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Knowledge, Attitudes, and Intentions of Students Majoring in Food and Nutrition on Working with the Elderly

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Abstract

With the increase of elderly people, educators have begun designing experiences to prepare students to work with elderly group. The purpose of this study is to evaluate the knowledge and attitude of students majoring in food and nutrition for the elderly and their intentions to provide services for the elderly. The knowledge level of the students was in a medium range, and no relationship was found between knowledge and attitudes using Pearson correlation. The knowledge did not significantly differ across gender and academic level when compared using *t*-test and ANOVA, but knowledge level was significantly different based on residential experiences with elderly over 65 years of age ($p < 0.05$). Students had neutral attitudes toward working with elderly employees and working for elderly. Students had positive intentions to work with elderly employees, seek employment in an organization for elderly clients/customers, and seek opportunities for positive social interaction with the elderly. However, students do not have positive work preference with elderly employees. As a result of multiple regression analysis, it was found that knowledge was not a predictor of intentions to provide services to the elderly. However, attitudes toward working with elderly employees, attitudes toward elderly, residential experiences with elderly >65 years have been predicted the intentions to work with elderly employees. Attitudes working with elderly employees and attitudes toward elderly influenced the intentions to work in the organizations to provide services to elderly. This study can be identified the need for additional didactic preparation and experiences to prepare students to work with elder aging population.

Key words: students majoring in food and nutrition, knowledge for the elderly groups

INTRODUCTION

Recent medical and technological developments have resulted in a longer life span. Increases in the aging population is a world wide phenomenon in number and in the proportion of older adults. According to the UN reports (1), the percentage elderly people in total populations is projected to be 27.3% in Japan, 23.2% in German, and 19.8% in United States by 2030. The Korea National Statistical Office (2) projected that people aged 65 years or olders will account for about 7.2%, 10.7%, 15.1%, and 23.1% of the total population in 2000, 2010, 2020, 2030, respectively. Based on the projected population of Korea during the same periods, 47, 49.6, 50.6, and 50.2 million, respectively, the projected numbers of people aged 65 and over are estimated to be at about 3.4, 5.3, 7.7, and 11.6 million, respectively. By 2019, as elderly population will make up 14.4% of the total population, Korea will be an emerging aged society. The time it would take for the percentage of the elderly to increase from 7% to 14% of the total population is estimated to be only 19 years in Korea, compared to 26 years in Japan, 45 years in United Kingdom, 71 years in United States, and 115 years in France (1). Consequently, Korea is becoming an aged society at the most rapid rate in the world, and this phenomenon has numerous societal implications. For example, with an ageing population, greater numbers of young professionals will find themselves working with people in older age groups. The demands for doctors, dieticians, nurses, and other health professionals to provide high quality-services to aging populations will be continuously increasing (3).

Most older adults can expect to have a variety of chronic diseases and functional impairments that may interfere with the maintenance of good nutritional status. These conditions all have adverse outcomes that could be ameliorated or reduced with appropriate nutritional intervention. A committee of the Institute of Medicine in the United States (US) (4) recognized that registered dietitians are the most qualified professionals to provide

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nutrition services to older adults. The American Dietetic Association (ADA) 2002 Environmental Scan (5) also underscored the ongoing demanded registered dietitians' to position themselves toward providing qualified nutritional services for the aging population. The position of ADA (6) emphasized the preparation of knowledgeable dietetics professionals with multiple skills to properly respond to demands of the ageing society. In the late 1980s, the dietetics and nutrition discipline began emphasizing the insufficient geriatric curriculum and the need to expand internship programs and coordinated undergraduate programs to include additional nutrition and aging education (7). Dietetics and nutritional educators had conducted diverse studies regarding inclusion of geriatric nutrition, qualitative and quantitative improvements in aging curricular, emphasis in training gerontological nutritionists (8), delineating the importance of education for producing knowledgeable and sensitive professionals who are interested and effective at working with older adults.

However, previous studies that revealed nutrition students' limited knowledge, negative attitude, and low work preferences toward aging and older adults predicted shortages in well-prepared dietetics and nutrition students to work with older adults effectively (9). However, the students' attitudes on aging and the variables associated with students' interests in working with older persons could be modifiable through increasing students' knowledge about aging and by increasing opportunities for interactive experiences with older adults (10). Therefore, dietetic educators should intergrate appropriate information about the elderly into their courses to prepare students to meet the demands of the aging phenomenon.

Despite the need to prepare for future challenges of the aging population, there are few studies evaluating the dietetic students' attitudes and behavioral and intentions to work with the elderly, or efforts for the development of effective educational module to improve the students' competencies in working with the aging society in Korea. It is very resonable to evaluate the future dietitians' competences toward the elderly in order to focus on professional development efforts.

Therefore, we purposed to examine the attitutes and competencies of food and nutrition students and their attitutes towards working with and providing services for older adults. Also, this study identified the most critical factors and challenges for preparing students to work with older adults in Korea.

METHODS

The questionnaire evaluated knowledge about aging and the elderly, general attitudes toward the elderly, attitudes toward working with elderly employees and providing services to elderly, previous experiences, and intentions to work with and provide services to the elderly. The questionnaire statements about aging and the elderly statements were developed based on Kline, Scialfa, Stier, and Babbitt's and O'Hanlon, Camp, and Osofsky' study (11,12). A cumulative knowledge score was assigned one point for each correct response and zero point to each incorrect response. A cumulative score was determined with the maximum score being 20 points. The attitude section consisted of 23 items that measured attitudes toward elderly, attitudes toward working with elderly employees, and attitudes toward working for the elderly. Subjects were asked to respond to statements of behavioral intentions and preferences for working with the elderly with answers ranging from "strongly disagree" (1) to "strongly agree" (5) on a 5-point scale. Students were asked to respond multiple item questions to determine barriers to working with elderly. The fourth section asked about previous experiences with elderly and the fifth section requested socio-demographic data about the respondents. Demographic information about the participants included age, gender, ethnicity, and academic level.

A pilot test was conducted with 80 college students; measurement items had a good reliability. The questionnaire was modified to improve reliability and clarity of wording based on the results of pilot study.

The survey population was university students in four classes at southern university in Korea. One of researchers announced the purpose of this study and encouraged students to participate in this study prior to survey administration. A total of 314 questionnaires were completed. One hundred sixtyone of food and nutrition students completed surveys; 153 students majored in other studies.

Statistical analyses were performed using SPSS 12.0 for windows (13). In the first stage, descriptive analysis was performed on all measurement items. In addition, frequency analysis was performed to determine overall characteristics of students on each of the categorical questions, including several demographic variables. Student's *t*-test and ANOVA were conducted to compare means of knowledge and attitude toward elderly by gender, academic level, and previous experiences (aging courses taken, residency with elderly, internship experience in organizations which the majority of clients/customers were elderly, and frequent contact with elderly). Pearson correlation was applied to test for relationships between knowledge and attitudes toward elderly, working with elderly employees, and working for

elderly. Multiple regression analysis was performed to examine the influence of knowledge, previous experience, and attitude toward elderly on behavioral intentions to work with elderly and work in an organization where I can provide products and services to elderly clients/customers. The level of statistical significance was $p < 0.05$.

RESULTS

Demographics

One hundred and fifty eight (98%) of the inclass survey respondents were female, and three (2%) were male. The mean age of survey respondent was 20.9 years (SD 1.9 years) and more than half the students were juniors (Table 1). When asked about previous experience and relationships with the elderly, results showed that very few students had only chances to take courses that included information about the elderly or had previous contact with elderly (Table 1).

Table 1. Demographic characteristics of students majoring in food and nutrition (n=161)

Variables	Student respondents	
	N	%
Age (y)		
18~22	141	87.6
23~27	16	9.9
28~32	4	1.8
Gender		
Female	158	98.1
Male	3	1.9
Academic level		
Sophomore	46	28.6
Junior	90	55.9
Senior	25	15.6

Knowledge of aging, attitudes toward elderly, behavioral intentions, and work preference with elderly

Among the 161 students, the lowest score on the knowledge about aging and the elderly was 9 points out of a possible 20 points and the highest score was 16 points. The knowledge level for the majority of the students was 12.8 ± 1.67 out of maximum possible score of 20. The analysis of variance (ANOVA) and Student's *t*-test of mean knowledge of aging based on gender and academic level indicated that there were no significant differences among the different academic levels. In addition, knowledge of aging and elderly of student respondents was significantly different depending on residential experiences with elderly over 65 years of age ($p < 0.05$) (Table 2).

Students had neutral attitudes toward working with elderly employees and working for elderly (Table 3). Students had positive intentions to work with elderly employees, seek employment in an organization for elderly clients/customers, and seek opportunities for pos-

Table 2. Knowledge score of students majoring in food and nutrition on aging depending on students academic level and previous experiences (n=161)

	No.	Knowledge score[1] (mean ± SD)	Significance
Academic level			
Sophomore	46	12.24 ± 1.57	.75
Junior	90	12.63 ± 1.55	.52
Senior	25	12.34 ± 1.88	.19
Completed aging courses			
Yes	6	12.84 ± 0.98	.18
No	155	12.78 ± 1.68	
Took courses included information about elderly			
Yes	99	12.84 ± 1.65	.42
No	62	12.67 ± 1.68	
Lived with adults >65 years			
Yes	35	12.93 ± 1.21	.02*
No	126	12.03 ± 1.77	
Internship experience			
Yes	9	12.44 ± 1.42	.35
No	151	12.81 ± 1.68	
Frequent interaction with adults >65 years			
Yes	10	12.60 ± 1.90	.65
No	151	12.79 ± 1.65	

[1]A cumulative score was determined with the maximum score being 20 points.
*$p < 0.05$.

Table 3. Attitudes, behavioral intentions, and preferences of students majoring in food and nutrition for the working with the elderly employees and providing services to the elderly (n=161)

	Disagree		Neutral		Agree		Mean±SD
	N	%	N	%	N	%	
Attitudes on the elderly (α = 0.70)							
Most elderly are set in their ways	29	16.8	64	39.8	68	42.2	3.27±0.84
Most elderly are bored	27	16.8	48	29.8	86	53.4	2.56±0.94
Most elderly are apt to complain	61	37.9	64	39.8	36	22.3	3.17±0.84
Most elderly can learn new things	96	17.4	50	42.2	15	40.4	3.32±0.87
People become wiser as they age	39	24.2	66	41.0	56	34.8	3.11±0.87
Most elderly can not work effectively	76	47.2	64	39.8	21	13.0	2.61±0.81
Most elderly are in good health	107	66.5	47	29.2	7	4.3	2.27±0.71
Most elderly do not adapt when they relocate to a new environment	36	22.3	41	25.5	84	52.2	3.32±0.89
Most elderly can perform as well as young people in jobs	70	43.5	68	42.2	23	14.2	2.69±0.79
Most elderly take longer to recover from physical and psychological stress	18	11.2	51	31.7	92	57.1	3.58±0.85
Attitudes on working with elderly employees (α =0.63)							
Working with elderly employees							
···makes my job interesting	46	28.6	77	47.8	38	23.6	2.95±0.82
···is depressing	103	64.0	47	29.2	11	6.9	3.68±0.83
···is stressful	115	71.4	36	22.4	10	6.2	3.84±0.87
···is meaningful	9	5.6	60	37.3	92	57.1	3.59±0.76
···is prestigious	40	24.9	101	62.7	20	12.5	2.88±0.69
I have the ability to work with elderly employees	10	6.2	72	44.7	79	49.1	3.50±0.73
Attitudes on working for the elderly (α = 0.71)							
Working for the elderly							
···makes my job interesting	46	30.5	72	44.7	43	26.7	2.99±0.84
···is depressing	111	68.9	40	24.8	10	3.0	3.73±0.72
···is stressful	105	65.2	47	29.2	9	5.6	3.78±0.81
···is meaningful	10	6.2	76	47.2	75	46.6	3.47±0.73
···is prestigious	22	13.7	109	81.4	30	18.6	3.07±0.64
I have the ability to work for the elderly	81	50.3	47	29.2	33	20.5	2.63±1.00
It is hard to make money working for organizations providing products and services for the elderly	17	10.6	88	54.7	56	34.7	3.26±0.77
Behavioral Intentions (α =0.79)							
I intend to work with elderly employees	20	12.4	75	46.6	60	41.0	3.35±0.80
I intend to seek employment in an organization where I can provide products and services to elderly clients/customers	27	16.8	70	43.5	64	39.8	3.27±0.84
I intend to seek opportunities for positive social interaction with the elderly	10	6.2	52	32.3	99	61.5	3.67±0.79
Work Preference with Elderly (α =0.68)							
I prefer to work with elderly employees	63	39.1	79	49.1	19	11.8	2.71±0.72
I prefer to work in an organization where I can provide products and services to elderly clients/customers	71	44.1	80	49.7	10	6.2	2.58±0.69

Scale: 5-point scale from 1-strongly disagree to 5-strongly agree.

itive social interaction with the elderly. However, students did respond positively for working with elderly employees (Table 3).

The reliability of statements measuring attitudes was acceptable as a coefficient alpha >0.70 (14). Results of ANOVA showed no significant differences in attitudes toward elderly, working with elderly employees, or working for elderly at the academic level. However, attitude toward working for elderly was significantly different for those having taken aging courses or having past frequent contact with elderly. Attitudes towards working with elderly employees were also significantly different based on residential experience with elderly and frequent contact with elderly over 65 years of age (Table 4).

Multiple regression analysis was performed to examine the influence of knowledge, previous experience, attitudes toward elderly, attitudes toward working with elderly employees, and attitudes toward working for elderly as expressed by behavioral intentions to work with elderly employees and work in an organization for elderly clients/customers (Table 5). Results of multiple regression analysis found that knowledge was not a predictor of intentions to work with elderly employees

Table 4. Food and nutrition students attitudes depending on students demographic profiles and previous experiences (n=161)

	N	Attitude 1[1] (mean±SD)	Attitude 2[2] (mean±SD)	Attitude 3[3] (mean±SD)
Previous experiences				
Completed aging courses	6	3.12±0.50	3.15±0.62	3.58±0.35*
Took courses rncluded information about elderly	99	2.99±0.52	3.17±0.15	3.02±0.45
Lived with adults >65 years	35	3.00±0.51	3.55±0.40*	3.16±0.35
Internship experience	9	3.07±0.48	3.00±0.41	3.11±0.48
Frequent interaction with adults >65 years	10	2.87±0.35	3.63±0.52*	3.49±0.26*

[1]Attitude 1=attitudes toward elderly.
[2]Attitude 2=attitudes toward working with elderly employees.
[3]Attitude 3=attitudes toward working for elderly.
Scale: 5-point scale from 1-strongly disagree, 5-strongly agree.
*$p<0.05$.

Table 5. Multiple regression analysis for variables predicting behavioral intentions and work preferences (n=161)

	Unstandardized coefficients		Standardized coefficients	
Variable*	B	Std. error	Beta	R^2
Dependent variable: Behavioral intention 1[1]				.23
Attitudes toward working with elderly	.710	.143	.381	
Attitudes toward elderly	.581	.212	.195	
Residential experiences with elderly >65	.412	.175	.182	
Dependent variable: Behavioral intention 2[2]				.38
Attitudes toward working with elderly	.614	.159	.306	
Attitudes toward elderly	.662	.212	.248	
Dependent variable: Work preference 1[3]				.18
Attitudes toward elderly	.620	.114	.365	
Attitudes toward working with elderly employees	.323	.147	.173	
Dependent variable: Work preference 2[4]				.19
Attitudes toward working for elderly	.613	.136	.268	

[1]Intentions to work with elderly employees (behavioral intention 1).
[2]Intentions to seek employments in an organization providing products and services to elderly clients (behavioral intention 2).
[3]Preferences to work with elderly employees (work preference 1).
[4]Preferences to work in an organization providing products and services to elderly clients (work preference 2).
*$p<0.01$.

or work in an organization for elderly clients/customers. However, attitudes toward working with elderly employees, attitudes toward elderly, residential experiences with elderly >65 years of age predicted the intentions to work with elderly employees. Attitudes about working with elderly employees and attitudes toward elderly influenced the intentions to work in the organizations to provide services to elderly. Attitudes toward elderly and working with elderly employees influenced the students' work preferences to work with elderly employees. Attitudes toward working for elderly influenced the preferences to provide services for elderly. Having taken courses including information about the elderly or internship experience with elderly over 65 years of age did not influence the respondents' intentions to work with or for the elderly, or for work preferences to work with and work for the elderly.

Barriers influencing work with elderly employees and elderly clients

When asked about the barriers influencing students not to work with elderly employees and work for the elderly clients, students responded with the following: indicated insufficient financial compensation (n=110), negative attitude toward the elderly (n=90), insufficient geriatric knowledge (n=73), public attitude toward elderly (n=73), insufficient learning opportunity (n=65), limited experience with healthy elderly (n=60), lack of role models (n=53), and lower status of work (n=44) (Table 6).

Table 6. Perceived barriers influencing intentions to work for the elderly of students majoring in food and nutrition

(n=161)

Variables	Student respondents[1)]	
	N	%
Limited experience with healthy elderly	60	37.3
Lack of role models	53	32.9
Insufficient learning opportunity	65	40.1
Negative attitude on the elderly	90	56.3
Lower status of work	44	27.3
Public attitude on the elderly	73	45.3
Insufficient financial compensation	110	68.6
Insufficient geriatric knowledge	73	45.3

[1)]Respondents could select one or more choices.

DISCUSSION

Although the importance and need for knowledge about the elderly have been emphasized in Korea, this study revealed students' low level of knowledge toward the elderly and aging. Previous studies (15-17) have also revealed deficiencies in knowledge about the needs of the aging population among medical, nursing, social work, and college students. A series of ANOVA revealed no performance differences in knowledge score for age and academic level. However, students' residential experiences with elderly >65 years influenced the knowledge level. Because the methods for measuring knowledge are highly disparate and generalized, it is difficult to compare with our results with other studies, even though the literature on student knowledge toward elderly is extensive. The findings of this study suggest that food and nutrition students' level of knowledge about elderly may need improvement. When students have greater knowledge about aging, it may be a reflection of positive attitudes toward the elderly (17).

The students surveyed in this study generally expressed positive attitude about working with and for the elderly, although they had a neutral general attitude toward elderly. There was a general agreement on the characteristics that students consistently selected. Older adults were seen as educable and wise, and working with them and for them was considered meaningful and interesting. Most of all, students agreed that they have the ability to work with and work for older adults. On the negative side, older adults were viewed as stubborn and unhealthy. Similar result for this findings can be seen in a study by Mosher-Ashley and Ball (18), who found students in four college undergraduate majors—business, psychology, nursing, and occupational therapy—had positive attitudes toward older adults such as knowledgeable, enjoyable to be with, and sociable but a negative attitude about their poor physical conditions. Moeller (19) and Panek (20) reported that students found the elderly to be rigid and inflexible, which is a similar negative attitude toward older adults found in this study.

There was no association between age and attitudes toward elderly in this study. Early studies by Mosher-Ashley and Ball (18), Arvey (21), and Paton et al. (22) also found that the age of respondents did not influence attitudes toward elderly. Additionally, we can find the supporting evidences in numerous studies that having previous experiences such as having a residence experience with an older person, positive personal experience with older persons, and professional interaction through participating gerontology course work, field experiences with older adults, and intergenerational programs associated with positive attitudes and interest in working with older persons (23-26). However, Riddick (27) reported that individuals who had a lot of contact with the elderly did not differ significantly in their attitudes toward older adults from those who had little and Alford et al. (16) pointed out that medical students learn negative attitudes toward older adults in medical school. Therefore, it is proposed that the quality of interaction with older persons, rather than the amount, methodological factors, or respondent's personal characteristics, would be more an important factor in influencing students' attitudes toward aging and elderly.

In previous studies, students' general attitudes toward elderly and aging were found to be associated with student interests in working with older persons (22,26). A majority of university students were found to have neutral or negative attitudes and a low preference to work with age specific older persons (9,28). Food and nutrition students surveyed in this study were found to have favorable intentions to work with elderly employees and provide services to older clients, even though they had unfavorable work preferences toward working with and working for the elderly. These results imply that a low preference for working with elderly does not necessarily reflect students' expectations of future behavior on job selection.

Barriers to working with and for the elderly most commonly listed by the students were: insufficient financial compensation, insufficient geriatric knowledge, negative attitude toward elderly, limited experience with healthy elderly; lower status of work was listed less frequently. These rankings were considerably different from those assigned by social work students or nursing students (15). Among the social workers, the lower status of working with problems of elderly, limited experience with healthy older adults, and fragmentation and discontinuities of service were identified most often; among nursing students, insufficient curriculum time and insufficient academic role models were reported as the greatest barriers. In addition, for medical students it was speculated that lack of interest in work with older people is due to the nature of work itself, the extra training required, and financial considerations. Among different disciplines, students have their own different barriers, because they will work in different professional fields and be confronted with different work environments. However, all of young professionals who have lower interests in working with and working for elderly report that it is due to a combination of factors involving various barriers, and no single factor is responsible.

To better understand the factors associated with student intentions of working with older employs and working for older clients, multiple regression analysis was performed by using variables such as knowledge, previous experience, attitudes toward elderly, attitudes to work with elderly and work in an organization for elderly clients/customers. The results found that knowledge was not a predictor of intentions to work with elderly or to work in an organization for elderly clients/customers. Paton et al. (22) reported similar finding, there was no association with knowledge and interest in working with older persons. However, attitude toward working with elderly employees was the only given predictor of behavioral intentions to work with elderly and provide services to elderly. Preference for working with elderly was also significantly influenced by attitudes toward working with elderly employees.

We can conclude, given the above findings, that increased knowledge of gerontology, although desirable, does not necessarily positively affect attitudes and the willingness to work with the elderly, previous experiences with older adults as clients/customers or coordinates had might directly as well as indirectly, through changes in attitudes toward older adults may influence their behavioral intentions toward working with older persons. Therefore, dietetic learning program should be reinforced by experiential learning, such as internship programs, intergenerational programs to enhance students' understanding of the ageing population and help them to be prepared for the changing demographic trends.

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1. Oh MC, Oh CK, Kim SH. 1996. Rapid analytical method of nitrite and nitrate in fish by ion chromatography. *J Food Sci Nutr* 1: 1-5.
2. Pomeranz Y. 1991. *Functional properties of food components.* 2nd ed. Academic Press Inc, New York. p 70.
3. Natarajan KR. 1980. Peanut protein ingredients: Preparation, properties and good uses. In *Advances in food research.* Gross E, Meinhofer J, eds. Academic Press, New York. Vol 26, p 215-220.
4. AOAC. 1980. *Official methods of analysis.* 14th ed. Association of official analytical chemists, Washington DC. p 31.
5. Das DJ, Barringer SA. 1997. Use of organic solvents for improving peel ability of tomatoes. Abstract No 13A-9 presented at 58th Annual Meeting of the Institute of Food Technologists. Orlando, FL, USA.
6. Pappas CP. 1979. Interactions between milk proteins in model systems with special reference to the influence of calcium, lactose and heat. *PhD Dissertation.* University of Reading, UK.
7. Doczi J, Ninger FC, Silverman HI. 1964. Composition for inhibiting pepsin activity and method of preparing same. *US Patent* 3,155,575.

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