

NUTRITION SERVICES IN ADULT DAY CARES IN TEXAS

A THESIS

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COLLEGE OF HEALTH SCIENCES
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BY

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DENTON, TEXAS

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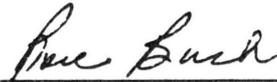
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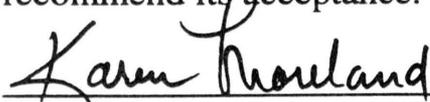
To the Associate Vice President for Research and
Dean of the Graduate School:

I am submitting herewith a thesis written by Sarah E. Williams entitled "Nutrition Services in Adult Day Care Facilities in Texas". I have examined this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Nutrition.

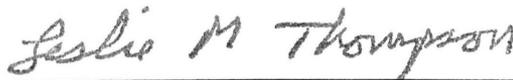


Rose Bush, Major Professor

We have read this thesis and
recommend its acceptance:







Associate Vice President for Research
and Dean of Graduate School

DEDICATION

This thesis is dedicated to those who work so tirelessly to make the lives of the elderly brighter by providing good, wholesome meals that support the unique needs of the elderly. Increasing numbers of elderly make these people all the more valuable.

ACKNOWLEDGMENTS

I feel I must thank my sister and my parents for their undying support, emotionally and financially, as I have been in school these many years. You have been my inspiration to do my best. I also must thank my thesis advisor Ms. Rose Bush for the patience she has shown and for the encouragement to finish this project. I must thank Linda Cashman and Karen Moreland for serving on my advisory committee, and Dr. Mary Watson for her help in preparing the survey. Special thanks also must be expressed to Saroj Bahl, Rebecca Upchurch, Elaine Weyant, and Alecia Honeycutt for validating the survey.

NUTRITION SERVICES IN ADULT DAY CARE FACILITIES
IN THE STATE OF TEXAS

Sarah E. Williams

May, 1999

ABSTRACT

The purpose of this study was to collect information about the nutrition services in adult day care facilities in Texas. One hundred and eighteen of the 220 facilities surveyed participated. Of those participating, 59 facilities (50%) returned the surveys only, and 59 facilities (50%) sent menus with their completed surveys. The average size of these facilities was 31-70 clients, and almost all had a nutrition consultant that is a Registered, Licensed Dietitian. Lunch was the most common meal served, followed by breakfast. Snacks were most commonly served in the afternoon, or at 10 a.m. and 2 p.m. for the diabetic clients. Nutrient Analysis of the 59 lunch menus received revealed adequate calories, protein, vitamins A, B6, B12, C, D, E, Folate, Niacin(B3), Thiamin (B1), Riboflavin (B2), as well as the minerals Calcium, and Zinc.

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CHAPTER I

Introduction

Adult Day Care for senior adults needing assistance is one of the new challenges facing health professionals today. Research from the 1990 United States census indicates that at present 12% of the population of the United States is 65 years or older. By the year 2030, 22% of the population of the U.S. will be above age 65, with the 85 year old and over group expanding at the same rate (Vickery, Camasso, & Cotugna, 1993). These increases in numbers of elderly indicate a need for new ways to take care of those who are no longer able to care for themselves. Adult Day Care Centers have become an alternative form of care for many families since the 1970's (Conrad, Hughes, Hanrahan, & Wang, 1993).

History of Adult Day Care

The idea of Adult Day Care began in Russia in 1920 with a psychiatric day hospital for the mentally ill, then expanded to care for veterans after World War II (Hunter, 1992). The concept was first used for the elderly in 1954 at the Hudson Day Center in New York. In the 1960's and 1970's, Adult Day Care consisted mainly of day hospitals. The numbers of adult day care centers have steadily increased from 18 in 1974 to 1,700 in 1988 (Conrad et al., 1993), to 2,200 in 1989 (Cefalu, Ettinger, & Espeland, 1996) with more than 3,000 currently, according to the National Institute for Adult Day Care and the American Council on Aging. Adult Day Care facilities are sometimes

attached to facilities which provide additional care. Several of the facilities in Texas are associated with nursing homes, Alzheimer's facilities, or Personal Care Homes.

Personal Care Homes are establishments that provide food, bed, and board for fewer than four people unrelated to the owner, or a foster-care type residential facility with fewer than 5 persons. These facilities operate under the guidelines established by the Texas Department of Human Services. Regardless of the logistics of the facility, Adult Day Care has "clearly assumed a major role in the spectrum of long-term care" (Conrad et al, 1993). As a result of the growth in long-term care facilities, the need for trained personnel has increased dramatically.

Adult Day Care Staff

The staff of an Adult Day Care Facility consists of a Director, Nurse, Activities Director, Attendants, and Nutrition Consultant. According to the Licensing Standards of the Texas Department of Health and Human Services (1995), the director oversees the facility, staff, and paperwork, and may also serve as Activities Director or Nurse (but not both). There must be a Registered or Licensed Vocational Nurse on the premises any time more than one client is present. The Activities Director plans social activities for the clients and maintains records of support services. Attendants are responsible for the personal care of the clients, supervision of the clients, and assisting clients in participating in the activities planned by the Activities Director.

Vickery (1993) found that most Adult Day Care facilities employ a Director, many had Registered Dietitians as consultants, and at least one Registered Nurse.

Additional Staff included art, music and group support therapists, a pharmacist, rehabilitation counselor, psychologist and gerontologist. Staff must be able to manage any physical handicap or provide any care given at a nursing home (Hunter, 1992). The clients' individualized care plans are reviewed by the staff and updated often. Problems such as poor dietary intake are addressed and a new plan developed to provide appropriate care.

As the numbers of elderly grow, facilities dedicated to the care of the elderly, particularly the functional elderly, become crucial. Careful planning and monitoring by the staff will assure that the special needs of the elderly are being met.

CHAPTER II

Literature Review

Regulations Governing Food Service

Guidelines for menus come from the Texas Department of Health and Human Services Title 40 regulations on Day Care facilities, and from the state regulations governing Child Day Care facilities. Title III (C) of the Older Americans Act (OAA) of 1965 was amended in 1973 to create the Elderly Nutrition Program (ENP), also known as the National Nutrition Program. This program set up guidelines for providing one meal that meets one-third of the Recommended Dietary Allowances for those over the age of 55. The “Manual: Policies and Procedures for the National Nutrition Program for the Elderly” and the “Guide to Effective Project Operations: The Nutrition Program for the Elderly”, also known as the green guide, were published to assist the facilities in planning menus (Rhodes, 1991). The U.S. Dietary Guidelines published in 1992 give more guidelines for determining what should be served at elder care facilities.

Many Adult Day Care facilities are enrolled in the Texas Department of Health’s Special Nutrition Program Child and Adult Food Program. This program provides food reimbursement based on number of eligible meals served. Administrators of the facilities go through an orientation to the program where they receive the program materials and are introduced to the requirements of the program. Periodic inspections ensure that meals meet these requirements.

Eligible meals include:

Breakfast

1 cup milk

1/2 cup fruit, vegetable or full-strength juice†

2 servings of bread*

Client may decline one of the four items

Lunch

1 cup milk

1 cup fruit, vegetable or full-strength juice†

2 servings of bread*

1 serving of meat¹

Client may decline two of the six items

Dinner (if offered)

1 cup fruit, vegetable or full-strength juice†

2 servings of bread*

1 serving of meat¹

Client may decline two of the five items

Snack

Center must serve two of the four components ‡

(Bread, Fruit/Vegetable, Meat or Milk)

* Bread serving is defined as: 1 slice; 1 serving of cornbread, rolls, muffins, etc.; ¾ cup or 1 oz. cold dry cereal; ½ cup cooked cereal; ½ cup cooked pasta; ½ cooked cereal grains or an equivalent quantity of any combination of bread/bread alternate.

† ½ cup constitutes a serving of vegetables, fruits or full-strength juices. At lunch and dinner, two different selections must be served.

¹ A serving of meat is defined as: 2 oz. lean meat, poultry or cheese; 1 Egg; ½ Cooked dry beans or peas; 4 tbs. of peanut, soy or other nut or seed butters; 1 oz peanuts, soynuts, treenuts or seeds = ½ a serving;

‡Yogurt may be used for the snack only.

Determining a Clients Nutritional Needs

Relevant medical and nutritional information is collected when the client is referred to the facility. Vickery (1993) found that most facilities require a physical exam before entering the program, but not necessarily hematological parameters. If blood

values were included, glucose, cholesterol, triglycerides, hemoglobin, albumin, potassium, hematocrit, sodium, and white blood count were requested. These parameters were usually reassessed annually.

Fasting blood glucose levels are used to detect diabetes and to monitor diabetes management. Cholesterol monitoring reveals information about the body's fat stores and is an indicator of ability to heal. Protein and hydration status are monitored using albumin, hematocrit, and hemoglobin values. Lab values can be misleading among the elderly due to the physiological changes in aging and the changes brought on by chronic illness common among the elderly (Roubenhoff, Giacoppe, Richardson, & Hoffman, 1996). Roubenhoff et al. recommend that Bioelectrical Impedance Analysis (BIA) or Resting Energy Expenditure (REE) be used as more accurate indicators of body composition. The equipment for both tests is, however, expensive so that the cost could be prohibitive to many Adult Day Care Facilities.

Awareness of food and drug allergies avoids potentially hazardous reactions. Special needs such as modified diets, insulin dosage and monitoring, dialysis, and food preferences should also be established in the initial interview. Vickery (1993) found that the Dietitian is primarily responsible for the screening, though the Facility Director, Nurse, or Social Worker may assist in getting the information. Knowing as much as possible about the client is the first step in providing appropriate care.

Specific Nutrients and their Effect on the Elderly

The elderly may have inadequate intakes of calories, protein, vitamins A, B₆, B₁₂, C, D, E, riboflavin, thiamin, folate, niacin and zinc (Blumberg, 1991, Zawanda, 1996). Inadequate vitamin and mineral intake can decrease immune response, making the elderly more susceptible to illness and infection and less able to fight off infection when they do become ill. Insuring a diet adequate in nutrients and calories can improve overall health and avoid subclinical macronutrient (Energy, Protein, Carbohydrate, and Fat) deficiencies.

Calories. Adequate caloric intake is essential to avoiding other nutrient deficiencies. Overall inadequate caloric intake in the elderly may have many contributing factors including decreased appetite, medication interactions, inactivity or immobility, altered mental status, and decreased availability of foods. The decrease in muscle mass in the elderly means that there is a decrease in metabolically active tissue with a resulting decrease in caloric requirements (Blumberg, 1997). Zawanda (1996) expressed these issues in the mnemonic WEIGHT LOSS:

- | | |
|---|--|
| W | Wandering and forgetting to eat due to dementia |
| E | Emotional problems (e.g., depression) |
| I | Impecunity (insufficient funds for foods) |
| G | Gut problems (e.g., dumping syndrome or malabsorption) |
| H | Hyperthyroidism or other endocrine dysfunction |
| T | Tremor or other neurologic problem interfering with ability to feed self |
| L | Low-salt, Low-cholesterol, or other unappetizing diet |
| O | Oral problems (e.g., poor dental care or mouth hygiene) |
| S | Swallowing problems |
| S | Shopping and food-preparation difficulties |

Barriers exist not only for the elderly getting and consuming foods, but the RDAs for calories (and other nutrients) are not well defined in the elderly, particularly the very old (ADA, 1996). Currently, the RDA for a 68" tall, 51 + year old man weighing 77 kilograms is 2300 kcal/day, and a 63" tall, 51+ year old woman weighing 65 kilograms is 1900 kcal/day (RDA's, 1989). There are no designations for those that are 70 or 80 years old or even older. Research to determine these needs is hindered by the very things that decrease nutrient intake in the elderly. Getting an accurate food recall, taking into account the impact of medications and illness, and decreased activity level contribute to the difficulty of this assessment.

Protein. The next major nutrient that can contribute to nutritional risk for the elderly is protein. Muscle mass decreases with age and is compensated for by an increase in body fat. This process can be slowed with adequate protein intake. Current RDAs are 0.75 g/kg body weight for a woman 51 + years old weighing 65 kg, or a man 51 + years old weighing 77 kg. Activity level, changes in metabolism, and illness or disability in the elderly alter the requirements for protein, but there is little information on which to base exact recommendations for protein intake (RDAs, 1989). Blumberg (1997) recommends a diet with 1.0-1.25 g/kg high quality protein, an increase from the 0.8 g/kg body weight, the current RDA (1989). The American Dietetic Associations Position Paper on Nutrition, Aging and the Continuum of Care (1996) states that adequate protein intake decreases the risk of morbidity and mortality.

Vitamin A. Recommendations for the intake of vitamin A are another area where the elderly have unique needs. Vitamin A has two forms, retinoids and carotinoids that have different biological activity. All-trans β -carotene is the most important form for human nutrition. The requirement for the retinol form of vitamin A decreases with age because of decreased hepatic uptake of retinol (Blumberg, 1991 & 1997). This decrease in hepatic uptake makes toxicity from supplements more common among the elderly (ADA, 1996). The current RDA for the β -carotene form of vitamin A for people over 51 years of age is 800 ug Retinol Equivalents (RE) for men, 1,000 ug RE for women (RDA, 1989).

Vitamin B1, Thiamin. Thiamin is another metabolic coenzyme found in unrefined cereal grains, brewers yeast, organ meats (liver, heart, kidney), lean cuts of pork, legumes and seeds or nuts (RDA, 1989). Thiamin needs may increase with age, but it is agreed that 0.5 mg/1000 kcal is sufficient for men and women over 60 years of age (RDA, 1989, Nichols and Basu, 1994). Beriberi, or thiamin deficiency, has symptoms that include nervous and cardiovascular changes (RDA, 1989) – both of concern to the elderly. Particularly in cases of overall decreased intake, these symptoms could be attributed to “old age” or “senility”.

Vitamin B2, Riboflavin. Riboflavin is an important coenzyme in oxidation-reduction reactions, and in the conversion of tryptophan to niacin. As with vitamin B₆, adequate intake does not necessarily coordinate with adequate serum indices. Food sources of riboflavin include meat, poultry, and fish, and especially dairy products. Riboflavin does, however, break down in ultra violet light, so milk should be kept in a

closed refrigerator to maintain riboflavin content. The RDAs are 1.4 for men over 51 years of age, and 1.2 for women over 51 years of age (RDA, 1989, Blumberg, 1997). Blumberg (1997) found that most elderly report intakes of at least 2/3 of the RDA of riboflavin, and that symptoms occur with relatively small decreases in intake.

Vitamin B3, Niacin. Niacin is a vitamin that is available by the conversion of tryptophan. Part of the daily requirements are met in this way. Milk and eggs have some niacin, but also have tryptophan to make up for the lack of adequate niacin. Meat has both niacin and tryptophan in adequate quantities. The RDA is 15 NE (niacin equivalents) for men over 51 years of age, 13 NE for women over 51 years of age (RDA, 1989).

Vitamin B6. Vitamin B₆, also known as pyridoxine, works in many metabolic reactions in the body. The need for B₆ is related to protein intake because of its action in amino acid metabolism. The need for B₆ increases in relation to the amount of amino acids to be metabolized. The best sources of B₆ are chicken, fish, kidney, liver, pork and eggs, followed by unmilled rice, soybeans, peanuts and walnuts. The elderly may or may not get adequate amounts of these foods, so the dietitian should make every effort to include these in a menu appropriate for the client's cultural preferences. Even though intake may be satisfactory, serum levels may still indicate inadequate stores. Current RDA's are 2.0 mg for men over 51 years of age, and 1.6 mg for women over 51 years of age. Blumberg (1991, 1997) found that research suggests that these levels may not be

adequate, especially in light of the decreased intake and increased requirements for B6 in the elderly.

Vitamin B12. Vitamin B₁₂, cobalamin, is also active in metabolism, and is produced by bacteria in the colon. The elderly are at risk for B₁₂ deficiency because of the high incidence of gut dysfunction, and poor protein intake. Cobalamin was also linked with immune function, blood glucose regulation, and mental functioning. Clients should be monitored for signs of macrocytic, megaloblastic anemia and given supplemental shots if B12 is indicated as the cause of the anemia. The RDA for B₁₂ is currently 2 ug for men or women over 51 years of age (RDA, 1989). Folate and B12 also play a role in decreasing homocysteine levels, thereby decreasing the risk of atherosclerosis (Blumberg, 1997).

Vitamin C. Vitamin C, known as ascorbic acid, is a water-soluble antioxidant that has many metabolic functions. It is thought to boost the immune system, as illustrated by decreased reactions to Delayed Cutaneous Hypersensitivity tests. Vitamin C is thought to have a role in cancer prevention due to its antioxidant properties. The current RDA for vitamin C is 60 mg for men and women over 51 years of age (RDA, 1989). This vitamin is an important part of a well-balanced diet (Preziosi, Galan, Herbeth, et al. 1998). It may also play a role in memory and mental functioning (La Rue, Koehler, 1997).

Calcium. The mineral calcium is most commonly found in the bones. Many factors influence the intestinal absorption of calcium. Vitamin D and protein promote absorption. The RDAs of calcium for both men and women over 51 years is 800 mg

(RDA, 1989). The elderly must have adequate intake calcium, vitamin D and exercise to promote optimum bone mineralization (Blumberg, 1997, ADA, 1996). Women should also be given appropriate estrogen therapy to assure proper bone mineralization (ADA, 1996).

Vitamin D. Vitamin D, or calciferol, is essential in bone formation and mineral homeostasis. It is manufactured in the skin in reaction to ultra-violet light. Food sources include milk, eggs, butter and margarine. The elderly are at risk because of infrequent exposure to sunlight, lactose intolerance, and low-fat diets (ADA, 1996). Elderly women, already at risk for osteoporosis, are at greatest risk of the effects of inadequate vitamin D, particularly if they get little exercise and do not consume sufficient calcium. The RDA for vitamin D is 5 micrograms for both men and women over 51 years of age (RDA, 1989).

Vitamin E. Vitamin E, the antioxidant most commonly found as α - tocopherol, is also crucial for the elderly. It helps prevent cancer by acting as an antioxidant and maintaining cellular integrity. Bantsev et al. found that maintenance of adequate vitamin E levels could prevent the eye damage that leads to cataracts. LaRue et al. (1997) found that both vitamins C and E lead to improved memory and mental functioning. The current RDA is 10 mg α -TE (tocopherol equivalents) for men over 51 years of age or older, and 8 mg α -TE for women 51 years of age or older (RDA, 1989). Blumberg (1991, 1997) found concern among experts that these levels may not be adequate in light of the importance of vitamin E and the decreased intake among the elderly. Blumberg (1991, 1997) also found that vitamin E plays an important role in immunity.

Folate. Folate is a coenzyme that promotes growth. It is found in liver, yeast, leafy vegetables, legumes, and some fruits. Food sources differ in bioavailability of folate, so a variety of food sources should be consumed. The RDA is 200 ug for men 51 years old or older, and 180 ug for women 51 years or older (RDA, 1989). Folate and B₁₂ are also linked because a deficiency in either or both results in anemia and their interrelationship with hyperhomocysteinemia (Blumberg, 1997). Adequate sources are therefore important particularly to elderly men and women with heart disease (Blumberg, 1997).

Zinc. Zinc is a trace element essential to metabolic function in most living things. Various dietary factors affect the bioavailability of zinc. Zinc has two functions important for the elderly : the immune system (Mossad, 1998, Blumberg, 1997) and taste. Providing a variety of foods, including meat (or an alternate source of zinc) will provide adequate dietary intake of zinc. The body pool of zinc turns over readily, so daily intake is critical to adequate stores (RDA, 1989).

The importance and benefits of providing the elderly with a well-balanced diet with foods of high-biological value nutrients are clear. The elderly have special needs that are caused by age-related physiological changes, prescription drug use, and a slowed activity level. These needs should be further investigated.

CHAPTER III

Purpose of the Study

The major purpose of this study was to collect demographic information about the Licensed Adult Day Care facilities in Texas, their food service programs, and the nutritional adequacy of their menus.

Research Questions

The questions answered by this study are as follows: What are the qualifications of the nutrition consultant at the facilities? What type of food service do the facilities use? Are the lunches on the menus from the facilities nutritionally adequate? Do the lunches meet at least 1/3 of the RDA of calories, protein, vitamins A, B1(Thiamin), B2 (Riboflavin), B3 (Niacin), B6, B12, C, D, E, Folate, and the minerals Calcium and Zinc for people over 51?

CHAPTER IV

Methods

Subjects

Subjects for the study included all of the 245 licensed Adult Day Care facilities in Texas. The address and phone number of each facility was obtained from the Texas Department of Health and Human Services list of Licensed Adult Day Care Facilities for December, 1997.

Procedure

Each facility was contacted by phone and the name of the facility director and preferred mailing address was determined. A survey was mailed to each Facility Director, and then two weeks later the facility directors who had not responded were contacted by phone.

Instrument

A survey (see Appendix A) was developed and reviewed by a practicing dietitian, two dietitians on a Skilled Nursing Facility/Rehabilitation unit at a Houston area Hospital, and a nutrition consultant at an Adult Day Care. The survey was used to collect demographic data, the credentials of the nutrition consultant, meal preparation and presentation, and a sample menu on which to base nutritional analysis. Descriptive Statistics were used to compile the demographic data.

The lunches from the second full week of the sample menus collected were analyzed, averaged, and compared to at least 70% of 1/3 of the Recommended Daily Allowances for individuals over 51 years of age.

CHAPTER V

Results

Respondents

All 245 of the facilities in the Directory of Licensed Adult Day Care Facilities in the state of Texas were contacted, but twenty-five facilities could not be reached for various reasons. Thirteen of the phone numbers were no longer in service. Four facilities contacted had a fax connected at the number, and another four did not answer, despite repeated attempts to call. Two numbers were no longer adult day care facilities, and one facility was not interested. One survey was mailed to the wrong address. Excluding these facilities, 220 facilities received surveys, with 120 sending the completed surveys back; One facility “had food brought in and so could not complete the survey”. Another facility has the clients bring their own lunch. This gave an overall response rate of 54%, with 59 facilities (50% of total returned) returning the survey only, and 59 (50% of total returned) returning the survey along with a menu.

Eight (7%) of the Adult Day Care Centers were associated with long-term care facilities, four with Personal Care Homes, one with an Alzheimer’s center, one with a nursing home, and two with both nursing home and Alzheimer’s care facilities. Only one of these eight facilities responded to the survey.

Demographic data

Size of the facilities. Seventy-one (60%) of the responding facilities served between 31 and 70 clients. Only one facility served less than 10 clients, and only three served more than 120 clients. Figure one illustrates the reported sizes of the facilities.

Location of facilities. For purposes of this study, facility location was defined as Rural (population less than 25,000) or Urban (population more than 25,000). These definitions are based upon the U.S. Bureau of the Census (1997). Thirty-seven (31%) of the facilities that responded were located in rural areas. The largest numbers, 81(69%) facilities were located in urban areas. Houston had the largest concentration of facilities for a single metropolitan area (n=16, 14%), and Hidalgo county had the highest concentration of facilities for a single county (n=55, 47%). Appendix B lists the cities where the facilities are located by rural and urban population level.

Nutritional Guidelines. Menus were developed using a variety of guidelines for nutritional content. Seven facilities (6%) used the Health Care Finance Administration guidelines. Twelve facilities (10%) reported using the Child and Adult Care Food Program Guidelines (Rhodes, 1991). Seventeen facilities (14%) use the Food Guide Pyramid, while 28 (24%) used the Dietary Guidelines for Americans. This question may have been confusing, because it had the largest non-response of any question in the survey (n=41, 35%).

Age of clients. One hundred and five (89%) of the responding facilities defined client age range by one of the ten-year increments on the survey.

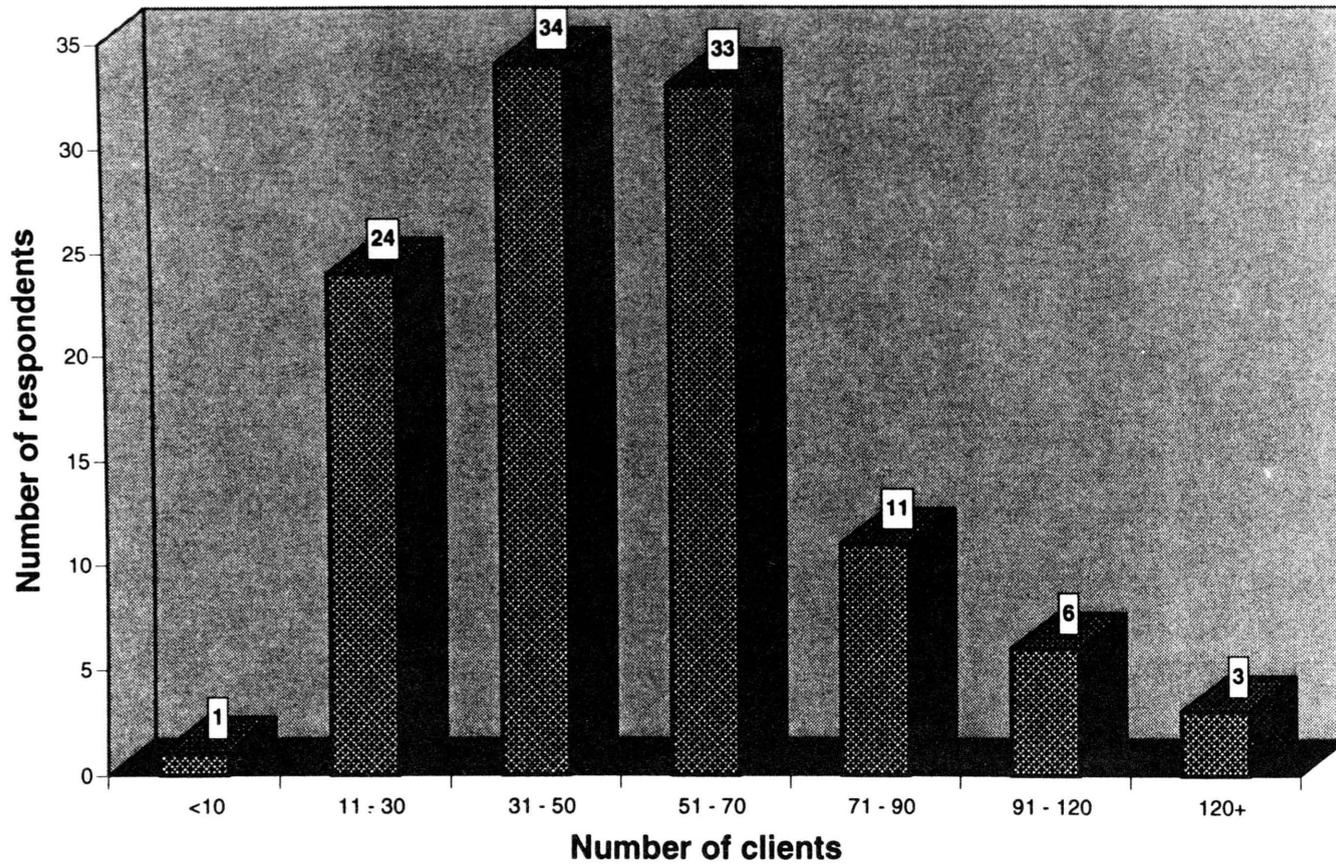


Figure 1. Size of Responding Facilities

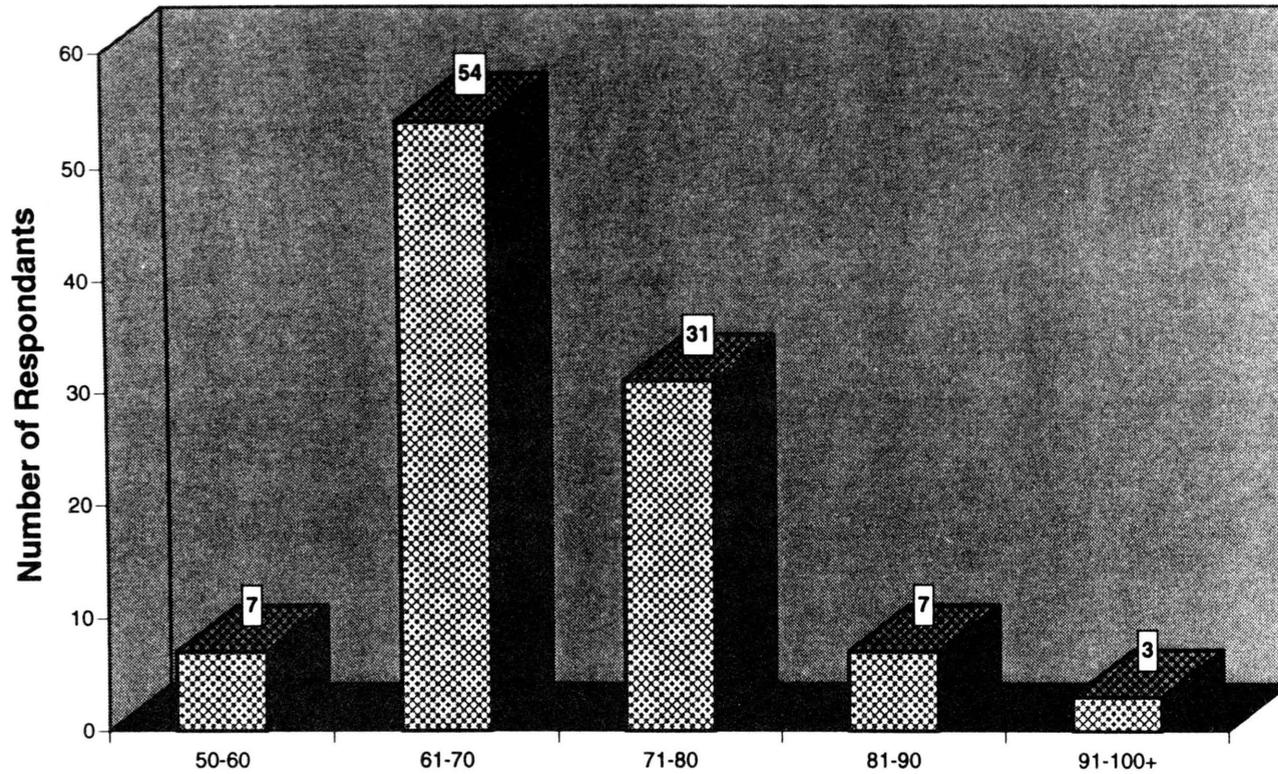


Figure 2. Age of Clients

Figure 2. Age of Clients at Responding Facilities

The facilities that had the hardest time defining this were facilities that serve the disabled. These facilities serve a wide age range (early twenties to sixty or seventy years). Therefore, only those facilities that answered with one 10-year increment are reported in Figure 1.

Most facilities (n=54, 51% of the 105 respondents used in Fig. 2) stated the age range of their clients was between 61 and 70 years. The next largest group stated their client age ranged from 71-80 years (n=35, 33% of the respondents used in Fig. 2). Two facilities served the very old (91-100+ years).

Level of feeding assistance. The survey asked the level of feeding assistance required by the majority of clients at each facility. Only four facilities (3%) reported that their average client needed full feeding assistance (help with all aspects of feeding). Fifty-six facilities (47%) reported most of their clients needed minimal assistance (help opening containers, cutting meat, etc.). Forty-eight (41%) facilities reported that their clients were independent and needed no feeding assistance.

Facilities that serve clients with Alzheimer's and the disabled had a wider range of feeding assistance needs. Four facilities (3%) had such a wide variance in client functional level that they indicated all three levels of assistance.

Qualifications of Nutrition Consultant

Education. The nutrition consultants at the facilities were predominantly Registered, Licensed Dietitians (n=55, 46%). Fifty-eight (49%) were Licensed or

Registered. Fifteen (13%) nutrition consultants had a Masters Degree. One reported having a Ph.D. One reported being a Certified Diabetic Educator (CDE).

Several facilities (n=6, 5%) reported using the consultant that represents the food service provider with which they contract, and so could not report the RD's educational level.

Years as consultant. A majority of the facilities (n=64, 54%) reported that the nutrition consultant had served the facility for between one and five years. The remaining 45% of facilities were almost equally distributed between less than a year and more than five years.

Inservices provided. The majority of facilities (n=70, 59%) conducted one to five nutrition inservices during the last year. It is not clear if the nutrition consultant was responsible for these. Some facilities counted the mandatory food safety courses provided by the Department of Health and Human Services as an inservice. Forty-four facilities (37%) reported between six and ten inservices during the last year. Nine (8%) reported eleven to fifteen, while three (3%) reported more than fifteen inservices during the last year.

Referral of clients with special nutritional needs. Ninety-six (81%) of the reporting facilities refer clients with special nutritional needs to the nutrition consultant.

Food Service.

Types of Food Reimbursement. The responding facilities received many types of food reimbursement (see table 1). The Texas Department of Human Services program,

along with the Special Nutrition Programs' Child and Adult Food Program, were the most commonly used programs. Table 1 lists both the reimbursements listed on the survey and those written in by the facilities.

TABLE 1

Financial Reimbursement Sources

Listed on survey:

Texas Department of Health and Human Services
 Medicare/Medicaid
 Grants
 Area Councils on Aging
 Private Pay

Written in by facilities:

CACFP - The Special Nutrition Program of the Texas Department of Human Services
 The Department of Agriculture
 Senior Nutrimeals
 Public Support Foundations - United Way
 USDA Contract
 Information not available to respondent
 One respondent did not answer

Food Preparation. Thirty-three facilities (30%) reported preparing their food on-site. Thirty-eight facilities (32%) have contracts with various restaurants or vendors (see appendix D). In one facility all clients bring their lunch, and one facility did not respond to the survey because they have food brought in from local restaurants. Sixteen facilities (14%) use a central kitchen that prepares meals that are shipped to the facilities. One facility reported preparing some food on-site, and using some prepared meals from Sysco Foods. Table 2 lists the Food Service Providers that some of the responding facilities

contract with for meal service, noted by the facilities in response to question 10 of the survey.

TABLE 2
Food Service Providers

Salvation Army
 Christian Senior Services
 Meals on Wheels (2 facilities)
 Prestige Catering (5 facilities)
 Marriott Catering
 Hartz
 Valley Innovative Services
 Valley Services
 Marriott Food Management
 Nutrition and Services for Seniors
 Prince Catering (2 facilities)
 MC's Catering Services
 Amarillo Senior Citizens Association
 The Healthy Dish
 Private vendor, not named (1 facility)
 Indicated a contract, provider not named (10 facilities)

Meal Service. Meals were most often (n=66, 56%) served by the entire staff of the facility as opposed to the Nursing or Dietary staff. Two facilities indicated that a Kitchen or Food Director was in charge of serving the food at mealtimes.

Meals are served either in the main room or dayroom of the facility (n=58, 49%) or in a dining room (n=52, 44%). Two facilities indicated that both settings were used.

Special Diets. The five most common special diets were Pureed, Low fat/Low Cholesterol, Diabetic, Low Sodium, and Renal. Six facilities did not indicate any specific special diets but reported that they served any diet prescribed by the physician.

Meals and Snacks. All facilities served lunch, and many (n=80, 68%) also offered breakfast. Two facilities offered dinner. Sixty facilities (51%) serve morning snacks, thirteen serving a breakfast that they considered a snack. One hundred facilities (85%) serve afternoon snacks. Five facilities mentioned serving snacks for the diabetic clients.

Menu Development. Forty-eight facilities (41%) reported that the nutrition consultant develops the facilities menu. Seventeen facilities (14%) used menus provided by the contracted food service provider. Three facilities indicated that other staff helped to develop the menu. One facility indicated that the facility director develops the menu and that the nutrition consultant approves the menu. One large group of facilities develop their menus at the central kitchen.

Nutritional Analysis

Specific Nutrients. Calories, Protein, Vitamin A, Thiamin, Riboflavin, Niacin, Vitamin B6, Vitamin B12, Folate, Vitamin C, Vitamin D, Vitamin E, Calcium and Zinc levels in the menus presented were analyzed on the Food Processor software and compared to 1/3 of the RDA for women over 51. Table 3 illustrates that the levels of these nutrients in the reported menu items met or exceeded the 1/3 of the RDA's for all nutrients except Vitamin E, where levels are just below the required. Table 4 illustrates that these findings do not appear different if the facilities were grouped by location rather than by size of the facility.

Comparison of lunches on adult day care menus with 1/3 the RDA* by size of facility

Nutrient	Facilities with 1-50 clients n = 18	Facilities with 51-90 clients n = 30	Facilities with 91-120+ clients n = 11	Total of All Respondants n = 59
Calories, kcal	658 ± 89	700 ± 167	674 ± 78	683 ± 134
%RDA (1750 kcal/d)†	38%	40%	39%	39%
Protein, g	33 ± 5	36 ± 7	37 ± 4	35 ± 5
%RDA (50 g/d)	66%	72%	74%	50%
Vit A, mcg RE	516 ± 276	624 ± 398	410 ± 172	552 ± 337
%RDA (800 RE/d)	65%	78%	51%	69%
Vit B1 Thiamine, mg	0.50 ± 0.11	0.53 ± 0.18	0.51 ± 0.13	0.52 ± 0.15
%RDA (1 mg/d)	50%	53%	51%	52%
Vit B2 Riboflavin, mg	0.70 ± 0.13	0.81 ± 0.19	0.76 ± 0.01	0.77 ± 0.16
%RDA (1.2 mg/d)	58%	68%	63%	64%
Vit B3 Niacin, mg NE	7 ± 1.3	7 ± 1.9	7.3 ± 1.2	7 ± 1.6
%RDA (13 mg NE/d)	54%	54%	56%	54%
Vit B6, mg	0.57 ± 0.01	0.60 ± 0.24	0.63 ± 0.1	0.59 ± 0.18
%RDA (1.6 mg/d)	36%	38%	39%	37%
Vit B12, mcg	1.8 ± 0.75	1.8 ± 0.57	2.1 ± 0.60	1.9 ± 0.63
%RDA (2 mcg/d)	90%	90%	105%	95%
Calcium, mg	400 ± 95	438 ± 61	439 ± 36	426 ± 71
%RDA (800 mg/d)	50%	55%	55%	53%
Vit C, mg	29 ± 12	36 ± 52	26 ± 14	32 ± 38
%RDA (60 mg/d)	48%	60%	43%	53%
Vit D, mcg	2.28 ± 0.92	3.00 ± 1.54	2.72 ± 0.34	2.74 ± 1.25
%RDA (5 mcg/d)	46%	60%	54%	55%
Vit E, mg alpha -TE	2.1 ± 0.5	2.3 ± 2.4	1.9 ± 0.6	2.2 ± 1.7
%RDA (8 mg alpha TE/d)	26%	29%	24%	28%
Folate, mcg	72 ± 12	80 ± 34	74 ± 27	77 ± 27
%RDA (180 mcg/d)	40%	44%	41%	43%
Zinc, mg	4 ± 1	4 ± 1	4 ± 1	4 ± 1
%RDA (15 mg/d)	30%	30%	30%	30%

* = Subject for analysis was a 70 year old, lightly active female, wt 120#, ht 5' 4"

† = unit/d indicates the amount of the nutrient per day according to the 1989 RDAs

Comparison of lunches on adult day care menus with 1/3 the RDA* by location of facility

Nutrient	Facilities in Rural Areas n = 18	Facilities in Urban Areas n = 38	Total of All Respondants n = 59
Calories, kcal %RDA (1750 kcal/d)†	664 ± 101 38%	695 ± 151 40%	683 ± 134 39%
Protein, g %RDA (50 g/d)	37 ± 4 74%	35 ± 6 50%	35 ± 5 50%
Vit A, mcg RE %RDA (800 RE/d)	395 ± 142 49%	624 ± 384 78%	552 ± 337 69%
Vit B1 Thiamine, mg %RDA (1 mg/d)	0.50 ± 0.01 50%	0.53 ± 0.18 53%	0.52 ± 0.15 52%
Vit B2 Riboflavin, mg %RDA (1.2 mg/d)	0.77 ± 0.01 64%	0.77 ± 0.19 64%	0.77 ± 0.16 64%
Vit B3 Niacin, mg NE %RDA (13 mg NE/d)	7 ± 0.8 54%	7 ± 1.9 54%	7 ± 1.6 54%
Vit B6, mg %RDA (1.6 mg/d)	0.59 ± 0.01 37%	0.59 ± 0.22 37%	0.59 ± 0.18 37%
Vit B12, mcg %RDA (2 mcg/d)	2.1 ± 0.55 105%	1.75 ± 0.64 88%	1.9 ± 0.63 95%
Calcium, mg %RDA (800 mg/d)	428 ± 32 54%	424 ± 84 53%	426 ± 71 53%
Vit C, mg %RDA (60 mg/d)	23 ± 7 38%	36 ± 46 60%	32 ± 38 53%
Vit D, mcg %RDA (5 mcg/d)	2.73 ± 0.29 55%	2.75 ± 1.53 55%	2.74 ± 1.25 55%
Vit E, mg alpha -TE %RDA (8 mg alpha TE/d)	1.8 ± 0.39 23%	2.3 ± 2.1 29%	2.2 ± 1.7 28%
Folate, mcg %RDA (180 mcg/d)	73 ± 16 41%	80 ± 31 44%	77 ± 27 43%
Zinc, mg %RDA (15 mg/d)	4.3 ± 1 36%	4 ± 1 30%	4 ± 1 30%

* = Subject for analysis was a 70 year old, lightly active female, wt 120#, ht 5' 4"

† = unit/d indicates the amount of the nutrient per day according to the 1989 RDAs

CHAPTER VI

Discussion

Response Rate

The overall response rate was 50% (111 out of 220 surveys sent). This was significant, particularly because most of the facilities had never participated in research before. The response was improved by first, contacting the facilities by phone, explaining the survey, and determining the facility directors name. Second, by sending the survey to the facility director, the possibility that the dietitian was not on-site was avoided.

Menus were requested along with the surveys, but only half (n=59) of the respondents included them. There was some concern among the facilities that the menu from the food service contractor should not be released. Usually, a phone call to reinforce the purpose of the research cleared up confusion.

Because the facilities have not been involved in research, the directors were somewhat suspicious and confused about the survey. Two facilities returned blank surveys, one returned a survey explaining “we have food brought in from restaurants and deli’s, so we cannot complete the survey”. The fact that this was exactly the type of information that the survey was designed to collect had been explained to the director when the initial phone contact was made.

Future researchers should take care to develop a strong dialogue with the facilities before conducting research.

Regulations Governing Food Service

Many of the facilities (83, 70%) receive government support from the Texas Department of Health and Human Services Special Nutrition Program. This is a smaller percentage than Vickery et al. (1993) found (80% of their sample received state funding). Thirty-one percent of the facilities surveyed (n=36) received federal funding compared with 40% in the study by Vickery et al. (1993). As programs such as Adult Day Care develop, funding methods must adjust to assure access to these services (Rhodes, 1991).

Education of Nutrition Consultant

The nutrition consultants from the reporting facilities were mostly Registered Dietitians (n = 89, 81%). Vickery et al (1993) found that 127 out of 160 facilities (79%) employed registered dietitians. Title III program regulations (Rhodes, 1991) indicate that the nutrition consultant must have a Bachelors Degree in nutrition, but not specifically be a Registered Dietitian. According to Texas' Licensing Standards (1995), the facilities may use the consultant that works for the Food Service Contractor, an option six (5%) of the reporting facilities indicated.

Nutrient Analysis

The nutrient levels were compared with the RDA for a 51-year-old female. The subject profile used by the Food Processor software was a 70-year-old woman that was slightly active. This subject was chosen because population of the facilities fall mostly

within that age range, and does have a large female population (ADA, 1996), though this survey did not address the gender make-up of the facilities.

The RDA's for men and women 51 years and older differ in their levels of calories, protein, thiamin, riboflavin, niacin, folate, zinc, and vitamins C and B6. The menus analyzed provided 1/3 the RDA of protein, thiamin, riboflavin, niacin, folate, calcium, and vitamins C and D for men over age 51. Calories, zinc and vitamins B6 and E are not provided at 1/3 the RDA. Providing red meat or liver (chicken or fish was often served) on a regular basis would provide good sources of B6 and zinc, as well as providing calories. Vitamin E and calories could have been underestimated, as described below.

Vitamin E was consistently just below 1/3 the RDA for men and women, partially due to the abundance of vegetables in the menus, the infrequent fried foods, and the small servings of margarine that were assumed (1 tsp. - 1 pat/ meal in most cases, some less). Margarine or other fat was not added to the vegetables. These circumstances lead to a relatively low-fat diet, with few good sources of vitamin E. The facilities may serve fried foods and clients may use more margarine than assumed, so the actual intake may be higher than was calculated.

Some assumptions were made when the food items were entered into the Food Processor program (see appendix E). Most of these were related to portion sizes (which many of the menus did not include). As discussed earlier, the most important assumption was the profile of the subject used to compare the results. A more detailed study of the

clients at Adult Day Care facilities would provide more detailed information in actual client demographics and needs.

Milk provided additional calories, vitamins A, D and riboflavin to all of the food lists, and proved vital in assuring at least one of the menus met the 1/3 RDA requirements. Milk was a part of each meal per the state requirements, and is always offered, though the client may decline it if they wish. Levels of vitamins A and D proved much higher than expected, due to the consistent presence of 8 oz of milk per meal. If consumed, the milk will also be an invaluable source of calcium for maintenance of bone health.

The menus analyzed met or exceeded 1/3 the RDA. This, however, does only reflect the menu, not actual intake or actual food provided. Reluctance to provide menus may indicate that either the menus had not been prepared, or the menus might not meet the expected 1/3 of the RDA. Thus, the nutrition information gathered only represents the 59 facilities that returned menus along with their survey, and is not necessarily representative of the other Adult Day Care facilities in Texas.

In conclusion, this survey gathered a demographic picture of Adult Day Care facilities in Texas, their nutrition consultants, and their nutrition services. This survey found that Adult Day Care facilities in Texas are predominately in urban areas, use Registered Dietitians as consultants, and use a variety of guidelines in planning menus that meet the RDA's for persons over 51 years of age.

As the elderly population continues to grow, care of the elderly becomes more and more important. More research should be done to describe the nutrition programs at Adult Day Care facilities. Areas that could be investigated are: clearly defining the client population, developing educational materials for both staff and clients, and defining the nutrition education offered adult day care staff. As previously mentioned, it will be necessary to develop a dialogue with the facilities before pursuing research. In addition, recommendations for nutrient levels adequate to meet the special needs of the elderly, particularly the older old (70 + years), will help dietitians better meet the needs of the elderly.

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APPENDIX A

Cover Letter and Survey

TEXAS WOMAN'S
UNIVERSITY
DENTON/DALLAS/HOUSTON

DEPARTMENT OF NUTRITION
AND FOOD SCIENCES
1130 M.D. Anderson Blvd.
Houston, TX 77030-2897
Phone: 713/794-2371

Dear Administrator,

My name is Sarah Williams and I am a graduate student seeking a Masters Degree in Nutrition from Texas Woman's University, Houston Center. I became interested in Adult Day Care after working as a nutrition consultant for a small adult day care facility.

Little information is available on Adult Day Care Facilities, and even less about the nutrition programs at these facilities. I developed the enclosed survey to collect information about the facilities and the types of menus served. Return of the survey will serve as consent to use the data for research purposes only.

Thank you very much for your help in collecting the data and completing my thesis. After completing the survey, please return it, along with the current month's menu, in the enclosed pre-paid envelope (simply fold them in the middle). I will send my findings to all the facilities who request it in the survey. If you have any questions, please call me at (713)799-2814 or Rose Bush, my thesis advisor, at (713) 794-2376.

Thank you again for your valuable time.

Sincerely,



Sarah Williams BS



Rose Bush MS, RD, LD

Adult Day Care Nutrition Program Survey

Subject #

Please answer the following questions by checking the appropriate answers and include a regular monthly menu. All answers are to be used for the purpose of research only and will remain completely anonymous. Thank you for your time in completing this survey and helping me complete my Masters.

1. What credentials does the nutrition consultant have? (Check all that apply)

- Licensed Dietitian
- Registered Dietitian
- Masters of Science in Nutrition
- Education in progress (explain) _____
- _____
- Other (explain) _____

2. How long has your nutrition consultant been at this facility?

- less than 1 yr.
- 1+ yr.- 5 yrs.
- 5+ yrs.

3. What is the average age of the clients at your facility?

- 50-60
- 61-70
- 71-80
- 81-90
- 91-100+

4. What level of feeding assistance do the majority of your clients require?

- Full Assistance (need help with everything)
- Minimal Assistance (help cutting meat, opening packages)
- Independant (able to manipulate food as necessary)

5. How many clients does your facility serve on an average day?

- less than 10
- 11-30
- 31-50
- 51-70
- 71-90
- 91-120
- 120+

6. How many nutrition inservices were provided for your adult day care staff over the last year?

- 1-5
- 6-10
- 11-15
- more than 15

7. What type (if any) food reimbursement do you receive ?
(Check all that apply)

- Texas Department of Health and Human Services
- Medicare/Medicaid
- Grants
- Area Councils on Aging
- Private pay
- Other _____

8. Does you facility refer clients with special nutritional needs to the dietitian?

- Yes
- No

9. How is the food at your facility prepared?

- On-site
- By contract with a restaurant or vendor

10. If you do contract, who is the contract with? _____

11. How are the menus at your facility developed?

- Provided by Food Service Contractor
- Developed by the Nutrition Consultant
- Other (explain) _____

12. If the menus are developed at your facility, what guidelines are used?

- HCFA
- Food Guide Pyramid
- Dietary Guidelines
- Other (explain) _____

13. Who is primarily responsible for serving the food?

- Nursing
- Dietary
- Other _____

14. Where are meals served?

- In the dayroom or main room of the facility
- In a dining room
- Other _____

15. What special diets do you provide for your clients?

(check all that apply)

- Pureed
- Low fat/Low Cholesterol.
- Diabetic
- Salt restricted
- Other (specify) _____

16. Which meals is your facility responsible for serving?

(Check all that apply)

- Breakfast
- Lunch
- Dinner

17. How often are snacks served? (check all that apply)

- Morning
- Breakfast (counted as snack for reimbursement)
- Afternoon
- As requested only

18. Would you like to receive a summary of the findings of this project when it is completed?

- Yes
- No

Return of this survey is consent to use the data for research.
Thank you once again for your valuable time in completing this survey and helping me with my thesis. Please don't forget to include a copy of the current month's menu. Remember, all information is completely anonymous and will be used only for the purpose of this research.

APPENDIX B

Listing of Cities by Population

Rural Areas (less than 25,000 people) with facilities***City (Population)**

***Population estimates from: Ramos, M.G. (Ed). (1997).
Texas Almanac 1998-1999 edition, Dallas Morning News**

Alamo (10,935)	Robstown (13,190)
Alice (20,252)	Roma (10,930)
Aransas Pass (7,766)	San Benito (22,495)
Beeville (14,416)	San Diego (5,376)
Benavidas (1,974)	San Isidro (160)
Cleveland (7,901)	San Juan (24,327)
Crosby (2,167)	Santa Rosa (2,744)
Crystal City (8,244)	Stafford (11,434)
Daingerfield (2,625)	Sullivan City (2,649)
De Berry (191)	Sweetwater (12,004)
Donna (13,495)	Taft (3,819)
Eagle Pass (24,805)	Zapata (7,741)
Edcouch (3,653)	
Elgin (5,495)	
Elsa (5,608)	
Falfurrias (5,815)	
Henderson (11,959)	
Hidalgo (5,056)	
Huffman (250)	
Kenedy (3,606)	
Kilgore (11,601)	
La Grulla (1,828)	
La Joya (3,871)	
La Villa (1,712)	
Liberty (8,869)	
Livingston (7,037)	
Lyford (1,977)	
Marshall (24,059)	
Mathis (5,653)	
Mercedes (15,174)	
Orange Grove (1,321)	
Palestine (17,793)	
Pearsall (7,692)	
Penitas (1,210)	
Pittsburg (4,418)	
Premont (2,994)	
Port Isabel (5,005)	
Raymondville (9,343)	
Rio Grande City (11,870)	

Urban Areas (25,000 or more people)with facilities***City (Population)*****Population estimates from: Ramos, M.G. (Ed). (1997).****Texas Almanac 1998-1999 edition, Dallas Morning News**

Temple (49,772)

Abilene (116,000)	
Amarillo (168,592)	Texas City (41,475)
Arlington (288,227)	Tyler (80,204)
Austin (557,532)	Victoria (61,320)
Baytown (69,004)	Waco (108,562)
Beaumont (115,521)	Wichita Falls (98,553)
Brownsville (131,542)	Weslaco (27,812)
Bryan (60,451)	
Corpus Christi (274,234)	
Dallas (1,050,698)	
Del Rio (34,361)	
Edinbrg (35,773)	
El Paso (583,431)	
Ft. Worth (478,307)	
Grand Prarie (108,910)	
Harlingen (53,864)	
Houston (1,749,001)	
Irving (169,855)	
Kingsville (26,557)	
Laredo (162,122)	
Longview (74,206)	
Lubbock (194,522)	
Lufkin (32,851)	
McAllen (100,589)	
Mesquite (113,906)	
Midland (98,251)	
Mission (38,101)	
Missouri City (50,719)	
Nacogdoches (32,358)	
Pasadena (130,168)	
Pharr (39,843)	
Port Arthur(58,196)	
Rosenburg (26,747)	
Round Rock (48,923)	
San Angelo (89,421)	
San Antonio (1,079,207)	
Spring (37,730)	

APPENDIX C

Assumptions made when entering menus

Assumptions made when entering menus

- 1. Vegetables and side dishes were entered as 1/2 c or 4 oz unless otherwise specified.**
- 2. Recipes were “re-created” by the researcher if they were not specifically described (i.e.: King Ranch Chicken, Pea Salad, Combo salad, Mexican steak, etc.).**
- 3. Entrees were entered as : Meat = 3 oz, Casserole = 4 oz.**
- 4. 2% Milk was assumed unless otherwise specified.**
- 5. Soft, White Bread assumed unless otherwise specified.**
- 6. Fruit juice assumed to be a 4 oz. serving unless otherwise specified.**
- 7. Fruit assumed canned unless otherwise specified.**
- 8. Fideo, a mexican pasta, was entered as DiGiorno Fettuccini Pasta.**
- 9. Combo salad was assumed to be a tossed salad with toppings.**
- 10. Pico di Gallo Salsa was entered for Pico di Gallo.**
- 11. Smoked White Turkey Breast was entered for Turkey Filet Mignon.**
- 12. If more than one entree was offered, the selections were alternated daily.**

APPENDIX D

Response Cover Letter and Letter

TEXAS WOMAN'S
UNIVERSITY
DENTON / DALLAS / HOUSTON

DEPARTMENT OF NUTRITION
AND FOOD SCIENCES
1130 M.D. Anderson Blvd.
Houston, TX 77030-2897
Phone: 713/794-2371

To the Adult Day Care facility staff,

In October, 1998, I sent your facility director a survey on the nutrition services at your facility as part of my research for my thesis. I have now completed my thesis and wanted to send you the following report of the results of the project. I was pleasantly surprised at the high response rate, and thank each of you for using your valuable time completing the survey and helping me complete my Masters. Please feel free to contact me with questions or for more information. I can be reached at:

Sarah Williams
7900 Cambridge, #5-1E
Houston, TX 77054
(713) 799-2814 or
sew17@concentric.net

I hope you find this information useful. I enjoyed gathering this information and look forward to more work in the Adult Day Care field in the future.

Sincerely,

Sarah Williams, B.S., R.D.
Graduate Student,
Texas Woman's University

Nutrition Services in Adult Day Care Facilities in the State of Texas

All 245 licensed Adult Day Care Facilities in the December 1997 Directory of Licensed Adult Day Care Facilities were contacted by phone before the survey was mailed to confirm mailing address and determine the name of the facility director. Twenty-five facilities were not reached for various reasons including fax machines at the given phone number, disconnected phone numbers, and no answers despite repeated attempts to call. The final number of surveys sent was 220, and the response was 118 surveys (54%).

Most facilities (60%) reported serving between 31-70 clients. Only one facility served less than ten clients, and three served 120 or more clients. These clients were reported by 54% of the facilities to be between 61 and 71 years old. Thirty-three percent of the facilities reported the average age of their clients to be between 71 and 80 years. Three facilities served the very old (91-100+ years). Facilities that served the disabled as well as the elderly had a larger age range (usually from the mid-twenties to the seventies) and more difficulty classifying the age range into the ten-year segments indicated in the survey. These facilities also had a wider range of functional abilities (measured here by feeding ability). Fifty-one percent of the facilities reported that their average clients needed minimal assistance (help opening containers, cutting meat, etc.). Forty-eight of the facilities reported their clients were totally independent and needed no feeding assistance.

Seven of the facilities surveyed were associated with long-term care facilities such as Alzheimer's Care Facilities, Personal Care Homes, or Nursing Homes. Facilities were located primarily in urban areas (defined for this report as a population of 25,000 or more), with Houston having the largest number for a metropolitan area (16, 14%), and Hidalgo County having the highest concentration for a single county.

All facilities had a nutrition consultant, with 55 facilities (47%) reporting Registered, Licensed Dietitians as their consultant. One consultant reported having her Ph.D., and fifteen reported having a Masters degree. One consultant reported being a Certified Diabetic Educator. Several of the facilities use a consultant that works for their food service contractor, and so were not able to answer these questions in the survey. The consultants conducted one to five inservices over the preceding year. They also developed menus that met the guidelines of the food reimbursement programs (most commonly the Special Nutrition Program of the Texas Department of Human Services) or state

guidelines. Clients with special nutritional needs were referred to the nutrition consultant at most facilities.

Thirty percent of the facilities prepare their food on-site, and 32% contract with various restaurants or vendors. Special diets most commonly provided were Pureed, Low Fat/Low Cholesterol, Diabetic, Low Sodium, and Renal. Almost all facilities indicated that they serve afternoon snacks, many specifically mentioning the diabetic clients.

Fifty-nine facilities returned menus along with the surveys. These were analyzed using the Food Processor computer database. The lunches for the second full week of the month were entered and divided by five. The results were then compared with 1/3 of the RDA for women over 51 (though this survey did not address gender, the older population is predominately female). All menus met the RDA guidelines, indicating adequate calories, protein, Vitamins A, B1(Thiamin), B2 (Riboflavin), B3 (Niacin), B6, B12, C, D, E, Folate, calcium and zinc.