

EFFECT OF SOCIO-ECONOMIC STATUS ON PHYSICAL ACTIVITY IN COMMUNITY DWELLING SOUTH INDIAN OLDER ADULTS

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ABSTRACT

Introduction: Different patterns of activities were reported due to different cultural attitudes of the individuals. Socio-economic status should be taken into consideration when exploring the effect of socio-economic status on health over the life course. Available literature brings out limited studies on socio-economic status and its association with physical activity. In view of above, present study was undertaken to determine an association between selected demographic variables, BMI and physical activity, among older adults, in south India.

Materials and Methods: Present study is a community based cross-sectional study, undertaken among older adults (> 55 years and above). Purposive sampling method was used to select the study subjects. A total of 63 older adults were included in the study. The study was conducted over a period of one and half years from 01 January 2018 to 30 June 2019, in selected urban and semi-urban areas in Dakshina Kannada district, Karnataka (India).

Results: The study comprised of a total of 63 older adults which included 32 (50.79%) males while remaining 31(49.20%) were females. The physical activity levels were found to be highest (33.33%) in 55-60 years age group while these were lowest (0.00%) in 75 years and above, age group. The association between physical activity and age, was found to be statistically significant. (p value= 0.015)

Discussion: In our study, out of 21 older adults from middle SES class 13 (61.90%) were found to be having low physical activity, while in lower SES group out of 21 subjects 9 (42.85%) were found to be having high physical activity levels. However, the subjects from upper SES group, revealed low levels of physical activity as only 02(09.52%) out of 21 subjects showed high levels of physical activity.

Conclusion: Present study brings out significant association between physical activity and BMI, while no association was observed between socio-economic status and physical activity. Further, low levels of physical activity were observed across all SES groups,

KEY WORDS: Socio-Economic Status, Physical Activity, Bmi, Community Dwelling.

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INTRODUCTION

Physical inactivity is the 4th risk leading cause for global mortality [1]. Physical activity (PA) is defined as any bodily movement produced by

skeletal muscles that requires energy expenditure [2]. Studies bring out that physically inactive older adults show higher rates of mortality as compared to older adults who were

physically active [3]. Decline of fitness with age is a repeatedly analyzed aspect [4]. Non-uniform age-related reduction in physical fitness level is often related to falls risks [5]. World Health Organization (WHO) recommends that older adults should do at least 150 minutes of moderate-intensity physical activity throughout the week, or at least 75 minutes of vigorous-intensity physical activity throughout the week, or an equivalent combination of moderate- and vigorous-intensity activity and for additional health benefits, they should increase moderate-intensity physical activity to 300 minutes per week, or equivalent [6].

India's elderly population (60 years or more) is growing three times faster than its population as a whole [7]. It is estimated that the elderly people percentage will rise to 20% by the year 2050. As a greater section of the population sustain to very old ages, the burden of disability and disease has become an important concern [8]. The competence of the older person to function self-sufficiently in the community is an important issue of public health.

The effects related to inactivity are reported to be more adverse in the age group above 65 years old adults as the health benefits from physical activity is stronger for above 65 years old adults compared to another age group [9-10].

Evidence suggests that health-related quality of life is improved by psychological well-being with better physical activity [11]. Although some age-related physical and mental declines are undeniable but physically active older adults retain healthy functioning for a longer time than sedentary peers [12].

Socio economic status (SES) refers to an individual's position within a hierarchical social structure, which is one of the important enticements of health status [13-18].

There are several studies which suggest that there are associations between physical activity and perceived environmental factors such as neighborhood safety and aesthetics and household income [19-21].

Low socioeconomic individuals might continue working to fulfill their basic necessities. Fewer participants participated in recreational activities and sports from South Asian population

residing in UK [22].

Different patterns of activities were reported due to different cultural attitudes of the individuals. Socio-economic status should be taken into consideration when exploring the effect of socio-economic status on health over the life course. Available literature brings out limited studies on socio-economic status and its association with physical activity. In view of above, present study was undertaken to determine an association between selected demographic variables, BMI and physical activity, among older adults, in south India.

MATERIALS AND METHODS

Present study is a community based cross-sectional study, undertaken among older adults (> 55 years and above). Purposive sampling method was used to select the study subjects. A total of 63 older adults were included in the study. The study was conducted over a period of one and half years from 01 January 2018 to 30 June 2019, in selected urban and semi-urban areas in Dakshina Kannada district, Karnataka (India).

Modified Kuppaswamy scale (2018) has categorized socio-economic status into 5 groups viz 1) Upper class 2) Upper middle class 3) Lower middle class 4) Upper lower class 5) Lower class. For the purpose of evaluating influence of socio-economic status on physical activity, a re-grouping was done for the sake of convenience, categorizing these five groups into 3 groups i.e. 1) Upper SES class 2) Middle SES class by combining Upper and Lower middle class and 3) Lower SES class by combining Upper lower class and Lower-class.

Data Collection: The study was conducted after taking necessary permission from the Institutional Ethics Committee. The study subjects were explained the purpose of the study and informed consent was taken from them. A semi-structured, validated questionnaire was administered, which comprised of standard questions related to their socio-demographic profile and physical activities undertaken by them. This was followed by health education sessions, giving emphasis on physical activity. Modified Kuppaswamy scale and International Physical Activity Questionnaires (IPAQ) short

form, were used for social classification and measuring levels of physical activity, respectively.

Inclusion And Exclusion Criteria: Older adults aged ≥ 55 years and above, of both genders, who could walk independently without walking aids, living in urban and semi-urban community and willing to participate in the research, were included in the study. However, study subjects with terminal or acute illnesses, moderate or severe cognitive impairment, presence of specific neurological or any other muscle diseases which could make it difficult for them to understand and/or provide information and those living in old age homes / institutions were excluded from the study.

International Physical Activity Questionnaires Short-form (IPAQ-SF): In this study, to assess physical activity International Physical Activity Questionnaires (SF-IPAQ) short form was used. Three specific types of activity (walking, moderate-intensity activities and vigorous intensity activities) were assessed through this scale [24]. Frequency (measured in days per week) and duration (time per day) are collected individually for each specific type.

Scoring: Volume of activity is calculated in METs (METs are multiples of the resting metabolic rate) which yield a score in MET-minutes for each type of activity by its energy requirements [25]. The MET values were obtained for individual activity type which is as following-

Walking = 3.3 METs, Moderate PA = 4 METs and Vigorous PA = 8 METs.

Total score is found by adding the duration (in minutes) and frequency (days) of walking, moderate-intensity and vigorous-intensity activity.

Three categorical level score was proposed as [26]

1. Low physical activity

- No activity is reported OR
- Some activity is reported but not enough to meet Categories 2 or 3.

2. Moderate physical activity

Any one of the following 3 criteria

- 3 or more days of vigorous activity of at least 20 minutes per day OR

- 5 or more days of moderate-intensity activity or walking of at least 30 minutes per day OR
- 5 or more days of any combination of walking, moderate-intensity or vigorous intensity activities achieving a minimum of at least 600 MET-min/week.

3. High physical activity

Any one of the following 2 criteria

- Vigorous-intensity activity on at least 3 days and accumulating at least 1500 MET-minutes/week OR
- 7 or more days of any combination of walking, moderate-intensity or vigorous intensity activities achieving a minimum of at least 3000 MET-minutes/week.

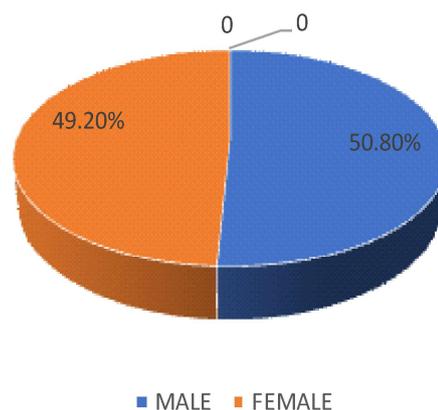
Total Score: Expressed as MET-min per week: MET level x minutes of activity x events per week.

RESULTS

Figure-I & II and table -1 bring out the age group, gender breakdown, literacy status and levels of physical activity among the study subjects. The study comprised of a total of 63 older adults which included 32 (50.79%) males while remaining 31(49.20%) were females (Figure-I).

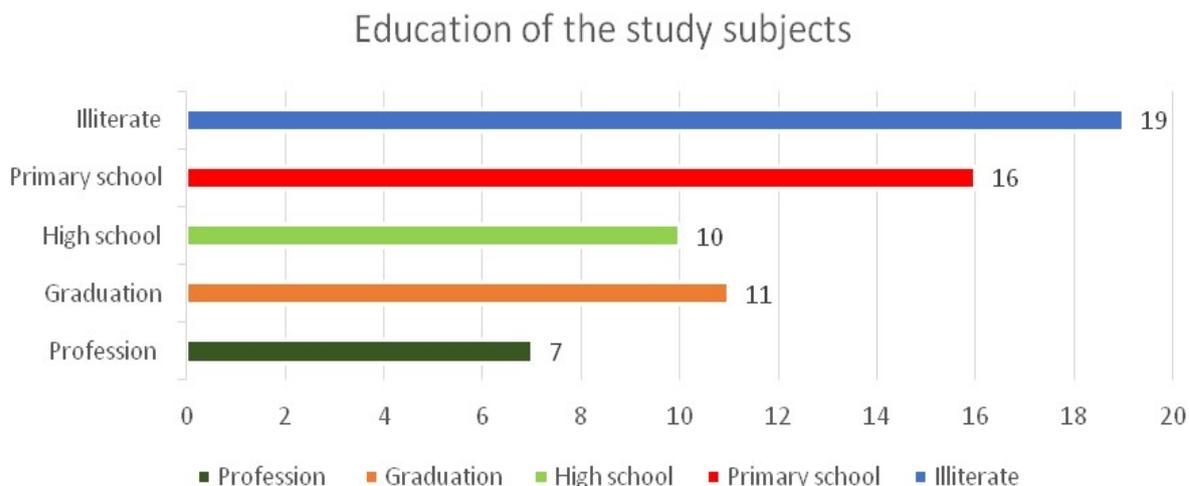
Fig. 1: Gender distribution of study subjects. (n=63).

GENDER AMONG STUDY SUBJECTS



Further, highest number of study subjects i.e.17 (26.98%) belonged 65-70 years age group, while lowest number 04 (06.34%) belonged to 75 Yrs. age group. Their mean age was found to be 65.55 years (± 6.41). The study also brought out an even distribution of literacy status among the elderly as 19 (30.15%) of them were illiterate while 18(28.57%) were graduate and above. Figure-II

Fig. 2: Educational status of study subjects. (n=63).



IPAQ vs Age group

Table 1: Age group and physical activity levels of study subjects. (n=63).

| IPAQ vs Age group | | | | | | | |
|--------------------|-------------|--------------|---------|---------|---------|-------------------|---------|
| IPAQ-SF | | AGE GROUP | | | | | Total |
| | | 55 - 60 | 60 -65 | 65 -70 | 70 - 75 | 75years and above | |
| | Low PA | 2 | 7 | 11 | 10 | 4 | 34 |
| | | 13.30% | 46.70% | 64.70% | 83.30% | 100.00% | 54.00% |
| | Moderate PA | 8 | 5 | 3 | 1 | 0 | 17 |
| | High PA | 5 | 3 | 3 | 1 | 0 | 12 |
| | | 33.30% | 20.00% | 17.60% | 8.30% | 0.00% | 19.00% |
| Total | | 15 | 15 | 17 | 12 | 4 | 63 |
| | | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% |
| Mean Age | | 65.55(±6.41) | | | | | |
| Chi-Square Test | | | | | | | |
| | | Value | Df | | P value | | |
| Pearson Chi-Square | | 18.964 | 8 | | 0.015 | | |

The physical activity levels were found to be highest (33.33%) in 55-60 years age group while these were lowest (0.00%) in 75 years and above, age group. The association between physical activity and age, was found to be statistically significant. (p value= 0.015) (Table-1).

Chi-Square Test

Table-2 depicts the distribution of physical activity levels and BMI among the study subjects. Out of the 63 subjects, 34 (54%) of them were found to be having low physical activity levels, 17 (27%) subjects revealed moderate physical activity levels, which is considered as performing activity more than the minimum activity level, while 12 (19%) subjects

had high physical activity levels ideally recommended to maintain a healthy lifestyle. The mean International physical activity questionnaire (IPAQ-SF) short form score, from the study population, was found to be 1801.8 (±2878.69). The study further revealed an inverse relationship between physical activity levels and BMI; as obese subjects were found to be having low levels of physical activity, while subjects with normal weight were found to be having higher levels of physical activity. The mean BMI of study subjects was found to be 22.88(±4.68). Further, the association between physical activity levels and BMI was also found to be statistically significant, (p value=0.032).

Table 2: Association between physical activity and BMI among study subjects. (n=63).

IPAQ vs BMI

| IPAQ vs BMI | | | | | | |
|--------------------|-------------|-------------|---------|------------|---------|---------|
| | | BMI | | | | Total |
| | | Underweight | Normal | Overweight | Obese | |
| ipaq | Low PA | 8 | 12 | 8 | 6 | 34 |
| | | 72.70% | 35.30% | 72.70% | 85.70% | 54.00% |
| | Moderate PA | 2 | 14 | 0 | 1 | 17 |
| | | 18.20% | 41.20% | 0.00% | 14.30% | 27.00% |
| | High PA | 1 | 8 | 3 | 0 | 12 |
| | | 9.10% | 23.50% | 27.30% | 0.00% | 19.00% |
| Total | | 11 | 34 | 11 | 7 | 63 |
| | | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% |
| Chi-Square Tests | | | | | | |
| | | Value | df | p-value | | |
| Pearson Chi-Square | | 13.834 | 6 | 0.032 | | |

Table 3: Physical activity levels among study subjects according to their SES. (n=63).

·Regrouped SES Scales.

| IPAQ | SOCIO ECONOMIC SCALE * | | | TOTAL |
|--------------------|------------------------|--------|--------|---------|
| | UPPER | MIDDLE | LOWER | |
| LOW PA | 12 | 13 | 9 | 34 |
| | 57.10% | 61.90% | 42.85% | 54.00% |
| MODERATE PA | 7 | 7 | 3 | 17 |
| | 33.30% | 33.33% | 14.28% | 27.00% |
| HIGH PA | 2 | 1 | 9 | 12 |
| | 9.50% | 4.76% | 42.86% | 19.00% |
| TOTAL | 21 | 21 | 21 | 100% |
| | 100% | 100% | 100% | |
| Chi-Square Tests | | | | |
| | | Value | df | P value |
| Pearson Chi-Square | | 14.517 | 8 | 0.069 |

Table-3 brings out (based on IPAQ score) that out of 21 subjects, in upper class 12 (57.14%) were found to be having low physically activity levels, 7 (33.33%) were found to be having moderate physically activity levels while 02 (09.52%) were found to be with high levels of physically activity. In middle class, out of 21 subjects, 13(61.90%) were found to be physically less active, 7 (33.33%) were found to be moderately physically active , while 1 (04.76%) subject was found to be physically highly active. In lower class, out of 21 subjects, 9 (42.85%) were found to be physically less active, 03 (14.28%) were found to be moderately physically active while 09 (42.85%) subjects were found to be physically highly active. However, no statistical association was found between socio-economic status and physical activity among study subjects. (p=1.62). Nonetheless, subjects from lower class showed

higher levels of physical activity as compared to other SES groups. (Table-3).

DISCUSSION

A cross sectional study was undertaken to determine the influence of socio-economic status on the physical activity in community dwelling, among older adults which included 63 subjects from both genders aged e" 55years and above, who fulfilled the inclusion criteria and were willing to take part in the study. The period of study was 1 ½ years.

Physical inactivity contributes to high morbidity and mortality every year and is identified as a consequential public health concern [27].

In the present study, physical activity was assessed using International Physical Activity Questionnaire-Short form (IPAQ-SF). The study subjects were interviewed for physical activity done during last 7 days and were given score

(MET-min/week) accordingly, further categorizing them to be having low, moderate and high physical activity.

In our study, out of 21 older adults from middle SES class 13 (61.90%) were found to be having low physical activity, while in lower SES group out of 21 subjects 9 (42.85%) were found to be having high physical activity levels. However, the subjects from upper SES group, revealed low levels of physical activity as only 02(9.52%) out of 21 subjects showed high levels of physical activity. Stalsberg R, et al, conducted a systematic review in 2018 reported that high SES groups were less active as compared to the low SES groups [28].

Present study brings out an inverse relation between physical activity and body weight/BMI, as 64.7% of the subjects with normal body weight were (BMI: 18.5-24.9) found to be moderate to highly physically active. Similar results have been brought out by Pandey Ambarish, et al, in their study which shows strong, dose-dependent associations between physical activity levels and BMI [29].

In our study, as the age progresses physical activity was found to be reduced in older adults. Older adults with 75 years age and above showed less physical activity and older adults with 55-60 years age showed high physical activity. Similar finding was found in the study done by Hadeel Halaweh, et al, in the age group "55 years and above" which showed that participants in the higher age groups recorded lower level of physical activity in terms of walking minutes/week [30].

CONCLUSION

Present study brings out significant association between physical activity and BMI, while no association was observed between socio-economic status and physical activity. Further, low levels of physical activity were observed across all SES groups, though study subjects from lower socio-economic status were found to be having higher levels of physical activity.

Limitations

Present study had the limitation which are inherent to small sample size, cross sectional observational studies. Hence residual or unmeasured confounding cannot be ruled out and the

findings of the study cannot be generalized.

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ABBREVIATIONS

SES - Socio-economic status.

PA - Physical Activity.

IPAQ-SF - International Physical Activity Questionnaire Short Form.

Conflicts of interest: None

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