

Physical activity participation among older people and its association with health status and quality of life: A cross-sectional study.

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Keywords:	physical activity, quality of life, older people
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Abstract:	<p>Introduction: The aging process brings with it a host of physiological changes, many of which can lead to a reduction in physical function and an increased risk of chronic disease. Worldwide, around 3.2 million deaths per year are being attributed to inactivity. Engaging in regular physical activity has been shown to be an effective means of mitigating many of these negative outcomes, particularly in older adults. In addition to improving physical health outcomes, physical activity has also been linked to improved quality of life in older adults.</p> <p>Aims and Objectives: To identify physical activity levels among study population and to examine the relationships between physical activity with self-stated health, and quality of life among older adults.</p> <p>Methodology: A cross-sectional community-based study was carried out among people aged 60+ years residing within a radius of 3km from Medical College using snowball technique by visiting jogger's parks in the morning and evening. Physical activity was assessed using the Physical Activity Scale for the Elderly (PASE) and Quality of life was assessed using Stark questionnaire. Ethical approval for the study was obtained. Responses were analysed using descriptive statistics.</p> <p>Results: This study concludes that those who were physical active, they were significantly having higher quality of life as compared to those who were physically inactive. The regression analysis reveals that the chance of living quality life was nine percent higher among those who were physically active as compared to their counterparts.</p> <p>Conclusion: The mechanisms underlying the association between physical activity and quality of life are not entirely clear. However, several potential pathways have been proposed. One possibility is that physical activity may improve physical function and mobility, which in turn leads to increased social engagement and participation in meaningful activities. This can result in increased social support and a greater quality of life.</p>

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ABSTRACT

Introduction: The aging process brings with it a host of physiological changes, many of which can lead to a reduction in physical function and an increased risk of chronic disease. Worldwide, around 3.2 million deaths per year are being attributed to inactivity. Engaging in regular physical activity has been shown to be an effective means of mitigating many of these negative outcomes, particularly in older adults. In addition to improving physical health outcomes, physical activity has also been linked to improved quality of life in older adults.

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Keywords: Physical activity, Quality of life, older people

Introduction

The health benefits of physical activity (PA) among old age are well documented, by increasing years of independent living and enhancing quality of life, hence reducing age-related illness and disability. (1-4). Literature suggested that older adults who engaged in high levels of physical activity had a greater likelihood of aging successfully ten years later (5). As people age, their organs and systems gradually deteriorate, and the effects of ageing are exacerbated by a large discrepancy between their chronological and physiological ages (6). Physical activity is a protective factor for non-communicable diseases such as cardiovascular disease, stroke, diabetes, and some types of cancer. Data from a recent epidemiological study indicated an average of 20.5% mental health morbidity in older adults in India (7). In India, depression affected about one-third of the senior population, with a higher prevalence among women. (8) Improved mental health and a delay in the onset of dementia are also linked to physical activity (9). Since the world's population is ageing quickly, significant efforts are required to promote greater levels of engagement to mitigate the negative consequences of physical inactivity on older people and society. (10,11)

Objectives

To identify physical activity levels among study population and to examine the relationships between physical activity with self-stated health, and quality of life among older adults.

Methodology

Study design

A community-based cross-sectional study was conducted among individuals aged 60 years and above residing within 3 km of medical college. The snowball technique was used by visiting parks in the morning and evening by joggers between October- December 2023. Ethical approval for the study was obtained.

Sample size

The following formula was used to determine the sample size for this research, which came to 303: Z^2pq/d^2 by substituting the values as follows: $p = 0.27$, $Z = 1.96$, and $d = 0.05$ (p is the prevalence of vigorous physical activity among older people (12)(13) in India, Z is the type 1 error at 5%, and d is the absolute error).

Data collection

Socio-demographic variables along with Body Mass Index were collected. In addition, with who they lived, marital status, and substance use were also recorded.

Physical activity assessment: Physical activity was measured using the Google fit app (14)(15). The average minutes of walking per week were recorded by the app. Physical activity levels were estimated according to the 2010 WHO guidelines. According to the guideline, individuals aged 18-64 years and ≥ 65 years must exercise at least 150 minutes of moderate intensity or 75 minutes of vigorous intensity or an equivalent combination of PA per week (16). Physical activity was also assessed with the Physical Activity Scale for the Elderly (PASE) (17). The PASE is a brief instrument specifically designed to assess physical activity in the elderly over 1 week (18).

Health status assessment: self-assessments of health status by persons participating in surveys have been shown to be effective predictors of mortality; they appear to provide significant additional independent information to indicators of health status collected from self-report or medical examinations (19). Self-reported health status was collected using the question 'In general, how is your health?' on a five-point Likert scale (very good, good, fair, poor, and very poor), with those who answered, 'very good' or 'good' classified as being in good health, whereas those who answered 'fair," 'poor," and 'very poor' were classified as being in poor health (20). Regarding the morbidity pattern, participants were considered to have a disease if they had been diagnosed by physicians with respiratory, endocrine, musculoskeletal, or depression problems, chronic renal failure, cancer, or hepatitis. Depending on the number of conditions, the outcome was categorized as "no medical history" as 0 or "existing medical history" as 1.

Quality of life was assessed using the Stark questionnaire, which measures health-related quality of life (QoL) almost exclusively by imagery. It consists of a mental and a physical health component (21).

Statistical analysis

The interviewed questionnaire was entered using EPI info software and further imported into SPSS for statistical analysis. Descriptive analyses were used to characterise moderate and vigorous physical activity among older adults. Differences between groups were established using chi-squared and t-tests. Multivariate logistic regression analyses were performed to determine the association between physical activity, self-reported health, and quality of life.

Results

Table 1: Social Profile of respondents

Variable	Category	Frequency	Percentage (%)
Age	55 - 65	128	42.2
	66 - 75	131	43.2
	76 and above	44	14.5
Gender	Female	53	17.5
	Male	250	82.5
Education	Below primary	34	11.2
	Secondary	56	18.5
	High	54	17.8
	Graduate	159	52.5
Religion	Hindu	287	94.7
	Other	16	5.3
Caste	General	239	78.9
	ST	20	6.6
	OBC	44	14.5
Family member	<4	151	49.8
	≥5	152	50.2
Marital status	Married	246	81.2
	Widow/separated	57	18.8
Substance use	Currently user	58	19.1
	Ever User	48	15.8
	Never	197	65
Health insurance	No	144	47.5
	Yes	159	52.5
Physical activity	Not regular	92	30.4
	Regular	211	69.6
BMI	mean±sd	25.68±3.56	
QoL	mean±sd	17.55±5.77	
	Total	303	100

Table 1 shows that a high proportion (52.5%) possess graduate-level education; a substantial majority (69.6%) engage in regular physical activity indicating a positive lifestyle choice that contributes to overall health and well-being.; most respondents (81.2%) are married; a significant number (52.5%) have health insurance; and a considerable portion (65%) report no history of substance use.

Table 2: Occupational profile of respondents

Variable	Category	Frequency	Percentage (%)
Occupation	Armed	4	1.3
	Clerical	8	2.6
	Craft	2	0.7
	Elementary	10	3.3
	Housewife	29	9.6
	Managers	12	4.0
	Plant	88	29.0
	Professional	62	20.5
	Service	78	25.7
	Technician	10	3.3
Does your occupation required physical effort?	No	160	52.8
	Yes	143	47.2
Does your occupation required lifting heavy loads?	No	247	81.5
	Yes	56	18.5
Does your occupation required stooping, kneeling, or crouching?	No	176	58.1
	Yes	127	41.9
Does your occupation required good eyesight?	No	133	43.9
	Yes	170	56.1
Does your occupation required intense concentration or attention?	No	96	31.7
	Yes	207	68.3
Does your occupation required people skills?	No	58	19.1
	Yes	245	80.9
Does your occupation involved burning materials?	No	225	74.3
	Yes	78	25.7
Does your occupation involved chemical spills?	No	263	86.8
	Yes	40	13.2
Does your occupation involved noxious substances?	No	257	84.8
	Yes	46	15.2

Most respondents work in safe, socially interactive jobs. About 80.9% require interpersonal skills, 81.5% don't lift heavy loads, and 58.1% avoid stooping or kneeling. Additionally, 74.3% aren't exposed to burning materials, 86.8% avoid chemical spills, and 84.8% aren't near noxious substances. These findings collectively suggest that most respondents are employed in safe work environments with a strong emphasis on social interaction and minimal exposure to physical or environmental hazards. (Table 2)

Table 3: Health status profile of the participants

Variable	Category	Frequency	Percentage (%)
General health status	Bad	26	8.6
	Fair	90	29.7
	Good	141	46.5
	Very good	46	15.2
In the past 12 months have you visited any healthcare facility?	No	86	28.4
	Yes	217	71.6
Hypertension	No	132	43.6
	Yes	171	56.4
Diabetes	No	189	62.4
	Yes	114	37.6
Cancer	No	295	97.4
	Yes	8	2.6
Lung disease	No	269	88.8
	Yes	34	11.2
Heart	No	279	92.1
	Yes	24	7.9
Stroke	No	289	95.4
	Yes	14	4.6
Arthritis	No	212	70
	Yes	91	30
Psychiatric	No	273	90.1
	Yes	30	9.9
High cholesterol	No	219	72.3
	Yes	84	27.7
	Total	303	100

Table 3 indicates that most (80.9%) have an occupation characterized by interaction with others. Most (81.5%) do not lift heavy objects and 58.0% are not required to stoop, kneel or crouch in their work suggesting they have less physical effort. In addition, 74.3% are not allowed to work with burning materials, 86.8% avoid chemical spills, and 84.8% do not work in proximity to noxious substances. Overall, most respondents work in relatively safe environments that provide social engagement.

Table 4: Relation between amount of physical activity and its impact on concentration level

Amount of physical activity involved					Total
	Attention frequently diverted, cannot concentrate	Attention occasionally diverted	Attention sometimes diverted	Can concentrate	
Every day	10	20	34	138	202
More than once a week	0	8	10	22	40
Once a week	4	8	2	12	26
One to three times a month	2	4	0	7	13
Hardly ever or never	2	6	2	12	22
Total	18	46	48	191	303

Table 4 summarises that among daily exercisers, 138 participants can concentrate, with 34 being occasionally distracted, 20 sometimes distracted, and 10 frequently distracted. Focusing on those more than once a week active, concentration is reported by 22, with 18 being distracted. Weekly exercisers say that 12 concentrate and 12 distract. There are seven concentrates and six distractions within the populace active 1-3 times monthly. Among hardly ever active individuals, 12 concentrate, with 8 distracted. In net, 191 concentrate with 112 distracted at different amounts of distraction levels.

Table 5: Representing BMI

S no.	BMI	No of participants	Percentage (%)
1.	Underweight (<18.5)	6	2

2.	Normal weight (18.5-24.9)	123	40.6
3.	Pre-obesity (25-29.9)	134	44.3
4.	Obesity (>30)	40	13.1
Total		303	100

Participants' BMI assessment shows that most participants fall into the range of pre-obesity (44.3%), followed by normal weight (40.6%). The least accounted-for category is obesity at 13.1%. This shows a high prevalence of overweight and obesity, pertaining to the necessity of intervention measures toward healthier weight-mitigation. (Table 5)

Table 6: Quality of life among participants

Quality of life			
		No. of participants	Percentage (%)
Mood			
	Very happy	112	37.0
	Happy	121	39.9
	Normal	62	20.5
	Sad	6	2.5
	Very sad	2	0.7
Energy			
	Energetic	176	58.1
	Dull	127	41.9
		303	100
Social contact			
	More social contact	190	62.7
	Little social contact	95	31.4
	Isolated	18	5.9

Table 6 highlights positive aspects of participants' quality of life. A significant majority of both combined (76.9%) reported feeling either happy or very happy, indicating good emotional well-being. Additionally, 58.1% described themselves as energetic, reflecting a favourable

level of physical vitality. Socially, 62.7% experienced more social contact, suggesting strong social engagement and connectivity. Overall, the data indicates that most participants enjoy a good quality of life across emotional, physical, and social domains.

Discussion:

This study explored the relationship of physical activity (PA) and various health outcomes in older adults living within 3 km of a medical college. The results support PA being positively related to better quality of life (QoL), emotional well-being, cognitive function and health status, in this population. Our analysis of the data from 303 participants shows that a large proportion of the population were having good quality of life in terms of mood, energy, social contact.

This study further investigated the demographic relationship with the physical activity and found that it was significantly associated with mood of geriatric population. An impressive 69.6% of participants were regularly physically active, indicating a favourable occurrence of this health promoting behaviour, and greater health potential. Of those who were physically active, 76.9% reported being happy or very happy, 58.1% felt they had energy, and 62.7% indicated they see friends and family often. These findings are on par with Musich et al. (4) who found PA positively impacts physical functioning, reduces depression, and enables social interaction as we age.

Cognitive function also disclosed a strong relationship to physical activity in the study. For the 202 participants who exercised daily, 138 (68.3%) said they had good concentration. Overall, 191 participants (63%) said they could concentrate well, which suggests a relationship between regular physical activity and cognitive alertness. This is consistent with findings presented by Livingston et al. (10) who identified physical activity as a potential factor in delaying dementia onset and promoting cognitive health later in life.

From the physiological perspective, the study recorded a mean BMI of 25.68 ± 3.56 , where 44.3% of the sample was classified as pre-obese and 40.6% were in the normal weight range. Weight management is a key component to reduce risk factors for non-communicable diseases (NCDs), like hypertension (56.4%) and diabetes (37.6%), that were represented in the sample. Taylor (1) previously described physical activity as a preventive form of medicine in the sense that it can lead to increased time before the onset of chronic disease and disability, which we supported and confirmed through the health benefits physically active participants experienced.

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Moreover, multivariate analysis showed participants that were active had a 9% increased chance of reporting good quality of life than non-active participants. This is similar to longitudinal research by Gopinath et al (5) that found that older adults that were physically active were also had more of a chance for successful aging (absence of disability and maintenance of cognitive and emotional health) over a 10-year longitudinal study period. Despite mostly good findings, it's also important to note that this study did not inquire into reasons for inactivity for the 30.4% of participants that were not (or did not self-report) as regularly active. Previous work by Rai et al. (11) identified different opportunities for physical activity in older adults (and barriers to physical activity including limitations of the body, internal lack of motivation, and external environmental barriers). The Government of India's National Policy for Older Persons also emphasizes the importance of promoting active lifestyles and accessible environments to support healthy aging (22). Future research should examine the barriers for physical activity among older adults to explore various opportunities for interventions and implementation for sedentary elderly participants.

Conclusion:

This study demonstrates a strong positive association between regular physical activity and improved quality of life, emotional well-being, cognitive function, and general health among older adults. A significant proportion of participants who engaged in regular physical activity reported feeling happy, energetic, socially connected, and cognitively alert. The findings reinforce existing evidence that physical activity serves as a powerful non-pharmacological intervention for promoting healthy aging, reducing the burden of chronic diseases, and enhancing psychological and social health. Moreover, the observed 9% higher likelihood of reporting a good quality of life among physically active individuals emphasizes the need for community-level interventions and policies to encourage physical activity in the elderly population. Although a majority were active, nearly one-third of the population remained inactive, indicating the necessity for further studies to understand and address barriers to physical activity. Overall, the study underscores the vital role of maintaining an active lifestyle in later life and calls for integrated efforts from healthcare providers, policymakers, and communities to support and sustain physical activity among the aging population. The need to remain physically active becomes more pronounced with advancing age because of the risk of chronic illness. We found that people over 40 years of age are more likely to be

inactive or mildly active when compared with people below 40 years, posing a greater risk of developing chronic illness.

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