Relationship between Nursing Nutrition Knowledge and Attitudes and Identification of Malnutrition in the Acute Care Setting

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RELATIONSHIP BETWEEN NURSING NUTRITION KNOWLEDGE AND ATTITUDES AND IDENTIFICATION OF MALNUTRITION IN THE ACUTE CARE SETTING

by

Susan D. Kendziorski

A Thesis
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Susan D. Kendziorski
Relationalship Between Nursing Nutrition Knowledge and Attitudes and Identification of Malnutrition in the Acute Care Setting

Susan D. Kendziorski, M.A.
Western Michigan University, 2001

Malnutrition is widespread in healthcare and effective protocols are needed to identify those at risk. Nurses are well suited to carry out screening for malnutrition because they are in close contact with the patient and are responsible to coordinate each patient's care. In order to perform this role nurses must have nutrition knowledge and the skills to complete an accurate nutrition screen. The purpose of this study was to examine relationships between nursing nutrition knowledge, nursing attitudes towards nutrition, and the accurate completion of a nutrition screening protocol. Patient's charts were reviewed for accurate completion of the nutrition screening protocol and appropriate referral to the Registered Dietitian. Nutrition knowledge and attitude scores were obtained by surveying each nurse. Results were then compared.

This study confirmed that patients at nutritional risk were not consistently identified. No correlation was found between the nurses' knowledge of nutrition and successful identification of patients at nutritional risk with appropriate referral to the R.D. Years in acute care correlated significantly with opinions strongly agreeing that nutrition has an impact on health and wellness. Factors including part time status and attitudes towards identification of malnutrition may be worthy of further examination.
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INTRODUCTION

Malnutrition is a widespread problem in healthcare. Of patients admitted to the hospital, 30-50% are either malnourished or at risk of becoming malnourished (Ross Products Division Abbott Laboratories, 1994). Patients who are malnourished have a higher incidence of morbidity and mortality, increased complication rates associated with treatment or surgery, longer lengths of hospital stay, decreased rates of wound healing and higher health care costs (Ross Products Division Abbott Laboratories, 1994). Dietitians continue to serve as the primary provider of nutrition services, however a collaborative effort between health care professionals is required to identify patients at nutritional risk and to carry out a successful nutrition care plan. The position of the American Dietetic Association is that dietetic practitioners should “work with other health professionals to identify patients at nutritional risk and to reinforce nutritional advice” (Chapman & Lasswell, 1991, p. 612). Nurses are especially well suited to carry out screening for malnutrition because they are in close contact with the patient and are responsible to oversee coordination of the patient’s total care. In order to carry out this role effectively nurses must have knowledge regarding the role nutrition plays in the health and well being of each patient and skills to complete an accurate and appropriate nutrition screen. In addition the nurse must know when to involve the dietitian who will set appropriate nutritional goals, implement a nutrition plan of care, and evaluate progress towards the established nutrition goals.
The relationship between the role of the dietitian and nurse has become more collaborative and has provided the nurse with more responsibilities, which traditionally have been those of the food and nutrition department (Morse & Perry, 1993). This study was undertaken to determine if there is a positive relationship between nursing knowledge of nutrition, nursing attitudes towards nutrition, and the accurate completion of a standardized nutrition screening protocol.
LITERATURE REVIEW

Very few studies were available that focus specifically on the relationship between nursing nutrition knowledge and attitudes and the identification of malnutrition, suggesting that additional investigation may be beneficial. Perry (1997) found no relationship between nutrition knowledge, stated attitudes, and subsequent behavior. In fact discrepancies between stated and actual behavior were found. Results of this study may have been altered by the fact that general group comparisons were used to analyze the relationship between conduct and questionnaire results. No attempt was made to match individual conduct to individual questionnaire results. The criteria used to describe nutrition care provided by the nurse was narrowly defined. Nutrition activities were described as measuring of height and weight, documentation of percent of meal consumed, or statement of poor appetite or inadequate intake. Although nurses perceived that they assessed nutritional status, answers to the questionnaire suggest an essential lack of understanding of what that entails. Evaluation by the nurse specifically for nutrition risk and referral to the dietitian was not addressed.

Rawlinson (1998) looked more specifically at documentation in nursing notes for identification of not only height and weight, but also nutritional status and referral to the dietitian. A questionnaire was also utilized to assess self-reported behavior and rationale for and attitudes towards that behavior. The research committee found that there was a large variety in nutrition related care activities being conducted, referral of
patients who were malnourished to the dietitian was "haphazard" (p. 293), and review of nursing documentation did not support the nurses perception that nutritional information was being charted.

If a relationship is found between nutrition knowledge and attitudes and the identification of malnutrition then factors contributing to nutrition knowledge may be worth examining. Multiple studies have examined nutrition knowledge and attitudes in relationship to educational background, experience, and work setting.

Years out of school may be one such factor. In a study by Lindseth (1990) evaluating variables contributing to the nutrition knowledge of rural Registered Nurses, time out of school correlated positively with nutrition knowledge scores, with those out of school for six to ten years scoring the highest (33.5/50). Surprisingly age and experience did not show a significant correlation. An additional significant finding in this study was that despite the incidence of malnutrition and the acuity level in the hospitalized patient hospital nurses demonstrated the lowest scores (31/50) of nutrition knowledge when compared to community/public health (34/50) or geriatric/nursing home nurses (32.5/50). Another study by Lindseth (1994) confirms that years out of school may contribute to nutrition knowledge scores. When the nutrition knowledge of geriatric nurses was examined to determine whether geriatric nurses are prepared to implement nutrition interventions for high-risk elderly patients, nutrition knowledge scores were lowest for those nurses who had been out of school for over 20 years. Once again nurses who scored the highest had been out of school between six and ten years. Actual nutrition intervention performed by the nurses however, was
Yet another factor that may contribute to nursing nutrition knowledge is work experience. Although Lindseth did not find work experience to be a significant factor in her first two studies there was a correlation found in her 1997 study of 129 graduating nursing students. In this study greater work experience correlated positively with improved nutrition knowledge scores. Concerns were raised that while the acuity level of hospitalized patients and incidence of malnutrition remain high, results of a nutrition knowledge test revealed only 50-60% accuracy.

Attitudes of nurse’s regarding their own role in nutritional care of their patients may have an impact on both nutrition knowledge and the successful identification of malnutrition. Burnham (1996) provided a questionnaire to nurses working in a “busy district general hospital” (p. 78). When asked who owned responsibility for the nutritional care of the patient just more than 50% saw it as their role to be responsible for their patient’s nutritional status.

In one mid-western acute care teaching hospital it is the nutrition screening section of the RN assessment by which malnourished patients are identified. The nurse is responsible for completing it for each patient within the first 24 hours of admission. The dietitian relies upon the nurse to utilize this tool to identify patients at moderate or severe risk and then make a referral to the dietitian for a complete assessment and implementation of a nutrition care plan. If the nurse fails to carry out his or her responsibilities in relationship to the nutrition screen patients at risk for malnutrition may be missed; opportunities to prevent or treat malnutrition will be foregone;
and detrimental complications associated with malnutrition will persist. Wallace also quotes Dickerson (1986) who suggests that malnutrition will not be recognized unless it is looked for (p. 68).
RESEARCH DESIGN

This was a quantitative study addressing the relationship between nursing nutrition knowledge, opinions related to the impact of nutrition to health and disease, and accurate and appropriate completion by nurses of the nutrition screening section of the RN Assessment. The nurses were surveyed in a mid-western acute care teaching hospital. Results of the survey and chart audits results evaluating correct and accurate completion of the nutrition screening section of the RN Assessment were then compared.
METHODS

Validation of the Instrument

The questionnaire was adapted with permission from one used by Dr. Glenda Lindseth, R.N., C.N.S. (Lindseth 1990, 1994). The current questionnaire included 20 nutrition knowledge questions, five items on nutrition opinions and beliefs, three questions on personal dietary intake, and two professional background questions. The research protocol was approved by Human Subjects Review Boards at both the hospital and Western Michigan University (Appendices A, B, and C).

In order to evaluate the current questionnaire for readability, construct validity, and test-retest reliability the questionnaire was pre-tested with 20 critical care nurses and 63 Registered Dietitians. The critical care nurses were recruited from the same acute care teaching hospital where the research study was to occur through an interoffice mailing. The mailing contained a cover letter, questionnaire and instructions not to include their name, and a preaddressed return interoffice envelope. (Appendix D). The return interoffice envelope was stamped confidential across the flap to protect the identity of the participant.

Western Michigan University dietetic internship preceptors were recruited by U.S. mail with a cover letter and attached coded questionnaire with instructions not to include their name (Appendix E). The Registered Dietitians received a second mailing via U.S. mail containing a cover letter and identical coded questionnaire
An impartial third party, a graduate assistant assigned to Western’s Family and Consumer Sciences Department, coded each questionnaire sent to a Registered Dietitian, stuffed the envelopes and mailed the packets in order to protect the identity of the participant and confidentiality of results. After the second mailing was complete, the impartial third party destroyed the list of Registered Dietitians’ names and codes. Consent to participate was indicated in both groups by completion and return of the survey.

Each question was evaluated for content validity and test-retest reliability via the SPPS Statistical program. Questions with poor R.D. performance or poor differentiation between groups were either deleted or rewritten. Questions, 13, 20, 22, and 26 were rewritten due to poor R.D. performance defined as less than 75% of the R.D sample completing the question correctly. Poor differentiation was determined if there was 10% difference or less in percentage of each group answering the question correctly. Because of poor differentiation questions 4, 9 and 25 were rewritten and questions 18 and 20 were deleted. These changes were intended to improve construct validity. Question number 15 was also rewritten because comments by the Registered Dietitians suggested that was confusing. Test-retest reliability for the questionnaire was good with a standardized item alpha of .9277. The final questionnaire used for phase two was resubmitted and approved for use by Western’s Human Subjects Review Board and consisted of 18 nutrition knowledge questions, five items on nutrition opinions and beliefs, three questions on personal dietary intake, and two professional background questions (Appendix G).
Survey of Nurses

The research study was carried out in conjunction with data collected through a performance improvement initiative conducted by the hospital's Food and Nutrition Department. The performance improvement initiative involves quarterly auditing of every other patient's medical chart on each unit within 24 to 48 hours of admission to evaluate the nutrition-screening portion of the initial RN Assessment for completion, accuracy, and appropriate referral to the dietitian. The audit is carried out hospital wide except for the following units due to either extreme differences in patient acuity or admission protocol: critical care, pediatrics, nursery, and obstetrics. After review of the chart the reviewer then completes the screening tool by following the same protocol as followed by the nurse. The results of nurses' and Registered Dietitians' nutrition screens are then compared. For the purposes of this study, charts audited on March 1, 3, 5, 6, 13, 15, 19, 20, 21, and 22 were used to obtain a sample of 89 audits. These dates were chosen by random drawing from all possible days in March.

The researcher identified the nurses who completed each of the 89 RN assessments and sent them a cover letter and questionnaire including instructions to not include their name and a preaddressed return envelope with confidential stamped across the flap (see Appendix H). Many precautions were taken to ensure confidentiality of the participants and the results. Once the nurse was identified as a potential study participant his or her name was added to a master list by the third party and coded. No one except this third party individual had access to this master list of names. The third party, a graduate assistant from the Family and Consumer Science
Department, then coded and prepared the questionnaire for mailing and then removed the nurses’ names from the nutritional screening forms and replaced it with each nurses corresponding code. After removal, the nurses’ names and master list were shredded. The third party and the researcher met at the hospital to send the questionnaires via interoffice mail as an extra safety precaution to avoid the possibility of tampering.

Completed questionnaires were returned through hospital interoffice mail to the researcher. General reminder notices were posted at strategic sites throughout the hospital and sent through e-mail to all users one week before and one week after the questionnaire due date (see Appendix I for methods flowchart).
DATA ANALYSIS

The chart audit data were grouped into three main categories and assigned a number score: those completed accurately, those completed inaccurately or not at all that led to missing identification of patients at risk for malnutrition, and those completed inaccurately or not at all that resulted in no consequences. Frequencies were tabulated for chart audit results and for the responses to each knowledge, nutrition opinion and personal dietary intake question on the questionnaire. Data were then analyzed for correlations between chart audit result categories and nutrition knowledge scores, nutrition opinion results, personal dietary intake results, and nutrition knowledge questions specific to malnutrition. Data were also analyzed for correlations between chart audit results and questionnaire results and years of experience and years since graduation. A .05 level of probability was chosen to determine statistical significance.

The data from the questionnaire was separated into multiple categories: overall nutrition knowledge scores, nutrition knowledge scores from questions focused on malnutrition alone, results of questions related to personal dietary intake, results of opinion questions regarding the impact of nutrition on health, and results of questions related to who should have responsibility for screening for malnutrition in the acute care setting. Correlations were measured between category of audit result and each category from the questionnaire. In addition correlations were sought between questionnaire and chart audit results with years of experience and years since graduation.
This study required data analysis including both descriptive statistics and inferential statistics. The following descriptive statistics were calculated: mean, median, mode, range, and standard deviation. These parameters were used to describe the sample population in relation to years since graduation, experience, nutrition knowledge score, malnutrition knowledge score, personal dietary intake score, opinion outcomes and accurate completion of the nutrition screening tool. In order to further analyze and compare the subset of six malnutrition knowledge questions with other parameters correct answers for each question were assigned a score of 1 and each incorrect answers were assigned a 2, resulting in a range of scores from the best possible score of 6 to a worst possible score of 12. Personal dietary intake was converted into a number score in a similar fashion; answers of always were assigned a 1 and answers of frequently, sometimes, and never were assigned a 2, allowing a minimum score of 3 and a total possible score of 6. Opinions regarding the impact of nutrition on wellness and prevention were analyzed by assigning a 1 to each answer of strongly agree, a 2 to each answer of agree, a 3 to each answer of unsure, a 4 to each answer of disagree, and a 5 to each answer of strongly disagree. Possible opinion scores ranged from 4 to 20 for those four items on the questionnaire. Inferential statistics were crucial in analyzing the results of this study. Due to the survey nature of this study a significance level of P<.05 had been chosen. Correlation between nutrition knowledge scores and the following parameters were evaluated by calculating correlation coefficients: completion and accuracy of the screen, opinions towards nutrition and wellness, and years of experience of the nurse. Correlation coefficients
were also evaluated for results of the audit evaluating the accuracy and completion of
the nutrition screen and the malnutrition score, opinions towards nutrition and well-
ness, years since graduation, and acute care experience. The malnutrition score and
opinions towards nutrition and wellness were also evaluated for relationships with
work experience. Once significant relationships were identified the Chi squared test
was applied to further analyze and define the relationship.
RESULTS

Nutrition Knowledge

Of the 89 nurses contacted, 34% (30) of the sample returned the questionnaire. All of the nurses who returned the questionnaire were currently working in acute care, but 13% (4) had previously worked in a clinic setting and 3% (1) had previously worked in home care. Almost two-thirds or 64% worked full time and 36% worked part time. Years since graduation from nursing school ranged from one to 32 years with an average of 15.5 years. Further examination results showed that 30% graduated between 1969 and 1981, 30% graduated between 1983 and 1988, and the final 30% graduated between 1989 and 1999. Years in acute care ranged from 1 year to 28 years with an average of 13.3 years. Years of experience ranged from 1 year to 33 years with an average of 14.9 years. The average score on the nutrition knowledge questions was 10.8 + 2.4 out of a possible score of 18. That indicates that 61% of questions were answered correctly. Individual scores ranged from 4 to 14 (22-78%) correct (see Tables 1 and 2).

Knowledge of Malnutrition

Six of the questions on the questionnaire were specific to malnutrition. This subset of six questions was analyzed independently as described above. The average malnutrition score was 8.5 + 1.4 out of a possible score of 12 and ranged from 6 to
Table 1
Characteristics of Nurses Who Returned the Questionnaire (N=30)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Range</th>
<th>Avg</th>
<th>% Sample</th>
<th>(N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Years Since Graduation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-11</td>
<td></td>
<td>30.0%</td>
<td>(9)</td>
<td></td>
</tr>
<tr>
<td>12-17</td>
<td></td>
<td>30.0%</td>
<td>(9)</td>
<td></td>
</tr>
<tr>
<td>19-32</td>
<td></td>
<td>30.0%</td>
<td>(9)</td>
<td></td>
</tr>
<tr>
<td>Not Answered</td>
<td></td>
<td>10.0%</td>
<td>(3)</td>
<td></td>
</tr>
<tr>
<td>Prior and Current Work Setting</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute Care</td>
<td></td>
<td>100.0%</td>
<td>(30)</td>
<td></td>
</tr>
<tr>
<td>Clinic</td>
<td></td>
<td>13.0%</td>
<td>(4)</td>
<td></td>
</tr>
<tr>
<td>Home Care</td>
<td></td>
<td>3.0%</td>
<td>(1)</td>
<td></td>
</tr>
<tr>
<td>Full Time and Part Time Status</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full Time</td>
<td></td>
<td>64.0%</td>
<td>(18)</td>
<td></td>
</tr>
<tr>
<td>Part Time</td>
<td></td>
<td>36.0%</td>
<td>(10)</td>
<td></td>
</tr>
<tr>
<td>Years in Acute Care</td>
<td>1-28 years</td>
<td>13.3 years</td>
<td>(30)</td>
<td></td>
</tr>
<tr>
<td>Years of Experience</td>
<td>1-32 years</td>
<td>14.8 years</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2
Questionnaire Results

<table>
<thead>
<tr>
<th>Category</th>
<th>Average Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Nutrition Knowledge</td>
<td>10.8 + -2.4</td>
</tr>
<tr>
<td>Knowledge of Malnutrition</td>
<td>8.5 + -1.4</td>
</tr>
<tr>
<td>Personal Dietary Intake</td>
<td>5.8 + -.5</td>
</tr>
<tr>
<td>Opinions Regarding Nutrition and Health</td>
<td>6.0 + -1.1</td>
</tr>
</tbody>
</table>
12. The higher the score the more questions were answered incorrectly. Of the nurses, 50% missed two or fewer of the six questions. Those who scored better on the overall questionnaire generally scored higher on the malnutrition questions as well.

Personal Dietary Intake

Three questions on the questionnaire were designed to collect information on specific aspects of usual food intake. The questions addressed quantity of daily fruit and vegetable intake, elimination of foods high in fat and sugar, and inclusion of complex carbohydrates and fiber. The average food frequency score was 5.8+-.5 with a range of 4 to 6. A score of 3 would have indicated that each question was answered always and a score of 6 indicated that each question was answered frequently, sometimes, or never when asked about the healthy eating habits above. This parameter suggests poor discrimination since 90% of participants scored the same.

Opinions Regarding the Impact of Nutrition on Health and Wellness

Four questions dealt with how strongly the participant agreed or disagreed that nutrition has an impact on the development of chronic disease and how strongly the participant agreed or disagreed that it is important to screen every patient. The resulting average opinion score was 6 +1.1 with a range of 5 to 8 and a possible score of 20. A score of 20 would have indicated that each question was answered strongly disagree whereas a score of 4 would have indicated that strongly agree was answered on each question. Of those nurses who failed to identify patients at nutrition risk 75%
agreed that it is important to assess the nutritional status of every patient admitted to
the hospital while 25% strongly agreed. In contrast of those nurses who completed
the nutrition screen accurately 44% agreed that it is important to assess the nutritional
status of every patient and 56% strongly agreed.

Opinions Regarding Responsibility for Screening

When nurses who had completed the screen accurately were asked who has
the major responsibility for screening patients for malnutrition 1(6%) answered the
dietitian assigned to the unit, 1(6%) answered the admitting physician, and 16 (89%)
answered all of the above meaning all three disciplines including the admitting nurse.
When the same question was asked of nurses who failed to complete the screen accu­
rately 1 (13%) answered the admitting nurse, 1(13%) answered the dietitian assigned
to the unit and 5 (63%) answered that all three disciplines including the admitting
physician had the major responsibility.

Chart Audit

The chart audit revealed that more than half or 53% of the nurses that returned
the questionnaire completed the screen accurately. Another 30% had failed to iden­
tify patients who were at risk for malnutrition by either not completing the nutrition
screen or by not completing it accurately. The remaining 17% failed to complete the
nutrition screen or completed it inaccurately, but these were for patients who were not
at nutrition risk (see Table 2).
Table 3

Characteristics of Respondents Based on Chart Audit Results

<table>
<thead>
<tr>
<th>Chart Audit Category</th>
<th>Accurately Completed Nutrition Screen</th>
<th>Inaccurately Completed Nutrition Screen Resulting in Lack of Identification of Malnutrition</th>
<th>Inaccurately completed Nutrition Screen for Patients not at risk for Malnutrition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent of Respondents</td>
<td>53.0%</td>
<td>30.0%</td>
<td>17.0%</td>
</tr>
<tr>
<td>Years Since Graduation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-11</td>
<td>29.0%</td>
<td>25.0%</td>
<td>60.0%</td>
</tr>
<tr>
<td>12-17</td>
<td>42.0%</td>
<td>37.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>19-32</td>
<td>29.0%</td>
<td>37.0%</td>
<td>40.0%</td>
</tr>
<tr>
<td>Full Time</td>
<td>67.0%</td>
<td>27.0%</td>
<td>6.0%</td>
</tr>
<tr>
<td>Part Time</td>
<td>30.0%</td>
<td>30.0%</td>
<td>40.0%</td>
</tr>
</tbody>
</table>

Correlations

No correlation was found between overall questionnaire score or score on the malnutrition questions and chart audit results. There was a positive, however not statistically significant correlation between number of years in acute care and overall nutrition questionnaire score ($r = .285$, $P = .134$).

There was a positive, but not statistically significant correlation between chart audit results and those that answered that they strongly agreed there was a relationship
between specific aspects of nutrition and development of chronic disease (Pearson Chi Square p=0.109). There was also a statistically significant positive correlation between experience or years in acute care and those that strongly agreed that there was a relationship between nutrition and development of chronic disease (r = -424 and p=.025). Although the nurses with more experience in acute care generally scored better on the nutrition questionnaire it was the nurses who had graduated between 1983 and 1988 who were most likely to complete the nutrition screen accurately. This result however was not statistically significant (Pearson Chi Square p=0.460).

A correlation was found to be positive, but not statistically significant between accurate completion of the nutrition screen and full time or part time status (Pearson Chi Square p=0.052). Nurses who worked full time tended to complete the nutrition screen more accurately. The nutrition screen was completed accurately by 67% (12/18) of those nurses who worked full time versus 30% (3/10) of non-full time nurses. Despite this, failure to identify patients at risk for malnutrition was essentially equal in both groups at 27.8% for the full time group versus 30% for the non-full time group. In addition the nutrition screen was completed inaccurately for patients who turned out not to be at risk by 5.6% of the full time group and 40% of the non-full time group. It should be noted that questionnaires returned were almost double for full time nurses than for part time nurses (18 vs. 10). Of the returned questionnaires two failed to identify full time or part time status.
DISCUSSION

This study was designed to explore the relationship between nursing nutrition knowledge and identification of malnutrition risk through completion of the nutrition screening section of the RN Assessment in an acute care teaching hospital. It confirmed that we are not successfully identifying all patients at nutrition risk. Thirty percent of patients’ whose charts were audited in this study were at risk for malnutrition and not identified. This result agrees with Rawlinson (1998) who concluded that referral of malnourished patients to the R.D. was “haphazard” (pg. 293). Reasons for lack of identification of malnutrition needs to be further investigated and identified so that solutions can be sought and improved patient care provided.

This study suggests that a nurse’s lack of knowledge of nutrition may not contribute to the low rate of accurate and appropriate completion of the nursing nutrition screen. Results were also consistent with Perry’s 1997 study that suggested that neither knowledge nor attitudes of nurses were linked consistently with actions related to nutritional care. If there is no relationship between nutrition knowledge and proper identification of malnutrition, then perhaps other relationships might be discovered if this issue were further examined. The results of this study may provide insight into what those relationships might be.

Experience in acute care, confidence with nutrition knowledge, and belief systems regarding the ability of nutrition to impact health may be worthy of further examination. Years in acute care correlated significantly with opinions strongly
agreeing that nutrition has an impact on health and wellness. Nurses with more experience in acute care were more likely to state that they strongly agreed that nutrition has an impact on heart disease, cancer, and birth defects.

In addition there was a positive but not statistically significant relationship between how strongly the nurse felt that nutrition impacts health and the likelihood that the nutrition screen was completed accurately. Those that agreed more strongly that nutrition impacts health were also more likely to have completed the nutrition screening section of the RN Assessment accurately leading to greater identification of malnutrition than those that agreed, but agreed less strongly. This is in agreement with Perry's 1997 study that found that "nurses with more than ten years of experience were more likely to express the attitude that it is important to assess the nutritional status of every patient." (pg. 319).

It may be that nurses who are more experienced are more confident of their own knowledge of nutrition and are either more comfortable completing the nutrition screen or have a greater interest in nutrition thus are more likely to complete the screen accurately. Possibly belief systems incorporating the importance of nutrition on wellness and healing are a stronger motivator than pure knowledge alone. Perhaps those who feel more strongly about nutrition's impact on health have had more positive personal experiences with the impact nutrition can have on wellness and healing and desire this also for their patients. Providing opportunities for less experienced nurses to explore and develop confidence regarding the positive impact nutrition can have on health may be an avenue to ultimately impact nutritional care of the patient.
More information on attitudes and beliefs regarding the importance of identifying patients at risk for malnutrition and ownership for this responsibility may also provide further insight. Nurses who successfully screened their patients for malnutrition risk were more likely to strongly agree that it is important to screen every patient admitted to the hospital for risk of malnutrition than nurses who failed to identify patients at risk. They were also more likely to believe that the responsibility for this lies with an interdisciplinary group including the admitting nurse, admitting physician, and dietitian assigned to the unit. Nurses who failed to identify patients at nutrition risk may not be as likely to believe that risk of malnutrition is a problem or that it is their responsibility to identify malnutrition risk.

Full time status versus part time status may also play a role in successful identification of patients at nutritional risk. Nurses who worked full time were more likely to complete the screen accurately than those who worked part time suggesting that more opportunities to utilize the nutrition screen may lead to more accurate completion. More time spent at work may also contribute to greater awareness and familiarity of patient care standards and procedures through practice and more effective and timely communication. Although Perry did not examine full time versus part time status in her 1997 study she did conclude overall that “Whilst there was evidence of knowledgeable and proactive nursing care, it also appeared that there were fairly widespread deficiencies in the knowledge, communication and coordination required to ensure consistent good practice” (pg. 315). Even though full time nurses were more likely to complete the nutrition screen accurately, equal percentages of full time
and part time groups failed to identify patients at nutrition risk. Additional data supports the notion that part time status may be a factor in completion of the screen: 40% of part time nurses failed to complete the nutrition screen accurately when patients were not at nutrition risk whereas only 5.4% of full time nurses failed to. Secondly, almost equal percentages of part time participants in the study fell into each of the three categories of chart audit results evaluating performance on the screen. To obtain a more thorough understanding of the impact of working full time or part time it may be beneficial to further define the length of time and in what prior settings each nurse had previously worked. It also may be helpful to compare questionnaire return rates of full time versus part time participants to determine if rates of return were disproportionate.

Unlike Lindseth's 1990 study that found a statistically significant correlation between years since graduation and nutrition knowledge scores, no correlation was discovered in this study, however it is interesting to note that nurses in this study who had graduated from school between 1983 and 1988 (13-18 years since graduation) were slightly more likely to have completed the nutrition screen accurately than those who graduated from 1969-1981 or 1989-1999. Further investigation may show a trend in the fields of nursing or nutrition that may have made this group of graduates more aware of the importance of nutrition in the hospitalized patient or more comfortable with an interdisciplinary approach to patient nutritional care.

Further defining years since graduation in relationship to educational background and degree obtained may yield more detailed information for comparison with
nutrition screening and chart audit results.

Although this study did not set out to confirm nutrition knowledge score results of other studies our mean nutrition knowledge score of 60% was consistent with nutrition knowledge performance demonstrated by Vickstrom and Fox's 1976 study where hospital nurses achieved a score of 50%, and in Lindseth's 1990 study of rural nurses which found hospital nurses scored 60%.

When evaluating the results of this study it is also important to keep in mind the current environment and recent changes in the acute care setting. Nurses currently work in an environment, which may be less than ideal. Case loads are higher, patients are in and out of the hospital faster, many nurses work twelve hour shifts and have less time to develop a rapport with their patients and ancillary staff, nurses have taken on a greater number of roles that traditionally have not been theirs, contributing to greater demands and stress. A study by Kowanko, Simon, and Wood (1999) confirms this point. They found through interviews with acute care nurses that although nurses felt "ultimately responsible for ensuring that patients received adequate nutrition" (p. 221), other routine activities assume a higher priority. They also encountered a resistance to "changing routines to allow greater time and attention for nutritional care" (p. 221). At this particular acute care teaching hospital nurses are expected to not only screen patients for malnutrition upon admission, but also to ensure that patients receive the proper diet and menu items on their meal trays. Lack of sufficient time has forced nurses to prioritize what is most important for their patients and focus on those tasks first; leaving otherwise important issues unfinished.
This study could be improved by eliminating many of the study’s limitations that may have had an impact on outcomes. It included a small sample size. The number of questions included on opinions towards nutrition’s impact on health, specific malnutrition knowledge questions and personal dietary intake were quite limited. In addition full time and part time group sizes for comparison were not equal nor were the resulting group sizes for chart audit categories. Also this study was conducted in one hospital with a specific tool for screening for risk of malnutrition. Expanding this study to include additional hospitals with alternate screening tools and nursing environments may provide a wider variety of results. Other shortcomings include failure to differentiate between those nutrition screens completed by a LPN, RN or BSN and also those screens started by one nurse with completion and referral to the dietitian made by another.

Limited information was obtained to evaluate each nurse’s prior educational and work background. More in depth questions regarding alternate work settings including greater definition in relationship to what type of clinic or home care setting may have provided greater insight and direction for future studies. It may also have been helpful to obtain further information regarding the nurses educational background including degree obtained and prior continuing education experiences.

In a clinical review article on the effects of malnutrition in hospitalized patients Wallace (1993), a staff nurse, states:

The nurses role is primarily that of prevention, early detection, treatment and liaison with other members of the multidisciplinary team. The dietitian relies on referrals by nurses, although the nurse-dietitian relationship should be that of liaison and not merely referral. (p. 68)
Nurses, Dietitians, and Physicians must strive together to identify and treat malnutrition. Further solutions must be sought to determine how we can better meet the nutritional needs of our patients.
Appendix A

Permission to Use Questionnaire
April 24, 2000

To: Susan Kendzierski  
Western Michigan University

From: Glenda Lindseth, Ph.D., RN, FADA  
University of North Dakota, School of Nursing

Re: Henderson-Sabry Questionnaire

Thank you for your request for the adapted nutrition questionnaire from Henderson-Sabry, Hadley and Kristine, and the related demographic/curricular questions that were used in my studies on evaluating graduate rural nurses for nutritional preparation and the nutritional preparation of geriatric nurses! I tried sending these questionnaires several times by email attachment, and unfortunately had them returned to me each time. The original questionnaire was developed by Jean Henderson-Sabry and tested by her colleagues at the University of Guelph in Ontario. Permission was obtained from Dr. Henderson-Sabry for its use in my work. I've enclosed my adapted questionnaire along with the answer key for the nutrition questions. You are welcome to use the adapted questionnaire in your work with a request that the materials be cited.

Please do not hesitate to call if you should have questions concerning the instruments, study, or results. Best wishes on your study!
Appendix B

Questionnaire Used for Validation of the Instrument
PLEASE ANSWER ALL QUESTIONS. CIRCLE ONLY ONE ANSWER FOR EACH QUESTION. PLEASE COMPLETE THE QUESTIONNAIRE WITHOUT THE ASSISTANCE OF ADDITIONAL REFERENCES.

1. What is the end product of the digestion of starches?
   A. Cellulose
   B. Sucrose
   C. Glucose
   D. Fructose

2. In which of the following is iron most readily available to the body?
   A. Meat
   B. Bread
   C. Spinach
   D. Bran Cereals

3. Adequate intakes of folate during childbearing years helps to prevent the development of birth defects.
   A. Strongly Agree
   B. Agree
   C. Unsure
   D. Disagree
   E. Strongly Disagree

4. Which one of the following is classified as a B vitamin?
   A. Pyridoxine
   B. Ascorbic Acid
   C. Citric Acid
   D. Prothrombin

5. I eat at least 5 fruits and vegetables every day
   A. Always
   B. Frequently
   C. Sometimes
   D. Never

6. Which of the following can normally be synthesized by the body?
   A. Vitamin C
   B. Essential Amino acids
   C. Non-essential Amino Acids
   D. Folic Acid

7. Which mineral is essential for maintenance of fluid balance?
   A. Iron
   B. Iodine
   C. Potassium
   D. Magnesium

8. Dietary intake high in fat and cholesterol contributes to the development of heart disease
   A. Strongly Agree
   B. Agree
   C. Unsure
   D. Disagree
   E. Strongly Disagree
9. Of the following groups of foods, which one is highest in cholesterol?
   A. Broccoli, Chicken, Rice
   B. Green Salad, Whole Wheat Bread, Margarine
   C. Apple Pie, Lemon Sherbet, Coffee
   D. Shrimp, Whole Milk, Liver

10. How does an adult's requirement for nutrients generally change with increased age?
    A. More Vitamin E is Needed
    B. Fewer Calories are Needed
    C. There are No changes in Requirements
    D. Less Protein is Required

11. Which nutrient deficiency or deficiencies may occur with habitual high intake of alcohol even if food intake is normal? Circle only one answer.
    A. Calcium and Phosphorous
    B. Vitamin E
    C. B Vitamins
    D. Dietary Fiber

12. Which one of the following is not considered to be a risk factor for cardiovascular Disease?
    A. High Serum Triglycerides
    B. High Serum Levels of HDL Cholesterol (High Density Lipoproteins)
    C. High Serum Levels of LDL Cholesterol (Low Density Lipoproteins)
    D. Elevated Blood Pressure

13. What is the best guide for determining adequacy of energy intake for an individual?
    A. The recommended Daily Intake for Energy from the Recommended Daily Dietary allowances for One's Size, Age, and Activity
    B. Maintenance of Desirable Weight for the Individual
    C. The Food Pattern for the Daily Food Guide
    D. Feeling Full after Eating Meals

14. I try to eat a diet that is low in fat and sweets
    A. Always
    B. Frequently
    C. Sometimes
    D. Never

15. Diabetic patients who are not feeling well enough to eat their regular meals for a day or two should
    A. Not take their insulin or pills and only eat what they feel like
    B. Take their insulin or pills and eat as much as they can
    C. Not take their insulin or pills and take fluid replacements according to their meal Planning booklet for food not eaten
    D. Take their insulin or pills and take fluid replacement according to their meal planning booklet

16. Which one of the following should be avoided on a sodium restricted diet?
    A. Hard Drinking Water
    B. Softened Water
    C. Orange Juice
    D. Coca-Cola
17. A diet high in fiber that includes many fruits and vegetables can help prevent cancer
   A. Strongly Agree
   B. Agree
   C. Unsure
   D. Disagree
   E. Strongly Disagree

18. For patients being treated for cancer, to which aspect of diet should most attention be
directed?
   A. Increase Appetite and Food Intake
   B. Avoid Food Additives
   C. Decrease Sugar Intake
   D. Take Large Amounts of B Vitamins

19. I try to include foods that are high in complex carbohydrates and fiber
   A. Always
   B. Frequently
   C. Sometimes
   D. Never

20. When a person with lactose intolerance drinks large quantities of milk, which one of the
    following symptoms is likely to occur?
    A. Flatulence and Diarrhea
    B. Hives
    C. Asthma
    D. Migraine Headache

21. How many calories are there in 2 liters of a D5NS IV fluid?
   A. 1800
   B. 1200
   C. 400
   D. 200

22. What nutritional risk parameter correlates with degree of malnutrition and increased risk
    for morbidity and mortality?
    A. Pre-Alb
    B. Transferrin
    C. Total Protein
    D. Albumin

23. What percentage of patients admitted to the hospital are malnourished?
    A. 2-4%
    B. 5-10%
    C. 30-50%
    D. 70-90%

24. Greater than or equal to what percent of unintentional weight loss over a 6 month period
    suggests nutritional risk?
    A. 3%
    B. 5%
    C. 10%
    D. 20%
25. Which one of the following is a consequence of malnutrition?
   A. Hyperglycemia
   B. Shorter Length of Stay in the Hospital
   C. Increased BUN and Creatinine
   D. Increased Incidence of Infection

26. Which of the following is true in regards to malnutrition when the body is under severe physical stress such as trauma, major surgery, or sepsis?
   A. Malnutrition Develops more Rapidly
   B. There are a greater number of Consequences from Malnutrition
   C. Malnutrition is Easier to Identify
   D. Malnutrition is Not a Concern

27. It is important to assess the nutritional status of every patient admitted to the hospital
   A. Strongly Agree
   B. Agree
   C. Unsure
   D. Disagree
   E. Strongly Disagree

28. Who do you feel has the major responsibility for screening patients for malnutrition?
   A. The Admitting Nurse
   B. The Dietitian assigned to the unit
   C. The Admitting Physician
   D. All of the Above

29. Please write in the number of years you have been employed as an RN in each of the following settings and whether you worked Part Time or Full Time. If Part Time is chosen please add hours you worked average each week.

   Acute Care _____ Full Time _____ Part Time _____
   Home Care _____ Full Time _____ Part Time _____
   Clinic _____ Full Time _____ Part Time _____

30. Please indicate the year that you graduated from nursing school_______

Comments:

PLEASE RETURN IN THE ENCLOSED ENVELOPE VIA REGULAR U.S. OR INTEROFFICE MAIL
TO: SUSAN KENZIORSKI, FOOD AND NUTRITION SERVICES

THANK YOU FOR YOUR ASSISTANCE WITH MY STUDY!
Appendix C

Human Subjects Institutional Review Board Approval Letters
Date: 3 January 2001

To: Maija Peterson, Principal Investigator
   Susan Kendziorski, Student Investigator for thesis

From: Michael S. Pritchard, Interim Chair

Re: HSIRB Project Number: 00-11-11

This letter will serve as confirmation that your research project entitled "Relationship Between Nursing Nutrition Knowledge and Attitudes and Identification of Malnutrition Risk in the Acute Care Setting" has been approved under the expedited category of review by the Human Subjects Institutional Review Board. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the application.

Please note that you may only conduct this research exactly in the form it was approved. You must seek specific board approval for any changes in this project. You must also seek reapproval if the project extends beyond the termination date noted below. In addition if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: 3 January 2002
Western Michigan University's policy states that "the HSIRB's review of research on a continuing basis will be conducted at appropriate intervals but not less than once per year." In compliance with that policy, the HSIRB requests the following information:

**PROJECT TITLE:** Relationship between nursing nutrition knowledge and attitudes and identification of malnutrition risk in the acute care setting

**HSIRB Project Number:** 00-11-11 Date of Review Request: 03/12/01 Date of Last Approval: 03/01/01

**PRINCIPAL INVESTIGATOR OR ADVISOR**

Name: Dr. Maija Pettersson
Department: FCN Electronic Mail Address: PETERS0NS@WMICH.EDU

(1) **CO-PRINCIPAL OR STUDENT INVESTIGATOR**

Name: Susan Kendzierski
Department: FCN Electronic Mail Address: KZOOSUSAN@AOL.COM

(2) **CO-PRINCIPAL OR STUDENT INVESTIGATOR**

Name:

**1.** The research, as approved by the HSIRB, is completed.

☐ Yes (Continue with items 5-7 below.) □ No (Continue with items 2-5 below.)

**2.** Have there been changes in Principal or Co-Principal Investigators?

(IF yes, provide details on an attached sheet.)

**3.** Is the approved protocol still accurate and being followed with respect to:

(If no to any item below, provide the details on an attached sheet.)

a. Procedures ☑ Yes □ No
b. Subjects ☑ Yes □ No
c. Design ☑ Yes □ No
d. Data collection ☑ Yes □ No

**4.** Has any instrumentation been modified or added to the protocol?

(IF yes, attach new instrumentation or indicate the modifications made.)

**5.** Have there been any adverse events which need to be reported to the HSIRB?

(IF yes, provide details on an attached sheet.)

**6.** Current total number of subjects enrolled: 83 Current number of subjects in the control group: 0

**7.** Provide copies of the consent documents signed by the last two subjects enrolled in the project. Cover the signature in such a way that the name is not clear but there is evidence of signature. If subjects are not required to sign the consent document, provide a copy of the most current consent document being used.

( Remember to include a clean original of the consent documents to receive a renewed approval stamp.)

---

**Principal Investigator/Faculty Advisor Signature**

**Co-Principal or Student Investigator Signature**

---

**Approved by the HSIRB:**

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Revised 5/98 WMU HSIRB
All other copies obsolete.
Appendix D

Pre-test Cover Letter to Nurses
Dear Nurse:

I am conducting my Masters Thesis at Western Michigan University and would be very grateful if you would be willing to participate in phase one of my research project entitled “The Relationship between nursing nutrition knowledge and attitudes and identification of malnutrition risk in the acute care setting”. This research project is being conducted by Dr. Maija Petersons from Western Michigan University, Department of Family and Consumer Sciences and myself. The enclosed questionnaire will be used in phase two of my research project to obtain information on the nutrition knowledge background of nurses. Data obtained in this phase of testing will be used to evaluate my questionnaire to make sure it is testing for what is intended.

By completing my questionnaire you as an acute care nurse are one of the few who can assist me in determining if it is acceptable for use in phase two of my research study. It contains 30 questions and will take 20 minutes to complete.

In order to minimize any discomfort associated with completing this survey your replies will be completely confidential. Do not put your name anywhere on the form. As in all research there may be unforeseen risks to the participant. If an accidental injury occurs, appropriate emergency measures will be taken; however no compensation or additional treatment will be made available except as otherwise stated in this consent form.

Results of this study may point towards more efficient and effective nutritional screening methods. Another benefit to participating in this research study may be the satisfaction of contributing to improved patient care and to the knowledge gleaned from nursing and nutrition research. There is no direct benefit for you or your patients for participating in this study. You may choose to not answer any question and simply leave it blank. If you choose to not participate in this study, you may either return the blank questionnaire or you may discard it. There is no penalty for choosing not to participate. Returning the completed questionnaire indicates your consent for use of the answers you supply.

This consent document has been approved for use for one year by the Human Subjects Institutional Review Board as indicated by the stamped date and signature of the board chair in the upper right corner. If you have any questions, you may contact Dr. Maija Petersons at 387-3710, Susan Kendziorski at 226-6972, the Human Subjects Institutional Review Board at 387-8293 or the Vice President for Research at 387-8298.

Susan D. Kendziorski
January 30, 2001
I will greatly appreciate it if you could complete the enclosed questionnaire by February 9th and return it in the confidential interoffice envelope provided. You may obtain the aggregate results of my study after September 1st 2001 by calling 226-6972. Thank you for your participation!

Sincerely,

Susan D. Kendziorski
Appendix E

Pre-test Cover Letter to Registered Dietitians
Dear Registered Dietitian:

I am conducting my Masters Thesis at Western Michigan University and would be very grateful if you would be willing to participate in phase one of my research project entitled "The Relationship between nursing nutrition knowledge and attitudes and identification of malnutrition risk in the acute care setting". This research project is being conducted by Dr. Maija Petersons from Western Michigan University, Department of Family and Consumer Sciences and myself. This is the first of two questionnaires you will receive. The enclosed questionnaire will be used in a subsequent study with nurses. Data obtained in this phase of testing will be used to evaluate my questionnaire to make sure it is testing for what is intended and to ensure reliability.

By completing my questionnaire you as the nutrition expert are one of the few who can assist me in determining if it is acceptable for use in phase two of my research study. It contains 30 questions and will take 20 minutes to complete.

In order to minimize any discomfort associated with completing this survey your replies will be completely confidential. Do not put your name anywhere on the form. Your results will be identified by the code number on the questionnaire only. As in all research there may be unforeseen risks to the participant. If an accidental injury occurs, appropriate emergency measures will be taken; however no compensation or additional treatment will be made available except as otherwise stated in this consent form.

Results of this study may point towards more efficient and effective nutritional screening methods. Another benefit to participating in this research study may be the satisfaction of contributing to improved patient care and to the knowledge gleaned from nursing and nutrition research. There are no direct benefits to you for participating in this study. You may choose to not answer any question and simply leave it blank. If you choose to not participate in this study, you may either return the blank questionnaire or you may discard it. Returning the completed questionnaire indicates your consent for use of the answers you supply. There is no penalty for choosing not to participate.

This consent document has been approved for use for one year by the Human Subjects Institutional Review Board as indicated by the stamped date and signature of the board chair in the upper right corner. If you have any questions, you may contact Dr. Maija Petersons at 387-3710, Susan Kendziorski at 226-6972, the Human Subjects Institutional Review Board at 387-8293 or the Vice President for Research at 387-8298.

I will greatly appreciate it if you could complete the enclosed questionnaire by January 24 and return it in the self-addressed stamped envelope provided. You will receive a second questionnaire for completion by
January 31st. You may obtain the aggregate results of the study after September 1st 2001 by calling 616-226-6972. Thank you for your participation!

Sincerely,

Susan D. Kendiorski
Appendix F

Second Mailing Pre-test Cover Letter to Registered Dietitians
Dear Registered Dietitian:

Thank you so much for completing my first nutrition questionnaire! The information I will obtain through your assistance by completing not only the first questionnaire, but also the enclosed questionnaire is very valuable to my study.

In order to minimize any discomfort associated with completing this survey your replies will be completely confidential. Do not put your name anywhere on the form. The results of this questionnaire will be matched to the results of the previous questionnaire by code number only. As in all research there may be unforeseen risks to the participant. If an accidental injury occurs, appropriate emergency measures will be taken; however no compensation or additional treatment will be made available except as otherwise stated in this consent form.

Results of this study may point towards more efficient and effective nutritional screening methods. Another benefit to participating in this research study may be the satisfaction of contributing to improved patient care and to the knowledge gleaned from nursing and nutrition research. There are no direct benefits to you for participating. You may choose to not answer any question and simply leave it blank. If you choose to not participate in this study, you may either return the blank questionnaire or you may discard it. There is no penalty for choosing not to participate. Returning the completed questionnaire indicates your consent for use of the answers you supply.

This consent document has been approved for use for one year by the Human Subjects Institutional Review Board as indicated by the stamped date and signature of the board chair in the upper right corner. If you have any questions, you may contact Dr. Maija Petersons at 387-3710, Susan Kendziorski at 226-6972, the Human Subjects Institutional Review Board at 387-8293 or the Vice President for Research at 387-8298.

I will greatly appreciate it if you could complete the enclosed questionnaire by January 25th and return it in the confidential interoffice envelope provided. You may obtain the aggregate results of my study after September 1st 2001 by calling 226-6972. Thank you for your participation!

Sincerely,

Susan D. Kendziorski

January 16, 2001
Appendix G

Final Questionnaire
1. What is the end product of the digestion of starches?
   A. Cellulose
   B. Sucrose
   C. Glucose
   D. Fructose

2. In which of the following is iron most readily available to the body?
   A. Meat
   B. Bread
   C. Spinach
   D. Bran Cereals

3. Adequate intakes of folate during childbearing years helps to prevent the development of birth defects.
   A. Strongly Agree
   B. Agree
   C. Unsure
   D. Disagree
   E. Strongly Disagree

4. Which one of the following is classified as a B vitamin?
   A. Pyridoxine
   B. Ascorbic Acid
   C. Beta-Carotene
   D. Pyruvate

5. I eat at least 5 fruits and vegetables every day
   A. Always
   B. Frequently
   C. Sometimes
   D. Never

6. Which of the following can normally be synthesized by the body?
   A. Vitamin C
   B. Essential Amino acids
   C. Non-essential Amino Acids
   D. Folic Acid

7. Which mineral is essential for maintenance of fluid balance?
   A. Iron
   B. Iodine
   C. Potassium
   D. Magnesium

8. Dietary intake high in fat and cholesterol contributes to the development of heart disease
   A. Strongly Agree
   B. Agree
   C. Unsure
   D. Disagree
   E. Strongly Disagree
9. Of the following groups of foods, which one is highest in cholesterol?
   A. Broccoli, Beef, Rice
   B. Green Salad, Whole Wheat Bread, Peanut Butter
   C. Apple Pie, Lemon Sherbet, Coffee
   D. Shrimp, Skim Milk, Liver

10. How does an adult's requirement for nutrients generally change with increased age?
    A. More Vitamin E is Needed
    B. Fewer Calories are Needed
    C. There are No changes in Requirements
    D. Less Protein is Required

11. Which nutrient deficiency or deficiencies may occur with habitual high intake of alcohol even if food intake is normal? Circle only one answer.
    A. Calcium and Phosphorous
    B. Vitamin E
    C. B Vitamins
    D. Dietary Fiber

12. Which one of the following is not considered to be a risk factor for cardiovascular Disease?
    A. High Serum Triglycerides
    B. High Serum Levels of HDL Cholesterol (High Density Lipoproteins)
    C. High Serum Levels of LDL Cholesterol (Low Density Lipoproteins)
    D. Elevated Blood Pressure

13. What is the best way to determine whether the energy intake for an individual has been adequate?
    A. Compare past intake to the recommended Daily Intake for Energy from the Recommended Daily Dietary allowances for One's Size, Age, and Activity
    B. Maintenance of Desirable Weight for the Individual
    C. Compare past intake to the Food Pattern for the Daily Food Guide
    D. Feeling Full after Eating Meals

14. I try to eat a diet that is low in fat and sweets
    A. Always
    B. Frequently
    C. Sometimes
    D. Never

15. Diabetic patients who are not feeling well enough to eat their regular meals for a day or two should
    A. Not take their insulin or pills and only eat what they feel like
    B. Take their insulin or pills and only eat what they feel like
    C. Not take their insulin or pills and take fluid replacements according to their meal Planning booklet for food not eaten
    D. Take their insulin or pills and take fluid replacement according to their meal planning booklet

16. Which one of the following should be avoided on a sodium restricted diet?
    A. Hard Drinking Water
    B. Softened Water
    C. Orange Juice
    D. Coca-Cola
17. A diet high in fiber that includes many fruits and vegetables can help prevent cancer
   A. Strongly Agree
   B. Agree
   C. Unsure
   D. Disagree
   E. Strongly Disagree

18. I try to include foods that are high in complex carbohydrates and fiber
   A. Always
   B. Frequently
   C. Sometimes
   D. Never

19. How many calories are there in 2 liters of a D5NS IV fluid?
   A. 1800
   B. 1260
   C. 340
   D. 210

20. What nutritional risk parameter best correlates with degree of malnutrition?
   A. Prealbumin
   B. Transferrin
   C. Total Protein
   D. Albumin

21. What percentage of patients admitted to the hospital are malnourished?
   A. 2-4%
   B. 5-10%
   C. 30-50%
   D. 70-90%

22. Greater than or equal to what percent of unintentional weight loss over a 6 month period suggests nutritional risk?
   A. 3%
   B. 5%
   C. 10%
   D. 20%

23. Which one of the following is a consequence of malnutrition?
   A. Hypoglycemia
   B. Increased Levels of Circulating Insulin
   C. Decreased BUN and Creatinine
   D. Increased Incidence of Infection

24. How does the presence of severe physical stress such as trauma, major surgery, or sepsis affect the patient’s response to malnutrition?
   A. Symptoms of malnutrition Develop more Rapidly
   B. There are a greater number of symptoms from malnutrition
   C. Malnutrition is Easier to Identify
   D. Malnutrition is less of a Concern
25. It is important to assess the nutritional status of every patient admitted to the hospital
   A. Strongly Agree
   B. Agree
   C. Unsure
   D. Disagree
   E. Strongly Disagree
   Any Comments:

26. Who do you feel has the major responsibility for screening patients for malnutrition?
   A. The Admitting Nurse
   B. The Dietitian assigned to the unit
   C. The Admitting Physician
   D. All of the Above

27. Please write in the number of years you have been employed as an RN in each of the following settings
    and whether you worked Part Time or Full Time. If Part Time is chosen please add hours you worked
    average each week.
    
    Acute Care _______ Full Time_______ Part Time_______
    Home Care _______ Full Time_______ Part Time_______
    Clinic _______ Full Time_______ Part Time_______

28. Please indicate the year that you graduated from nursing school________

Comments:

PLEASE RETURN IN THE ENCLOSED ENVELOPE VIA REGULAR U.S. OR INTEROFFICE
MAIL
TO:  SUSAN KENDZIORSKI, FOOD AND NUTRITION SERVICES
THANK YOU FOR YOUR ASSISTANCE WITH MY STUDY!
Appendix H

Cover Letter to Nurses Seeking Participation in the Survey
Dear [Nurse]:

I am conducting my Masters Thesis at Western Michigan University and would be very grateful if you would be willing to participate in my research project entitled "The Relationship between nursing nutrition knowledge and attitudes and identification of malnutrition risk in the acute care setting". This research project is being conducted by Dr. Maija Petersons from Western Michigan University, Department of Family and Consumer Sciences and myself. The data obtained from this questionnaire will be statistically compared with performance improvement data collected through the usual food and nutrition department protocol at Borgess Medical Center from the nutrition-screening portion of the initial RN assessment.

Your experience and insight as an acute care nurse is critical to learning how to ensure successful nutritional care for our patients. The enclosed questionnaire has been tested with a sampling of acute care nurses to make sure it is effective in obtaining necessary data in a minimum of time. It contains 28 questions and will take 20 minutes to complete.

In order to minimize any discomfort associated with completing this survey your replies will be completely confidential. Do not put your name anywhere on the form. Your name has been eliminated from all performance improvement data and replaced with the same code number found on the questionnaire. From this point forward all research data will be identified by code number only. As in all research there may be unforeseen risks to the participant. If an accidental injury occurs, appropriate emergency measures will be taken; however no compensation or additional treatment will be made available except as otherwise stated in this consent form.

Results of this study may point towards more efficient and effective nutritional screening methods. Another benefit to participating in this research study may be the satisfaction of contributing to improved patient care and to the knowledge gleaned from nursing and nutrition research. There will be no direct benefit to you or your patients for participating in this study. You may choose to not answer any question and simply leave it blank. If you choose to not participate in this study, you may either return the blank questionnaire or you may discard it. There is no penalty for choosing not to participate. Returning the completed questionnaire indicates your consent for use of the answers you supply and for that data to be compared with performance improvement data previously tabulated.

This consent document has been approved for use for one year by the Human Subjects Institutional Review Board as indicated by the stamped date and signature of the board chair in the upper right corner. If you have any questions, you may contact Dr. Maija Petersons at 387-3710, Susan Kendziorski at 226-6972, the Human Subjects Institutional Review Board at 387-8293 or the Vice President for Research at 387-8298.

I will greatly appreciate it if you could complete the enclosed questionnaire by April 6th and return it in the confidential envelope provided via interoffice mail to me in the Food and Nutrition Services.
Department. You may receive the aggregate results of this study by calling 226-6972 after September 1, 2001. Thank you for your participation!

Sincerely,

Susan Kendziora
RD CNSD

Susan Kendziora RD CNSD
Appendix I

Methods Flowchart
Methods Flowchart: Validation of the Instrument

Adapted original questionnaire to include 30 questions total

Pretested with 20 critical care nurses and 63 dietitians for readability, construct validity, and test-retest reliability

Mailing to nurses

1st mailing to dietitians

Returned questionnaire received from RD’s

Questionnaire results evaluated using SPPS statistical program

Questionnaire revised: 8 questions rewritten 2 questions deleted

Final questionnaire ready for use with 28 questions
Methods flowchart: Survey of nurses

Data from performance improvement chart audit obtained

89 nurses identified from chart audit for potential sample

Nurses names removed from chart audit forms and replaced with a code number

89 questionnaires coded and sent to each nurse, master list of codes and names destroyed

30 completed questionnaires returned to researcher through hospital interoffice mail

Data analyzed via SPPS statistical program
Appendix J

Nutrition Screening Tool
VI. COGNITIVE/PERCEPTUAL

Language if other than English: ____________
Able to Comprehend English: ____________
Last Grade Completed: ____________

Spoken: NO YES  Written: NO YES

Cognitive Difficulty: NO YES

Reading: NO YES

Suspect Explain: ____________

Speech: Clear NO Slurred Hoarse Incoherent

Hearing: Unremarkable Hard of Hearing

Vision: Unremarkable Impaired Vision

Patient Wears: Eyeglasses

IOL - L R Contact Lens (s) - L R

Hearing Aid L R

Other Explain: ____________

VII. FEMALE SEXUAL/REPRODUCTIVE

Date of Last Menstrual Period  / / ____________

Have You Been Pregnant Within The Last 3 Months?  NO YES

VIII. NUTRITIONAL/METABOLIC:

A. Diet followed prior to admission: ____________

Significant food intolerances: ____________

B. Consult the dietitian if any of the following are present: Pressure Ulcer or non-healing wound (+) or less than 80% Ideal Body Weight:

C. Not currently at nutritional risk

D. NUTRITION SCREEN (Circle rating of items that apply)

YES

2. Do you have any extended illness, diagnosis, or condition which has reduced your ability to eat for greater than one week?

3. Do you eat fewer than two meals each day or has your appetite been poor?

3. Do you have difficulty swallowing?

1. Are you over age 65 and usually eat alone?

7. Are any of the following conditions present?

+ Newy Diagnosed Diabetes + HIV/AIDS + Hepatitis/Cirrhosis

+ DKA + Acute Renal Failure + Malabsorption Disease

1. Have you eliminated any of the following food groups? (Circle) Grains Fruit Meat Milk Vegetables

2. Do you have greater than 3 drinks of beer, liquor, or wine almost every day, or more than 4 drinks at one time?

Have you unintentionally lost greater than 10 pounds:

3. in the past 6 months

5. in the last 3 months

1. Do you have difficulty with your teeth which makes it hard to eat?

1. Do you take more than 3 medications everyday?

3. Have you had nausea, vomiting or diarrhea for more than 3 days?

O = Total Points Scoring Key: 7 - 9 points = moderate risk, > 9 points = high risk

Signature: ______________________ Date: ______________________
Appendix K

List of Definitions
*Acute Care:* “A pattern of health care in which a patient is treated for an acute episode of illness, for the sequelae of an accident or other trauma, or during recovery from surgery. Usually takes place in a hospital by specialized personnel.” (Anderson, K. pg. 27)

*Complication:* “A disease or injury that develops during the treatment of an earlier disorder.” (Anderson, K. pg. 372)

*Construct Validity:* “The extent to which inferences from a test’s scores accurately reflect the construct that the test is claimed to measure.” (Gall, M., Borg, W., Gall, J., pg. 756)

*Descriptive Statistics:* “Mathematical techniques for organizing, summarizing, and displaying a set of numerical data.” (Gall, M., Borg, W., and Gall, J. pg. 757)

*Malnutrition:* “Any disorder of nutrition. It may result from an unbalanced, insufficient, or excessive diet or from the impaired absorption, assimilation, or use of foods.” (Anderson, K. pg. 950)

*Morbidity:* “An illness or abnormal condition or quality.” (Anderson, K. pg. 1013)

*Mortality:* “The condition of being subject to death.” (Anderson, K. pg. 1014)

*Nutrition Care Plan:* A plan of care for the patient incorporating various health care professionals developed to treat malnutrition.

*Nutrition Intervention:* Action taken to identify and/or treat malnutrition.

*Nutrition Screen:* A set of criteria developed to identify potential patients at risk for malnutrition.

*Patient Acuity:* Degree of illness.

*Quantitative Study:* “Inquiry that is grounded in the assumption that features of the social environment constitute an objective reality that is relatively constant across time and settings. The dominant methodology is to describe and explain features of this reality by collecting numerical data on observable behaviors of samples and by subjecting these data to statistical analysis.” (Gall, M., Borg, W. and Gall, J., pg. 767).

*Readability:* Ability to easily read and understand what is read.
*Test-retest reliability: “An approach to estimating test reliability in which individuals’ scores on a test administered at one point in time are correlated with their scores on the same test administered at another point in time.” (Gall, M., Borg, W., and Gall, J., pg. 772).

*Years in Acute Care: The number of years worked in an acute care setting.

*Years Out of School: The number of years since graduation from Nursing School.


