

AN EXPLORATORY STUDY OF PERCEPTION OF MEAL AND SERVICE
QUALITY/IN THE TITLE III C CONGREGATE MEALS PROGRAM:
A COMPARISON BETWEEN MANAGEMENT AND PARTICIPANTS

by

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(ABSTRACT)

Little attention has been paid in the literature to participant perception of, and attitudes toward, program and service quality in the congregate meals program. Based upon the scarcity of knowledge in this area, managers and participants in the Title III C meals program in Montgomery County, Maryland were surveyed to explore how differences in perception of program and service quality affect participant acceptance and evaluation of the program. A nutrition monitoring instrument was designed for managers at 14 meal sites to assess major components of the food service operation. A survey addressing participant perception of meal quality, meal acceptance, program administration and management, and food service personnel was designed and administered to 264 participants. The two surveys contained 17 identical or similar questions to identify any perceptual differences. Several social variables such as age, educational level, sex, marital status, living arrangement and acquisition of information about the program were found to significantly influence participant response to certain questions. Significant differences in perception

between managers and participants were found in response to questions regarding availability of nutrition education lessons, need for therapeutic diets, adequacy of program transportation, temperatures at which food was served, and the degree to which substitutions were made for posted menu items. The results of this research will be used to make suggestions for program planning and evaluation, as well as to aid in continuous quality assurance.

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INTRODUCTION

It has been consistently demonstrated that the Title III C Congregate Meals Program of the National Nutrition Program for the Elderly has been effective in meeting long and short term goals, which are to provide low cost nutritious meals; opportunities for social interaction; limited auxiliary nutrition, homemaker education and shopping assistance; counseling and referral to other social and rehabilitative services; and transportation services (1).

Pelcovits (2) concluded in an early study that group meals in community settings are an effective vehicle in dealing with health and nutrition problems of noninstitutionalized older Americans, most profoundly the elderly poor. Several other studies demonstrate that social-psychological variables such as socioeconomic factors, lifestyle, level of social support, age, level of education, food habits and food use patterns, and individual personality may impact on the health and nutritional status of older adults as well (2-15).

The purposes of this study are to identify perceptions of participants and managers related to program and service quality, and to identify any differences in perception of services in a congregate meals program, as measured by a questionnaire. Little attention has

been paid in the literature to participant perception of, and attitudes toward, program quality and services, and how perceptual differences between participants and managers of the program may affect usage of and satisfaction with nutrition and support services. Implications of impact upon the operation of the program of any differences will be explored.

A review of current literature will focus on certain variables which may be significantly correlated with participant perception of program services. The methodology used to gather and analyze data will be described, and results will be reported and summarized. From the data, conclusions will be made concerning the manager and participant perceptions which will provide the basis for recommendations.

REVIEW OF LITERATURE

The National Nutrition Program for the Elderly constitutes a very important alternative to many of the adverse social, psychological, physiological and economic factors that may influence the dietary intakes of its elderly participants. What initially began as a program whose focal point was nutrition and social activities has evolved into a comprehensive health support system revolving around the congregate or home delivered meal plan (3). Under the 1978 amendments to the Comprehensive Older Americans Act, meals and nutrition services are provided at congregate meal sites through the National Nutrition Program for the Elderly under Title III C. Provision of meals is possible through various systems: catered, satellite, and decentralized. Meals are provided at sites or central locations, which may be senior centers, churches or schools. The focus of the Congregate Meals Program is the provision of one or more meals per day (up to seven days per week) without regard to participant income. Meals are designed to provide at least one-third of the Recommended Dietary Allowance for basic nutrient requirements. Though donations are accepted for meals, elderly participants are not required to pay for their meals. The programs' priority aged are low income and minority groups (15).

NUTRITIONAL STATUS AND DIET QUALITY

Early population studies (4, 5) indicated that nutrient deficiencies affect as many as one in five noninstitutionalized persons aged 65 years and older in the United States and Canada. The incidence of malnourished individuals expands even further in hospitals, community based clinics and institutionalized settings. In light of this, several studies have been done that may serve as comparison of dietary status between participants in the Title III C program vs. nonparticipants.

A number of reports in the literature indicate that, regardless of whether subjects are free-living or institutionalized, nutrients most commonly found to be deficient are calcium (6-11), vitamin C (6, 12, 13), iron (6, 12), thiamin (6), vitamin A (6, 8, 12, 13), and food energy (7, 9-11). There is still a search by authors for substantial evidence supporting extrapolation of these findings to all segments of the elderly population, due to the fact that most studies in the literature are not based on representative noninstitutionalized populations which would afford unbiased contrast to other age groups. Many studies in the current literature are based on the participants in government sponsored feeding programs or use representative samples with biases related to the dominance of health motivated individuals, those wishing to earn money, and those with available transportation (14).

Assumptions underlying government intervention to improve nutritional status of the elderly are based on evidence that there is a high prevalence of malnutrition among this population. Though difficult to compare results because of differences in methodology and standards used and differences in sex and ages of subjects, studies have been undertaken in an attempt to assess the effectiveness of the meals program in reducing this incidence of malnutrition in the elderly segment of the population.

In a survey of five meal sites in Missouri (15) results suggested that a meal program can improve nutrition and health, particularly for those at risk of vitamin A and vitamin C deficiencies. Twenty-five percent of participants believed that health was improved by participation, and none reported that health declined. In a similar study, biochemical analyses and 24 hour food records obtained from 49 program participants and 32 nonparticipants indicated that nutrient intakes of those who received congregate meals were significantly higher than for nonparticipants. The percentages of low biochemical measures was higher for nonparticipants (16). Interview and clinical data from 250 subjects in another study found that the prevalence of less than acceptable concentrations of vitamins A and C was found to be significantly related to participation in a meals program. Of the subjects who had never taken part in the program, 43 percent had less than acceptable concentrations of vitamin A, compared to 3.9 and 5.7

percent of the subjects who participated two to five times per week, and less than two times per week, respectively. When overall quality of the diet was rated on the basis of intake of food groups, there was a significant relationship of the quality of the diet to participation in the program (12). Caliendo (3) found through data from questionnaires and food intake records from 73 elderly program participants that the Title III C Meals Program provided 50 percent or more of the total days' intake for many nutrients, thus the program offered an important way to improve nutrient intake. The mean nutrient intake met or exceeded the RDA for all nutrients except calories, calcium and thiamin. In another study based on 24 hour diet recalls (17), the dietary intakes of 97 noninstitutionalized elderly females indicated that congregate meal participants had significantly higher nutrient intakes at the noon meals than those not consuming congregate meals. Thus, research studies cited indicate that the Title III C Meals Program is generally effective in meeting its goal of improving the nutritional status of its participants.

A common approach used to measure the impact of the program is to compare nutrient content of the meal served with the requirement that the meal meet one-third of the RDA. Stallings et al. (18) determined caloric, protein, fat, and carbohydrate content of 20 meals served at congregate meal sites in South Carolina. The meals met approximately 31.5 percent of daily energy needs for males, and 42 percent for

females. Mean percent of the 1980 RDA for protein supplied by the meals exceeded 62 percent and 79 percent for males and females, respectively. Average fat content exceeded 38 g., or 41 percent of the total calories, and the mean carbohydrate content of meals was less than 35 percent of the total calories. In this study, type of beverage consumed with the meal was significantly related to nutrient quality of the meals; mean calorie content of meals without milk beverages fell below one-third the 1980 RDA for males. Meals with milk exceeded one-third the RDA for calories for both males and females. This study corroborates the findings of two previous research reports (8, 16). Based on 24 hour food records obtained from meal program participants, both studies reported that meals provided, on the average, better than 40 percent of total energy intake for males and females. Kohrs (8) found that, generally, nutrient content of meals exceeded one-third the 1974 RDA. Meals also provided 75 percent and 91 percent of the 1974 RDA for protein for males and females, respectively. Harrill and co-workers (16) found that meals served provided 81 percent and 99 percent of the 1974 RDA for protein for males and females, respectively.

The choice and use of nutrient dense foods, and the fact that the quality of the diet decreases with age and falls rapidly after the age of 75 years (19), are major problems of the elderly, and concerns of those who feed the elderly. Studies regarding the nutritional

status of participants in congregate meal programs and nutritional quality of the meals served in the programs are crucial. However, to view these results without regard to social-psychological factors affecting food intake and utilization in later years is counterproductive. These social-psychological factors have been shown to impact on the effectiveness, acceptance and utilization of some of the core services that the National Nutrition Program for the Elderly seeks to provide (15). In view of the fact that the aged are frequently impoverished, poorly educated, uninformed about good nutritional practices, and socially isolated, one may reason that these factors may, by themselves or in combination with other factors, serve to affect the nutritional status of the elderly (15). It has been only recently that researchers have attempted to examine these interrelationships with regard to nutritional status and food intake.

Age itself may be an important predictor of dietary patterns, or influential variable over food choice. Garcia et al. (20) examined age and cohort influences on dietary patterns and found that when year of birth or cohort effect was accounted for, adult women maintained lifelong dietary habits during aging. Similarly, Slesinger and co-workers investigated the food patterns of 372 elderly households in an urban community and found that when effects of gender, income, education and living situation were statistically controlled, differences in food patterns found common to other age groups

remained. The authors speculated here, as in the previous study, that some of the differences might be attributed to cohort experiences, as well as to factors not examined, such as medically recommended special diets, or strong dietary traditions based on cultural heritage (14). Social-psychological literature indicated that self-concept, well-being, or attitude towards oneself had strong correlations to health status and diet quality of all persons, most specifically the elderly (21). Parham (22) found that it is realistic to expect that many elderly persons may achieve an improved sense of well-being through diet. Self-concept and well-being is defined as how a person defines and feels about him/herself and is related to how that person will behave in the environment. Larson (23) stated that advancing age is related to a decline in the subjective well-being among persons over 60 years of age. The author reported that differences in birth cohorts here also may play an important part in the association between age, well-being and health. Cohort influence is a concept which should not be disregarded in the attempt to successfully improve the nutritional status of our elderly population. Denning and Cutler stated that "one can better understand the processes of aging with the realization that old people at any given point in time partly reflect the characteristics and experiences of their own particular birth cohort," and that "each cohort has its own unique set of birth characteristics and its own social, economic and political life history or collective biography," (24). Several contrasting research

findings also cited age as an important factor in dietary quality. Findings of the Ten State Nutrition Survey (3), as well as a report by Timmreck (19), indicated declining nutritional status as one ages. Reports by Caliendo et al. (25) and Brown (26) concluded, however, that generally as age increased there was a trend toward increased dietary quality. With regard to the meals program itself, studies have shown that as participants grow older, benefits derived from the program generally increase (8, 15). Confounding influences such as food habits and culture, income, education, and social contact may explain the discrepancies in results; thus, studies regarding these factors as they relate to the program will also be reviewed.

FOOD HABITS AND CULTURE

Food habits, as well as food choice and culture have been shown to exert considerable influence on the attitudes and actions of the program participants. A generally well accepted notion is that food patterns form an integral part of the design called "culture" or the composite of beliefs, values and customs which grow out of a groups' shared experiences over time. It is also important to the aged to maintain cultural traditions which give continuity to one's life effort (27). Food intake generally reflects established food patterns, which vary with background and experiences of each individual. According to Bruch (28), eating behavior is deeply

embedded in the early development of the individual and continues to be tied to the psychodynamics of human development. Frequently, foods that are familiar are liked best, and elderly often prefer foods they have enjoyed since early life. With aging, rigidity of food habits may increase, and the familiar food pattern is much sought (29). The very lifestyle of the individual may be tied to eating behavior. Successful attempts to alter a food pattern, even to improve the intake of nutrients (as in the Elderly Nutrition Program), must take into consideration the effect that changes may have on the total structure of the culture and on the lives of separate individuals. Ethnicity will determine food habits if the traditions of the foods have been preserved. By incorporating such things as cultural heritage factors into nutritional concerns for the aging, we will help to maintain each individual's identity (30). Shifflett and McIntosh (31) examined future time perspective and its association with food habits among elderly persons. Their findings suggested that the elderly do make changes in their food habits, and there is an association of positive or negative food habit changes with positive or negative future time perspective. The authors also cite demographic and social conditions as being influential in food habit changes.

Complicating the food habit/pattern concept are the findings of one study that compared food beliefs with actual practices between

residents in special housing for elderly and nonresidents. These findings indicated that the respondents did not always practice what they believed; that is, an absence of correlation between food beliefs and practices was revealed (32). In summary, a multitude of factors, both objective and subjective, may actually be responsible for the formation of food habits and the adoption of food practices. This fact may have marked influence on nutritional status.

SOCIOECONOMIC STATUS

Based on information found in current literature, estimates of numbers of aged that are poor range from 60-75 percent (33, 34). In an overall view of various living situations of the American population, the U.S. Bureau of Census reported that 13 percent of the elderly (65 years and older) were below the poverty level in 1979 (35). According to early studies, the incidence of malnutrition increased as income decreased (4, 5). Though only one variable, low income contributed to the difficulty of obtaining or selecting a high quality diet and maintaining good nutritional status. One study of 1,664 consumers in all age categories revealed that nutrition knowledge was also significantly associated with income and more prestigious occupations (36). In this study, high risk groups that tended to have the poorest nutritional knowledge were those of low socioeconomic status and the elderly.

Adults over 65 years old living in rural areas constitute one of the largest groups of elderly poor. One study of older adults from a rural poverty area indicated a significant association between income adequacy and a majority of variables representing three major areas: health, subjective well-being, and social integration (37).

Grotkowski and Sims, in their study of 64 elderly individuals found, through the use of three day food records and questionnaires, that socioeconomic status was significantly related to more nutrient intakes than any other variable (38). Similarly, Kohrs et al. (39), found several socioeconomic factors, such as type of occupation and level of education to be significantly related to intakes of energy and other nutrients. Several other aforementioned studies also cite education as a major influential variable. The study by Singleton et al. (17) found that education had a significant positive effect on the intake of vitamins A and B12, on thiamin, and riboflavin, except for those possessing less than an eighth grade education, and on riboflavin except for those who had a vocational or business education. Generally, it was found that as years of education increased, so did the intake of nutrients, except for thiamin and riboflavin. Based on interviews and food frequency data, Brown's study of 303 noninstitutionalized elderly subjects found that as education increased, the amount of money the respondent spent each week for groceries increased; the number of meals eaten with children

decreased; the number of meals eaten away from home increased; and the more likely the respondent was to give the correct answers to questions on nutrition (26).

SOCIALIZATION

One of the primary functions of the National Nutrition Program for the Elderly is to enhance the frequency of social contact of participants. Generally, all reviewed literature pointed to a positive relationship between social contact, satisfaction, and adequate nutrient intake. Low levels of social interaction, poor health and low income have been found to be related to lower expressed satisfaction with life, low morale, and lower contentment (23, 40-41). Social support may be viewed as an effective buffer or mediator of life stress. Though this finding was based on information from a study involving primarily middle aged women, the same view of social support may be applicable to old age, where life's stressors are often felt hardest (42). In a four year longitudinal study of 60 elderly women, Graney found that direct relationships between happiness and social activity existed (43). Several studies have found that not only is the level of interaction important, but the nature of the interacting group seems to affect satisfaction as well (41-44). Most studies indicate that face to face contact, or the potential for this, is highly associated with happiness. Other

activities such as degree of activity in radio use, visiting friends and relatives, telephone use, attending religious services, and attending meetings of and maintaining membership in voluntary associations were positively correlated with happiness.

McIntosh and Shifflett (44) looked more intensely at the influence of social factors on the dietary intake of elderly and found that social supports of close proximity (such as marriage and neighbors) as opposed to simpler types of attachments (such as friends and community) are significantly associated with increased intakes of certain nutrients. Other researchers reported that the most important factors explaining the diet quality of elderly persons are social influence variables (45, 46). The social life of the adult may be built to a great extent around the pleasures of food and drink, and a failure to understand this may result in the failure to meet the nutritional needs of older adults. Weinberg concluded that it is not necessarily what the older person eats, but with whom (46). One report stated that "keen appetite and enjoyment of eating are not consistent with states of loneliness, a sense of forsakenness, joblessness, and impaired mobility..." (47). This supported the findings of two earlier reports (2, 18) which stated that a person who is isolated and has little contact often neglects preparing well-balanced meals and generally finds food less appealing. Thus, poor eating habits, with accompanying listlessness, apathy, and

unwillingness to reach out for social contact, fosters the beginnings of a "vicious circle" for elderly individuals.

The findings by Grotkowski and Sims reported that the more calories consumed with others, the higher the iron, niacin, vitamin C, thiamin and protein intakes. This study supported the notion that quality of diet and nutritional status are improved when a meal is shared with others (38). In an overall evaluation of the Nutrition Program for the Elderly, Posner asserted that low frequency of meal participation negatively affected all areas of program impact. High rates of program participation were crucial in order for the program to have the desired impact on the nutritional status of the elderly (48). Caliendo and Batchner found, in their survey of 73 participants in a nutrition program for the elderly, a trend toward negative association between meal program and social participation variables. A negative relation of the program to outlook on life was found; that is, those who tended to be pessimistic, lonely and depressed more frequently attended the meal program than did their counterparts (49).

Other factors closely related to the topic of social interaction that can impact on nutritional status are the living arrangements, family relations and marital status where the elderly are concerned. Recent research indicated that most elderly do not live alone or even

with nonrelatives. Most live in families, although such families typically consist of only an aged husband and wife (50). According to a study by Marshall et al. (51), the trend in recent years of the elderly was movement away from the extended household due to the fact that general rising income for members of this age group has permitted the purchase of desired privacy in housing. Interestingly, researchers found little evidence that older people today would benefit more from incorporation into extended households (51, 52). Those older people who share housing with an offspring may either be heading their own households or living as guests in their children's homes. The latter option is exercised largely by those who are widowed, ill, impoverished and/or very old (51-53).

Most research into the effects of living arrangement on dietary patterns focused on married elderly. One report by Schafer studied factors affecting food behavior and quality of the diets of 116 married couples. Results indicated that though the wife is the major decision maker concerning food purchases and menus, the husband does have considerable influence over what food items are selected. Most interesting is the fact that the single most important influential variable in food choice for men was taste. For women the major variable was the nutritional value of the food item (54). A later report by Schafer and Keith (45) cited several social-psychological variables having impact on dietary quality of married couples. In

addition, findings for elderly married couples were contrasted to the same data collected on single elderly females. Eighty-two elderly couples and 69 elderly single women were interviewed regarding diet quality and social-psychological factors. The marital status of the subjects had a significant effect on the diet quality and attitudes about nutritional status, with single women having a significantly better diet than the married couples. Among married couples, age was not significantly related to diet quality. There was a negative relationship between age and diet quality for the elderly single women - the older they were, the poorer the quality of the diet. The author stated that the marriage relationship may diminish the negative aspects of age and diet quality of the elderly. As in other studies (53, 54), however, spouses were an important influence on food practice. In Schafer's study (45), the influence of a spouse was related to a better quality diet and better feeling about health. Schafer postulated that the elderly women in the study who had better quality diets, have had high quality diets all their lives. The general body of literature reviewed suggested findings and conclusions contrary to this study. That is, married elderly generally have higher morale, greater life satisfaction, and higher quality diets and nutritional status than do those who are single or widowed. This is especially evident when one realizes, given the known association of life changes and illness, that the widowed represent a population of high health risk. A considerable body of research evidence suggested

that sudden life changes precipitated declines in health and morale. The widowed are more likely than those married to report themselves as unhappy (51).

PERCEPTION

The nature of food intake - what people eat, how, when, where, and how much - may be heavily influenced and explained in part by social, economic, political, and cultural processes. This has been well established in the literature. However, the association between how elderly versus those concerned with feeding the elderly actually perceive congregate meals and services, and how similarities and differences in perception may affect the acceptance of and participation in the program has not been reported. Carterette and Friedman (55), extensively studied the field of human perception. The authors stated that the area of perception is one of understanding the way in which a person transforms, organizes, and structures information arising from the world in sensory data or memory. Perception may also be referred to as the consciousness of particular material things present to sense. One's perception of reality can be affected by lack of knowledge, by physical illness or handicap, by major emotional disturbance, by previous experience, and by any of the social and personal pressures or inhibitions that predispose against clarity and realism (56).

With regard to illness and poor health affecting behavior, Birren developed the Discontinuity theory in 1963 based upon his work with the elderly (57). This theory stated that only when a physiological function becomes abnormal does the physiological variable affect behavioral variables. Some sensory decline as an inevitable consequence of aging is well documented (56-68). Since behavior is not determined directly by a person's physical environment but rather by that part of the physical environment which the person's sensory receptors can detect, it stands to reason that behavior and perception may be affected (58).

General comments in early literature suggested that others' views may affect an older person's feelings of adequacy, usefulness, security or depression, thus that person's attitude in general (59, 60). Recently Kincaid, in a study of nine Title III C nutrition sites, found considerable evidence that elderly participants were fearful of losing meal program services if they complained about food quality, quantity and service. Thus, other participants or management affected the way in which participants responded to a questionnaire (61).

Other factors may affect perception of program services as well. One of these factors is participant attitude toward usage of program services in general. Though rarely used in this capacity, meal time may represent a particularly important resource in institutions for

the aged. Burkhardt et al. (62), in a 25 percent systematic random sample survey of congregate meal sites, found that the participant demand for meals and services was influenced by factors that are thought to influence classical or normal consumption patterns of consumer goods or services. Program mandates state that no eligible participant be denied a meal because he/she elects not to make a contribution. However, participants in this study did not view the contribution as voluntary; thus they paid for and expected certain quality services. Nutrition sites with better services and other desirable attributes were found to attract more participants. Crucial in the results of the study was the finding that many of the desirable attributes cited by the participants, such as type of food preparation, perceived cost to the client, and site's location, can be influenced to some degree by those administering the program. Attendance rates at sites can be predicted based on these principles, which demonstrates that participant behavior toward the usage of nutrition services reflects behavior patterns of consumers in the marketing sense.

The educational background of the participant, particularly the extent to which he/she has had exposure to nutrition education, may also affect perception of meal and service quality (12, 15, 22, 63). Finally, the participant's upbringing and/or culture may influence if he or she perceives meal and service quality as adequate (27, 30-32).

METHODOLOGY

As part of a community nutrition practicum, regular visits were made to 14 Title III C nutrition sites throughout the Montgomery County, Maryland area in the summer of 1984. Comments and concerns of participants and management regarding program meals and services prompted research questions regarding possible differences in perception where these areas were concerned. Considering these comments and questions and upon reviewing research related to the Congregate Meals Program, survey questions were developed regarding meal quality, meal acceptance, program administration, special diets, foodservice personnel, programs and activities, and demographics. It was hypothesized that perceptual differences between managers and participants may affect participant acceptance and evaluation of services. The questions tapped areas of concern to which participants and managers could respond without deliberation. Six sites representative of the metropolitan area population, which consists of a relatively homogeneous population of middle class Caucasians, were then selected for statistical analysis. These sites were also selected on the basis of site size (number of participants daily) and location. The source of the data was elderly persons (N=264) who participated at the six sites selected for study. "Elderly persons" refers to those persons 60 years of age and older who are eligible to participate, and their spouses of any age. Each participant present

at the respective sites was given a questionnaire (see appendix A) consisting of 28 questions. Questionnaires were collected from each participant. Those participants physically or otherwise unable to complete the form themselves were interviewed by the researcher. This consisted of verbally asking the participant the questions as they appeared on the questionnaire. A total of seven participants were surveyed in this manner.

A questionnaire was designed in a similar fashion to gather the same information from the site manager at each site. The instrument consisted of 52 questions (see appendix B). Seventeen questions were the same or similar to those on the participant survey. Additional questions were included in order to assess administrative and managerial procedures at each site. Questionnaires were distributed and explained to each of the 14 site managers at a site manager meeting. A self-addressed stamped envelope was provided for their convenience in returning the instrument to the investigator. Eleven of 14 site managers responded.

DATA ANALYSIS

Nutritional quality of meals served was assessed based on the program mandate that the noon meal provide one-third of the Recommended Dietary Allowance for all nutrients (64). For the five days that participant data was collected, the meals program menu was copied and analyzed using an interactive graphics diet analysis computer program (N-Squared Computing, Silverton, Oregon) based on Agricultural Handbook 72 (65), and Food Values of Portions Commonly Used (66). A five day average was obtained for calories, protein, calcium, phosphorus, iron, vitamin A, thiamin, riboflavin, niacin and vitamin C as well as for cholesterol, carbohydrate, potassium, sodium and fat for both males and females 51 years of age or older.

All data from the questionnaires were transferred to coding sheets and compiled into frequency distributions by question, and by manager and participant response using the Statistical Analysis System (67). Analysis of variance, and Spearman Rank and Pearson's Product Moment Correlations were computed to measure the association of participant response to each question with six demographic variables: age, sex, marital status, education, living arrangement, and how the participant found out about the program. The analysis of variance was followed up by the Tukey method to determine where differences, if any, existed. The SAS Funcat procedure was utilized to determine if relationships

exist between manager and participant responses to questions identical on both surveys. Z values were computed on frequency data from questions worded similarly.

Findings, conclusions, implications and limitations of the study will be addressed, following statistical analysis of the data.

RESULTS

GENERAL CHARACTERISTICS OF SAMPLE

The participants ranged in age from 53 years to 96 years with a mean age of 74 years. The majority, 166 participants (63 percent) were female. Educational level varied: only six percent had less than a seventh grade education, 45 percent completed high school, 26 percent completed between one and four years of college, eight percent indicated more than four years of college, and 14 percent attended vocational or business school. Forty-three percent were currently married, 44 percent were widowed, six percent had never married and seven percent were divorced.

Many of the respondents learned of the Title IIIC program through a friend or family member (48 percent), while 17 percent obtained information from the Department of Social Services. Eleven percent learned of the program through the newspaper, five percent from radio and television, and 12 percent learned of the program in other unspecified ways.

Almost half of the sample (47 percent) indicated that they lived with one significant other, i.e., a spouse or close friend, 38 percent of respondents lived alone, and 14 percent indicated "other"

as their living arrangement, which included most often living with a son or daughter and his/her family.

More than half of the sample (55 percent) came to the meal program four or five times per week, 16 percent came three times per week, 25 percent came once or twice per week. Respondents were asked if they would come to the site more often if transportation were available; 65 percent said transportation did not affect their ability or desire to participate, 26 percent said they would come more often if they had the transportation. The remaining four percent and nine percent with regard to frequency of participation and transportation availability, respectively, did not respond.

NUTRIENT QUALITY OF MEAL SERVED

Table 1 presents information obtained by computer analysis of the program menu for the week in which participants were surveyed. The interactive graphics diet analysis program utilized to analyze the program menu uses the upper value of recommended caloric intake, or 2400 kcal and 1800 kcal for males and females, respectively. Based on these values and the fact that the average caloric value of the meal was 758 kcal, the noon meals provided on the average 31.8 percent and 42 percent of recommended daily energy intake for males and females, respectively. Calcium was the nutrient of lowest value

TABLE 1: NUTRITIVE VALUE OF TITLE III MEAL: PERCENT OF RECOMMENDED DIETARY ALLOWANCES

	Energy (kcal)	Pro(g)	Ca(mg)	P(Mg)	FE(mg)	Vit A (ugRE)	Thiamin (mg)	Riboflavin (mg)	Niacin (mg)	Vit C (mg)
<u>Males</u>										
<u>51 yrs +</u>										
RDA	2050-2400	56	800	800	10	1000	1.2	1.4	16	60
Range	485-1140	21-39	150-373	421-579	4-6	153-3390	.38-.63	.49-.83	6.3-17.4	38-184
5 Day Avg.	32%	58%	36%	62%	50%	126%	42%	46%	69%	183%
<u>Females</u>										
<u>51 years+</u>										
RDA	1600-1800	44	600	800	10	800	1.0	1.2	13	60
5 Day Avg.	758	32.3	282.6	499.6	4.98	1264	.50	.64	11	110
Range - same as above										
% RDA	42%	73%	36%	62%	50%	158%	50%	53%	85%	183%

in the diet at 36 percent of the RDA. Note that the range for the five days, 150-373 mg, with an average value of 282.6 mg was obtained without including milk, one of the beverages offered to each participant with the daily meal. All other nutrients well surpassed the 1/3 RDA requirement.

Components of the meal for which there are no established RDA's with comparison to currently recommended safe and/or adequate intakes are presented in table 2. Cholesterol content of the meals ranged from 61-224 mg, with some meals being quite high when compared to the recommendation that daily intake not exceed 300 mg. Carbohydrate and potassium average values fell within recommended ranges, as did total fat intake and proportion of saturated and unsaturated fat components. Sodium values ranged from 208-1727 mg ($x = 694.3$ mg). When one considers the recommended intake of 1100-3300 mg per day, that the meals provided up to 1700 mg sodium may serve as the basis for some concern due to the fact it is only part of the daily intake for most participants. When asked the question "are foods offered that you avoid eating?", 44 percent of participants answered yes, and the majority of these individuals (52 percent) reported that the foods they avoided they did so because the foods were "too salty". Twenty-four percent of respondents said the foods they avoided were "too sugary", and 12 percent said they avoided starchy foods. The remaining 12 percent indicated other reasons for food avoidance, such

TABLE 2: NUTRITIVE VALUE OF TITLE III MEAL:
FIVE DAY AVERAGES COMPARED WITH RECOMMENDED LEVEL OF INTAKE

	RANGE	5 DAY AVERAGE	RECOMMENDED INTAKES
Cholesterol	61-224 mg	108.8mg	300mg/day ^a
Carbohydrate	71-229g	117.6g	50-100g/day ^b
Potassium	1170-1529mg	1369.2mg	1875-5625mg ^c
Sodium	208-1727mg	694.3mg	1100-3300mg ^c
Fat	7-24g	18.8g (22.3% of kcal)	30%kcal ^a
Saturated fat	1.8-11.5g	7.46g (8.8% of kcal)	10%kcal ^a
Oleic FA (Monounsatur FA)	2.5-8.2g	5.94g (7% of kcal)	10%kcal ^a
Linoleic FA (PUFA)	0.8-7.8g	3.1g (3.6% of kcal)	3%kcal ^c

^aSelect Committee on Nutrition and Human Needs, U.S. Senate, Dietary Goals for the U.S., 2nd ed. Washington, D.C.: US Govt P.O. 1977.

^bMinimum amounts recommended to support normal metabolism of carbohydrates and lipids.

^cFood and Nutrition Board, Committee on Recommended Allowances, Recommended Dietary Allowances, 9th ed. Washington, D.C.: National Academy of Sciences, 1980.

as food allergies and difficulty with chewing.

In response to the question, "How would you rate the meals?", 19 percent said meals were excellent, 66 percent said meals were good, 14 percent thought the meals were fair, and one percent responded that meals were poor. Ninety-three percent of respondents thought, in general, that meals served were "tasty".

CORRELATIONS

Correlations among participant responses to survey questions and variables of age, sex, marital status, education, living arrangement and how the participant acquired information about the program are shown in table 3. A significant positive correlation was found between frequency of participation and age. Older participants tended to participate in the meal program more frequently than their younger counterparts. A significant positive correlation with age and a negative correlation with education was found with participant response to the question, "Generally, hot food items are hot". Other questions bearing statistically significant relationships to education include, "Are the food servers pleasant and courteous?" and, "Is nutrition education available once per month?", the latter being negatively related. In other words, participants with higher levels of education more frequently perceived food servers as

TABLE 3: CORRELATION COEFFICIENTS BETWEEN PARTICIPANT RESPONSE TO SURVEY QUESTIONS AND DEMOGRAPHIC VARIABLES

	<u>AGE</u>	<u>SEX</u>	<u>M.S.</u>	<u>EDUCATION</u>	<u>LIV. ARR.</u>	<u>INFO RE: PROG.</u>
The site manager is helpful and courteous	-0.094 ^a	0.036 ^a	0.087 ^a	0.068 ^a	0.081 ^a	-0.045 ^a
The site manager is neat and clean	0.068 ^a	-0.033 ^a	-0.017 ^a	0.044 ^a	-0.023 ^a	0.033 ^a
Cold food items are cold	0.051 ^a	0.025 ^a	0.055 ^a	-0.084 ^a	0.111 ^a	0.000 ^a
Hot food items are hot	0.119 ^{ac}	0.020 ^a	-0.009 ^a	-0.137 ^{ac}	0.097 ^a	-0.045 ^a
The food is tasty	0.025 ^a	0.026 ^a	-0.037 ^a	-0.081 ^a	-0.008 ^a	0.003 ^a
Have you been placed on a special diet?	-0.042 ^a	-0.129 ^{ac}	-0.076 ^a	0.077 ^a	0.092 ^a	-0.012 ^a
Are foods served that you avoid eating?	-0.003 ^a	-0.170 ^{ac}	-0.050 ^a	0.027 ^a	0.058 ^a	-0.016 ^a
The serving line is open long enough	-0.444 ^a	0.013 ^a	-0.040 ^a	0.004 ^a	0.108 ^a	0.099 ^a
The servers are pleasant and courteous	-0.045 ^a	-0.107 ^a	-0.070 ^a	0.133 ^{ac}	0.011 ^a	-0.020 ^a
The servers are neat and clean	-0.029 ^a	-0.023 ^a	-0.009 ^a	0.010 ^a	-0.016 ^a	-0.038 ^a
The dining area is clean and dry	-0.111 ^a	-0.066 ^a	-0.092 ^a	0.046 ^a	0.120 ^a	-0.036 ^a
Nutrition education is available once per month	-0.050 ^a	-0.023 ^a	-0.109 ^a	-0.103 ^{ac}	-0.015 ^a	0.072 ^a
Programs and activities are offered on a regular basis	0.046 ^a	0.020 ^a	-0.056 ^a	-0.014 ^a	-0.040 ^a	-0.028 ^a
You are interested and participate in the programs offered	-0.110 ^a	-0.000 ^a	-0.058 ^a	0.011 ^a	-0.027 ^a	0.004 ^a
Would you come more often if transportation were available?	-0.082 ^a	-0.053 ^a	0.069 ^a	0.082 ^a	-0.083 ^a	0.058 ^a
How often do you come to this site to eat?	0.223 ^{bc}	-0.010 ^b	0.003 ^b	-0.088 ^b	-0.020 ^b	-0.060 ^b
How would you rate the meals?	-0.098 ^b	0.006 ^b	-0.106 ^b	-0.027 ^b	-0.014 ^b	0.088 ^b
The meal served is the same as the posted menu	-0.020 ^b	-0.074 ^b	-0.013 ^b	0.069 ^b	0.009 ^b	0.079 ^b
Do you have to wait for your meal?	0.111 ^b	0.056 ^b	0.047 ^b	-0.053 ^b	-0.033 ^b	0.000 ^b

^aPearson Product Moment Correlations

^bSpearman Rank Correlations

^cSignificant at .05 level

pleasant and courteous, and those participants with higher educational levels felt that nutrition education was not being offered once per month.

Statistically significant relationships were also found between males and females in response to the questions, "Has your doctor placed you on a special diet?", and "Are foods served that you avoid eating?". Seventeen percent of males and 30 percent of females said that they had been instructed by a physician to follow a specific therapeutic diet, and 33 percent of males and 52 percent of females responded that certain foods were served that they selectively avoided eating.

ANALYSIS OF VARIANCE

Results of the analysis of variance performed on participant response to survey questions versus demographic variables are presented in Table 4. Significant differences were found between males and females in response to the questions, "Has your doctor prescribed a special diet for you?", and "Are foods offered that you avoid eating?". As reported previously, a significantly higher percentage of females than males responded affirmatively to both questions.

QUESTIONS	PARTICIPANT RESPONSE VERSUS SIX DEMOGRAPHIC VARIABLES - F RATIO					
	AGE	SEX	M.S.	EDUCATION	LIV. ARR.	INFO RE PROG.
How often do you come to site?	1.38	0.33	0.20	2.79	3.07*	1.70
How would you rate the meals?	1.03	0.05	2.54	0.25	1.35	1.50
Generally, cold food items are cold	1.05	0.24	0.75	1.24	1.54	0.64
Generally, hot food items are hot	1.17	0.29	0.13	2.01	1.67	1.43
The meal is exactly the same as menu	1.22	2.54	0.11	0.59	2.94*	1.52
In general, food is tasty	1.11	0.22	3.03*	0.54	0.32	0.49
Has your doctor prescribed a special diet?	1.56	5.66*	2.14	0.80	1.52	1.63
Are foods offered that you avoid?	0.98	7.89*	1.51	0.16	1.56	1.12
The serving line is open long enough	1.02	0.07	0.90	0.88	2.11	0.54
The servers are pleasant and courteous	0.61	2.98	0.80	2.09	2.53	1.45
The servers are neat and clean	0.66	0.11	0.09	0.23	0.10	0.15
The dining area is clean and dry	0.66	3.07	0.84	1.36	0.66	0.18
Nutrition education is available once per month	1.13	0.11	1.58	0.66	0.26	1.36
Programs and activities are offered regularly	0.78	0.40	0.83	1.17	0.64	1.81*
You are interested and participate in programs	1.40	0.03	0.62	0.10	0.52	2.09*
Would you come more often if transportation were available?	1.10	0.98	1.24	0.95	1.21	0.97

*Sig at .05 level

The analysis revealed significant differences in perception of overall taste of food relative to marital status. Divorced individuals said the food was not tasty more often than married or widowed individuals.

With regard to living arrangements, significant differences were found in response to questions concerning frequency of participation, and how often participants perceived the meal and menu to be the same. Ninety-two percent of participants who indicated "other" as their living arrangement stated that they lived with a son or daughter and his or her family. It was found that these individuals came less often than those living alone or than those living with only one other; these individuals also indicated they felt the menu and meal were always the same, as opposed to those living with one other who felt the meal was only occasionally the same as the menu.

Acquisition of information about the program was the source of significant differences in response to questions concerning programs and activities offered at meal sites. Participants who found out about the program through a combination of the newspaper and Department of Social Services were more inclined to say that programs and activities were not offered on a regular basis; those who acquired information from the newspaper only disagreed. With regard to interest and participation in programs and activities, individuals

who indicated the acquisition of information regarding the program from newspaper, radio and television were more interested and participated more in programs and activities than participants who found out about the program in any other way.

COMPARISON OF MANAGERIAL AND PARTICIPANT RESPONSE TO SURVEY QUESTIONS

Table 5 contains Chi square and Z values obtained from analysis of participant and manager response to survey questions identical or similar on both questionnaires. Chi square values for identical questions indicate significant relationships between how managers and participants perceived nutrition education and transportation components of the meals program. Ten out of 11, or 91 percent, of site managers stated that they provided nutrition education programs once per month, yet only 53 percent of participants believed that they received nutrition education lessons this frequently. In response to the question regarding how transportation affects participation in the program, nine out of 11, or 82 percent, of site managers believed that participants would come to the sites more often if transportation were provided to participants on a routine basis; only 26 percent of participants responded in the same manner.

For questions similar on each questionnaire, Z values were calculated (see appendix C). Significant differences in the

TABLE 5
COMPARISON OF MANAGEMENT VERSUS PARTICIPANT RESPONSES

<u>QUESTION</u>	<u>Chi-Square Value</u>
<u>A. Identical Questions</u>	
Are cold food items cold?	.82
Are hot food items hot?	1.42*
Is food tasty?	.81
Is serving line open long enough?	.94
Is dining area clean and dry?	.77
Is nutrition education available once/month?	3.91*
Are programs and activities offered on a regular basis?	.14
Are participants interested and participate in programs and activities	1.77
Would participate if more transportation available	8.55*
<u>B. Similar Questions</u>	
Is the meal served always the same as posted menu?	2.8543*
Requests for special diets?	2.2172*
Are foods avoided?	1.2516
Comfortable with reservation system?	0.5087
Comfortable with contribution collection?	-0.0344
Are servers pleasant and courteous	0.3113
Are servers neat and clean?	0.3113
Do you have to wait for meal past designated lunch hour?	7.5144*

*Sig at .05 level

proportion of managers answering in one way versus the proportion of participants answering in the same manner were found in response to the questions, "Is the meal served always the same as the posted menu?", "Have you received/made requests for special diets?", and "Do you/participants have to wait past the designated lunch hour for your/their meal?". Seventy-three percent of managers said that the meal was exactly as the menu stated it should be. Thirty percent of participants said this was always the case. Fifty percent of participants stated that frequently the meal and menu were exactly the same. With regard to requests for special diets, six managers, or 55 percent, stated they had received requests for therapeutic diets. Thirty-four percent of participants said their doctor had prescribed a special diet for them. In response to the question concerning how often participants must wait past the designated lunch hour for their meal, 73 percent of managers felt that participants rarely waited, 18 percent stated that participants occasionally waited, and nine percent thought the meal was always late. Fifty-five percent of participants felt they rarely waited for their meal; 27 percent thought the meal was occasionally late, 10 percent indicated they frequently waited, and seven percent said the meal was always late.

DISCUSSION AND CONCLUSIONS

Generally, the nutrient content of the meals exceeded one-third of the Recommended Dietary Allowance for most nutrients. Calcium and calories, though at acceptable levels on the average, were the two nutrients falling close to 33 percent. This corroborates the findings of previous research efforts that calcium and calories are problem nutrients in this program (8, 9-12, 15). These studies indicate that not only are congregate meals deficient in these nutrients, but biochemical tests performed on program participants indicate that some nutrients including calcium and calories are deficient in the diets of these individuals as well. The meals in the current study were analyzed without incorporating milk as a beverage; thus, participants who consume or are encouraged to consume milk with their meal would obtain calcium and calories in amounts great enough to comfortably satisfy the one-third RDA requirement for these nutrients. However, many individuals do not consume milk with their meal, and for some the Title IIIC lunch is the only substantial daily meal. For these participants, the somewhat low calcium and caloric content of the meals may be a problem and deserve special attention.

Vitamin A and vitamin C content of the meal was very high. This contrasts most studies regarding dietary intakes of older Americans and nutrient content of meals served in the congregate meals program

which demonstrate vitamin A and vitamin C to be deficient (7, 10, 12, 13). Kohrs and coworkers (12) contend that the presence of less than acceptable concentrations of vitamins A and C are significantly related to frequency of participation in the congregate meals program. Joering (13) stated that simply serving ample quantities of fruits and vegetables in canned form did not provide sufficient vitamin A and vitamin C. Regardless of the fact that in the current study vitamin A and vitamin C are the program's target nutrients for which the menus are analyzed in advance, (thus the higher levels), current literature indicates that other factors may serve to alter intake and reduce serum levels of these two nutrients.

Though the meals appear to be adequate with regard to the Recommended Dietary Allowances, they may not be adequate for individuals on therapeutic diets. Ninety participants, or 34 percent, of the sample indicated that their physician had placed them on some type of special diet. The literature indicates this to be the average percentage of older individuals on dietary restrictions. Kincaid, for example, in a survey of 501 Title IIIC program participants found that 23 percent (approximately 115) were on special diets for health reasons (61). The majority of the individuals requiring therapeutic diets in the current study were older participants who resided in public and subsidized housing projects. These individuals also comprised the majority of participants who expressed the concern that

the meals were too salty, and who stated that there were foods offered that they avoided. Current literature indicates debate as to whether taste sensitivity declines with age (68-72). Most researchers have found that there is a decline in sweet and salt sensitivity in elderly subjects as compared to young subjects, and that older individuals are more likely to over use salt on food to combat "flat" tastes (68, 70, 72-74). In light of these findings, this study seems to negate current literature due to the fact that participants expressed concern that meals were too salty. Reasons for this may be either that this group is relatively health conscious and motivated and have been instructed by their physician or influenced by nutrition education and media to reduce sodium; or meals may actually be high in sodium due to the contractor's use of processed or canned foods.

No relationship was found between managers and participants with regard to therapeutic diets; in other words, there were participants instructed to follow therapeutic diets at sites where managers stated they had not received any requests for such diets. Similarly, some managers expressed concern for therapeutic diets at sites where the majority of participants stated that they had not been placed on special diets. Because six out of 11 site managers indicated a problem with participants discarding food, a more in depth look at this in relation to therapeutic diets should be done to determine if participants are simply not voicing their dietary needs to program

managers, thus concealing the need to offer alternative meal choices; or whether food aversion is the result of food habits or cultural patterns and differences.

Current literature suggests a variety of reasons for plate waste; namely, excessively large portions, negative effects of stress and medication on appetite, the manner in which food is prepared, patients' ethnic background or personal preference, appearance of food and tray, and temperature of food (75-77). These variables should be considered together in an attempt to understand the implications of plate waste in the Title III C program.

Several social variables were found to influence participant response to survey questions. In agreement with other studies (8, 15), it was found that older persons and those who lived alone participated in the program more often. Generally, most researchers have found that as persons get older, benefits from the program increase (8, 15). The literature also indicates that those who tend to be lonely tend to participate mostly due to social aspects of the program (48, 49).

Age of participants also had a significant influence on perception of food temperatures. As age of participants increased, perception of hot increased. Younger, more educated individuals tended to feel that

hot food was not served hot enough. This may be due to variation in cooking and service procedures at each site. At larger sites participants often must wait past the designated lunch hour for meals, thus affecting temperature at which the meal is served. Perhaps younger, more educated individuals are more aware of correct serving temperatures, and the meals are, indeed, not being served at the correct temperatures. Only one site manager stated that food temperatures were taken before and during food service. Other managers either did not respond to the question, or indicated that food temperatures were not taken regularly. All eleven managers, however, stated that hot food items were served hot.

Attitude toward food service workers also served as the basis for difference of opinion between participants. Younger individuals with higher levels of education most often perceived food servers as pleasant and courteous. Generally, lower educational levels and older age tend to place individuals in positions of low power; thus, it would stand to reason that these individuals would be more likely to look down upon food service workers who are probably at the same socio-economic status as themselves. These apparent interactions between social classes should be looked at in more depth as they apply to this program.

To better understand participant response to survey questions with

regard to marital status, changes in social status need to be targeted. Sudden life changes such as widowhood or divorce, may precipitate feelings of unhappiness and decline in health and morale. The fact that divorced individuals tended to say that food was not tasty more often than married or widowed individuals seems to warrant examination of participant response in this context. Schafer has established that any event that affects self-worth or self-concept may also directly affect diet selection and quality (21).

Finally, how participants acquired information about the program deserves some discussion. It has been established that eating habits and nutrient intakes of elderly people are affected by many environmental factors. The media, especially radio and television, have been positively correlated with adequate nutrient intake and food patterns (78). The results of one study reported the media habits of 73 elderly Title IIIIC program participants. It was found that 92 percent watched at least 1 - 2 1/2 hours of television daily; 63 percent listened to the radio often, and 81 percent read the newspaper daily (3). Though a more in depth look at acquisition of information in relation to diet quality is needed for participants in the present study, newspaper, radio and television seemed to have a positive effect on participants with regard to satisfaction with social components of the program.

DIFFERENCES IN PERCEPTION: MANAGERS VERSUS PARTICIPANTS

As stated previously, response to the question concerning therapeutic diets was one area where perceptual differences were uncovered between managers and participants. Whether management is ignoring participant requests, or participants are simply not expressing their needs to management needs to be investigated further. Regardless of whether the thirty-four percent of participants who stated they had been placed on special diets is deemed significant enough to warrant the provision of the diets themselves, it has been found that physical illness, handicap, and abnormal physiological function may directly affect behavioral variables and perception of reality (56, 57). Thus, the presence of an abnormal physiological condition evidenced by a prescription for a therapeutic diet may affect the way these individuals perceive program and service quality.

Significant perceptual differences also existed between managers and participants with regard to whether or not they felt nutrition education was provided once per month. The legislation surrounding the Title III C program states that nutrition education is to be incorporated into monthly activities. It was found that better educated participants felt that nutrition education was not provided once per month. Nutrition knowledge is significantly associated with

higher education, income and more prestigious occupations (26, 36, 39). Those with less education may not be aware of what nutrition education is. Program publicity or leaflets and flyers stating that meals are "nutritious" may be enough for these individuals. It may also be that some participants may not be interested in nutrition, and participate solely on the basis of social aspects. Since 80 percent of participants and 91 percent of managers stated that participants were interested and participate in programs and activities offered, it is not likely that the apparent lack of nutrition education is due to lack of interest. However, discrepancies do exist since 91 percent of managers, but only 53 percent of participants feel that nutrition education is offered regularly.

Controversies apparent in this study surrounding manager and participant perception of program-sponsored transportation are somewhat misleading. Eighty-two percent of managers stated that participants would come more often if adequate transportation were available, while only 26 percent of participants felt the same way. According to site managers, it seems that those participants most in need of program provided transportation may not be benefiting from this service. The importance of mobility and transportation with regard to dietary patterns of and utilization of nutrition services by elderly persons (10, 19, 62). The majority of individuals surveyed in the current study were able to participate in the program three or more

times per week; thus, a significant number of eligible individuals may not be able to participate regularly due to lack of dependable transportation. These persons may not have been present at the sites when the survey data was collected.

The meal and actual service of the meal were also sources of discrepancy in perception between managers and participants. In an attempt to gain insight into how often substitutions were made for menu items at various sites, it was found that most of the managers felt the meal served and menu were almost always the same; changes in the menu were rarely needed. Participants tended to feel that substitutions were made a little more frequently. Reasons for this difference of opinion are not understood. Perhaps menus are not placed in conspicuous areas for adequate view by participants, thus participants are not sure of the exact content of the menus. Managers may feel pressured to report that menu substitutions are not made due to the emphasis placed on the nutritive quality of the foods served. The substitution of "unapproved" items is discouraged, and managers may feel it is a reflection on them if the meal is not exactly the same as the posted menu.

A greater proportion of participants than managers felt that the meal is served later than the designated lunch hour. Due to the variation in serving procedures and number of participants from site

to site, constraints are often placed on the ability of the manager and food servers to provide the meal to everyone at the same time. Late-comers and "no shows" also create problems for efficient food service. A slight wait for the meal may be acceptable; however, further investigation into this is needed to assure that quality and correct temperature of food items are not in jeopardy. In addition, because of the apparent association between the taste and service of the meal with participant satisfaction (19, 62) food substitutions and actual time of meal service deserve special investigation.

IMPLICATIONS

The results of this study indicate apparent beneficial effects of incorporating a new dimension into traditional food service monitoring. This exploratory study sought to eliminate one sided views of program and service quality through examination of management and participant response to the same general survey questions. By uncovering discrepancies or significant differences in response to survey questions, program administrators can more effectively target areas where service improvement or modification is needed.

The present study uncovered several areas where further research and/or improvement is needed. Investigation into the therapeutic diet issue is crucial. If the addition of complete therapeutic meals is not feasible, perhaps alternative entree choices could be provided to accommodate those with special needs. A survey of participant likes and dislikes should be undertaken in order to incorporate cultural preferences and food habits into menu planning. The taste of the food with regard to the perception of "saltiness" should be investigated further. Due to the fact that the sodium content of the meals varied considerably throughout the five days that this research was done, a follow-up is needed to legitimize participant complaints. This, in combination with the provision of alternative meal choices, may effectively reduce plate waste.

In-service education is warranted for site managers with regard to taking food temperatures. The importance of this in relation to food quality should be stressed. Managers should be instructed as to appropriate times to take temperatures, and how to dispose of or deal with food items found to be at inappropriate temperatures. Within a reasonable period of time after the instruction, a follow-up study should be undertaken to see if this affects perception of hot and cold food items.

Since the site manager is also ultimately responsible for nutrition education, in-service education in this area is also warranted. The challenge to individuals who work with the older segment of the population is to stimulate interest in nutrition. Due to the known association between diet quality and nutrition knowledge, this should be regarded as a high priority. If managers are unqualified or otherwise unable to provide the nutrition information, community resources could be tapped not only for expertise but for variation as well. Nutrition education modules must be adapted to the needs of the elderly population that the program serves. Subtle approaches to nutrition education, such as informative posters or displays in waiting areas, lounges or meeting places may be utilized. Once the manner in which lessons are given is changed and the information is provided on a more regular basis, data can be collected

regarding how the increased frequency of nutrition education actually affects perception of meals and services.

Transportation is an issue which must also be addressed by program personnel. Program provided transportation constitutes a significant proportion of program revenue, thus it should operate in the most efficient manner possible. It was apparent from this study that those most in need of program transportation are not receiving the service; thus a community assessment should be undertaken to determine where the greatest concentrations of individuals in need are. Through a bit of reorganization, transportation services may enhance program service utilization.

Increased use of media (newspapers, radio, television) to disseminate information about the program should be considered, due to the large amount of persons who reported that they were influenced by or obtained information from these sources. Types of services and activities offered at sites and menus could be advertised in order to encourage participation.

LIMITATIONS

Due to the exploratory nature of this study, several limitations must be addressed.

The sample used in this study may have been biased due to the fact that they were predominantly a homogeneous group of middle class caucasians. Only those individuals present on the days selected for survey were included. Those individuals who were not present at the sites used may significantly change the results.

Managers were surveyed at all sites; participants were surveyed at six sites selected for study. Regardless of whether data was gathered at six sites or at all 14, the problem of disproportionate sample sizes is inherent and significantly affects the manner in which data is analyzed and interpreted. Disproportionate sample sizes must be kept in mind when comparing frequency of response. Sites with large numbers of participants may tend to skew results. By-site data is crucial to uncover such discrepancies.

With regard to computer analysis of the menu, it must be remembered that only five days of menus were totalled and analyzed. The presentation of five day averages also tends to cover up extremely high or low values. Recommended Dietary Allowances are a problem due

to the fact that most values are for persons 51 years of age and older, and the average age of program participants was 74 years. Recommendations in these tables are also not directed for persons on therapeutic diets. Foods for the computer analysis were estimated as closely as possible using Agricultural Handbook 72. This serves as a possible controversy regarding actual nutrient values.

The pressure to answer survey questions in the "right way" may have influenced manager response, though it was stressed to each manager that results would be kept confidential and response was in no way a reflection on their performance as a site manager. Participants may have been reluctant to complain or express concern about program or service quality because they were fearful of losing their privileges.

Finally, some questions may be perceived as too general, while other questions are very specifically tailored to this particular program and its administration. The monitoring instruments are in need of revision and evaluation in order that they be used on a quarterly basis for continuous program and service quality assurance.

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APPENDIX A

SITE _____

NUTRITION PROGRAM SURVEY

DEAR PARTICIPANT: PLEASE CIRCLE OR MARK THE RESPONSE THAT MOST NEARLY REPRESENTS YOUR VIEW. YOU CAN BE ASSURED OF COMPLETE CONFIDENTIALITY. THE IDENTIFICATION NUMBER AT THE TOP OF THE QUESTIONNAIRE IS FOR CODING PURPOSES ONLY. THANK YOU!

1. HOW OFTEN DO YOU COME TO THIS SITE TO EAT?
 A. ONCE OR TWICE PER WEEK C. FOUR OR FIVE TIMES PER WEEK
 B. THREE TIMES PER WEEK D. MORE THAN FIVE TIMES PER WEEK
- YES NO 2. WOULD YOU BE INTERESTED IN PARTICIPATING IN A BREAKFAST PROGRAM?
3. HOW WOULD YOU RATE THE MEALS AT THIS SITE?
 A. EXCELLENT C. FAIR
 B. GOOD D. POOR
- YES NO 4. GENERALLY, COLD FOOD ITEMS ARE SERVED COLD.
- YES NO 5. GENERALLY, HOT FOOD ITEMS ARE SERVED HOT.
6. THE MEAL THAT IS SERVED IS EXACTLY THE SAME AS THE MENU THAT IS POSTED.
 A. RARELY C. FREQUENTLY
 B. OCCASIONALLY D. ALWAYS
- YES NO 7. IN GENERAL, FOOD IS TASTY.
- YES NO 8. HAS YOUR DOCTOR PRESCRIBED A SPECIAL DIET FOR YOU? IF YES, WHAT DIET HAS BEEN PRESCRIBED? _____
- YES NO 9. ARE FOODS OFFERED THAT YOU AVOID EATING? IF YES, WHAT DO YOU AVOID?

- YES NO 10. THE SERVING LINE IS OPEN LONG ENOUGH.
- YES NO 11. DO YOU FEEL COMFORTABLE WITH THE RESERVATION SYSTEM?
 COMMENTS: _____

- YES NO 12. DO YOU FEEL COMFORTABLE WITH THE MANNER IN WHICH YOUR CONTRIBUTION IS COLLECTED? COMMENTS: _____

- YES NO 13. THE PEOPLE WHO SERVE THE FOOD ARE PLEASANT AND COURTEOUS.
- YES NO 14. THE PEOPLE WHO SERVE THE FOOD ARE NEAT AND CLEAN IN APPEARANCE.
- YES NO 15. THE SITE MANAGER IS HELPFUL AND COURTEOUS.

- YES NO 16. THE SITE MANAGER IS NEAT AND CLEAN IN APPEARANCE.
17. DO YOU HAVE TO WAIT PAST THE DESIGNATED LUNCH HOUR FOR YOUR MEAL TO BE SERVED?
- _____ A. RARELY _____ C. FREQUENTLY
 _____ B. OCCASIONALLY _____ D. ALWAYS
- YES NO 18. THE DINING AREA, INCLUDING FLOOR, TABLES AND CHAIRS, IS CLEAN AND DRY.
- YES NO 19. NUTRITION EDUCATION IS AVAILABLE ONCE EACH MONTH.
- YES NO 20. PROGRAMS AND ACTIVITIES ARE OFFERED ON A REGULAR BASIS.
 COMMENTS: _____
- YES NO 21. YOU ARE INTERESTED AND PARTICIPATE IN PROGRAMS AND ACTIVITIES THAT ARE OFFERED. COMMENTS: _____
- YES NO 22. WOULD YOU COME TO THE SITE MORE OFTEN IF TRANSPORTATION WERE AVAILABLE?
23. WHAT IS YOUR CURRENT AGE? _____
- PLEASE CHECK THE ANSWERS THAT BEST DESCRIBE YOU.
24. SEX: _____ A. MALE _____ B. FEMALE
25. MARITAL STATUS:
- _____ A. SINGLE _____ C. DIVORCED
 _____ B. MARRIED _____ D. WIDOWED
26. PLEASE INDICATE THE HIGHEST GRADE YOU HAVE COMPLETED:
- _____ A. BELOW GRADE 7 _____ C. VOCATIONAL TRAINING/BUSINESS SCHOOL
 _____ B. GRADES 7-12 _____ D. 1 TO 4 YEARS OF COLLEGE
 _____ E. MORE THAN 4 YEARS OF COLLEGE
27. LIVE:
- _____ A. ALONE _____ C. WITH ONE OTHER (FRIEND, SPOUSE, ETC.)
 _____ B. WITH MORE THAN ONE OTHER _____ D. OTHER _____
28. HOW DID YOU FIND OUT ABOUT THE MEALS PROGRAM?
- _____ A. NEWSPAPER _____ D. FRIEND, FAMILY MEMBER
 _____ B. RADIO/TELEVISION _____ E. DEPARTMENT OF SOCIAL SERVICES
 _____ C. OTHER _____

APPENDIX B

SITE _____

DATE FORM COMPLETED _____

NUTRITION MONITORING SURVEY

Please respond to the following questions by circling or marking the response that most nearly represents your view. You can be assured of complete confidentiality; the identification number at the top of the questionnaire is for coding purposes only. This is so that your name can be checked off once the form is returned. At no time will your name appear on the questionnaire.

A. The following questions pertain to the MENU

- YES NO 1. The meals that are provided are nutritious. Comments: _____

2. Approximately how many times per week is fruit offered? _____
3. Approximately how many times per week is a yellow or green vegetable offered? _____
- YES NO 4. Generally, cold food items are served cold.
- YES NO 5. Generally, hot food items are served hot.
- YES NO 6. Are food temperatures checked?
 If yes, when are temperatures taken? _____
 Who takes the temperatures? _____
- YES NO 7. The meal that is served is exactly the same as the menu that is posted.
8. Approximately how often are substitutions made for items on the menu?
 _____ a. less than once per week
 _____ b. one to three times per week
 _____ c. four to five times per week
 _____ d. more than five times per week
- YES NO 9. Are food items, or meals, that are received checked against the number ordered?
- YES NO 10. In general, food looks appealing.
- YES NO 11. In general, food is tasty.
- YES NO 12. Are containers or trays adequate to keep food separate from each other when served?
- YES NO 13. Are portion sizes of small, medium and large available?

- YES NO 14. Are seconds permitted on request?
- YES NO 15. Have you received any requests for therapeutic diets? (diabetic, low-sodium, special diets for dentures or weight control, for example?)
If yes, for which diets have you received requests? _____

16. In general, participants consume all foods on their tray.
 a. rarely
 b. occasionally
 c. frequently
 d. always
- YES NO 17. Specific food items are frequently left on the plate or tray and are discarded.
If yes, please identify these items. _____

18. Leftovers:
 YES NO a. can be taken home by participants
 YES NO b. are stored and used as part of another meal
 YES NO c. are offered to other people at the site
 YES NO d. are returned to the contractor for credit
19. At what time is the serving line completely stocked at your site?

20. At what time is lunch served at your site? _____
- YES NO 21. Is the serving line open long enough?
22. How long is the serving line open at your site? _____
- YES NO 23. Are provisions made for handicapped persons to be served at the table?
- B. The following questions pertain to the PARTICIPANTS at your site
- YES NO 24. The present system by which participants make reservations seems efficient and does not confuse the participants. Comments: _____

- YES NO 25. Are there "no shows" when people make reservations?
If yes, approximately how many "no shows" are there during any given week? _____

YES NO 26. Do the participants feel comfortable with the manner in which contributions are collected? Comments: _____

YES NO 27. Do the participants sign in at each meal?
If no, who is responsible for keeping track of attendance each day? _____

YES NO 28. Meals are provided to any older person regardless of whether or not a person will/can make a contribution.

YES NO 29. Ineligible meal participants are required to pay the full cost of the meal.

YES NO 30. This site is represented by participants at project council meetings:

- a. rarely
 b. occasionally
 c. frequently
 d. always

YES NO 31. Would participants come to the site more often if adequate transportation were available?

C. The following questions pertain to the FOODSERVICE PERSONNEL that work at your site.

YES NO 32. Foodservice personnel are on time for work each day.

33. Foodservice personnel have all food, condiments and serving utensils available at the beginning of serving time.

- a. rarely
 b. occasionally
 c. frequently
 d. always

34. Foodservice personnel are pleasant and courteous to the participants.

- a. rarely
 b. occasionally
 c. frequently
 d. always

35. Participants must wait past the designated lunch hour for their meal to be served.

- a. rarely
 b. occasionally
 c. frequently
 d. always

YES NO 36. An adequate number of paid and volunteer staff are utilized to assure a continuous flow of service with lack of problems.

D. The following questions pertain to the SANITARY CONDITIONS at your site.

- YES NO 37. Is there a health inspection on file for your site?
If yes, what is the date and score?
Date _____ Score _____
- YES NO 38. Food handlers have clean hands and well groomed fingernails.
- YES NO 39. Food handlers have clean uniforms.
- YES NO 40. Food handling practices are sanitary (that is, hair is properly restrained, utensils are used properly, etc.)
- YES NO 41. Fruits and vegetables are thoroughly washed prior to preparation and serving.
- YES NO 42. Is food handling kept to a minimum?
- YES NO 43. Is the serving line kept clean during service?
- YES NO 44. Is the food preparation area (including the floor of the kitchen, equipment and utensils, etc.) clean and free of debris?
- YES NO 45. Participant dining areas, including the floor, tables and chairs, are kept clean and dry.
- YES NO 46. If there are salt/pepper/sugar containers available to participants, are they cleaned on a regular basis?
- YES NO 47. Is there a known problem with flies, rodents and/or insects at your site?
- YES NO 48. Is smoking allowed (for participants, paid, or volunteer help) at your site?

E. The following questions pertain to the PROGRAMS conducted at your site.

- YES NO 49. Nutrition education is available to all participants once each month.
- YES NO 50. Other programs/activities are offered to participants on a regular basis. Comments: _____

- YES NO 51. Participants express an interest and actively participate in programs and activities offered at your site.
52. What other programs and activities would you suggest for presentation at your site? _____

THANK YOU VERY MUCH FOR YOUR TIME AND COOPERATION! 10/84

APPENDIX C: CALCULATION OF Z VALUES

$$z = \frac{\hat{p}_1 - \hat{p}_2}{\sqrt{\hat{p}\hat{q}\left[\frac{1}{n} + \frac{1}{m}\right]}}$$

n = number of managers (11)

m = number of participants (264)

$$\hat{p}_1 = \frac{\text{number of managers responding "yes"}}{11}$$

$$\hat{p}_2 = \frac{\text{number of participants responding "yes"}}{264}$$

$$\hat{p} = \frac{\text{total combined number of "yes" responses}}{n + m}$$

$$\hat{q} = 1 - \hat{p}$$

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