Age Group and Health Status Effects on Health Behavior Change

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The authors explored health behavior change during 5 years, considering age/cohort, health status, and gender effects. The authors divided the sample (n = 1,064) into 4 age/cohort groups: young adults (n = 139; 19–42 years), middle-aged adults (n = 386; 43–62 years), young-old adults (n = 296; 63–72 years), and old-old adults (n = 243; 73+ years) and health status: cardiovascular disease and physical disability. Smoking and seat belt behaviors remained stable, whereas alcohol, food consumption, food preparation, physical activity, dental, and medical behaviors showed change. Change in health behaviors differed by age/cohort group and health status for food consumption, food preparation, and medical care, primarily showing negative change for old-old adults and positive change for individuals with cardiovascular disease. Health behavior interventions need to focus on the old-old, individuals with physical disability, and on smoking and seat belt use. These specific populations and behaviors need to be targeted to promote positive health behavior change, to limit future onsets of disability and morbidity, and to prevent the occurrence of premature death.

Index Terms: *aging, alcohol, exercise, health behavior change, health care, health status, nutrition, seat belt use, smoking*

Health behaviors are defined as "any behavior that people engage in spontaneously or that can be induced with the intention of alleviating the impact of potential health risks and hazards in their environment."[1] The study of health behaviors is of interest because of their potential for improving societal health conditions[2] and their effect on the maintenance of positive health status across age.[3] Health behaviors have specifically shown to positively influence cognitive performance, morbidity, mortality, and disability outcomes.[4–6] Better understanding of normative health behavior change and identifying antecedents of change can target individuals requiring intervention to induce positive health behavior change for improved health outcomes.

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Traditionally, health behavior change has been examined in an intervention context following the guidelines of health belief theorists; these theoretical frameworks often presume individuals' beliefs affect health behaviors.[7–11] However, we feel that when exploring normative health behavior change patterns outside of intervention contexts, health belief frameworks may not be an appropriate explanatory model. Nevertheless, the concept of personal health vulnerability in existing health belief models can be useful for explaining normative individual health behavior change. Personal health vulnerability can be perceived as an individual's level of health impairment, as denoted by an individual's health status. Having an adverse health condition, compared to a condition-free status, can represent an elevated level of personal health vulnerability that can cause behavioral change.[12] Thus, health status can directly affect health behavior change by influencing an individual's sense of vulnerability for morbidity and mortality.[13,14]

Furthermore, life course theory can be applied to explain developmental effects on health behavior change. Based on life course theory,[15] behavior change (including health behavior change) is thought to occur across the lifespan at varying rates contingent on the individual's position in the lifespan as well as personal and social associations specific to a given life stage (ie, cohort or period effects, developmental period, and distance to onset of morbidity or mortality).[16,17] For example, older individuals might be more inclined to engage in positive health behavior change to prevent poor health outcomes, due to their higher probability of death and morbidity compared to young individuals.[12,18] When using life course theory and health belief frameworks in combination to explore normative health behavior change across adults, one can assume that older individuals and individuals with poorer health status will display positive health behavior change due to their life stage and their higher vulnerability for further morbidity and premature mortality.

Our purpose in this study was to investigate normative health behavior change in the context of gender, health status, and age/cohort groups. We specifically investigated the following questions: (1) Do health behaviors change over time? (2) Does health behavior change differ by age/cohort groups? (3) Does health behavior change differ by health status? (4) Does health behavior change differ by gender? Despite the exploratory nature of our investigation, we expected to find that health behaviors would change over time, older individuals would display relatively more positive health behavior change, individuals with a health condition would display more positive health behavior change, and gender would affect health behavior change, but we formed no hypotheses concerning the directionality of the gender effects.

METHODS

Sample

The study sample consisted of 1,064 (male = 461; female = 603) Seattle Longitudinal Study (SLS) consenting participants in the 1993 (Time 1) and 1998 (Time 2) waves of the study. All participants were residents of the greater Seattle, Washington area and were recruited from the membership of the Group Health Cooperative of Puget Sound, a health maintenance organization (HMO). The main purpose of the research conducted in the SLS is to study various aspects of psychological development during the adult years. In 1956, 500 Group Health members were randomly selected to participate in the first study. They ranged in age from their early 20s to late 60s. The study has continued in 7-year intervals since: 1956, 1963, 1970, 1977, 1984, 1991, and 1998, with some off-wave data collections (eg, 1993). At each interval, the study researchers asked all persons who had previously participated in the study to participate again. In addition, at each 7-year interval, researchers asked a new group of people randomly selected from the Group Health membership to participate. Approximately 6,000 people have now participated at some time in this study. More detailed descriptions of SLS are available in previous publications.[19]

We categorized participants into 4 age/cohort groups: young adults (24–42 years, 13%), middle-aged adults (43–62 years, 36%), young-old adults (63–72 years, 29%), and old-old adults (73–91 years, 23%); these age groups were selected for consistency with earlier age/cohort groups employed in previous SLS research in health behaviors.[20–23] We also categorized participants into 4 health status groups: condition-free (69%), physical disability (DHS) only (9%), cardiovascular disease (CHS) only (17%), and a comorbid group with both physical disability and cardiovascular disease (5%). Table 1 depicts age, education, and income by health status and gender breakdowns for the total sample. We did not include ethnicity because 95% of the sample was white.

All study participants provided voluntary written consent allowing the interview to take place and the use of their information for research. The researchers acquired written consent during each time point of the Seattle Longitudinal Study with the understanding that all research data would remain unidentified throughout analysis and publication. Participants retained 1 copy of the consent for their own records and the other copy was securely stored.

Assessments

The researchers gave participants in the 1993 wave of the Seattle Longitudinal Study the Health Behavior Questionnaire (HBQ) as a mail survey. Researchers gave participants assessed in 1998 the HBQ as part of an interview and homework, associated with a larger test battery consisting of 29 tests. From the larger 1998 battery, we used a subset of measures in the present study to assess health behaviors and demographic variables. We assessed cardiovascular disease status using 1992–1994 medical records from the HMO and disability health status using the 1993 Health Behavior Questionnaire.

Health Status

We based the conceptualization of the cardiovascular/heart disease classification on comprehensive cardiovascular conditions listed in the International Classification of Disease, version 9, (ICD-9). We assessed cardiovascular health status (CHS) using the HMO records of heart or cardiovascular disease codes. We selected hypertensive, ischemic,

TABLE 1. Demographics for Total Sample by Gender and Health Status

Group	Total	Age (y) Mean	Age (y) Range	Age (y) *SD*	Education (y) Mean	Education (y) Range	Education (y) *SD*	Income Mean ($)
Total	**1,064**	**60.40**	**24–91**	**14.37**	**15.38**	**7–20**	**2.71**	**48,299**
Free	734	57.66	24–91	14.29	15.64	7–20	2.67	51,149
DHS	99	63.14	24–88	15.32	15.09	10–20	2.61	40,349
CHS	181	66.34	28–86	11.05	14.88	8–20	2.70	45,899
Comorbid	50	73.72	49–88	8.49	13.94	8–20	2.80	24,799
Men	**461**	**60.15**	**24–89**	**14.20**	**15.86**	**7–20**	**2.83**	**54,149**
Free	316	57.55	24–89	14.09	16.10	7–20	2.78	55,449
DHS	27	58.40	28–86	17.93	15.14	10–20	3.13	54,799
CHS	100	66.53	43–86	10.73	15.46	8–20	2.76	52,499
Comorbid	18	72.88	49–86	8.54	14.88	8–20	3.17	39,149
Women	**603**	**60.60**	**24–91**	**14.52**	**15.02**	**8–20**	**2.56**	**43,749**
Free	418	57.74	26–91	14.45	15.30	10–20	2.53	47,849
DHS	72	64.91	24–88	13.95	15.06	12–20	2.41	35,049
CHS	81	66.11	28–85	11.49	14.17	8–20	2.46	37,649
Comorbid	32	74.18	52–80	8.57	13.40	8–20	2.46	25,149

Note. Free = cardiovascular disease and disability free; DHS = individuals with disability at time 1; CHS = individuals with cardiovascular disease at time 1; Comorbid = individuals with cardiovascular disease and disability at time 1; *SD* = standard deviation.

cerebrovascular, and arterial diseases because they were frequently used to define heart or cardiovascular diseases in the literature.[24–29] We identified individuals with cardiovascular disease as having a cardiovascular/heart disease diagnosis prior to and at the time of the 1993 health behavior assessment.

We assessed the second condition, physical disability (DHS), using responses to 3 self-report questions (eg, frequency of falls, level of difficulty when walking, and level of external assistance required when walking). We adapted physical disability criteria from classifications found in the literature for physical impairment[3,30,31] and falls.[32] Individuals with physical disability indicated in the 1993 health behavior measurement that they had walking difficulty sometimes or more frequently, had 3 falls or more, or required walking assistance. Individuals free of physical disability indicated in the 1993 health behavior measurement walking difficulty seldom or less frequently, had 2 falls or less, and never required walking assistance.

Health Behaviors Domain Scores

The 8 health behavior domain scores were *smoking abstention* (ie, cumulative change or changes in smoking status over time, current smoking status), *alcohol moderation* (ie, consumption of alcohol last week), *food consumption* (ie, consumption of caffeinated beverages in an average day, cholesterol and fat consumption, cholesterol consumption), *food preparation* (ie, sodium monitoring, fat monitoring, sodium consumption, fat consumption), *physical activity* (ie, physical exercise, sleep), *seat belt use* (ie, seat belt use in town and on the highway), *dental care* (ie, frequency of teeth brushing, teeth flossing, and dentist visits), and *medical care* (ie, frequency of physician contact; hospitalization; hearing correction; eye vision correction; vision monitoring; hearing monitoring; aid for bowel movements; flu shots; blood pressure monitoring; blood pressure medication usage; monitoring cholesterol; medical check-ups; aspirin use for cardiovascular risk; aspirin use for pain; colorectal exam; breast or prostate exam; cervical, uterus, or ovarian exam; advanced directives and living wills). Higher scores represented the positive spectrum of the specified health behavior domain.

We based the health behavior domains on results from a previous factor analysis conducted in the Seattle Longitudinal Study that identified 8 unique health behavior factors.[33] However, because we found that the 8-factor structure was not time invariant,[34] we created weighted health behavior domain composite scores based on expert importance ratings for cardiovascular and disability criteria. This article only focuses on the cardiovascular criteria, because there were no significant differences in change based on different criteria.

Demographics

We obtained information on age, gender, education, and incomes from the 1998 Life Complexity Inventory (LCI) self-report questionnaire,[35] the most proximal point to the health behavior measurement.

Selection of the Sample and Attrition

From the 1,638 participants who had responded to the 1993 mail distribution of the Health Behavior Questionnaire (HBQ), 1,064 participants returned for follow-up. The returning subsample represents 65% of the original longitudinal sample. We only used the returning subsample in the current investigation. To assess attrition effects, we conducted multivariate analyses of variance (MANOVAs) to assess whether there were group differences in mean age, gender, and education between the original sample and the returning sample. We found significant mean differences for age ($p > .05$; mean difference = 1.42) and education ($p > .001$; mean difference = .42). Adjusted means indicated the sample of returning individuals as a whole represented a younger and a more educated sample, compared with the baseline sample. In addition, we compared demographics and 1993 health behavior levels between 1998 returning individuals and those lost to attrition. Analyses indicated there were significant differences for age ($p > .001$), education ($p > .001$), smoking ($p > .001$), food consumption ($p > .001$), exercise ($p > .001$), seat belt use ($p > .01$), and dental care ($p > .01$). We did not find significant differences for alcohol, food preparation, and medical checkups. The returning individuals, as compared to those lost to attrition, were younger and better educated and had better smoking, food consumption, exercise, seat belt use, and dental behaviors.

Analysis Summary

To examine health behavior change across domains and subgroups, we standardized all the health behavior domain scores with a mean = 50 and $SD = 10$. We analyzed frequencies to examine change in health behaviors over time. We used Repeated Measures MANOVAs to examine whether there were significant health behavior changes and whether gender, age/cohort, and health status groups have differing change, excluding individuals without medical data and young adults, due to limited comorbidity.

RESULTS

Frequency distributions showed smoking behaviors and seat belt use remained relatively stable, whereas alcohol moderation, food consumption, food preparation, physical activity, dental care, and medical care show normally distributed change during the 5-year time span. The Repeated Measures MANOVA examining Time × Health Behavior Domains × Gender × Age/Cohort Group health status model indicated significant effects for Time × Age/Cohort Group ($p < .01$), Time × Domain ($p < .05$), Time × Domain × Age/Cohort Group ($p < .01$), and Time × Domain × Age/Cohort Group × Health Status ($p < .01$) (Table 2). These results indicate that health behaviors changed uniquely by domain, change was significantly different in age/cohort groups, change significantly differed in health status groups, and change did not significantly differ across gender. We conducted follow-up tests to determine which health behavior domains' change significantly differed by Age/Cohort Group × Health Status Group, and how that change varied across age and health status groups in that specified domain. Results indicated that food consumption ($p < .05$), food preparation ($p < .01$), and medical care ($p < .01$) domain changes were significantly affected by Age/Cohort Group × Health Status.

FOOD CONSUMPTION FOLLOW-UPS

Young-Old Adults

Food consumption change in young-old individuals with comorbidity (ie, cardiovascular and physical disability) significantly differed with individuals in less severe health status groups. Figure 1 depicts food consumption change for young-old adults by health status ($p < .05$), where food consumption change increased for comorbid individuals whereas it remained relatively stable for individuals in all the other health status groups. This implies that, over time, young-old comorbid individuals consumed less caffeine and cholesterol or fat products.

Old-Old Adults

Food consumption change in old-old individuals with cardiovascular disease significantly differed in condition-free ($p < .05$) and physical disability ($p < .01$) health status groups. Figure 2 depicts food consumption change for old-old adults by health status; health status for individuals with cardiovascular disease decreased whereas it increased for condition-free and physical disability groups. Over time, old-old individuals with cardiovascular disease consumed more caffeine and cholesterol or fat products, whereas members of the physical disability health status group and condition-free group had less consumption of caffeine and cholesterol or fat products.

Cardiovascular Disease Group

Food consumption change in old-old individuals with cardiovascular disease differed significantly from the younger

TABLE 2. Health Behavior Change Model 2 (2 [Time Points] × 8 [Health Behavior Domains] × 2 [Gender] × 3 [Age/Cohort Groups] × 2 [Health Status])

Source	*df*	Type III SS	*MS*	*F*
Time	1	106.00	106.00	2.11
Time × Gender	1	21.73	21.73	0.43
Time × Age/Cohort Group	2	402.97	201.48	4.00*
Time × Age/Cohort Group × Gender	2	116.31	58.15	1.16
Time × Health Status	3	96.03	32.01	0.64
Time × Gender × Health Status	3	267.57	89.19	1.77
Time × Age/Cohort Group × Health Status	6	389.86	64.97	1.29
Time × Gender × Age/Cohort Group × Health Status	6	439.10	73.18	1.45
Error (Time)	841	42,340.32	50.34	—
Time × Domain	7	736.89	105.27	2.56*
Time × Domians × Gender	7	349.10	49.87	1.21
Time × Domains × Age/Cohort Group	14	1,623.57	115.96	2.82***
Time × Domains × Gender × Age/Cohort Group	14	839.55	59.96	1.46
Time × Domains × Health Status	21	1,327.34	63.20	1.53
Time × Domains × Gender × Health Status	21	547.41	26.06	0.63
Time × Domains × Age/Cohort Group × Health Status	42	3,014.73	71.77	1.74**
Time × Domains × Gender × Age/Cohort Group × Health Status	42	2,050.64	48.82	1.19
Error (Time × Domain)	5887	242,456.86	41.18	—

*$p < .05$. **$p < .01$. ***$p < .001$.

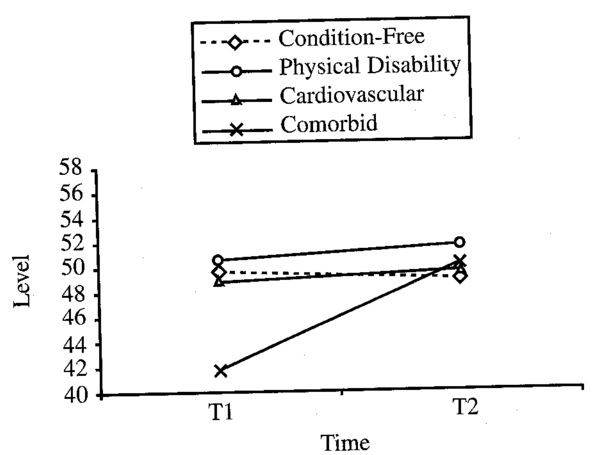

FIGURE 1. Food consumption change in young-old group.

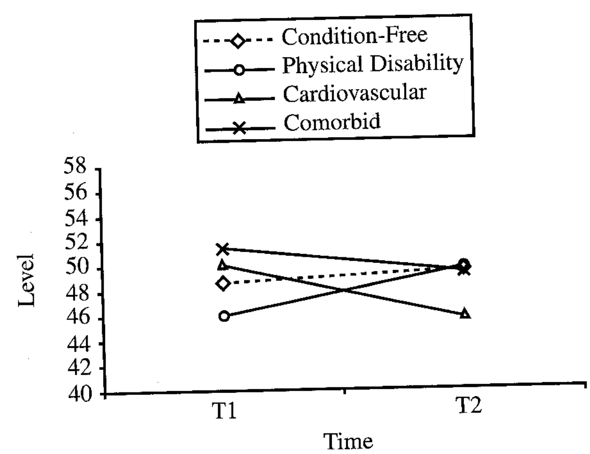

FIGURE 2. Food consumption change in old-old group.

age/cohort groups ($p < .01$). Figure 3 depicts food consumption change for the cardiovascular group by age/cohort group; old-old individuals decreased whereas both middle-age and young-old adults showed some improvement. This implies that, over time, among cardiovascular disease individuals, old-old adults consumed more caffeine and cholesterol or fat products, whereas younger individuals had less consumption of caffeine and cholesterol or fat products.

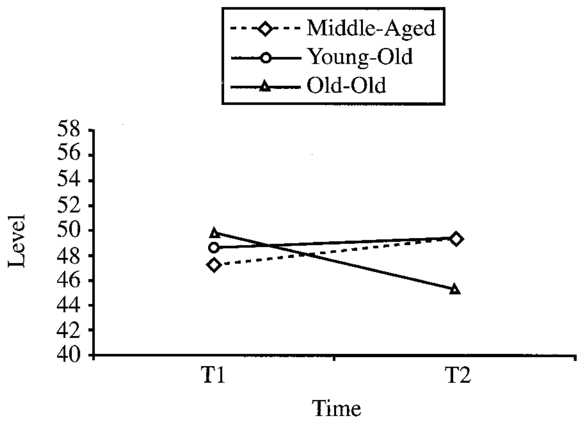

FIGURE 3. Food consumption change in cardiovascular group.

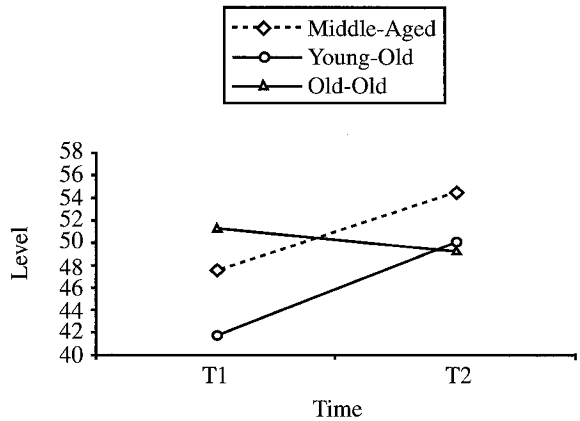

FIGURE 4. Food consumption change in comorbid group.

Comorbid Group

Food consumption change in old-old comorbid individuals significantly differed from young-old adults ($p < .01$). Figure 4 depicts food consumption change for the comorbid group by age/cohort group; young-old individuals' consumption increased whereas old-old individuals' consumption decreased. This implies that, over time, among comorbid individuals, old-old adults consumed more caffeine and cholesterol or fat products, whereas young-old individuals had less consumption of caffeine and cholesterol or fat products.

FOOD PREPARATION FOLLOW-UPS

Young-Old Adults

Food preparation change in young-old individuals with physical disabilities differed significantly with condition-free ($p < .05$) individuals. Figure 5 depicts food preparation change for young-old adults by health status; food preparation for individuals with physical disability decreased whereas, for condition-free individuals, it increased. This implies that, over time, young-old individuals with physical disability had poorer food monitoring or preparation, whereas condition-free individuals had better food monitoring or preparation.

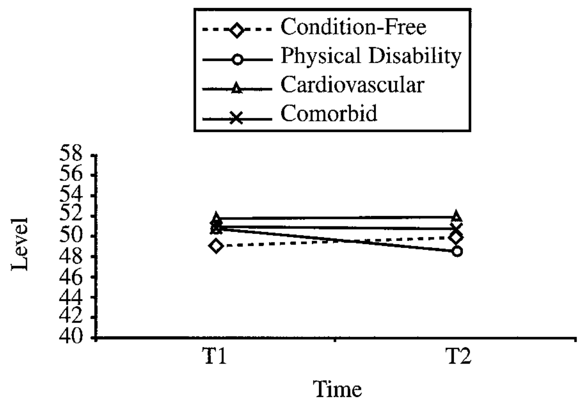

FIGURE 5. Food preparation change in young-old group.

Old-Old Adults

Food preparation change in old-old individuals with physical disabilities significantly varied with all other health status groups ($p < .01$). Figure 6 depicts food preparation change for old-old adults by health status; food preparation for individuals with physical disability decreased and also decreased for condition-free and comorbid individuals, but at a smaller magnitude, whereas food preparation for individuals with cardiovascular disease increased. This implies that, over time, old-old individuals with physical disability had the most negative change in food monitoring or preparation.

Physical Disability Group

Food preparation change in old-old individuals with physical disabilities significantly differed from middle-aged adults ($p < .01$). Figure 7 depicts food preparation change in individuals with physical disability by age/cohort group, where change in old-old individuals decreased and remained stable in middle-aged adults with disabilities. This implies that, over

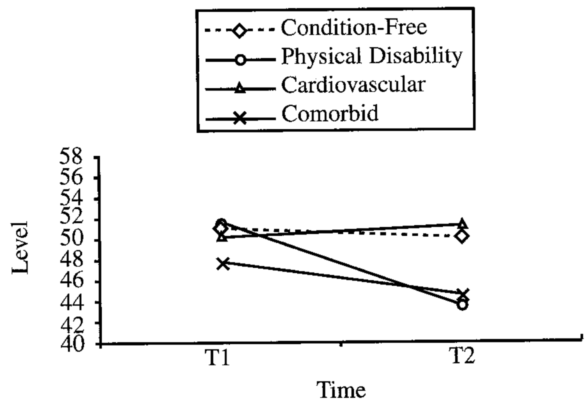

FIGURE 6. Food preparation change in old-old group.

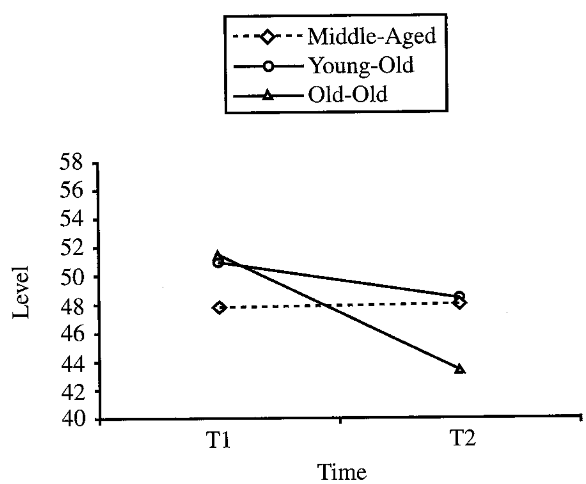

FIGURE 7. Food preparation change in physical disability group.

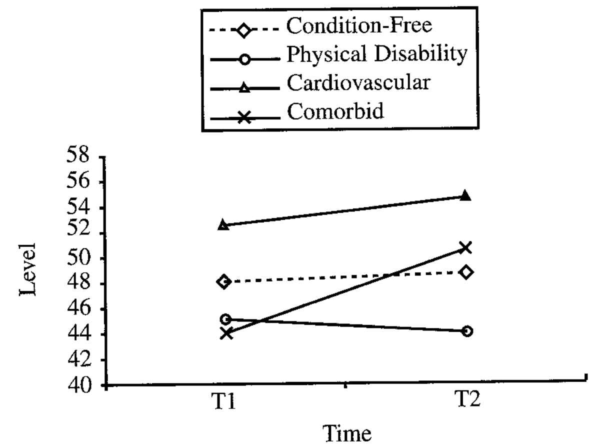

FIGURE 8. Medical care change in middle-age group.

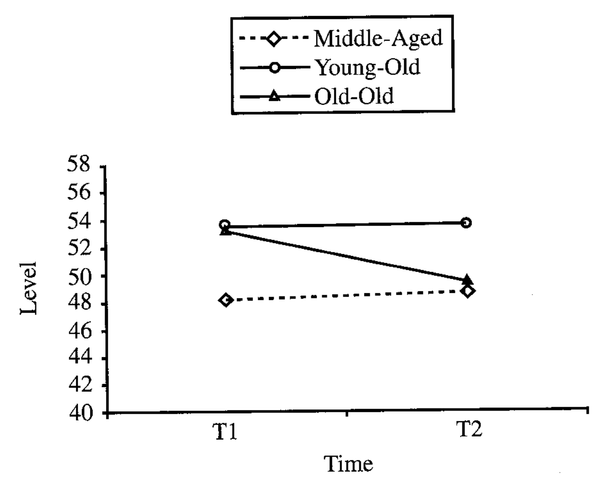

FIGURE 9. Medical care change in condition-free group.

time, food monitoring and preparation for old-old individuals decreased and for middle-aged adults, it remained stable.

MEDICAL CARE FOLLOW-UPS

Middle-Aged Adults

Medical care change in middle-age individuals with physical disabilities differed significantly from individuals with cardiovascular disease ($p < .05$). Figure 8 depicts medical care change for middle-aged adults by health status; medical care change for individuals with physical disability decreased whereas it increased for cardiovascular disease individuals. This implies that, over time, middle-aged individuals with physical disability had less frequent doctor visits or checkups, whereas individuals with cardiovascular disease had more frequent doctor visits or checkups.

Condition-Free Group

Medical care change in old-old condition-free individuals differed significantly from younger age/cohort groups ($p < .01$). Figure 9 depicts medical care change for condition-free adults by age/cohort group; medical care for old-old adults decreased, whereas it remained relatively stable for younger adults. This implies that, over time, old-old condition-free individuals had less frequent doctor visits or checkups, whereas younger individuals had stable levels of doctor visits or checkups.

Cardiovascular Group

Medical care change in middle-aged cardiovascular disease individuals differed significantly with older age/cohort groups ($p < .05$). Figure 10 depicts medical care change for adults with cardiovascular disease by age/cohort group; medical care for middle-aged adults increased whereas it decreased for older adults. This implies that, over time, middle-aged individuals with cardiovascular disease had more regular doctor visits or checkups, whereas older individuals had fewer doctor visits or checkups.

DISCUSSION

The focus of this study was driven by the concept that leading a healthy lifestyle can lead to compression of morbidity (delaying the onset of disease) in old age, and that it is never too early or late to begin leading a healthy lifestyle to avoid negative physical and psychological outcomes throughout life.[1–6] The findings of this study add to existing empirical research on the development of health behaviors and specifically add to the limited research covering a wide age range of adults in a nonintervention context. Using an age and health status–specific approach to examine health behavior change in this study, we were able to identify similarities and differences in health status effects on change and highlight stages of the lifespan where possible interventions aimed at health behavior promotion might be most appropriate and most beneficial.

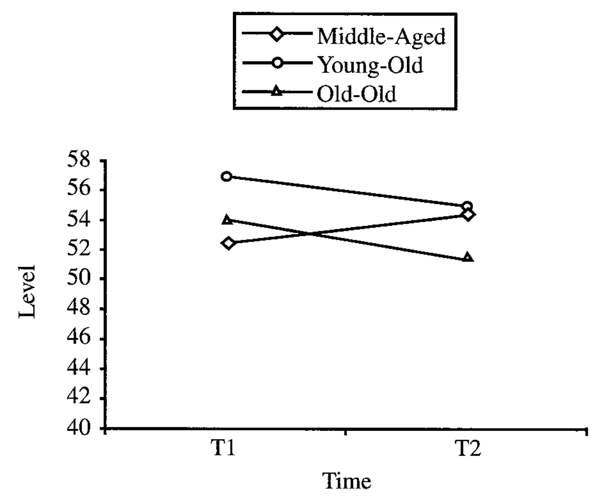

FIGURE 10. Medical care change in cardiovascular group.

The results of this study show change in most health behaviors, except for smoking and seat belt use. Age and health status only affect change in food consumption, food preparation, and use of medical care. For these health behaviors, old-old adults do not show positive change regardless of their health condition. Middle-aged and young-old adults with adverse health conditions do show positive health behavior changes. Younger individuals with no adverse health condition maintain reasonably stable health behavior levels. Physical disability in younger age/cohort groups appears to induce positive change with respect to food consumption. The effect of physical disability in inducing positive health behavior change is not as consistent as that shown in persons with cardiovascular disease or those with comorbidity (having cardiovascular disease and physical disability).

These findings imply that most health behaviors are reasonably dynamic, with the exception of smoking and seat belt use, which appear to be rigid variables. The rigid quality of smoking and seat belt use may parallel the stability in the public and scientific message promoting smoking cessation and seat belt use, or it may simply reflect the difficulty in producing change in these behaviors. Change in alcohol use, nutrition, physical activity, and health care utilization behaviors may be paralleling the consistently changing public or scientific message for the recommended behaviors and the flexibility of these variables. Therefore, individuals displaying negative change in alcohol use, nutrition, physical activity, and health care utilization behaviors and stability of poor levels of smoking and seat belt use are in need of some health behavior intervention. When such interventions are created, the history and dynamic or rigid qualities of the targeted health behavior need to be taken into consideration.

The study findings also suggest there may be stages of health behavior change linked with an individual's age and health status. Contrary to our expectations, health behavior change may represent an inverted U pattern, instead of the linear pattern we expected in which there would be improvement in health behaviors with advancing age and declining health.[12,15–18] Instead, we found that older individuals exhibited high levels of positive health behaviors at the beginning of our study and, over time, old-old adults appeared to experience negative health behavior change. Middle-aged adults generally had poorer health behavior levels compared to older individuals and poorer change compared to young-old adults, but more positive change as compared to the oldest age group. Young-old individuals displayed the most positive health behavior change and level, possibly implying young-old adulthood as the apex of health behavior development.

Despite the poor health behavior levels of the middle-aged adults, their positive health behavior change may indicate conscious recognition of the validity of self-health management through health behaviors and they may be interested in reducing the risk of developing further disease or preventing premature mortality. Old-old adults having favorable health behaviors levels, accompanied by unfavorable health behavior change, may reveal their earlier recognition of the utility of self-health management through health behaviors, but may later develop less favorable beliefs of the importance of engaging in positive health behaviors and may simply be attempting to live the remaining part of their life according to their personal system of life satisfaction instead of one promulgated by health scientists. In other words, health behavior change patterns in the oldest adults may be caused by possible survivor effect. Old-old adults may not feel the same sense of urgency to make positive changes in their health behaviors because they have already lived past the average life span.

The study findings partially supported our notion that a health condition affects positive health behavior change.[15–17] Having a health condition induced middle-aged and young-old adults to improve their health behaviors. However, this relationship was weaker for individuals with physical disability only, as compared to individuals with either cardiovascular disease or cardiovascular disease in combination with physical disability. These results could imply that the perception of personal health vulnerability matched with a desire to prevent or avoid further negative health consequences may occur only in middle-aged and young-old adults with adverse health conditions. Old-old adults experienced negative health behavior change, regardless of health condition, implying either the absence of personal health vulnerability or a lack of desire to prevent or avoid further negative health consequences by improving their health behaviors. However, the limitation of physical disability at producing positive health behavior change may be two-fold. Having a physical disability may impair one's ability to positively change one's health behaviors because of the characteristics of one's condition. However, it is also possible that health behavior guidelines established for cardiovascular disease patients may send a stronger and clearer message for health behavior promotion, as compared to physical disability.

It is surprising that gender did not affect health behavior change. This finding contradicts our original hypothesis and the health behavior literature.[36] Because most existing health behavior research does not examine normative change over 5 years, this effect may be unique to the methodology of this study. Because of the absence of gender effects on health behavior change, we conclude that health behavior interventions do not need to be specifically tailored more for men or women; instead, health behaviors interventions can be similarly promoted across gender. However, although health behavior change did not differ across gender, there could be differences in the mechanisms of health behavior change (ie, personality, social network structure, demographics, health beliefs, and comorbidity) that need to be considered when creating interventions.

CONCLUSIONS

Using health belief and life course perspectives was effective in examining health behavior change for individuals across their lifespan. Generally, assumptions about health behavior change could not be generalized to all health behavior domains. Frequencies of change indicated smoking abstention and seat belt use were stable, whereas alcohol moderation, food consumption, food preparation, physical activity, dental care, and medical care were dynamic. In addition, change in health behaviors over time differed by age/cohort group and health status for food consumption, food preparation, and medical care, indicating poor health behavior change in older adults and adults with disabilities and positive health behavior change in younger individuals with a cardiovascular diagnosis. Future health behavior interventions need to focus on the old-old age group and individuals with physical disabilities to promote positive health behavior change and to limit future onsets of further disability, morbidity, and even premature death. Future work can explore health behavior change with respect to other health conditions (ie, diabetes, depression, cognitive impairment, osteoporosis, liver disease, obesity, cancer), in alternative samples to examine the generalizability of the current findings, and use varying methodologies to challenge the presence of a possible self-report bias in this study. Future studies should examine the effects of individual characteristics (eg, personality, social network structure, demographics, health beliefs, comorbidity), in addition to age and health status, as predictors of varying health behavior trajectories to further understand health behavior change. Additional research can elucidate the dynamic health behavior process to promote positive aging behaviors.

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NOTE

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