

NUTRITION AND DIET THERAPY
IN SCHOOLS OF NURSING

by

Susie Jane Blankenship

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APPROVED:

S. J. Ritchey, Ph.D., Chairman

M. K. Korslund, Ph.D.

J. E. Montgomery, Ph.D.

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CHAPTER I

INTRODUCTION

The teaching of nutrition and diet therapy in diploma schools of nursing is considered generally inadequate. Some schools employ a full-time or part-time nutrition instructor; however, the teaching is often performed by the administrative, production or therapeutic dietitian who is employed by the hospital in a more primary capacity. In some cases, there is formal classroom instruction without follow-up of clinical experience. In other cases, nutrition and diet therapy are integrated with other nursing courses and are taught by nursing instructors. In still other cases, no teaching is done at all.

Research has been done suggesting methods for strengthening this phase of nursing education but it has not been established that the subjects must be taught by a nutrition instructor, nor has a standardized curriculum guide been designed. Thus, this project was initiated to determine the appropriate level of instruction for the nutrition component in the training of nurses.

CHAPTER II

REVIEW OF LITERATURE

As far back as the history of nursing schools, dietetics has been a part of nursing. Cooper (1) wrote that Florence Nightingale, well known for her contributions to nursing, considered the art and science of feeding the sick to be an integral part of nursing. She held that the physician should prescribe the food for the patient.

According to Stewart (2), the first Nightingale schools of nursing were introduced in America in 1873. At that time there were no dietitians as we know them today but food preparation was a part of nursing. Rynbergen (3) stated that since 1890, when it was suggested that "invalid cookery" be taught to student nurses at Johns Hopkins Hospital, the subject of nutrition (meaning nutrition, cooking and diet therapy) has had a place in the nursing curriculum. Cooper (1) found that, as early as 1901, Adelaide Nutting, Superintendent of Nurses at Johns Hopkins Hospital, expressed the need for home economics teachers in the school for nurses.

In 1937, the National League for Nursing Education (4) published the second revision of the Curriculum Guide for Schools of Nursing. This was the first attempt to integrate dietetics into other parts of the nursing curriculum. In

the curriculum guide it was suggested that sixty hours be designated for Nutrition, Foods and Cookery and that thirty hours be designated for Diet Therapy. Nutrition should be taught during the second term of the first year, following the courses in chemistry and physiology. Classroom instruction in diet therapy should be given, preferably as an integral part of general medical-surgical nursing, during the third term of the first year and immediately following the course in nutrition. Clinical experience should follow classroom instruction and should be concurrent with medical-surgical experiences.

The National League for Nursing Education (4) further stated that, whenever possible, a full-time teaching and supervising dietitian should be employed. Otherwise, both courses should be taught by a well-trained dietitian. In small hospitals where a full-time instructor was not required, the teaching duties should be performed by the hospital dietitian. The National League for Nursing established objectives for each course and suggested time periods for teaching each unit of course material.

In 1944, Baughman (5) made the first report of a dietitian being on a nursing faculty. This was at Johns Hopkins Hospital. In the same year, Betzold and Elfert (6), wrote that Johns Hopkins employed a teaching dietitian on the nursing faculty and designed a program which integrated nutrition and diet therapy into the nursing curriculum so

completely as to make it difficult, in fact, almost impossible to determine how many hours were to be allotted to each course. Prior to 1946, the nutrition program at Johns Hopkins Hospital was in the experimental stages. Due to student dissatisfaction, parts of the program were revised. In discussing the program, Betzold and Elfert (6) stated,

Since we have eliminated our isolated diet therapy assignments and have substituted an integrated program of nursing and nutrition, the students have gained greater interest and better knowledge in the nutritional aspects of patient care. ... The time has come when all of us should encourage the study and practice of nutrition as a part of nursing rather than as an isolated subject.

Through the early 1950's, there had been little general interest in the instruction of nutrition and diet therapy in schools of nursing. However, the increased scientific knowledge of nutrition stimulated nursing educators to question whether these courses were meeting the current needs of nurses.

Thigpen and Mitchell (7) reported that, at Baptist Hospital in Memphis, Tennessee, nutrition was integrated into nursing education with medical-surgical nursing, maternal health and child health. Rynbergen (8) reported that, at Cornell University-New York Hospital School of Nursing, both nutrition and diet therapy were integrated with all nursing courses throughout the three-year program. The initial course in nutrition followed other science courses;

therefore, it was designed to avoid repetition of course material. Diet therapy followed the course in nutrition. Both subjects combined classroom instruction and practice with clinical orientation to patient care.

Germain (9) suggested that the dietetic aspects of nursing care were sufficiently important to merit a full-time instructor. The instructor should be on the payroll of the school and hold at least a Bachelor of Science degree in home economics with an internship which was approved by the American Dietetic Association.

In 1957, Sister Xavier Miriam (10) suggested that nutrition and diet therapy be correlated with the study of specific diseases. For example, after defining and classifying a nutrient, students would be assigned clinical experiences relating to that specific nutrient. This would take careful planning but would be more meaningful to students. In the same year, Sister Mary Carolyn (11) suggested that nutrition follow the teaching of anatomy and physiology of the gastro-intestinal tract. It should be parallel with pharmacology and the chemistry of digestion and should be parallel with medical-surgical nursing so as to teach dietary treatment as various diseases were studied.

Elliott reported that, by 1959, a small number of hospital schools of nursing was fortunate enough to have full-time nutrition instructors. However, it was still common to

call on the hospital dietitian. Thus, in hospital programs, the dietitian was expected to teach and supervise students when her major interest and responsibility was food service. She might have little or no interest in teaching and it was likely that she would have little academic preparation.

In 1960, the National League for Nursing, Edmonds (13), published Guidelines for Teaching Nutrition and Diet Therapy in Schools of Nursing. The guidelines suggested that each designated section of material be taught according to objectives which would be written in behavioral terms. One principal objective would be stated, followed by a four column outline which would include the specific objective, expected behavior change, content and learning activity. The guidelines would strengthen the position of the teaching dietitian.

Shortly after publication of the guidelines, Greene (14) reported that Boston University School of Nursing had designed, as had been suggested by the National League for Nursing, a nutrition program which would maintain a continuous "thread" throughout the curriculum during the entire four years. All nutrition courses were taught by nutrition instructors.

An unpublished M. A. thesis was written in 1967 by C. M. Hamilton (15) at Wayne State University which analyzed nutrition and diet therapy course objectives, course content

and teaching methods. A questionnaire was sent to all hospital diploma schools of nursing in five states: Illinois, Indiana, Michigan, Ohio, and Wisconsin. Of the schools contacted, 86 per cent returned the questionnaires. Most of the schools offered a separate course in nutrition, but only about half of them employed a nutrition instructor on the nursing faculty. The other half stated that nutrition was taught by either the hospital dietitian, a combination of the hospital dietitian and the nursing faculty nutrition instructor or by nursing instructors. One-fourth of the schools offered a separate diet therapy course, but in most cases, diet therapy was integrated with other nursing courses. About three-fourths of the schools indicated that they offered some type of diet therapy clinical experience but more than half of these schools relied on the hospital dietitian to supervise the work. About three-fourths of the schools provided college or university affiliation for instruction in anatomy, physiology, microbiology, psychology, and sociology. Less than one-third indicated that college affiliation was offered in nutrition and none provided instructional affiliation in diet therapy. In summary, course objectives, course content and teaching methods varied significantly according to teaching personnel.

According to Elliott (12), collegiate nursing programs usually utilize the resources of academic faculty

and not the hospital dietitian as do hospital schools. Collegiate faculties have used various methods of instruction. Sister M. Willann Mertens (16) taught therapeutic nutrition as an independent study course. Course objectives were clearly defined and each student received a listing of specific areas to be studied, along with a calendar blocking out periods when each area would be reviewed. Each student also received criteria which would be used by the faculty advisor for evaluation. Instead of lectures and formal class sessions, the faculty advisor held weekly individual conferences. At the end of the course, each student was required to submit a "log" of findings. Student and faculty evaluations of the course were positive.

Another teaching method which has been used in colleges, as reported by Kiang (17), is programmed instruction. In a comparative study, the protein section was chosen for programming and the same course content was taught through assigned readings. Results showed that the time needed to complete each course was approximately the same but programmed instruction resulted in higher scores. After learning through programmed instruction, there was a highly significant advance in nutrition knowledge and students favored this type of learning. Since the time allotted for nutrition and the time of the nutrition instructor were limited, this type of study relieved the nutrition instructor, thus,

enabling her to spend more time in clinical areas and seminars. No research has been done to evaluate the ultimate effectiveness of the total program.

Harlan et al. (18) made a survey of nutrition education in medical schools. From the survey, it was concluded that less time was devoted to the application of nutrition principles in the prevention and treatment of diseases than was true several years ago. This reflected a lack of personnel and difficulty in melding a program into the crowded curriculum.

In 1969, nutrition in medical education was discussed in the Dairy Council Digest (19) which stated that nutrition and diet therapy were an important part of medical training not only because of the role in maintaining health but also because of the therapeutic value of adjusting food intake to the altered metabolism in pathological states. Surveys (19) have indicated that the medical student is exposed to nutrition information in many subjects but that the overall quality of nutrition teaching varied widely in medical schools and teaching hospitals.

According to the present review of literature, evaluation studies of nutrition and diet therapy knowledge in schools of nursing have not been published. Therefore, the present study was undertaken.

CHAPTER III

MATERIALS AND METHODS

The study was done by means of a standard test and was based on the hypothesis that knowledge of nutrition and diet therapy in diploma schools of nursing was improved when a nutrition instructor was employed on the nursing faculty. The primary objectives of the study were to compare and/or contrast nutrition and diet therapy knowledge of nursing students within the state of Virginia according to type of instruction:

- nutrition instructor vs. nursing instructors
- nutrition instructor vs. hospital dietitians

Other objectives were to compare and/or contrast nutrition and diet therapy knowledge:

- at each level of training
- in diploma and degree schools of nursing

A letter was written to the Virginia State Board of Nursing requesting a list of schools of nursing in the state of Virginia. Associate degree schools were not included since they were relatively new programs and would not compare to the established programs. A letter of introduction

(Appendix A) and a questionnaire (Appendix B) were mailed to the director of nursing in all diploma and degree schools. The purposes of the questionnaire were to obtain general information about each school and to request permission to pursue the study.

Those schools which agreed to participate in the study were contacted in order to schedule an exact date and time for administration of the standard test. The test was constructed to determine the extent of nutrition and diet therapy knowledge of presently enrolled students at all levels of training. The chief source of information for the test questions was the textbook, Food, Nutrition and Diet Therapy by Marie V. Krause (20). Test questions were written according to the form used in Mosby's Comprehensive Review of Nursing (23) for usability and for consistency with State Board Examination test questions. The test was composed of fifty multiple-choice questions, twenty-five relating to nutrition and twenty-five relating to diet therapy, each having four possible answers. The test contained questions which were repetitious in content in order to determine whether answers were actual knowledge or random guessing. A copy of the test is included in Appendix C. References (20-29) used for preparing the test were standard nutrition and diet therapy textbooks and diet manuals.

A pre-test was given to students enrolled in two

courses in the Department of Human Nutrition and Foods at Virginia Polytechnic Institute and State University. Students were asked to state their class and major. The pre-test was given as an attempt to measure validity of the test.

CHAPTER IV

RESULTS AND DISCUSSION

Questionnaire Results

Thirteen of the twenty-four diploma and degree schools of nursing receiving questionnaires, or approximately fifty per cent, responded. One degree school returned the questionnaire unanswered and stated that there was some question as to whether the program would continue since the chairman of the department of nursing was no longer employed.

Students enrolled in the schools of nursing had recently graduated from high school and were between the ages of 17 and 20. They had passed the Scholastic Aptitude Test (SAT) of the College Entrance Examination Board (CEEB) with minimum scores of 700. Due to the prerequisites for entering nursing school, the students had passed at least one year of nutrition.

The number of students enrolled in the schools ranged from 56 to 165, with an average number of 90 students in the nursing programs. The schools included various types of nutrition and diet therapy instruction. All schools offered classroom instruction in nutrition and eight offered classroom instruction in diet therapy. Three schools

indicated that they offered clinical experience in nutrition. All except two schools offered clinical experience in diet therapy and these two schools indicated that there was no diet therapy instruction at all.

Two of the schools responding to the questionnaire employed a full-time nutrition instructor who taught both nutrition and diet therapy. One school employed a full-time nutrition instructor who taught nutrition only. The remaining schools indicated that the teaching was done by therapeutic dietitians or nursing instructors.

The source of teaching information varied widely. All schools indicated that they used a textbook and some supplemented this material by using the hospital diet manual. All except three schools stated that nutrition was integrated throughout other nursing courses for at least one year. All schools reported that diet therapy was integrated throughout other nursing courses for the entire period of three or four years.

One school stated that State Board Examination test scores in nutrition were lower than scores in other nursing courses. One school stated that scores in nutrition and diet therapy were about the same as scores in other nursing courses. The remaining schools reported that these scores were not separate and that they had not made comparisons.

The attitude of nursing students toward nutrition and

diet therapy varied. About half of the schools stated that students disliked these subjects and about half of the schools indicated that the attitude of nursing students was about the same in all subjects.

Seven schools stated that their nutrition program was adequate and two felt that the program was inadequate. Six schools felt that their diet therapy program was barely adequate or that it needed to be evaluated. Three schools stated that their diet therapy program was inadequate. The remaining four schools did not answer the question.

Eight of the thirteen schools which responded to the questionnaire agreed to participate in the study. Seven of these schools were three year diploma schools and one was a four year degree school.

Pre-Test Results

The pre-test designed to establish validity was administered to 111 students in the Department of Human Nutrition and Foods at Virginia Polytechnic Institute and State University. Eighty-six of the students were enrolled in a freshman nutrition course and 25 were enrolled in a senior level course.

Total test scores averaged 24 and 33, respectively, for the two groups. Scores for both groups were higher on the nutrition section of the test than on diet therapy.

Students in the freshman nutrition course represented

all four years at the university and a wide variety of majors. No differences in scores were noted according to class. The one biology major made the highest total score of 38. The second highest scores were made by sociology majors. The one English major made the lowest score of 16. Second lowest scores were made by majors in clothing, textiles and related arts. All students in the senior level courses were majors in Human Nutrition and Foods.

Frequency of Questions Missed on Nutrition
Section of Test

In the freshman nutrition course, 62 of the 111 students did not know how to measure protein retention in the body. Sixty-one of the group did not know the end products of protein metabolism. Three students did not know the chief functions of calcium in the body and 17 did not know the definition of bile.

In the senior level course, 16 of the 25 students did not know that carbohydrates are absorbed directly into the bloodstream. Sixteen of this group did not know the relationship of calcium, phosphorus and vitamin D within the body. There were 6 questions which none of the group missed. The questions related to amino acids and fatty acids, fat-soluble vitamins, bile, calcium, iron and nutrients for the elderly.

Frequency of Questions Missed on Diet Therapy
Section of Test

In the freshman nutrition course, 81 of the 111 students

were unable to calculate a diabetic diet and 80 students did not know what foods are permitted for patients with uremia. Twenty-two students did not know what foods are restricted for patients with conditions of the colon, gallbladder and ulcers. Twenty-six students missed the question relating to weight loss.

In the senior level course, none of the students knew what foods are permitted for patients with uremia and 22 did not know the diet for patients following partial or total gastrectomy. Four students did not know what foods are restricted for patients with conditions of the colon, gallbladder and ulcers. Four students did not know the primary objective in the dietary treatment of diabetes mellitus.

There was no explanation for the differences noted according to majors in the freshman nutrition course. Possibly the one biology major had previously studied anatomy and physiology.

The test was given on the first day of a new quarter for both groups and students knew in advance that they would not be graded. A possible explanation for the lower scores made by students enrolled in the freshman level course is that they had not previously studied either nutrition or diet therapy. Students enrolled in the senior level course had not previously studied diet therapy.

Total test score averages for both groups were in

proportion with respect to educational backgrounds of the students. The frequency of questions missed was relatively consistent for both groups. Scores made in the senior level class were higher than those of the freshman level group. Therefore, the investigator accepted the pre-test at face validity and suspected that it would give similar results when given to any other group with comparable educational backgrounds.

Test Results

A total of 701 tests were marked and returned. Thirty-two per cent of students who took the test were in the first year of training, forty per cent were in the second year, twenty-four per cent were third year students and four per cent fourth year.

Table I shows mean scores with standard deviations of scores on nutrition section according to position of instructor. In schools where a full-time nutrition instructor taught nutrition, scores were approximately the same as when the subject was taught by nursing instructors. In schools where a full-time nutrition instructor taught diet therapy (Table II), scores were slightly higher than when taught by nursing instructors. Scores for both nutrition and diet therapy were lowest when taught by therapeutic dietitians (Tables I and II).

Mean scores for individual schools, with one exception, gradually increased from the first through the last year of training (Table III). Table IV shows mean scores with standard deviations for all schools combined. There was an increase of eight points in nutrition and six points in diet therapy, for a total increase of 14 points from the first through the last year of training.

TABLE I

Mean Scores with Standard Deviations of Scores on Nutrition Section
According to Position of Instructor

Position of Instructor	No. of Schools	Nutrition			
		1st yr	2nd yr	3rd yr	4th yr
Full-time nutrition instructor	2	14 <u>±</u> 5.3 ¹	17 <u>±</u> 5.8	18 <u>±</u> 5.5	--- ²
Nursing instructors	1	---	20 <u>±</u> 6.5	17 <u>±</u> 6.0	---
Therapeutic dietitian	2	9 <u>±</u> 6.5	17 <u>±</u> 6.5	17 <u>±</u> 5.5	---
Part-time nutrition instructor	1	13 <u>±</u> 7.5	16 <u>±</u> 6.5	16 <u>±</u> 5.0	---
College professor	2	13 <u>±</u> 7.0	16 <u>±</u> 6.8	19 <u>±</u> 6.3	20 <u>±</u> 4.5

¹ sd.

² No tests given.

TABLE II

Mean Scores with Standard Deviations of Scores on Diet Therapy Section
According to Position of Instructor

Position of Instructor	No. of Schools	Diet Therapy			
		1st yr	2nd yr	3rd yr	4th yr
Full-time nutrition instructor	1	10+5.0 ¹	15+6.0	17+4.0	--- ²
Nursing instructors	3	9+4.5	14+5.7	15+5.3	---
Nursing instructors & therapeutic dietitian	1	11+6.5	14+5.0	14+3.0	---
Therapeutic dietitian	2	10+6.0	12+4.8	15+7.0	---
College professor	1	10+5.5	12+6.5	12+6.5	16+5.0

¹ sd.

² No tests given.

TABLE III

Mean Scores on Nutrition and Diet Therapy Sections at Each Level of Training

Type of School	Nutrition				Diet Therapy				Total Score			
	1st yr	2nd yr	3rd yr	4th yr	1st yr	2nd yr	3rd yr	4th yr	1st yr	2nd yr	3rd yr	4th yr
Diploma	14	16	-- ¹	--	12	13	--	--	26	29	--	--
	--	20	17	--	--	14	15	--	--	33	32	--
	--	17	16	--	--	14	15	--	--	31	31	--
	14	18	18	--	10	15	17	--	24	33	35	--
	9	16	17	--	8	11	15	--	17	27	32	--
	13	16	16	--	11	14	14	--	24	30	30	--
	12	17	16	--	9	13	14	--	21	30	30	--
Degree	13	16	19	20	10	12	12	16	23	28	31	36

¹ No tests given.

TABLE IV

Mean Scores with Standard Deviations for All Schools Combined

	First year	Second year	Third year	Fourth year
Nutrition	13 ± 4.0^1	17 ± 4.5	17 ± 4.0	20 ± 2.5
Diet therapy	10 ± 3.5	13 ± 3.0	15 ± 3.0	16 ± 3.0
Total Score	23 ± 7.5	30 ± 7.5	32 ± 7.0	36 ± 5.5

¹ sd.

Scores for all schools were consistently higher in nutrition than in diet therapy (Tables III and IV). Since only one degree school participated in the study, no differences could be noted in diploma and degree schools.

Percentages of Students at Each Level of Training
Missing Questions on Nutrition and Diet Therapy
Sections of Test

Percentages of questions missed by students on the nutrition section (Table V) and percentages of questions missed on the diet therapy section (Table VI) gradually decreased from the first through the last year of training. Since mean scores for individual schools gradually increased from the first through the last year of training (Table III), perhaps these results indicated an actual increase of knowledge rather than random guessing.

TABLE V

Percentages of Students at Each Level of Training
Missing Questions on Nutrition Section of Test

Question ¹ No.	First year	Second year	Third year	Fourth year
1	14	20	16	13
2	28	10	16	13
3	63	51	38	35
4	27	8	11	4
5	53	36	38	22
6	69	57	46	17
7	61	22	29	9
8	76	43	41	4
9	64	20	16	22
10	50	25	29	13
11	44	46	54	26
12	82	56	54	48
13	47	24	19	17
14	17	17	12	4
15	71	63	68	48
16	43	29	16	17
17	47	32	41	35
18	67	14	9	13
19	27	33	30	17
20	3	3	1	4
21	3	1	1	0
22	41	30	20	13
23	46	22	24	4
24	55	45	54	61
25	47	33	35	13

¹ See Appendix C.

TABLE VI

Percentages of Students at Each Level of Training
Missing Questions on Diet Therapy Section of Test

Question ¹ No.	First year	Second year	Third year	Fourth year
26	33	5	2	0
27	77	59	50	13
28	36	9	11	4
29	41	19	17	13
30	79	48	41	17
31	64	43	30	35
32	81	68	54	65
33	70	48	49	22
34	43	22	11	4
35	31	14	16	17
36	63	62	58	57
37	68	66	66	74
38	63	60	63	70
39	81	80	74	70
40	44	38	29	17
41	47	43	37	52
42	90	90	51	91
43	33	15	18	17
44	67	60	49	17
45	80	82	69	70
46	39	31	33	26
47	79	24	17	4
48	47	38	36	26
49	90	71	66	39
50	60	60	53	65

¹ See Appendix C.

Percentages of Total Number of Students Who Took Test
Missing Questions on Nutrition Section

Sixty-five per cent of the 701 students who took the test did not know that digestion of food takes place primarily in the small intestines. Sixty-five per cent of the group did not know that, in order to be absorbed, carbohydrates must be broken down into monosaccharides. Only three per cent of the total group did not know the chief function of calcium in the body and six per cent did not know the chief function of iron (Table VII).

Percentages of Total Number of Students Who Took Test
Missing Questions on Diet Therapy Section

Eighty-eight per cent of the total group could not identify low residue foods. Seventy-eight per cent could not identify foods which were low in both proteins and sodium. Thirteen per cent of the 701 students did not know the chief cause of atherosclerosis and only eighteen per cent did not know the correct diet used in the treatment of cardiac conditions, edema and hypertension (Table VIII).

Scores on Questions in Which Subject
Matter Material Was Duplicated

Results of duplicate questions are given in Table IX. No differences were noted according to position of instructor.

On the nutrition section of the test, there was only

TABLE VII

Percentages of Total Number of Students Who Took Test
Missing Questions on Nutrition Section

Question ¹ No.	Percentages Missing Questions
1	16
2	17
3	51
4	15
5	42
6	56
7	36
8	52
9	33
10	34
11	48
12	65
13	30
14	17
15	66
16	31
17	39
18	30
19	43
20	3
21	6
22	37
23	30
24	51
25	36

¹ See Appendix C.

TABLE VIII

Percentages of Total Number of Students Who Took Test
Missing Questions on Diet Therapy Section

Question ¹ No.	Percentages Missing Questions
26	13
27	61
28	18
29	25
30	54
31	46
32	68
33	54
34	26
35	20
36	61
37	67
38	61
39	78
40	37
41	43
42	88
43	22
44	50
45	78
46	34
47	38
48	40
49	75
50	57

¹ See Appendix C.

TABLE IX
Scores on Questions in Which Subject
Matter Material Was Duplicated

Questions	All correct	Missed one	Missed two	Missed three
10 & 12 ¹	27 ²	45	28	--
27 & 35	33	49	18	--
28, 36 & 37	20	26	45	9
29 & 38	33	50	17	--
30 & 39	9	46	45	--
31 & 43	38	53	9	--
32 & 40	20	53	27	--
33, 41 & 43	24	42	29	5
34, 42 & 43	7	57	29	7
44 & 45	10	43	47	--

¹ See Appendix C.

² Percentages.

one series of duplicate questions. Twenty-seven per cent of the students answered correctly the series of two questions. These related to the end products and absorption of carbohydrates.

On the diet therapy section of the test, twenty-two per cent of the students answered all duplicate questions correctly. The remaining seventy-eight per cent missed either one, two or three questions in each series. Approximately fifty per cent of the students missed one question in each series. This might have been due to random guessing or possibly the specific questions used did not actually test duplicate knowledge.

The instrument used for testing and the limited sampling might have accounted for test results. Another possible explanation is that perhaps rapport of nursing students with nursing instructors and rapport of nursing students with nutrition instructors provided equal stimulation for learning. The lower scores made when therapeutic dietitians taught nutrition and diet therapy might be explained by the possibility that therapeutic dietitians had less time to devote to teaching.

CHAPTER V

SUMMARY AND CONCLUSIONS

Knowledge of nutrition and diet therapy of nursing students in schools of nursing within the state of Virginia was evaluated by means of a comparative study. A questionnaire was mailed to the director of nursing in all diploma and degree schools of nursing. Results of the questionnaire were used in determining which schools would participate in the study.

The study was done primarily by means of a standard test which was constructed for the study, pre-tested and administered by representatives of the various institutions to 701 students enrolled in 8 schools of nursing.

An attempt was made to review State Board Examination test scores and National League for Nursing Achievement test scores of former students. However, it was learned that State Board Examination test scores for individual subjects were not recorded. It was also learned that schools of nursing were reluctant to disclose National League for Nursing Achievement test scores. One school did submit these scores for the preceding five years. Scores in nutrition and diet therapy were lower than scores in any other subjects.

Test scores showed that knowledge of nutrition in diploma and degree schools of nursing did not vary according to position of instructor and that knowledge of diet therapy varied slightly. Test scores showed an increase of knowledge at each level of training.

The original hypothesis that nutrition and diet therapy knowledge in diploma schools of nursing was improved when a nutrition instructor was employed on the nursing faculty was not correct. Perhaps the selection of another instrument for testing and a wider sampling would have given the anticipated results.

Since the literature indicated that this is an area where research is needed, perhaps further and more extensive studies should be done prior to the development of a teaching program or curriculum guide. State Board Examination test results and National League for Nursing Achievement test scores could not be investigated. Curriculum guides which are being used for teaching could be examined.

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APPENDICES

APPENDIX A

LETTER OF INTRODUCTION

March 20, 1972

I am a graduate student in the department of Human Nutrition and Foods at Virginia Polytechnic Institute and State University. Having taught basic nutrition and diet therapy in a school of nursing before graduate school, I am particularly interested in the nutrition education and programs of instruction for nursing students.

I have reviewed the literature related to the teaching of nutrition and diet therapy in schools of nursing. A wide variety of approaches are being utilized and range from rather informal training to the employment of instructors for the nutrition component. That no effective curriculum guide is being used by many is also apparent. The development of a curriculum guide would seem to strengthen the nutrition education of nurses, so I plan, as part of my degree requirements, to develop a guide.

As one phase of this project, I would like to obtain background information about nursing programs in Virginia. I would like to determine, by means of a standard test, the nutrition knowledge of nursing students. A review of State Board Examination scores of graduates during the period 1967-1971 would be helpful, also.

A brief questionnaire is enclosed. Certain preliminary information and your permission to pursue this study in your program is requested. Your time and cooperation in completing the questionnaire and in the entire project will be appreciated.

A self-addressed, stamped envelope is enclosed for your convenience in returning the questionnaire.

Sincerely yours,

Susie J. Blankenship, R.D.

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Enclosures

APPENDIX B

QUESTIONNAIRE

Please complete the following questionnaire and return in the enclosed envelope. Your assistance is helpful and appreciated.

1. What is the name of your hospital or school of nursing?

2. What type of nursing program does your hospital or school of nursing have?
Diploma _____ Length of Program _____
Degree _____ Length of Program _____
Other _____ Length of Program _____
3. Does your school of nursing education offer formal classroom instruction in: Nutrition _____ Diet Therapy _____
4. Does your school of nursing education offer clinical experience in: Nutrition _____ Diet Therapy _____
5. Is the teaching of nutrition and/or diet therapy done by:
Full-time nutrition instruction _____ Therapeutic dietitian _____
Part-time nutrition instruction _____ Nursing instructors _____
Administrative dietitian _____ No teaching is done _____
Production dietitian _____ Other _____
6. How many students do you have in each class? 1st year _____;
2nd year _____; 3rd year _____; 4th year _____.
7. What is the source of information for teaching?
Textbook _____
Name of text _____
Author(s) _____
Hospital Diet Manual _____ No format _____
Other _____
8. Is nutrition integrated with Medical-Surgical nursing during the:
1st year _____; 2nd year _____; 3rd year _____; 4th year _____.
9. Is diet therapy integrated with Medical-Surgical nursing during the:
1st year _____; 2nd year _____; 3rd year _____; 4th year _____.
10. How do nutrition and diet therapy State Board Examination test scores compare with other test scores?
Higher _____ About the same _____
Lower _____ About the same _____

11. What is the general attitude of nursing students toward nutrition and diet therapy?
Like it _____ Dislike it _____
About the same as toward other subjects _____
12. Do you feel that your nutrition program is:
Adequate _____ Inadequate _____
13. Do you feel that your diet therapy program is:
Adequate _____ Inadequate _____
14. From what area of the United States does the majority of your students come?
South _____; North _____; No particular state _____;
One particular state _____; Name of state _____
Other _____
15. For admission, College Board Examination test scores must be between _____ and _____.
16. Will you be willing to schedule a date and time for the administration of a standard test on nutrition and diet therapy to part or all of your students?
(I will administer the test and no names will be signed. The test will consist of 50 multiple-choice questions similar to those used on State Board Examinations.)
Yes _____ No _____
17. Will you be willing to allow me to review your records of State Board Examination test scores of former students from 1967-1971?
Yes _____ No _____
18. Would you like a copy of the curriculum guide which I develop?
Yes _____ No _____

Please use this space to comment regarding your opinion of nutrition and diet therapy in schools of nursing education. (Use back also if necessary)

Thank you for your time and cooperation

APPENDIX C

STANDARD TEST

DIRECTIONS: Please circle the letter beside the group of words which will make a true and complete statement. Please select the best possible answer.

1. The process by which a person receives and uses food to keep the body healthy is defined as:
 - A. diet therapy
 - B. nutrition
 - C. dietetics
 - D. nutritional state
2. The Basic Four Food Groups are:
 - A. milk, meats, fruits and vegetables, breads and cereals
 - B. milk, meats, vegetables, fats
 - C. milk, meats, fruits, fats
 - D. meats, fruits, vegetables, dairy products
3. Whole milk is not a "perfect food" because it:
 - A. lacks vitamin C and iron
 - b. lacks vitamin A and iron
 - C. is not always homogenized
 - D. contains saturated fats
4. The chief function of protein in the body is:
 - A. heat and energy
 - B. resistance to diseases
 - C. to maintain body fluids
 - D. to build and repair tissues
5. The end products of protein digestion are:
 - A. amino acids
 - B. urea and nitrogen compounds
 - C. fatty acids
 - D. monosaccharides
6. The major end products of protein metabolism are:
 - A. amino acids
 - B. urea and nitrogen compounds
 - C. fatty acids
 - D. monosaccharides
7. Amino acids and fatty acids which are necessary for the body but which cannot be made in the body are referred to as:
 - A. conjugated
 - B. unsaturated
 - C. nonessential
 - D. essential

8. A way to measure protein retention in the body is by:
 - A. fluid retention
 - B. nitrogen balance
 - C. basal metabolism
 - D. the food calorie
9. The three groups of carbohydrates are:
 - A. linoleic, linolenic, arachidonic
 - B. monosaccharides, disaccharides, polysaccharides
 - C. starches, cellulose, glycerol
 - D. complete, partially complete, incomplete
10. The end products of carbohydrate digestion are:
 - A. monosaccharides
 - B. simple sugars
 - C. glucose and fructose
 - D. all of the above
11. Carbohydrates are absorbed directly into the:
 - A. liver
 - B. large intestines
 - C. bloodstream
 - D. small intestines
12. In order to be absorbed, carbohydrates must be broken down into:
 - A. glycogen
 - B. glucose, fructose and sucrose
 - C. glucose, fructose and maltose
 - D. monosaccharides
13. Essential and nonessential refer to:
 - A. amino acids and fatty acids
 - B. amino acids and carbohydrates
 - C. fatty acids and glucose
 - D. fatty acids and carbohydrates
14. A secretion from the liver which aids in the digestion and absorption of fat is:
 - A. rennin
 - B. bile
 - C. hydrochloric acid
 - D. arachidonic acid
15. Digestion of food takes place primarily in the:
 - A. mouth
 - B. stomach
 - C. small intestines
 - D. large intestines
16. Absorption of food takes place primarily from the:
 - A. mouth
 - B. stomach
 - C. small intestines
 - D. large intestines

17. Examples of water-soluble vitamins are:
 - A. vitamins B₁, B₂, C
 - B. thiamine, riboflavin, niacin
 - C. ascorbic acid
 - D. all of the above
18. Examples of fat-soluble vitamins are:
 - A. A, D, K, E
 - B. thiamine, riboflavin, niacin
 - C. Vitamins A and B
 - D. vitamins K and C
19. In the body, carotene is changed into:
 - A. vitamin C
 - B. fatty acids in the presence of bile
 - C. vitamin A
 - D. the vitamin B complex
20. One of the chief functions of calcium in the body is to:
 - A. form hemoglobin
 - B. maintain water balance
 - C. control metabolism
 - D. form bones and teeth
21. One of the chief functions of iron in the body is to:
 - A. form hemoglobin
 - B. maintain water balance
 - C. control metabolism
 - D. form bones and teeth
22. One of the chief functions of iodine in the body is to:
 - A. form hemoglobin
 - B. maintain water balance
 - C. control metabolism
 - D. form bones and teeth
23. Thyroid, pituitary and adrenal are:
 - A. endocrine glands
 - B. ductless glands
 - C. glands which secrete hormones
 - D. all of the above
24. The percent of sodium in salt is approximately:
 - A. 3 to 7%
 - B. 40%
 - C. 87%
 - D. 2-1/2 to 3%

25. Because of the ammonia and potassium content of salt substitutes, they can be harmful in:
- A. atherosclerosis
 - B. liver disorders
 - C. renal disorders
 - D. b and c
26. An excess of cholesterol deposits in the arteries is the chief cause of:
- A. atherosclerosis
 - B. gallstones
 - C. obesity
 - D. kidney stones
27. The diet used in the treatment of atherosclerosis is usually low in:
- A. all fats
 - B. animal fats
 - C. vegetable fats
 - D. calories
28. The diet used in the treatment of cardiac conditions, edema, and hypertension is usually low in:
- A. fats
 - B. salt and sodium
 - C. residue
 - D. proteins
29. The diet used in the treatment of angina pectoris and myocardial infarction is usually:
- A. low in calories
 - B. soft, easily digested foods
 - C. small meals
 - D. all of the above
30. The diet used in the treatment of uremia is usually low in:
- A. fats
 - B. salt and sodium
 - C. proteins
 - D. b and c
31. The diet used in the treatment of gallbladder conditions is usually low in:
- A. fats
 - B. salt and sodium
 - C. proteins
 - D. a and c
32. The diet used in the treatment of liver disorders is usually:
- A. high caloric, high protein, high carbohydrate, low fat
 - B. low caloric, high protein, high carbohydrate, low fat
 - C. high caloric, low protein, high carbohydrate, high fat
 - D. high caloric, low protein, low carbohydrate, high fat

33. The diet used in the treatment of ulcers is usually low in:
- A. fats
 - B. salt and sodium
 - C. residue
 - D. proteins
35. The following foods are usually permitted for patients with atherosclerosis:
- A. beef stew, corn on cob, fried okra, skimmed milk
 - B. roast turkey, boiled potato, summer squash, grape juice
 - C. frankfurter, baked beans, slaw, hot chocolate
 - D. fried chicken, lima beans, sliced tomato, coffee
36. The following foods are usually permitted for patients with cardiac conditions, edema and hypertension:
- A. crab cake, rice, spinach, tea
 - B. roast veal, baked potato, celery and carrots, milk
 - C. cream of chicken soup, cheese sandwich, tomato juice
 - D. none of the above
37. The following foods are low in sodium:
- A. crab cake, rice, spinach, tea
 - B. roast veal, baked potato, celery and carrots, milk
 - C. cream of chicken soup, cheese sandwich, tomato juice
 - D. none of the above
38. The following foods are usually permitted for patients with angina pectoris and myocardial infarction:
- A. baked haddock, rice, green peas, skimmed milk
 - B. roast beef, noodles, green beans, skimmed milk
 - C. egg omelet, grits, asparagus, skimmed milk
 - D. all of the above
39. The following foods are low in proteins and sodium:
- A. clear broth, plain jello, coffee, sugar, cream
 - B. bouillon, fruit jello, tea, sugar, cream
 - C. buttered rice, sour balls, coffee, sugar, cream
 - D. buttered noodles, tomato juice, tea, sugar, cream
40. The following foods are high caloric, high protein, high carbohydrate and low fat:
- A. canadian bacon, baked apple, mixed vegetables, tea
 - B. broiled steak, whipped potatoes, winter squash, milk
 - C. vegetable soup, potato chips, applesauce, hot chocolate
 - D. bacon, grits, tossed salad, coffee
41. The following foods are usually permitted for patients with ulcers:
- A. baked ham, sweet potatoes, green peas, pineapple juice
 - B. tunafish, noodles, green beans, milk
 - C. hamburger steak, creamed potatoes, broccoli, tea
 - D. chicken livers, rice, brussel sprouts, apricot nectar

42. The following foods are low in residue:
- A. hard cooked eggs, rice, plain jello, orange juice
 - B. pea soup, cottage cheese, fruit cocktail, vegetable juice
 - C. roast beef, mashed potatoes, green beans, milk
 - D. macaroni and cheese, asparagus, sliced tomato, prune juice
43. Seasonings, seeds, skins, spices, stimulants, strings and strong flavored foods (The 7 S's) are not permitted for patients with:
- A. conditions of the colon
 - B. gallbladder conditions
 - C. ulcers
 - D. all of the above
44. The dietary practice used in treatment of the dumping syndrome is:
- A. to raise protein and fat intake and lower carbohydrates
 - B. to prevent food from literally dumping into the jejunum
 - C. to avoid liquids with meals
 - D. all of the above
45. The following dinner is suitable for a patient who has had a partial or total gastrectomy:
- A. swiss cheese, ham, lettuce, cocoa
 - B. American cheese, bacon, sliced tomato, mayonnaise
 - C. cottage cheese, potato chips, mayonnaise, milk
 - D. peanut butter sandwich, banana, mayonnaise
46. In order to lose one pound per week, it is necessary to reduce the caloric intake by:
- A. 500 calories per day
 - B. 1000 calories per week
 - C. 500 calories per week
 - D. 1000 calories per month
47. In diabetes mellitus, the primary dietary objective is to:
- A. decrease total calories
 - B. regulate carbohydrate intake
 - C. allow for a bedtime feeding
 - D. avoid insulin by decreasing sugar intake
48. In the diabetic exchange lists:
- A. one cup whole milk equals one ounce meat
 - B. one egg equals one ounce meat
 - C. one teaspoon margarine equals one slice bacon
 - D. b and c
49. The following diet was ordered for a diabetic patient:
180 grams cho, 65 grams pro, 65 grams fat.
The patient received:
- A. 2120 calories per day
 - B. 1545 calories per day
 - C. 1520 calories per day
 - D. do not know how to figure this

50. The following diet was ordered for a diabetic patient:
200 grams cho, 110 grams pro, 100 grams fat-1/3, 1/3, 1/3
The patient received:
- A. regular or no insulin
 - B. protamine zinc insulin
 - C. NPH insulin
 - D. insulin three times per day

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NUTRITION AND DIET THERAPY
IN SCHOOLS OF NURSING

by

Susie Jane Blankenship

(ABSTRACT)

A comparative study was undertaken in diploma and degree schools of nursing within the state of Virginia to evaluate nutrition and diet therapy knowledge of presently enrolled nursing students. A questionnaire determined which schools would participate in the study which was done by using a standard test. The test was pre-tested, accepted at face validity and administered to 701 students.

Results of the test showed that nutrition knowledge did not vary according to position of instructor and that diet therapy knowledge varied slightly. Test scores were consistently higher in nutrition than in diet therapy and gradually increased from the first through the last year of training.

In nutrition, mean test scores for all schools combined ranged from 13.0 to 20.0 with standard deviations of 2.5 to 4.5 from the first through the last year of training. Mean scores in diet therapy ranged from 10.0 to 16.0 with standard deviations of 3.0 to 3.5.

The hypothesis that knowledge of nutrition and diet therapy in diploma schools of nursing was improved when a nutrition instructor was employed on the nursing faculty was not correct. The use of another instrument for testing and a wider sample selection might have given the anticipated results.