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**Michigan dietitians and the aging: An assessment of attitudes,
knowledge, and problem solving approach**

Noel, Mary Margaret Barth, Ph.D.

Michigan State University, 1988

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**MICHIGAN DIETITIANS AND THE AGING:
AN ASSESSMENT OF ATTITUDES, KNOWLEDGE,
AND PROBLEM SOLVING APPROACH**

By

Mary Margaret Barth Noel

A DISSERTATION

**Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of**

DOCTOR OF PHILOSOPHY

Department of Family and Child Ecology

1988

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ABSTRACT

MICHIGAN DIETITIANS AND THE AGING: AN ASSESSMENT OF ATTITUDES, KNOWLEDGE, AND PROBLEM SOLVING APPROACH

By

Mary Margaret Barth Noel

The objective of this research was to assess the attitudes and knowledge of Michigan dietitians about aging. Dietitians' attitudes and knowledge about aging are important because of the potential influence on nutrition services provided to older adults. Four instruments were used: a demographics measure, the Wall-Oyer Attitudes Toward Aging, the Palmore Facts on Aging and three problem solving questions to assess the use of the human ecological perspective.

The dietitians surveyed were active members of the American Dietetic Association in Michigan in 1986. The survey was mailed to 1408 dietitians with 738 responding (52.4%). The responding dietitians were predominantly under 40, well-educated and female, which was consistent with the 1986 national census of dietitians.

The results indicated that dietitians hold positive attitudes toward older adults in most areas. An exception was that a majority of dietitians perceived older adults as resistant to treatment.

Although knowledge about aging by dietitians generally was adequate, questions consistently answered incorrectly were in the areas of economic and health status of older adults. These are critical areas of

deficiency in knowledge by dietitians since food and nutrition issues often involve money and health.

In the problem solving section, the dietitians usually focused on one specific environment or area of concern. The full range of all possible environments with which older adults interact usually was not considered. The diversity of older adults' needs was not reflected in the responses.

It was concluded that continuing education as well as comprehensive undergraduate courses that include aging would have a positive influence on Michigan dietitians' attitudes and knowledge about aging. Also, further research is needed to determine if dietitians and other health professionals understand older adults within their total context, or through a human ecological perspective.

To George, Katherine and Joseph
for their continued love and support
throughout my program and research.

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CHAPTER I

INTRODUCTION

The population of the United States is undergoing a significant change. The number and percent of the total population constituted by older adults (65 years of age or older) in the United States is large and increasing. Michigan is no exception to this trend. One of the major needs of this older segment of our society is appropriate nutrition because good nutrition is a key to good health, and good health among this large and increasing segment of the population will be economically and socially advantageous to society. As the older population increases, the need for nutrition education and services also increases. Although dietitians are the primary providers of nutrition education and services, very little is known about their knowledge or attitudes concerning aging, or the extent to which they consider the total context of older adults when presented with their nutrition problems. In learning more about dietitians, the ultimate goal is to improve services to older people by better preparing dietitians to meet their needs.

Background of the Problem

Both the average life expectancy and the percentage of the population over 60 are increasing. The age group with the greatest increase in numbers is the group over 85 years of age, which is expected to at least double in number by the year 2000 (Atchley, 1985) (Table 1).

Table 1

The Absolute and Relative Size of U.S. Aging
Population Group
(1945 - 2050)

Year	65+ (Population in millions)	Aged as a percentage of Total Population	Aged 80+ as a percentage of Total Aged
1945	10.5	7.5	13.3
1965	19.0	9.3	16.5
1985*	29.3	11.8	21.7
2005*	37.5	13.8	30.9
2025*	60.8	19.4	24.4
2050*	69.7	21.1	38.3

Source: U.S. Bureau of Census, Current Population Report, 1979.

*Data for 1945-1980 actual; for 1985-2050 are based on projections based on mid-range series of census and social security actuaries.

With the growing number and proportion of older people in the population, health is of particular concern due to its influence on both the quality of life of older individuals and the use of societal resources. Nutrition is a part of health as well as a part of the treatment of diseases of the aging.

Nutrition for the aging involves several issues. These may include social issues such as loneliness or biological issues such as the decreasing caloric needs at a time when nutrient needs stay the same. The strong interrelationship between health and nutrition in older adults has long been recognized because a variety of medical problems may be

caused or intensified by poor nutrition (Sandstead, 1985). The occurrence of heart disease, stroke, cancer and other chronic afflictions can reflect lifelong environmental factors and health behaviors such as poor nutrition and lack of exercise (Surgeon General's Report on Health Promotion and Disease Prevention, 1979). Public officials have realized the interrelation of health to food and nutrition through policy decisions that provide food programs for women, infants and children (WIC), food stamps, and senior food sites. Yet, most health care providers have little training in nutrition or aging (National Research Council, 1985; Senger, O'Brien, & Barker, 1985). Nutrition in the health care field is within the scope of practice of the dietitian. "The dietitian is a translator of the science of nutrition into the skill of furnishing optimal nourishment to people." (American Dietetic Association (ADA) 1985, p. 5). Those who provide and determine nutrition services and policies are the dietitians in institutions, the community and government.

Although other health professionals have been assessed as to their knowledge and attitudes about aging, dietitians have not (Wilson & Whittington, 1985). Dietitians have training in nutrition, biochemistry, and physiology as well as social sciences, management, and education (Appendix F, Minimum Academic Requirements of ADA for Dietitians). Yet, dietitians may have little knowledge about the social, psychological and physiological process of aging (Hutchinson, 1984). Their educational programs usually encompass specialty subjects such as life-cycle nutrition, but the undergraduate college education of dietitians does not usually include any required topics in aging or its special needs (Sims,

Smiciklas-Wright, & Shannon, 1984). Furthermore, dietetic internships and other post-baccalaureate training may have varying lengths of exposure to facilities for and services to the aging (Shoaf & Kotanchek, 1987).

Often dietary care as well as medical care is necessary due to problems common in older adults such as heart disease, diabetes and obesity. The cost of these problems to the individual can be helplessness and the inability to care for oneself. The cost to society also can be great due to the range of services required by older persons with multiple health problems. The changing demographics are not the only cause for this phenomenon. The very old, who have higher than average medical expenses relative to the younger aged, are a part of the demographic picture. Increasing general health care costs per capita are important in contributing to the health care financing costs since these costs have greatly exceeded the rate of increase of the GNP per capita for years (U.S. Bureau of Census, 1984). This rate of growth can be expected to continue unless major policy changes occur (Table 2).

Table 2

Long Term Federal Outlay Trends as Percentage of GNP

Year	Pension Programs	Health Care Financing Programs
1965	4.1	0.3
1975	6.4	2.0
1985	6.6	2.7
1995	6.0	3.6
2005	5.6	4.2

Source: Palmer and Gould. 1986, page 312.

Through its policy makers, society is looking for a means to diminish these costs as well as improve the quality of life for older adults. Preventive programs encouraging improvement of nutrition and increased physical activity are current recommendations for older adults (Surgeon General's Report, 1979).

The demographics of Michigan are similar to the national statistics on the percentage of aging adults who are a part of the population. In 1981, about 10% of Michigan's population was over 65 years of age. In 1981, 5% of Michigan's aged population, about 46,500, lived in nursing homes. The percentage of the population as well as the number in nursing homes will double by 2030 (Michigan Department of Social Services, 1984).

Dietitians generally provide nutrition services to older adults (Britton, 1984). The trained, qualified dietitian (known as a registered dietitian) who is a member of the American Dietetic Association can belong to optional specialty dietetic professional groups. Two of these

professional groups have aging as the primary or major area of concern. These practice groups are the Gerontological Nutrition group and the Consultant Dietitians in Health Care Facilities group (primarily long-term care facilities). Other specialty groups such as Public Health Nutritionists, Diabetes Care and Education, and Nutrition Education for the Public have secondary interest in aging because the aged are major populations addressed by these groups. None of the specialty groups have educational or other membership requirements. The only qualification is that when membership dues are paid, an additional amount of money (\$10-\$15) is paid to each group the dietitian notes on the membership form. Usually dietitians belong to the group related to their practice area, but this is not always the case.

The informal education of dietitians through a network of articles and personal development might contribute to their knowledge of the nutritional needs of the aging, but it is difficult to assess the impact or comprehensiveness of such an approach. Dietitians may have levels of knowledge and attitudes similar to the general public because they have had little formal gerontological education, and informal education is difficult to assess. Providers will need to increase their understanding of the aging process, and their knowledge and attitudes will have important implications for the types of services they provide.

As the trained experts in nutrition, dietitians should be providing leadership in nutrition for the aging and their families. The first step towards dietitians providing that leadership is to assess their knowledge and attitudes about aging. If low knowledge levels and negative attitudes are noted, then programs can be designed for improving these

basic areas. If high levels of knowledge and positive attitudes towards aging are found among dietitians, then additional skills such as problem solving and leadership development programs could be developed.

Purpose of the Study

The overall purpose of this research was to assess the knowledge and attitudes of Michigan dietitians about aging. This is a starting point of determining better information about the quality and amount of help available to older people in the area of nutrition. As nutrition experts, dietitians have not been assessed for their attitudes and knowledge about aging as other health professionals have been. Prior to determining the extent to which dietitians work with older adults, it is important to discern what dietitians know about older adults. In order to reach this goal, the following specific objectives were developed:

1. To determine what attitudes Michigan dietitians hold concerning aging.
2. To determine the knowledge about aging Michigan dietitians hold.
3. To determine if age, education, professional interest, and professional and personal experiences with aging are related to Michigan dietitians' attitudes and knowledge about aging.
4. To determine to what extent Michigan dietitians use a human ecological perspective in problem solving, and what is the relationship between the ecological perspective and their attitudes and knowledge about aging.

Definitions

Attitudes. Kalish (1985) defines an attitude as an enduring tendency to think, feel, and behave in a consistently favorable or unfavorable fashion toward a concrete thing including a person or abstract thing or idea. The instrument used in this study to assess

attitudes on aging is the Wall-Oyer Attitudes Toward Aging Inventory. This inventory measures the preconceived notions or prejudices persons have about the aging, feelings about older persons and interest in dealing with older people. Wall-Oyer did not present a definition of an attitude with their instrument. Conceptually, attitudes about aging in this survey are defined by this researcher as prejudices, feelings and interests in older persons. Operationally, attitudes about aging will be measured by the Attitudes Towards Aging Inventory by Wall-Oyer which is a 22-item instrument using a Likert scale.

Knowledge of Aging. Knowledge of aging is defined as information, ideas or understanding gained through experience, observation or study (Purtilo, 1973). Knowledge of aging is factual information that an individual possesses, or is able to demonstrate on a test of facts on aging. Operationally, knowledge of aging was measured by Palmore's 25-statement true or false Facts on Aging inventory.

Human Ecological Perspective. An ecological perspective on situations or events would include an understanding of individual and family issues within the human behavioral environment, the human constructed environment and the natural environment as they impact upon human experiences, attitudes, beliefs and situations. The human ecological perspective takes into account culture and values that influence human relationships and the modifications humans make to their environments. This is an important perspective because humans are interdependent creatures rather than independent organisms. The human ecological perspective provides a holistic view of individuals in association with the physical, biological and social conditions and events around them.

Because older adults are the most heterogeneous age group of individuals (Weg, 1982), this perspective is particularly valuable.

Professional Interest. Professional interest was indicated by the affiliation with a professional group or groups expressly for the understanding or sharing of information about aging persons and/or services to the aging.

Professional Experience with Aging. Experiences reported by the dietitian as related to his/her career in dietetics that dealt primarily with aging persons and/or services to the aging.

Personal Experiences with Aging Persons. Experiences reported by the dietitian regarding his/her personal life as related to aging persons.

Active Dietitian. Active dietitians are defined by the American Dietetic Association (ADA) constitution as "any person who possesses or satisfies the education, experience, endorsement, and supervision qualifications prescribed by the Executive Board and whose application has been evaluated and approved by the membership committee may become an active member of the Association." (American Dietetic Association Constitution 1967, p. 3.) Active dietitians in Michigan were used as a representative group of the ADA since Wenberg (1975) showed that this group is similar to the general ADA membership.

Conceptual Framework

Due to the complexity and multifaceted nature of the health and nutrition problems that the aging face, a human ecological perspective was chosen as the conceptual framework.

A human ecological model

follows a general ecological model that views organisms as interacting with their environment. The organism, its environment and their interaction is called an ecosystem. . . . Our model gives attention to the spatial dimension of organisms in relation to their environment and also takes account of cultures and values that influence human relationships and people's adjustments to and modifications of their environment. (Bubolz, Eicher and Sontag, 1979, p. 28).

The attitudes and knowledge of dietitians are important within the total context of how the problems of the aging are viewed. If aging is not viewed ecologically, then the nutrition services that dietitians provide will be limited, short-sighted and not helpful to the aging adult. Nutrition services can be inadequate if viewed only within the context of the aging individual. Aging adults need to be considered within the context of their families, communities, and the resources these systems provide. A human ecological perspective is the framework that considers the multifaceted dimensions of the human being. This perspective considers individuals (physical and mental), their families, human behavioral environments (social, values, policies, laws, religious and community relations), human constructed environments (housing, transportation, and community services) and the natural environment (weather, geography and natural resources, such as water). Each of these environments is an element to consider in reviewing the situation and circumstances of individual life problems. The older adult has developed many linkages to each of these environments throughout a lifetime. Interactions which occur in the various environments influence the quality of daily living. The interchanges between the older adult and each system in each environment become more important with time; a loss (such as loss of a spouse or close friend, selling of a familiar home,

change in community and climate) in any system could precipitate a crisis in the older adult. Older adults who are viewed by many as highly resistant to change may actually undergo more changes in their later years than at any other time. These changes occur in their families and their social relations, in housing and sometimes the natural environment. The changes and interactions of older adults are important to their well-being--including their health and nutrition.

Recently, Fanelli and Abernethy developed a nutrition questionnaire to assess the nutritional needs of older adults (Fanelli & Abernethy, 1986). Though it was not developed within a human ecological framework, the information contained in it corresponds to the elements of the ecological framework. However, family is the one area which a human ecological model identifies that was not strongly delineated in the Fanelli-Abernethy questionnaire or in other nutrition sources. Families are not considered in nutrition assessments of older adults by some researchers (Fanelli & Abernethy, 1986). The human ecological model maintains that the family is an important factor in considering the concerns of humans. Family is recognized as the principal teacher of nutrition and food habits. The aging person's involvement with a family enhances the social aspects of eating (Schlenker, 1984). Yet, often nutrition assessments of older adults omit family as one of the considerations. The human ecological perspective takes family into consideration in its impact on the individual. Through the human ecological perspective important areas are considered, such as inter-relationships of the older individual with the family, the community or

the natural environment. With this perspective, a thorough view of the give and take between individuals and their world can occur.

Since many dietitians in Michigan have graduated from Michigan State University, a major proponent of the human ecological model, there could be a difference in their approach to nutrition services as compared to approaches utilized by dietitians from other schools. How training in the human ecological conceptual framework develops a particular type of knowledge and influences attitudes in the area of nutrition has not been investigated.

The human ecological perspective could be a useful means of assessing how dietitians' attitudes and knowledge influence their professional practice with older persons. The life experiences of older adults are so diverse that many aspects of family and community must be considered to understand fully their needs. The ecological perspective provides the framework for assessing these diverse interrelationships in older adults' lives.

The ecological framework was proposed in order to clarify the complex relationships between variables in this study. The independent variables of age, education, professional interest, and professional and personal experiences were predicted to influence the dependent variables of attitudes and knowledge about aging of Michigan dietitians. Both of these variables could influence the ecological perspective on aging in viewing the nutrition concerns of older adults through their individual interrelationships with family, community, policy, and natural environments (Figure 1).

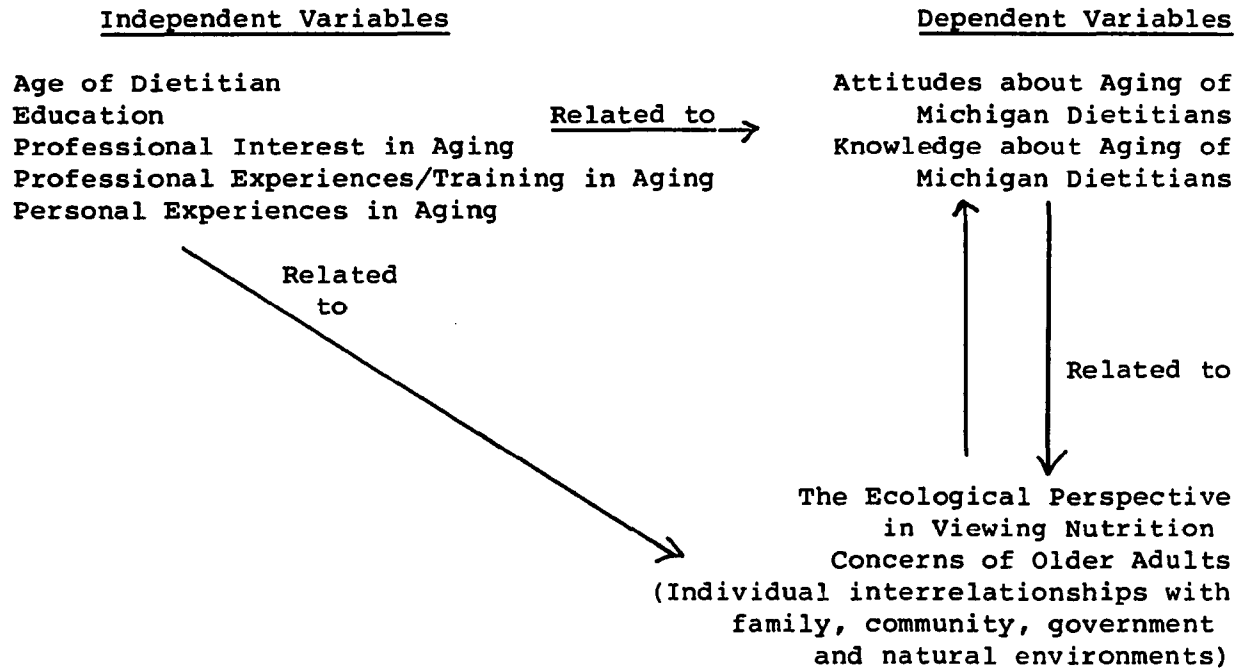


Figure 1. Research Framework

The actual attitudes and knowledge of Michigan dietitians are important, but how these attitudes and knowledge affect decisions or problems involving older adults is the crucial clinical question. This study investigates attitudes and knowledge about aging so that additional questions about providing services to older adults can be studied. The ecological perspective provides a holistic approach for viewing (a) the environments in which individuals function and (b) the nutrition problems encountered by the older adult. This framework provides a means for assessing the impact of factors such as the individual's physical and psychological status, family issues, community resources, policy, including health and economic, and characteristics of the natural environment.

The reason that attitudes towards and knowledge of aging are crucial to all health professionals is the influence these attitudes and knowledge may have on clinical judgments affecting older adults. The ecological perspective is a framework for testing clinical judgments to determine how broadly or encompassing various areas are considered related to the needs of the older adult.

Therefore, it is necessary to assess the attitudes and knowledge of dietitians about aging, related to their problem solving processes. The ecological perspective provides a potential means for analyzing the issues which Michigan dietitians view as concerns in the nutrition problems of older adults.

Summary

Despite the fact that more of the U.S. population is living longer and may have specialized nutritional needs, health professionals generally are not trained in nutrition for the aging (Hutchinson, 1984). Although the needs of older adults vary widely due to life experiences, health professionals often fail to understand these diverse needs (Weg, 1982). Other health professionals have shown a lack of desire to work with the older adult (Geiger, 1978). This may be due to their lack of education and insufficient professional or personal experience with older adults as well as a lack of holistic understanding of the multifaceted problems of older adults. Although professional dietitians provide nutrition and food services to the aging population, they have not been assessed as to their knowledge or attitudes towards the aging. A better understanding of the attitudes and knowledge about aging could help define the education dietitians need. The human ecological perspective

provides a framework to study the clinical judgment of dietitians when dealing with older adults. Also important is the effect that these attitudes and knowledge have on the decisions about the nutritional problems of older adults because they directly affect the quality of services the aging receive.

CHAPTER II

LITERATURE REVIEW

Introduction

The literature review summarizes pertinent information on dietitians, nutrition of the aging, and attitudes and knowledge of health professionals about aging. Because the human ecological framework is the conceptual basis for this study, research in the use of this framework in nutrition and aging also is discussed.

The first area covers dietitians, because this is the group which the research was conducted. The second area includes nutrition of the aging because this is the content area for the research. The third reviews attitudes towards aging; the fourth covers knowledge of aging. The final area of the literature review is the ecology of nutrition and aging.

Role of Dietitians

The person who is concerned with proper nourishment of individuals and groups has functioned as a dietitian long before the title existed. Concern about the relationship between what people eat and drink to health goes back as far as 2500 B.C. as recorded on stone tablets in Babylonia (ADA, 1985). The American Dietetic Association (ADA) was incorporated in 1927 with a formal decision on the title (and spelling) of dietitian occurring in 1930 (ADA, 1985). The president of ADA in 1964

realized the need for advanced study and specialization within the profession. Work began to investigate requiring credentials within the profession. Voluntary registration that includes an examination and continuing education requirements was initiated in 1969. The ADA registered dietitian (RD) became the form for certification of dietitians (ADA, 1985).

Special interest groups have existed in ADA for many years; in 1979 dietetic practice groups (DPG) became an important part of ADA structure. Major interests of the membership, not necessarily areas of practice, were identified by DPGs. Two of the DPGs are specifically interested in gerontology -- Gerontological Nutrition Group and Consultant Dietitians in Health Care Facilities. The latter group's interest is due to the large percentage of the population of older adults in nursing homes -- a major type of health care facility where dietitians consult. The Consultant Dietitians in Health Care Facilities Group is the largest single practice group in the ADA membership (3,871 out of 26,653) whereas the Gerontological Nutrition Group is average in size (1,334 members) (ADA, 1985).

The ADA has asserted its commitment to improving the institutional status and health of older adults through support of nutrition education for older adults, research on the aging process, and nutrition care-giving activities (Journal of the American Dietetic Association, 1981). In addition, dietitians' involvement in nutrition and aging can be demonstrated by the varying populations dealt with by dietitians, the interest of practice groups in the nutritional concerns of older adults and positions taken by ADA for nutrition issues for older adults.

Michigan dietitians as representative of the national membership in ADA in that education, practice locations, and other factors, are similar (Wenberg, 1975).

Problems in Studying Nutrition of Aging

The study of the nutrition of aging is complex because of the multifaceted nature of gerontology.

Older persons are probably the most heterogeneous of all subgroups in the population. These diverse individuals have unique genetic identities, fulfilled during interaction with unique life histories. They are more different from each other than ever before--although they may face similar life stage challenges. People age differently from one another, in both rate and substance of change. In each person, organ systems age at distinctive rates in a variety of ways. (Weg, 1982, p. 81)

Weg goes on in her "Position Paper on a Model of Normal Aging" to discuss gerontology.

As a field of inquiry, it is developmental and process-oriented, with the commitment to understand the mechanisms and trajectory of lifelong changes with time, in the psychological, affectional, social, physical, and spiritual dimensions of human development with time. As a field of inquiry and practice, it has major implications for clinical geriatric investigation, teaching, and practice. A model of normal aging seeks to distinguish disease from changes with time, to integrate all perspectives into the whole person, and to know their interaction. (p. 82)

This diversity of the aging population along with the complexities of multiple areas influencing the older adult has made consistent nutrition data on the aging adult difficult to obtain (Roe, 1983). Even as recently as 1985 Sandstead wrote that ". . . it is evident that our ignorance about the relations between nutrition and aging far exceeds our knowledge." (1985, p. 171). Even though the same nutrients are essential for individuals of all ages, changes accompanying the aging process may call for variations in the amounts required by aging adults (Love,

1982). Though the Recommended Dietary Allowances (National Research Council, 1980) list the oldest age group as 51 years and older, it is likely that the vigorous 65 year old has little in common with the frail 91 year old in nutritional needs (Hutchinson, 1984). Nutrition also is affected by the diversity in psychological, physiological, and social well-being. A few sources consider the ecological approach suggested by this diversity (Robson, Larkin, Sandretto, & Tadayyon, 1972), but most do not (Fanelli & Abernethy, 1986; Mullis & Bowen, 1985).

Steinbaugh (1984) identifies three areas which are of special nutritional concern in studying nutrition and aging. First is the newness or "youthfulness" of gerontology, especially of nutrition in aging. The nutrition of aging has not been studied with the elderly viewed as a distinct and different segment of adults. Studies have been conducted that grouped adults from 25 to 65 years of age, or 65 and older (Sandstead, 1985). Therefore, any unique nutritional differences within the over 65 population have not been distinguished. The situation is changing in that the elderly, including the very old, are becoming the focus of age specific research.

Second is the definition of "normalcy."

The definition of normality, and therefore abnormality, is critical to the study of nutrition and aging and of nutrition assessment of the elderly. The difficulty is that chronic and clearly pathological conditions such as arthritis, heart disease or diabetes mellitus can often be controlled sufficiently so that elderly individuals can lead fairly normal active lives. Should the operational definition of normality not allow for such conditions? From a practical and a statistical viewpoint are not these conditions more or less typical and usual? Also many conditions formerly thought to be an inevitable part of the aging process are now considered pathological conditions which may be related to nutritional intake. For example, an alteration of mental state may be the

result of dehydration caused by inadequate fluid intake. (Steinbaugh, 1984, p. 10).

The third issue is the lack of recognized anthropometric and biochemical standards of normalcy for the elderly (Steinbaugh, 1984). To make accurate determinations of the nutritional status of older adults, comparisons are made between clinical assessments of individuals with appropriate standards of what is considered healthy and normal. Age and gender-specific normative data for older adults, especially those age 75 and older, are not available for many nutritional parameters.

In summary, many questions about the aging in nutrition and physiology/biochemistry remain. Because of the heterogeneous nature of the aging population, there needs to be a broad perspective, an ecological review of aging adults and their nutrition concerns (Delahanty, 1984). Yet, because of the relative youth of the field of gerontology, the difficulty of defining "normalcy" in aging, and the lack of recognized anthropometric and biochemical standards for the elderly, our perspective is limited because some specifics are not known.

Attitudes Towards Aging

Attitudes seem to indicate interest in serving the needs of older adults. These perceptions can influence the quality, type, and amount of professional assistance available to older persons (Kosberg, 1983). Studies of medical students and physicians have shown poor attitudes as well as a lack of interest in providing care to older adults (Senger et al., 1985; Geiger, 1978; Holtzman, Tocue, & Beck, 1979). As older adults increase in number and require more health services, the attitudes and

types of services health professionals provide will be crucial in meeting their needs.

Ray, Raciti and Ford (1985), in their review of psychiatrists, state an important point in the concern with attitudes of all helping professions.

Harboring negative sentiments toward elderly people can exacerbate their difficulties by becoming a self-fulfilling prophecy. To prevent self-fulfilling negative stereotypes of the aged from being realized, members of the helping professions must first clarify and understand their own attitudes towards this population. (p. 500)

Attitudes carried into adulthood occur through personal and professional experiences. In recent years, more attention has been paid to the attitudes of health professionals toward the aging population. Health professionals are a crucial part of the lives of older adults because of their increasing use of physicians, other health professionals, and health care facilities. This increase is shown by the increase in admissions of older adults in both short term and long term care (Table 3).

Table 3

Age Related Medical Statistics

Age (years)	Percentage of elderly with limitation of activity due to chronic disease	Rate of admission to short term hospital/1000 population for persons in this age group	Rate of admission to nursing home per 1000 for same age group
65-74	41%	29	15
74-84	51%	451	68
85 and older	60%	509	216

Source: 1978 National Center for Health Statistics Current Population Reports Series, No. 85, in U.S. Bureau of Census (1984).

Of the health professions surveyed, negative attitudes or "ageism" have been noted in physicians and residents (Callen, Ingham, & Lower, 1982; Holtzman, Tocue, & Beck, 1979; Senger et al., 1985; Maxwell & Sullivan, 1980), medical students (Senger et al., 1985), rehabilitation professionals (Benedict & Ganikos, 1981), dentists (Kiyak, Milgrom, Ratener, & Conrad, 1982) and dental students (Claus, 1982). Positive attitudes towards the aging have been noted in administrators and direct service workers in agencies dealing with older adults (Kabacoff, Putnam, Shaw, & Klein, 1983). The nursing profession literature has mixed results of both negative and positive attitudes (Goebel, 1984; Olsen, 1982). Ingham and Fielding (1985) concluded that the research on nurses' attitudes towards aging showed these inconsistent results due to sampling, measures used and data analysis.

The research to date has focused primarily on general perceptions and attitudes toward the aging which are unrelated to specific older individuals or specific contexts (Green, 1981). This is probably part of the reason for contradictory results. General perceptions and attitudes are viewed as first steps in studying knowledge. Green (1981) also stated that future work should focus on the impact of attitudes and the context within which the attitudes are held.

The health education literature review shows that through gerontology education attitudes of a variety of health professions improved (Woolliscroft, Calhoun, Maxim, & Wolf, 1984; Greene, 1983; Sims et al., 1984; Ray, et al., 1985). Greene's findings are encouraging in that training and education can have positive effects on modifying attitudes towards the aging. Greene's research was based on the belief that formal

education focusing on didactic methods--but including experiential opportunities--can produce improvements in attitude. Woolliscroft et al. (1984) demonstrated that medical students had positive attitudes towards the elderly when their curricula incorporated community settings for the elderly.

Dietitians provide services to all age groups in hospitals and nursing homes as well as in community settings. Assessment guidelines and services recognize the need for nutrition services for older adults, yet dietitians as a group have not had their attitudes nor their participation in gerontological services assessed (Mullis and Bowen, 1985).

Knowledge of Aging

Several studies have assessed the level of knowledge of aging among various types of health professionals. To date, dietitians have not been surveyed for their knowledge about aging. Palmore (1977) developed a "Facts on Aging" quiz which has been utilized to measure knowledge of basic physical, mental, and social factors involved in aging, along with misconceptions about aging. Because it is short and has a true-false format, the Palmore quiz has been extensively used in surveying health professionals such as physicians, medical residents and students, physician assistants, and dentists (Michielutte & Diseker, 1984-85; West & Levy, 1984; Belgrave, Lavin, Breslau, & Haug, 1982; Geboy, 1982).

Attitudes and knowledge are often difficult to separate. Kosberg (1983) pointed out that health professionals may not be providing services to the elderly as a matter of choice and may have negative stereotypical attitudes towards older adults. Kosberg (1983) also

suggested three specific mechanisms which could be used to foster positive attitudes among health care professionals: formal education, continuing education programs, and staff assessment of positive attitudes towards elderly persons. Through education and knowledge, it is proposed that some attitudes can be changed in health professionals. Even if education does not fully change attitudes towards the aging based on cultural biases, knowledge of the normal aging process can correct misconceptions (Kosberg, 1983).

Palmore's Facts on Aging (1977) in samples of 3,351 people in 25 different studies (Palmore, 1980) evaluated the most frequently held misconceptions. The most frequently held misconceptions were:

1. That more than 10% of the aged are in long-term institutions
2. That most aged are set in their ways and unable to change
3. That the majority of the aged are bored
4. That over 15% of the population are 65 or older
5. That the majority of the aged are in poverty
6. That the majority of the aged are often irritated or angry

In identifying groups with misconceptions, Palmore (1980) found little difference in mean Facts on Aging Quiz scores based on gender, race or even age when education was held constant.

Miller and Dodder (1980) evaluated Palmore's Facts on Aging quiz as reliable, but found several major problems with the scale. These problems included vague terminology and the need for "Don't know" responses. Courtenay and Weidemann (1985) determined that a third response of "Don't Know" does remove the risk of correct guesses. Laner (1981) demonstrated that the Palmore Facts on Aging did measure knowledge and

also measured change in knowledge about aging in social gerontology classes through pretest/posttest. Laner (1981) called for research to determine the nature of the relationship between knowledge increases and attitude change using the Palmore Facts on Aging.

Ecology of Nutrition and Aging

Professionals providing nutrition knowledge about the heterogeneous group of older adults must take into account the physiological, mental, social, environmental, and economic changes associated with aging as well as specific age related nutrition issues. The study of nutrition in the aging population must reflect an ecological approach which considers the nature of the multiple influences (Hutchinson, 1984). This lends support to the ecological framework as a perspective to view these influences.

The same issues that are addressed by Sims, Paolucci and Morris (1981) for children are concerns for older adults. Sims et al. stated that

. . . it is proposed that an ecological model is most appropriate for explicating the complex syndrome of malnutrition. Because nutrient intake may be influenced by environmental characteristics, an ecological model facilitates the study of nutritional status of children in relation to those factors which characterize his near environment, i.e., his family. (p. 34)

The factors which have been identified as affecting food choices are physiological, psychological, social, and economic (Schlenker, 1984). Although usually considered singularly, all act in combination. To understand the nutritional status of older adults, the combination of factors in the ecological framework is necessary. In older adults food behaviors reflect lifelong habits and attitudes as influenced by changing environments, lifestyle, health, and economic status. Life events such

as bereavement or divorce can influence food intake and nutritional status. Interrelationships between the nutritional status and the environments of the individual vary according to a system of checks and balances between the influences. Schlenker (1984) gives an example of the unpredictable nature of environmental influence on older adults:

Although factors such as living alone or having less money to spend on food do lead to poor nutrient intake in some older people, this is not true of all older people. The stereotype of the older person subsisting on tea and toast is not substantiated by survey data from the United States or Great Britain. (p. 183-184)

If only one or two sets of environmental influences are considered, then unrealistic conclusions and predictions may be made. An ecological perspective is a more balanced perspective on the older adult because it keeps observations of the very sick or the very poor from creating prejudicial attitudes about all older adults. In the study of the nutrition concerns of the aging person, the ecological framework provides an objective perspective of the issues affecting older adults' nutritional status.

In classical terms, ecology may be defined as the science of relationships between organisms and their environment. An ecological perspective in the study of living systems enables one to consider the whole rather than isolated component parts in the analysis of any system . . . human ecology attempts to develop a conceptual framework whereby the convergent complexity of the relationship of total man to his total environment is recognized . . . the study of nutrition is actually a subset of ecology because the whole of an organism's environment must be examined in order to achieve a valid assessment of nutritional status. (Sims, et al., 1981, p. 27)

Jackson (1966) reinforced this idea that the study of nutritional status of individuals is actually a subset of ecology. Because of the wide range of influences on older adults, the literature reiterates that

many considerations should be reviewed in relation to older adults (Hutchinson, 1984; Schlenker, 1984). For example, the lack of eating by an older adult could be influenced by the lack of food, lack of interest in food, the lack of money, or the lack of transportation to sources of food. This lends support to the ecological framework as a perspective to view these influences.

The dietitian as the nutrition expert needs to understand the complexity of issues affecting older adults, whether the terminology of ecology is used to explain the nutritional assessment process or other holistic terminology is used. As Sims et al. (1981) described, the task of nutritional assessment is an exceedingly complex matter and difficult to achieve for systems in the life or behavioral sciences. Without a conceptual framework in which to identify the subsets or parts, the task moves from difficult to impossible.

Fanelli and Abernethy (1986) identified the elements of nutrition assessment of older adults. Yet, without an ecological framework encompassing individual issues, family concerns, community, and other environments in which to organize the elements of assessment, issues are missed. Then nutritional assessments become tools that often fail to consider the important interactions between the individual, family, community, and other environments.

Summary

In the United States the older adult population is increasing in both numbers and proportion of the total population. Older adults have more intensive health needs and therefore use more health services than younger people. Health professionals' attitudes and knowledge towards

aging can affect the type and quality of services provided for older adults. Surveys of health professionals regarding attitudes and knowledge about aging have shown negative attitudes and misconceptions about aging.

As providers of needed nutrition services to older adults, dietitians must understand and have positive attitudes towards the aging. Yet, little is known about the knowledge and attitudes of this important group. This lack of basic information is exacerbated by the multifaceted nature of nutrition concerns of the aging requiring an assessment as to whether dietitians perceive the nutrition problems of older adults in their total context.

Older adults are a heterogeneous group affected by physiological, mental, social, physical and economic factors. These multiple influences are reflected in an ecological approach which organizes the areas into a systematic framework that can be reviewed logically in the context of the individual older person or groups of older adults.

CHAPTER III

RESEARCH DESIGN AND METHODOLOGY

Overview

The overall purpose of this research was to assess the knowledge and attitudes of Michigan dietitians about aging. In order to reach this goal, the following specific objectives were developed to guide this research:

1. To determine what attitudes Michigan dietitians hold concerning aging.
2. To determine the knowledge about aging Michigan dietitians hold.
3. To determine if age, education, professional interest, and professional and personal experiences with aging are related to Michigan dietitians' attitudes and knowledge about aging.
4. To determine to what extent Michigan dietitians use a human ecological perspective in problem solving, as well as the relationship between the ecological perspective and their attitudes and knowledge about aging.

Sample and Data Collection Procedure

Prior to starting this research project, the research proposal was submitted to the University Committee on Research Involving Human Subjects (UCRIHS). Approval for the research project was received on June 3, 1986 (Appendix A).

Because responses of the participant dietitians were completely anonymous, written informed consent was not possible. Therefore, in the contact letter, the participants were informed that they gave their

consent to participate by returning the questionnaire (Appendix B). The confidentiality of the participants was maintained by not having any code or identification numbers on the questionnaire or the return envelopes. The coding for analysis occurred as the questionnaires were returned.

Active members of the American Dietetic Association comprised the population for this study. Michigan was selected purposely as representative of the American Dietetic Association. The sampling frame was all active dietitians in the state of Michigan (1408 members) who belong to the American Dietetic Association. The response rate was 52.4% (738 respondents).

Michigan dietitians have been documented to be a representative sample in parameters such as age, educational level, size of facility in which employed, location, and type of employment when compared to the American Dietetic Association (Wenberg, 1975). Additional demographic information was collected from the ADA 1981 and 1986 censuses to verify that Michigan dietitians remain representative of the national group. According to the 1986 membership census, the typical American Dietetic Association (ADA) member is young, college-educated, white and female. More than 63% of all ADA members are younger than 40 years of age, with 97% female and 87% white (American Dietetic Association, 1985; Baldyga, 1983; Byrk, 1987).

A questionnaire with accompanying letter and a stamped, self-addressed envelope was sent to each active dietitian in Michigan, according to ADA as of March 1986. This questionnaire was mailed on 15 June 1986, with a requested return date of 15 July 1986. Surveys were

accepted until 15 August 1986, however. Three surveys came in later than that date and were not included in the analysis.

Though 1,436 active dietitians in Michigan were members of ADA in March 1986, the 28 persons not included in the study were: 18 whose addresses were outside of Michigan and/or the United States, eight who participated in the pilot study, one who was on the advisory committee for this research, and the researcher. Therefore, the survey was mailed to 1408 active dietitians in Michigan. A return rate of 50 percent generally has been considered adequate (Babbie, 1983) or appropriate when the respondents are representative of the group as a whole. The response rate for this questionnaire was 52.4% (738 out of 1408), and the respondents were representative of the ADA census studies.

Research Design and Instrumentation

The questionnaire consisted of four instruments. These included a demographic measure, the Wall-Oyer Attitudes Toward Aging Inventory, Palmore Facts on Aging, and a problem solving component designed to address the dietitian's ecological perspective. The initial demographic instrument was used to develop baseline information on the dietitians (Appendix C). This instrument requested information on training and experience the respondents had in the area of aging. It also covered basic pertinent information on age of the dietitian and how long he/she had been a registered dietitian.

The second section of the questionnaire was the Wall-Oyer Attitudes Towards Aging Inventory (Appendix C). This scale was selected because it has been used with other health professionals to survey attitudes. Other perceptions or attitudes measures such as Tuckman-Lorge (Tuckman & Lorge,

1953) are more difficult to use due to the length of questionnaire or answer format. The Wall-Oyer is a 22-item, Likert-type scale, and was considered short enough to include with the other parts of the questionnaire. The attitude measure came before the knowledge measurement, so later scales would not influence attitudinal responses.

The Wall-Oyer Attitudes Toward Aging Inventory has been tested on medical and speech therapy students at two universities. The instrument was designed to have two dimensions--personal and general. It has been found upon re-administration in previous tests to be reliable (Appendix G). The original items of the instrument were developed based upon intuitive and reasoned notions of Wall and Oyer of the Speech and Hearing Science Section at Ohio State University. Wall and Oyer stated that the items were representative of content being measured on attitudes about aging based upon several years of working with speech and hearing undergraduate and graduate students in classroom and clinical settings. Additionally, written student narratives concerning their attitudes toward aging and older people were used as a basis to help develop the instrument. The test item format utilizes a Likert-type scale with equal positive and negative phrasing of the items. Once these items were developed, each item was judged for its relevance to attitudes toward aging by five senior professors who had worked in a variety of areas related to aging and older adults. This group determined what was considered a positive or negative attitude on the Inventory. Based upon the responses of these judges, items were either included or excluded from the final test instrument (Wall & Oyer, 1983; L.G. Wall & H.J. Oyer,

personal communication, April 22, 1986; Appendix G). A minor modification, as suggested by the computer program design staff at Michigan State University, was made by reversing the scoring sheet to the score of 1 being STRONGLY DISAGREE and the score of 5 being STRONGLY AGREE, because "agree" items are usually on the right on most tests. The questions are mixed as to whether agree or disagree reflect positive attitudes.

The third section of the questionnaire consisted of the Facts on Aging test by Palmore (Appendix C). This test has been administered to numerous students and health professional groups so that information on knowledge and interest in geriatrics can be documented. This questionnaire also has been critiqued by many reviewers (Miller & Dodder, 1980; Laner, 1981; Courtenay & Weidemann, 1985). The critics are concerned with the forced choice (true-false) with no opportunity for "don't know," as well as concern for potential attitudes blended with facts. This measure was selected because it does represent a number of facts on aging, and has been administered to many health professional groups. However, because so much cultural bias is a part of our knowledge about aging, questions have been raised as to whether it tests knowledge or attitudes. The Palmore Facts on Aging is a 25-question, true-false format that can be answered within a few minutes. Other knowledge of aging tests are generally not available or easy to administer, or used to any extent with health care professionals (Miller, 1977).

The fourth and final part of the questionnaire was a set of three essay questions with the objective of integrating nutrition knowledge on aging with problem solving. The intent of this section was to determine

to what extent dietitians use the human ecological perspective in solving problems of older clients.

The human ecological framework provides a system for analysis of the interrelationships individuals have with family, community, policy, and natural environments. The questions in this section were based on common nutrition issues of older adults that required solutions dependent on the life circumstances of the older person. Each of the environments could provide important insights to possible problem areas and their solutions. Therefore, information from each environment of individual, family, community, and policy was needed to identify potential problems and their solutions for the older person in the question.

A preliminary pilot study was conducted. Initially, an open-ended essay questionnaire was developed by this researcher to test the use of the ecological approach to aging and nutrition. Eight Michigan dietitians known to the researcher answered this part of the questionnaire so that direct feedback could be obtained. This group was omitted from the final survey of Michigan dietitians. They varied in age and practice background; seven were female and one was male. Two of the dietitians in the pilot study were previously employed by the Michigan Office for Services to the Aging. After this pilot, the essay questions were revised based on suggestions and answers given by the initial group (Appendix D). The answers were categorized according to an ecological framework with four categories: individual, family, community, and policy (Appendix E). The problems to be solved were designed to review the possible factors affecting the nutritional status of older adults.

Question (1) considers resources for older adults as its focus. ("Mrs. S. (age 75) is considering attending a group or congregate eating site. What factors do you feel would be important in making this a successful experience for Mrs. S.?") Question (2) considers health concerns of older adults as its focus. ("You are asked to do a nutritional assessment of Mr. T. (age 80) at his annual health visit. What would you include in your assessment?"). The last question (3) considers personal needs as its focus. ("You are asked to review a three-day diet record of Mrs. A. (age 65). Upon comparison with the Recommended Dietary Allowances, Mrs. A's diet record is found low in calories, protein and Vitamin A. What other information would you want before making your recommendations?"). These questions cover tasks which are typical to dietitians and the services they provide. The factors in each question are actually the same in that the possible answers for each question cover the same areas. These areas are as follows:

Individual Issues:

- Special diet
- Individual medical problems
- Personal food likes/dislikes
- Physical handicaps
- Mental awareness
- Food aversions
- Lifelong food habits
- Impact on individual of surroundings
- Chronic diseases
- Personal educational level

Family Issues:

- Loneliness
- Bereavement
- Recent loss of spouse or family member
- Values or beliefs
- Family support

Community and Friend Issues:

- Loneliness
- Transportation
- Housing resources (including cooking facilities)
- Social isolation or network
- Adequate support and resource network

Economic, Health and/or Policy Issues:

- Adequate income and/or retirement pension
- Adequate medical resources such as insurance, income and availability of medical facilities
- Safe housing-crime and sanitation
- Availability of senior centers
- Adequate variety of housing such as senior apartments

Points were assigned to each category of issues with the individual issues weighted most heavily (four points) due to the general concerns in nutrition given this area. Personal well-being is usually foremost to the individual older person as well as to the dietitian. For example, physical status and personal food preferences of a client would usually be the initial areas considered by the dietitian in an assessment. The other issue areas were assigned two points. A total score of ten was possible for each question. The questions and possible answers were determined by the pilot study group's answers and additional information they provided as well as literature reviews, especially Schlenker (1984). The three questions in total took about ten to twenty minutes to answer. The researcher scored all three questions based on the above areas listed. This allowed for consistency in the scoring. The reliability of these questions was tested through a pilot study to ensure that the same data were reported by each participant in the pilot study before questionnaires were mailed to Michigan dietitians. Because this three part

questionnaire has not been used previously, broader testing for reliability is needed. The measure does reflect the areas considered by dietitians in reviewing older patients. The answers and their format are designed to reflect the human ecological perspective except for one area, the natural environment. This area was not considered in the answers for the questions because it was not considered in the literature reviews by any author or in the pilot study by any participant. It is generally considered to be an acceptable standard of practice when current practitioners and experts (literature sources) cite a concern. This was not the case for the natural environment, therefore it was not included. No dietitian gave a response on these questions regarding the natural environment.

The depth of each answer was not taken into account in the scoring. In other words, additional answers in the same category did not score any additional points. The breadth of the answers was considered the important concern, with additional points given for each category that an answer included (Appendix D), because this measure was designed to assess how broadly dietitians view the nutritional concerns of older adults.

Limitations

The human ecological model is complex, and testing as to whether it is part of the problem solving process of a professional dietitian remains unexplored. Since this was the first attempt to analyze the concept of ecological thinking by dietitians, the questions were open-ended. The scoring of each question was based on how many categories of possible answers were given rather than the depth of each category. If an essay question was not answered, it was considered as missing data,

not as a zero score. This was the case in all sections. Missing data varied according to section and question. The fourth section had the lowest response rate (634 out of 738 respondents). Every attempt was made to consider each answer of the respondent. This was to ensure fairness to the respondents, but this could have increased the total scores for this section. The researcher scored the essay section, which could have introduced bias in the scoring. This section was scored without knowledge of any other section of the questionnaire.

Dietitians elected to be included in this study. Answers to the survey might not be indicative of non-responding dietitians. Another limitation was the length of the questionnaire. It contained nine pages and required from twenty to thirty minutes to complete. Two dietitians commented negatively on its length. This may have affected return rate since this survey was answered voluntarily.

No follow-up or remailing of questionnaire was attempted in this survey. This could have affected the total number of respondents, since remailing of the questionnaire could have increased the return rate.

Analysis

Four objectives were addressed in this study:

1. To determine what attitudes Michigan dietitians hold concerning aging.
2. To determine the knowledge about aging Michigan dietitians hold.
3. To determine if age, education, professional interest, and professional and personal experience with aging are related to Michigan dietitians' attitudes and knowledge about aging.
4. To determine to what extent Michigan dietitians use a human ecological perspective in problem solving, and what is the relationship between the ecological perspective and their attitudes and knowledge about aging?

The data were prepared by computer key punch operators with entry of each questionnaire by code number. The data entries were cross checked twice for accuracy. Analysis was based on the following:

1. The demographic description of the respondents and how they compare to Michigan dietitians and ADA census study of dietitians
2. The correlations among demographic characteristics, attitudes, and knowledge
3. The nature of Michigan dietitians' attitudes about aging
4. The nature of Michigan dietitians' knowledge of aging
5. The nature of the ecological perspective in problem solving
 - a. description of the answers given
 - b. its relationship to place of graduation
 - c. its relationship to attitudes and knowledge of aging

The demographic data were analyzed using frequencies or counts of the actual occurrence of each event so that comparisons could be made with the ADA censuses. These data were grouped into indicative patterns to be used in later analyses with the attitudes and knowledge measures. These included education, professional experience and personal experience. When comparing the data of the dietitians responding to this survey to the ADA censuses, these dietitians were similar in age, education, and gender.

The second area of analysis was to determine correlations between the demographic characteristics and the attitudes and knowledge measures. The attitudes and knowledge instruments scores were interval data. The Pearson Product Moment Correlation was used for this analysis. By this means linear correlations between the demographic data and the entire attitudes and knowledge measure could be noted. This did not determine a

cause and effect relationship, but was helpful in showing a relationship between the independent variables and the dependent variables of attitudes and knowledge. An alpha level of .05 was considered statistically significant. Because a more complete understanding of the attitudes and knowledge measures was necessary, additional analysis was conducted.

Factor analysis was used for the Wall-Oyer Attitudes Towards Aging Inventory and the Palmore Facts on Aging quiz because it provided a means for discovering patterns among the variations in the questions in these instruments. Factor analysis is considered an efficient method of discovering predominant patterns among questions (Babbie, 1983). Three principle factors were derived from the Wall-Oyer Attitudes Toward Aging instrument. (For simplicity, these factors were designated Attitude 1, Attitude 2, and Attitude 3.) Attitude 1 included questions about the interest of the dietitian in working with or providing services to older adults. Reliability analysis of this factor had an alpha of .83, with a reliability score of 1 representing a perfect association. This factor had the strongest reliability score of the three attitude factors. Attitude 2 was composed of questions denoting how the dietitian benefits or perceived benefits from interactions with older adults. Reliability analysis of this factor had an alpha of .64. The third attitude factor, Attitude 3, combined questions about the perceived characteristics of older adults. Reliability analysis of this factor had an alpha of .66 which is similar to Attitude 2.

As a means of grouping the different questions within the Palmore Facts on Aging, three different subsets of the instrument were determined by the researcher based on the content of the questions rather than

factor loading values. Therefore, the reliability analysis for these factors were designated Knowledge 1, Knowledge 2, and Knowledge 3. Knowledge 1 was created from the questions about the social/psychological interactive ability of older adults (reliability analysis alpha .53). Knowledge 2 consisted of questions about the physical ability and health of older adults (reliability analysis alpha .41). Knowledge 3 was created from the questions about the demographics of older adults (reliability analysis alpha .38). Two questions from the Palmore Facts on Aging did not seem to belong to any of the three factors and were omitted from all three knowledge factors. Because knowledge of the facts on aging can be independent facts known separately from other facts, a knowledge test might be expected to have specific questions that do not group or form a factor. The Palmore Facts on Aging did not have strong reliability on its three separate factors for the association of the questions within that factor. However, the factor analysis provided an efficient means for discovering predominant patterns among a large number of variables (Babbie, 1983).

Multiple regression was used to examine the relationships between attitudes and knowledge and selected independent variables. Age of the dietitian and the number of years as a registered dietitian were the independent variables controlled for by the multiple regression statistical technique. Multiple regressions were calculated with each of the attitudes and knowledge factors and with education, professional experience, and personal experience indicators. The use of multiple regression analysis for statistical inferences is based on the assumptions of random sampling, the absence of nonsampling errors and

continuous interval data. As Babbie (1983) states, social science research seldom satisfies all the assumptions completely, and caution must be used in assessing the results of the multiple regressions in this study.

In considering the response to the problem solving section, it is important to realize that this was a first attempt to assess the use of a human ecological perspective through responses on problem solving questions. Therefore, general descriptions of the answers as well as the number of points actually received by the responding dietitians were calculated. The relationship between place of graduation and the problem solving total score was computed by Pearson Product Moment Correlation. The Pearson Product Moment Correlation also was used in determining the relationship between the attitudes, knowledge and problem solving measures.

Summary

This study, which utilized a mailed questionnaire, measured attitudes and knowledge of Michigan dietitians about aging. The sample included 1408 dietitians in Michigan who were active members of the American Dietetic Association as of March 1986; they were not a part of the pilot study nor affiliated with the study. Each dietitian received an introductory letter, questionnaire, and stamped, addressed return envelope. The questionnaires were coded upon return. Any questions not answered were noted as missing data rather than incorrect or negative responses. Of those receiving questionnaires, 738 dietitians returned the questionnaire for a response rate of 52.4%.

The four instruments used in this study were a demographics measure, the Wall-Oyer Attitudes Toward Aging Inventory, Palmore Facts on Aging, and a problem solving component designed to address the dietitians' human ecological perspective. The responses were noted as to the correct or positive answer, and the frequencies with which answers occurred. Pearson Product Moment Correlation, factor analysis, and multiple regressions were used in the data analysis. Also, the responses on the problem solving component were described with an emphasis on the human ecological approach.

CHAPTER IV

RESULTS

This research study was designed to assess Michigan dietitians' attitudes about and knowledge of aging. Health and nutrition have become crucial issues to both the quality and length of life. An understanding of aging is essential for dietitians who provide services to older persons.

Demographic Data

Age, Education and Gender of Dietitians

The initial demographic questionnaire was used to develop baseline information on Michigan's dietitians. This questionnaire gave information on training and experiences the respondents have had in the area of aging. It also covered basic pertinent information on gender and age (Table 4).

This survey of Michigan dietitians compares closely with the last two published censuses of dietitians in the United States (Baldyga, 1983; Byrk, 1987). Of those responding to this questionnaire, 65.9 percent were under 40 and 97.7 percent were female, as compared to the ADA samples of 61 to 63 percent under 40 and 97.3 to 97.7 percent female.

The sampling frame for this questionnaire was active dietitians of the American Dietetic Association in Michigan. To be an active dietitian means that one has at least a bachelor's degree. Only degrees completed were reported in this survey. Previous ADA census studies (Baldyga, 1983; Byrk, 1987) have included all members of the American Dietetic Association, including those with non-bachelor degrees and degrees in progress. The Michigan respondents were similar to the general population of ADA dietitians in the 1986 census study with 35.8% of the Michigan respondents having master's as compared to 36.2% of the 1986 ADA census, and 2.8% of the Michigan respondents having doctorates as compared to 3.1% of the 1986 ADA census.

Tables 4 through 8 indicate the educational level of the Michigan respondents. The typical Michigan respondent was a young, well-educated, female. Most degrees (60.3%) were granted in the last twenty years (Table 5). A large proportion of the respondents reported a master's degree (35.8%) (Table 6). Dietitians in this survey reported having about the same percentage of doctoral degrees (2.8%) as compared to the American Dietetic Association census studies with 1.7% (1981) and 3.1% (1986) (Table 7). Many respondents (58.9%) reported being registered dietitians ten or fewer years (Table 8). The university listed most often as the degree granting institution for bachelor's (25.1%) and master's (16.9%) degrees was Michigan State University (Table 9).

The response rate for the 1986 ADA census study was 66.7% (Byrk, 1987) as compared to the response rate for this Michigan survey of dietitians at 52.4%. The two groups of dietitians were similar in

gender, age and educational levels, indicating that this survey was as representative of dietitians as the 1986 ADA census study.

Table 4
Characteristics Of Respondents
As Compared To The
American Dietetic Association Survey

	Michigan Questionnaire on Aging N = 1408	1981, American Dietetic Association Census N = 42,200	1986, ADA Census (Active) N = 52,145
RESPONSE RATE	52.4%	92%	66.7%
Gender: (of those responding)			
Female	97.7%	97.3%	97.7%
	(721 responses)		
Age:			
21-25	4.8%	6.2%	3.9%
26-30	23.1%	25.3%	20.6%
31-35	25.6%	17.3%	24.5%
36-40	12.4%	12.0%	14.4%
41-45	9.5%	8.5%	10.0%
46-50	5.8%	7.4%	7.1%
51-55	5.6%	7.3%	6.9%
56-60	7.1%	7.2%	6.0%
61-65	4.1%	4.0%	4.6%
66 or older	2.0%	4.0%	2.0%
no response	.04	None calculated	
Degree:			
Bachelor's degree earned	94.6%*	55.3%**	49.2%**
Master's degrees earned	35.8%	28.8%**	36.2%**
Doctorate degree earned	2.8%	1.7%**	3.1%**

* Only sent to active membership dietitians

**These do not total 100% due to ADA categories highest degree attained or working towards whereas Questionnaire on Aging only counted degrees attained.

Table 5
Bachelors' Degrees

Year Received Bachelor's Degree	
n = 738	%
Prior to 1966	30.9
Between 1967 and 1985	60.3
Did not respond	8.8

Table 6
Master's Degrees

n = 738	%	Number
Total with Master's Degrees	35.8	264
Area of Study Received Master's Degree	Percent of Total Master's Degrees	
Foods and Nutrition	48.2	
Institutional Administration	13.0	
Public Health	11.9	
Business	5.1	
Education	13.0	
Exercise Physiology	1.6	
Food Science	2.0	
Communication	0.4	
Other	4.7	
No Response	0.1	
Year Received Master's Degree		
Prior to 1969	19.7	
Between 1970 and 1986	70.2	
No Response	0.04	

Table 7

Doctoral Degrees

n = 738		%	Number
Total with Doctoral Degrees		2.8	21
Area of Study Received Doctoral Degree		Percent of Total Doctoral Degrees	
Foods and nutrition		40.0	8
Education		35.0	7
Exercise physiology		10.0	2
Other		15.0	3
No response		10.0	2
Year Received Doctoral Degree			
Prior to 1968		0.0	
Prior to 1969		5.3	
Between 1970 and 1986		94.7	
No response		0.0	

Table 8

Number Of Years As Registered Dietitian

Number of Years	%
n = 738	
Less than 1 year	1.4
1-10 years	57.5
11-16 years	18.0
17 years (maximum number years can be registered)	24.5

Table 9

Degree Granting University or College

University/College n = 738	Bachelor's Degree		Master's Degree		Doctoral Degree	
	No.	%	No.	%	No.	%
Michigan State University	185	25.1	43	16.9	2	10.5
Eastern Michigan University	45	6.1	20	7.8	-	-
Western Michigan University	31	4.2	11	4.3	2	10.5
Central Michigan University	16	2.2	10	3.9	-	-
Mercy College	36	4.9	1	0.4	1	5.3
Wayne State University	57	7.7	29	11.4	1	5.3
University of Michigan	10	1.4	30	11.8	3	15.8
Purdue University	15	2.0	3	1.2	-	-
Other	284	38.5	108	42.4	10	52.6

The education of dietitians in aging seems to be limited. In this study, 74.3% report having had no courses in aging, but when aging is considered a part of a more comprehensive course as listed by respondents, 19.5% had no coursework on aging (Tables 10 and 11).

Table 10

Number Of Courses In Aging

Total Number of Courses	Number of Respondents n = 738	Percent
0	548	74.3
1	136	18.4
2	36	4.9
3	10	1.4
4	4	0.5
No response	4	0.5

Table 11

Percent of Respondents Who
Studied Aging As Part of a
Comprehensive Course

Total Number of Courses	Number of Respondents n = 738	Percent
0	144	19.5
1	313	42.4
2	184	24.9
3	63	8.5
4	30	4.1
No response	4	0.5

Post-baccalaureate training is a requirement to become a registered dietitian. This experience assists the dietitian in using factual knowledge for practical application. However, 55.6% of respondents reported a week or less in their post-baccalaureate training in aging programs or working with the elderly (Table 12).

Table 12**Time Spent As Part Of Post-Baccalaureate Dietetic Training With Aging**

Time	Number of Respondents n = 738	Percent
0-1 week	411	55.6
2 weeks - 2 months	222	30.1
2-3 months	38	5.1
4 or more months	56	7.6
No response	11	1.5

In evaluation of their training in geriatrics, 50.3% described the training in geriatrics relative to their need as inadequate or very inadequate (Table 13).

Table 13**Self-Evaluation Of Training In Geriatrics
Relative To The Dietitian's Need For Working With Aging**

Ranking	Number respondents n = 738	Percent
Very inadequate	158	21.4
Inadequate	312	28.8
Neutral	194	26.3
Adequate	133	18.0
Very adequate	26	3.5
No response	14	1.9

Professional Interest

Respondents did not attend a high number of continuing education programs in aging. In regard to workshops on aging, 48.2% had not attended any in the last five years (Table 14). For ease in reporting, workshops on human and family ecology also are reported in Table 14.

Table 14

Continuing Education Programs/Workshops

Continuing Education Programs/Workshops	On Elderly n = 738		On Human or Family Ecology n = 738	
	Number	Percent	Number	Percent
None	356	48.2	533	72.2
1	196	26.6	109	14.8
2	109	14.8	31	4.2
3	33	4.5	21	2.8
4 or more	39	5.3	27	3.7
No response	5	0.7	17	2.3

The survey also showed that nearly nine out of ten respondents do not belong to a professional group related to gerontology (Table 15).

Table 15

Membership in Gerontology Professional Groups

Number of Gerontology Professional Groups	Number n = 738	Percent
0	660	89.4
1	61	8.3
2	11	1.5
3	4	0.6
4	1	0.2

The ADA groups most often reported were the Gerontological Nutrition group and Consultant Dietitians to Health Care Facilities which serves facilities for the aging adult. The only group listed outside ADA was the American Association for Retired Persons (AARP) which is not recognized as a professional group though listed as such by the dietitians. No one mentioned other professional gerontological associations such as the Gerontological Society of America. Of those mentioning membership in such associations, most (79.2%) mentioned only one gerontological group membership.

Personal and Professional Experiences with Aging

Over 59% of the respondents reported quite often or a great deal of experience with their grandparents. Also, over 40% reported this same level of contact as children with older nonrelatives (Table 16).

Table 16

Contact As A Child With Elderly

Amount of Contact	Contact with Grandparents		Contact with Nonrelative	
	Number n = 738	Percent	Number n = 738	Percent
None	60	8.1	41	5.6
Very little	79	10.7	135	18.3
Some	161	21.8	261	35.4
Quite Often	153	20.7	170	23.0
Great deal	284	38.5	129	17.5
No response	1	0.1	2	0.3

Professional experience with elderly persons was considerable, with only 3.7% reporting no professional experience with the elderly. Most professional experiences (84.1%) reported were with hospital patients. Hospice patients were reported the least with only 9.8% reporting experience with this group of elderly persons (Table 17).

Table 17

Type Of Professional Experience As Dietitian With Elderly

Type Professional Experience	Number n = 738	Percent
None	27	3.7
Family, friends, neighbors	494	66.9
Nursing home	349	47.3
Home care	136	18.4
Patients in hospital	621	84.1
Patients in hospice	72	9.8
Government nutrition program	132	17.9
Other	134	18.2

Responding dietitians also related many personal adult experiences with the elderly. More than 95% had social contact with the elderly, and over 36% have been involved in multi-generational living experiences. Only 2.2% reported no personal experience with the elderly (Table 18).

Table 18

Type Of Personal Experience With Elderly

Type Personal Experience	Number n = 738	Percent
None	16	2.2
Social contact with elderly	704	95.4
Family work with elderly	239	32.4
Multi-generational living with self-sufficient elderly	175	23.7
Nursing home	344	46.6
Active care of elderly such as hospice	46	6.2
Multi-generational living with dependent elderly	93	12.5
Other	38	5.1

Human Ecological Training

Many respondents do not recall or report training in human ecology as a recognized entity. Even though many recently graduated from universities that have human ecology as a part of their philosophy, more than 37% reported no comprehensive course in human ecology or related content within another course. About 6% reported not knowing what human ecology is (Tables 19 and 20).

Table 19

Dietitians Who Took Courses in Human Ecology (HE)

Total Number of Courses	Number n = 738	Percent
0	212	29.8
1	191	25.9
2	120	16.3
3	93	12.6
4	59	8.0
Don't know what HE is	51	6.9
No response	12	1.6

Table 20

Dietitians Who Took Courses With Human Ecology (HE)
As Part of a Comprehensive Course

Total Number of Courses	Number n = 738	Percent
0	274	37.1
1	203	27.5
2	108	14.6
3	43	5.8
4	43	5.8
Don't know what HE is	49	6.6
No response	18	2.4

Few of the dietitians had taken any continuing education courses in human ecology, with 72.2% reporting no such course work or workshop in the last five years (Table 14). They reported no contact with the concept of human or family ecology.

Wall-Oyer Attitudes Towards Aging Inventory

The responding dietitians generally expressed positive attitudes toward aging. Most questions on this section were answered in a positive direction with at least 60% responding positively to 15 out of 22 statements. Results are summarized in Table 21.

The most striking result of the Wall-Oyer Inventory was the number of dietitians who thought older adults would resist in a treatment

program (Item 21 in Table 21). No other studies are known to this researcher related to dietitians' expectations of resistance in clients. It was difficult therefore to know if this is the perception only about older adults or other age groups as well. Among the responding dietitians, 60.6% expected resistance, while another 13.7% were undecided, leaving only 24.2% not expecting resistance from older people in treatment programs.

Table 21

Dietitians: Results of Wall-Oyer Attitudes on Aging Inventory in Percentages

n = 739

Question	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Left Blank
1. Older people usually understand the problems encountered by the young. (Positive →)	1.5	26.2	17.9	49.6	3.7	1.2
2. Older people are often critical of younger generations. (← Positive)	0.7	29.5	14.0	49.3	5.4	1.1
3. Most older people have a good sense of humor. (Positive →)	0.1	8.3	19.2	62.1	8.3	2.0
4. Most older people have active social lives. (Positive →)	2.0	31.4	17.5	43.2	54.5	1.4
5. Most older people prefer to be independent and live in their own homes. (Positive →)	0.3	1.1	1.1	38.8	57.7	1.1
6. Many older people are less tidy about themselves than younger people. (← Positive)	17.5	57.7	9.9	12.2	1.8	0.9
7. Younger people can usually benefit from the wisdom of older people. (Positive →)	0.3	1.1	3.0	51.4	43.2	1.1
8. Working with older adults in terms of improving their functioning often can be a rewarding experience. (Positive →)	0	0.4	6.2	51.1	41.5	0.8
9. Older people generally are not interested in younger people and their concerns. (← Positive)	24.3	65.4	5.7	2.3	0.8	0.9
10. Most older people are amenable to change. (Positive →)	5.7	42.7	26.4	22.6	0.9	1.6
11. Ordinarily I would not feel comfortable working on the medical problems of the elderly. (← Positive)	29.1	54.2	6.4	7.6	1.8	0.9

Table 21 (Continued)

Question	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Left Blank
12. Working in a stroke-rehabilitation program for the elderly would probably be a poor investment of time. (← Positive)	27.4	50.9	13.4	5.6	1.6	1.1
13. I usually feel as relaxed around older people as I do around younger people. (Positive →)	0.4	7.6	5.7	62.2	23.0	1.1
14. I would not want to work in a medical setting for older adults who are psychologically disengaged from daily events. (← Positive)	7.7	28.9	22.8	32.1	38.5	1.1
15. I feel many older people are opinionated and difficult to work with. (← Positive)	7.0	64.2	14.2	12.3	0.7	0.7
16. I would not be interested in devoting a major portion of my practice to specializing in geriatric care. (← Positive)	10.6	32.1	21.7	29.1	4.9	1.6
17. I would like to develop a practice catering to the special needs of the elderly. (Positive →)	6.2	33.7	34.6	19.0	5.0	1.5
18. I would typically find working with older people and their physical problems depressing. (← Positive)	8.1	54.7	19.6	15.0	1.4	1.1
19. I would find it difficult to develop programs for working with the medical problems of older people. (← Positive)	9.5	58.5	16.1	13.3	1.4	1.2
20. Usually I enjoy communicating with older people. (Positive →)	0.4	2.3	4.3	70.3	20.9	1.8
21. As a dietitian I expect to encounter some resistance from older adults in a treatment program. (← Positive)	1.8	22.4	13.7	57.6	3.0	1.6
22. I would learn a great deal working with older people. (Positive →)	0	2.8	11.1	67.1	17.8	1.2

The notable exceptions to the level of generally positive response level are the questions where 40% or more of the dietitians held negative attitudes (Table 22). These items dealt with working with older adults, attributes of older adults (critical of younger people) and older adults' resistance to treatment.

The results overall show positive attitudes, though not strongly positive, since 90% of the respondents had eight or fewer strongly positive responses. The other 10% had nine to eighteen strongly positive responses, and no one had 22 strongly positive responses.

Table 22

Dietitians: Negative Attitudes Towards Aging

Question	Percent with Negative Attitude n = 738	Attitude towards Aging Statements
2	54.4%	"Older people are often critical of younger generations"
10	48.4%	"Most older people are amenable to change"
14	39.6%	"I would not want to work in a medical setting for older adults who are psychologically disengaged from daily events"
17	39.9%	"I would like to develop a practice catering to the special needs of the elderly"
21	60.6%	"As a dietitian, I expect to encounter some resistance from older adults in a treatment program"

Palmore Facts on Aging

The knowledge instrument used was the Palmore Facts on Aging. The basic knowledge of dietitians was good, with almost 60% of the dietitians having scores of 17 out of 25 correct (Table 23).

However, a high percentage of the respondents missed several important questions. Over 60% thought that more older people were institutionalized than actually are. In addition, nearly 90% of the responding dietitians thought a higher proportion of the population is elderly than is actually the case. Finally, dietitians (58.3%) lacked awareness regarding the economic status of older adults. In summary, Michigan dietitians generally believed that older adults are sicker and poorer than they really are and that the population of older adults is larger than it really is.

Table 23

Dietitians: Results of Palmore Facts on Aging in Percentages

n = 738

Question	Correct Answer	True	False	Left Blank
1. The majority of old people (past age 65) are senile (i.e., defective memory, disoriented, or demented).	False	0.4	99.1	0.5
2. All five senses tend to decline in old age.	True	69.2	29.9	0.8
3. Most old people have no interest in, or capacity for, sexual relations.	False	4.1	95.0	0.9
4. Lung capacity tends to decline in old age.	True	69.4	27.4	3.3
5. The majority of old people feel miserable most of the time.	False	1.8	97.3	0.9
6. Physical strength tends to decline in old age.	True	89.3	10.0	0.7
7. At least one-tenth of the aged are living in long-stay institutions (e.g., nursing homes, mental hospitals, homes for the aged).	False	63.0	31.7	5.3
8. Aged drivers have fewer accidents per person than drivers under 65.	True	57.2	38.1	4.7
9. Most older workers cannot work as effectively as younger workers.	False	12.2	85.6	2.2
10. About 80% of the aged are healthy enough to carry out their normal activities.	True	92.3	5.8	1.9
11. Most old people are set in their ways and unable to change.	False	17.9	80.5	1.6
12. Old people usually take longer to learn something new.	True	46.1	41.5	2.6
13. It is almost impossible for most old people to learn new things.	False	0.7	98.9	0.4
14. The reaction time of most old people tends to be slower than reaction time of younger people.	True	91.3	7.9	0.8

Table 23 (Continued)

Question	Correct Answer	True	False	Left Blank
15. In general, most old people are pretty much alike.	False	3.4	95.8	0.8
16. The majority of old people are seldom bored.	True	40.8	56.6	2.6
17. The majority of old people are socially isolated and lonely.	False	33.3	64.1	2.6
18. Older workers have fewer accidents than younger workers.	True	66.3	28.3	5.4
19. Over 15% of the U.S. population are now age 65 or over.	False	89.4	6.6	3.9
20. Most medical practitioners tend to give low priority to the aged.	True	60.7	36.0	3.3
21. The majority of older people have incomes below the poverty level (as defined by the federal government).	False	58.3	37.8	3.9
22. The majority of old people are working or would like to have some kind of work to do (including housework and volunteer work).	True	87.8	9.6	2.6
23. Older people tend to become more religious as they age.	False	61.7	34.0	4.3
24. The majority of old people are seldom irritated or angry.	True	63.0	33.2	3.8
25. The health and socioeconomic status of older people (compared to younger people) in the year 2000 will probably be about the same as now.	False	22.1	74.3	3.7

Dietitians hold several misconceptions that are similar to other groups tested (Palmore, 1980) (Table 24). They believed that: institutional rates are higher than the actual, older adults are bored, and the percentage of the aging population that is old and poor is larger than is actually the case.

Table 24

Commonly Held Misconceptions By Dietitians Responding

Question	Percent with Incorrect Answer n = 738	Knowledge of Aging Statements
1	63.0%	"More than 10% of aged are in long-term institutions."
16	56.6%	"Most old people are bored."
19	89.4%	"Over 15% of the U.S. population are 65 or over."
21	58.3%	"The majority of older people are in poverty."

Other most commonly held misconceptions listed by Palmore, but not commonly held by responding dietitians are that older people are set in their ways and that older people are seldom irritated (Table 25).

Table 25

Common Misconceptions That Responding Dietitians Do Not Hold

Question	Percent with Correct Answer n = 738	Knowledge of Aging Question
11	80.5%	"Older people are not set in their ways and are able to change."
24	63.0%	"Older people are seldom irritated or angry."

In spite of not holding the same misconceptions as other groups, the respondents have a misconception that other groups tested do not have (Table 26). About half of responding dietitians thought that older people do not take longer to learn something new.

Table 26

Misconceptions Held By Respondents
Not Commonly Held By Other Groups

Question	Percent with Incorrect Answer n = 738	Knowledge of Aging Question
12	51.4%	"older people do not take longer to learn something new."

In summary, the responding dietitians generally erred on the side of thinking older people are poorer and more incapacitated than they actually are, except for their rate of learning something new. In only six questions (of 25) did large percentages (more than 50%) of the respondents answer incorrectly. However, economic and health issues, dietitians' weaker areas, are central to the well-being of older adults.

Correlations Between Demographic Characteristics, Attitudes and Knowledge about Aging

Correlations of Demographic Characteristics with the Total Attitudes and Knowledge Instruments

The total scores for the attitude measure (the Wall-Oyer Attitude on Aging Inventory) and the knowledge measure (Palmore Facts on Aging) were compared by the Pearson Product Moment Correlation which is the appropriate measure for ratio or interval data (Babbie, 1983) to determine any relationship to the demographic characteristics (Table 27).

The Wall-Oyer Inventory correlated at statistically significant levels ($\alpha = .05$) with doctorate degree, membership in professional groups related to aging, aging as a part of a comprehensive course in college, continuing education in aging and number of different types of personal experiences in the elderly. The other demographic variables did not correlate significantly with the attitudes measure.

The Palmore Facts on Aging score correlated at statistically significant levels ($\alpha = .05$) with number of courses in aging, membership in professional groups related to aging, having at least a master's degree, aging as a part of a comprehensive course in college, and number

of different types of personal experiences with the elderly. The other demographic variables did not correlate with the knowledge measure.

Table 27

Correlations Between Demographic Characteristics
and Total Scores on the Attitudes and Knowledge Measures

Variable	Wall-Oyer Inventory		Palmore Facts on Aging	
	r	p	r	p
Age	*		*	
Number years RD	*		*	
Professional experiences	*		*	
Number of courses aging	*		.0893 (n = 734)	.008
Doctorate degree	.0685 (n = 21)	.03	*	
Number courses HE	*		*	
Number prof. groups aging	.2114 (n = 737)	.001	.1053 (n = 737)	.002
Master's degree	*		.1066 (n = 738)	.002
Continuing ed HE	*		*	
Aging part comp course	.1015 (n = 734)	.003	.0701 (n = 734)	.03
Continuing ed aging	.1879 (n = 733)	.001	*	
Personal experiences	.061 (n = 733)	.05	.0814 (n = 734)	.06
HE part comp. course	*		*	

(* = NOT STATISTICALLY SIGNIFICANT AT .05 LEVEL)

Multiple Regressions for Demographic Characteristics and
Parts of Wall-Oyer Attitudes Towards Aging Inventory

As a means of grouping the different items within the Wall-Oyer Attitudes Towards Aging Inventory, three different factors of the Inventory were determined using a principle components factor analysis

with iteration (Table 28). The item loading and eigen value for each factor is noted in Table 28. The set of items is listed according to the attitude factor to which it is related. For simplification of designation, these factors will be referred to as follows: Attitude 1, Attitude 2, and Attitude 3. The factor loadings for Attitude 1 were the strongest and Attitude 3 had the weakest overall factor loadings. But, the attitudes as listed also had substantive meaning, so that these factors had substantive meaning as well as statistical meaning (though weak in several cases). This is explained further after Table 28. The eigen value for each factor is the measure of relative importance of the factor. The higher the value the more important the factor is in the variance. The number of factors to be extracted were restricted to three meaningful interpretations. By the nature of the factor analysis, each eigen value decreases with each factor.

Attitude 1 includes the items about the interest of the dietitian in working with or providing services to older adults. Reliability analysis for this subscale was .83. Attitude 1 included the following seven items from the Wall-Oyer Inventory:

<u>Statement number</u>	<u>Statement</u>
11	"Ordinarily I would not feel comfortable working on the medical problems of the elderly."
12	"Working in a stroke-rehabilitation program for the elderly would probably be a poor investment of my time."
14	"I would not want to work in a medical setting for older adults who are psychologically disengaged from daily events."

- 16 "I would not be interested in devoting a major portion of my practice to specializing in geriatric care."
- 17 "I would like to develop a practice catering to the special needs of the elderly."
- 18 "I would typically find working with older people and their physical problems depressing."
- 19 "I would find it difficult to develop programs for working with the medical problems of older people."

Table 28

Factor Analysis of Attitudes

Item	Attitude	Factor 1 eign value = 4.05	Factor 2 eign value = 1.51	Factor 3 eign value = .88
11	Attitude 1	.49	.28	.02
12		.47	.29	.06
14		.72	.01	.08
16		.80	.07	.08
17		.66	.09	.11
18		.67	.16	.12
19		.48	.16	.08

5	Attitude 2	.07	.31	.07
7		-.05	.51	.10
8		.22	.61	.06
13		.22	.33	.15
20		.22	.48	.08
22		.26	.48	.10

1	Attitude 3	.03	.18	.41
2		.07	.12	.49
3		-.02	.28	.43
4		-.03	.14	.47
6		.02	.05	.39
9		.06	.27	.26
10		.09	.02	.36
15		.26	.09	.52
21		.07	-.06	.28

Attitude 2 is composed of items denoting how the dietitian benefits or perceived benefits from interactions with older adults. Reliability analysis for this factor was .64. Attitude 2 included the following six items from the Wall-Oyer Inventory:

<u>Statement number</u>	<u>Statement</u>
5	"Most older people prefer to be independent and live in their own homes."
7	"Younger people can usually benefit from the wisdom of older people."
8	"Working with older adults in terms of improving their functioning often can be a rewarding experience."
13	"I usually feel as relaxed around older people as I do around younger people."
20	"Usually I enjoy communicating with older people."
22	"I would learn a great deal working with older people."

Attitude 3 combined items about the perceived characteristics of older adults. Reliability analysis for this factor was .66. Attitude 3 included the following nine items from the Wall-Oyer Inventory:

<u>Statement number</u>	<u>Statement</u>
1	"Older people usually understand the problems encountered by the young."
2	"Older people are often critical of younger generations."
3	"Most older people have a good sense of humor."
4	"Most older people have active social lives."

- | | |
|----|---|
| 6 | "Most older people are less tidy about themselves than younger people." |
| 9 | "Older people generally are not interested in younger people and their concerns." |
| 10 | "Most older people are amenable to change." |
| 15 | "I feel many older people are opinionated and difficult to work with." |
| 21 | "As a dietitian, I expect to encounter some resistance from older adults in a treatment program." |

Multiple regressions were calculated for each of the three factors with the demographic characteristics of education, professional experiences, and personal experiences. Age of the dietitian and the number of years as a registered dietitian were the independent variables controlled for by the multiple regression.

Education indicators included number of dietitians who had courses that included aging, number of courses in human ecology/family ecology, number of professional groups with an interest in aging, having at least a master's degree, having a doctorate degree, number of workshops in human ecology/family ecology, and the number of courses in aging as a part of comprehensive courses. Professional experiences included the number of different types of professional experiences with the aged. Personal experiences with the aged consisted of the number of different types of personal experiences. A significance level of .05 was considered statistically significant (Tables 29-33).

Variety of professional experiences with the aged, membership in professional groups for aging, continuing education in aging, and variety of personal experiences with the aged were significant predictors of

Attitude 1 (the desire to work with the older adults). None of these variables are factors which are a part of the formal education process. It was either personal experiences outside of schooling, or experiences and work after completion of college that correlated with the desire to work with older adults. The amount of variance (R^2) attributed to these variables is 14%.

Doctorate degrees, membership in professional groups for aging, continuing education in aging, and personal experiences with the aged were significant predictors of Attitude 2 (the benefits of interactions with older adults). The same variables as correlated with Attitude 1 are important with Attitude 2 except professional experience (Attitude 1) and doctorate degree (Attitude 2). The amount of variance (R^2) attributed to these variables is 7%.

Attitude 3 (characteristics of the older adult) was different in that age was negatively predicted with this subscale. The only positive predictor with Attitude 3 was personal experience with the aged.

The one variable that was a predictor of all three attitude factors was personal experience with the aged. Continuing education in aging and membership in professional groups related to aging were predictors with two attitude factors (Attitude 1 and Attitude 2). In summary, variables of personal, professional and education indicators beyond the baccalaureate experience of dietitians seem to be the best predictors of positive attitudes towards aging.

Table 29

Multiple Regressions for Attitudes,
Controlling for Age and Number of
Years as a Registered Dietitian

	F	P [#]	R	R ²
<u>Attitude 1</u> (desire to work with elderly)				
Educational Indicators (n = 609)	6.46	.000	.32	.10
Number/Types Professional Experiences with aging (n = 699)	17.87	.000	.26	.07
Number/Types Personal Experiences with aging (n = 699)	14.71	.000	.24	.06
All Predictors (n = 607)	7.8	.000	.38	.14
<u>Attitude 2</u> (benefit from elderly)				
Educational Indicators (n = 608)	2.9	.001	.23	.05
Number/Types Professional Experiences with aging (n = 699)	5.99	.000	.16	.03
Number/Types Personal Experiences with aging (n = 699)	9.60	.000	.20	.04
All Predictors (n = 606)	3.86	.000	.28	.07
<u>Attitude 3</u> (characteristics of elderly)				
Educational Indicators (n = 602)	3.16	.000	.23	.05
Number/Types Professional Experiences with aging (n = 691)	7.87	.000	.18	.03
Number/Types Personal Experiences with aging (n = 691)	9.60	.000	.20	.04
All Predictors (n = 600)	3.02	.000	.25	.06

.05 = level of statistical significance

Table 30

Multiple Regression for Attitude 1
(desire to work with elderly)
Controlling for Age and Number of Years as Registered Dietitian

	Beta	F for Beta	P#
<u>Educational Indicators</u> (n = 609)			
Age	*		
Number courses aging	*		
Doctorate degree	*		
Number courses HE	*		
Number prof. groups aging	2.02	22.25	.000
Master's degree	*		
Continuing ed. HE	*		
Aging part comp. course	*		
Continuing ed. aging	.66	12.48	.000
HE part comp. course	*		
Number years RD	*		
<u>Number/Type Professional Experiences with Aging</u>			
(n = 699)			
Age	*		
Professional experience	.97	52.48	.000
Number years RD	*		
<u>Number/Type Personal Experiences with Aging</u>			
(n = 699)			
Age	*		
Personal experience	.97	42.99	.000
Number years RD	*		
<u>All Predictors</u> (n = 607)			
Age	*		
Professional experience	.42	7.57	.006
Number courses HE	*		
Doctorate degree	*		
Number courses aging	*		
Number prof. groups aging	1.64	14.91	.000
Master's degree	*		
Continuing ed. HE	*		
Aging part comp. course	*		
Continuing ed. aging	.59	10.06	.002
Personal experience	.52	9.04	.003
HE part comp. course	*		
Number years RD	*		

Note: (*) not statistically significant at .05.

(#) .05 = level of significance.

Table 31

Multiple Regression for Attitude 2
(benefit from elderly)
Controlling for Age and Number of Years as a Registered Dietitian

	Beta	F for Beta	P#
<u>Educational Indicators</u> (n = 608)			
Age	*		
Number courses aging	*		
Doctorate degrees	1.32	4.97	.026
Number courses HE	*		
Number prof. groups aging	.63	8.32	.004
Master's degree	*		
Continuing ed. HE	*		
Aging part comp. course	*		
Continuing ed. aging	.21	4.84	.028
HE part comp. course	*		
Number years RD	*		
<u>Number/Type Professional Experiences with Aging</u>			
(n = 699)			
Age	*		
Professional experience	.28	16.96	.000
Number years RD	*		
<u>Number/Type Personal Experiences with Aging</u>			
(n = 699)			
Age	*		
Personal experience	.39	27.76	.000
Number years RD	*		
<u>All Predictors</u> (n = 606)			
Age	*		
Professional experience	*		
Number courses HE	*		
Doctorate degree	1.24	4.46	.035
Number courses aging	*		
Number prof. groups aging	.48	4.79	.029
Master's degree	*		
Continuing ed. HE	*		
Aging part comp. course	*		
Continuing ed. aging	.19	3.82	.05
Personal experiences	.29	10.24	.001
HE past comp. course	*		
Number years RD	*		

Note: (*) not statistically significant at .05.
 (#) .05 = level of significance.

Table 32

Multiple Regression for Attitude 3
(characteristics of elderly)
Controlling for Age and Number of Years as a Registered Dietitian

	Beta	F for Beta	P#
<u>Educational Indicators</u> (n = 602)			
Age	-.69	11.98	.001
Number courses aging	*		
Doctorate degrees	*		
Number courses HE	*		
Number prof. groups aging	*		
Master's degree	*		
Continuing ed. HE	*		
Aging part comp. course	*		
Continuing ed. aging	*		
HE part comp. course	*		
Number years RD	*		
<u>Number/Type Professional Experiences with Aging</u>			
(n = 691)			
Age	-.66	13.39	.000
Professional experience	*		
Number years RD	*		
<u>Number/Type Personal Experiences with Aging</u>			
(n = 691)			
Age	-.74	16.22	.000
Personal experience	.32	6.07	.014
Number years RD	*		
<u>All Predictors</u> (n = 600)			
Age	-.75	13.84	.000
Professional experience	*		
Number courses HE	*		
Doctorate degree	*		
Number courses aging	*		
Number prof. groups aging	*		
Master's degree	*		
Continuing ed. HE	*		
Aging part comp. course	*		
Continuing ed. aging	*		
Personal experiences	.31	3.99	.046
HE past comp. course	*		
Number years RD	*		

Note: (*) not statistically significant at .05.
 (#) .05 = level of significance.

Table 33

Summary of Multiple Regressions for Attitude 1, 2, 3
When Controlling for Age and Number of Years as a Registered Dietitian

	<u>Attitude 1</u> (desire to work with elderly)	<u>Attitude 2</u> (benefit from elderly)	<u>Attitude 3</u> (characteristics of elderly)
<u>Predictor Variables</u>			
Age	*	*	--
Prof. experience	++	*	*
Number courses HE	*	*	*
Doctorate degree	*	++	*
Number courses aging	*	*	*
Number prof. groups aging	++	++	*
Master's degree	*	*	*
Continuing ed. HE	*	*	*
Aging part comp. course	*	*	*
Continuing ed. aging	++	++	*
Personal experience	++	++	++
HE part comp. course	*	*	*
Number years RD	*	*	*

-- or ++: statistically significant variable in determining attitude factors (see Tables 27-30)

*: not statistically significant at .05.

**Multiple Regressions for Demographic Characteristics
and Parts of Palmore Facts on Aging Instrument**

As a means of grouping the different items within the Palmore Facts on Aging, three different factors of the Instrument were determined by the researcher based on content. For simplification of designation, these will be referred to as follows: Knowledge 1, Knowledge 2, and Knowledge 3.

Knowledge 1 was created from the items about the social/psychological interactive ability of older adults. Reliability analysis for this factor was .53. Knowledge 1 included the following twelve items from the Palmore Facts on Aging instrument:

<u>Statement number</u>	<u>Statement</u>
1	"The majority of old people are senile."
5	"The majority of old people feel miserable most of the time."
8	"Aged drivers have fewer accidents per person than drivers under age 65."
9	"Most older workers cannot work as effectively as younger workers."
11	"Most old people are set in their ways and unable to change."
15	"In general, most old people are pretty much the same."
16	"The majority of old people are seldom bored."
17	"The majority of old people are socially isolated and lonely."
18	"Older workers have fewer accidents than younger workers."

- 22 "The majority of old people are working or would like to have some kind of work to do."
- 23 "Older people tend to become more religious as they age."
- 24 "The majority of old people are seldom irritated or angry."

Knowledge 2 consisted of the items about the physical ability and health of older adults. Reliability analysis for this factor was .41. Knowledge 2 included the following eight items from the Palmore Facts on Aging Instrument:

<u>Statement number</u>	<u>Statements</u>
2	"All five senses tend to decline in old age."
4	"Lung capacity tends to decline in old age."
6	"Physical strength tends to decline in old age."
10	"About 80% of the aged are healthy enough to carry out their normal activities."
12	"Old people usually take longer to learn something new."
13	"It is almost impossible for most old people to learn new things."
14	"The reaction time of most old people tends to be slower than reaction time of younger people."
20	"Most medical practitioners tend to give low priority of the aged."

Knowledge 3 was created from the items about the demographics of older adults. Reliability analysis for this factor was .38. Knowledge 3 included the following three items from the Palmore Facts on Aging:

<u>Statement number</u>	<u>Statements</u>
7	"At least one-tenth of the aged are living in long-stay institutions."
19	"Over 15% of the U.S. population are now age 65 or older."
21	"The majority of older people have incomes below the poverty level."

Two items from the Palmore Facts on Aging did not seem to belong to any of the three subsets and were omitted from the three knowledge factors. These two items were:

<u>Statement number</u>	<u>Statements</u>
3	"Most older people have no interest in, or capacity, for sexual relations."
25	"The health and socioeconomic status of older people (compared to younger people) in the year 2000 will probably be about the same as now."

Because knowledge can be independent facts known separately from other facts, it might be expected on a knowledge test to have specific questions that do not group or form a set of items. This also may account for the low reliability analysis.

Multiple regressions were calculated for each factor with the demographic characteristics of education, professional experiences, and personal experiences. Age of the dietitian and the number of years as a registered dietitian were the independent variables controlled for by the multiple regression. Education indicators, professional experiences, and personal experiences were the same variables as designated in the Attitude 1, Attitude 2 and Attitude 3 analysis section. A significance level of .05 was considered statistically significant (Tables 34-38).

Age of the dietitian and number of courses in aging as a part of a comprehensive course were significant predictors for Knowledge 1 (social/psychological). The amount of variance (R^2) attributed to these variables is 4%. None of the variables were predictors for Knowledge 2 (physical ability/health). The amount of variance (R^2) attributed to these variables is 3%. The age of the dietitian, having at least a master's degree, and variety of personal experiences with older adults were significant predictors of Knowledge 3 (demographics). The amount of variance (R^2) attributed to these variables is 8%. In the knowledge factors, age was an important variable. The older the dietitian, the more knowledge the dietitian seemed to have. Having at least a master's degree was a predictor for knowledge about the demographics of aging. Coursework on aging as a part of a comprehensive course was a predictor for the knowledge about the social/psychological interactive ability of older adults. The demographic variables and the three knowledge subsets did not demonstrate strong predictors.

Table 34

Multiple Regressions for Knowledge,
Controlling for Age and Number of Years
as a Registered Dietitian

	F	P#	R	R ²
<u>Knowledge 1 (Social/Psychological)</u>				
Educational indicators (n = 577)	1.92	.034	.19	.04
Number/types professional experiences (n = 640)	1.85	.137	.09	.008
Number/types personal experiences (n = 640)	3.26	.021	.12	.015
All predictors (n = 555)	1.87	.031	.20	.04
<u>Knowledge 2 (Physical Ability/Health)</u>				
Educational indicators (n = 574)	1.40	.166	.16	.03
Number/types professional experiences with aging (n = 660)	1.06	.365	.07	.005
Number/types personal experiences with aging (n = 660)	1.03	.379	.07	.005
All predictors (n = 572)	1.30	.209	.17	.03
<u>Knowledge 3 (Demographics)</u>				
Educational indicators (n = 629)	4.73	.000	.28	.08
Number/types professional experiences with aging (n = 722)	14.70	.000	.24	.06
Number/types personal experiences with aging (n = 722)	14.61	.000	.24	.06
All predictors (n = 627)	4.37	.000	.29	.08

(#) .05 = level of statistical significance

Table 35

Multiple Regressions for Knowledge 1
(Social/Psychological)
Controlling for Age and Number of Years as a Registered Dietitian

	Beta	F for Beta	P#
<u>Educational Indicators</u> (n = 577)			
Age	.21	4.77	.029
Number courses aging	*		
Doctorate degrees	.98		
Number courses HE	*		
Number prof. groups aging	*		
Master's degree	*		
Continuing ed. HE	*		
Aging part comp. course	.17	3.52	.06
Continuing ed. aging	*		
HE part comp. course	*		
Number years RD	*		
<u>Number/Type Professional Experiences with Aging</u> (n = 640)			
(NOT STATISTICALLY SIGNIFICANT	*		
SEE TABLE 34)			
<u>Number/Type Personal Experiences with Aging</u> (n = 640)			
Age	.18	4.00	.046
Personal experience	.13	4.20	.041
<u>All Predictors</u> (n = 555)			
Age	.18	3.50	.06
Professional experience	*		
Number courses HE	*		
Doctorate degree	*		
Number courses aging	*		
Number prof. groups aging	*		
Master's degree	*		
Continuing ed. HE	*		
Aging part comp. course	.18	3.55	.06
Continuing ed. aging	*		
Personal experiences	*		
HE past comp. course	*		
Number years RD	*		

Note: (*) not statistically significant at .05.

(#) .05 = level of significance.

Table 36

Multiple Regression for Knowledge 2
(Physical Ability/Health)
Controlling for Age and Number of Years as a Registered Dietitian

	Beta	F for Beta	P#
<u>Educational Indicators</u> (n = 574)			
(NOT STATISTICALLY SIGNIFICANT SEE TABLE 34)	*		
<u>Number/Type Professional Experiences with Aging</u> (n = 660)			
(NOT STATISTICALLY SIGNIFICANT SEE TABLE 34)	*		
<u>Number/Type Personal Experiences with Aging</u> (n = 660)			
(NOT STATISTICALLY SIGNIFICANT SEE TABLE 34)	*		
<u>All Predictors</u> (n = 572)			
(NOT STATISTICALLY SIGNIFICANT SEE TABLE 34)	*		
Note: (*) not statistically significant at .05.			
(#) .05 = level of significance.			

Table 37

Multiple Regression for Knowledge 3
(Demographics)
Controlling for Age and Number of Years as a Registered Dietitian

	Beta	F for Beta	P#
<u>Educational Indicators</u> (n = 629)			
Age	.17	17.82	.000
Number courses aging	*		
Doctorate degrees	*		
Number courses HE	*		
Number prof. groups aging	*		
Master's degree	.20	7.6	.006
Continuing ed. HE	*		
Aging part comp. course	*		
Continuing ed. aging	*		
HE part comp. course	*		
Number years RD	*		
<u>Number/Type Professional Experiences</u>			
(n = 722)			
Age	.20	29.32	.000
Professional experience	*		
Number years RD	*		
<u>Number/Type Personal Experiences</u>			
(n = 722)			
Age	.19	27.96	.000
Personal experience	*		
Number years RD	*		
<u>All Predictors</u> (n = 627)			
Age	.16	14.69	.000
Professional experience	*		
Number courses HE	*		
Doctorate degree	*		
Number courses aging	*		
Number prof. groups aging	*		
Master's degree	.21	7.96	.005
Continuing ed. HE	*		
Aging part comp. course	*		
Continuing ed. aging	*		
Personal experiences	.61	3.67	.056
HE past comp. course	*		
Number years RD	*		

Note: (*) not statistically significant at .05.
 (#) .05 = level of statistical significance.

Table 38

Summary of Multiple Regressions for Knowledge 1, 2, 3
When Controlling for Age and Number of Years as a Registered Dietitian

	<u>Knowledge 1</u>	<u>Knowledge 2</u>	<u>Knowledge 3</u>
	(Social/Psychological)	(Physical Ability/ Health)	(Demographics)
<u>Predictor Variables</u>			
Age	++	*	++
Prof. exp.	*	*	*
Number courses HE	*	*	*
Doctorate degree	*	*	*
Number courses aging	*	*	*
Number prof. groups aging	*	*	*
Master's degree	*	*	++
Continuing ed. HE	*	*	*
Aging part comp. course	++	*	*
Continuing ed. aging	*	*	*
Personal exp.	*	*	++
HE part comp. course	*	*	*
Number years RD	*	*	*

++: statistically significant variable in determining knowledge factors
 (see Tables 32-35)

*: not statistically significant at .05.

**Multiple Regressions for Attitude Factors
and Knowledge Factors**

Multiple regressions for the attitude subscales and the knowledge subscales were computed (Table 39). These computations demonstrated relationships (at the significance level of .05) between Knowledge 1 (Social/Psychological) and Attitude 2 (benefits from older adult) and Attitude 3 (characteristics of older adults). There was a negative relationship between Knowledge 2 (Physical Ability/Health) and Attitude 3 (characteristics of older adults). Knowledge 3 (Demographics) showed no relationship with Attitude 1, Attitude 2, or Attitude 3.

Table 39

**Multiple Regressions for Attitude 1, 2, 3
with Knowledge 1, 2, 3 and Total Knowledge
Controlling for Age and Years as a Registered Dietitian**

	<u>Attitude 1</u> (desire to work with elderly)	<u>Attitude 2</u> (benefit from elderly)	<u>Attitude 3</u> (characteristics of elderly)
n = 611			
Knowledge 1			
(Social/Psychological)			
Beta	1.69	.23	.82
F	2.56	21.64	94.36
p	.11	.000	.000
Knowledge 2			
(Physical Ability/Health)			
Beta	-.28	.11	-.52
F	3.50	2.47	19.15
p	.062	.117	.000

Table 39 (continued)

	<u>Attitude 1</u> (desire to work with elderly)	<u>Attitude 2</u> (benefit from elderly)	<u>Attitude 3</u> (characteristics of elderly)
Knowledge 3 (Demographics)			
Beta	.14	-.74	-.96
F	.34	.41	.24
F significance	.562	.523	.622

.05 = level of statistical significance.

**Problem Solving Section to Determine the Use of
an Ecological Perspective**

Description of Answers

The problem solving essay questions were left unanswered more frequently than other sections. Between 13% and 14% left each question blank. This may be due to the length of time it takes to answer an essay question rather than lack of knowledge or ability on the part of the respondents.

The frequency distribution of the number of points received for each question is shown in Figures 2 through 4. The possible range of points for each question was zero to ten, with a total of 30 possible points. Most dietitians (50% or better) received six or more points on each question and 23.3% received 20 or more total points.

Each question had a most common type of response from dietitians, even though the general correct answers to all the questions could be the same.

Question 1: Mrs. S (age 75) is considering attending a group or congregate eating site. What factors do you feel would be important in making this a successful experience for Mrs. S?

The most common responses to this question dealt with transportation (community-based issues) and quality of food (individual-based issues).

Example of a typical answer for Question 1:

"making sure the site was close to the patient & that transportation was available. making sure the appropriate foods are available should the patient be on a special diet. (sic)" (transportation (community based) 2 points; special food needs (individual based) 4 points; total score 6 points)

Question 2: You are asked to do a nutritional assessment of Mr. T (age 80) at his annual health visit. What would you include in your assessment?

The most common responses to this question dealt with the physical status of the older person (individual-based issues).

Example of a typical answer for Question 2:

"Height and weight; triceps skinfold at appropriate sites; mid arm circumference; I would order specific labs to be run -- particularly serum albumin, transferrin, total lymphocyte count, and total protein" (physical laboratory parameters (individual based) 4 points; total score 4 points).

Question 3: You are asked to review a three-day record of Mrs. A (age 65). Upon comparison with the Recommended Dietary Allowances, Mrs. A's diet record is found low in calories, protein and Vitamin A. What other information would you want before making your recommendation?

The most common responses to this question dealt with the physical status (individual-based issues) and/or income concerns (economic issues) for the older person.

Example of a typical answer for Question 3:

"Height/weight; Diagnosis, laboratory values, income" (physical-laboratory parameters (individual based) 4 points; income (economic issues) 2 points; total score 6 points).

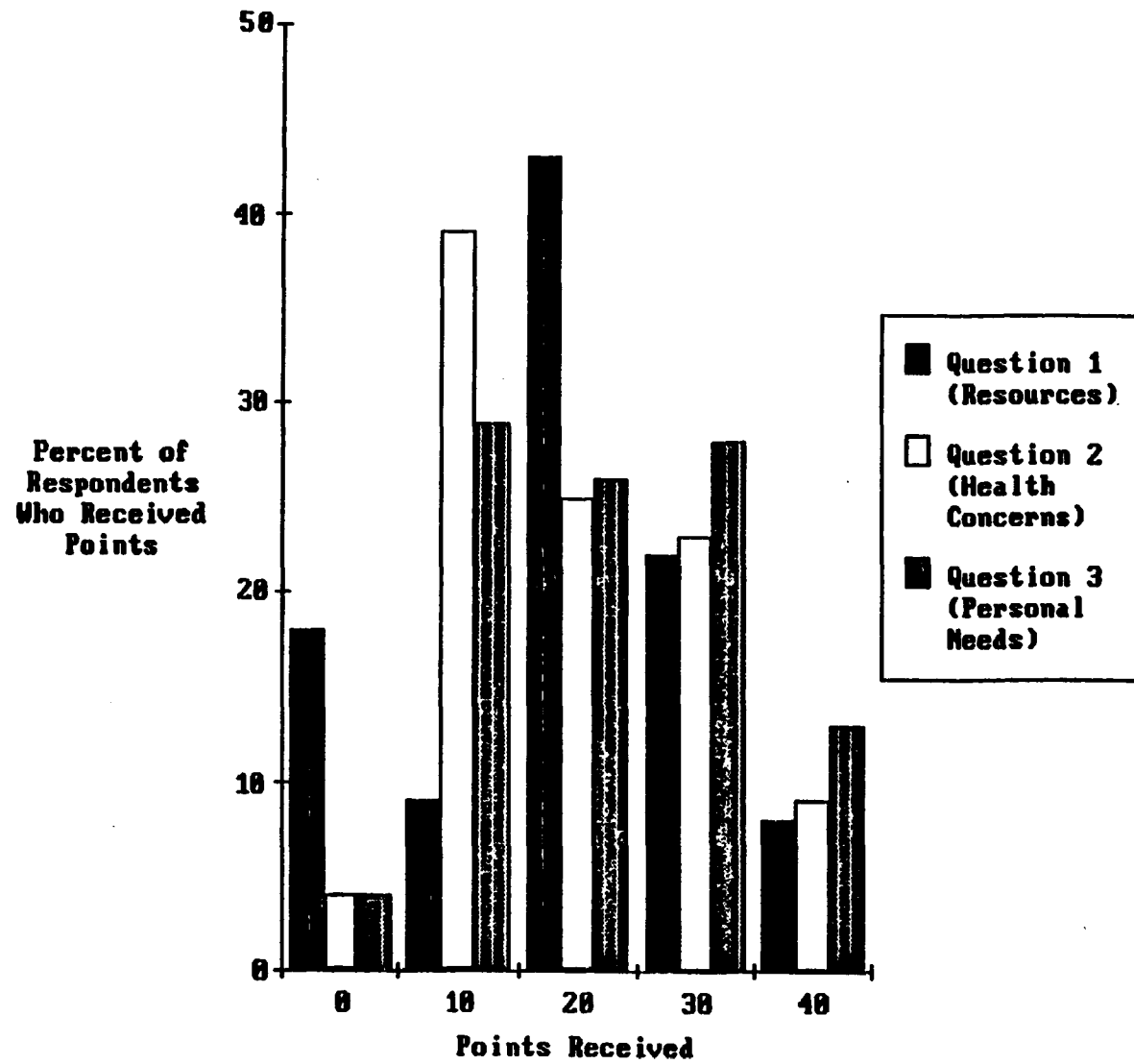


Figure 2: Problem Solving Questions

In summary, each question had a usual or more typical answer which tended to include one or two environments. The individual concerns were the areas most often listed in answer to the questions, especially in Questions 2 and 3. Bereavement, family loss or family issues were rarely mentioned (only once in the answers).

Problem Solving Questionnaire Responses **in Relation to Place of Graduation**

Using a Pearson Product Moment Correlation for interval data, the total score on the problem solving questionnaire was correlated with the school of graduation and degree level. The total score for the problem solving section did not correlate for any school or degree level at a statistically significant level ($\alpha = .05$).

Correlations Between Demographic Characteristics **and the Problem Solving Measure**

The relationship between the demographic characteristics and the Problem Solving Measure was determined by Coefficient of Linear Correlation. The demographic characteristics were as follows: age, number of years as a registered dietitian, number with courses in aging in college, having a doctorate, number of courses in human ecology/family ecology in college, number of professional groups in aging in which dietitian is a member, having at least a Master's degree, continuing education in human ecology/family ecology, number of courses in which aging was a part of a more comprehensive course in college, continuing

education in aging, personal experiences with older adults, and number of courses in which human ecology/family ecology was a part of a more comprehensive course in college.

A statistically significant correlation ($\alpha = .05$) was found between age and coursework in aging as a part of a more comprehensive course, and the total score on the problem solving measure. The older the dietitian, the higher the total score on the problem solving measure. Also, the more courses where aging is a part of a comprehensive course (such as a life cycle course), the higher total score on the problem solving measure.

Table 40

Correlations Between Demographic Characteristics
and Total Score on the Problem Solving Measure

Variable	Total Score for Problem Solving Measure		
	r	P	n
Age	.1005	.005	644
Number years RD		*	
Professional experiences		*	
Number of courses aging		*	
Doctorate		*	
Number courses HE		*	
Number prof. groups aging		*	
Master's degree		*	
Continuing ed HE		*	
Aging part comp. course	.1163	.002	643
Continuing ed. aging		*	
Personal experience		*	
HE part comp. course		*	

(* = not statistically significant at .05 level)

**Problem Solving Questionnaire Responses Correlated with
the Attitudes and Knowledge Measures**

As Table 41 shows, there was little or no correlation between each of the measures used in this survey at a statistically significant level ($\alpha = .05$). The low correlations were not meaningful in that they had statistical but not practical significance.

Table 41

Correlations Between Scores on the Instruments

Instruments	Attitudes		Knowledge		Problem Solving	
	r	p	r	p	r	p
Wall-Oyer	-		.1524 (n = 738)	.001	.0141 (n = 647)	.361
Palmore	.1524 (n = 738)	.001	-		.0746 (n = 647)	.029
Problem Solving	.0141 (n = 647)	.361	.0746 (n = 647)	.029	-	

.05 = level of statistical significance.

Summary of Data

In the summer of 1986, 1408 active dietitians in Michigan were surveyed regarding their attitudes and knowledge about aging. A problem solving section which focused on the use of the ecological perspective also was included. Of those sent the questionnaire, 738 (52.4%) responded.

Attitudes were measured by the Wall-Oyer Attitudes Towards Aging Inventory. The knowledge instrument was the Palmore Facts on Aging Quiz,

and the problem solving measurement included three essay questions developed by this researcher to assess the use of the ecological perspective.

The attitudes of dietitians toward older adults were generally positive. Notable exceptions to this positive attitude were that 54.4% felt older people are critical of younger generations, 48.4% did not feel older adults are amenable to change, 60.6% felt that they would encounter resistance from older adults in a treatment program.

The dietitians lacked knowledge in the two general areas, the economic and health concerns of the older adult. Respondents thought that more older adults are institutionalized than actually are and that a higher proportion of the population is elderly than is actually the case. They also thought that older adults are poorer than the actual statistics show.

Factor analysis was completed on the Wall-Oyer Attitudes Toward Aging Inventory and the Palmore Facts on Aging. Three attitude factors were determined: Attitude 1 (the desire to work with older adults), Attitude 2 (the benefits of the interactions with older adults), and Attitude 3 (characteristics of older adults)--as subsets of the Wall-Oyer Instrument. Three knowledge factors were defined--Knowledge 1 (social/psychological interactive ability of older adults), Knowledge 2 (physical ability and health of older adults), and Knowledge 3 (demographics of older adults)--as subsets of the Palmore Instrument.

The attitudes and knowledge subsets were predicted by some of the demographic variables of the dietitians surveyed. Personal experience with the elderly was a positive predictor for Attitude 1 (the desire to

work with older adults), Attitude 2 (the benefits of the interactions with older adults), and Attitude 3 (characteristics of older adults). Continuing education courses in aging and membership in professional groups interested in aging were predictors of Attitude 1 and Attitude 2. The age of the dietitian was a positive predictor for Knowledge 1 (social/psychological interactive ability of older adults) and Knowledge 3 (demographics of older adults). Courses that included aging as a part of a comprehensive course also were a predictor for Knowledge 1. Having at least a Master's degree, and personal experience with the aged also was a predictor for Knowledge 3. None of the variables used were statistically significant predictors of Knowledge 2 (physical ability and health of older adults).

On the problem solving section, the dietitians usually focused on one specific environment or area. The full range of all possible environments interacting with older adults usually was not considered. In particular, families were rarely mentioned in the dietitians' considerations of nutritional problems of older adults. When the total scores for the instruments were compared, the instruments did correlate with one another, but not at a meaningful level.

CHAPTER V

SUMMARY, IMPLICATIONS AND RECOMMENDATIONS

Summary

This study investigated the attitudes and knowledge of Michigan dietitians about aging within a human ecological framework. The importance of these attitudes and this knowledge lies in the influence they may have on decisions and actions taken by dietitians in regard to older adults and their nutrition problems. If dietitians have negative attitudes and limited knowledge about aging, then the potential for negative stereotyping occurs. To prevent this from happening, dietitians need to assess their own attitudes and then correct inaccurate and inadequate information about the normal aging process. The attitudes and knowledge of the responding dietitians about aging could have a direct impact on their decisions about the nutritional care and services the elderly receive.

Three instruments plus a demographics section were used in the questionnaire mailed to Michigan dietitians. The instrument used to measure attitudes was the Wall-Oyer Attitudes Toward Aging Inventory. It is a 22-item Likert-type scale and was considered short enough to include with the other parts of the questionnaire. The Palmore Facts on Aging instrument, which has a 25-question, true-false format, was used to measure knowledge. The problem solving section of the questionnaire was presented in an essay test format and focused on assessing the use of the

human ecological perspective. This section was difficult to develop because methods to measure ecological problem solving are not fully developed and tested.

The four-section questionnaire was sent to 1408 active dietitians in Michigan. A total of 738 (52.4%) returned the questionnaire. The demographic characteristics of the Michigan respondents were comparable to the last published census of dietitians in the United States (Baldyga, 1983; Byrk, 1987). These data indicated that dietitians are predominantly young, well-educated, and female.

The research objectives were as follows:

1. To determine what attitudes Michigan Dietitians hold concerning aging.
2. To determine the knowledge about aging Michigan dietitians hold.
3. To determine if age, education, professional interest, and professional and personal experiences with aging are related to Michigan dietitians' attitudes and knowledge about aging.
4. To determine to what extent Michigan dietitians use a human ecological perspective in problem solving, and what is the relationship between the ecological perspective and their attitudes and knowledge about aging.

Attitudes on Aging

As indicated by the Wall-Oyer Inventory, dietitians as a whole seem to have positive attitudes toward aging, with most statements answered in the positive direction with at least 60% responding positively. Exceptions to the generally positive attitudes were in the areas of older people not understanding the young, being critical of the young, not having active social lives, and being unwilling to change. The attitudes relating to working with older adults also elicited negative responses.

The strongest negative attitude of the dietitians (60.6%) was the expectation that older people would be resistant to treatment programs. This researcher is not aware of another study specific to dietitians which has similar findings. It is not known if this is a negative attitude towards the elderly, all age groups, or only select age groups.

Knowledge About Aging

The knowledge instrument was the Palmore Facts on Aging. The respondents demonstrated a reasonably high level of knowledge about aging, with the majority of the respondents answering almost 60% of the items correctly.

Dietitians in the study did hold some of the misconceptions often held by other groups, as noted by Palmore (1980). The number of people in long-term institutions, percent of older people in the population, and the number of older people living below poverty level were among the basic demographic characteristics not generally known by the respondents. In addition to those commonly held misconceptions, dietitians thought that a higher percentage of the elderly were poorer than they are and that the elderly are more incapacitated than they are.

Demographic Characteristics Related to Attitudes and Knowledge About Aging

Age

In overall Wall-Oyer Inventory scores, age did not seem to relate to the attitudes measure in this survey for dietitians. But, age was a predictor of one of the three factors created from the overall attitude measure. Although age was not a predictor of the desire to work with older adults or the perceived benefits from interactions with older

adults, it was a negative predictor of the perceived characteristics of older adults.

In the Palmore Facts on Aging total score, age did not seem to predict the knowledge measure in this survey for dietitians. But age did predict positively two of the three subsets of questions in the Palmore Facts on Aging. Age was a positive predictor for social/psychological and demographic data. That is, the older the dietitian, the more accurate the knowledge the dietitian had in these two areas.

Education

The educational indicators used in this survey show that several are positive predictors of the attitudes instrument score (Wall-Oyer Attitudes on Aging Inventory). Having a doctorate degree, coursework on the aging when a part of a comprehensive course, and continuing education in aging are positive predictors of the overall score of Wall-Oyer. The subsets of the attitude measure also predict some of the education indicators. Number of memberships in professional groups concerned with aging, and the number of continuing education workshops in gerontology are predictors of the attitude area dealing with working with older adults. The attitude dealing with perceived benefits from interactions with older adults was predicted by having a doctorate degree, continuing education in gerontology, and number of memberships in professional groups concerned with aging. The attitude subset on perceived characteristics of older adults was not predicted by individual education indicators when age and number of years as a registered dietitian were considered. Membership in professional gerontology groups, continuing

education in aging as well as higher degree levels are predictors of positive attitudes about aging.

Several educational indicators also are predictors of the Palmore Facts on Aging instrument. The total score on the Palmore Facts on Aging was predicted by the number of courses in aging, number of memberships in professional groups concerned with aging, having at least a master's degree, and number of courses with aging as part of a comprehensive course in college. The factors of the knowledge measure also indicated a relationship to the education variables. The social/psychology knowledge area were positively predicted by having a doctorate degree and the number of comprehensive courses in college which had aging as part of the course content. The knowledge subset area of physical ability/health was not predicted by the educational indicators. The demographic knowledge areas were positively predicted by having at least a master's degree. In this survey of dietitians, scores on the knowledge section increased when the dietitian had educational experiences which included aging. Knowledge scores also increased when dietitians had educational experiences past their bachelor's degree such as professional groups, continuing education courses, master's and doctorate degrees.

Professional Experiences

Professional experiences with older adults did not correlate with the total attitude measure (Wall-Oyer). However, in the attitude factors, the area of interest in working with older adults was predicted by professional experience. The other two attitude factors (perceived benefits from older adults and perceived characteristics of older adults)

were not predicted by professional experiences with older adults. Professional experiences with older adults did not increase scores on the total knowledge measure for any of the three subsets of the knowledge instrument. Experience or years as a registered dietitian was another measure of professional experience that did not predict the attitude measure scores or the knowledge measure scores.

Personal Experience

There was a strong positive relation to personal experience with age of dietitians and attitudes. The more types of personal experiences dietitians had with older adults, the more positive their attitudes towards older adults. Also, all three attitude factors (interest in working with older adults, perceived benefits from interactions with older adults, and perceived characteristics of older adults) were positively predicted by personal experiences of the dietitian.

No strong prediction was found between personal experiences and the overall knowledge instrument score. But the knowledge factor concerned with demographic data about aging was predicted by personal experiences. Personal experience with aged did not predict overall knowledge about aging, but it did predict knowledge about the demographic information on older adults.

Problem Solving Measure

The problem solving component, though inconclusive, did seem to indicate that dietitians do not view aging and nutrition problems within a human ecological conceptual framework. The lack of breadth of answers to the questions could be due to the essay format which is more difficult

to answer than the multiple-choice format. Also, this was a first attempt to measure this concept.

This problem solving exercise had a usual or typical answer which tended to include one or two areas. The individual areas such as physical or laboratory values were the areas most often listed in answer to the questions, especially question 2 and 3. Bereavement, family loss or family issues were rarely mentioned in any of the answers.

Correlation between school of graduation and the problem solving measure was not statistically significant. Graduates of Michigan State University, which stresses the human ecological approach, did not show any higher scores for this section than graduates from other colleges and universities.

Two areas did correlate with the problem solving measure. The age of the dietitian and the number of comprehensive courses in college with aging as part of the course both correlated positively with the total score for that measure.

The place of graduation did not relate to the problem solving questions; whereas, age and comprehensive coursework including aging as a part did relate to the problem solving questions. The problem solving measure did not correlate with either the attitude or knowledge measure. Nor did the attitude or knowledge measures strongly correlate with each other. It is possible that each instrument assessed a different aspect of the dietitian's understanding or point of view on aging.

Implications and Recommendations

Dietetics Education

Dietitians hold generally positive attitudes towards aging. Educational indicators and personal experiences seem to correlate most strongly with positive attitudes. Education of student dietitians with comprehensive courses with aging as part of the course would seem to influence attitudes towards aging.

Almost 60% of the dietitians had 66% or more of the answers correct on the knowledge test. However, basic demographic characteristics of the elderly were often answered incorrectly. Dietitians also did not know the correct percentage of the population that is elderly.

The dietitians' perception of older adults as poor and sick may lead to services for the elderly that are inappropriate. This lack of knowledge by the dietitian may cause difficulties in dietitians' and older adults' ability to work together. An example of this would be dietitians' underestimating financial resources of older adults so that programs did not present the full range of economic possibilities with the information not relevant to the actual income. The dietitian may not be able to overcome the prejudices and misinformation about aging to provide a wide range of appropriate nutrition and educational services needed by older adults, if basic facts about the aging population are not understood by the dietitian, as well as the heterogeneous influences on older adults.

The knowledge measure was correlated with number of courses in aging, and with aging as part of a more comprehensive course. It would seem from this survey of dietitians that coursework in aging and includ-

ing aging as a topic in more comprehensive courses relate to knowledge on aging by dietitians. Professional membership in gerontology groups and advanced degrees correlated with knowledge of aging, too. This would seem to indicate that professional experiences beyond college can influence knowledge about aging. These educational experiences both during and after college can be encouraged to increase knowledge of aging by dietitians. Increased educational experiences would positively influence the dietitians' knowledge of aging. Considering that the average dietitian is young, these results suggest the necessity of increased information about older adults. This finding leads to the conclusion that more information or facts about aging needs to be included in educational programs of dietitians so that the young dietitian has accurate knowledge about aging and older adults. This area of study could be included in basic nutrition courses, nutrition in the lifecycle courses and by using examples of the elderly and their needs in general nutrition classes.

In conclusion, dietitians have a good understanding of the facts about aging except in two important areas--the economic and health status of older adults. These two areas could be a serious impediment to dietitians adequately helping older adults. This lack of information could actually hamper the development of services and programs that meet the wide range of needs of older adults. Increased gerontology education for student dietitians could enhance their knowledge of aging. Dietitians should be involved in educational and training programs which have time and experiences devoted to older adults. The survey showed that education and training programs did influence dietitians, especially when

aging programs were a part of a comprehensive program such as the life cycle approach. In comprehensive coursework, adequate time for the study of the later years needs to be ensured. This could occur by starting with later years in the life cycle and working back towards the younger years.

Dietitians also could profit from continuing education courses in aging, since many lack this type of education. This could enable the dietitian to have accurate knowledge about the economic and health status of older adults, as this was an area in which knowledge was lacking.

The problem solving measure did correlate with the age of the dietitian and the number of comprehensive courses which respondents have taken that contained content on aging. These two variables seem to indicate that the problem solving measure could in part be measuring a human ecological perspective of dietitians on aging. It could be expected that as a person ages, the individual could view the client as being influenced by more areas just as that individual provider is. Also, the comprehensive courses that include content on aging as part could help the dietitian see the issues that influence clients in a broad or comprehensive context.

But, this raises questions on whether aging should be taught separately, or if it is better to teach aging as a part of other more comprehensive courses. Since colleges and universities can influence the curriculum but not the dietitians' chronological age, an appropriate means to increase problem solving skills within the human ecological perspective could be the comprehensive courses that include a component on the aging.

With the complexity of problems older adults face and the lack of homogeneity among older adults as a group, the ecological perspective has the potential for addressing the individual needs of older adults. Dietitians could benefit from the human ecological perspective in dealing with the nutrition issues of the older adults. However, the human ecological perspective with practical applications does not appear to be a significant part of undergraduate education in dietetics. Neither have continuing education programs been developed with this perspective, as evidenced by the fact that 70% of the respondents had not taken any ecological courses in the last five years. If this perspective is to be used by practicing dietitians, it has to be related to their dietetic practice and nutrition issues. Graduate coursework or continuing education coursework for dietitians relating the human ecological perspective to nutrition and aging appears to be relatively unavailable. That dietitians are unfamiliar with it and do not use it in problem solving or practice is not surprising. Continuing education and graduate courses in nutrition and aging need to be developed within the human ecological perspective for dietitians to use the framework to enhance their problem solving.

In summary, the recommendations for dietetic education that would enhance dietitians' attitudes and knowledge about aging are as follows:

1. undergraduate coursework in aging, especially if the course was a comprehensive course with aging as a part of it,
2. continuing education in aging after graduation.

Professional Practice

For the practicing dietitian, workshops and courses available in aging could positively influence their attitudes. This is especially important in the attitude area of interest in working with older adults. Membership in professional gerontology groups also relates to positive attitudes. Professional memberships in this survey of dietitians were limited to groups exclusive to dietitians. It is possible that broad membership in professional groups in gerontology such as the Gerontological Society of America could further enhance attitudes of dietitians towards aging.

These findings indicate that education does make a difference in the attitudes towards aging of Michigan dietitians responding to this survey. That is important because continuing education programs could positively influence how dietitians perceive aging and older adults. It does not seem practical for larger percentages of dietitians to belong to gerontology groups. Yet, more of the dietitians who belong to gerontology groups within the American Dietetic Association might consider membership in gerontology groups outside of nutrition. These groups might broaden and increase dietitians' understanding of aging as well as increase the understanding of other health professionals in the nutrition concerns of older persons. Educators and other professional leaders as well as employers need to encourage dietitians to participate in professional groups that promote continuing education on the aging. This continuing education could include the ecological perspective as well as knowledge to promote positive understanding of older citizens and their needs. This increased exposure to different ideas and methods of services to

older adults could influence attitudes, knowledge and the ecological perspective of dietitians.

The importance of educational and professional experiences in promoting interest in working with older adults is critical because these experiences can be planned as part of study and work situations such that interest might be encouraged. Professional experiences would not be difficult to plan for dietitians since a practicum is a part of most dietitians' training. These professionals' experiences could be planned outside of institutions so that knowledge concerning the non-institutionalized older adult could be enhanced. Examples of these non-institutional experiences with older adults could be home care programs, senior citizen centers, senior advocacy programs, public health programs, or church groups.

Personal experiences also influenced attitudes of responding dietitians towards older adults. The implication for this is more difficult for the profession or educational process to address, but reaffirms the need for society as a whole to have multi-generational experiences to enhance the attitudes of dietitians as well as others.

The age of the dietitians was negatively correlated with their attitudes. It is not clear why older dietitians had more negative attitudes concerning perceived characteristics of older adults. One possibility is that the individual dietitian does not perceive his/her own aging but attributes that process to other people. Since dietitians are relatively young, this negative attitude might not present a problem to nutrition services. But, this is an unexpected finding. Age and comprehensive courses correlated positively with the problem solving

measure. If the problem solving measure does measure ecological awareness, then these correlations could be due to the broadening of understanding of the dietitian with age. Comprehensive courses that include aging could possibly model the ecological perspective so that more dietitians would use this perspective in their professional endeavors, especially in aging.

The strongest negative attitude held by dietitians (60.6%) was that they expect resistance to their treatment programs by older adults. It is not known whether this is a perception by dietitians of only older persons or other age groups as well. Also, it is not known if this is a common perception among other health service providers. Perhaps older adults are resistant to dietitians' treatment programs. Dietitians need to consider in their professional practice whether they view all clients as resistant to their treatment programs. If this is the case, the reasons for this perception need to be understood. The attitude towards clients could then be improved by understanding that resistance may be part of any change. If they are resistant, then strategies to overcome this resistance must be developed. It is recommended that this perception of resistance be investigated further with other health professionals as well as with dietitians in their services to all age groups.

Professional experiences with older adults did not increase scores on the total knowledge measure for any of the three subsets of the knowledge instrument. This was not expected since usually professional experiences should increase the information a dietitian has on that client group. Employers and others in workplace settings should do more in this area so that a better understanding of aging in general occurs,

not just the pathology of aging that many institutionalized aging experience.

In summary, the recommendations for the professional practice of dietitians are as follows:

1. membership in professional gerontological groups (when possible) as well as diverse gerontological groups other than dietetics,
2. practicum training in a variety of noninstitutional settings with older adults, and
3. educational programs in workplaces and experiences that enhance dietitians' understanding of aging beyond the pathology of aging.

Recommendations for Revised Research Framework

The original research framework did not adequately explain the research data. At the conclusion of this study, a revised research model is proposed to guide any further research into a human ecological perspective of the dietitian as related to aging. This model (Figure 5) represents two Human Environed Units (HEU), the older person and the dietitian, embedded in their respective human behavioral, human constructed and natural environments. With the characteristics influencing both the human environed units, then both HEU's are depicted as influencing service needs including utilization.

Rather than being a relatively measurable characteristic such as knowledge or attitudes, the human ecological perspective is a pervading approach, spirit of inquiry or perspective. The implication is that the range of influences is greatly extended. The conventional wisdom says that knowledge and attitudes have an impact on service provision, but the

human and environmental characteristics of the system may have a greater impact on services and their outcomes.

This revised research model better describes the complexity of influences on the dietitian in providing services to older adults. It also takes into account the heterogeneity of older adults. Many aspects of this study could be included in the revised research model such as personal experiences in the human behavioral environment, and education, professional interest and experiences in the human constructed environment. The revised model also demonstrates that additional areas of influence on the practicing dietitian such as the health care service environment are missing from the original research framework.

In studying the influences on the services provided to older adults, this model demonstrates that both individuals involved in the interaction could influence the outcome as determined by the influences on them. This revised research model expands the scope of determinants of nutrition/health services for older adults by dietitians.

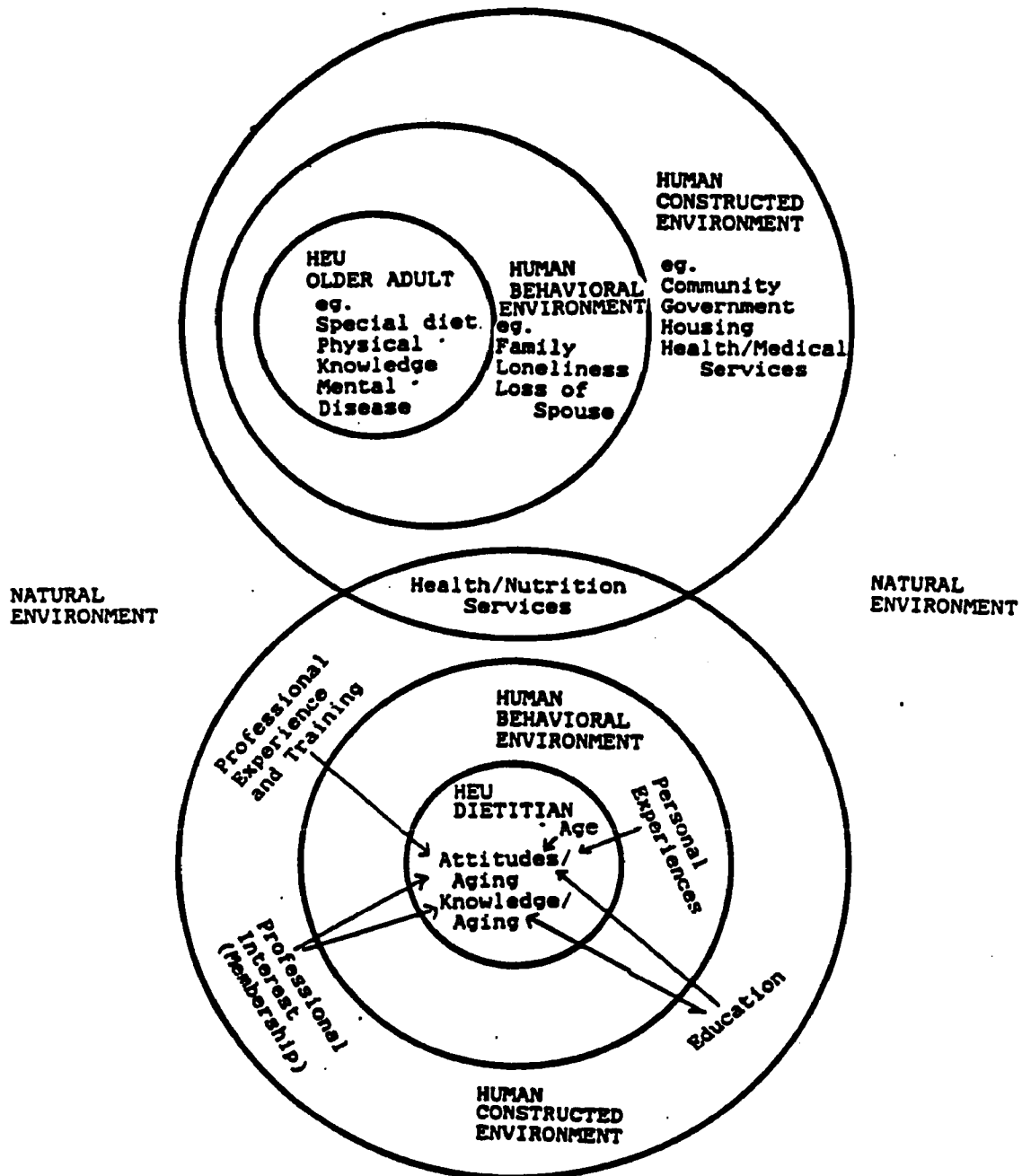


Figure 3. Revised Research Model

Recommendations for Further Research

The following are general comments and suggestions for use in future studies:

1. Research needs to be conducted in other regions of the United States to determine whether the attitudes and knowledge of aging held by Michigan dietitians are representative of all dietitians.
2. Research could be conducted with dietetic students as education, experiences, and training in aging occur to determine both immediate and future impact on attitudes and knowledge.
3. Ecological perspective in problem solving
 - a. Other health care professionals should be studied to determine how holistically they view the problems of aging.
 - b. Other health care professionals as well as dietitians should be studied to determine how ecologically they view health problems of any age group.
 - c. Other methods of testing the ecological approach of health care professionals should be explored. Other research could include reviews of assessment tools, treatment plans, or problem lists.
 - d. Other graduates from colleges using the human ecology framework should be studied to seek evidence of a human ecological perspective in problem solving.
 - e. A more refined measure should be used in further studies to verify that it does measure the extent to which problems in nutrition and aging are viewed ecologically by dietitians.

4. Further research into the attitude of dietitians about clients being perceived as resistant to treatment programs is needed.
5. Actual resistance or attitudes of clients/general public towards dietitians could be studied to identify additional problems dietitians might encounter.
6. Research is needed to further explain the interrelationship between the health care provider and the client.
7. Qualitative research methods could be used to assess problem solving, with controls for such variables as gender, age and marital status.

APPENDICES

APPENDIX A

**Research Approval by the
University Committee on
Research Involving Human Subjects
(UCRIHS)**

UNIVERSITY COMMITTEE ON RESEARCH INVOLVING
HUMAN SUBJECTS (UCRIHS)
238 ADMINISTRATION BUILDING
(517) 355-2186

EAST LANSING • MICHIGAN • 48824-1046

June 3, 1986

Ms. Mary Margaret Noel
Family & Child Ecology

Dear Ms. Noel:

Subject: Proposal Entitled, "The Aging Process: An Assessment
of Attitudes and Knowledge of Michigan's Dietitians"

UCRIHS' review of the above referenced project has now been completed. I am pleased to advise that the rights and welfare of the human subjects appear to be adequately protected and the Committee, therefore, approved this project at its meeting on June 2, 1986.

You are reminded that UCRIHS approval is valid for one calendar year. If you plan to continue this project beyond one year, please make provisions for obtaining appropriate UCRIHS approval prior to June 2, 1987.

Any changes in procedures involving human subjects must be reviewed by the UCRIHS prior to initiation of the change. UCRIHS must also be notified promptly of any problems (unexpected side effects, complaints, etc.) involving human subjects during the course of the work.

Thank you for bringing this project to our attention. If we can be of any future help, please do not hesitate to let us know.

Sincerely,



Henry E. Bredeck
Chairman, UCRIHS

HEB/jms

cc: Dr. Barbara D. Ames

APPENDIX B

Letter to Dietitians

MICHIGAN STATE UNIVERSITY

COLLEGE OF HUMAN ECOLOGY
DEPARTMENT OF FAMILY AND CHILD ECOLOGY

EAST LANSING • MICHIGAN • 48824-1030

June 15, 1986

Dear Colleague:

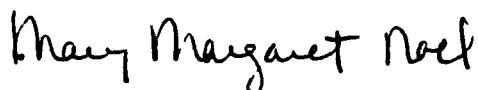
This letter is with regard to a survey of Michigan Dietetic Association membership as a part of my doctoral program in Family Ecology at Michigan State University. The purpose of this survey is to gain greater understanding of the attitudes and knowledge dietitians in Michigan have about aging. You can help impact educational programs by giving the information requested in the survey.

Your survey is not marked in any way, so neither I, nor anyone else will know who responded in what manner. Instead of a signed consent form, your return of the questionnaire is your consent to participate in the study. The results will be analyzed statistically and will not be identifiable in any way. Our aging population is growing and it is important that educational programs help prepare dietitians to work more effectively with the aging.

Please return your survey in the enclosed stamped, addressed envelope by July 15, 1986.

Thank you for your help with this research. Your time and energy are greatly appreciated.

Sincerely,



Mary Margaret Noel, MPH, RD



Barbara Ames, Ph.D.
Research Director
Associate Professor
Family & Child Ecology

APPENDIX C

Questionnaire to Dietitians

123
QUESTIONNAIRE ON AGING

This is a questionnaire which will give us information concerning your knowledge and attitudes about aging. You are requested also to provide some demographic information.

PART I.

Put an "X" before the alternative which best describes your answer to the statement, or fill in the blanks where necessary.

1. (1) _____ Male (2) _____ Female
2. Educational level (check all that are appropriate)
 - (1) _____ Bachelor's Degree
Name of college/university _____
Year of graduation _____
 - (2) _____ Master's Degree
Area _____
Name of college/university _____
Year of graduation _____
 - (3) _____ Doctoral Degree
Area _____
Name of college/university _____
Year of graduation _____
3. What is your age? _____ years old.
4. How long have you been a registered dietitian? _____ years.
5. Check the number of courses in which aging was the major focus in your undergraduate and/or graduate education:
 - (0) _____ none (0)
 - (1) _____ one (1)
 - (2) _____ two (2)
 - (3) _____ three (3)
 - (4) _____ four (4) or more

Questionnaire on Aging
Page 2

6. Check the number of courses in which aging was a part of a more comprehensive course (such as Nutrition in the Life Cycle) in your undergraduate and/or graduate education:
- (0) _____ none (0)
 (1) _____ one (1)
 (2) _____ two (2)
 (3) _____ three (3)
 (4) _____ four (4) or more
7. Check the number of courses in which Human or Family Ecology was the major focus in your undergraduate and/or graduate education:
- (0) _____ none (0)
 (1) _____ one (1)
 (2) _____ two (2)
 (3) _____ three (3)
 (4) _____ four (4) or more
 (5) _____ don't know what Human or Family Ecology is
8. Check the number of courses in which Human or Family Ecology was a part of a more comprehensive course (such as the Ecology of Nutrition) in your undergraduate and/or graduate education:
- (0) _____ none (0)
 (1) _____ one (1)
 (2) _____ two (2)
 (3) _____ three (3)
 (4) _____ four (4) or more
 (5) _____ don't know what Human or Family Ecology is
9. Amount of time spent as part of dietetic training (such as internship, traineeship, coordinated undergraduate program or planned experience) in aging, elderly, senior citizen activities:
- (1) _____ 0-1 week
 (2) _____ 2 weeks - 1 month
 (3) _____ 2 months - 3 months
 (4) _____ 4 months or more
10. Evaluate your dietetics training in Geriatrics/Gerontology relative to your needs in working with the aging (elderly, senior citizen, older adults) in your practice setting: (rank on a scale from 1 to 5 with 1-very inadequate and 5-very adequate)
- | | | | | |
|-----------------|------------|-------|----------|---------------|
| very inadequate | inadequate | | adequate | very adequate |
| ___ 1 | ___ 2 | ___ 3 | ___ 4 | ___ 5 |

11. While you were a child or teenager, how much contact did you have with your grandparent(s)? (Rank on a scale from 1 to 5 with 1-none and 5-a great deal):

none some a great deal
____1 ____2 ____3 ____4 ____5

12. While you were a child or teenager, how much contact did you have with older person(s) who were unrelated or relatives other than grandparents? (Rank on a scale from 1 to 5 with 1-none and 5-a great deal):

none some a great deal
____1 ____2 ____3 ____4 ____5

13. Please check all of the following with which you have (had) professional experience as a dietitian with the elderly:

- (1) _____ None
(2) _____ family, friends, neighbors
(3) _____ nursing home
(4) _____ home care
(5) _____ patients in hospital
(6) _____ patients in hospice
(7) _____ government nutrition program
(8) _____ other - please specify _____

14. Please check all of the following with which you have had personal experience:

- (1) _____ none
(2) _____ social contact with elderly as family, friends, neighbors
(3) _____ family work with elderly
(4) _____ multi-generational living with self-sufficient elderly person
(5) _____ nursing home with elderly
(6) _____ active care elderly/hospice
(7) _____ multi-generational living with an elderly person who is unable to care for self.
(8) _____ other - please specify _____

15. Do you belong to or participate in any professional groups which emphasize gerontology or aging?

(1) _____ Yes (0) _____ No

16. If yes, please list:

- (1) _____
(2) _____
(3) _____
(4) _____
(5) _____

17. How many continuing educational workshops, or programs on aging (elderly, older adults) have you participated in the last five years?
- (0) _____ none (0)
(1) _____ one (1)
(2) _____ two (2)
(3) _____ three (3)
(4) _____ four (4) or more
18. How many continuing education workshops, or programs, in Human or Family Ecology have you participated in during the last five years?
- (0) _____ none (0)
(1) _____ one (1)
(2) _____ two (2)
(3) _____ three (3)
(4) _____ four (4) or more

PLEASE NOTE:

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These consist of pages:

QUESTIONNAIRE ON AGING: 127-131 and 133-137

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APPENDIX D

**Correct Answers and Scoring for
Parts II, III, and IV of the
Questionnaire to Dietitians**

Example of each area in Part IV

Individual issues include such things as:

- Special diet
- Special individual health problems
- Personal food likes and dislikes
- Physical handicaps
- Mental awareness
- Food aversions
- Lifelong food habits
- Impact on individual of surroundings
- Chronic diseases
- Personal education level

Family issues include such things as:

- Loneliness
- Bereavement
- Recent loss of spouse or family member
- Values or beliefs
- Family support

Community and Friend issues include such things as:

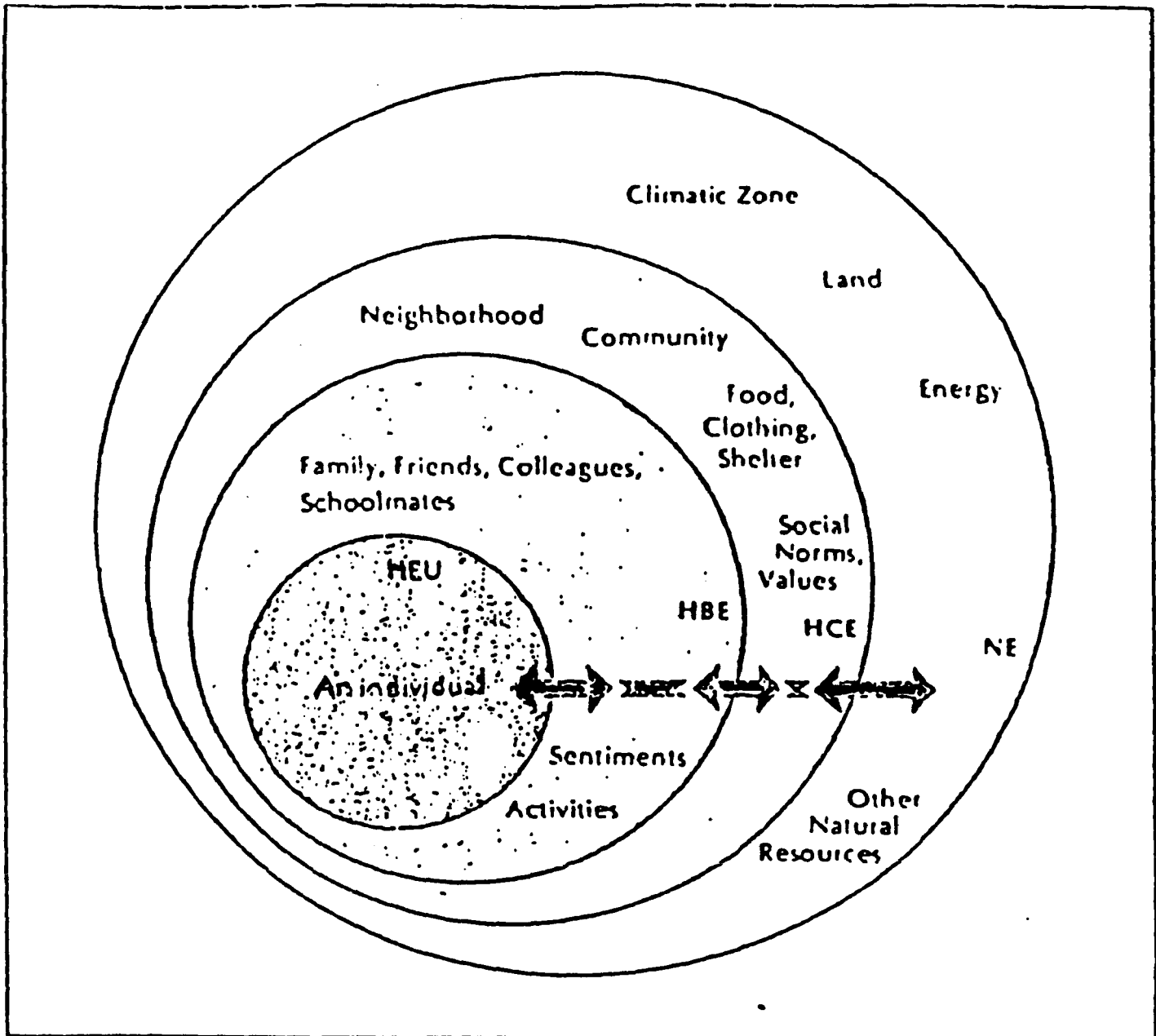
- Loneliness
- Transportation
- Housing resources (such as cooking facilities)
- Social isolation or network
- Adequate support and resource system

Economic, Health and/or Government issues include such things as:

- Adequate income or retirement
- Adequate medical resources such as insurance, income or availability of types of medical facilities
- Safe housing - crime and sanitation
- Availability of senior feeding sites
- Adequate variety of types of housing
 - senior apartments
 - nursing homes

APPENDIX B

A Human Ecosystem Illustrating Relationships between Environments and the Individual



A Human Ecosystem Illustrating the Near HBE, HCE, and NE

APPENDIX F

**Minimum Academic Requirements of the
American Dietetic Association for Dietitians**

**THE AMERICAN DIETETIC ASSOCIATION
MINIMUM ACADEMIC REQUIREMENTS^a
Plan IV^{**}**

A Baccalaureate Degree Including Basic Requirements Plus One Area of Specialization^{*}**

The College or University's plan for meeting these academic requirements must be approved by the ADA before they can be applied to the individual student. Students must check with the college or university program representative for that program's specific academic requirements.

AREA OF SUBJECT MATTER	BASIC REQUIREMENTS	AREA OF SPECIALIZATION IN DIETETICS			
		General	Management	Clinical	Community
Physical & Biological Sciences	Chemistry, inorganic and organic Human physiology Microbiology	Biochemistry		Biochemistry Biochemical analysis Anatomy or advanced physiology or genetics	Biochemistry
Behavioral & Social Sciences	Sociology or psychology (principles) Economics	Cultural anthropology or sociology	Labor economics or relations	Cultural anthropology or sociology	Cultural anthropology or sociology Psychology
Professional Sciences	Food (composition, physical and chemical changes, quality, acceptability, and aesthetics) Prerequisite: organic chemistry Nutrition Prerequisites: human physiology organic chemistry Management theory and principles	Food service systems management Nutrition in disease Prerequisite: biochemistry	Food service systems management Principles of business organization (Management of personnel) Financial management	Additional nutrition course Prerequisite: biochemistry Nutrition in disease Prerequisite: biochemistry	Nutrition in disease Prerequisite: biochemistry Nutrition and community health Prerequisite: biochemistry Food service systems management (volume food service in the community)
Communication Sciences	Writing (creative or technical) ^a Mathematics to intermediate algebra Learning theory or educational methods	Data processing (computer logic) or Data evaluation (statistics)	Data processing (computer logic) or Data evaluation (statistics)	Data evaluation (statistics)	Data evaluation (statistics)

^aMay be acquired prior to college entrance

^bNot completed in Basic Requirements

These requirements are under constant review
and subject to change

^cAdopted July 1, 1972 REVISION EFFECTIVE - NOVEMBER 1, 1980

^{**}Applies to Active and Affiliate (Category 1) Membership

^{***}Minimum Academic Requirements are expressed in terms of basic competencies
rather than in specific credit hours in knowledge areas, not in courses

APPENDIX G



The Ohio State University

Speech and Hearing
Science Section

324 Derby Hall
154 North Oval Mall
Columbus, Ohio 43210-1372
Phone 614 422-8207

22 April 1986

Mary Margaret Noel, MPH, RD
Doctoral Candidate in Family Ecology
233 Kensington Rd.
East Lansing, MI 48823

Dear Ms. Noel:

Dr. Oyer and I were happy to hear that you are interested in using the instrument that we developed for assessing attitudes. In response to the questions that you asked concerning the Wall-Oyer Attitudes Towards Aging instrument, please note the following:

1. We are pleased that you are interested in using the instrument with your doctoral research on dietitians' attitudes towards aging and we are happy to grant permission for your use.
2. In addition to our study only Dr. James O'Brien and Dr. Senger have used the instrument to date.
3. Information on the reliability of the instrument is as follows:

The Wall-Oyer Attitude Inventory Toward Aging assessed the attitudes of students toward the elderly. The instrument had two dimensions; "personal" and "general". It was found, upon readministration, to be reliable; general dimension $r=.72$ and personal dimension $r=.62$ (Pearson product-moment correlations). Test-retest reliability was determined to be significant for both dimensions ($p .05$).

4. Information on the validity of the instrument is as follows:

Content validity: The original items of the instrument were developed based upon intuitive and reasoned notions of the authors of the instrument. The authors felt that the items were representative of content of the property being measured based upon several years of working with speech and hearing undergraduate and graduate students in the classroom and in the clinical setting. Additionally, written student narratives concerning their attitudes toward aging and older people were used as a basis to help develop the instrument. Test item format resembled a Likert type of scaling and equal positive and negative phrasing of the items was included. Once these items were developed, each item was judged for its presumed relevance to attitudes toward aging by five competent judges. These five judges were senior professors who have spent numerous years working in the following specialized areas: speech and hearing, communication and attitudes and attitude change, aging and family relations. Based upon the responses of these

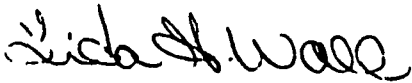
22 April 1986
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judges, items were either included or excluded from the final test instrument.

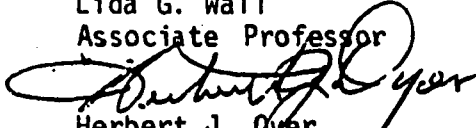
Construct validity: The authors of the instrument deduced that certain relationships should exist between 1) the attitudes toward aging held by the students 2) their experience with the elderly 3) the amount of factual information the student's possessed 4) the age group a student intended to work with in the future. To this end information concerning Facts on Aging Quiz (Palmore, 1977) was administered. Identification information concerning the amount of contact students with older people was evaluated along with a rank ordering of the age group with which the student preferred to work. As speculated, the students (64%) had only moderate experience or coursework with the elderly. The knowledge score based upon Palmore's Quiz indicated their knowledge of basic social, mental, and physical facts were only slightly better than chance (mean score was 65.4%). Older people were ranked relatively low as a group with which they would like to work. General and personal attitudes were more favorable than unfavorable. It is within this area that we are still intending to gather more empirical evidence. It appears as if there is a relationship between some of the knowledge questions, the attitudinal questions and some of the identifying information; 58 percent of the variance could be accounted for. However, construct validity should be considered to still be in the stage of empirical verification.

We hope this information has been helpful to you. We'd be interested in any relevant findings you have should you continue along this line of research.

Sincerely,



Lida G. Wall
Associate Professor



Herbert J. Over
Professor and Director

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