Pilot Study: 
Patients’ Perception of the Role of Nutrition in Hip Fracture Recovery

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ABSTRACT. Poor nutrition may contribute to the incidence and complications of hip fractures. An interview survey was used to assess the nutrition knowledge and attitudes of 40 female and 10 male elderly subjects hospitalized with hip fractures at a local community hospital. Subjects were recruited from a sample of convenience able to respond appropriately. Ninety-two percent of the subjects were unaware of the potential role nutrition plays in recovery. Once counseled on the possible benefits, 80% of the participants were willing to implement some degree of nutrition therapy. While inferential statistics yielded no statistically significant correlations, the practical applications are of importance. [Article copies available for a fee from The Haworth Document Delivery Service: 1-800-342-9678. E-mail address: <getinfo@haworthpressinc.com> Website: <http://www.HaworthPress.com>]

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INTRODUCTION

The increase in the number of hip fractures occurring among older adults, especially those over 85 (Heaney, 1992) adds to health care costs while decreasing functional independence and quality of life. Koval (1999), in a study examining the effect of nutrition on patient outcome after hip fracture found that 18% of subjects out of 490 were malnourished on hospital admission based on preoperative albumin, and 57% based on total lymphocyte count. Adequate nutritional intake prior to the fracture and during recovery is vital to this population in helping to reduce the morbidity and mortality associated with hip fractures (Delmi, 1990; Position of the American Dietetic Association: Cost-effectiveness of medical nutrition therapy, 1995).

Older adults with hip fractures may not receive appropriate nutritional care because of shorter hospital stays and inadequate service coordination occurring in today’s healthcare environment (Position of the American Dietetic Association: Nutrition services in managed care, 1996). Prior to discharge, there is insufficient time to identify, assess, and educate patients at nutrition risk of the importance of an adequate dietary intake for optimum recovery.

While many studies have identified the merits of nutrition intervention after a hip fracture, these authors have been unable to identify any studies which have attempted to assess patient knowledge of the value of nutrition therapy in hip fracture recovery. Since the length of hospitalization and hence contact with medical team personnel has been decreased as a result of cost containment and managed care, it is important that patients take a proactive role in their recovery. Part of this process is developing an awareness of the value of medical nutrition therapy, implementing the recommendations, and monitoring the results of the intervention. If patients are however, unaware or ill informed, then proactive involvement is unlikely to occur; hence the value of assessing patient awareness.

An interdisciplinary nutrition intervention study attempted by these authors to measure the benefits of nutrition care on hip fracture recovery in older adults attempted in 1996 experienced difficulty recruiting participants, as patients made no connection between nutrition and their recovery and consequently were not interested in participating.
Lack of transportation or assistance to return for follow-up care was also cited as a reason for non-participation. This current study was developed in order to further investigate this phenomenon.

The purpose of this pilot study was to look qualitatively at patients who had hip fractures, using a survey format, to examine: (a) awareness of the role nutrition plays in recovery; (b) patient willingness to change dietary habits to support recovery; and (c) nutrition status with respect to appetite, kilocalorie intake, and food group selection. The value of this data lies in its direct clinical application.

**CHANGES IN HIP FRACTURE TREATMENT IN A COMMUNITY HOSPITAL**

A 334 bed county tax-assisted facility located in suburban Broward County, Florida, instituted an elective total hip replacement surgery protocol (a planned procedure) in 1995 in an attempt to shorten the length of hospital stay by including pre-surgery outpatient diagnostic tests, physical therapy, social services, and anesthesia assessments prior to hospital admission. The protocol then identified over a four-day length of hospital stay what should occur from day 1 (admission day) through day 4 (discharge day). The protocol indicates nutrition assessment on an as needed basis, with no clear indication of triggers or criteria for assessment and who would be responsible for requesting the assessment. The four-day discharge protocol precludes timely identification of those at nutritional risk or even a provision for nutrition education. The application of this protocol has, however, not been limited to only elective total hip replacement patients but also to patients who have suffered hip fractures and therefore the de-emphasis on nutrition is also applied to this patient group.

Regardless of treatment protocols and pathways, patients may be unable or unwilling to change dietary practices if they do not know how important good nutrition is to recovery.

**METHODS**

Forty female and ten male Caucasian patients with a primary diagnosis of hip fracture occurring from a fall were identified from the
hospital-generated nutrition report. Patients were excluded if they had a history of metastatic disease, severe Alzheimer’s disease, dementia, trauma-induced hip fractures or appeared confused. A qualitative design, using a sixteen-question survey and a sample of convenience, was used to investigate the study problem. Patients were interviewed on day 1 or 2 after surgery during the acute phase of hospitalization. If, however, a patient could not be interviewed at this time, and would receive follow-up care within the hospital’s Rehabilitation or Transitional Care Unit, the interview (by Kaye-Ann Grant) was conducted there.

**STATISTICAL ANALYSIS**

Minitab Statistical Software (Minitab, Inc., version 9, State College, PA) was used for statistical analysis. Coefficient of correlation was used to analyze the data obtained from the patient survey to assess for correlations between nutritional parameters and discharge outcomes. Descriptive statistics included frequency, mean, and standard deviation.

**RESULTS AND DISCUSSION**

The mean age of the pilot study participants was 82 years +/− 7.59 (range 61-96 years). Fourteen patients had previous fractures, of which two were hip fractures. Three of the 40 female patients were receiving estrogen replacement therapy. Two patients expired: one died in the sub-acute unit and the other died approximately one month after hospital discharge. The average length of the acute hospital stay was 5.94 days. Eighty-six percent of the patients appeared in the categories of old and oldest old, consistent with other reports as the population most likely to experience hip fractures (Heaney, 1992). Only 2% of the sample were men, reflecting that women tend to live longer than men and comprise a larger percentage of the old and oldest old age subgroups (see Table 1).

Based on a subjective rating of good, fair and poor, participants in the pilot study rated their appetite as 34%, 50%, and 16% respectively. Bonjour (1996) found in a survey of hospitalized elderly patients with very low femoral neck bone mineral density at the level of the proximal femur that the self selected intake of protein and energy was
TABLE 1. Summary of Findings

<table>
<thead>
<tr>
<th>aSelf-reported rating of appetite (%)</th>
<th>Good 34%</th>
<th>Fair 50%</th>
<th>Poor 16%</th>
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<tr>
<th>Kilocalorie intake based on self-reported servings from the Food Guide Pyramid</th>
<th>Mean 917 +/- 228 Kilocalories</th>
<th>Range 475-1425 Kilocalories</th>
</tr>
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<tr>
<th>Percentage of participants meeting the Food Guide Pyramid guidelines for each food group</th>
<th>Bread 18%</th>
<th>Meat 64%</th>
<th>Milk 20%</th>
<th>Vegetable 2%</th>
<th>Fruit 66%</th>
</tr>
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<tr>
<th>Self-reported individual weekly food cost</th>
<th>Mean $34.60 +/- 10.32</th>
<th>Range $20-75</th>
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Note. aN = 50

insufficient during their hospital stay. This finding may well be supported in this pilot study in which 66% of the participants rated their appetite as either poor or fair. Within the context of these ratings, the average calorie intake based on the self-reported servings from the Food Guide Pyramid ranged from 475 calories to 1425 calories. Self-reported food servings indicated that the Food Guide Pyramid recommended guidelines were highest for fruits, meat, milk, bread, and vegetables. The average weekly food cost for participants in this study was $34.60 with the cost ranging from $20-$75.

At the beginning of the interview, 92% of the subjects were not aware that nutrition plays a role in recovery. The four patients (8%) who were aware of the benefits of sound nutrition had been transferred from acute care to the Transitional Care Unit (TCU), where the TCU dietitian, through routine screening had provided counseling to two patients, and the other two patients were informed by their physicians.

Once informed of the importance of nutrition by a registered dietitian (Kaye-Ann Grant), 80% of the participants agreed to alter their dietary intake by increasing protein. In addition, 20% indicated willingness to use nutritional supplements. Patients refusing to make any dietary changes stated even after counseling, that they did not believe that food/nutrition had any impact on recovery.

Ninety-two percent of the patients were discharged from the acute hospital setting to a variety of intensive rehabilitation, sub-acute care
or skilled nursing facilities. Six percent were discharged to adult congregate living facilities and the other 2% were discharged home with assistance from family and home health aides. Discharge decisions depended upon the subjects’ abilities to ambulate, perform activities of daily living, availability of assistance at home, and settings for which the health insurance companies would authorize payment.

**STUDY FINDINGS AND APPLICATIONS**

Previous studies have documented that hip fracture patients who improve their nutritional status experience positive outcomes including decreased mortality, decreased rehabilitation time, and increased functional independence (Bastow, 1983; Vellas, 1992) that may save healthcare dollars. However, lack of knowledge or awareness on the patient’s part about the important role nutrition plays in hip fracture recovery may hamper them from making positive dietary changes.

Patients are frequently asked during nutrition assessments to qualitatively rate their appetite. We found that the use of qualitative responses as a screening mechanism may need to be reevaluated since this self-rating may not be reflective of actual nutrient intake but more indicative of patients’ perception of how well they are eating. Based on self-report, all subjects had a suboptimal nutrient intake that was unlikely to support efficient tissue repair and weight maintenance. However, inadequate intake may not necessarily be identified using a self-assessed qualitative appetite scale. It may be more informative to determine whether food intake guidelines such as the Food Guide Pyramid are being met (Food Guide Pyramid: A guide to Daily Food Choices). In this study, none of the subjects met the minimum USDA Food Guide Pyramid guidelines.

While inferential statistics yielded no statistically significant correlations, the practical applications are of importance. This pilot study while limited by convenience sample, single site, and racial group, indicates that hip fracture patients may not at first understand the important role nutrition plays in rehabilitation, but once informed, they are receptive to making changes.

Because of shortened inpatient stays, the opportunity for conducting nutrition assessments, implementing nutrition care plans and long term monitoring of interventions is no longer feasible. Hospitalization is the time dietetics professionals should be ready to optimize the window of opportunity to impact recovery. Educating the patient about the
importance of maintaining adequate dietary intake, possible short-term use of nutritional supplements, and proactive coordination with the discharge planning process to achieve a long term plan for recovery should be the goals. Working with physicians, case managers, and social workers, an individualized nutrition plan should be integrated into a patient’s long term treatment package. Prioritized medical nutrition therapy could include nutrition assessment and monitoring, nutrition counseling, targeted used of nutrition supplements, home delivered or congregate meals, food stamps or shopping assistance.

Dietitians should be involved in educating patients on the importance of nutrition in recovery from hip fractures and guiding patients in developing and implementing a nutrition plan to improve dietary intake and their nutritional status.

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REFERENCES


APPENDIX. PATIENT OPINION INFORMATION SURVEY

Age _____ Sex _____ Race _____
Fracture Site ____________________________________________________________
Previous Fractures _______________________________________________________
Hormone Replacement Therapy _____________________________________________

Please circle the answer as indicated.
1a. Is your appetite good fair poor ?
1b. Is your appetite now:
   the same as prior to hospital admission?
   better than prior to hospital admission?
   worse than prior to hospital admission?

Please fill in the answers as indicated.
(Data before hospital admission)
2. How many meals do you eat daily?

3. How many snacks do you eat daily?

4. How many servings do you eat from each group daily?
   EXAMPLE: 5 servings.  STARCH GROUP
   (1 slice bread for breakfast, 2 slices bread for a sandwich at lunch, 1/2 cup pasta at dinner,
   3 graham crackers for a snack)

   ____ servings.  STARCH GROUP
   (bread, cereal, rice, pasta)
   • a serving is 1 slice bread
   1 oz ready-to-eat cereal
   1/2 cup cooked cereal, rice, pasta
   3 or 4 small plain crackers

   ____ servings.  MEAT GROUP
   (meat, poultry, fish, dry beans, eggs, nuts)
   • a serving is 2-3 ounces cooked lean meat, poultry, or fish
   • 1/2 cup cooked dry beans, 1 egg, or 2 tablespoons peanut butter = 1 ounce lean meat
   **1 ounce = the size of a matchbox
   3 ounce = the size of a deck of cards

   ____ servings.  DAIRY GROUP
   (milk, yogurt, cheese)
   • a serving is 1 cup of milk or yogurt, 1 1/2 ounces natural cheese, 2 ounce process cheese

   ____ servings.  VEGETABLE GROUP
   • a serving is 1 cup raw leafy vegetables, 1/2 cup of other vegetables, cooked or chopped raw, 3/4 cup of vegetable juice

   ____ servings.  FRUIT GROUP
   • a serving is 1 medium apple, banana or orange, 1/2 cup chopped cooked or canned fruit, 3/4 cup fruit juice
59 servings. **FAT, OILS, AND SWEETS**
(oil, butter, mayonnaise, candy, chocolate)

59 servings. **ALCOHOL**

5a. Would you be willing to increase your protein intake by:
   1) eating high protein foods and/or
   2) taking a liquid nutritional supplement if this is likely to improve your recovery?

   Yes, because __________________________________________________________
   No, because __________________________________________________________

5b. Has nutritional status been mentioned to you since hospitalization as a possible risk factor for hip fractures and complication during recovery?

   NO   YES

   If yes, by whom? _______________________________________________________

6. Do you think your ability to eat adequately will be affected when you return home as a result of your current injuries?

   NO   YES

   If yes, why? __________________________________________________________

7. Will you have assistance with:
   a) meal preparation?
      NO   YES

   If yes, by whom? _______________________________________________________

   b) grocery shopping?
      NO   YES

   If yes, by whom? _______________________________________________________

8. Do you think that you will benefit from having your nutritional status monitored by a dietitian?

   During hospitalization:

   Why? __________________________________________________________________

   After hospitalization:

   Why? __________________________________________________________________

9. Will you be discharged to:
   Home
   Rehabilitation Facility
   Transitional Care Facility
   Nursing Home
   Adult Congregate Living Facility (ACLF)
   Other _________________________________
10. How would you have rated your mobility and endurance prior to hospital admission?
   ___ Device  ____________  ___ No Device
   ___ Household ambulator  ___ Short distance ambulator
   ___ Unlimited ambulation

11. How would you rate your vision?
   ___ Device  ____________  ___ No Device
   ___ Difficulty reading/seeing close objects
   ___ Difficulty with distant vision
   ___ Difficulty with close and distant vision
   ___ No difficulty with vision

12. How much do you spend weekly on food cost? (restaurant, grocery, etc.)


15. List any data duplicated on the Nursing Assessment form.

16. Length of hospital stay

17. Length of rehab stay

18. Length of Transitional Care Stay (TCU)