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The Relationship Between the Activities of Daily Living, Instrumental Activities of Daily Living, and the Oral Quality of Life

Yu Na Kim[1,2], Jae-Hyun Kim[1,2]

[1]Department of Health Administration, College of Health Science, Dankook University, Cheonan, Korea (yunakim@gmail.com), First Author
[2]Institute for Digital Life Convergence, Dankook University, Cheonan, Republic of Korea (jaehyun@dankook.ac.kr), Corresponding Author

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ABSTRACT

The purpose of this study is to analyze the relationship between the ADL (Activities of Daily Living), Instrumental Activities of Daily Living (IADL) and the oral quality of life and provide the basic data. The multiple regression analysis was performed using the data from the Korea Aging Panel Survey 2018, and 6,936 participants were the final subjects. In addition to the ADL and the IADL, the demographic variables and health behaviors on the oral quality of life of the elderly were considered as the control variables. As a result of the analysis performed, it was found that the IADL had a significant relationship with the oral quality of life for the Model 3 (B: -0.010, P<.0001). Conclusion of the study: The result was secured such that the IADL acts more importantly on the oral quality of life than the ADL. Hence, it is necessary to improve the programs and education customized for the elderly to improve their oral quality of life.

1. Introduction

Currently, the elderly population of Korea is consistently on the rise. Examining the increase in the aged population over the past three years, the elderly population in 2017 was 7.07 million, which accounted for 13.8% of the total population, in 2018, 7.38 million, 14.9%, and in 2019, 7.38 million, 14.9%, which indicates that the composition of the elderly is increasing (Statistics Korea, 2020). Korea's aging phenomenon is progressing the fastest among the OECD countries and is expected to continue to further intensify (Lee, 2019, pp. 1-4). This can cause not only economic problems but also the quality of life related problems (Kang et al., 2013, pp. 302-313; Han et al.,

2019, pp. 33-47).

In particular, as the aging progresses, the natural bodily processes occur where the bone density decreases and the physical performance such as parallelism, walking speed, and getting up from a chair decreases (Jung, 2008, pp. 488-499). As such, among the elderly population, the body and physical performance change according to aging, and the indicators that can be evaluated are the ADL (Activities of Daily Living) and the IADL (IADL, Instrumental Activities of Daily Living). As for the ADL and the IADL, the higher the score, and the lower the performance of the elderly, which prevents them from taking actions to promote their oral health properly, and consequently, the oral diseases such as periodontal disease and dental caries increase, and the oral health deteriorates, leading to a decrease in the oral quality of life (Han et al., 2012, pp. 179-189; Cho et al., 2019, pp. 55-64). Furthermore, such oral diseases may affect the range of food choices by reducing the chewing power of food and cause unbalanced nutritional intake, which may lead to health problems (Henshaw et al., 2001, pp. 34-42; Kim et al., 2011, pp. 833-841).

As such, the oral health by the physical performance of the elderly is related to the nutritional status, and by affecting the pronunciation such as communication-related expressions, it also affects the mental and social aspects and contributes to the overall quality of life (Henshaw et al., 2001, pp. 34-42; Kim, 2018, pp. 202-209).

Hence, it may be inferred that the deterioration of physical performance among the elderly not only reduces their oral quality of life by causing the oral health problems, but also affects the overall quality of life by decreasing the oral quality of life. Hence, the oral quality of life according to the physical performance of the elderly needs to be investigated as important because it is an important indicator of the overall quality of life (Boffano et al., 2012, pp. 207-213).

According to the previous study, “A Study on the Determinants of Quality of Life Related to the Oral Health Among the Elderly,” it was found that the better the ADL, the more it affects the self-health performance and has a positive effect on the oral quality of life. This suggests that the physical performance ability of the elderly is an important variable for the oral quality of life (Yeom et al., 2014, pp. 23-26). However, in this study, unlike the previous studies that used a combined tool of the ADL and the IADL, the ADL and the IADL were analyzed separately to investigate the influence of each on the oral quality of life among the elderly. The reason is such that, while the ADL is a basic daily activity such as washing face and brushing teeth, the IADL is a more advanced activity than the ADL such as doing housework and going outside, and hence, the effect of the two variables on the oral quality of life may be different. Based on which, this study, unlike the previous studies, has analyzed the effects of the ADL and the IADL, which are the basic elements of the regular activities of the elderly, on the oral quality of life, and also found an appropriate ADL or IADL related improvement program for the rapidly increasing elderly population. Through which, it is also sought to help improve the oral quality of life of the elderly.

2. Research Method

2.1 Research data and subjects

In order to understand the 'relationship between the ADL, IADL, the oral quality of life,' which is the subject of this paper, the data from the 2018 Aging Research Panel, which was approved by the Korea Employment Information Service, was used. The original sample of the Korean Aging Panel Survey was 10,254 people in the first basic survey conducted in 2006, yet the measurement year for the oral variables began after 2018. 6,936 people were selected for the analysis, excluding 555 people who had omissions or errors in terms of the information needed for the study, such as socioeconomic variables and health variables.

The subjects of this study were the elderly, but not limited to those aged 65 years or older, and the participants aged 55-64 were recruited to investigate the physical performance and the oral quality of life of the elderly and the pre-elderly. Among the total survey subjects, those aged 55 to 74 years old accounted for 66.7% (4,899 people) and those aged 75 years or older accounted for 33.4% (2,313 people). people), and in terms of gender, 42.4% (2,938 people) were male and 57.8% (3,998 people) were female, indicating a high proportion of the female participants.

2.2 Independent variable

This study was conducted by using the data from the Korea Aging Research Panel Survey, and the ADL (Activities of Daily Living) was consisted of 7 questions and the IADL (IADL, Instrumental Activities of Daily Living) was consisted of 10 questions.

2.2.1 ADL (Activities of Daily Living)

It was consists of 7 questions such as changing clothes, using the bathroom, and eating as basic actions for daily life. A value from 0 to 7 was set as '1' when a partial assistance was needed or when one needed help from others entirely, and "0" was set when no assistance was needed.

2.2.2 IADL (Instrumental Activities of Daily Living)

It is a more complex level of behavior than the ADL, and is consists of 10 questions such as doing housework, washing clothes, and managing money. If one needs a partial help or when one needs help from others, it was set to '1' and if one does not need help, it was set to '0' for the values from 0 to 10.

2.3 Dependent variable

2.3.1 Oral quality of life (Oral QOL, Oral-related Quality Of Life)

The oral quality of life variable was newly added and created during the 7th session in 2018, and the Korean GOHAI scale was used. It was consists of 12 questions, which measured them on a scale of 0 to 5 (6 points scale) and added them all up. However, 3 questions among them

were calculated by converting the score inversely. The higher the total score of 12 questions, the higher the oral quality of life.

2.4 Correction variable

The correction variable was selected as education level (less than elementary school, middle school, high school, four year college or higher), gender (male and female), age (55-64 years old, 65-74 years old, and 75 years old or older), marital status (married, separated or divorced, and single), labor restrictions (yes and no), drinking (yes and no), insurance type (health insurance and medical benefits), number of chronic diseases (0, 1, and 2 or more) and subjective health status (good, average and bad).

2.5 Analytical Method

A chi-square (X2) test and the multiple regression analysis were performed to determine the relationship between the ADL, IADL, and the oral quality of life. Furthermore, in the Korean Aging Panel Survey, the oral quality of life related variables of the elderly were investigated only in 2018, and the cross-sectional analysis was performed. The arrangement and statistical analysis of the collected data was used based on the SAS ver. 9.4 (SAS Institute Inc., Cary, NC, USA), and the significance level (α) of all analyses was set to less than 0.05.

3. Result

Table 1 illustrates the general characteristics of the participants. The total number of the participants was 6,936, and the subjects were 55 years of age or older. Of them, 2,283 people (32.9%) responded that they engage in the regular physical activities, and 4,653 (67.1%) of them do not engage in the regular physical activities. The average ADL score of the participants who responded that they engage in the regular physical activities was 0.044 (SD: 0.5, p<.0001), indicating that there was a statistically significant difference in the ADL score according to the regular physical activities. Furthermore, the average IADL score of the participants who engaged in the regular physical activities was 0.213 (SD: 1.1 points, p<.0001), indicating that there was a statistically significant difference in the IADL scores according to the regular physical activities. The average score of the oral quality of life of the participants who engage in the regular physical activities was 51.294 (SD: 7.6, p<.0001), and there was a statistically significant difference according to the regular physical activities. Furthermore, there were significant differences in the ADL, IADL, and the oral quality of life according to age, education level, labor restrictions, health insurance, and subjective health.

Table 1. General characteristics of subjects included for analysis at baseline

	Total		ADL				IADL				Oral QOL			
	N	%	Mean	SD	P-value	Schffe	Mean	SD	P-value	Schffe	Mean	SD	P-value	Schffe
Regularly Physical activity					<.0001				<.0001				<.0001	
Yes	2,283	32.9	0.044	0.5			0.213	1.1			51.294	7.6		
No	4,653	67.1	0.301	1.3			0.799	2.3			50.265	9.4		
Age					<.0001	a>b>c			<.0001	a>b>c			<.0001	a>b>c
55-64	2,586	37.3	0.026	0.4			0.104	0.8			53.517	7.8		
65-74	2,037	29.4	0.111	0.8			0.321	1.4			50.575	7.9		
≥75	2,313	33.4	0.522	1.7			1.418	3.0			47.371	9.5		
Education level					0.003	d>c>a,b			<.0001	d>c>a,b			<.0001	d>c>a,b
≤ Elementary school	2,670	38.5	0.412	1.5			1.078	2.7			48.134	9.4		
Middle school	1,157	16.7	0.132	0.9			0.423	1.7			51.150	8.3		
High school	2,227	32.1	0.074	0.7			0.258	1.3			52.337	7.9		
≥ College	882	12.7	0.094	0.7			0.296	1.3			52.985	8.0		
Gender					0.408				0.023				0.691	
Male	2,938	42.4	0.196	1.1			0.589	2.0			50.984	8.6		
Female	3,998	57.6	0.232	1.1			0.618	2.1			50.324	9.0		
Marital status					0.874	a,c>b			0.003	a,c>b			0.001	a,c>b
Married	5,232	75.4	0.157	1.0			0.433	1.7			51.399	8.6		
Separated, divorced	1,647	23.8	0.402	1.5			1.145	2.7			48.027	9.2		
Single	57	0.8	0.298	1.3			0.877	2.6			52.070	8.9		
Working restriction					<.0001				<.0001				<.0001	
Yes	2,542	36.7	0.532	1.7			1.401	3.0			47.847	9.9		
No	4,394	63.4	0.034	0.4			0.146	0.9			52.198	7.7		
Alcohol consumption					<.0001				<.0001				0.375	
Yes	2,263	32.6	0.034	0.4			0.163	0.9			51.907	8.3		
No	4,673	67.4	0.305	1.3			0.820	2.4			49.972	9.0		
Health insurance					<.0001				0.000				0.000	
National Health Insurance	6,650	95.9	0.196	1.1			0.566	2.0			50.760	8.8		
Medical aid	286	4.1	0.692	2.0			1.521	3.2			46.972	9.6		
Number of chronic disease*					<.0001	a>b,c			<.0001	a>b,c			0.184	a>b,c
0	6,292	90.7	0.191	1.0			0.549	1.9			50.730	8.9		
1	584	8.4	0.416	1.5			1.065	2.7			49.560	8.4		
≥2	60	0.9	0.917	2.2			2.050	3.7			47.500	9.0		
Self-rated health					<.0001	a>b>c			<.0001	a>b>c			<.0001	a>b>c
Good	2,047	29.5	0.023	0.3			0.078	0.7			52.840	7.8		
Moderate	3,053	44.0	0.032	0.4			0.195	1.0			51.873	7.9		
Bad	1,836	26.5	0.739	2.0			1.877	3.4			45.999	9.7		
Total	6,936	100.0	0.217	1.1			0.606	2.0			50.603	8.8		

* Hypertension, diabetes, cancer, chronic obstructive pulmonary disease, liver disease, cardiovascular disease, cerebrovascular disease, arthritis

Table 2 is the analytical result of investigating the effect of regular physical activities and the ADL and the IADL on the oral quality of life or the relationship between the regular physical activities, ADL, IADL and the oral quality of life. Model 1 is a model demonstrating the relationship between the regular physical activities, ADL, and the oral quality of life except for the IADL.

The oral quality of life score of the participants who engage in the regular physical activities was -0.005 points lower than that of the participants who did not engage in the regular physical activities, but it was not statistically significant (p=0.280). Furthermore, in the case of Model 1, when the ADL increased by one unit, the oral quality of life score was statistically significantly lower by -0.009 (p<.0001).

Table 2. Adjusted effect of association between ADL/IADL and oral QOL

	Model 1				Model 2				Model 3			
	B	95% CI		P-value	*B*	95% CI		P-value	*B*	95% CI		P-value
Regularly Physical activity												
Yes	-0.005	-0.013	0.004	0.280	-0.006	-0.014	0.003	0.190	-0.006	-0.014	0.003	0.192
No	ref				ref				ref			
ADL	-0.009	-0.013	-0.005	<.0001					0.005	-0.002	0.012	0.145
IADL					-0.008	-0.010	-0.006	<.0001	-0.010	-0.014	-0.007	<.0001
Age												
55-64	ref				ref				ref			
65-74	-0.033	-0.043	-0.023	<.0001	-0.033	-0.043	-0.023	<.0001	-0.033	-0.043	-0.023	<.0001
≥75	-0.063	-0.074	-0.051	<.0001	-0.060	-0.072	-0.048	<.0001	-0.060	-0.072	-0.048	<.0001
Education level												
≤ Elementary school	-0.030	-0.044	-0.015	<.0001	-0.030	-0.044	-0.016	<.0001	-0.030	-0.044	-0.016	<.0001
Middle school	-0.013	-0.027	0.002	0.083	-0.013	-0.027	0.001	0.072	-0.013	-0.027	0.001	0.073
High school	-0.010	-0.022	0.002	0.108	-0.010	-0.023	0.002	0.100	-0.010	-0.023	0.002	0.100
≥ College	ref				ref				ref			
Gender												
Male	ref				ref				ref			
Female	0.007	-0.002	0.016	0.114	0.006	-0.003	0.015	0.200	0.006	-0.003	0.015	0.216
Marital status												
Married	ref				ref				ref			
Separated, divorced	-0.017	-0.028	-0.007	0.001	-0.016	-0.027	-0.006	0.002	-0.016	-0.026	-0.005	0.003
Single	0.020	-0.021	0.061	0.345	0.021	-0.021	0.062	0.329	0.021	-0.021	0.062	0.324
Working restriction												
Yes	-0.022	-0.032	-0.013	<.0001	-0.020	-0.030	-0.011	<.0001	-0.020	-0.029	-0.011	<.0001
No	ref				ref				ref			
Alcohol consumption												
Yes	ref				ref				ref			
No	0.002	-0.007	0.011	0.699	0.003	-0.006	0.012	0.540	0.003	-0.006	0.012	0.535
Health insurance												
National Health Insurance	ref				ref				ref			
Medical aid	-0.016	-0.037	0.005	0.138	-0.017	-0.038	0.005	0.124	-0.017	-0.038	0.004	0.112
Number of chronic disease*												
0	ref				ref				ref			
1	0.005	-0.009	0.019	0.469	0.006	-0.009	0.020	0.442	0.006	-0.009	0.020	0.445
≥2	-0.010	-0.054	0.034	0.665	-0.008	-0.051	0.036	0.736	-0.008	-0.052	0.036	0.722
Self-rated health												
Good	0.078	0.066	0.091	<.0001	0.073	0.061	0.086	<.0001	0.073	0.060	0.086	<.0001
Moderate	0.078	0.067	0.090	<.0001	0.074	0.062	0.085	<.0001	0.074	0.062	0.085	<.0001
Bad	ref				ref				ref			
QIC	6,955				6,954				6,956			

Model 2 is a model demonstrating the relationship between the regular physical activities excluding ADL, IADL, and the oral quality of life. The oral quality of life score of the participants who engage in the regular physical activities was -0.006 points lower than that of the participants who do not engage in the regular physical activities, but it was not statistically significant (p=0.190). Furthermore, in the case of Model 2, when the IADL increased by one unit, the oral quality of life score was statistically significantly lower by -0.008 (p<.0001).

Model 3 controls regular physical activities, ADL, IADL, and the oral quality of life. The oral quality of life score of the participants who engage in the regular physical activities was -0.006 points lower than that of the participants who do not engage in the regular physical activities, but it was not statistically significant (p=0.192). Furthermore, in the case of Model 3, when the IADL increased by one unit, the oral quality of life score was statistically significantly lower by -0.010 (p<.0001).

Table 3 illustrates the analytical result of the effects of the ADL and the IADL on the 12 questions of GOHAI, each respectively. Among the 12 questions of GOHAI, the restriction of quantity or type of food (B:-0.023, p<.0001), it turned out that the IADL had a significant effect on the 7 questions of difficulty in chewing food (B:-0.024, p<.0001), obstruction of teeth or dentures during conversation (B: -0.012, p<.0001), interpersonal problems due to oral health problems (B:-0.011, p<.0001), taking medications for oral problems (B:-0.009, p=0.000), perception of oral problems (B: -0.011, p=0.000) and eating problems in front of others (B: -0.016, p<.0001). Furthermore, both the ADL (B:0.010, p=0.038) and the IADL (B:-0.014, p<.0001) had a significant effect for the question of concern about oral problems, and the ADL (B: 0.014, p=0.004) and the IADL (B:-0.018, p<.0001) both caused significant effects.

Table 3. Adjusted effect of association between ADL/IADL and specific oral QOL

	B	95% CI		P-value
Limit the amount or type of food				
ADL	0.008	-0.003	0.019	0.131
IADL	-0.023	-0.029	-0.017	<.0001
Hard food chewing problem				
ADL	0.009	-0.003	0.020	0.137
IADL	-0.024	-0.030	-0.017	<.0001
swallow comfortably				
ADL	-0.004	-0.019	0.012	0.632
IADL	0.006	-0.003	0.015	0.181
Interference with teeth or dentures when communicating				
ADL	0.000	-0.010	0.009	0.930
IADL	-0.012	-0.017	-0.006	<.0001
discomfort in eating				
ADL	-0.002	-0.016	0.013	0.821
IADL	0.005	-0.003	0.014	0.233
Relationship problems with people due to oral health problems				
ADL	0.000	-0.009	0.010	0.954
IADL	-0.011	-0.016	-0.005	<.0001

	B	95% CI		P-value
Oral Health Satisfaction				
ADL	-0.003	-0.014	0.008	0.610
IADL	0.002	-0.005	0.008	0.605
Taking medications for oral problems				
ADL	0.006	-0.003	0.014	0.195
IADL	-0.009	-0.014	-0.004	0.000
Whether you are concerned about oral problems				
ADL	0.010	0.001	0.019	0.038
IADL	-0.014	-0.019	-0.008	<.0001
Awareness of oral problems				
ADL	0.009	-0.001	0.019	0.084
IADL	-0.011	-0.017	-0.006	0.000
Eating problems in front of others				
ADL	0.008	-0.002	0.018	0.100
IADL	-0.016	-0.022	-0.011	<.0001
tooth gum sensitivity				
ADL	0.014	0.005	0.024	0.004
IADL	-0.018	-0.023	-0.012	<.0001
Adjusted for all covariates				

4. Discussion

In this study, it was sought to examine and understand the relationship between the ADL, IADL, and the oral quality of life among the elderly by using the Korean aging panel data, and the results of this study may be summarized as follows.

In Model 1, the ADL had a significant association with the oral quality of life, and for the Model 2, there was a significant association between the IADL and the oral quality of life. However, in the case of Model 3, the final model, the oral quality of life had a significant relationship with the IADL but not with the ADL. Furthermore, it was found that the IADL had a significant effect for 9 of the 12 questions of GOHAI, including the restrictions on the amount or type of food, and difficulty in chewing food. That is, as the IADL score increases, oral quality of life decreases, suggesting that the IADL is a more important factor for the oral quality of life.

The final Model 3's results demonstrated that there was no significant difference in the oral quality of life according to the ADL. This was because the IADL had a high degree of correlation with the oral quality of life, which had a negative effect on the correlation between the ADL and the oral quality of life during data analysis, yielding the results in the above. Furthermore, the proportion of the elderly participants under the age of 74 who participated in this study was 66.7% and the proportion of the participants aged 75 and older was 33.3%. It is considered that there was no significant result between the ADL and the oral quality of life because there was no difficulty in the treatment (Han et al., 2012, pp. 179-189). Whereas, the IADL is more complex than the ADL, such as doing housework, going out for a short distance, and using means of trans-

portation, and hence, it may be difficult for the young and the elderly, suggesting a significant relationship between the IADL and the oral quality of life (Nam, 2010, pp. 362-371).

According to the study, "Dental Care Patterns According to the ADL and the IADL Among the Elderly," the activity impairment among the elderly affected the availability of dental care, and hence, the elderly with the IADL limitations were more likely to receive dental care for the oral disease than the elderly with the ADL limitations, frequently using the care. (Cho et al., 2015, pp. 102-109) Based on which, it is evident that the IADL is directly related to the dental care and is an important factor for improving the oral quality of life.

As such, the IADL among the elderly affects the oral health behaviors, such as dental visits, and reduces oral quality of life by causing the oral health problems. Moreover, the resulting oral health problems also affect the emotional and social aspects such as the expression of opinion, which lowers the overall quality of life. (Park, 2014, pp. 271-280) Furthermore, the IADL is an index that evaluates the elderly's adaptability to the social environment. The higher the IADL score, the more restrictive their activities, the less social participation, and the resulting negative perception of the health status, and consequently, the life satisfaction decreases. Hence, the serious social problems such as depression and suicide among the elderly may occur thereby (Kwon, 2009, pp. 8-10), and hence, it is necessary to develop and apply a health program customized for the elderly to ensure that the oral quality of life according to the IADL does not deteriorate.

Concerning which, according to a study on the "Differential Effects of the Social Participation Type and Frequency on the Reduction of the IADL Among the Elderly" in Japan, where aging is rapidly progressing as in Korea (Tomioka et al., 2018), the elderly aged 65 or older often participate in society involuntarily, and hence, it turned out that the compulsory participation in the following background types of volunteer group, sports group, hobby club, elderly club, neighborhood life club, and cultural club is a mental burden and limited opportunity for the participants, and hence, a moderate participation (monthly or yearly) has a favorable effect on the IADL than the frequent (weekly or more frequent) participation as it may have a psychological effect. Furthermore, in the case of women, they were more sensitive to intimacy with the members than men, and hence, the frequent participation in hobby clubs was effective in preventing the IADL from against deterioration. In the case of the male elderly, there was a more positive effect than the female in the elderly club, and there was no difference in the risk of the IADL reduction between the frequent participation and the non-participation for the 6 background types (Tomioka et al., 2018).

Such social participation has a significant effect on the IADL, and based on which, in order to improve the oral quality of life of the elderly, it is necessary to consider the gender, and social participation type and frequency of the elderly rather than focusing only on the participation of the elderly for the oral health programs toward preparing the more effective programs and measures. Furthermore, based on the study that the oral health knowledge varies depending on the oral health status of the elderly (Yoon et al., 2016, pp. 369-370), the inclusion of education which classifies the physical performance ability and knowledge of the elderly in the above program is expected to have a positive effect on the oral quality of life. Hence, it is expected that the elderly will receive education to manage their IADL levels and oral health on their own through an oral health program that considers gender and social participation type and frequency, and recognize the IADL ability, interpersonal problems

caused by oral health problems, and oral problems, ultimately improving the oral quality of life.

This study has the following limitations. First, the causal relationship between the IADL and the oral quality of life cannot be clearly identified by performing the cross-sectional analysis by using the 7th data of the Korean Aging Research Panel Survey (2018). Second, this study is one using the secondary data, and while the effect on the oral quality of life was investigated using the data surveyed in 2018, there is a limitation in that the oral variables such as the number of teeth and dentures were not investigated. Third, the independent variable of this study investigated as to whether the help of others is needed for the ADL and the IADL, which is the result of a self-reported questionnaire, and hence, it may be difficult to objectively take measurements. Hence, further research on such is needed. However, as a result of using the data from the Aging Research Panel, which are the national data that can represent the elderly in Korea, the results of the IADL affecting the oral quality of life can be generalized, and it is considered to be meaningful as a study for the society. Furthermore, unlike the previous studies that used a combined tool of the ADL and the IADL, this study independently analyzed the ADL and the IADL, and hence, there were a few similar studies, and the representativeness of the study was secured by using a large scaled sample as a matter of strength.

5. Conclusion

The purpose of this study was to investigate the relationship between the ADL, IADL, and the oral quality of life among the Korean population aged 55 and older. As a result of the study, the oral quality of life did not have a statistically significant difference by the regular physical exercise and the ADL, yet there was a statistically significant difference with the IADL. In contrast, by independently analyzing the ADL and the IADL, it was possible to indicate the result that the IADL affects the oral quality of life. Hence, in order to improve the oral quality of life of the elderly with a low instrumental ADL, it is expected that an education customized for the elderly will be prepared in connection with the IADL and that the elderly will be able to manage their IADL level and oral health on their own.

Conflicts of interest

No author has any financial or other conflict of interest to declare.

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