Implementation of a Personalized Eating-Assistance Program for Oncology and Geriatric Inpatients of the Jewish Rehabilitation Hospital Who Are At Risk for Malnutrition

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Abstract

This study examined how a personalized eating-assistance program (PEAP) would help improve the nutritional status and perceived well-being of hospitalized oncology and geriatric patients in a rehabilitation setting who are at risk for malnutrition. A purposeful criterion sample of ten participants and ten controls were screened for malnutrition risk and ability for social interaction. Volunteers were trained in nutrition and how to provide eating assistance. Visits occurred three times per week at mealtime and their activities included eating together, encouraging intake, educating on nutrition, going to the cafeteria, helping with tray set-up, and providing companionship. This mixed-methods study used (a) a quantitative analysis to determine the effect of the PEAP on objective markers of nutrition (weight, caloric and protein intake, albumin, lymphocytes, and hemoglobin), and (b) a qualitative analysis with a constructivist framework to explore the subjective experiences of participants and volunteers. Weight, albumin, hemoglobin, and caloric and protein intake increased more in the experimental group than the control group. The subjective experiences of the participants and volunteers described the quality of their relationship, the activities they did together, and the interventions the volunteers used. Although the small sample size was a limiting factor in finding statistically significant differences, small to large effect sizes and clinically important results warrant further study. Socializing at mealtime with trained volunteers who can provide nutrition education and encouragement to increase food intake may be able to help improve the nutritional status and perceived well-being of this population.

Keywords: eating assistance, feeding assistance, oncology, geriatric, nutritional status

Implementation of a Personalized Eating-Assistance Program for Oncology and Geriatric Inpatients of the Jewish Rehabilitation Hospital Who Are At Risk for Malnutrition

Malnutrition is a serious health concern in the elderly and ill population (American Dietetic Association, 2000; Kane, Abrass, & Ouslander, 2009; Keller, 2007; Lesourd, 1999; Vesnaver & Keller, 2011). Food intake of older adults is often inadequate and therefore many are at nutritional risk (Keller, 2007; Vesnaver & Keller, 2011). Over half of seniors admitted to the hospital and 77% of patients with cancer are malnourished (Bozzetti, 2009; Shils & Shike, 1999). It is estimated that malnutrition affects from 10 to 50% of elderly people living in the community and from 20 to 60% of hospitalized elderly (Locher, Robinson, Roth, Ritchie, & Burgio, 2005; OPDQ, 2000).

Contributors to eating difficulties may include limitations in mobility inside and outside the home, lack of strength and endurance, decreased manual dexterity, poor eyesight, loss of appetite or taste, increased satiety, poor pain control, fatigue, chewing difficulties, dysphagia, needing several small meals, inability to open food containers and difficulty manipulating utensils or food, and factors related to institutionalization (American Dietetics Association, 2000; Ausman & Russell, 1999; OPDQ, 2000; Vesnaver & Keller, 2011). Older age brings about changes in oral health, digestion, physical ability to prepare food and grocery shop, and changes in social relationships, all of which may affect food intake (Vesnaver & Keller, 2011). In addition, oncology patients experience weight loss, nausea, anorexia, and taste changes secondary to cancer treatment (Tong, Isenring, & Yates, 2008).

"Nutrition is one of the few modifiable risk factors for health in old age [which affects] institutionalization, quality of life, and survival" (Keller, 2007, p. 992). Health professionals and

healthcare administration need to be aware of this problem and implement solutions to promote health, disease prevention, and a favorable prognosis.

Literature Review

Health Promotion Needs

A literature review by Keller (2007) found that older adults who are aging at usual or successful rates tend to be receptive to nutrition education. Therefore, they can benefit from initiatives aimed at health and nutrition promotion. The author stated: "Nutrition promotion, policy, and legislation as well as education are lacking and therefore substantial to improve the nutritional intake of older adults in Canada. Older adults do participate and improve their health as a result of health promotion efforts" (p. 992). Intervention is needed as a secondary prevention instead of only at the tertiary level because this population (i.e., successfully and usually aging) is being overlooked. Research is needed on "quality of life and satisfaction with physical health, mental health, social functioning, and well-being as it relates to and is affected by food intake" (p. 998). Research is also needed on "compliance with education, counseling, and supplementation interventions as well as to determine which older adults benefit from these interventions" (p. 998).

Education Needs

In a qualitative study, Locher et al. (2009a) found that older adults with cancer experience nutritional problems and there were psychosocial factors, cultural factors, particular attitudes and beliefs, misconceptions, and physical limitations that contributed to this along with the illness and side effects of treatment. Additional themes addressed but not labeled by the authors were relationship with food, cultural connection with food, and sensation alterations (e.g., taste changes due to chemotherapy). Therefore, addressing these issues by providing

education and cognitive and behavioral interventions will help improve the nutritional status of these patients.

Hughes, Bennett, and Hetherington (2004) found that older men tended to not consume enough energy, fruits, and vegetables as per their needs. Those with better cooking skills consumed more vegetables and reported better physical health, yet consumed less energy than those with poorer cooking skills. This may be due to the higher vegetable intake, which has lower caloric content. Those with lower vegetable and fruit intake also consumed less protein and did not describe their cooking skills as good; this may be because protein foods usually require cooking. The men lacked the appropriate knowledge regarding what a healthy diet includes and incorrectly judged the adequacy of their own eating habits. Therefore, improving the diets of older adults, and men in particular, could require offering cooking classes, providing healthy eating information tailored for them in the context of the whole diet, and encouraging the adoption of simple strategies to make healthy diet changes. Interventions must address the needs and wishes of this population.

Compliance to Nutrition Education Among Older Adults

Zazpe et al. (2010) looked at predictors of success of an intervention aimed to increase adherence to a healthy diet, namely the Mediterranean diet for those at high cardiovascular risk. The sample included 1048 adults aged 55 to 80 years old. The PREDIMED intervention, which lasted 12 months, consisted of quarterly individual motivational interviews that included positive and individualized recommendations to follow the corresponding Mediterranean diet, quarterly group sessions, written material with descriptions of typical Mediterranean foods, seasonal shopping lists, meal plans, recipes, and free provision of virgin olive oil (1 L/week) or mixed nuts (30 g/day). The results showed that poor baseline dietary habits and marital status (i.e.,

being married) were the best predictors for successful compliance to this diet. This study also indicated that regular follow-up and nutrition education and promotion could enhance adherence to a recommended diet.

In a qualitative study, Sheahan and Fields (2008) investigated the experiences and decision-making behaviors among older women following a sodium-restricted diet. Although no theoretical framework was clearly stated, they appeared to combine a grounded theory approach with elements of phenomenology. A semistructured interview with three focus groups was used to collect data. One of the major themes found was that the participants had a desire to empower themselves, control their health, and learn about nutrition. The researchers also mentioned the need for prevention programs to keep the elderly healthy and out of the hospitals for as long as possible. Overall, they found that diet education was lacking and that this population desired to have more information on how to adhere to this type of diet. In addition, eating alone caused low motivation to cook and prepare nutritious meals. This study indicated that healthcare professionals need to provide nutrition education on sodium-restricted diets. It also showed that the social context of older women had an impact on their adherence to healthy recommended diets.

Social Relationships and Eating

Locher, Burgio, Yoels, and Ritchie (1997) looked at the cultural and social themes related to food and eating among older adults receiving meals on wheels (MOW) food services. Those eating alone did not always conform to norms of eating (e.g., eating at particular times of the day, eating three meals per day, certain food items for the corresponding meals, eating in the dining area of the house). This showed that, without others present, eating loses its social significance and qualities. Some participants eating alone turned the radio or television on

during mealtime, which showed that in the absence of social contact, these devices served as substitutes for company at mealtime. This corresponds to a common theme in the literature that mealtime and eating are known to humankind as social events.

Some MOW recipients shared their meal with their neighbors, especially when they perceived their neighbor's need for it was high. This enabled them to participate and interact with their community. According to the social exchange theory, giving away one's food (i.e., the cost) provides respect and appreciation from other members of the community (i.e., the reward). In addition, contact with other humans because of the delivery of the meals provides social support that meets their instrumental and socio-emotional needs. Eating is a primary way of initiating and maintaining social relationships. This means that the sharing of food may be used as an exchange in the development and maintenance of these relationships. Human behaviors such as eating and nutrition have social implications because they require social situations for their satisfaction. Recipients eating alone relied on physical cues to determine food needs, however this is problematic because aging may diminish them, or social and psychological conditions may alter them. Recommendations included having volunteer food deliverers join the recipients at mealtime and eat with them in order to enhance the dining experience and increase food intake (Locher et al., 1997).

Locher et al. (2009b) found that social factors, including the role of caregivers in providing social support surrounding mealtime activities, may affect dietary intake however they have not been extensively studied. Their qualitative study with thirty participants found that meal preparation was a source of distress for cancer patients and their caregivers. A grounded theory, constructivist perspective was used in this study and important themes related to the socialization of meals emerged. In one case, when an elderly woman with cancer was being

visited by friends, her family reported that the company was more appreciated than the food they brought. This indicated that even though a social support circle may be providing instrumental support (e.g., food and meals), which may be a necessity, socialization is just as important and can be just as therapeutic.

Vesnaver and Keller's literature review (2011) looked at social influences and eating behaviors in older adults. Eating is a social activity in which certain norms, preferences, and cultural values have been adopted over time. Social isolation is one of the seven key risk factors for predicting nutritional health in older adults. Social integration (i.e., regular social contacts reinforcing norms and rules) is only health promoting in relationships that encourage healthy practices. Companionship (i.e., enjoyable interactions and shared activities with others that result in feelings of well-being and intimacy) may have an indirect effect on food intake through improved mood and self-esteem. Commensality (i.e., the act of eating with others) may provide opportunities for companionship, social integration, and social support (i.e., social resources that are available--instrumental, emotional, and informational). Social support is important for the dietary intake of vulnerable older adults, particularly those relying on instrumental support (i.e., help with food-related activities). The social facilitation of food and its impact on dietary intake may depend on the quality of the relationships and the type of support received. For example, the companion may not be aware of the nutritional needs of older adults, may think undereating is "normal" with aging, may not encourage them to eat more, and may even cause decreased intake if they themselves eat less (Vesnaver & Keller, 2011). This indicated that the most beneficial social situation would be when the person accompanying the older adult at mealtime has a certain amount of knowledge or training.

In summary, eating alone has repeatedly been shown to reduce enjoyment of meals and increase risk of poor intake, and thereby nutritional risk among older adults. Social facilitation of eating behaviors may provide an important opportunity to improve food intake and diet quality among community-living older adults. It has been suggested that the most direct way social relationships can influence diet is through the activity of eating together (Vesnaver & Keller, 2011), which led us to an exploration of how different social factors influence diet.

Eating Alone versus Eating with Someone

In a qualitative study, Sheahan and Fields (2008) found that eating alone was a contextual barrier that decreased motivation for older women to prepare nutritious meals, and that socialization at mealtime was an important variable that influenced their nutrition. Vesnaver and Keller (2011) reviewed studies that examined eating alone versus eating with someone, and demonstrated a trend of increased caloric intake if the meal was shared. Particularly, if the deliverer of meals on wheels sat down to eat with the recipient, there were increased opportunities for commensality, which provided social cues as to when and what to eat. This corresponds to this literature review by reinforcing what Locher et al. (1997) recommended, which is to have MOW's food deliverers eat the meal with the recipient in order to enhance the dining experience and increase food intake. This reduces the reliance on physical cues to determine food needs, and utilizes the social ones.

A quantitative study by Locher et al. (2005) found that homebound older adults consumed more calories when others, such as family members or caregivers, were present during the meal. No effect on intake was found when others were present in the house but not at the meal. These results are important for institutional settings where mealtime lacks meaningful social interaction despite the presence of others. One may conclude that a simple and

inexpensive way to increase caloric intake of older adults would be to have someone sit down and eat with them. The authors suggested that the reasons for this may be the extended duration of the meal, the amount eaten by the companion being more than that of the older adult, the desire of the older adult to please their companion, and the social support the companions could have given. Limitations of the study, primarily the lack of control group, mean that further detailed quantitative studies are needed to validate these conclusions. Nevertheless, the results found are useful in order to guide future studies that would look at the effect of the presence of others on nutritional intake. The results are also useful in designing nutrition intervention programs with preventative and corrective goals.

Quite a few older studies support this finding. McIntosh and Shifflet (1984) found that social support, which included the presence of others at mealtime, was significantly associated with higher intake of specific nutrients. De Castro (1993) found that the presence of others at mealtime extended the duration of the meal, resulting in increased intake. With the companionship of family and friends, there is a release of inhibitions and intake of food is further increased. Therefore, social support systems should be incorporated into nutrition programs for older adults.

The Effects of Intervention Meal Programs

Keller (2006) found that seniors involved in formal supports of meal programs (e.g., meals on wheels, meals with socialization) were able to improve or maintain nutritional risk over an 18-month period. This study involved 367 cognitively well, vulnerable seniors recruited from community-service agencies in southwestern Ontario. Seventy percent participated in meal programs and follow-up was done with these 263 participants. A nutrition screening tool was used to determine nutritional risk. A statistically significant change in nutritional risk was found

with participation in a formal meal program. At the time of follow-up, decreased or discontinued use of the programs was associated with improved nutritional risk. Increased use of the programs was associated with increased nutritional risk and declined health status. The author hypothesized that health status of these seniors was declining anyway and meal programs and other types of help with meals were increased to provide assistance. Therefore, meal programs have the potential to improve or maintain nutritional status of seniors and prevent declines in health and quality of life, as seen by the seniors who no longer needed the program at the time of follow-up. Participation in meal programs should be encouraged and communities and providers should continue to develop them.

Walton et al. (2008) conducted a pilot study by implementing a feeding-assistance program for elderly inpatients in an aged care ward in Sydney, New South Wales, Australia. Volunteers assisted patients at mealtime with tray set up, feeding assistance, and encouragement, twice per week on weekdays. Observations and nutritional intake were recorded during these two weekdays and on two weekend days, when no volunteer was present. A convenience sample of nine patients participated in the study. Leftover food was weighed and a standard serving was used as the initial weight to determine amount consumed. It was found that protein intake at the volunteer-assisted lunch and throughout the whole day was significantly higher when compared to days when no volunteer was present. Energy intake also improved at the volunteer-assisted lunch, but was not statistically significant. The nurses' and volunteers' responses to the program were very positive: Nurses appreciated the assistance and wanted the program expanded. Volunteers were satisfied with their role in assisting with the patient's care and felt that the company at mealtime, particularly opening packages, positively influenced their dietary intakes.

Other observations indicated that compared to nurses, volunteers socialized more with patients, encouraged increased intake more often, and spent more time feeding them.

A pilot project of the "Integrated Eating-Assistance Program for Seniors at Home" (IEAP) was conducted by the Coalition of Physicians for Social Justice and evaluated by McCusker, Andalib, & Reavell (2002). Volunteers were recruited and trained to be eating assistants. Seniors living in the community, who were appropriate candidates, were recruited and visited by these volunteers once per week in their homes. Volunteers helped the seniors with food-related activities such as meal or snack preparation, grocery shopping, and food storage. They also provided company and a friendly visit during or outside of mealtime. Eight seniors participated who were all at high nutritional risk. Satisfaction questionnaires were administered to both seniors and volunteers for feedback. In addition, a focus group was conducted to obtain qualitative feedback from the volunteers at the end of the program. Seniors reported that they appreciated the volunteer's help and encouragement given to increase their food intake, and enjoyed the social interaction. Two seniors asked if they could restart the program because they enjoyed it so much. Overall, the volunteers were happy to participate in the program--they enjoyed the interaction with the senior the most, found the training useful, felt competent to help and carry out the action plan, felt that the senior appreciated their assistance, had a good rapport with the senior, and enjoyed the project. Some volunteers felt there was not enough contact with the dietitian after the first visit with the senior to discuss any concerns, and the time commitment was too much because of the traveling component.

Recent Reviews of Nutrition Intervention Research

In a systematic review of the nutrition intervention research, Green, Martin, Roberts, and Sayer (2011) found few well-designed reported studies that supported the use of volunteers to

improve mealtime care, thereby concluding that there is limited useful evidence. The main reason for this conclusion was questionable internal validity and reliability of the studies under discussion, mainly because of a lack of description, missing dietary intake such as snacks, and limited or missing qualitative information such as the subjective experiences of volunteers, nurses, and patients. The authors also stated that it is difficult to demonstrate a change in nutritional status and intake because many other confounding factors can influence the outcome measures, and qualitative data are much easier to measure and record. While this statement is true, the studies that these authors reviewed included ones looking only at dietary intake or subjective experiences, not at other markers of nutrition. However, it is not possible to assess one's nutritional status based on a single measurement such as dietary intake (OPDQ, 2000). Despite this, the studies reviewed in this paper showed increased energy and protein intake in the experimental groups who were part of a nutrition program, lending support that the use of these programs may be able to improve nutritional status (Manning et al., 2012; Green et al., 2011; Walton et al., 2008). Green et al. (2011) pointed out that their reviewed studies provide a useful framework for a volunteer training program and they also suggested pairing the volunteer in an eating or feeding-assistance program with a healthcare professional to discuss any problems or concerns along the way.

Wade and Flett (2013) reviewed studies looking at various nutrition intervention models and their effect on nutritional status. They looked at studies with different types of meal intervention programs to see which was most effective. As in Green et al.'s (2011) review, they commented on the lack of high quality evidence to support making clinical recommendations for implementation of these programs. They did find that the feeding assistance and communal dining rooms showed an improvement in energy and protein intake, however the other studies

reviewed did not show any significant difference for body weight and biochemical markers of nutrition. It is important to consider that this review was comparing various meal intervention methods, and were basing their evaluation on finding enough evidence of statistical significance to support the use of a particular program in clinical settings. Although the authors found limited evidence to support the change in clinical practice using one of these programs, they did state that larger multi-centre trials would be needed to obtain this. Overall, this review suggested the need for further studies, but did not conclude that meal intervention programs are not useful. While large-scale trials showing statistically significant improvement in participants is not yet available, there is clinical support for these programs in helping to improve patients' nutritional status.

Conclusion

Malnutrition is a serious and prevalent health concern among older adults. Nutrition promotion and education are lacking, however are very much needed and desired by this population to optimize nutritional health and well-being. Social relationships have an effect on dietary intake, and it has been repeatedly demonstrated that eating with others improves intake. The social context and frequency of follow-ups have been shown to be predictors for compliance to healthy diet recommendations. A beneficial relationship is known to include the companion of the older adult having some degree of nutrition and aging knowledge. This suggests that efforts to develop nutrition programs with a training component are worthwhile. Larger-scale studies are needed to detect significant differences in nutritional status indicators by using nutrition intervention programs. Further research is also needed to explore the socialization aspect, in particular what type of companion and what kind of interventions will provide the best type of support and result in optimal dietary intake.

Limitations of Research--General

That eating alone increases nutritional risk and eating with others increases dietary intake, has been established. The literature is lacking studies of the quality of the relationship between individuals sharing the meal, how social interaction influences dietary intake, the subjective experiences of older adults, and evidence that participation in a socializing meal program improves nutritional status (Green et al., 2011; Vesnaver & Keller, 2011; Wade & Flett, 2013). More research is also needed on quality of life and food intake, as well as compliance with education and interventions (Keller, 2007).

Limitations of Similar Studies

A study by Walton et al. (2008) has shown results that are useful for developing feeding-assistance programs in institutions. A convenience sample of nine elderly inpatients in an aged care ward in Sydney, New South Wales, Australia, participated in the study. Intake at meals was measured with and without volunteers present. Detailed observations were obtained at meals when the volunteers were present to determine possible causes for improved intake. Mean length of stay was 29.3 days (SD = 12.3), which is comparable to a short-term care center (e.g., rehabilitation) where this type of program can be implemented. Volunteers were trained for this job, which included encouraging a high energy, high protein diet. In this study, each participant's intake was estimated by comparing the weight of food remaining on the tray to a sample meal. While this is more accurate than a professional giving their subjective estimation of the percentage of the meal that was consumed, it leaves substantial risk for error. This is because the precise amount of food distributed to each plate in a hospital kitchen is not truly standardized (Fogel, unpublished data). Obtaining the weight of each food item prior to the meal

would have allowed an accurate measure of food consumption, which would have permitted more reliable results.

The small sample size may have been a limiting factor in finding statistically significant changes in energy intake. Although protein intake increased when volunteers were present, the overall nutritional status of the participants was not examined, which would have added to the resulting effectiveness of this program. Although the qualitative data from the nurses and volunteers were useful, including the participants' experiences would have added strength to this study.

The Integrated Eating Assistance Program for Seniors at Home (IEAP) pilot project (McCusker et al., 2002) used various types of activities in a context of socialization to improve the nutritional status of seniors. Training material was developed and used to train volunteers, which has been shown to be beneficial (Vesnaver & Keller, 2011). This project was implemented with a population in the community as opposed to an institution, which showed its potential impact in various settings. This project designed and developed a model of an eating-assistance program, which could be used as an intervention for future controlled studies. Qualitative data obtained showed positive effects of this program for both seniors and volunteers, making this intervention model a strong base for future designs. However, this project failed to use any quantitative indicators of change in nutritional status as a result of this intervention. This made it difficult to state there was any measurable improvement in nutritional status. In addition, there were difficulties recruiting and retaining candidates and volunteers. Travel time of the volunteers and lack of contact with the dietitian were drawbacks of the program (McCusker et al., 2002).

Expected Contribution

The current mixed-methods research study on a personalized eating-assistance program for older adults who are at risk for malnutrition fills gaps in the literature, while retaining the strengths of the aforementioned studies. The present study was based on secondary prevention efforts to promote good nutrition and education in an at risk population (Keller, 2007). It encompassed trained companions (i.e., who are volunteers), socialization at mealtime, education, encouragement to improve food intake, frequent follow-ups, and promotion of compliance (Green et al., 2011; Hughes et al., 2004; Keller, 2007; Locher et al., 1997; Locher et al., 2009a; Locher et al., 2009b; Locher et al., 2005; Sheahan & Fields, 2008; Vesnaver & Keller, 2011; Zazpe et al., 2010). The design of the program was based on that of McCusker et al. (2002) with elements such as trained companions, also suggested by Green et al. (2011). Training materials were based on those used in the original IEAP study (McCusker et al., 2002).

The setting was a rehabilitation institution, which is similar but not identical to a previous study (Walton et al., 2008) where this type of program was implemented and successful. The subjective experiences of the participants and volunteers were explored to determine the quality of their relationship and what factors contributed to improved food intake. The nutritional status of the participants was determined with five biological markers of nutrition, which is a more comprehensive assessment of nutritional status than what was done in previous studies (Green et al., 2011; Manning et al., 2012; OPDQ, 2000). The methods used to collect food intake were more extensive and accurate than those used in previous studies (Walton et al., 2008). Candidate and volunteer recruitment and retention were facilitated by the resources available: hospitalized, yet functional patients who were rehabilitation candidates, the established volunteer department of the hospital, access to a large amount of health professional university students, and a budget

for compensation of volunteer travel expenses. The dietitian of the program was available for consultation by the volunteers for the duration of the program, which had been suggested by Green et al. (2011).

Method

Ethics

Ethics certification was obtained from the Center for Interdisciplinary Research in Rehabilitation of Greater Montreal (CRIR) on April 20, 2011.

Candidate Selection for the Personalized Eating-Assistance Program (PEAP)

Participants were recruited from the geriatric and oncology inpatient programs at the Jewish Rehabilitation Hospital (JRH). Admissibility criteria included age of 35 years or older, a Functional Independence Measure (FIM) score of at least five for social interaction, and a moderate to high risk of malnutrition (score of 6 to 13) on the Payette Nutritional Screening Tool (Payette, Cyr, & Gray-Donald, 1994; Payette, Guigoz, & Vellas, 1999; Appendix A). Patients with dysphagia and neurological conditions were excluded because their nutritional status may be affected by factors not addressed in the PEAP.

Control Group

Control subjects were selected from the oncology and geriatric programs using the admissibility criteria before and after implementation of the PEAP. If these data were to be collected concurrently with the study, patients not receiving the PEAP could have casual contact with PEAP volunteers, potentially influencing their nutritional status and thus contaminating the control sample.

Volunteer Recruitment and Training

An email was sent to McGill University students in the dietetic, physiotherapy, and occupational therapy programs describing the program and asking for volunteers. Interested students were given a one-day training and orientation session. This included the standard orientation given by the volunteer department, training in the nutritional needs of older adults, and how to provide eating assistance to their assigned participants. This training was based on the training given in the pilot IEAP by the Coalition of Physicians for Social Justice (McCusker et al., 2002). The adapted training material used for the present study is in Appendix B. The volunteers were asked to fill in an information form (Appendix C) which included their university program, contact information, languages spoken, and availability at mealtime (e.g., lunch and supper).

Implementation of Program

Participants who gave written consent (consent form in Appendix D) to participate were matched with a volunteer based on availability and sex. The volunteer visited the participant at lunch or supper three times per week for the duration of the participant's inpatient hospital stay. The volunteers provided mealtime assistance such as accompanying the participant to the cafeteria, ensuring proper positioning for eating, setting up the tray, opening food containers, encouraging food and liquid intake, stimulating alertness, providing companionship, and promoting a safe and enjoyable mealtime experience. A cafeteria coupon for lunch was provided for the volunteers so they could eat lunch with their assigned participant. Volunteers submitted reports on their activities and any problems on a standardized form (Appendix E) to the PI (primary investigator: CM Fogel) after every visit. The PI responded to the concerns of the volunteers or problems with the participants on an as-needed basis.

Data Collection

Quantitative. Medical charts of participants and controls were reviewed for anthropometric and biochemical markers of nutrition status on admission and at discharge. This was done at one time for all participants and controls by the study supervisor (HCL), who was blind to subject participation in the PEAP. The parameters sought in the nursing and medical charts were: body weight, blood albumin, total lymphocyte count, and hemoglobin). Caloric and protein requirements for each person were obtained from the dietitian's consult. According to procedure at the JRH, all of these parameters are to be measured and recorded for all patients.

Additionally, dietary intake was measured on two consecutive days, on admission and at discharge for each participant. Whenever possible, the same menu day was used on admission and discharge to avoid biases of food preferences and dislikes. The food items for each participant were weighed before and after each meal to determine the amount consumed. Two full days of dietary intake were measured in order to provide a more accurate estimate of consumption.

Qualitative. Semistructured interviews were conducted with the participants prior to and at the end of the program. They were asked a series of open-ended questions regarding how they view their overall and nutritional health status, and the benefits or challenges they anticipated or experienced in the program (Appendix F). A control group was not used for this part of the study because the personal and specific experiences of PEAP participants were being analyzed. A focus group was held with the volunteers after the data collection for the study was complete (Appendix G). All interviews of participants were recorded and transcribed. The focus group was recorded and field notes were taken by the researchers, both of which were used in transcribing the contents of the session.

Data Analysis

Quantitative. Because the lengths of stay differed for all participants, anthropometric and biochemical values were converted to the mean change per day instead of the overall change from admission to discharge, in order to standardize the data and allow group comparison. Caloric and protein intake were calculated using an online tool (EATracker.ca) as well as the hospital dietary department's menu software (PROMENU) to maximize accuracy. Because the latter provided the nutritional information of the main courses per portion in volume, the average weight of a regular portion of the meal was calculated and used to determine the individual calories and protein consumed. The mean of the two days collected was used for the analysis.

Statistical analysis was used to compare changes in the PEAP participants versus those receiving the current standard of dietetic and nursing care at the JRH. The SPSS statistical software was used to carry out nonparametric *t*-tests (Mann-Whitney Wilcoxon) to determine statistical significance between the experimental and control group for quantitative data obtained. Effect sizes were calculated using $r = Z / \sqrt{N}$ (Field, 2005). Nonpaired data were removed and the *p* value used was .05. In addition, Chi-square and Fisher's exact tests were used for the dietary intake data. Effect sizes were calculated using Phi coefficient or Cramer's V.

Qualitative. The qualitative data were analysed using a constructivist framework, in order to identify overarching themes in the participants' experiences. This analysis used a similar method to a qualitative study done by Lambert et al. (2005). The data were open-coded line by line, meaning comments by the participants and volunteers were broken down into precise concepts. These concepts were then written on color-coded post-it notes for each of the ten participants interviewed and the volunteer focus group (eleven colors in total totalling 442 codes). Post-its were then organized into different categories. The relationships between

categories were explored by comparing them to eachother and to the literature. Themes and up to three levels of subthemes were then identified. Meaningful quotes made by participants were also listed in a separate document to be used in the results section later on.

Data were triangulated using the volunteer reports. The supervisor (HCL) coded 10% of the transcripts to verify the analysis. Additional analysis of the qualitative data according to individual participants' quantitative measures was performed as indicated by the data (e.g., comparison of the perceptions of participants who did and did not show improvement on objective nutritional indicators).

Results

The breadth of data collected allowed an analysis of many aspects of the PEAP, notably, (a) the quality of training received by the volunteers, (b) the effectiveness of various interaction styles between the participants and volunteers, and (c) the overall effectiveness of the program, in terms of qualitative and quantitative data.

Participants

Eighteen patients were referred to participate in the study. Six refused because of fatigue, depression, or they were dealing with too many stressful life events. One was excluded by the PI because she was not a new admission (had already been in the hospital for two months), which did not meet the admissibility criteria. Another patient was transferred back to acute care for medical problems before the initial contact could be made.

Ten patients accepted to participate in the PEAP and signed the consent form. One participant was transferred back to the acute care hospital because of medical problems before the second (i.e., discharge) qualitative interview was performed. However, his admission data and volunteer reports were still taken into consideration for this analysis. Another participant

had a very short rehabilitation stay (about two weeks) and some quantitative discharge data were not available because not enough time had elapsed for valid retesting.

Control subjects were chosen based on admissibility criteria, however data were not used if more than one variable of the quantitative data were missing from the chart. Therefore, the total *N* of this study was ten experimental (the participants or group V) and ten control (group C) patients. The diagnoses or reasons for admission for these patients were: cancer rehabilitation (bladder cancer, Kaposi's sarcoma and HIV, lymphoma, leukemia, or ovarian cancer, all with deconditioning post-cancer treatment), hip fractures and replacement surgery, femoral fractures, humeral fractures, COPD exacerbations, aortic and abdominal aneurysm resection, and bowel surgery.

Experimental group. The participants ranged in age from 57 to 88 years (mean 73.7; *SD* = 9.7) and were eight females and two males. Their length of stay ranged from 16 to 169 days (mean 49.7; *SD* = 43.2). The score for nutritional risk on the Payette screening tool ranged from 5 to 11 (mean 7.4; *SD* = 1.9). Three participants were from the oncology program and the rest had the other orthopedic or surgical conditions mentioned above (Tables 1 and 2).

Control group. The controls ranged in age from 42 to 91 years (mean 77.9; *SD* = 14.5) and were six females and four males. Their length of stay ranged from 34 to 90 days (mean 60.5; *SD* = 19.1). The score for nutritional risk on the Payette screening tool ranged from 4 to 9 (mean 7.0; *SD* = 1.6). Two patients were from the oncology program and the rest had the other orthopedic or surgical conditions mentioned above (Table 2).

Volunteers. Eight female and two male volunteers participated in this study. They were all university undergraduate students from McGill University, except for one who was from University of Montreal. Six were dietetics students, three were occupational therapy students,

and one was a physiology major. Languages spoken included English, French, Greek, Vietnamese, Portuguese, Italian, Thai, and Arabic (Table 3).

Table 1

Participants

Participant	Age	Sex	Reason for Admission	Length of Stay (days)	Payette Score	Culture
1	71	M	Non-Hodgkin's Lymphoma; medullar compression	47	6	French Canadian
2	83	M	Femoral fracture	26	8	French Canadian
3	64	F	Acute Myeloblastic Leukemia; deconditioning	41	6	Philipino
4	57	F	COPD exacerbation	27	8	French Canadian
5	67	F	COPD exacerbation	16	10	French Canadian
6	88	F	Femoral fracture	42	6	French Canadian
7	84	F	Complications of THR	49	5	Spanish
8	73	F	COPD exacerbation	39	11	French Canadian
9	72	F	Ovarian cancer; deconditioning	169	7	German
10	76	F	Humeral fracture	41	7	English Canadian; Jewish

Table 2

Characteristics of Group V and C

	Group V	Group C
N	10	10
Sex (m:f)	4 : 6	2 : 8
Dx (oncology)	3	2
Age (years)	73.7 ± 9.7	77.9 ± 14.5
Length of stay (days)	49.7 ± 43.2	60.5 ± 19.1
Payette score	7.4 ± 1.9	7.0 ± 1.6

**p* value > .05

Table 3

Volunteers

Volunteer	Sex	University Major	Culture
A	M	Occupational Therapy	English Canadian
B	F	Occupational Therapy	Vietnamese
C	F	Dietetics	French Canadian
D	M	Physiology	English Canadian; Jewish
E	F	Dietetics	Lebanese
F	F	Dietetics	Brazilian/Italian/Lebanese
G	F	Dietetics	Lebanese
H	F	Dietetics	Greek
I	F	Occupational Therapy	English Canadian
J	F	Dietetics	Thai

Quality of Training

These results were taken from interviews with the volunteers in a focus group, which took place at the end of the study and data collection. The volunteers felt the training provided prior to the program was adequate and enabled them to be comfortable assisting their participant. The aspects of the training that were most appreciated were: (a) emergency guidelines and (b) the basics of nutrition and healthy eating for those volunteers without a dietetics background.

The volunteers were asked if they had any advice for future volunteers of the Personalized Eating-Assistance Program (PEAP). Their advice was focused on aspects of the relationship between the volunteer and participant, and what interventions to use: work on a case-by-case basis, be adaptable on how you address food and nutrition, modify your plan as needed, have a sense of humor, be flexible, be a good listener, do not over think, stress out, or feel pressure, remember that it is ok if one day the participant has a poor appetite, and that all activities done by volunteers are important and unique.

Interaction Styles

These results were taken from both the interviews with the participants and the volunteers. It includes the activities done together and the type of relationship they had.

Activities. The activities done together were providing company, having conversations, going to the cafeteria for lunch, and going outside for some fresh air.

Company. A major theme that emerged from the participant interviews and focus group was the concept of providing company. This was enjoyed immensely by all participants regardless of whether their nutritional status or intake improved or not. However, many participants did state company during mealtime helped to improve their appetite. The volunteers felt the company they provided made the mealtime experience more enjoyable for their

participant and pleased those who needed someone to talk to and open up to. Participant 9, who was from the oncology program, loved being social and really needed someone to talk to, so she was happy just with the friendly visit whether it was during mealtime or not (e.g., going outside for some fresh air which helped her appetite). She concluded that this company was beneficial for more than just improving food intake--it was a necessity for all cancer patients who are undoubtedly constantly thinking about their illness:

> [Company] is the BEST thing for cancer patients. . . . If someone is with you, you forget that you're sick. . . .If they [the volunteers] come for mealtime, they [the patients] eat much better and they are not thinking too much about their sickness.

Participant 4 did not think she needed a volunteer to begin with but agreed to participate anyways, and soon realized the benefits of the company. When asked what she liked best about Volunteer C, she responded:

> [I loved] her smile [the most].

Conversations. Many participants stated that the conversations they had with their volunteer were one of the most enjoyable parts of the experience. They said that talking about food along with eating together made them improve their food intake. Their conversations about nonfood-related topics were also very enjoyable. Many talked about aspects of good nutrition with their volunteers, however others also enjoyed talking about food and their meal in general terms (e.g., what they are eating, if they like it, what will be served in the cafeteria).

Going to eat lunch in the cafeteria. The participants, who were well enough to go to the cafeteria, stated that they enjoyed going to eat there with their volunteer because there was a larger variety of food available, it was something to look forward to, and they were able to eat more even when they did not like their meal. This activity also enabled the participants to leave

their rooms, change their environment, and see other people, which the participants reported also helped improve their intake.

The volunteers also talked about going to the cafeteria together as a positive aspect of the program. This was because it increased the variety of foods, palatability of the meals, and allowed them to assist in mealtime preparation, such as heating up food in the microwave available. Volunteer A had seen two participants, one of whom he ate lunch with in the cafeteria and the other he visited in his room at lunchtime. He said going to the cafeteria was preferable because it changed the dynamics of the program. It allowed for proper timing so both people could eat together, because when he went to the participant's room he often arrived after the participant finished his lunch, so the volunteer ended up being the only one eating. He also reported that it increased the selection of food, allowed use of the microwave to warm up the meals, increased socialization, changed the environment, and allowed the participant to see other people.

In summary, going to the cafeteria helped increase the participants' food intake and happiness. It also allowed for proper timing, so both people could eat together, which this study found to be a beneficial aspect of a PEAP. Going to the cafeteria was preferable, however it was still beneficial to visit the participant in his or her room because it broke their isolation.

Eating together or not. Although the original design of the program included the volunteers visiting the participants at mealtime, Volunteers H and I who each visited Participant 9, were not always able to do so. For this oncology participant, eating a meal together was not important because she was only interested in the company, being able to leave her room, and going outside for some fresh air. However for the rest of the participants, eating together was of great benefit to the success of the program. According to the volunteers, sharing the activity of

choosing food and eating together was an important aspect of the program because it enabled food to be part of the conversation. In turn, this made it easy to encourage intake directly or indirectly (e.g., in a conversation about the meal, Volunteer A said to Participant 2: "Put a little pepper on it, it's good!"). The volunteers also said the program is not as beneficial if only the participant is eating because it diminishes the social aspect, becomes an observation instead of a social event, makes it awkward for the participant, and risks the participant feeling singled out in his or her room, which may affect them personally and bother them. This was confirmed by Participant 5 who stated she would be less embarrassed during the visit if the volunteer is eating as well.

Timing of visits. The volunteers stated that if the objective of the program is indeed to improve nutritional intake and provide nutrition education, a visit at mealtime with both participant and volunteer eating a meal together is a necessity. Eating a meal together must be the main activity of the visit because it serves as an ice breaker and provides a good opportunity to talk about food, which was named by the participants as a factor that helped improve their food intake. Talking about food with regards to nutritional value or simply in general was also named as a useful intervention strategy by the volunteers (which is discussed in the next section on the relationship aspect). The volunteers stated they would not be able to provide nutrition advice without the activity of eating together and having a meal in front of them.

Frequency of visits. Most volunteers found that a frequency of visiting three times per week was very appropriate because it kept the participants under saturated, provided a nice balance of eating alone versus eating with company (because the participant may be eating alone after discharge), gave the participants some alone time to reflect on advice that might have been given, and gave them something to look forward to during their week. Volunteer H of

Participant 9, who benefitted from the company and the break of isolation more than the activity of eating a meal together, stated that as many visits as possible during the long length of stay would have been beneficial. For this particular case, the maximum visits would help to improve morale and provide company, but the volunteer was unsure about any effect it would have on intake and nutrition.

Going outside for fresh air. Participant 9 from the oncology program, enjoyed going outside with her volunteer to take a walk, get some fresh air, and feed the squirrels. For her, having company for these activities was the most enjoyable aspect, and she claimed that getting fresh air helped increase her appetite. Her volunteers, H and I, both stated that this participant preferred this activity to eating a meal together. They also said it helped increase the participant's morale and reduced her isolation.

Relationship. Each of the nine participants who completed the program had a different yet significant type of relationship with their volunteer. Their relationships provided various beneficial aspects and met certain needs. Different interventions were used by each volunteer depending on their assigned participant's situation. Specific personality characteristics of the volunteers were effective and appreciated by the participants.

Beneficial aspects and fulfillment of needs. For two participants, this relationship provided them with a special friendship. They looked forward to the time they spent with their volunteer and to future visits. The participants felt that this feeling was mutual. They enjoyed the conversations and appreciated the volunteer's personality characteristics:

> She [the volunteer] is a very easy person to be with. . . . She's *very very very* [good], EXCELLENT, *very* good girl . . . she's nice to *be with* and you know we talk, we talk. It's good I'm telling you (Participant 10).

This same participant thought of her volunteer as her friend despite their 40-year age difference. Besides stating this fact in her interview, it was evident when she clearly defined their relationship to a stranger in the cafeteria who made an erroneous judgment about it:

> You know, I don't know who it was, said "Is that your maid or something?" And I said "No that's my friend." And that was good (Participant 10).

For four other participants, the relationship enabled them to break their isolation, which they appreciated immensely. It reduced the time they were alone in the hospital in general, and helped change their environment by allowing them to leave their room. In turn, this helped increase their appetite, food intake, and nutritional status:

> To see people, to not be alone in the same place all the time, yes it's good. . . . it's because to stay all the time in the same place, in our rooms, . . . it gives more appetite when we see others. We are all together. The project was a good idea! (Participant 6).

Participant 7 was seen by the primary investigator (PI) in the hallway walking to the cafeteria with her volunteer. When casually asked how everything was, the participant excitingly responded:

> Amazing! It's like I got let out of prison and now I'm free!

At a later time, during her interview, she expanded on this experience and how wonderful it was to be able to leave her room:

> Leaving my room and being accompanied by this very charming and pleasant young girl, it's like I won the lottery, because my roommates [have to] stay in the room and eat there.

Three participants described their relationships as being good for their morale and their well-being:

> It was good for me (Participant 8).

The relationships between the participants and volunteers fulfilled personal needs such as mutual respect, caring, concern, helpfulness, and encouragement. For example, it changed the thoughts of Participant 9, the oncology participant who emphasized that all cancer patients need company to temporarily forget about their illness, which is beneficial for their well-being. Participant 7, who received nutrition education, stated that she realized the value of what Volunteer F what saying and doing. Participant 3, who shared a common culture with Volunteer B that was part of their conversations, appreciated that she was responsive to her stories. The relationships were also described as ones that provided company (as mentioned in the previous section), encouragement, fun activities and conversations, trust (to be addressed in the next section), communication, and helped improve nutritional status.

Two participants were interested in keeping in touch with their volunteers after the program ended. Participant 9, whose length of stay was especially long (169 days), had two volunteers visit her (Volunteers H and I). She asked them to get together for lunch after her discharge home and asked the primary investigator (PI) about the well-being of one volunteer who went travelling after the program ended. Participant 10 was describing how happy she was with her volunteer visits, and revealed that she wanted to continue their relationship:

She could stay with me if she wants to.

The relationship evoked certain emotions in some participants. They described the experience as being very happy and that they were honoured to have met their volunteer. Participant 7 felt very guilty about forgetting their last date because she respected and loved her volunteer so much. Participant 10 had positive feelings about their intergenerational friendship and her improved food intake:

> Well naturally [it improved my food intake]! . . . [being with] a young person like that . . . that gives you a better feeling.

This participant also described feelings of familial closeness with her volunteer despite their cultural differences:

> She said something about Chinese. I never said "what are you? Chinese? Are you this?" I don't do that. I really don't. It really doesn't matter. *I LOVED her like my little girl!* . . . All I can is that she was very more than pleasant.

A final beneficial aspect of the relationship was that nutrition education was provided by the volunteer in some cases. Five participants stated their nutrition knowledge increased as a result of the program. Three said they did not learn anything about nutrition from this relationship, however Participant 8 admitted she would have if she did not have to cancel her last two visits. Participant 2 was not interested in discussing nutrition, because palatability of the meal was most important to him. Participant 7 described how nutrition education was a big part of their relationship and how much she benefitted from it:

> I REALLY REALLY loved our conversations and I am honoured to have known her . . . I learned a lot from her. . . . I learned how to value food and make better choices. . . . I will eat more [protein] and think of her. . . .

Two participants were going to implement what they learned from their volunteer about nutrition. Participant 10 did not state this directly, but at the end of the interview stated she was going to have her snack now, giving this action interest and importance. Participant 7 did say it directly:

> You can be sure I will put into practice what I learned about nutrition.

Interventions. The volunteers described various intervention strategies they used with their participants in order to encourage food intake and meet their personal needs, which differed depending on the particular case and situation. The needs of the participant were assessed by each volunteer alone, without the help of the PI. The only guidance given was to Volunteer F, who was visiting Participant 7. This participant had a good and stable appetite, and was an especially good candidate for education for a healthy and nutritionally adequate diet.

Food-focused approach. Some volunteers focused their conversations with their participants directly on nutritious food and what is required for adequate intake. Volunteer A was visiting Participant 2, who was very motivated to gain weight, so he provided encouragement to increase food intake, emphasized intake of high protein foods, and talked about food and the meals at the participant's residence (where he went on the weekends). Volunteer F, who was advised by the primary investigator (PI) to provide nutrition education for Participant 7, encouraged high protein foods and identified that the participant's sodium intake was too high. This participant actually stated that although she had been given nutrition advice by her daughter in the past to improve her eating habits, she was now willing to listen and follow it because it was coming from her volunteer.

Nonfood-focused approach. Other volunteers found that it was more effective to take the focus off of food in order to help their participant with their personal needs and thereby, indirectly cause an increase in food intake. They found that gradually dropping hints about nutrition was more effective and more likely to be retained by the participant, rather than being forceful or imposing about increasing their food intake. This was an appropriate approach for participants who would not have been responsive otherwise. During the admission interviews, three participants stated they had gotten annoyed at family members who constantly tell them

they are not eating right and push them to improve their intake. Participant 9 from the oncology program, who appreciated the company the most, was a very picky eater with a poor appetite and tended to choose fried foods which were not good for her digestive problems. At first Volunteer H tried to encourage increased food and protein intake and less concentrated sugar, because the participant was diabetic. However, she found this had no effect. Instead she found that providing company, enabling the participant to leave her room, and developing a trusting relationship with her, was much more effective because it helped decrease her depression and isolation and increase her morale, socialization, and overall happiness:

> I know [the program] is about nutrition and trying to help increase [their intake] and getting them to eat properly. You can't focus on that, its almost secondary and it comes from the relationship you build with the patient. Once you become their confident, they start trusting you. [Then], if you encourage them to eat more protein [because it will] make your muscles stronger so you can get out of this chair, then they are more apt to listen to you. If you start and you go in there [with] "you didn't eat enough" and become sort of judgmental [and] preachy, you know that [won't work]. Because you spend so much time with them, I found it was easy to drop something in, something about iron, something about calcium, then that would stay. . . . [Because] they have a bond with you. Instead of going in there like you said [and bothering them about eating just like everyone else does] (Volunteer H).

Participant 10 had a neighbor in her hospital room who was very nosy, imposing, and with whom she got very annoyed at. The participant's husband also pushed her to eat more, which she was getting tired of. So Volunteer J made it a point to not be like these other people and take the focus off of food. Instead, she took on a role of providing company,

encouragement, and friendly guidance instead of directly teaching nutrition. She used other methods to increase the participant's food intake such as talking about meals and cooking in general only as an interesting everyday conversation topic. She also commented on the progress of the participant's intake and the positive feelings it brought her instead of focusing on the negative aspect (i.e., what needs to be improved). The volunteer's goal was to increase overall intake and not impose food restrictions. In addition, the volunteer used modeling and behavioral observations to help increase her participant's intake.

Modeling and behavioral observations. Certain teachings and interventions were done by behaviour and nonverbal communication. The environment provided by the volunteer and sharing the activity of eating a meal together, contributed to the main goal of the PEAP. This emerged from the interviews with the participants and volunteers. The PI also observed Participant 10 with Volunteer J in the cafeteria, getting excited over what the volunteer had on her tray as she brought it to the table. At a later time, during her interview, she stated she was impressed with her volunteer's excellent appetite and eating habits and it had inspired her to be more like her volunteer. When asked if her appetite improved since the visits began, she responded:

> Yes! Yes! . . . and she takes me downstairs [to the cafeteria] and I say [to the volunteer] "what do you think we are going to have?" But she's a good eater, I'm telling you, *she does not leave anything over!* And now I started it!

Volunteer J used a nonfood-focused approach (described above in the previous section) and stated she used modeling and behavioral observations to help her increase her food intake. She matched her eating speed to the participant's in order to extend the mealtime, and ate three

full courses every time. The participant eventually started copying her, increased her intake, and was finishing her meals by the end of the program.

Participant 2, who ate lunch in the cafeteria with Volunteer A, stated his intake did not increase because of his dislike for the food. However, he was envious of his volunteer who had an excellent appetite and finished his meal every time, and wished he could be more like him. Participant 1, whose volunteer was also Volunteer A who visited him in his room at lunchtime, enjoyed talking about food and seeing what his volunteer had for lunch that day (which was food from the cafeteria). He was also impressed by his volunteer's eating habits and excellent appetite and wanted to try the same foods the next time.

Personality characteristics and qualities of the volunteers. The participants stated that they enjoyed the company and conversations provided by the volunteers the most. Certain qualities that the volunteers possessed enabled the satisfaction and increased food intake of the participants. The participants were impressed by the volunteers eating behaviors in terms of being neat and clean. They were also impressed with their good appetite and ability to finish their meal, which indicates the volunteers were positive role models. The participants also appreciated that the volunteers were knowledgeable about food and nutrition. They used these words to describe their volunteers: open, easy to be with, helpful, good person, loves food, not shy, friendly, warm, nonjudgmental, nonimposing, talkative, pleasant or pleasure, likeable, good communication skills, good teaching skills, nice, nicer than others, respectful, polite, nice smile, charming, evolved, sympathetic, and caring. Lastly, a couple of participants said they were able to eat more because it was nice and pleasurable to be with their volunteers.

Overall Program Effectiveness

These results are divided into two sections: qualitative data obtained from interviews with the participants and all quantitative data collected.

Qualitative. Prior to beginning the program and receiving visits from the volunteer, most participants stated they had a poor to medium appetite, poor nutritional status, and weight and muscle loss. Half of them did not feel they needed to change anything in their usual diets and the other half felt improvement was needed. All participants agreed that good nutrition is important for their health and their reasons varied: to improve quality of life, to increase their strength, to provide all essential nutrients for proper body functioning, to prevent digestion problems, and to delay mortality secondary to increased age. Good nutrition meant eating all food groups, avoiding fatty foods, choosing quality not quantity, enjoying your meal, and eating at appropriate times. The anticipation about the effects of the program (i.e., the volunteer visits helping to improve appetite and intake) were also varied: three believed it would help them, two did not know if it would, two were hopeful and said maybe it will help, one was hesitant about the process but was looking forward to leaving her room, and two did not feel they needed a volunteer at all.

The post program interviews showed a positive effect on appetite, food intake, and nutritional status by the majority of participants. Participant 4, who at first did not think she needed a volunteer, was asked how she felt about Volunteer C's visits and had the following response:

> An improvement? Yes. . . . [I eat] better now, I felt encouraged to eat better . . . because it was pleasant to be with her and it was a positive social experience.

Participant 5 stated Volunteer D helped more than just her food intake:

> Yes, but it was good for [my] morale . . . [and] he encouraged me [to eat better]! Yes! Only twice I hardly ate but all the other times I ate everything! He is VERY VERY nice . . . respectful and polite.

Participant 3 was even able to improve her intake despite her dislike of hospital meals, and maintained this view from admission to discharge:

> Oh definitely yes! It's helpful because I have somebody here to talk to. And if you're talking to somebody who's eating the same time like you, you feel like eating even if you don't like to eat! (Admission interview)
>
> It's better to have somebody with you when you're eating, you have that *appetite*. And you see her eating too, then you force yourself to eat. By talking to eachother, why not? (Discharge interview)

However, for two other participants palatability of meals was reported to be a limiting factor. Participant 2 did not experience any improvement at all in terms of food intake because palatability was the only important factor for him, and it was lacking. In addition, he felt his weight and strength did not improve either. For the majority of participants though, their nutritional status improved in terms of increased weight, muscle mass, and strength. The nutrition knowledge of Participant 7 improved after she received nutrition education from Volunteer F. Participant 6, who was hesitant at first about the process of the program and did not know if she would like it, was very happy with her improvement of nutritional status and the positive effect of the company:

> YES! YES! It's good. I suggest she [the volunteer] continues to do this. . . . It [the company] gives hunger, it gives appetite.

Overall, the participants enjoyed the program. Eight out of nine participants stated that future patients would benefit from this program and wanted their volunteer to continue to provide this service. The reasons they gave were: to break isolation, to encourage them to eat better and provide encouragement, to open the mind, it is fun, nice to have company and good conversations, and it will be pleasant for their thoughts. Participant 6, who was hesitant about the program at first, stated during her discharge interview that the project was a good idea because it allowed her to leave her room and see other people, which increased her appetite. When participants were asked if other patients would benefit from a PEAP:

> Yes, I think so. For all the patients that never have visitors, who are all alone, and have no one to talk to, YES. Yes it could be good [for them] (Participant 5).
>
> Yes, Yes, Yes! It would be very pleasant [for them], [for their nutritional status] and even their thoughts (Participant 4).

Participant 7, who received nutrition education from Volunteer F, emphasized the necessity of these visits when asked if other patients would benefit:

> Absolutely! ABSOLUTELY! First of all she [the volunteer] has all the required knowledge, she's educated, she's knows how to talk to you, and how to explain things to you, so I think [a visit from this volunteer] is very necessary. Not just desirable but necessary because it opens your mind. . . . I hope she does this for others.
>
> I congratulate you because [this project] is very interesting for everyone and everyone can benefit. . . . It was a genius idea! Thank you for putting it into practice. You will always win if [this volunteer] is involved.

Participant 8 cancelled her last two visits with Volunteer G because of some stressful events going on in her life--she was moving prior to her discharge from the hospital. However,

she still had positive comments about the effect of Volunteer G's visits on food intake and if others would benefit from this program:

> Ah yes! Certainly! Certainly! Because when they talk, they'll talk about food, and that makes you want to eat.

Participant 9 focused on her belief that all cancer patients need company, and even requested this service be provided for another patient she knows on her floor. She was so happy with the company she received from this program that she made it a point to be friendly with this patient, despite a language barrier, because she knew the other patient needed the company and friendliness.

Quantitative.

Anthropometrics. (Table 4)

Body weight. The mean change of weight was +37g (*SD* = 71) per day for group V (experimental group) and -21g (*SD* = 78) per day for group C (control group). The difference between the rank scores for the two groups was not found to be statistically significant, however the range, mean, and median for group V was higher than for group C (Figure 1). In addition, a medium to large effect size was found for this variable. Achievement of weight goals was defined as having at least maintained their weight, including if the goal was to gain. In group V, three participants needed to maintain their weight and seven needed to gain weight. Seven participants achieved their goal and gained weight. One achieved their goal by having maintained even though the goal was to gain. Two participants needed to gain or maintain their weight but they lost weight, therefore they did not meet their nutritional goals. In group C, one participant needed to maintain their weight and nine needed to gain weight. Three patients achieved their goal and gained weight, one needed to gain weight but maintained it, and four did

not meet their nutritional goals and lost weight (in group C, weights for two participants were not available). A small to medium effect size was found for weight goals (Table 5).

Biochemical. (Table 4)

Blood albumin. The mean change of albumin was +0.115 g/L (*SD* = 0.138) per day in group V and +0.024 g/L (*SD* = 0.092) per day in group C. The difference between the rank scores for the two groups was not found to be statistically significant, however the range, mean, and median for group V was higher than for group C (Figure 2). In addition, a medium effect size was found for this variable.

Total lymphocyte count. The mean change of lymphocytes was +0.003 x10e^9/L (*SD* = 0.021) per day in group V and +0.073 x10e^9/L (*SD* = 0.226) per day in group C. The difference between the rank scores for the two groups was not found to be statistically significant. The medians for the two groups were similar, and the range and means were higher in group C, however these results were affected by a severe outlier in the data (Figure 3). The mean change of group C without the outlier was +0.001 x10e^9/L (*SD* = 0.010), which is less than group V. A small effect size was found for this variable.

Hemoglobin. The mean change of hemoglobin was +0.270 g/L (*SD* = 0.575) per day for group V and +0.041 g/L (*SD* = 0.177) per day for group C. The difference between the rank scores for the two groups was not found to be statistically significant, however the range, mean, and median for group V was higher than for group C (Figure 4). A small effect size was found for this variable.

Table 4

Mean Change Per Day of Anthropometric and Biochemical Data

	Group V	Group C	Effect Size**
Weight (kg)	0.037 ± 0.071	-0.021 ± 0.078	0.40
Albumin (g/L)	0.115 ± 0.138	0.024 ± 0.092	0.32
Lymphocytes	0.003 ± 0.021	0.073 ± 0.226	0.09
(x $10e^9$/L)		0.001 ± 0.010 (no outlier)	
Hemoglobin (g/L)	0.270 ± 0.575	0.041 ± 0.177	0.09

*p value > .05
**based on non-parametric tests done to compare groups (Mann-Whitney: $r = Z / \sqrt{N}$)

Table 5

Goals and Achievement of Weight Change

	Group V	Group C	Effect Size**
N	10	10	0.25
Goal of weight maintenance	3	1	
Goal of weight gain	7	9	
Achieved goal	7	3	
Achieved goal by maintaining weight even with gain goal	1	1	
Did not achieve goal	2	4	

*p value > .05
**based on chi square

Figure 1. Weight Change Per Day for Group V and C

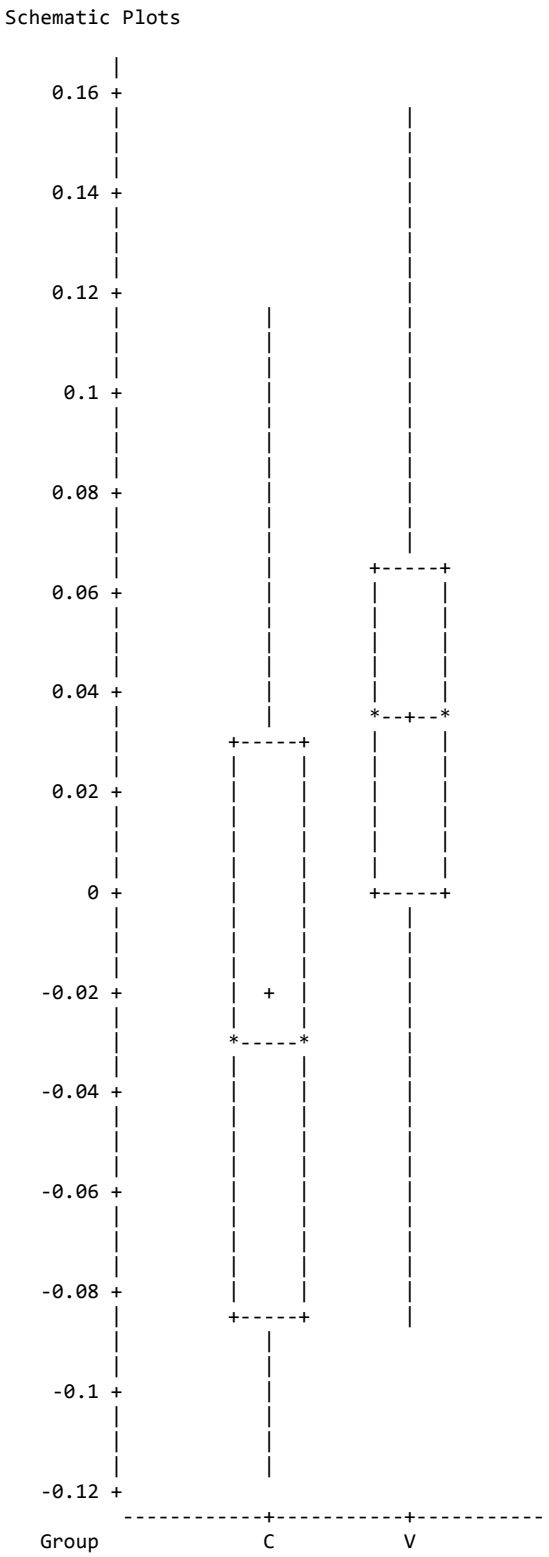


Figure 2. Albumin Change Per Day for Group V and C

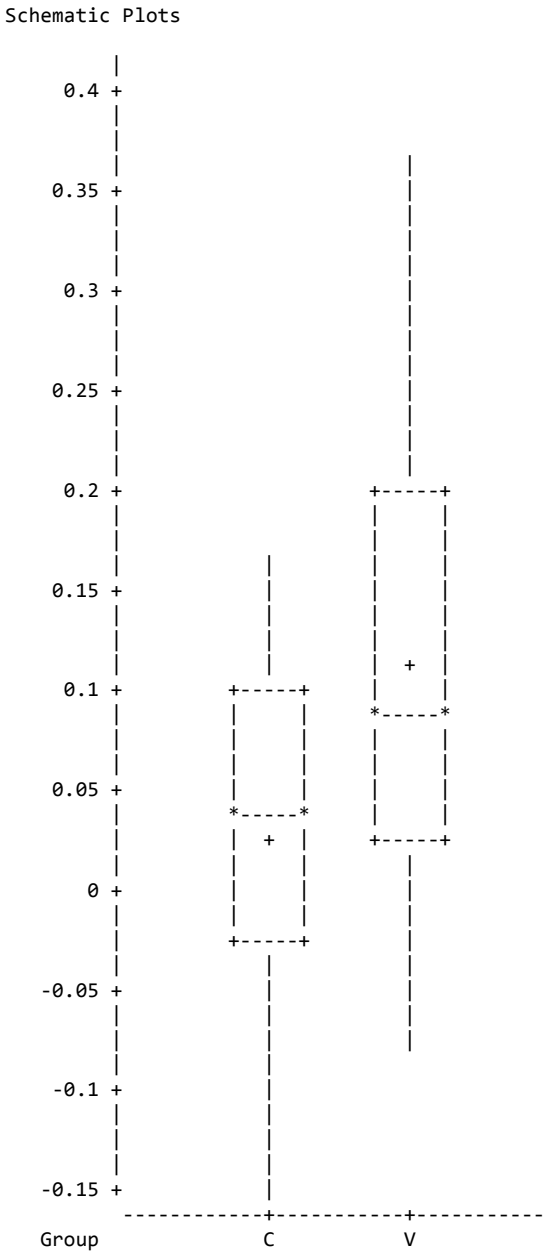


Figure 3. Total Lymphocyte Count Change Per Day for Group V and C

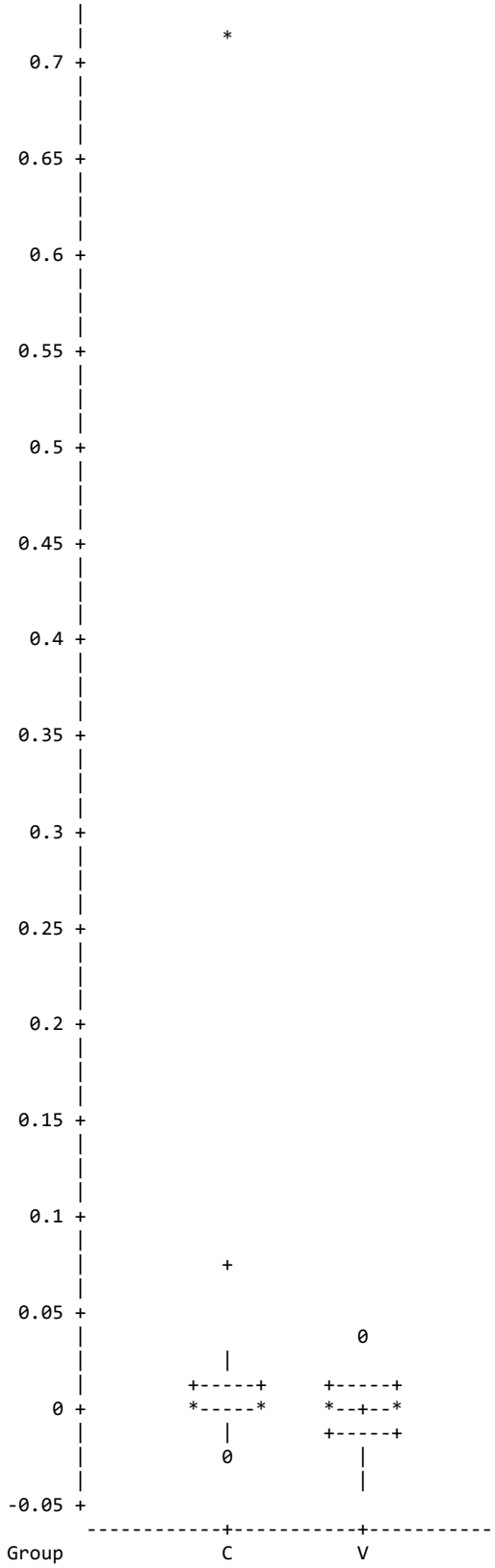
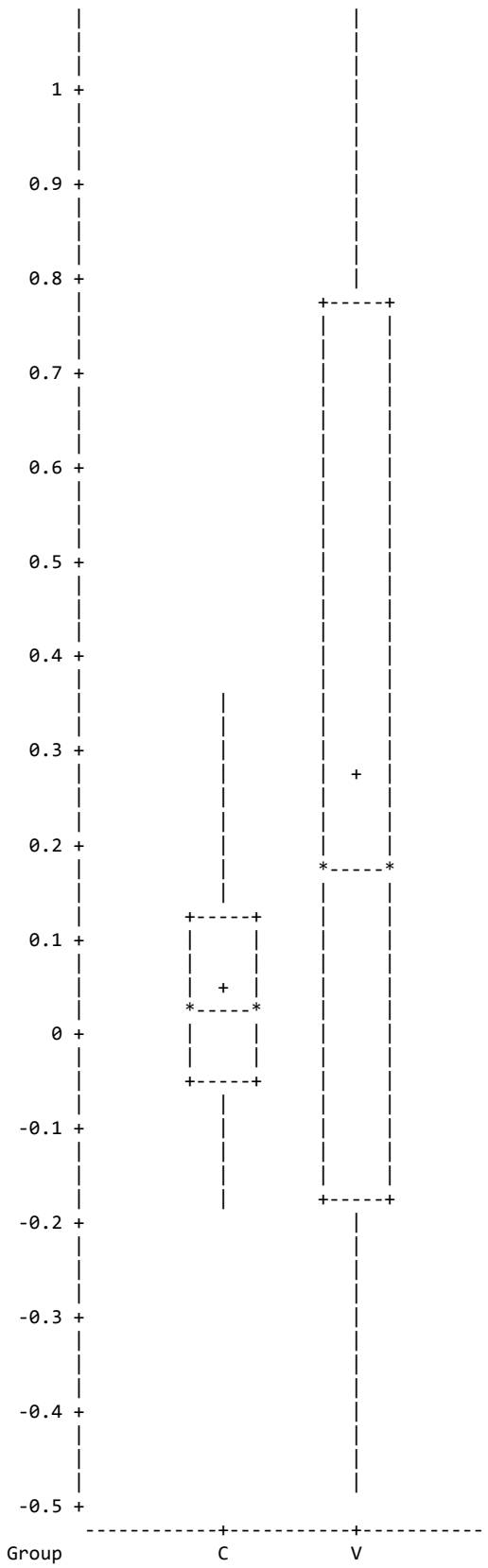


Figure 4. Hemoglobin Change Per Day for Group V and C



Dietary intake. The calories and protein consumed were calculated based on the weight of food consumed. Because it was not always possible to get the intake at every meal for every person, the data were analyzed from two perspectives: (a) consumption over a full day which included all three meals (when available) with respect to caloric and protein requirements, and (b) consumption at each meal separately.

Calories and protein for a full day (three meals). Group V ate an average of 48.9 more calories and 6.6g less protein on discharge. Group C ate 214 fewer calories and 6.2g less protein on discharge (Table 6). There was no statistically significant difference between groups. A medium effect size was found for calories and a small effect size was found for protein. In group V, four participants increased and two decreased their caloric and protein intake. In group C, one participant increased and five decreased their caloric and protein intake. A large effect size was found for these results (Table 7).

Table 6

Caloric and Protein Intake Full Day

	Group V (n = 6)	Group C (n = 6)	Effect Size**
Caloric needs (Kcal)	1717 ± 94	1900 ± 150	
Intake on admission	1771 ± 342	1377 ± 305	
Intake at discharge	1819 ± 320	1163 ± 243	
Difference on discharge	48.9 ± 292	-214 ± 154	0.35
Protein needs (g)	68.1 ± 6.6	76.0 ± 11.3	
Intake on admission	79.1 ± 17.1	50.9 ± 17.9	
Intake at discharge	72.4 ± 13.1	44.6 ± 16.8	
Difference on discharge	-6.6 ± 22.2	-6.2 ± 13.1	0.12

*p value > .05

**based on non-parametric tests done to compare groups (Mann-Whitney: $r = Z / \sqrt{N}$)

Table 7

Change in Caloric and Protein Intake (Full Day)

Change on discharge	Group V (*n* = 6)	Group C (*n* = 6)	Effect Size**
Increased caloric intake on discharge	4	1	
Decreased caloric intake on discharge	2	5	0.51
Increased protein intake on discharge	4	1	
Decreased protein intake on discharge	2	5	

*p value > .05
**based on chi square

Comparison to nutritional requirements. Group V's intake, when compared to their requirements, increased by 2.8% in calories and decreased by 9.7% in protein on discharge. Group C decreased their caloric intake by 11.3% and protein by 8.2% (Table 8). There was no statistically significant difference between groups.

Table 8

Mean Intake as a Percentage of Requirement

	Group V (*n* = 6)	Group C (*n* = 6)
Calories on admission (%)	103.1	72.5
Calories on discharge (%)	106.0	61.2
Difference on discharge (%)	2.8	-11.3
Protein on admission (%)	116.0	66.9
Protein on discharge (%)	106.2	58.7
Difference on discharge (%)	-9.7	-8.2

*p value > .05

Calories and protein at each meal separately. (Tables 9 and 10)

Breakfast. Group V ate an average of 31.6 more calories and 0.29g more protein on discharge. Group C ate 131 fewer calories and 2.57g less protein on discharge. There was no statistically significant difference between groups. A medium to large effect size was found for calories and a small to medium effect size was found for protein. In group V, five participants increased and three decreased their caloric intake. In group C, two participants increased and five decreased their caloric intake. A medium effect size was found for these results. In group V, three participants increased and five decreased their protein intake. In group C, three participants increased and four decreased their protein intake. A small effect size was found for these results.

Lunch. Group V ate an average of 14.8 fewer calories and 5.2g less protein on discharge. Group C ate 93.7 fewer calories and 6.9g less protein on discharge. There was no statistically significant difference between groups. A small to medium effect size was found for both calories and protein. In group V, three participants increased and three decreased their caloric and protein intake. In group C, two participants increased and six decreased their caloric and protein intake. A medium effect size was found for these results.

Supper. Group V ate an average of 13.1 fewer calories and 4.4g less protein on discharge. Group C ate 49.6 more calories and 2.2g more protein on discharge. There was no statistically significant difference between groups. A small to medium effect size was found for calories and a small effect size was found for protein. In group V, three participants increased and five decreased their caloric intake. In group C, four increased and two decreased their caloric intake. A medium effect size was found for these results. In group V, five participants

increased and three decreased their protein intake. In group C, three increased and three decreased their protein intake. A small effect size was found for these results.

Table 9

Caloric and Protein Intake at Breakfast, Lunch, Supper

	Group V	Group C	Effect Size**
Breakfast	*n* = 8	*n* = 7	
Calories on admission	612 ± 102	463 ± 123	
Calories at discharge	644 ± 156	332 ± 70	
Difference at discharge	31.6 ± 82.1	-131.3 ± 141.5	0.43
Protein on admission	20.6 ± 6.2	10.9 ± 3.8	
Protein at discharge	20.9 ± 5.0	8.4 ± 1.1	
Difference at discharge	0.29 ± 4.11	-2.57 ±3.20	0.21
Lunch	*n* = 6	*n* = 8	
Calories on admission	571 ± 119	456 ± 112	
Calories at discharge	556 ± 153	362 ± 111	
Difference at discharge	-14.8 ± 174.9	-93.7 ± 125.8	0.22
Protein on admission	28.3 ± 11.0	21.0 ± 8.1	
Protein at discharge	23.1 ± 5.6	14.1 ± 1.8	
Difference at discharge	-5.2 ± 15.0	-6.9 ± 8.2	0.16
Supper	*n* = 8	*n* = 6	
Calories on admission	570 ± 163	471 ±140	
Calories at discharge	557 ± 116	521 ±222	
Difference at discharge	-13.1 ± 100.5	49.6 ± 120.3	0.22
Protein on admission	29.7 ±11.3	21.1 ± 10.9	
Protein at discharge	25.3 ± 6.9	23.4 ± 14.4	
Difference at discharge	-4.4 ± 9.3	2.2 ± 8.4	0.09

**p* value > .05
**based on non-parametric tests done to compare groups (Mann-Whitney: $r = Z / \sqrt{N}$)

Table 10

Change in Caloric and Protein Intake for Each Meal

Change on discharge	Group V	Group C	Effect Size**
Breakfast	*n* = 8	*n* = 7	
Increased caloric intake	5	2	0.34
Decreased caloric intake	3	5	
Increased protein intake	3	3	0.05
Decreased protein intake	5	4	
Lunch	*n* = 6	*n* = 8	
Increased caloric intake	3	2	0.26
Decreased caloric intake	3	6	
Increased protein intake	3	2	
Decreased protein intake	3	6	
Supper	*n* = 8	*n* = 6	
Increased caloric intake	3	4	0.29
Decreased caloric intake	5	2	
Increased protein intake	5	3	0.13
Decreased protein intake	3	3	

**p* value > .05
***based on chi square

Discussion: Building a Successful Personalized Eating-Assistance Program (PEAP)

Quality of Training

The results of the quality of training provided for the volunteers in this study are consistent with those of the Integrated Eating-Assistance Program evaluated by McCusker et al. (2002). They had concluded that the training session was effective in improving the volunteers' nutrition knowledge. In addition, volunteers found the training useful, felt competent to help the participants, and carry out the action plan. This was also reflected in the literature, which stated that the socialization aspect of eating may depend on the quality of the relationship and the type

of support received from the companion (Vesnaver & Keller, 2011). If the companions are not aware of the nutritional needs of older adults and do not model good eating behaviors, they may verbally or nonverbally, not encourage the older adult to eat more. Consequently, the older adult may even decrease their intake as well. Therefore, a beneficial social relationship would include the person accompanying the older adult at mealtime having a certain amount of knowledge or training regarding nutrition and aging (Vesnaver & Keller, 2011). This supports this study's inclusion of a training session as an essential component in an effective eating-assistance program.

The advice given during the focus group by the volunteers to any future volunteers should be included in the training sessions. This advice enhances our knowledge about the quality of the relationship between the companion and older adult, which is lacking in the literature (Vesnaver & Keller, 2011). It provides important implications for practice when designing and implementing an eating-assistance program. This is because it gives the volunteers ideas of what type of interventions to apply, implying that they should be individualized (Bernardelli, 2013). It provides reassurance for their potential efforts, which increases their self-confidence as helpers and eating assisters. Lastly, it emphasizes a client-centered approach and active listening skills, which have been shown to be effective in a helping relationship (Bernardelli, 2013).

Interaction Styles

The results obtained regarding the quality of the relationship and types of interactions between the volunteer and participant fill an important gap in the literature. Socialization has been named as an important factor in improving eating behaviors, however more details are needed to implicate this in practice (Locher et al., 1997; Locher et al., 2009b). Vesnaver and

Keller (2011) describe this gap as the type of companion and nature of interventions they apply that provide the best type of support, resulting in optimal dietary intake. This aspect emerged from the initial interviews with some participants, who negatively described their family members as being forceful regarding their dietary intake. It also came from the discharge interview with one participant who admitted even though she had heard some of the nutrition advice from her daughter before she is now willing to follow it, and from the volunteer focus group discussion on the relationships they had. Locher et al. (2005) hypothesized, but did not measure, reasons for increased dietary intake when a companion eats with an older adult: extended duration of the meal, amount eaten by the companion being more than that of the older adult, desire of the older adult to please their companion, and the social support the companions could have given. These ideas are very similar to the results of the present study, which were obtained from the qualitative analysis.

Valuable characteristics of the relationship between the participant and volunteer can be described based on the results of the interviews and focus group. First, a good initial contact, trusting relationship, and bond are important. The volunteers all developed a trusting relationship and certain type of friendship with their participant, which was also shown to break isolation and increase happiness. The first priority of the volunteer was to work on building a trusting relationship with their participant. Then, when they became friends, they were able to talk about nutrition and encourage intake. This means that the nutritional aspect of the relationship is actually a second priority, although still vital to the program's goals. The volunteers emphasized that it is counterproductive to be judgmental, forceful, or imposing about nutrition and adequate dietary intake from day one, because the participants may already be annoyed from hearing similar comments from family members, healthcare workers, and even the

regular cafeteria volunteers. It is actually of great benefit for the volunteer to be a stranger so the participant can feel comfortable opening up, the volunteer can be different from everyone else, and with a trusting relationship the participants are more likely to listen to what they have to say. The type of relationship the volunteer and participant had contains elements that have been shown to be part of a successful helping relationship, in which the participant is more open and willing to learn or be helped by the volunteer (Bernardelli, 2013). This also includes building a trusting and respectful relationship, showing understanding, being non-judgmental, and showing empathy (Bernardelli, 2013).

The various interventions or approaches used by the volunteers were based on each particular case. Approaches used by helpers in a successful helping relationship should always be individualized (Bernardelli, 2013). One of the many interesting interventions used by several volunteers is modeling and behavioral observations. Some participants admitted to being inspired by their volunteers' eating habits and appetite, and it made them want to be more like their volunteer. This is similar to the hypothesized reasons of Locher et al. (2005) as to why eating with others increases intake (i.e., the extended duration of the meal and the larger amount of food eaten by the companion). Bandura's (1977, 1998) social cognitive learning theory suggests that people can learn from others through observation and modeling. This means that the social context is a key factor in this type of learning environment. People can learn behaviors by watching others model them and receive positive reinforcement from doing so (Bandura, 1977; Bandura, 1998). However, a source of motivation needs to be present for the learner to pursue the learning (Patrick & Williams, 2012; Pearson, 2011; Ryan, Patrick, Deci, & Williams, 2008). In this case, the learner is motivated to adopt the new behavior because they anticipate it creating a positive outcome for them (Bandura, 1977; Bandura, 1998). This learning theory is

based on satisfying certain psychological needs that people have, that is self-efficacy and relatedness (Patrick & Williams, 2012; Pearson, 2011; Ryan et al., 2008). The ability one believes he or she has to implement a new behavior or learn something new is called perceived self-efficacy. The higher self-efficacy one has, the more intrinsically motivated one will be to do so. The psychological need of relatedness is the need people have to feel connected, cared for, respected, and understood by others (Patrick & Williams, 2012; Pearson, 2011; Ryan et al., 2008).

This known learning theory describes some of the relationships and interactions that took place in the PEAP. The participants learned about nutrition from observations and having a positive role model at mealtime because of the social context of this project. They felt secure and comfortable in their new relationship and were motivated to improve their eating habits, which satisfies the psychological needs depicted in this learning theory.

Vesnaver and Keller (2011) also state the literature is missing what type of companion is most appropriate in this type of relationship. This project has shown that an educated companion is useful in promoting positive results. Along with providing a positive social context and role model for the participants as described above, the volunteer helped the participant achieve transformational learning in cases in which nutrition education was the primary goal. The transformational learning theory can best be applied to this process because it focuses on changes in perspectives of individuals (Baumgartner, 2001; Dirkx, 1998). Perspectives are acquired by people throughout their lives and from their life experiences, and are used to understand the world and how one fits into it in terms of their beliefs, values, and assumptions (Baumgartner, 2001; Dirkx, 1998). A perspective transformation is initiated by a disorienting dilemma (e.g., a personal crisis such as a change in health) and is followed by critical reflection and re-evaluation

of one's assumptions and beliefs through discussions (Baumgartner, 2001; Dirkx, 1998). This results in a change of perspective seen in one's personal beliefs, and how they apply it in everyday life (Baumgartner, 2001; Dirkx, 1998).

Teaching people how to change their eating habits involves changing their perspectives about food and the benefits of a healthy diet. Participant 7, who stated that she will change her eating habits and think of her volunteer when doing so, had experienced some form of transformational learning. In addition, it was her positive and pleasant relationship with a new person in her life, who was educated in nutrition, that enabled this change to happen. This is evident because advice given by her own family in the past never got her to this point. This further emphasizes that the nature of the relationship is a key aspect in helping the participant (Bernardelli, 2013).

This project also confirms what the literature has shown about the most beneficial social situation being when the person accompanying the older adult at mealtime has a certain amount of knowledge or training (Vesnaver & Keller, 2011). That being said, the volunteer focus group stated the most appropriate volunteers for a PEAP would depend on the goals--to provide company only or specific nutrition interventions. A volunteer with a healthcare background would be an advantage but not a necessity, because the PEAP includes a training session. However, if a particular participant has severe nutritional issues, there is a benefit in pairing them up with this type of volunteer.

Evidently, the volunteers in the PEAP took on various roles, which was more than anticipated in the original study design. Seven roles were identified from the study's results which were: mealtime assistant, companion, educator, friend, advocate and support role, accessory to the healthcare team, and a new person (i.e., a stranger) the participant can build a

relationship with and open up to. These roles allowed the volunteers to have various, yet significant impacts in their relationships with the participants. It also allowed for building a helping relationship that supported the participants and focused on their needs (Bernardelli, 2013). The characteristics of the relationship can be compared to those in a friendship, a professional relationship (i.e., with a healthcare professional such as a dietitian), or both (Table 11). This study showed that 52% of the characteristics of the relationship were friendship oriented, 10% were professional relationship oriented, and 38% were both. This indicates that the PEAP's volunteers and the quality of their relationships with the participants, can take on many roles with various positive and useful purposes and outcomes.

Table 11

Characteristics of the Volunteer-Participant Relationship

Characteristics	Definition	Friend	Professional	Both
1. Intergenerational	Older adult and young adult had a relationship and friendship which gave the participant a "better feeling" to be with a young person	✓		
2. Multicultural	Participant had strong familial feelings for volunteer despite cultural differences	✓		
3. Shared culture and heritage	Participant and volunteer shared the same culture and heritage and were able to share stories, recipes, etc.	✓		
4. Friendship	Participant thought of volunteer as her friend despite age gap; believes this was	✓		

	mutual; bonded together; saying goodbye was a special moment (because they wished eachother the best)				
5. Mutual respect	Respected eachother; fulfillment of this need in the relationship; volunteer responsive to participant's stories				✓
6. Mutual caring	Cared for eachother; fulfillment of this need in the relationship	✓			
7. Mutual concern	Concern for eachother's well-being and nutritional status	✓			
8. Mutual helpfulness	Helped eachother out; fulfillment of this need in the relationship; realized value of what the volunteer was saying and doing	✓			
9. Mutual encouragement	Encouraged eachother to eat well; fulfillment of this need in the relationship	✓			
10. Having fun together	Activities together such as going outside to feed the squirrels and fun conversations	✓			
11. Trust	Had a trusting relationship; felt comfortable with volunteer; nonjudgmental, genuine, and honest; made it possible to realize value of				✓

	what the volunteer was saying and doing			
12. Communication	Volunteer had good communications skills; able to explain things clearly			✓
13. Nonjudgmental	The volunteer did not judge the participant based on what he or she ate at that particular meal; was not critical; made the participant feel like they were NOT being judged			✓
14. Nonimposing	The volunteer was not forceful or imposing about what the participant was eating and what they needed to improve upon			✓
15. Comfortable	The relationship was comfortable for both people; participant felt at ease talking to volunteer, eating together, sharing feelings and stories, and trusted the volunteer			✓
16. Pleasurable	Participants stated it was a pleasure to spend time with their volunteers, no matter the activity	✓		
17. Going outside together	Going outside for fresh air, to talk, and feed the squirrels was fun and helped improve morale, appetite, and decrease loneliness	✓		

18. Eating meal together	Sharing the activity of eating a meal together improved the participant's dietary intake, made it a pleasurable and positive social experience, and made it possible for volunteer to talk about food	✓			
19. Company	Participants loved the company provided by the volunteers because it was social, fun, and helped improve their appetite	✓			
20. Went to cafeteria together	Sharing a meal together in the cafeteria was beneficial because it made the activity social, enabled the volunteer to help with meal preparation to maximize dietary intake (e.g., heating up meal, getting extra condiments, etc.), ensured both can eat together at the same time which is beneficial for other reasons (see #14 above), and helped increase variety of food, palatability of meals and therefore dietary intake, and happiness of participant	✓			
21. Conversation about food	One approach used by some volunteers was to directly provide information to the		✓		

	participant about nutrition (e.g., which foods are nutritious and why, tips on what they should be eating, and so on)			
22. Conversation NOT about food	Another approach used by some volunteers was specifically NOT to provide direct information and comments about what the participant should be eating but rather to talk about completely other subjects (which were enjoyable for them) or to talk about food but only in a general sense (e.g., what they were eating, how it tasted, if not good how to make it taste better such as adding condiments or spices, and cooking); guidance only provided which was focused on participant's progress in her eating habits and NOT what she needs to improve upon	✓		
23. Role model	Volunteer was a positive role model for the participant because s/he had a good appetite, ate well and neatly, and participant was impressed by this and admired volunteer			✓

24. Nutrition education	Volunteers educated the participants about nutrition topics and gave advice on what they should be eating in hospital and at home; participants learned about nutrition and will apply it		✓	
25. Encouragement	Participants felt encouraged by volunteers to eat better; friendly guidance provided which focused on participant's progress and the positive feeling it gave the volunteer to see her eat well			✓
26. Behavioral observation	A method of teaching and learning that took place in the relationship: - Participants learned how to eat well and increased their dietary intake by: watching the volunteer eat well during the meal, looking at what the volunteer had for lunch which peaked their interest and made them want to eat the same thing, being impressed by the volunteer eating well so started to "copy" them - Volunteer made an effort to take three courses for			✓

	lunch, finished her meal, and matched the participant's eating speed to extend the mealtime, all in an effort to help the participant increase her dietary intake			
27. Breaking isolation	Helped participants who were all alone with no one to talk to; gave them company and someone to talk to and open up with; increased appetite to be with others; decreased loneliness just to have a visitor			✓
28. Changing environment	Being able to leave their room helped participants eat better and feel better (i.e., their morale and happiness)	✓		
29. Increase food intake	Volunteer visit and any approach applied helped most participants increase their dietary intake			✓
30. Improved nutritional status	Overall, experience helped participants improve their nutritional status (subjective experience of their dietary intake and how they felt physically); quantitative results showed it improved based on biological markers of nutritional status		✓	

31. Decrease depression	Effect of volunteer visits on participants because of breaking isolation and providing company			✓
32. Increase socialization	Effect of volunteer visits on participants because of changing environment, eating together, and providing company	✓		
33. Positive emotions	Volunteer visits caused participants to develop strong emotions for them including happiness	✓		
34. Positive thoughts	Thoughts of participants were changed to positive ones because of volunteer visits; thinking less about their illness and problems and experienced more happiness because of visits and company	✓		
35. Improved well-being	Participants overall well-being improved because of improved physical, emotional, psychological, and social aspects			✓
36. Continue relationship	Some participants wanted to continue their relationships with their volunteers even after the project ended for them; concerned with their well-being	✓		

37. Opens the mind	Learning from the volunteer and listening to what s/he has to say opens the mind to new ideas and motivates one to apply them			✓
38. Companionship	Volunteers provided companionship for the participants; one of their many roles was to be a companion	✓		
39. Advocate	Support role: Volunteers were advocates for the participants in terms of their well-being and happiness; volunteers protected their emotions and stood up for them (e.g., the participant who had an annoying neighbor who was always putting herself where she did not belong--either physically by joining the pair for lunch or verbally by making comments)			✓
40. Mealtime assistant	Volunteers helped participants at mealtime by carrying and setting up their tray, opening containers, getting extra items as needed, and heating up food in the microwave	✓		
41. Accessory to healthcare team	Volunteers were a connection between participants (the patients) and the healthcare		✓	

	team because they spent mealtime with them and addressed any issues or concerns to the primary investigator (PI) (i.e., the dietitian) who was able to connect with the team in a context of their global care			
42. New person	Volunteer was a stranger to the participant so this made s/he a new person the participant could open up to; this made the relationship different than if it were a family member, treating healthcare professional, or regular cafeteria volunteer (because these people were always around telling the participant what to do and maybe judging them); a new relationship with a new person the participant respected and built trust with was refreshing and effective			✓

Overall Program Effectiveness

The results obtained from the qualitative and quantitative analyses suggest that a PEAP may help improve the nutritional status and well-being of rehabilitation patients, who are at risk for malnutrition, in various ways. Even though the sample size was limited and there were some

missing data of quantitative outcomes, the subjective opinions of the participants and volunteers suggest that this program creates a favorable social context, which serves many purposes. Despite the lack of statistical significance in the quantitative analysis, which is similar to results of past studies (Wade & Flett, 2013), there are still favorable results in terms of effect sizes and clinical importance that suggests this program may be a beneficial asset in helping this target population.

Qualitative. The PEAP allowed for gradual increase of dietary intake and follow-up, to enable a successful implementation of the volunteers' nutrition advice. Zazpe et al. (2010) found that regular follow-ups and nutrition education and promotion in various forms, can enhance adherence to a recommended diet. Whether the volunteer used a food or nonfood-focused approach, regular visits of three times per week provided an adequate follow-up for this to occur, as seen from the participant interviews and volunteer focus group.

The primary investigator (PI) was informed that a hospital room neighbor of Participant 4 often joined the participant and Volunteer C for lunch in the cafeteria. Even though the neighbor's opinions were not solicited, she supported the PEAP by commenting on her appreciation of the company and the encouragement, and asked her nurse for the same service. This shows the attraction that exists to having company at mealtime, the importance of the encouragement, and the potential desire and need of a PEAP for patients in the future.

Walton et al. (2008) conducted a similar study and examined the subjective experiences of volunteers and nurses. Although themes were not described in detail, activities conducted by the volunteers were similar to the PEAP: helping with tray set-up such as opening packages, encouraging intake, providing social support, and having conversations. In this study, physical assistance seemed to be the main activity, however the program was still found to be beneficial

overall. Volunteers and nurses were satisfied with the program, wanted it expanded, and felt the assistance they provided was helpful to the participants in terms of their dietary intake. Manning et al. (2012) found similar results, which showed satisfaction of patients, nurses, and volunteers, with the program.

The majority of participants stated that this program helped improve their appetite and nutritional status, which contributed to the conclusion that a PEAP may be successful in this regard. However, what was not fully anticipated was that the program seemed to help with more than the participants' nutritional status. Several participants focused on companionship being a positive social experience and part of their day, resulting in an improvement in their morale. Furthermore, they reported their thoughts becoming more pleasant and less focused on their illness and problems, their feelings of loneliness and isolation decreasing, and their knowledge regarding nutritious foods increasing as well as their motivation to incorporate this into their daily eating habits. It is possible that a PEAP not only improves one's physical needs, but also helps to satisfy one's psychological, emotional, and social needs as well. This supports the idea of applying a holistic approach in treating rehabilitation patients (Fogel, 2013). In support of the present study's conclusions, Manning et al. (2012) pointed out that it is perhaps the constant uninterrupted amount of time that the volunteer spends with the patient that leads to increased nutrition intake. However, the present study and that of Manning et al. (2012) have both shown that the social interaction and encouragement inherent in the PEAP have an influence on the positive outcomes, beyond just "feeding assistance".

Quantitative. Although there were no statistically significant differences found between groups for the data collected, there are various descriptive and clinically important differences that are valuable in this study. Lack of statistical significance can be attributed to the small *n*

used in each group, with the addition of missing data for some participants. In addition, there were a few participants in the experimental group who had unusual circumstances and whose data could have affected the results. Participant 1 was dropped from the study because he was transferred back to the acute care hospital for a medical emergency. Most discharge data were not available for him, however his admission interview and volunteer's experiences (Volunteer A) were used in the qualitative analysis. Participant 5 had a very short rehabilitation stay (16 days), so qualitative data were collected and used but no quantitative discharge data were available. In contrast, Participant 9 had a very long length of stay (169 days), which represents a rare occurrence and an outlier in the data. Consequently, two volunteers (Volunteer H and I) were needed to continue visiting her during this time. She also developed an intolerance to nutritional supplements and a dislike for hospital meals, so she started eating food brought in by her family. This could explain her small weight loss from admission to discharge and her decreased caloric and protein intake, which were calculated based on hospital meals only.

As mentioned in the methods section, because the lengths of stay were very different for all patients, anthropometric and biochemical values were converted to the change per day instead of the overall change from admission to discharge, in order to standardize the data and be able to compare groups. Group V had an overall gain of weight, and group C had an overall loss of weight. In addition, a higher mean, median, and range of values in group V indicate a stronger difference and minimal overlap between groups, as seen in Figure 1. The medium to large effect size found for weight change indicates that further studies with a larger sample size may detect significant differences. From a clinical standpoint, group V had more participants who achieved their weight goals (i.e., gain or maintenance), than group C (eight versus four, respectively; Table 5). Even though discharge weights were missing for two patients in group C, group V still

had more successful outcomes. In addition, the medium effect size found indicates need for further study. These results are similar to a study done by Wright, Hickson, and Frost (2006). Although the intervention was slightly different, it was based on the same concept that socialization at mealtime may help improve dietary intake. They found that using a supervised dining room caused a clinically important trend towards weight gain in the intervention group compared to the control group. This reflects the results seen in the present study--that participants in a PEAP have a greater potential for weight gain, improved nutritional status, and rehabilitation, than patients who do not participate.

The biochemical data show larger and positive changes in group V for albumin and hemoglobin. There was less change observed in the latter variable because of the small effect size and large range of values, however clinically both of these may indicate an improved nutritional status for the participants of group V. The medium effect size for albumin indicates need for further study and the possibility of detecting significant differences. The results for total lymphocyte count (TLC) were severely affected by an outlier, however even when removed the mean change was close to zero in both groups and the effect size was small. It is possible that the TLC is not a good marker of nutritional status in rehabilitation patients, especially considering the changes in white blood cells that occur with oncology treatments (Kumar, 2012) (Figures, 2, 3, and 4). These results are similar to a study done by Duncan, Beck, Hood, and Johansen (2006). In this study, dietetic assistants provided extra nutritional support and mealtime company for patients. They measured biochemical markers of nutrition such as albumin, lymphocytes, and hemoglobin, and found that although results in both the intervention and control group decreased, those in the intervention group decreased less. Despite the lack of statistical significance, the authors found these results to be clinically important, because they

showed a favorable pattern of nutritional status within their intervention group. This shows that eating-assistance programs may help to increase biological markers of nutrition, or may help to minimize the deterioration of vulnerable patients. Either way, there are clinical and physiological advantages of their implementation and usage.

Evidently, improvement in anthropometric and biochemical markers could have been influenced by the participants' lengths of stay instead of the effects of the PEAP on group V. With a longer hospital stay over which outcomes are measured, a positive correlation may indeed exist between length of stay and discharge quantitative data. This creates a confounding effect on the quantitative results and the conclusion that a PEAP may be the cause of the positive outcome. In order to determine if this confounding effect existed, the results of this study were plotted against the lengths of stay of the patients. As seen in figures 5, 6, 7, and 8, there is no correlation between each nutrition marker and the lengths of stay. This suggests that a PEAP may cause improvements in nutritional status and well-being, regardless of the length of stay of the participants. Therefore, this supports the use of a PEAP in practice and indicates that eligibility should not include projected length of participation.

The calories and protein consumed were calculated based on the weight of food consumed. Data were collected for two days and the mean was used for comparison between admission and discharge, and between group V and group C. Because it was not always possible to get the intake at every meal for every person, the data were analyzed from two perspectives: (a) consumption over a full day which included all three meals (when available, so the *n* was six in each group) with respect to the caloric and protein requirements, and (b) consumption at each meal separately. This was also done so all data collected could be included in the analysis, instead of being removed if one meal was missing from that collection day.

Figure 5. Weight Change Versus Length of Stay

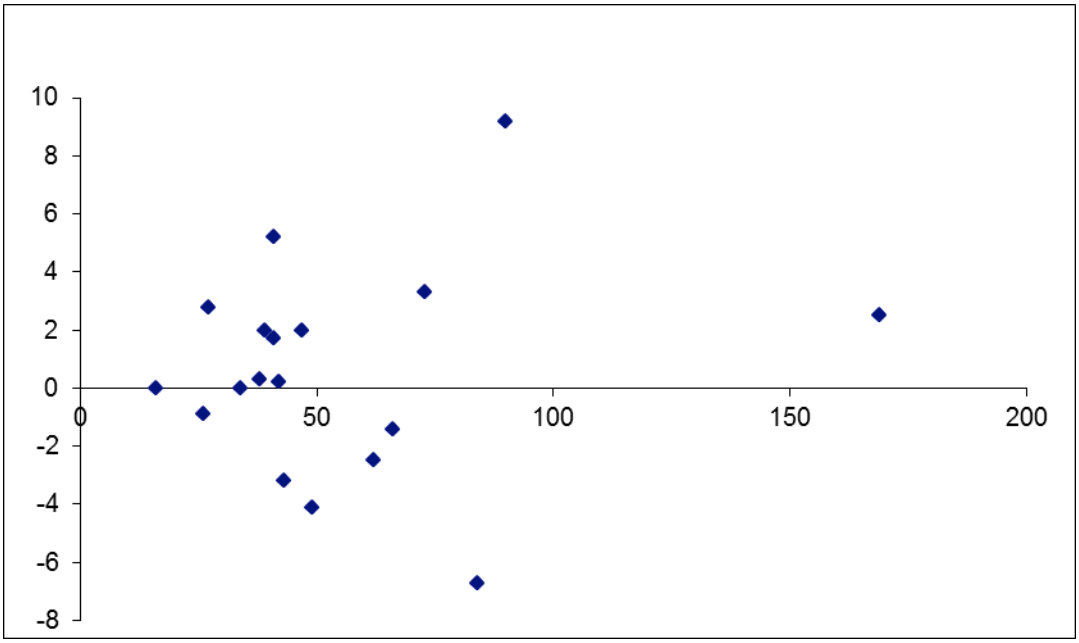


Figure 6. Albumin Change Versus Length of Stay

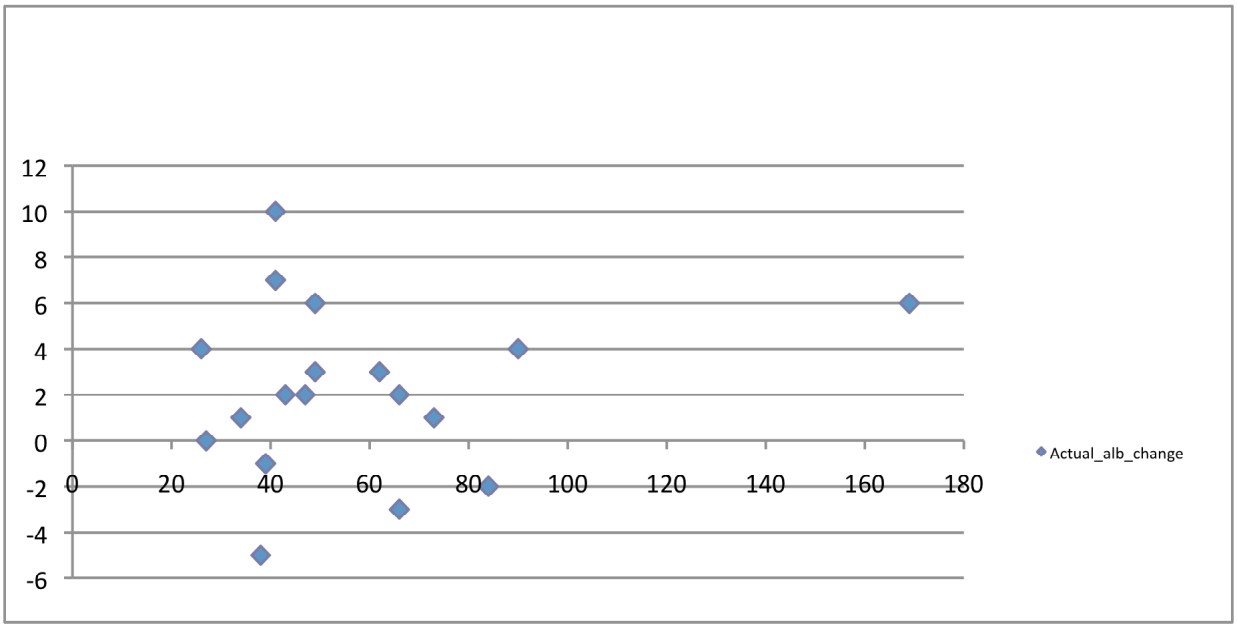


Figure 7. Total Lymphocyte Count Change Versus Length of Stay

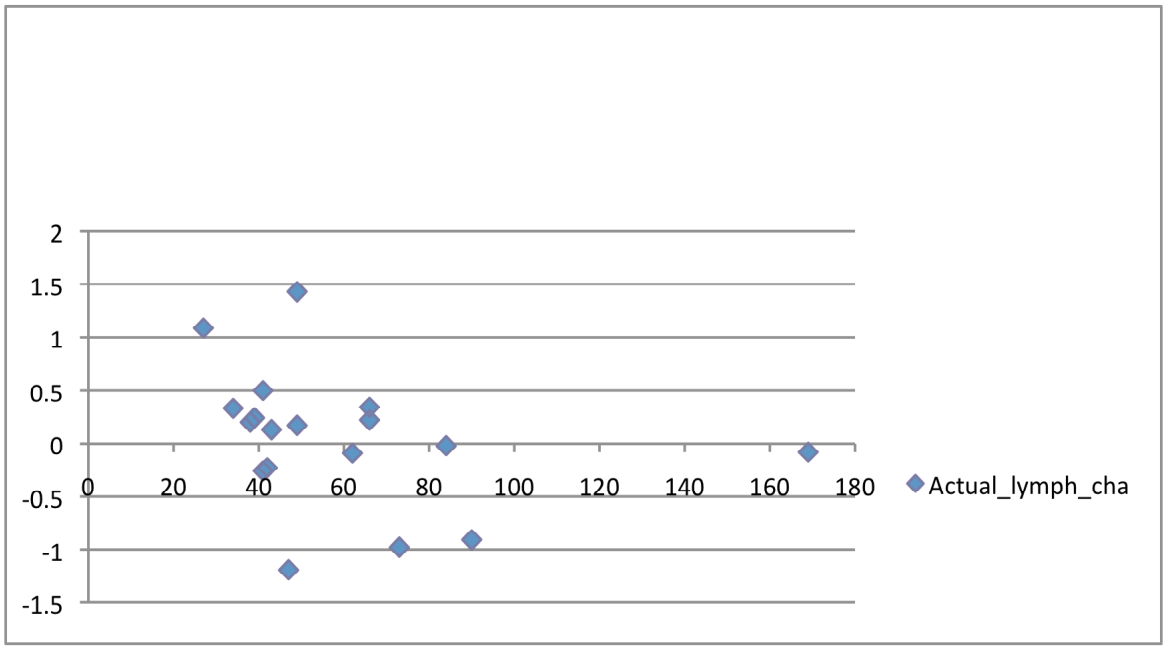
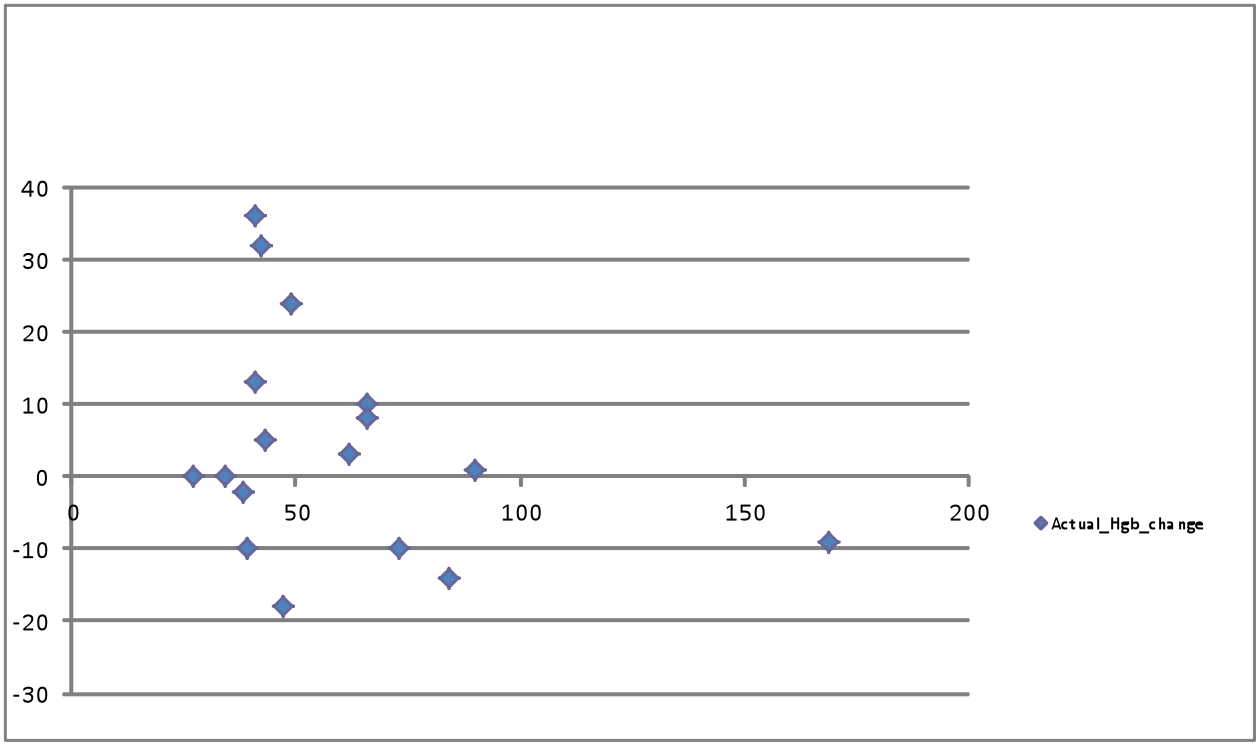


Figure 8. Hemoglobin Change Versus Length of Stay



For each meal separately, the variability of scores was very high, indicating the mean values might not be the best choice for analyzing these data (Table 9). Medium effect sizes were found for most variables, however the medium to large effect size of caloric intake at breakfast might indicate a significant difference in a larger study. This could be a valuable indicator of nutritional status in a PEAP, because the Payette nutritional screening tool used in this study, includes the dietary intake at breakfast to assess nutritional risk (Payette et al., 1994; Payette et al., 1999).

The changes in dietary intake that took place at each meal provide some clinically important information (Table 10). At breakfast, more participants from group V increased their caloric intake than group C. An equal number from each group increased their protein intake. This can be explained by the fact that because hospital meals are not high in fat, the increase in caloric intake probably comes from carbohydrates. This is plausible because many items consumed at breakfast are rich in carbohydrates, such as toast, cereal, and oatmeal. The small effect size found for the equal number of patients in both groups who increased their protein intake is likely because patients are eating enough protein-rich foods, such as eggs, peanut butter, and milk products, so there is no room for improvement.

At lunch, more group V participants increased both their caloric and protein intake than in group C. This may be because the PEAP volunteers visited at lunchtime and the companionship increased nutrition intake. The medium effect sizes indicate the need for further studies, which may find significant differences. At supper, more group C participants increased their caloric intake but more group V participants increased their protein intake. Evidently, there was a larger effect in group V than in group C for protein intake at lunch, which carried over into supper. Perhaps the group V participants were aware of which food items had the most

nutritional value because of nutrition education received from their volunteers, and chose to eat those foods at supper, when their appetite was more limited. This is clinically important because it is more essential that malnourished patients, or those at risk, increase their protein intake (OPDQ, 2000).

There was an inconsistency at supper, when the control group actually did better than the experimental group in terms of caloric intake, and a medium effect size was found. This can be explained by the fact that because group V were eating more calories and protein at breakfast and lunch, their appetite and intake at supper was reduced. The small effect size found for protein intake at supper may indicate that there may not be significant differences after all in a larger study. However, the full day analysis described below shows that overall, group V had a better nutritional intake than group C with a large effect size, despite the results found at each meal.

The full day analysis (i.e., with three meals) also had an average change in caloric and protein intake with a high variability, so the mean may not be the best indicator to use (Table 6). However, the medium effect size found for change in daily caloric intake indicates the possibility of finding significant differences with further studies. From a clinical perspective, four participants in group V increased their caloric and protein intake on discharge, whereas only one in group C managed to do this (Table 7). The large effect size found indicates that group V may be at an advantage for improved nutritional status, especially if significant differences are found in larger studies. Therefore, despite the inconsistent results at supper regarding dietary intake, group V clearly had an improvement in nutritional intake when compared to group C. More group V participants increased their caloric and protein intake, more calories were consumed overall, and protein intake was within the recommended requirements. This indicates an improved nutritional status in group V, and a likely positive effect of the PEAP.

Group V was meeting their caloric and protein requirements on admission and discharge, despite a drop in protein requirement consumption. On the other hand, group C was not meeting their caloric or protein requirements on admission, and their intake even decreased on discharge (Table 8). One may argue that if group V was already meeting their requirements on admission, they did not need the PEAP to improve it. Although this ended up being the situation for each group, the PEAP may have helped group V maintain their intake, which enabled them to meet their nutritional needs throughout their rehabilitation. Therefore, an eating-assistance program has the potential to help at risk patients meet their daily nutritional needs (Manning et al., 2012). Furthermore, group C's decrease in nutritional requirement consumption may have been prevented if they had been part of the PEAP. There was no positive correlation between lengths of stay and caloric or protein intake (Figures 9 and 10), indicating that this is not a confounding effect in the study.

These results can be compared to those of Walton et al. (2008), who conducted a pilot volunteer feeding-assistance program and found that significantly more protein was consumed at lunchtime when volunteers were present, and throughout the day. More energy was consumed at lunch and throughout the day, but was not significant. From a clinical standpoint, this study shows similar results to the present one, suggesting that the presence of volunteers at mealtime causes a trend of increased protein and energy intake.

Manning et al. (2012) expanded this pilot project into a larger mixed-methods study to evaluate the same outcomes. They found a statistically significant increase in mealtime protein and energy intake when volunteers were present and a statistically significant increase in daily protein intake, but not daily energy intake. Similar to the present study, Manning et al. (2012) concluded that an increase in energy intake is still clinically important despite the lack of

statistical significance. Furthermore, based on past studies, Manning et al. (2012) similarly pointed out that targeting vulnerable patients with specific interventions is more likely to result in a greater influence on dietary intake and nutritional status, than standard care alone.

Figure 9. Change in Caloric Intake Versus Length of Stay

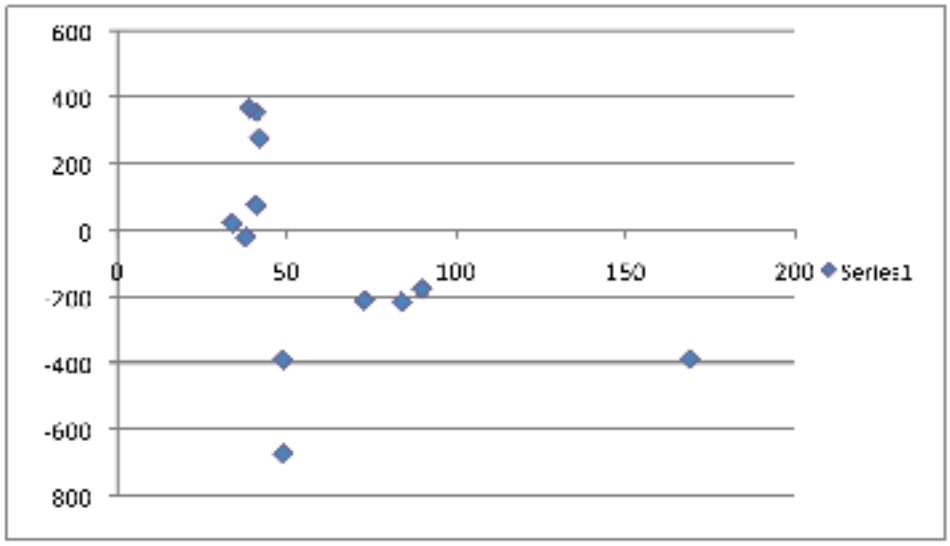
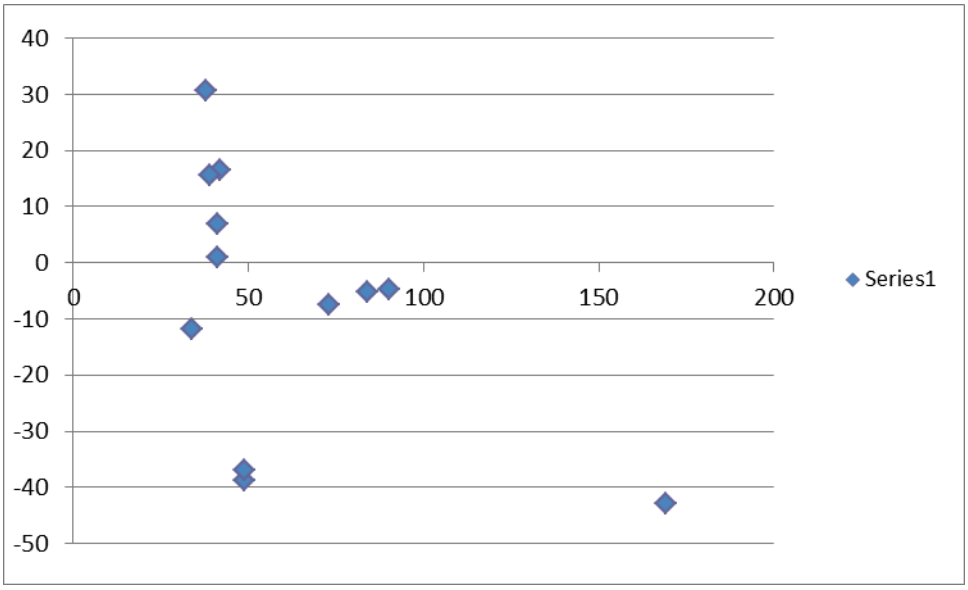


Figure 10. Change in Protein Intake Versus Length of Stay



The present study provides a different approach to measuring nutritional intake in patients receiving "eating assistance" compared to previous studies (Green et al., 2011; Manning et al., 2012; Wade & Flett, 2013; Walton et al., 2008). Instead of only measuring and comparing the caloric and protein intake in the presence or absence of companions, the present study explored the overall nutritional intake of the participants on several days, without the presence of volunteers. This was designed to examine the nutritional status of the participants, and what their eating habits are like when they are on their own. While more frequent visits could produce higher consumption at more meals, which would lead to greater improvement in nutritional status, this may be unrealistic in a PEAP because of limitation of resources. Most PEAP volunteers did not see an increase in the frequency of visits to be beneficial. Hence, the present study's results supports the benefits of a PEAP in improving nutritional status without increasing the frequency of volunteer visits, which is likely to be a feasible program design for institutions.

Study Limitations

Evidently, the small sample size of this research study was a limiting factor. Even though the quantitative data (variables such as weight and blood test values) collected were part of the standard practice at the Jewish Rehabilitation Hospital (JRH), they were sometimes missing from the chart. The dietary intake data were collected over two days, however actual intake may still have been misrepresented. More days would have given a better estimate of the patients' general nutritional intake and changes may have been better detected. It was not always possible to collect food weights for all meals because of cancelled or missing trays and patients' occasional absences at mealtime. Other food intake was not considered, such as snacks and food brought in by family. The actual intervention of the volunteer visits only lasted about two to three weeks because the first one to two weeks of the participant's admission were used to obtain

consent, and meet for the first interview. Having volunteers visiting participants during their entire hospital stay may have added a different dimension to the results of this intervention program in a rehabilitation setting.

Some aspects of the program to improve upon were generated by the volunteers during the focus group. The volunteers found that it was difficult to politely leave when the participant wanted the company to continue and had no one else to talk to, causing long visits of at least two hours. The long length of stay of one participant required the use of two volunteers, which was very demanding on them. If the participant wanted to discuss something upsetting, it was difficult for the volunteer to know what to say without knowing the entire story. There were some scheduling issues and some participants had memory problems, causing them to forget about their scheduled volunteer visits. One volunteer was uncomfortable with her participant wanting to tip her, buy her things, and pay for her lunch.

Conclusion

There were clinically important changes that took place in this study. The weight, albumin, and hemoglobin increased more for the participants receiving the volunteer visits than for the control group. In addition, more participants from the experimental group achieved their weight goals and increased their caloric or protein intake on discharge. The use of the cafeteria was very beneficial because it allowed flexibility, a variety of food, and a comfortable environment for both volunteers and participants. The training of volunteers was an important aspect suggested by past literature (Green et al., 2011; Vesnaver & Keller, 2011), and because one of the volunteers' roles was to provide education to the participants. Both volunteers and participants were satisfied with this program. The quality of the relationship and details of the activities done together and social support provided, show that a PEAP may also meet the

psychological, emotional, and social needs of this population. In summary, this study shows that a PEAP may help improve the nutritional status and well-being of oncology and geriatric patients in a rehabilitation setting. Future research should include a larger sample size, visits from the volunteers to start right after admission and continue until discharge, additional biochemical markers of nutrition, and more days measuring dietary intake.

Ten clearly defined program characteristics can be described for the design of a successful PEAP:

1. Training is provided to educate the volunteers in basic nutrition. The volunteers do not necessarily have to have a healthcare background, but it could be an advantage.
2. The volunteer is adaptable to the participant's needs, and approach or intervention to be used.
3. A trusting relationship and friendship is built first between the volunteer and participant.
4. The volunteer is not forceful or imposing about food intake.
5. Instead, the volunteer gradually drops hints about food and nutrition overtime and modeling is used to teach nutrition and adequate food intake.
6. The appropriate approach or intervention is used by the volunteer depending on the objective: food-focused or nonfood-focused.
7. The visit takes place at mealtime (unless otherwise indicated), at a frequency of no more than three times per week.
8. Both volunteer and participant are eating a meal together.
9. Mealtime is shared in the cafeteria instead of in the participant's room.
10. The volunteers have a connection to the healthcare team (i.e., the dietary department is involved even though the volunteer department runs the program).

Future of the Program

The volunteers described the support from the dietitian (the primary investigator) as an important aspect because it allowed a connection to the healthcare team. Any problems or concerns the volunteer had were able to be dealt with by a healthcare professional, who knew the participant's case and nutritional needs. This helped both the volunteer and the healthcare professional follow the participant's progress throughout their rehabilitation stay. Therefore, it is recommended to keep the dietetics department involved in this program and not just leave it solely to the volunteer department to run.

The selection criteria of participants should remain the same. However, because the overall effectiveness of the program has been shown to be positive, participants with mild neurological problems can be included, as long as they are still able to be socially appropriate. The selection of volunteers can be expanded to individuals without healthcare backgrounds, although special consideration should be given to participants with particular nutritional problems.

The training session for volunteers should include additional information on teaching and learning through modeling and observations, and the advice given for future volunteers (e.g., work on a case by case basis, be adaptable on how you address food and nutrition, modify your plan as needed, have a sense of humor, be flexible, be a good listener, do not over think, stress out, or feel pressure--just share a mealtime together and remember that it is ok if one day your participant has a poor appetite, all activities done by volunteers are important and unique). The training should also include advice on how to set limits with participants, and how to deal with difficult situations or conversations. It would also be useful to include the key elements of a successful helping relationship, in order to maximize the success of the PEAP, because it is a

program focused on relationships and social context (e.g., trust, empathy, understanding, nonverbal communication, appropriate verbal responses, being nonjudgmental, using individualized approaches).

In an effort to improve upon the negative aspects of the PEAP described by the volunteers, the program design should include limits on length of each volunteer visit and overall length of volunteer involvement with the participant, more detailed explanations to the participants about the limits of volunteer involvement, and explanations regarding the nonmonetary valued service provided (e.g., including the volunteer's lunch). The program director should also set up regular reminders for the participants, indicating when their volunteer will be coming to see them. This can be done by using a screening process to determine those who may forget, posting schedules in their rooms above their beds, and by providing personal visits with a reminder the day before the volunteer is due to come.

The design of a successful PEAP should include the ten characteristics listed above, in order to obtain the positive clinical and qualitative outcomes this study has shown. With the trained volunteers being adaptable to their participants' needs by applying the appropriate interventions, the visits taking place no more than three times per week at mealtime, and the two people sharing a meal in the cafeteria together, a nutrition intervention program of this sort can be implemented in practice. A PEAP has the potential to improve the clinical nutrition outcomes as well as the psychological, emotional, and social well-being of rehabilitation oncology and geriatric patients.

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APPENDIX A

**PERSONALIZED EATING ASSISTANCE PROGRAM
FOR GERIATRIC AND ONCOLOGY PATIENTS
AT THE JRH**

Please fill out for your patient and
send to Cindy Fogel in the dietary department

**QUESTIONNAIRE TO ASSESS THE NEED
FOR DIETARY HELP IN THE ELDERLY**

Date: _____

Reported or Actual or Estimated weight: _____ kg or lbs

Adult Height: _____m _____cm or _____ft _____in

CIRCLE THE NUMBER CORRESPONDING TO THE STATEMENT THAT APPLIES TO THE CLIENT

a) The person is very thin?	Yes	2
	No	0
b) Have you lost weight in the past year?	Yes	1
	No	0
c) Do you suffer from arthritis to the point where it interferes with your daily activities?	Yes	1
	No	0
d) How is your vision, even with glasses?	Good	0
	Medium	1
	Poor	2
e) Do you have a good appetite?	Often	0
	Sometimes	1
	Never	2
f) Have you recently suffered a stressful life event (e.g. personal illness/death of a loved one)?	Yes	1
	No	0

WHAT DO YOU USUALLY EAT FOR BREAKFAST?

g) Fruit or fruit juice	Yes	0
	No	1
h) Eggs or cheese or peanut butter	Yes	0
	No	1
i) Bread or cereal	Yes	0
	No	1
j) Milk (1 cup or more than ¼ cup in coffee)	Yes	0
	No	1

TOTAL: _____

Total score	Nutritional risk	Recommendations
6-13	High	Help with meal and snack preparation AND Referral to a dietitian
3-5	Moderate	Regular monitoring of diet (checking food intake, providing advice and encouragement)
0-2	Low	Regular monitoring for appearance of risk factors (e.g. change in situation or weight loss)

This questionnaire has been developed to identify elderly persons needing assistance to improve their food intake and meet their nutritional needs.

It was designed to be used by home care personnel. Answers are obtained by interviews. The numbers circled reflect the elderly person's answer and not the interviewer's assessment except for the statement: THE PERSON IS VERY THIN.

NOTE THAT THE EFFECTIVENESS OF THIS QUESTIONNAIRE HAS BEEN DEMONSTRATED *ONLY AMONG* A FUNCTIONALLY DEPENDENT FREE-LIVING ELDERLY POPULATION.

Weight : Adult height :	Weight and height are not measured. The person is asked his/her current weight and adult height.

THE QUESTIONNAIRE: PRACTICAL APPLICATIONS

THE PERSON:

Is very thin	This is a subjective assessment by the interviewer
Have you lost weight?	Any weight loss is indicated as a YES
What do you usually eat for breakfast?	USUAL food intake is evaluated here, not on a specific day.

RECOMMANDATIONS

A person at high nutritional risk needs to increase energy and nutrient intake. In addition to professional advice and encouragement he / she needs help to increase food intake. The services offered can include food preparation at home, home delivered meals or transportation to a congregate meal service.

A person at moderate nutritional risk needs regular advice and encouragement to improve his / her food intake and to prevent deterioration in his / her nutritional status.

A person at low nutritional risk also needs monitoring. In the frail elderly, nutritional status is precarious and can easily be altered by any change in situation or instability (death of loved one, personal illness or hospitalization).

[1] OPDQ. 2000. Questionnaire to Assess the Need for Dietary Help in the Elderly. Manual of Medical Nutrition Therapy. Appendix E. p12

APPENDIX B

See attached powerpoint presentation

APPENDIX C

PEAP Volunteer Information Form
May 2011

Date: _____

Name: _____

Gender: _____

University Major and year:

_____
_____

Contact information (phone number and email):

_____
_____

Languages spoken (even if only functional):

_____

Availability at lunch (12pm) and supper time (5pm) during the weekdays and weekend:

	LUNCH	**SUPPER**
Monday		
Tuesday		
Wednesday		
Thursday		
Friday		
Saturday		
Sunday		

Extra comments:

_____
_____
_____
_____
_____

APPENDIX D

CRIR Centre de recherche interdisciplinaire en réadaptation du Montréal métropolitain

Hôpital juif de réadaptation
Jewish Rehabilitation Hospital

McGill

CONSENT FORM FOR PARTICIPATION IN A RESEARCH PROJECT

TITLE: Implementation of a personalized eating assistance program for geriatric and oncology inpatients of the JRH who are at risk for malnutrition.

Research Team:

Principal investigator:
Cindy Fogel P.Dt.
Professional Dietitian/Nutritionist
Jewish Rehabilitation Hospital (JRH)

Co-investigator:
Heather Lambert PhD, OT(c)
Faculty Lecturer, McGill University, School of Physical and Occupational Therapy

Introduction

We are asking you to participate in a research project that looks at using volunteers to help patients who are at risk for malnutrition in a rehabilitation hospital. Before agreeing to participate in this project, please take the time to read and carefully consider the following information. This consent form explains the aim of this study, the procedures, advantages, risks and inconvenience as well as the persons to contact, if necessary. This consent form may contain words that you may not understand. We invite you to ask any questions you may have to the researcher and the other members of the staff assigned to the research project and ask them to explain any word or information which is not clear to you.

Description of the study and its purpose

Malnutrition is very common among the elderly population and among patients with cancer. It is known that over half of the elderly people admitted to hospital and 77% of patients with cancer are malnourished. The reasons that may cause them not to eat well are: trouble walking and doing daily tasks, decreased strength and endurance, trouble using their hands, poor eyesight, loss of appetite, change of taste, feeling full early on in the meal, pain, feeling tired, trouble chewing or swallowing food, needing several small

meals, trouble opening food containers and using utensils and being in the hospital. Patients with cancer usually lose weight, have nausea and taste changes because of the cancer treatment. Helping people with these problems is very important to improve their health, especially for patients with cancer because it will make the treatment work better.

Aim of the study: To determine whether a personalized eating assistance program (PEAP) will improve the nutritional status and perceived well-being of patients in a rehabilitation hospital.

Patients who are at risk for malnutrition will be asked to participate in this study (a total of 15 participants is planned). When you participate a volunteer will visit you 3 times per week in your room during mealtime (either lunch or supper). The days they will visit will depend on when the volunteer is available. The volunteers will stay for the whole mealtime and will keep you company, help you go to the cafeteria for lunch, help to open up containers, encourage you to eat and drink well and provide a friendly visit. During the volunteer visits, your family and friends cannot be present since this may influence the results. The volunteer will begin assisting you after you are admitted until you are discharged from the hospital (usually about 4-6 weeks).

Nature and duration of participation
If you agree to participate in this study, you will meet with the dietitian conducting the study at the beginning and end of your stay (and in between as needed) to discuss how you see your health and well-being and how you liked the volunteer visits. You will be asked a series of questions which *will take about 1 hour* (for both meetings at the beginning and end). In addition, your weight will be taken every week; the amount of calories you eat at a meal will be recorded twice per week at the beginning and end of your stay; two values from your blood test will be recorded at the beginning and end of your stay. These values will help us determine if your nutritional status changed. These visits will be *in addition* to the care you will receive as an inpatient at the JRH. We also ask you for permission to look at your medical chart. The researcher will answer any questions you may have about the study at any point.

Personal benefits from participating in the research study
By participating in this study, you may be able to maintain or improve your nutritional status. You will be helping the research team find new ways to help patients with nutrition problems which can then be used for many other patients in the future. If you so wish, the researcher will provide a summary of the study to you.

Risks associated with participating in the research study
Your participation involves no medical risk and will not affect the care and services which you will receive from the JRH. By participating in this study, you may feel disappointed if your nutritional status was not maintained or did not improve. However, you were at the hospital for only a limited time and we encourage you to use the diet recommendations you received from the dietitian during your stay.

Inconveniences associated with participating in the research study
There are no inconveniences associated with participating in this study.

Confidentiality
All personal information collected about you will be assigned numbers to keep it confidential. Only the members of the research team (and the Research Ethics Board) will have access to it. This information will be kept in a locked cabinet at the JRH for two years after the end of the study, after which it will be destroyed. If the results of the study are presented or published, no information identifying you will be included.

Voluntary participation and withdrawal of the participation
Your participation in this study is completely voluntary. You can, at any time, put an end to your participation without this affecting the care and services you are receiving at the JRH. The data collected about you will be destroyed if you wish.

Responsibility clause
While agreeing to participate, you do not give up any of your legal rights or release the researchers, sponsors or institutions involved of their legal and professional obligations.

Compensatory indemnity
There is no compensation given to participants of this study.

Contact persons
You may address any questions regarding the study now and in the future, to the Principal Investigator, Cindy Fogel (450-688-9550 ext 4479) at the JRH. Please contact her if you are considering a withdrawal from the research study. If you have any questions about your rights as a participant in this research study, you may contact Mrs Anik Nolet, Research Ethics Co-ordinator for the CRIR'S Institutions at (514) 527-4527 extension 2649 or by e-mail anolet.crir@ssss.gouv.qc.ca, as well as Mr. Michael Greenberg, complaints officer for the JRH at (450) 688-9550 (extension 232).

Informed Consent

I state that I have read this consent form. I understand this study, the nature and extent of my participation, as well as the benefits and risks/inconveniences to which I will be exposed as presented in this form. I have been given the opportunity to ask questions concerning any aspects of the study and have received answers to my satisfaction.
I, the undersigned, voluntarily agree to take part in this study. I can withdraw from the study at any time without prejudice of any kind. I certify that I have had sufficient time to consider my decision to participate in this study. A copy of this consent form signed and dated by both myself and a representative of the research group of this project will be given to me.

NAME OF PARTICIPANT (print) SIGNATURE OF PARTICIPANT

_____ _____

Signed at _____, the _____, 20 _____.

Responsibility of the principal investigator

I, the undersigned, _____, certify that I have

a) explained to the research participant the terms of this form;
b) answered all the questions he/she has asked;
c) clearly indicated that he/she remains free, at any time, to end his/her participation in the above described research study and
d) provided a signed and dated copy of this consent form to the subject
e) ensured that the participant has understood to the best of his/her ability all the aspects of his/her participation in the study described in this form.

_____

Signature of Principal Investigator or representative

Signed at _____, the _____, 20 _____.

APPENDIX E

Volunteer Report Form

Volunteer name: _____

Patient Name: _____

Date: _____

1. How long was your visit?

   Arrival time : _____am/pm
   Departure time : _____ am/pm TOTAL VISITING TIME = _____ minutes

2. How much time did you spend traveling to and from the JRH for your visit?

   Time to arrive : _____ minutes
   Time to return : _____ minutes TOTAL TRAVEL TIME = _____ minutes

3. Did you assist your candidate with any activities? ❒ 1-Yes ❒ 0-No
   a) If yes, please check off which activities you helped your candidate with and explain.

   ❒ Assisted with moving from one area of the hospital to another
   ❒ Observed whether the candidate was well positioned and safe while eating
   ❒ Assisted with positioning at mealtime
   ❒ Observed for any swallowing problems
   ❒ Provided company while eating
   ❒ Assessed whether candidate's intake is meeting *Canada's Food Guide to Healthy Eating*
   ❒ Other :
   _____

   b) If yes, please provide details of your activities.

   _____

   _____

   _____

   _____

   _____

4. Did you provide any nutrition information to your candidate? ❒ 1-Yes ❒ 0-No
   a) If yes, what information did you provide your candidate?

   ❒ Reinforced why nutrition is important
   ❒ Discussed what is adequate eating
   ❒ Encouraged increasing nutritional intake
   ❒ Talked about high protein foods
   ❒ Talked about calcium and gave examples of foods that are high in calcium
   ❒ Talked about ways to increase fiber intake
   ❒ Talked about constipation
   ❒ Encouraged increasing fluid intake
   ❒ Other: _____

   b) If yes, please list what information you told/gave your candidate.

   _____

   _____

   _____

   _____

   _____

4. Do you have any nutrition information or concerns (i.e. eating problems, poor intake) that you need to discuss with or ask the dietitian? ❒ 1-Yes ❒ 0-No
   a) If yes, explain

   _____

   _____

   _____

   _____

   _____

5. Did you encounter any problems during your visit?

   ❒ 1-Yes ❒ 0-No

   a) If yes, please explain

   _____

   _____

6. Do you feel that your visit was helpful to your candidate? ❒ 1-Yes ❒ 0-No
   a) Explain your answer

_____

_____

_____

6. Did you enjoy your visit? ❒ 1-Yes ❒ 0-No
   a) Explain your answer

_____

_____

_____

7. Is there anything you need to do before your next visit? ❒ 1-Yes ❒ 0-No
   a) If yes, make a note.

_____

_____

_____

APPENDIX F

Participants

Questions for qualitative part:

Initial:

1. How is your appetite? Is it back to it's `normal`` state or not?
2. How has your weight been over the last couple of months? (then probe with weight loss/gain or clothing fit as necessary)
3. Do you follow a special diet? Or do you have special dietary needs? i.e. allergies, intolerances, medical conditions, digestion problems
4. Do you think good nutrition is important for your health? Do you know what proper nutrition means? When you're at home, what are your typical meals like? How do you decide what to make? What would you like to change?
5. Do you think you eat adequately/healthy? If no, what is missing or what can be changed? (Both at home and in hospital)
6. Do you think having company at mealtime will help improve your intake and nutritional health?

At discharge:

1. Do you feel the volunteer visits helped improve your intake?
2. Did you feel encouraged to eat more/better? Why?
3. Did you learn anything from the volunteer re: nutrition? Anything you did not know before? If yes, what?
4. What did you like the most about the volunteer visits?
5. Do you think your nutritional status improved during your stay at the JRH? Why?
6. Do you think other patients can benefit from this type of service to help improve their nutritional status?

APPENDIX G

PEAP VOLUNTEER focus group
Nov. 11 2011
11:30-1:30pm

Start with transfer-in activity: give your name and your plans for the weekend

Thank everyone for volunteering their time
Give summary of my experiences with project - both positive and negative

Open discussion with the following questions:

1. Did you enjoy participating in this project? What did you enjoy the most? The least?
   Do you feel you personally benefited from working on this project?
   - learned about nutrition yourself
   - increased self-confidence in working with patients
   - felt like you made a difference in patient's life
   - enjoyed meeting other volunteers
   - other

2. Do you feel that your visits helped the patient?
   Do you think it is worthwhile to offer this type of nutrition service?
   Did you feel comfortable with the patient? The project staff?
   Do you think the amount of time and energy you put in was:
   - too much
   - just right
   - could have put more

3. Did you find the training adequately prepared you / did you feel competent in helping the patient?
   - What was useful?
   - What should have been included

   Did you feel you had sufficient information about the patient to carry out your responsibilities?

4. What was your main activity with your patient?
   Did you educate them about nutrition? If no, why not? If yes, what did you focus on?

5. What suggestions do you have for improvement - what should we do differently next time?
   Would you participate again?

Personalized Eating Assistance Program (PEAP)

Training Session for JRH Eating Assistance Volunteers

Prepared and presented by:
Cindy Fogel P.Dt. May 2011

Adapted from IEAP training prepared by: Kathie Whitehead P.Dt. SMH Aug,2001;
Revised June 2002, Feb. 2004 & June 2008 by Cindy Fogel P.Dt.

Research Project:

Implementation of a PEAP for geriatric and oncology patients at the JRH who are at risk for malnutrition

Project promoted by:

Jewish Rehabilitation Hospital, Laval

Funded by: JRH foundation

Researchers: Cindy Fogel, P.Dt. and

Dr. Heather Lambert, O.T.

OUTLINE OF PRESENTATION

- Background of PEAP
- Objectives of PEAP
- Volunteer orientation – Lily Rail
- Your role as a volunteer
- What the patients may be like
- Your tasks for the research project

OUTLINE OF PRESENTATION

Eating assistance training:

- Goal of training session
- Malnutrition and Reasons for Elevated Nutritional Needs
- Means of Communication
- Social Aspects of Eating
- Indication of Swallowing Problems
- Positioning for Eating
- What is Adequate Eating?
- Cultural Differences
- Strategies to Improve Food Intake
- Emergency Measures
- Tour

Background of PEAP

- Started as acute care hospital program (SMH)
- Community research project funded by Health Canada (IEAP) – CLSC CDN
- Community program in MTL
- Workshops given in areas of QC
- Now a nutrition research project in a rehabilitation setting (Laval)
- Abstract to be presented at CARN conference in September 2011

Objectives of PEAP

To determine if a PEAP will help to improve the nutritional status and perceived well-being of geriatric and oncology inpatients in a rehabilitation setting

Volunteer orientation at JRH

Presentation by:

Lily Rail

Head of volunteer services

Your Role as a Volunteer

- Providing companionship to the patient at mealtime
- Accompanying the patient to the cafeteria and helping them make food choices (You will also help carry the patient's tray to their table and may even eat lunch with them).
- Ensuring the patient is in the proper position for eating.

Role cont'd

- Setting up their tray by opening food containers, arranging items and other preparations as needed.
- Stimulating alertness during the meal.
- Providing a safe and enjoyable mealtime experience.
- Increasing opportunities for social interaction.

What the Patients may be like

- Elderly
- Weak, fragile, short of breath
- Poor hearing or vision
- Decreased mobility
- Underweight
- Hair loss

Your tasks for the research project

- Visit your assigned patient 3 times per week at mealtime (lunch or supper) for the duration of their stay (approx. 4-6 weeks)
- Fill in the report form after each visit and give to Cindy
- Attend a focus group at the end of the project period
- Keep all information about patients CONFIDENTIAL

Tasks of Volunteers cont'd

- Lunch provided in cafeteria if you are here at lunchtime
- Compensation provided for parking fees and mileage

Goal of Training

- To provide you with knowledge and skills to assist patients at mealtime so they can maintain or improve their nutritional status.
- This includes companionship, encouragement, and assistance in attaining improved nutritional intake.

Causes and risks of malnutrition

- Malnutrition is prevalent in the elderly and in cancer patients receiving treatment
- Environmental, physical, psychosocial factors may affect the elderly population
- Nausea, taste changes, dysphagia and diarrhea may result from cancer treatments
- Can lead to weight loss, dehydration, poor immune system - increased infections, bed sores, constipation, dysphagia, poor response to cancer treatments

Why Are Nutritional Needs Still High?

- To prevent unintentional weight loss
- To preserve muscle mass
- To help fight off infection
- To protect from disease
- To maintain capacity to function (strength to walk, climb stairs, cook, attend therapies)
- Presence of chronic disease may increase nutritional requirements or affect absorption of nutrients
- Drug / nutrient interactions

MEANS OF COMMUNICATION

Communication = Verbal + Non Verbal

Message ---------- Hearing

Listening

Seeing

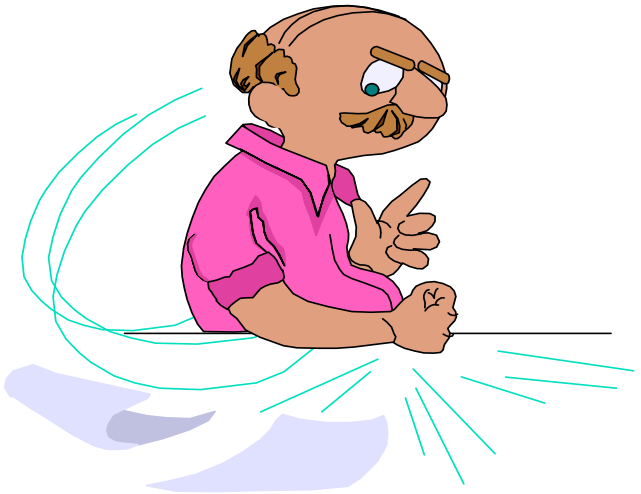
Acting

Active Listening

- Awareness of person's point of view
- Reading between the lines
- Being attentive
- Paraphrasing
- Asking questions
- Saying, "when X happens, it makes me feel ……."
- Being non judgmental

Non Verbal Communication

- Eye Contact
- Body Language (relaxed, anxious, nervous, shy, open, closed)
- Tone of Voice



SOCIAL ASPECTS OF EATING

- Eating is usually a part of our social gatherings
- Eating is usually more pleasurable and the quantity taken is greater with friends and family present
- Pleasant surroundings add atmosphere

  (? hearing, smelling and seeing)
- Touching a person's arm to give encouragement has been shown to increase intake

3 PHASES OF SWALLOWING

- Oral
- Pharyngeal
- Esophageal

Swallowing (Oral Phase)

- Smelling, seeing (?glasses), touching and talking about food begins to prepare us for swallowing by increasing salivation
- The lips close to hold food in the mouth
- Food is chewed (? teeth), mixed with saliva and formed into a bolus by the tongue
- The tongue moves the bolus to the back of the mouth to be swallowed

Swallowing (Pharyngeal Phase)

- Bolus goes into the throat
- Larynx (voice box) moves up to cover the airway
- Entrance to the nose is closed off
- Bolus goes down the throat (Watch Adam's Apple)

Swallowing (Esophageal Phase)

- Food goes down the esophagus into the stomach

Indication of Swallowing Problems

- Pocketing food in mouth (weak cheek muscles)
- Dribbles food or liquid from mouth
- Coughing/Choking
- Clearing throat often
- Wet or gurgling voice
- Congested or short of breath during or after meals
- Feeling of food sticking in throat

POSITIONING FOR EATING

- Sit straight (back and head) with meal centered in front
- Chair correct height for table
- If necessary, use pillows to prop person straight
- Feet on floor or wheelchair footrests
- If wheel chair, put break on

WHAT IS ADEQUATE EATING? Canada's Food Guide

- Vegetables and Fruit
- Grain Products
- Milk and Alternatives (? intolerance)
- Meat and Alternatives

Plus:

- Fats
- Fluids
- Fiber – soluble and insoluble
- Exercise

Examples of high calorie foods

- Grains: breads, crackers, hot and cold cereal, rice, pasta, barley
- Starchy vegetables: potatoes, carrots, corn, beets, peas, turnip, squash
- Fats: butter, margarine, oil, dressing, sauces, gravies, avocado, mayonnaise, cream cheese, sour cream

Examples of High Protein Foods:

- Meat, poultry, fish
- Milk, cheese, yogurt
- Eggs
- Peanut butter
- Legumes
- Nuts and Seeds

Examples of High Fiber Foods: constipation

- Whole grain breads
- Bran cereals
- Fruit and Vegetables (especially raw and dried fruit or prune juice)
- Legumes (dried peas, beans and lentils)
- Nuts and Seeds

Examples of soluble fiber: diarrhea

- Bananas
- Applesauce
- Oatmeal

- Can also benefit from: jello, rice, potatoes, refined grains, extra fluids with electrolytes

Fluid Intake:

- Minimum of 1500 mL/day (6 cups)
- Preferably 2000 mL/day (8 cups) to prevent constipation
- Includes water, juice, milk, soups, decaffeinated tea and coffee, jello, puddings, yogurt, hot cereals

CULTURAL DIFFERENCES

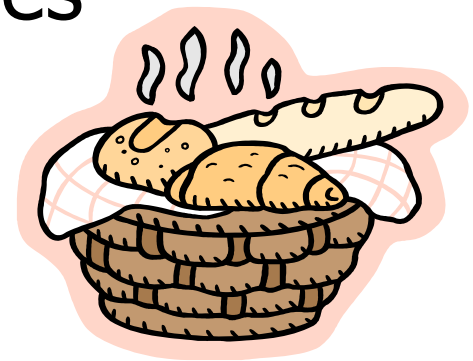
- Religion (Jewish, Muslim, Hindi)
  - foods eaten
  - holidays
  - fasting
- Vegetarian
- Habits of hours of eating and type of food taken at meals.

Kosher laws at the JRH

- No pork/ham/bacon
- No seafood
- No mixing of dairy and meat products at meals
- Pareve foods allowed at any time
- Nutritional supplements are dairy but served at any meal
- Kosher sections of the hospital

STRATEGIES TO INCREASE FOOD INTAKE

- Company while eating
- Rubbing arm (caring + increases alertness)
- Speaking person's name (increases alertness)
- Adapted eating equipment
- High energy, high protein diet
- Nutritional supplements and snacks



EMERGENCY MEASURES

- Press the emergency button above the bed
- If outside the patient's room, find a phone and dial #5555 for the intercom: say "Code 2-3" with the location of the patient
- Do not give your phone number or address to the patient
- Do not divulge a lot of personal information to the patient
- Do not help the patient transfer or go to the bathroom. Call for assistance instead.
- Problems or concerns: report to your contact dietitian

CONCLUSION

With the knowledge that you have gained from this session, we hope that you will:

- Feel comfortable visiting patients in their rooms or accompanying them to the cafeteria and socializing with them
- Have the knowledge to assess whether or not the patient is eating well
- Be able to encourage the patient to improve eating habits where necessary by using some of the tools provided in this session.