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A Study on Exercise and Health-Related Quality of Life Among Community-Dwelling Older Adults

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Abstract

Objective This study aims to investigate the physical and mental health effects of recreational physical activity on the older adult population.
Methods A cross-sectional questionnaire survey was conducted with adults aged 65 and over in an administrative district of Kaohsiung City, Taiwan, China. A total of 250 questionnaires were distributed via convenience sampling in public parks, with 237 returned and 229 valid responses included in the final analysis. The instrument was adapted from the validated scale developed by Hsiao (2003), covering exercise behaviour, frequency of outpatient visits, health-related quality of life (HRQoL) and demographic information. The 36-item HRQoL scale comprises the Physical Component Summary (PCS) and Mental Component Summary (MCS), with good internal consistency (Cronbach's $\alpha = 0.81$). Data were analysed using SPSS 20.0 with descriptive statistics, independent samples t-tests and one-way ANOVA, with significance set at $\alpha = 0.05$.
Results In total, 38.86% of participants engaged in physical activity 1–2 days per week, and 31.44% exercised 5 or more days per week. The most common activity types were walking, jogging and brisk walking, and the primary venues were parks (29.69%) and schools (25.33%). Overall, 44.54% of participants had more than 16 outpatient visits per year, with higher utilisation among those with chronic conditions. For HRQoL, social functioning scored highest ($M = 70.15$, $SD = 34.05$), followed by role-emotional ($M = 68.97$, $SD = 28.57$). Participants aged 75–79 scored significantly higher on PCS than those aged 65–69. Educational attainment was significantly associated with both PCS and MCS scores.
Conclusions Older adults in the study area show high willingness to participate in physical activity, and social interaction through exercise may support mental well-being. Targeted policy initiatives are needed to promote regular physical activity and optimise community exercise resources for older populations.

Keywords

Older Adults; Physical Activity; Leisure-Time Exercise; Health-Related Quality of Life; Community-Dwelling; Chronic Disease

1. Introduction

Numerous studies have confirmed the health benefits of regular physical activity for older populations. Exercise interventions can improve physical health and functional capacity in older adults, while endurance training can enhance cardiovascular health and reduce associated risk factors [1]. Subsequent evidence has further emphasised that regular physical activity is important for maintaining functional independence and healthy ageing among older adults [2]. Physical activity is also widely recognised as a core strategy for promoting health, reducing disease risk and enhancing quality of life [6,11].

Improving quality of life for older adults is a growing public health priority globally, and physical fitness is a key modifiable determinant of health outcomes in later life. Research in Taiwan, China has identified a significant association between regular exercise habits and healthcare utilisation under the National Health Insurance (NHI) system, with regular exercisers making significantly fewer outpatient visits than non-regular exercisers [4]. However, evidence on exercise behaviour and its association with HRQoL among community-dwelling older adults in southern Taiwan, China remains limited.

Therefore, this study investigates the current status of exercise behaviour, outpatient visit frequency and HRQoL among community-dwelling older adults in Kaohsiung, Taiwan. The findings are intended to provide an evidence-based reference for future age-friendly policy and community health promotion initiatives.

2. Methods

2.1. Study Design and Participants

This cross-sectional study was conducted between July and August 2020. The target population was adults aged 65 years and over residing in an administrative district of Kaohsiung City, Taiwan, China. Participants were recruited via convenience sampling at public parks in the district. A total of 250 paper questionnaires were distributed on site; 237 were returned, giving a response rate of 94.8%. After excluding incomplete and invalid responses, 229 questionnaires were included in the final analysis (valid response rate: 96.6%).

2.2. Research Instruments

The questionnaire was adapted from the validated scale developed by Hsiao (2003), comprising four sections: exercise behaviour, frequency of medical consultations, HRQoL and demographic characteristics.

The HRQoL section is a 36-item scale derived from the SF-36 Health Survey, where higher scores indicate better health status. The scale is divided into two summary components:

Physical Component Summary (PCS): includes four subscales – General Health, Physical Functioning, Bodily Pain and Role-Physical

Mental Component Summary (MCS): includes four subscales – Vitality, Mental

Health, Social Functioning and Role-Emotional

The original SF-36 scale has demonstrated excellent internal consistency, with Cronbach's α values ranging from 0.80 to 0.90 (Ware, 2000). In the present study, the overall scale achieved a Cronbach's α of 0.81, indicating good internal reliability.

2.3. Statistical Analysis

All statistical analyses were performed using SPSS 20.0 software. Descriptive statistics (frequency, percentage, mean, standard deviation) were used to summarise participant characteristics, exercise behaviour and HRQoL scores. Independent samples t-tests were used to compare HRQoL scores by gender, employment status, health check-up history and chronic disease status. One-way analysis of variance (ANOVA) was conducted to examine differences in HRQoL across age and education groups, with post-hoc tests for pairwise comparisons. The significance level was set at $\alpha = 0.05$.

3. Results

3.1. Exercise Behaviour and Healthcare Utilisation

Table 1 summarises participants' exercise behaviour and outpatient visit frequency. Only 9.17% of participants reported no regular exercise; 38.86% exercised 1–2 days per week, 20.52% exercised 3–4 days per week, and 31.44% exercised 5 or more days per week.

The most popular types of physical activity were walking (26.64%), jogging (20.09%) and brisk walking (15.28%), followed by qigong (14.85%). The most common exercise venues were parks (29.69%) and schools (25.33%), followed by local sports grounds (15.72%) and homes (13.97%).

Regarding healthcare utilisation, no participants reported zero outpatient visits in the past year. The largest proportion (44.54%) had 16 or more visits per year, equivalent to an average of 1–2 visits per month. Participants with chronic conditions accounted for the majority of high-frequency healthcare users.

3.2. Health-Related Quality of Life

Table 2 presents HRQoL subscale scores. Overall, MCS scores (M = 65.96, SD = 30.45) were slightly higher than PCS scores (M = 62.71, SD = 26.97). Among all eight subscales, social functioning ranked highest (M = 70.15, SD = 34.05), followed by role-emotional (M = 68.97, SD = 28.57) and role-physical (M = 69.15, SD = 30.51). The lowest scores were observed for physical functioning (M = 52.11, SD = 20.18) and vitality (M = 59.44, SD = 26.16).

3.3. Demographic Differences in HRQoL

Table 3 shows the results of ANOVA and t-tests for HRQoL differences by demographic variables. No significant gender differences were found for either PCS

or MCS scores.

For age groups, there was a significant difference in PCS scores across age groups ($F = 2.506$, $p < .05$). Post-hoc analysis indicated that participants aged 75–79 had significantly higher PCS scores than those aged 65–69. No significant age difference was found for MCS scores.

Educational attainment was significantly associated with both PCS ($F = 3.526$, $p < .05$) and MCS ($F = 4.528$, $p < .05$) scores. Post-hoc comparisons showed that participants with primary school education had significantly higher PCS scores than those with no formal education. For MCS, participants with no formal education scored significantly higher than those with lower secondary education.

No significant differences in HRQoL were found by employment status, regular health check-up history or chronic disease status.

4. Discussion

This study examined exercise behaviour, healthcare utilisation and HRQoL among community-dwelling older adults in southern Taiwan, China. The findings indicate a relatively high level of physical activity participation among the sample, with over 90% of participants engaging in exercise at least 1 day per week. This aligns with previous findings from Taiwanese community studies (Chou & Pai, 2012) and reflects vibrant social interaction through group-based physical activity in public spaces, which may contribute to better mental well-being.

The dominant activity types – walking, jogging and qigong – are low-intensity, accessible and socially oriented forms of exercise, which are well suited to older adults with varying functional capacities. The preference for parks and school grounds as exercise venues is consistent with international evidence that open, free and easily accessible public spaces are key facilitators of physical activity for older populations (Satariano, 2006).

Notably, nearly 45% of participants had 16 or more outpatient visits per year, and this rate was higher among those with chronic conditions. This pattern is consistent with the ageing population trend in Taiwan, China, where chronic disease prevalence drives high healthcare utilisation under the universal NHI system. While the present study did not find a statistically significant difference in visit frequency between regular and non-regular exercisers, the documented association between physical activity and reduced healthcare use in older populations (Strawbridge et al., 1996) suggests that promoting exercise may help alleviate healthcare burden in the long term.

For HRQoL, the finding that social functioning and role-emotional scores ranked highest supports the argument that community-based physical activity provides important social benefits for older adults, beyond physical health gains. Lee and Park (2018) similarly found that social support mediates the relationship between physical activity and HRQoL in older adults, highlighting the psychological and social

value of group exercise.

The unexpected finding that participants with no formal education had higher MCS scores than those with lower secondary education may reflect differences in expectation levels and life satisfaction. Older adults with less formal education may have lower reference standards for life quality, or may be more engaged in community social activities that support mental well-being. This finding warrants further investigation in future research.

4.1. Study Limitations

Several limitations should be noted. First, the convenience sample from a single district of Kaohsiung limits the generalisability of findings to the broader older adult population in Taiwan, China. Second, the cross-sectional design prevents causal inference about the relationship between exercise and HRQoL. Third, self-reported questionnaire data may be subject to recall bias. Future research should adopt random sampling, longitudinal study designs and objective physical activity measures to strengthen evidence.

5. Conclusions and Recommendations

This study demonstrates that community-dwelling older adults in the study area have high participation rates in physical activity, with walking and park-based exercise being the most common patterns. Social interaction through exercise is a prominent feature, which may support mental well-being. Healthcare utilisation is relatively high, particularly among those with chronic conditions, highlighting the need for health promotion strategies that combine physical activity with chronic disease management.

Two key recommendations are proposed for policy and practice:

1. Scale up community exercise promotion: Government and local authorities should leverage the social influence of community exercise groups to encourage older adults to meet the recommended level of at least 5 days of physical activity per week. Existing public spaces such as parks and school grounds should be upgraded with age-friendly facilities and sheltered areas to maintain exercise participation across weather conditions.

2. Conduct regular population-level HRQoL monitoring: Routine surveys of physical and mental health status among community-dwelling older adults should be implemented to identify unmet needs. Evidence-based activity programmes and policy strategies should be co-designed with local older populations to address demographic and health disparities.

Table 1. Summary of Survey Results on Physical Activity and Healthcare Utilisation Among Older Adults

Category	Variable	n	%	Category	Variable	n	%
Weekly exercise days	No exercise	21	9.17	Outpatient visits/year	0 times	0	0.00
	1–2 days	89	38.86		1–5 times	6	2.62
	3–4 days	47	20.52		6–10 times	37	16.16
	5 days or more	72	31.44		11–15 times	84	36.68
					16 times or more	102	44.54
Type of exercise	Walking	61	26.64	Exercise venue	Home	32	13.97
	Jogging	46	20.09		Park	68	29.69
	Brisk walking	35	15.28		School	58	25.33
	Hiking	15	6.55		Local sports ground	36	15.72
	Gymnastics	8	3.49		Swimming pool	3	1.31
	Qigong	34	14.85		Fitness centre	5	2.18
	Dance	18	7.86		Community activity centre	24	10.48
	Swimming	3	1.31		Other	3	1.31
	Weight training	2	0.87				
	Cycling	2	0.87				
	Other	5	2.18				

Note. N = 229.

Table 2. Summary of Health-Related Quality of Life Subscale Scores

Component	Subscale	Mean	Standard Deviation	Component Mean	Standard Deviation	Ranking
Physical Health (PCS)	General Health	61.72	23.15	62.71	26.97	6
	Physical Functioning	52.11	20.18			7
	Bodily Pain	67.84	34.06			5
	Role-Physical	69.15	30.51			3
Mental Health (MCS)	Vitality	59.44	26.16	65.96	30.45	8
	Mental Health	65.31	33.02			4
	Social Functioning	70.15	34.05			1
	Role-Emotional	68.97	28.57			2

Note. Higher scores indicate better health status. N = 229.

Table 3. Differences in Quality of Life by Demographic Variables

Variable	Group	PCS Mean	PCS SD	PCS F/t	Post-hoc	MCS Mean	MCS SD	MCS F/t	Post-hoc
Gender	Male	50.56	7.64	1.027		53.18	11.21	2.308	
	Female	48.15	9.01			48.16	13.01		
Age group	(1) 65–69	50.14	10.64	2.506*	(3) > (1)	49.64	7.05	0.950	(2) > (1) (3) > (1)
	(2) 70–74	53.18	8.64			51.08	8.16		
	(3) 75–79	52.46	9.08			51.46	9.17		
	(4) 80 and above	47.65	13.12			50.03	8.35		
Education	(1) No formal education	48.51	11.18	3.526*	(2) > (1)	52.15	6.57	4.528*	(1) > (3)
	(2) Primary school	50.35	8.67			48.56	7.82		
	(3) Lower secondary	50.12	10.23			49.13	9.08		
Employment	None	51.23	7.64	—		50.98	10.54	—	
	Yes	49.16	8.54			51.21	12.05		
Health check-up	No regular check-up	52.03	8.83	−0.276		48.97	10.21	−0.313	
	Regular check-up	48.25	9.09			47.81	8.05		
Chronic disease	None	53.24	11.15	3.874		52.56	9.15	3.605	
	Yes	49.69	10.27			50.11	8.07		

Note. PCS = Physical Component Summary; MCS = Mental Component Summary. $p < .05$. N = 229.

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