Social Cognitive Theory and Healthy Lifestyle among Elderly

T M U

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ABSTRACT

Aims The elderly population, both globally and in Iran, is increasing. The well-being of the elderly is a crucial aspect of health. This study aimed to examine the impact of social cognitive determinants on the healthy lifestyle of older adults.

Instrument & Methods This cross-sectional study was conducted in 2021, involving 455 elderly in Rasht City, Guilan Province. Data on demographic characteristics, lifestyle information, and constructs of the social cognitive theory were collected.

Findings The majority of participants had an average lifestyle. Among the various components, prevention received the highest score for a healthy lifestyle among the elderly, while physical activity received the lowest score. Among the constructs of the social cognitive theory, outcome expectancies had the highest mean score, while self-efficacy had the lowest mean score. The correlation analysis revealed significant and direct relationships between the constructs of the cognitive theory and healthy lifestyle scores among the elderly. Awareness, self-regulation, social support, and outcome expectations significantly predicted lifestyle behavior.

Conclusion The social cognitive theory holds predictive value for understanding the lifestyle of older adults.

Keywords Life Style; Aged; Health

CITATION LINKS

[1] World report on ageing and ... [2] World population ageing ... [3] The results of the 2016 national population and housing ... [4] The effectiveness of a community-based health promotion program ... [5] Study of sense of coherence health promoting behavior in ... [6] Association of healthy habits beliefs and mortality in older adults ... [7] Health promotion behaviors and quality of life among community ... [8] The health-promoting lifestyle profile: Development ... [9] Promoting healthy ageing ... [10] Promoting healthy behaviors in older adults to optimize ... [11] Planning, implementing and evaluating health ... [12] Theory in a nutshell: A practical guide ... [13] A systematic review and meta-analysis of social cognitive ... [14] Social cognitive theory: An agentic ... [15] A shared mealtime approach to improving social and ... [16] School-based nutrition education interventions to promote healthy ... [17] Social foundations of thought and action ... [18] Healty lifestyle assessment questionnaire in ... [19] A cross-sectional study on the prevalence of chronic diseases ... [20] The self-efficacy scale: Construction ... [21] Social cognitive influences on physical activity ... [22] Social cognitive theory correlates of physical activity in ... [23] Older adults' exercise behavior: Roles of selected ... [24] Social cognitive theory mediators of physical activity in a lifestyle ... [25] Predictive factors related to self-care behaviors among type2 ... [26] Assessing the effect of family-based intervention ... [27] Relationship between adherence to health behaviors ... [28] The nutritional literacy of breast cancer patients ... [29] Mental health promotion of the elderly in nursing ... [30] Effects of a theory-based training program with ... [31] The association between health-promoting-lifestyles, and ... [32] Health promoting behaviors, health needs and associated ... [33] Survey of osteoporosis preventive behaviors among ... [34] Integrated theory of health behavior change ... [35] Prediction of self-care behaviors among diabetic ... [36] Factors explaining regular physical activity among Borkhar ... [37] A healthy lifestyle in old age and prospective change in ... [38] Self-efficacy: The exercise of ... [39] The study on health promoting lifestyle ... [40] Using of social cognitive theory: Predictors of physical ... [41] Applying social cognitive theory in predicting physical activity ... [42] A survey of social cognitive determinants of physical activity among ... [43] Effect of the intervention based on new communication technologies ... [44] Barriers, motivations, and preferences for physical activity among ...

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Introduction

Aging is a natural process that affects all individuals [1]. The proportion of elderly people in the world and Iran is steadily increasing, emphasizing the need to prioritize their health and well-being [2, 3]. Adopting a healthy lifestyle is crucial in maintaining the physical and mental health of the elderly [4]. Along with the rise in the elderly population, their health problems have become more prominent. Factors such as physical inactivity, reduced social networks, loss of loved ones, and mental and physical illnesses have made maintaining a healthy lifestyle a significant challenge for many older adults [5, 6].

A healthy lifestyle, characterized by behaviors like healthy eating, regular physical activity, stress management, and positive interpersonal relationships, plays a vital role in preventing or delaying disability and improving the quality of life among the elderly [7, 8]. Research conducted in the UK has shown that engaging in health-promoting behaviors can lead to healthy aging and enhanced quality of life for older adults [9, 10]. A physical activity intervention in Taiwan positively affects the health behaviors of older adults and encourages health-promoting lifestyles. These findings underscore the importance of adopting and promoting healthy behaviors as a key strategy for promoting well-being and maximizing the potential for successful aging in older populations [10].

The effective implementation of theories and models in health education and promotion programs is essential for their success [11]. Social cognitive theory (SCT) is a well-established theoretical framework that explains the dynamic relationship between behavior and individual, as well as environmental, factors [12]. SCT has been widely utilized in the study of physical activity behavior among various populations, including the elderly [13].

Numerous studies have substantiated the effectiveness of SCT in promoting a healthy lifestyle [14]. Guan *et al.* [15] found that applying SCT principles in an intervention targeting physical activity results in significant improvements in exercise behavior among older adults. Similarly, a systematic review conducted by Bagherniya *et al.* [16] revealed that SCT-based interventions are effective in promoting healthy eating behaviors and weight management in older populations. These studies highlight the robust evidence supporting the efficacy of SCT in facilitating behavior change and promoting healthy lifestyles among older adults. This theory of human motivation and action elucidates the internal and external processes (cognitive, situational, self-reflective, and self-regulatory) that influence psychosocial functioning [17].

By understanding the factors that influence the lifestyle of the elderly, health professionals can design effective educational programs to support active and happy aging [18]. The current study aimed to leverage the utility of SCT constructs as a theoretical basis for tailoring lifestyle programs to the elderly population.

Instrument and Methods

This cross-sectional study was conducted in Rasht City, the North of Iran, among individuals aged 60 years in 2021. The participants were selected from a total of 38 comprehensive health service centers and bases in Rasht City.

According to a similar study by Alaei *et al.* [19], the formula $N=z^2 p (1-p)/d^2$ was used for sample size calculation considering the first type error of 5%, with d being equal to 3%. Based on the formula, the required number of samples was calculated as 350 people, which increased to 420 people when considering the design effect equal to 1.2. Eventually, the sample size was determined to be 455. The required samples were selected using the relative classification method, where the number of participants selected from each center was proportional to the total number of elderly registered at that center based on the inclusion/exclusion criteria. The selected samples were contacted and invited to the considered center to complete the questionnaire. After explaining the research project's objectives and obtaining written consent, one of the project partners read the questionnaire to the elderly participants and recorded their opinions.

The initial selection of participants was done randomly using the SIB system and the household file numbers. Subsequent participants were then selected using a random number table to reach the desired sample size of 455. The data collection took place over a period of approximately 55 days, from December to the end of February 2019.

Questionnaires were completed through face-to-face interviews. Before filling out the questionnaires, the study's purpose was explained to the participants, and they were assured that their data would be kept confidential and used solely for research purposes. Written consent was obtained from all participants. Individuals aged 60 years and older, without movement problems, who expressed satisfaction with their participation, were included in the study, while incomplete questionnaire responses were considered as an exclusion criterion.

Research tools

The data collection tool consisted of three parts. The first part was demographic characteristics (13 questions), including age, height, weight, body mass index (BMI), level of education, sex, marital status, number of children, occupation, second job during retirement, total monthly income, history of chronic illness (respiratory disease, heart disease, blood pressure, blood fat, and diabetes), and living status.

The second part was the constructs of the SCT (48 questions), including the construct of awareness (nine questions) with a three-point Likert scoring

system (correct=two points, don't know=one point, and incorrect=zero), self-efficacy construct (six questions), outcome expectation (eight questions), outcome expectancies (nine questions), social support (seven questions), observational learning (three questions), and self-regulation structure (six questions). These six constructs were scored on a five-point Likert scale (completely agree=five, agree=four, have no opinion=three, disagree=two, and completely disagree=one). The self-efficacy construct was taken from Sherer's questionnaire [20]. The remaining questions in this section were developed from a researcher-made questionnaire and compiled using similar studies, library research, and the experiences of the research team.

The third part was the Healthy Lifestyle Questionnaire, adapted from the 26-question Ishaghi Scale for measuring the healthy lifestyle of the elderly, including eight prevention questions, nine nutrition questions, one physical activity question, five stress management questions, and three questions about social and interpersonal relationships. Using a five-point Likert scale for frequency evaluation, a score of one indicated never, two indicated rarely, three indicated sometimes, four indicated often, and five indicated always. The maximum score was 130, where a score between 26 and 76 indicated an unhealthy lifestyle, a score of 77-101 indicated an average lifestyle, and a score of 102-130 indicated a healthy lifestyle [18].

The opinions of ten faculty members (including one epidemiologist, one statistician, one nutritionist, and seven health education and health promotion specialists) were utilized to calculate the questionnaire content validity ratio (CVR). In the questionnaire containing the SCT constructs, the CVR values calculated were 0.78 for consciousness, one for self-efficacy, 0.97 for outcome expectation, 0.80 for outcome expectancies, 0.97 for the environment, 0.90 for observational learning, and one for self-regulation. The content validity index (CVI) values obtained were 0.96 for consciousness, one for self-efficacy (with one question omitted), 0.90 for outcome expectation (with one question omitted), 0.98 for outcome expectancies, one for the environment, 0.78 for observational learning, and one for self-regulation. Mean values above 0.8 were also obtained for the reliability coefficient of consciousness (0.77), self-efficacy (0.91), outcome expectation (0.91), outcome expectancies (0.82), environment (0.87), observational learning (0.81), and self-regulation (0.83).

In the Healthy Lifestyle Questionnaire, the CVR values were 0.97 for prevention, 0.95 for nutrition, one for exercise, 0.88 for stress management, and one for social and interpersonal relationships. The CVI values were calculated as one for the prevention domain, 0.90 for the nutrition domain, 0.90 for the exercise domain, one for the stress management domain, and one for social relations and interpersonal relationships. Formal validity was assessed in terms of text, grammar, and editing. A pilot study was completed with 30 elderly living in Rasht to evaluate the questionnaire's reliability, which was confirmed.

Statistical analysis

Statistical analysis was performed using R software 4.1.2 and SPSS 22.0. Qualitative variables were expressed as numbers (percentages), while quantitative variables were expressed as mean and standard deviation. The Kolmogorov-Smirnov test was used to evaluate the normality of the data. The Spearman correlation coefficient was used to determine the relationship between the quantitative studied variables. All analyses were performed two-sided, and a significance level was considered at 0.05. The Shapiro-Wilk test was used to assess the normal distribution of age and BMI. An independent t-test was used to compare quantitative variables between groups. The Chi-squared and Fisher's exact tests were used to examine the relative distribution of patients assigned to different categories of qualitative variables.

Findings

Out of the 455 elderly participants in the study, 247 (54.3%) were female. Regarding age, 56.7% of the elderly were in the age group of 60-69 years (young-old), and 33.6% were in the age group of 70-79 years (middle-old). Also, 26.4% of the participants had a diploma, 75.4% were married, 71.4% had more than two children, 45.5% were retired, 47% had a monthly income of more than \$110, and 67.5% had at least one chronic disease. In addition, 54.5% of the elderly were living with their spouse at the time of answering the questionnaire. In terms of BMI, 42.0% were overweight. The results indicated that the healthy lifestyle score was associated with education, occupation, income level, and living status.

Elderly participants who had attained a higher level of education demonstrated higher lifestyle scores. As income increased, the lifestyle score increased as well. Additionally, the elderly who resided with their spouse and family exhibited a higher quality of life score (Table 1).

Most participants (60.9%) were found to have a healthy lifestyle. Among the various components, prevention had the highest balanced score (0-100) for a healthy lifestyle in the elderly, while physical activity had the lowest score. Outcome expectancies had the highest average score at 80.7%, while the self-efficacy structure had the lowest average score at 60.2% in the constructs of SCT. Regarding the correlation between SCT constructs and healthy lifestyle scores in the elderly, all correlations were significant and direct (Table 2).

The strongest correlation between healthy lifestyle and SCT constructs was found in the self-regulation construct (r=0.48; p<0.001), while the weakest was

found in the awareness construct (r=0.21; p<0.001). Additionally, the highest correlation was observed between SCT constructs, specifically between social support and observational learning (r=0.77; p<0.001), while the lowest correlation was found between awareness & self-efficacy (r=0.16; p=0.001).

Table 1. Frequency of socio-demographic characteristics and comparison of the lifestyle scores in the elderly

Parameter		Frequency	Mean lifestyle	p-Value
Age (year)	60-6	258(56.7)	105.3±16.3	0.578‡
	70-79	153(33.6)	106.4±14.3	
	>80	44(9.7)	103.1±16.6	
Gender	Male	208(45.7)	105.9±16.1	0.490†
	Female	247(54.3)	105.1±15.4	
Body mass index (kg/m²)	Normal	156(34.3)	105.8±16.9	0.717‡
	Overweight	191(42.0)	105.4±15.3	
	Obese	108(23.7)	105.2±14.7	
Education	Illiterate	67(14.7)	102.1±17.0	<0.001‡
	Reading and writing	39(8.6)	100.8±10.2	
	Elementary	89(19.6)	105.0±14.9	
	High school	56(12.3)	101.9±15.8	
	Diploma	120(26.4)	106.6±15.3	
	Academic	84(18.5)	111.5±16.3	
Marital status	Single	5(1.1)	98.6±15.2	0.126‡
	Married	343(75.4)	106.0±15.9	
	Divorced	7(1.5)	93.1±22.4	
	Widow	100(22.0)	104.7±14.2	
Number of children	0	20(4.4)	103.9±15.8	0.551‡
	1	25(5.5)	107.4±14.2	
	2	85(18.7)	106.7±17.3	
	>2	325(71.4)	105.1±15.4	
Occupation	Retired	207(45.5)	108.1±14.5	0.001‡
	Employee	14(3.1)	106.1±16.3	
	Self-employed	30(6.6)	97.7±20.1	
	Manual worker	13(2.9)	94.2±14.2	
	Unemployed	14(3.1)	99.2±15.4	
	Housewife	177(38.9)	105.0±15.5	
Income level (Dollar)	<60	70(15.4)	101.9±17.1	<0.001‡
	60-110	171(37.6)	102.4±15.2	
	>110	214(47.0)	109.0±14.9	
History of disease	Yes	307(67.5)	104.7±15.4	0.057†
	No	148(32.5)	107.1±16.2	
Living status	Alone	55(12.1)	103.7±15.2	0.043‡
	With wife	248(54.5)	106.5±15.7	
	With family	148(32.5)	105.2±15.1	
	With relatives	4(0.9)	77.5±22.0	
Total		455(100)	105.5±15.7	

†Mann-Whitney test; ‡Kruskal-Wallis test

Table 2. Correlation between the social cognitive theory constructs and healthy lifestyle score

Parameter	8	7	6	5	4	3	2	1
1-Self-regulation	0.48*	0.43*	0.46*	0.39*	0.32*	0.36*	0.21*	1
2-Observational learning	0.19*	0.20*	0.17*	0.15†	0.15†	0.16†	1	
3-Social support	0.50*	0.47*	0.46*	0.47*	0.41*	1		
4-Outcome expectancies	0.53*	0.48*	0.51*	0.77*	1			
5-Outcome expectation	0.62*	0.55*	0.57*	1				
6-Self-efficacy	0.64*	0.77*	1					
7-Awareness	0.72*	1						
8-Lifestyle	1							

*p<0.001; †p<0.05.

Discussion

The current study aimed to leverage the utility of SCT constructs as a theoretical basis for tailoring lifestyle programs to the elderly population. Based on SCT studies, various constructs have been identified as the strongest predictors of lifestyle-related behaviors in the elderly [20-24]. In our study, the self-efficacy constructs obtained the lowest percentage (68.15%), while the outcome expectation constructs (84.55%) and outcome expectancies (84%) scored the highest. Other researchers have found similar results, reporting outcome expectancies scoring the highest, while self-efficacy scores the lowest [25]. Additionally, the expectation of the outcome is the construct with the highest score among the constructs of SCT [23]. In the study by Ghoreishi *et al.* [25], anticipation, outcome expectancies, and self-regulation are the strongest predictors. However, the findings of our study are inconsistent with those of Amini Moridani *et al.* [26], who found that perceived social support constructs obtain the highest score, while environmental structures score the lowest. The reason for this

difference may be variations in study timing and cultural differences across the studied cities.

There was no statistically significant difference between the mean scores of SCT constructs by gender and BMI. There was a significant relationship between constructs' outcome expectancies and outcome expectations with a history of chronic disease. The elderly with no history of chronic disease had higher mean structural value scores and expected outcomes. The importance that the elderly attribute to desired behaviors forms the foundation for health promotion. In contrast, our study's findings contradict those that reported a significant relationship between the history of chronic disease and both self-efficacy and self-regulatory structure [27]. This difference may be due to differences in the study subjects. Another significant finding of this study was the relationship between the mean score of outcome expectancies and the number of children. Elderly with two children tended to achieve better-expected outcomes on average. Unfortunately, no similar article was found regarding these findings. Children can support their parents when they become old, and it is most likely that the elderly who have more children will receive more support compared to those without children.

A significant relationship was observed between the construct of outcome expectancies and social support with living status. Old people living with families had an average outcome expectancy score, and elderly people living with their spouses had a higher social support score because of the increased need for family support. On the other hand, the results of our study oppose those of Heidari-Soureshjani *et al.* [27], reporting a statistically considerable association between marital status and self-efficacy. The variation in the findings may be due to discrepancies in the populations examined (only women with diabetes referring to diabetes centers).

There was a significant relationship between the mean value of constructs and outcome expectation, social support, observational learning, and self-regulation according to education. The average score of these constructs was higher in the elderly who have a university education. With the increase in education, people's awareness increases due to the ability to read different books and magazines or benefit from scientific websites, which is attributed to the literacy of the elderly with the ability to read different books and have life skills. Their worldview is better and more open towards life. These results are consistent with findings from other studies [28-31]. A statistically significant relationship between the mean values of SCT constructs and the outcome and social support based on occupation. Among the elderly, those employed as employees scored higher in these two constructs compared to their counterparts, which is in line with the results of other studies [17, 30]. However, Heidari-Soureshjani *et al.* [27] reported that there is a statistically significant

relationship between employment status and self-efficacy and self-regulation structures, contradicting our findings. This contradiction may be due to factors, such as the gender and diabetes condition of the participants, as well as the variances in time between the two studies.

There was a statistically significant relationship between the constructs of awareness, outcome expectancies and expectations, social support, observational learning, and self-regulation in terms of income. The average scores of these constructs were higher among the elderly with higher incomes (>$110). Income and economic status are among the most important determinants of health in people, especially the elderly [10, 28, 31]. Therefore, government policies should prioritize providing special financial support through organizations like the Ministry of Welfare and Social Affairs. This support would encourage families who are unable to care for the elderly and ensure that all seniors can enjoy the benefits of living with family [32].

The findings also showed a direct and positive relationship between the mean scores of awareness, self-efficacy, outcome expectancies, social support, observational learning, self-regulation, and healthy lifestyle. Khani Jeihooni *et al.* [33] and Ryan [34] reported that there is a statistically significant relationship between nutritional performance, walking, and self-regulation, indicating consistency with the present study. These results suggest that the constructs of awareness, self-efficacy, outcome expectancies, social support, observational learning, and self-regulation from the SCT play an important role in healthy lifestyle behavior.

According to the results of the present study, of all the variables, including SCT and demographic variables, 26.3% of healthy lifestyle behavior was predicted by these two categories of variables. The constructs of social support, self-regulation, outcome expectancies, and awareness showed significant predictability using a multivariate linear regression model and step-wise method. They accounted for 25.9% of the variance in lifestyle behavior. According to this model, the included demographic variables were not significant and were removed from the model. Similar findings have also been observed in previous studies [35-37]. Therefore, as individuals age and enter old age, the need for environmental support, particularly from family members, increases. In general, social support has a positive impact on the lifestyle of older adults [35].

Regarding awareness, older individuals exhibited a higher level of awareness, knowledge, and information regarding health-promoting behaviors and lifestyles, also known as health literacy. They demonstrated an equal understanding and application of health issues and lifestyle. Moreover, these individuals were perceived more favorably. According to Bandura, self-regulatory strategies are crucial for targeting and planning regular physical

activity [38]. Self-regulation plays a pivotal role in social cognitive approaches to modifying health behaviors. In our study, elderly participants who practiced self-control and goal setting in shaping their lifestyle behaviors exhibited a more desirable lifestyle. Furthermore, the likelihood of engaging in desired behavior increases with an individual's higher value placed on the expected outcome.

Step-wise multiple regression analyses conducted in the study by Sung & Lim [39] revealed that the social support structure, with a 55% predictive power, is the strongest predictor for a health-promoting lifestyle. Peyman *et al.* [40] reported that self-regulatory and social support are the strongest predictors of physical activity in type 2 diabetic women. The results of Liu's study [41] demonstrated that social support structures from friends are the strongest predictors according to the SCT in students' physical activity. Umstattd & Hallam [23] indicated that self-regulation and expectation are the most influential factors in predicting physical activity among adults.

Our results are inconsistent with those of Yari *et al.* [35], where self-efficacy is one of the strongest predictors of physical activity, and also with the study by Nematollahi & Eslami [42], in which self-regulation has the greatest impact on physical activity, while self-efficacy has the least impact. The existing discrepancy in this field can be justified by the differences between the geographical area, culture, and climate of the present study.

Linear regression analysis in the study by Abdi *et al.* [43] showed that among the SCT constructs, environment and self-efficacy are the strongest predictors of a healthy lifestyle in overweight and obese employees. However, their results are inconsistent with ours. This discrepancy may be due to differences in the target groups regarding climatic and occupational conditions of the study subjects. According to Mahmoudi *et al.* [36], the SCT constructs (self-efficacy, outcome expectations, outcome expectancies, family support, and friend support) account for 13% of the variance of physical activity behavior in Borkhar and Shahin Shahr health network employees in Isfahan. The results of the present study are inconsistent with this study.

Furthermore, in the study by Gothe & Kendall [44], self-efficacy and outcome expectation are the most important predictors of physical activity for African-American adults. The findings of the present study were inconsistent with this study. These differences may be attributed to the heterogeneous population in the mentioned studies, which had different age ranges, demographic characteristics, and cultural and climatic differences that were distinct from the present study.

Among the limitations of the present study was the collection of information in a self-reporting manner. This method, which relied on participants being honest and accurate in answering questions, was beyond the control of the researcher. Additionally, the study faced challenges due to the large number of questions included in the questionnaire. It is important to note that the data collection coincided with the COVID-19 pandemic, which posed difficulties in ensuring convenient access to all elderly participants during quarantine. These circumstances may have influenced the quality of the data obtained. The results highlighted the importance of targeting these cognitive and social constructs when designing educational interventions to foster healthy lifestyles in the elderly. Further research is needed to explore other potential variables that may influence healthy lifestyle behaviors in this age group.

Conclusion

SCT is a suitable framework for understanding and promoting healthy lifestyles among the elderly. Factors, such as awareness, self-efficacy, self-regulation, social support, outcome expectations, and observational learning are key predictors of healthy lifestyle behaviors in the elderly, with social support, both from peers and family, being a particularly important factor.

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