

THE HOME HEALTH AIDES' KNOWLEDGE OF NUTRITIONAL
NEEDS FOR HOMEBOUND ELDERLY

A THESIS

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BY

KELLY TAYLOR, B.S., R.D., L.D., R.N.

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ABSTRACT

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Kelly Taylor

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A study was conducted to determine the nutrition knowledge of home health aides working with elderly homebound patients residing in a rural area. Twenty-seven home health aides identified nutrition services needed by their patients and completed a nutrition questionnaire to determine the aides' nutrition knowledge. Fifteen aides (experimental group) then attended a nutrition training session while the remaining 12 aides (control group) did not receive any nutrition education during the study.

Both experimental and control groups showed an improvement in the aides' identification of their patients' need for nutrition services. This would indicate that factors other than the training session improved the aides' detection of nutritional needs in their patients.

Home health aides can be utilized to identify patients in need of nutrition services. The author recommends further research to determine factors that improve aides' knowledge of nutritional risk in elderly homebound patients.

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CHAPTER I

INTRODUCTION

Only five percent of Americans age 65 years and older are institutionalized (1). Approximately 20 percent of independent living elderly are homebound (1). The homebound are at particular risk for nutrition-related disease due to a number of factors, including disability, transportation problems, social deprivation and isolation, decreased access to health care, and difficult socioeconomic conditions (1).

Limited data exist on the nutritional status and needs of the homebound elderly. A few studies have shown substandard intakes of major nutrients for homebound elderly individuals (2). Inadequate nutrient intakes, coupled with chronic disease and disability seen in many homebound elderly, enhances the risk of malnutrition. In turn, this can contribute to higher rates of institutionalization and rising health care costs.

The most rapidly growing age group in the U.S. is persons 85 years of age and older, and these individuals are very likely to be homebound (3). The percentage of elderly homebound living in rural areas is also increasing (3). There is considerable urban bias in the homebound elderly literature due, in part, to the difficulty in reaching this

special rural population (1). More research needs to be done on the rural population, since there can be major differences in income, access to transportation and access to health care in urban and rural areas. Such factors may or may not affect the dietary intake and nutritional status of the rural elderly and must be investigated (1).

Nutrition assessment of the homebound older person living in a rural area poses challenges to healthcare providers for a variety of reasons. Traveling to rural dwellings with appropriate equipment for obtaining anthropometric data is often very difficult (1). Labwork may not be available to identify nutritional deficiencies or excesses. Furthermore, professionals trained in proper nutrition assessment techniques may be hard to find in rural settings.

Dietitians can play an important role in providing effective nutritional care in the home environment (4). Unfortunately, lack of reimbursement from Medicare for nutrition services rendered by a registered dietitian remains the stumbling block for patients to receive proper care (5). Home health agencies with limited funding are forced to hire persons who lack the skills for providing nutritional assessment and treatment (5). Initial research has shown that patients' nutritional needs may not be identified or properly treated when dietitians are not involved with the planning and care of home health patients

(6). The American Dietetic Association has promoted the presence of the registered dietitian in the home by supporting the coverage of in-home dietetics services by Medicare and Medicaid (4, 5).

At this time, Medicare provides for direct reimbursement of skilled nurses and nurse aides for in-home patient visits. Traditionally, the skilled nurse performs an assessment of each patient's physical (including nutritional), psychological, sociological, and spiritual needs. If the agency does not employ a dietitian, the skilled nurse may have no choice but to provide nutritional services to patients, whether trained in this area or not.

Home health aides perform direct patient care duties that may include bathing, dressing, shopping, meal preparation, and housekeeping. Many patients establish closer bonds to their home health aides than with other health care professionals who make scheduled, but less frequent visits. Home health aides often spend more time in the patient's home because of the variety of personal care responsibilities they perform. Aides who have been trained are in a special position to identify patient dietary habits and nutritional needs, compliance with prescribed diets, and need for further nutritional/diet education.

Until Medicare reimbursement regulations are modified, paving the way for dietitians to become actively involved

in home care, using other health care disciplines to provide nutrition screening, assessment, and education may have to suffice. Training home health aides in basic nutrition and nutrition problems may be beneficial since they often are aware of patients' eating, shopping, and personal habits. A plan of referral to individuals with knowledge in nutrition assessment and education, preferably the registered dietitian, could then be implemented to flag patients that may otherwise go unnoticed.

Much more can be done to improve the nutritional status of older homebound Americans. Nutrition plays a major role in the health status of the older individual. Maintaining the elderly in their home environment with easy access to health services and trained health care providers may be a more humane and cost-effective approach to caring for our aging population.

PURPOSE

To determine the home health aide's knowledge of nutrition concepts and if a nutrition training session would improve reporting of homebound elderly in need of nutrition services.

CHAPTER II

REVIEW OF LITERATURE

The number of elderly people in the United States continues to increase because of longer life expectancy (7). Five thousand people turn sixty-five every day (2). Studies show that as many as 50 percent of independently living older Americans are at risk for poor nutritional status (5). Research suggests that the elderly are at greater risk for malnutrition for a variety of reasons, including physiologic, socioeconomic, and psychological factors.

These factors may include economics, adequate dentition, physical activity, heredity, chronic disease states, and medication use (7, 8). However, a tremendous gap exists between our knowledge of malnutrition and its sequelae, and our actions in preventing and treating it (9). Professionals of all disciplines and health care settings must come together to assist the elderly in improving their nutritional status and quality of life and health (9).

Nutrition intervention to the elderly should include the entire spectrum of care, from prevention through rehabilitation, including inpatient and outpatient services, home care services, and skilled nursing facility services (5). Optimal nutrition services for older people must be

provided within the continuum of health care. The concept of a "continuum of health care" was first defined in a 1982 California law as "a coordinated continuum of diagnostic, therapeutic, rehabilitative, supportive and maintenance services that addresses the health, social, and personal needs of (older) persons" (10, 11). It was recognized that older people may receive health care services and related benefits in a variety of settings (at home, in the community, or within institutions) and that the providers of necessary services may have diverse backgrounds, resources and orientations (10, 11). Nutrition services must be provided at all levels in order to keep the elderly in the most independent and cost-effective living setting (5). These recommendations are similar to the position paper on nutrition and aging proposed by the American Dietetic Association (12).

Data abound on the nutritional problems related to hospital or nursing facility housed elderly patients, but we have only sparse information on the nutritional status of the homebound elderly (1). Most homebound individuals are elderly and a higher proportion present with chronic illnesses rather than acute disease (13). Burns and Bhatti (13) target two groups with special nutritional needs in the home care population: 1) the elderly who require expanded nutritional services to avoid premature institutionalization,

and 2) the palliative care client. The authors (13) further define the expanded care group as needing home teaching on nutrition concepts, modified diet information, and shopping and meal preparation information. Many palliative home care clients have cancer or other terminal diseases, so the primary nutrition concerns address taste alterations, anorexia, dry mouth, nausea and vomiting, and weight loss (13).

At present, nutrition services for home health care are included in administrative costs under Medicare Part B and are not separately billable. This sets up the possibility of home health agencies with limited administrative funds to employ persons who do not have the skills to provide nutrition assessment in the elderly patient, leading to less than optimal care (5). The American Dietetic Association strongly recommends that home visits provided by registered dietitians be separately reimbursed when the physician's recommendation includes a diet therapy prescription (5).

Food intake and nutritional status by the homebound elderly are influenced by a number of factors, including rural versus urban living, living alone, whether they receive home delivered meals, social situation, physical health, gender, and ethnicity to name a few.

RURAL VERSUS URBAN LIVING

Research is inconsistent on whether living in a rural

area versus an urban area affects the nutritional intake and status of the independent living elderly. Smiciklas-Wright et al. (1) discussed the challenges in assessing nutritional status of the rural homebound elderly which, in part, has created urban bias in the gerontological literature (1). The romanticized image of rural life as the "good life" is often a deception. In reality, the rural elderly are more likely to have incomes below the poverty level and to have more health problems with less access to health services than their urban counterparts. The authors characterize the rural homebound elderly as older, more isolated, and subsisting on poverty level incomes, placing them at greater nutritional risk (1).

Stevens et al. (3) investigated food records in urban and rural elderly clients receiving home delivered meals. The researchers found that nutrient intake did not differ significantly between the two populations. Stevens et al. (3) found that the rural elderly relied more on family members to a greater extent than did urban residents. The investigators concluded that, although both rural and urban clients are at risk for developing nutritional deficiencies, nutrient intake is not affected by geographic location.

Hollingswoth and Hart (14) examined the joint effects of gender, ethnicity, seasonal variations, and place of residence on nutrient intakes in elderly clients.

The investigators found no significant difference between the nutritional intake of urban or rural dwellers. The authors did find, however, a significant difference over time (varying from season to season) between the two groups. There was a tendency among rural subjects to vary their nutrient intake among the seasons (probably due to home-grown gardens), but this tendency was not found among the urban subjects.

Posner et al. (2) examined dietary characteristics and nutrient intakes of 53 homebound older persons who receive home medical care. Using 24-hour recall and food frequency methodologies, the subjects' intakes were compared to the Recommended Dietary Allowances (RDA). The authors found that the mean intake of energy, folic acid, and calcium was below the RDA for male and female homebound subjects. The authors confirmed that dietary intake in the urban homebound elderly population is substandard.

"Food insecurity" is a term used by Roe (15) to describe a person's uncertainty of his/her food supply. Roe (15) linked food insecurity in the inner-city homebound to loss of mobility, poverty, and lack of in-home food assistance. Roe demonstrated less food insecurity in a group of patients receiving one home delivered meal per day than a comparison group on waiting lists to receive meals (15).

LIVING ARRANGEMENTS

Data relating living arrangements and nutritional intake and status of older persons is sparse and inconsistent. Theory would suggest that social interaction with housemates versus living alone renders a positive influence on morale, life satisfaction, well-being, and nutritional intake (16).

Davis et al. (17) investigated the association between living arrangements and eating behaviors from the 1977-1978 Food Consumption Survey. Compared to those living with a spouse, it was found that persons living alone not only ate more meals alone, but consumed a higher proportion of calories away from home, and skipped more meals. These data suggest that the eating behaviors are negatively associated with nutrient intake and dietary quality. A sex difference was shown in several variables. Men who lived alone, for instance, were more likely to skip meals than women. Frongillo et al. (18) also found an association between elderly subjects who did not eat for one or more days and living alone.

The data, however are still inconsistent on living arrangements and nutritional intake. Ryan and Bower (16) examined the relationship of living arrangements and socioeconomic status to nutritional intake of persons 55 years of age or older. The information presented did not find a relationship with living arrangements and nutrient

intake.

SOCIAL FACTORS

The quality of nutritional intake of older adults has been reported to be closely related to their socioeconomic status, with lower income groups having fewer food choices (16). Ryan (16) found a positive relationship between low socioeconomic status and inadequate nutritional intake. The article further supported the idea that those elderly who are housebound, isolated, and lonely, or who have low socioeconomic status are at risk for poor nutrition (16, 17, 18).

Walker and Beauchene (19) evaluated the dietary adequacy of elderly persons to determine whether factors such as loneliness, social isolation, or physical health were related to nutrient intake. Three-day food records, social contact diaries, a physical health questionnaire, and a loneliness scale were used to collect data. Energy and calcium were most likely to be under-consumed, and poor physical health was related to decreased intakes of vitamin A and ascorbic acid. Loneliness was related to dietary inadequacies.

A number of social factors are cited as nutritional screens for triggering further nutrition intervention in the Nutrition Screening Initiative (9). Factors listed as social indicators include: lack of money to buy food, eating alone,

living alone, being housebound, and the need for assistance with activities of daily living and shopping (9).

OTHER FACTORS

Several investigators have shown differences in nutritional intake of the elderly by ethnic origin and gender (14). Hollingsworth and Hart found that black subjects and male subjects were at risk for poorer nutritional intakes than non-blacks and females (14).

Whether homebound elderly patients receive home delivered meals may be a factor in determining nutritional status. Steele and Bryan (20) compared the dietary intakes of home delivered meal recipients and persons on waiting lists for home delivered meals. More than 50 percent of both the recipients and non-recipients consumed less than the RDA for vitamin A, riboflavin, calcium, phosphorus, and iron. Thiamin intake was below the RDA for greater than half of the home delivered meal recipients. Non-recipients consumed more carbohydrate, thiamin, and iron than those who received home delivered meals. Thirty-seven percent of the diets for patients who did not receive home delivered meals were rated as good or excellent as compared to only 12 percent of the recipient's diets. The authors postulated that the difference in the diets of the two groups was due to home delivered meals being targeted to nutritionally high risk

persons. Also the home delivered meal service displaced assistance with meals from family and friends (20).

Conversely, Roe (15) found that elderly persons receiving home delivered meals reported less hunger, less food insecurity, fewer problems acquiring food, and more regularity of meals than those on a waiting list to receive home delivered meals. Similar findings were presented by Walden et al. (21), showing that elderly subjects were more likely to have insufficient intakes of protein, thiamin, riboflavin, calcium, iron, and phosphorus on the days that meals were not provided (weekends) than on the days that meals were provided.

Today, health care costs continue to be concentrated in the hospital setting, but the direction is moving rapidly toward increasing health care in the community and home setting (11). The goal is to avoid institutionalizing the elderly as much as possible.

The continuum of care concept is intended to help older persons remain in their homes for as long as possible and to maintain a comfortable and dignified existence (11). The trends primarily pushing the continuum of health care for older persons include the rising costs of health care, the increasing elderly population, and a new emphasis on disease prevention, thereby reducing costly complications (11).

Home care is the fastest growing element of alternative health providers to the elderly. Home services are viewed as a potentially less costly and more humane method of providing and promoting health care in the older population (11). Home care is a system of providing case management and a wide range of medical, nursing, social, and related services to the individual's home (11). As previously mentioned, nutrition intervention lags far behind in the provision of comprehensive health care in the home health field, in part due to the lack of direct reimbursement for nutrition services performed by the registered dietitian (5, 22).

Evidence shows that home health providers are beginning to recognize the need for the registered dietitian as an integral team member for health care coordination of their patients. Burns and Bhatti (13) cited examples of inadequate nutrition knowledge by home care personnel and identified their desire for a nutrition consultant or counselor. Clarridge et al. (23) investigated the block grant-funded nutrition service in Wisconsin to identify whether people at high nutritional risk were receiving proper nutritional services. The researchers found that public sector nutritionists were able to reach most of their intended targets, except for several populations, including the homebound elderly. Clarridge et al. (23) comments that the

homebound population is often the group with the highest need for nutrition services, while receiving the least amount of care.

An increasing number of home health care providers are taking steps to include nutrition services to their patients. Castle (24) describes one agency's approach to providing comprehensive health care to patients. Many agencies (24) are providing registered dietitians as independent contractors to consult on problem patients, to educate staff, and to assist with education material development (13, 24, 25).

Other agencies are choosing to hire registered dietitians full-time to meet their patients' and staffs' nutritional assessment and educational needs (6, 13, 26). In such case, home visits for nutritional assessment and/or counseling will be performed by the registered dietitian as identified through nutrition screening by the registered nurse or physician. Another option that some home health agencies are choosing is education of the paraprofessional in the field of nutrition (25, 27, 28). The latter proposal is less desirable than having a full-time dietitian to meet the needs of the patients and staff, but until more agencies recognize the need for licensed, trained nutrition professionals, educating the direct caregivers in nutrition may have to suffice (25, 28).

Burns and Bhatti (13) alluded to the lack of nutrition knowledge by the home health care direct caregivers. Can these paraprofessionals be trained to assess and dispense nutrition information accurately and within the scope of their practice? Several studies (13, 25) discuss the desire of home health workers for nutrition education and modified diet programs. These caregivers have reported their lack of understanding of basic nutrition and diet principles (13). Glanz and Scharf (25) reported results of a nutrition questionnaire completed by social workers who are designated to provide nutrition education in one home health agency. Misinformation was most frequent for vitamin use, "health" food ideas, the need for a daily hot meal, and food costs (25).

Welch and Price (28) examined the impact of a one-day nutrition education workshop for paraprofessionals given at the beginning of the research period and repeated at three months. In this setting, it was the practice of home health nurses to screen and identify patients with possible nutrition problems and make assessments for patients' nutritional needs, including food preparation and meal service education, assistance with special diets, ordering of home delivered meals, and shopping for client groceries. The reviewers found that there was a significant increase in the detection of nutrition-related problems by the

paraprofessional than had been recorded prior to the workshop. There was also an increase in utilization of caretakers to assist with meal planning, grocery shopping, special diet attention, and week-day and week-end meal delivery. This information underscores the need for food and nutrition training for the paraprofessional providing nutrition care.

Concrete information concerning the need for registered dietitians in the home health setting is scarce in the literature (24). A growing body of knowledge is being gathered, however, on the number of homebound elderly with single and multiple modified diets prescribed by physicians, the increasing number of elderly on medications with nutritional interactions, and the number of elderly who are at risk for malnutrition. The need for nutrition services by the dietitian was described by Gaffney and Singer (24) when the investigators surveyed a large population of home health patients (N=812) and found that more than half of the patients were prescribed a modified diet. When all charts were reviewed for the need of diet modification, the investigators found that approximately three-fourths of the patients probably would have benefited from a diet modification, as opposed to only half (24). This emphasizes the need for extensive dietitian involvement in home care agencies and the necessity of developing a monitoring system

for nutritional needs assessment of all patients referred to home health care.

Providing nutrition services is a vital component of all phases of the continuum of health care to older persons. Nutrition plays an integral part in improving or maintaining the health of the older person, maintaining independence and dignity, decreasing the possibility of institutionalization, and lowering health costs (6). Nutrition screening and intervention should be a reimbursable service, since in the long run, it could improve the health of the elderly population and decrease health care costs (2).

CHAPTER III

METHODOLOGY

In order to determine the nutrition knowledge of home health aides working in a rural setting with elderly patients, a study of the nutrition knowledge of aides was conducted. Home health aides employed by a home health agency with six home care offices in a rural area of central Texas were asked to participate. Each office had a census of 18-85 patients, with the agency serving a total of 250-300 patients in an 80-mile radius. Patients served by the agency lived in either small towns (approximately 1000-15,000 population) or in the country.

The home health agency employed 3 to 15 home health aides per office, with each aide carrying a caseload of approximately 38 patient contacts per week. Fifty-one home health aides were targeted, with 24 aides dropping out of the study due to job turnover or transfer. A total of 27 female home health aides completed the study.

During the research period, home health aides completed a nutrition screening form on their assigned patients every two weeks. The "Need for Nutrition Services" form (Appendix A) was designed to determine the home health aides' ability to detect patients in need of nutrition services. Data were

collected by the researcher on information obtained from the forms for a period of approximately 16 weeks.

Midway through the study, home health aides in each office were asked to complete a nutrition questionnaire (Appendix B) designed to measure their knowledge of the Food Guide Pyramid (basic knowledge of food groups and nutrition principles), their ability to determine patients at risk for nutrition problems, and their ability to identify patients who might require nutrition services.

Prior to administration of the questionnaire, the researcher validated the tool by having two dietitians and five home health aides not participating in the study review the survey for clarity, accuracy, and ease in testing. The consensus of the test group was that the initial questionnaire was too difficult for the population being studied. Based on these suggestions, the researcher made changes in the questionnaire.

The questionnaire was administered and retrieved by the researcher after informed consent was obtained (Appendices C and D). Code numbers were used rather than names, in order to maintain the workers' confidentiality.

Fifteen home health aides then participated in a nutrition training session (experimental group) sponsored by the home health agency and conducted by the researcher. Information on the Food Guide Pyramid and how to identify homebound

patients with nutritional problems or potential problems was covered. The remaining home health aides were used as a control group. They completed the nutrition questionnaire, but did not attend the training session.

Information obtained on the "Need for Nutrition Services" forms were compared prior to (pretest) and after (posttest) the training session for both experimental and control groups. Again, due to a high job turnover rate as well as difficulty scheduling office times with a population that primarily works in patients' homes, the researcher was not able to obtain the series of eight "Need for Nutrition Services" forms for all aides. It was decided to use data from aides who completed at least one form prior to the treatment session, and at least one form completed after the treatment session, for both groups. An assumption of the study, then, was that the first pretest and posttest completed by the aides were representative of all pretests and posttests. Correct answers on the nutrition questionnaires were tallied into individual scores for each aide.

STATISTICAL ANALYSIS

Data were analyzed using BMDP Statistical Software, Inc., 1993, (Los Angeles, CA). Descriptive statistics were used to analyze the nutrition questionnaire and variables in the

experimental and control groups. Dependent t-tests compared the pretest and posttest scores for the experimental and control groups. One-way analysis of covariance (COANOVA) was used to analyze the pretest and posttest scores for the control and experimental groups, while controlling for the covariate (nutrition questionnaire).

CHAPTER IV

RESULTS AND DISCUSSION

This study was conducted in a home health agency in rural central Texas in order to determine home health aides' nutrition knowledge. Twenty-seven of 51 targeted home health aides completed a series of screening forms ("Need for Nutrition Services") designed to measure each aide's opinion of nutrition services their patients might need. Only data from aides who completed a minimum of one pretest and one posttest "Need for Nutrition Services" form were used in the study. Data from patients were paired with the pretest and posttest. Information on patients included only on the pretest or only on the posttest was not used in the study, since the researcher was unable to compare the responses. Due to the highly mobile characteristic of this working population (job changes, turnover rate, and availability for scheduled meetings), the number of aides complying with both pretest and posttest responses was only 53 percent.

Table 1 describes the nutrition variables that the control group of home health aides identified as needed by their patients. In general, aides felt that patients needed more nutrition services in their post-responses to the "Need for Nutrition Services" forms than in their initial (pretest)

Table 1

Home Health Aides' Identification of Nutrition Services
Needed by Patients - Control Group

Variable	Pretest		Posttest	
	freq.	%	freq.	%
1. Patients needing assistance with grocery shopping	40	74	49	91
2. Patients needing assistance with meal planning	24	44	36	67
3. Patients needing assistance with meal preparation	31	57	45	83
4. Patients needing assistance following a special diet	24	44	32	59
5. Patients needing home-delivered meals	30	56	48	89
6. Patients needing assistance eating meals and snacks	15	28	9	17
7. Patients needing complete feeding of meals and snacks	4	7	5	9
8. Patients who may benefit from seeing a dietitian	17	32	35	65

n=12

responses.

Table 2 describes the experimental group's determination of patient's nutrition needs. Similarly, the posttest scores indicated a greater number of patients needing nutrition services than pretest scores.

In order to determine if the control and experimental groups were treated equally, the number of aides responding to the questionnaire is presented in Table 3, part 1. Approximately 67 percent of both control and experimental group members completed the questionnaire. This would suggest equality in the treatment of both groups.

Although correct answers on the nutrition questionnaire were not provided to the control group, the possibility existed that the completing of the questionnaire influenced the outcome of the posttest scores for the control group. Therefore, a t-test was performed to determine if the completion of the nutrition questionnaire had an effect on the posttest scores of the control group. At a level of $p < 0.025$, the matched statistical t value was 2.21, inferring that the questionnaire did not have an influence on the posttest scores of the control group.

Part 2 of Table 3 compares the differences between pretest and posttest scores for both groups. A statistically significant difference was demonstrated in the pretest and posttest scores for the aides' determination of patients

Table 2

Home Health Aides' Identification of Nutrition Services
Needed by Patients - Experimental Group

Variable	Pretest		Posttest	
	freq.	%	freq.	%
1. Patients needing assistance with grocery shopping	56	85	64	97
2. Patients needing assistance with meal planning	42	64	51	77
3. Patients needing assistance with meal preparation	46	70	54	82
4. Patients needing assistance following a special diet	40	61	56	85
5. Patients needing home-delivered meals	36	55	50	76
6. Patients needing assistance eating meals and snacks	7	11	33	51
7. Patients needing complete feeding of meals and snacks	3	5	3	5
8. Patients who may benefit from seeing a dietitian	30	46	39	60

n=15

Table 3

Part 1. Number of Responses to Nutrition Questionnaire

Groups	<u>n</u>	Responded freq.	%	Did Not Respond freq.	%
Control	12	8	67	4	33
Experimental	15	10	67	5	33

Part 2. T-test on Difference Between Pre and Post Scores for Aides' Determination of Patients' Need for Nutrition Services

Groups	Mean	Std. Dev.	SEM	<u>t</u>
Control				
Pre	3.4	2.4	0.3	4.6
Post	4.8	1.8	0.2	
Experimental				
Pre	3.9	2.0	0.3	5.1
Post	5.3	1.6	0.2	

$p < 0.0001$

Control n=12

Experimental n=15

needing nutrition services. Posttest scores in the experimental group indicated that the aides found an increased need for their patients to receive nutrition services after the nutrition training session than before. Similarly, the control group found an increased need for patient nutrition services in the posttest scores. The researcher could not, therefore, draw the conclusion that the training session was the reason for improvement in the experimental group's posttest scores, since the control group improved as well. In contrast, findings by Welch and Price (28) clearly identified a significant increase in the detection of nutrition related problems and assignment of services after a nutrition education workshop.

Consistent with the literature, (25) this research identified inconveniences in scheduling meetings with home care providers that mainly work in patient homes. As Glanz (25) noted, caregivers frequently found attending inservices and mandatory office meetings a burdensome addition to their workload.

Table 4 compares the results of the pre and post scores for both groups, while controlling for the influence that the questionnaire, considered the covariate, might have on the scores. After equating the pretest and posttest scores, the data showed that both groups improved their scores alike. Figure 1 depicts the change in slope for the control and

Table 4

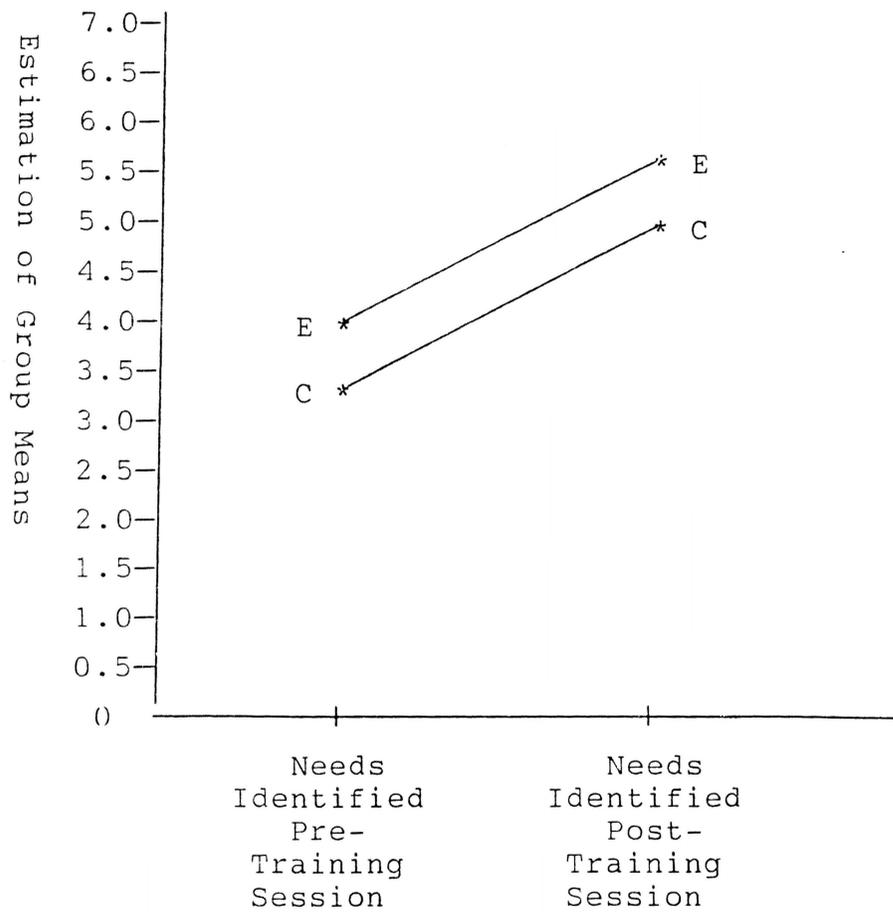
Results of One-Way COANOVA on Pretest and Posttest Scores for Control and Experimental Groups

Group	Mean of Covariable	Mean of Criterion	Adjusted mean of Criterion
Control	3.4	4.8	4.9
Experimental	3.9	5.3	5.2

SV	df	<u>SS</u>	<u>MS</u>	F
Equality of Adjusted Means of Groups	1	3.4	3.6	1.3
Error	117	292	2.5	

$p = .25$

Figure 1



C = Control Group
E = Experimental Group

Regression Lines and Slope of Control and
Experimental Group Means Pre and Post Training
Session

experimental groups. Although both lines have a positive slope, reflecting a change in pretest to posttest scores in the experimental and control groups, the degree of change in the slope is equal. There is no significant difference between the change in the treatment group and the change in the control group.

Table 5 describes the number and percentage of nutrition services needed, as identified by the home health aides. In general, aides determined that the majority of patients required an average of six nutrition services provided by the home health agency. Only a small number of patients were identified as needing all the nutrition services (7-8) provided by the agency. Priority needs for patients included assistance with grocery shopping, meal planning and preparation, assistance with following a special diet, receiving home-delivered meals, and the need to see a dietitian. This finding is consistent with other studies that have identified priority nutrition needs for the homebound elderly population (1, 3, 18, 24, 28, 29).

Home health aides rated two nutrition services as the most frequently needed by their patients: assistance with grocery shopping and assistance with meal preparation. Data from the National Home and Hospice Care Survey (29) support this research in finding that in 1992, the activities of daily living that patients needed assistance with the most

Table 5

Percents of all Variables Needed by Patients

No. of Nutrition Services Needed	Control Group				Experimental Group			
	Pretest		Posttest		Pretest		Posttest	
	freq.	%	freq.	%	freq.	%	freq.	%
0	7	13	3	5	2	3	0	0
1	9	17	1	2	8	12	0	0
2	6	11	3	6	9	14	5	8
3	7	13	5	9	9	14	5	8
4	5	9	6	11	7	10	10	15
5	5	9	9	16	12	18	10	15
6	10	19	22	41	15	23	19	28
7	2	4	4	7	3	5	15	23
8	3	6	1	2	1	2	2	3

(related to food and nutrition) included shopping for groceries and preparing meals.

A description of the home health aides' sources of nutrition knowledge is shown in Table 6. Descriptive statistics were used to tally the number and calculate the percentage of sources ranked by the aides. Seventy-three percent of the aides ranked inservices and information from work as a major source for acquiring nutrition knowledge. Other highly ranked nutrition education sources included nutrition courses in school, watching television, and information learned from family and friends.

Descriptive information on the nutrition questionnaire showed a mean of 14 out of 19 correct answers or an average score of 74 percent out of 100. Questions most frequently answered correctly were food group identification responses. Most aides were able to determine the correct groupings for food items, with the exception of omitting dry powdered or evaporated milk from the milk, yogurt, and cheese group. A number of responses incorrectly counted butter as a serving in the milk group. Other items frequently missed included questions on specific nutrients, such as protein, calcium, vitamins A and C. On the portion concerning nutrition and the elderly patient, the most frequently missed responses that could lead to nutrition problems in the elderly were failures to identify patients taking three or more

Table 6

Aides' Description* of Sources of Nutrition Knowledge

Source	Rank	No.	%
Work	1	8	73
	3	1	9
	5	2	18
School	2	2	67
	5	1	33
TV	2	1	25
	3	2	50
	5	1	25
Community Programs	1	1	33
	4	2	67
Food Labels	1	2	28
	2	2	28
	3	2	28
	4	1	16
Magazines/ Books	1	1	25
	2	1	25
	4	2	50
Family	2	1	50
	4	1	50
Doctor	4	1	50
	5	1	50
Friends	3	1	100

* Rank 1-5 (1 as the greatest source of knowledge, 5 as the least)

medications or alcoholic beverages per day as being risk factors. Two responses frequently cited incorrectly as potential nutrition problems included patients being over 65 years of age, and patients who did not take a daily multi-vitamin supplement.

Comparison of these data to the literature is scant, due to the lack of published studies involving home health aides or other home health caregivers providing nutrition services to patients. Clearly, more research is warranted to clarify these issues and establish guidelines for the important provision of nutritional care to the homebound population.

CHAPTER V

SUMMARY AND CONCLUSION

An emphasis in healthcare reform has shifted our perspective from institutional care to home health care. At present, few home health agencies employ dietitians to provide nutrition services to patients, due to the fact that nutrition is not automatically reimbursed by Medicare or private insurance. In order to provide adequate health care for older Americans, optimal nutrition services must be provided within the continuum of health care, which includes home health services.

Few data exist on the nutritional status and needs of the homebound elderly. The purpose of this study was to determine if direct home care providers could be utilized to assist dietitians, nurses, and physicians in identifying patients with nutrition problems. The study investigated the home health aide's knowledge of nutrition concepts and whether a nutrition training session would improve reporting of homebound elderly in need of nutrition services.

Home health aides employed by a large home health agency in rural central Texas participated in the study. During data collection, two groups of aides were studied: an experimental group and a control group. Aides in the

experimental group identified nutrition services needed by their patients prior to a nutrition training session and again after the training session. Aides in the control group also identified nutrition services they felt their patients needed, but did not attend a training session. All aides were targeted to participate in completing a questionnaire to determine their general nutrition knowledge. Due to scheduling difficulties, approximately two-thirds of the aides completed the nutrition questionnaire.

Descriptive statistics were used to provide information on results of the nutrition questionnaire and pretest/posttest scores for the aides' determination of their patients' need for nutrition services. Dependent t-tests and analysis of covariance were used to analyze the scores of the control and experimental groups. BMDP statistical software was used to analyze data collected.

The results of the study showed that home health aides can be utilized to identify nutrition needs and need for nutrition services in the homebound elderly population. Aides identified a significantly greater number of nutrition services ($p < 0.0001$) needed by patients post-training session as compared to pre-training session. The researcher was unable to show, however, that the nutrition training session was the causative factor in the aides' awareness of their patients' increased need for nutrition services.

Improvements in posttest scores for both the experimental and control groups led the researcher to postulate that completing the "Need for Nutrition Services" form piqued the aides' awareness of nutritional needs in their patients.

Results of the nutrition questionnaire showed that aides rated inservices or other forms of work-related education as their primary source of nutrition information. This leads to the conclusion that, while the nutrition training session may not have been the cause of improvements in posttest scores, nutrition education presented in the work environment is still important for direct healthcare providers.

The study found that working with home health aides poses a challenge, since this population primarily works in patients' homes. Home health aides working in a rural environment may travel an average of 50-100 miles per day, and may find it difficult to attend inservices or meetings in the office. The author suggests that nutrition education occur on initial hire, then periodically in the form of self-study handouts, or as a part of mandatory or "pay day" meetings.

Until reimbursement issues are expanded to include registered dietitians in the home health arena, other health providers must be trained to address the important issues of food and nutrition for homebound patients. Using an approach of nutrition orientation and training for care providers on

hire, then following with a system of periodic documentation of patients' nutrition habits and needs, may provide an easy, cost-effective system that benefits the patient and maintains awareness of nutrition services in home health care providers.

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APPENDICES

APPENDIX A

Need for Nutrition Services Form

APPENDIX B
Nutrition Questionnaire

NUTRITION QUESTIONNAIRE

Where have you received most of your nutrition knowledge (knowledge about foods, health, meal planning, etc.)?

RANK 1-5 (1 as the most and 5 as the least):

_____inservices/information at work	_____magazines or books
_____nutrition course in school	_____family members
_____TV	_____family doctor
_____community programs	_____friends
_____reading package labels	_____other, specify:

* * * * *

FOR THE FOLLOWING, CIRCLE THE BEST ANSWER:

1. Which snack is highest in protein?
 - A. 1 cup buttermilk, 2 tablespoons peanut butter and 6 crackers
 - B. 1/2 cup jello with fruit and 6 graham crackers
 - C. 1/2 cup cottage cheese with 1/2 cup fruit
 - D. A coke float (12 oz. coke and 1/2 cup ice cream)

2. Vitamins are essential to good health. Which is the correct statement about vitamins:
 - A. Vitamins give us energy.
 - B. Pills are the best vitamin sources.
 - C. Too much of a vitamin can be bad.
 - D. All foods have some of each vitamin in them.

3. A 3 ounce serving of meat after cooking and without the bone would be approximately the size of:

A. A small matchbox	C. A paperback book
B. A deck of cards	D. A VCR tape

4. The milk group is an important part of the Food Guide Pyramid. Which of these foods does NOT count as a milk group food?
- A. Butter
B. Cottage cheese
C. Dry powdered milk
D. Evaporated milk
5. For supper, your patient is having ham, sweet potatoes, green beans, a roll, and a glass of milk. What food group is missing from this meal?
- A. Vegetable group
B. Bread and grain group
C. Fruit group
D. Meat group
6. We all need several helpings of fruits and vegetables a day to get needed vitamins and minerals. Which of these is NOT a part of the fruit and vegetable group of foods?
- A. Celery
B. Navy beans
C. A banana
D. Green peppers
7. Mrs. Brown tells you she avoids all milk and milk products and meats due to cholesterol. She eats mostly vegetables. What nutrients might she be low in?
- A. Calcium and vitamin A
B. Protein and vitamin K
C. Vitamin A and vitamin D
D. Calcium and protein
8. Vitamins A and C are found in fruits and vegetables and very important in our diets. Which meal has the most vitamin A and vitamin C?
- A. Pork chop, rice, and yellow squash
B. A sandwich, green pea salad, and celery sticks
C. Tomato juice, French toast, and a sliced cantaloupe
D. Catfish, potato salad, and hush puppies

* * * * *

PLACE AN "X" BY THE FACTORS THAT COULD LEAD TO NUTRITION PROBLEMS IN THE ELDERLY:

- A patient who eats fewer than 2 meals per day.
- A patient who is able to purchase/prepare her own meals.
- Without wanting to, a patient who has lost or gained 10 pounds in the last 6 months.
- A patient who has 3 or more drinks of beer, liquor or wine almost every day.
- A patient who does not take a multivitamin every day.
- A patient who is not always physically able to shop, cook and/or feed himself.
- A patient who eats few fruits or vegetables, or milk products.
- A patient who is over 65 years of age.
- A patient who has an illness or condition that made her change the kind and/or amount of food she eats.
- A patient that receives home-delivered meals at noon.
- A patient who takes 3 or more different prescribed or over-the-counter drugs a day.

Code _____

APPENDIX C
Agency Approval Letter

354 WEST LIVE OAK
DUBLIN, TEXAS 76446
817-445-4620

711 N. GRAHAM
STEPHENVILLE, TEXAS 76401
817-965-6629



215 N HOUSTON
COMANCHE, TEXAS 76442
915-356-7501

111 S RICE
HAMILTON, TEXAS 76531
817-386-8991

March 07, 1994

Human Subjects Review Committee
Texas Woman's University
Box 223939 TWU Station
Denton, Texas 76204-0939

Dear Committee:

This a letter of approval for Stephen's Home Health Care, Inc. to allow a volunteer sample of home health aides to participate in the research done by Kelly Taylor, RD/LD, RN for partial fulfillment of her masters degree at TWU. I understand that the sample of home health aides may voluntarily fill out a questionnaire concerning nutrition in the homebound elderly. Data collection should be obtained in a confidential manner. The results of this study should be used to provide information to Stephen's Home Health Care Inc. for staff education needs, in order to provide optimum patient care.

Sincerely,
Ann Stephen, RN
Ann Stephen, RN
Administrator

APPENDIX D
Subject Consent Form

TEXAS WOMAN'S UNIVERSITY
SUBJECT CONSENT TO PARTICIPATE IN RESEARCH

TITLE OF STUDY: The Home Health Aides' Knowledge of
Nutritional Needs for the Homebound Elderly

INVESTIGATOR: Kelly Taylor, R.D./L.D., R.N.
817/879-2441

FACULTY ADVISOR: Betty B. Alford, Ph.D., R.D.
817/898-2636

You are being asked to participate in a study of home health aides' knowledge of nutrition and nutrition problems in the elderly. Since home health aides are often the main caregivers to homebound patients and in a unique position to identify some of their needs, you were selected to participate in this study. The purpose of the study is to determine home health aides' knowledge of nutrition and to determine if a nutrition training session would improve reporting of patients in need of nutrition services. Results of the research will be used by dietitians, nurses, and home health agencies to serve as a guide for education of home health aides, in order to provide better care for patients.

If you agree to participate, you will be asked to complete a 15-minute questionnaire on basic nutrition. Please understand that agreeing to take the questionnaire is voluntary, and information as to who did or did not choose to participate will not be made available to Stephen's Home Health owners, corporate staff, or any employee except for Kelly Taylor. The process of handing out and collecting the questionnaires will be done behind a closed door with only home health aides and Kelly Taylor in the room. Neither home health aide supervisors or other Stephen's employees will be allowed in the room during the time you complete the questionnaire. This will protect your right to either agree or refuse to take the questionnaire since corporate employees will have no knowledge of who participated.

To safeguard your privacy, questionnaires will be coded with a number rather than signing your name and kept in a locked file. Only Kelly Taylor and her school instructor

will have direct access to questionnaires. Stephen's administrators or supervisors will NOT have access to individual scores or questionnaires. Upon completion of the study, the questionnaires will be kept by Kelly Taylor no longer than 6 months, then destroyed by shredding. After responding to the questionnaire, an inservice on nutrition will be provided for approximately 45 minutes. The study will take about 1-3 months to complete. Results of the study will be made available to you when finished.

Minimal risk is involved in this study, other than possible mild anxiety in filling out the questionnaire. Benefits of the study to you may include improving your knowledge of caring for elderly patients.

For information about the research study or research subjects' rights, please contact Kelly Taylor or Betty Alford, at the numbers noted above. If you have any concerns about the way this research has been conducted, contact the Texas Woman's University Office of Research and Grants Administration at 817/898-3375.

* * * * *

Consent to Act as a Subject for Research and Investigation:

An offer to answer all of my questions regarding the study has been made and I have been given a copy of the dated and signed consent form. If alternative procedures are more advantageous to me, they have been explained. A description of the possible attendant discomfort and risks reasonable to expect have been discussed with me. I understand that I may terminate my participation in the study at any time. I understand that no medical service or compensation is provided to the subjects by the university as a result of injury from participation in research.

Subject's Signature

Date

Witness

Date

Code _____

APPENDIX E

Approval by the Human Subjects Review Committee

(Texas Woman's University)

████████████████████

TEXAS WOMAN'S UNIVERSITY

DENTON, DALLAS, HOUSTON

HUMAN SUBJECTS REVIEW COMMITTEE

June 9, 1994

Kelly Taylor
Route 1 Box 74 T
Comanche, TX 76442

OFFICE OF
RESEARCH AND
GRANTS ADMINISTRATION
P.O. Box 22939
Denton, TX 76204-0939
Phone: 817-898-3375

Dear Kelly Taylor:

Social Security #: 461-76-4164

Your study entitled "The Home Health Aides Knowledge of Nutritional Needs for the Homebound Elderly" has been reviewed by a committee of the Human Subjects Review Committee and appears to meet our requirements in regard to protection of individuals' rights.

Be reminded that both the University and the Department of Health and Human Services (HHS) regulations typically require that agency approval letters and signatures indicating informed consent be obtained from all human subjects in your study. These are to be filed with the Human Subjects Review Committee. Any exception to this requirement is noted below. This approval is valid one year from the date of this letter. Furthermore, according to HHS regulations, another review by the Committee is required if your project changes.

Special provisions pertaining to your study are noted below:

- The filing of signatures of subjects with the Human Subjects Review Committee is not required.
- Other:
- No special provisions apply.

Sincerely,



Chair
Human Subjects Review Committee - Denton

cc: Graduate School
Dr. Betty Alford, Nutrition and Food Sciences
Dr. Dorice Czajka-Narins, Nutrition and Food Sciences