

Original Research Article

Relationship between self-rated health status and physical activity in obese South Indian patients

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ABSTRACT

Background: Regular physical activity can improve people's overall health and reduce various risks for morbidity and mortality due to a sedentary lifestyle. Although the evidence linking obesity with many chronic diseases is well established, the relationship with self-rated health is not clear. The study aimed to assess the relationship between physical activity and self-rated health and how it is related to obesity.

Methods: The cross-sectional study included 132 individuals above 18 years, of both genders, with BMI above 25 kg/m². Data was collected using a structured proforma which included apart from demographic parameters, anthropometry parameters, self-reported physical activity, health status and stress levels of the subjects. Chi-square test/Fisher's exact test was used to assess the association between BMI, physical activity and self-rated health.

Results: A total of 132 subjects were included with a mean age of 48.44±11.23 years, with an almost equal proportion of males and females. The mean of BMI was 29.54±3.99. Most of them reported having normal physical activity (61.36%) with only 3% of them having high physical activity. The self-rated health of the subjects revealed 45.45% of them is having fair health and 43.18% of them having poor health. The mean a number of hours spent by sitting/sedentary activity in a week were 32.32±21.09.

Conclusions: The study findings revealed that the irrespective of the degree of physical activity both overweight and obese subjects rated their health fair to poor.

Keywords: Obesity, Physical activity, Self-rated health

INTRODUCTION

Self-evaluation of general health status has been associated with actual health in that what people report about their health has been shown to predict mortality.¹ Self-rated health (SRH) is a paradigm based on an individual's perception and assessment of health. Recently it is often used the gauge in health research and has been found to be a reliable and precise indicator of physical and mental functioning.²⁻⁵ Additionally, SRH has also been shown to be a predictor of health care utilization.⁶

Self-rated health (SRH) as a single survey question developed by the world health organization (WHO) has been validated as a tool to predict mortality in populations with and without cardiovascular diseases and functional ability.^{1,6-9} Self-rating of health is a broad summary measure of different domains of health that includes psychosocial domain. Self-rated health has been identified as an important indicator of health that is associated with a wide range of outcomes, from well-being to health service utilization and even overall mortality in populations.¹⁰⁻¹²

It is well established that regularly engaging in physical activity has physical health benefits such as improved cardiovascular and metabolic health, weight status, bone density and psychological wellbeing of individuals.¹³ According to WHO, insufficient physical activity is the fourth leading cause of non-communicable diseases, being responsible for 5.5% of all deaths.

The prevalence of overweight and obesity is increasing worldwide.¹⁴ Epidemiologic studies have identified high body-mass index (BMI, the weight in kilograms divided by the square of the height in meters) as a risk factor for an expanding set of chronic diseases, including cardiovascular disease, diabetes mellitus, chronic kidney disease, 16 many cancers, and an array of musculoskeletal disorders.¹⁵⁻¹⁷

Various studies have established that being overweight or obese is a risk factor for poor SRH.^{18,19} Obesity is also related to low self-esteem and poor peer relationships.²⁰ Although the relationship between self-rated health (SRH) and physical health is well documented in developed countries, very few studies have analyzed this association in the developing world particularly in India.

International studies analyzing the relation between overweight/obesity and SRH show that overweight and especially obese people report poor SRH more often than those of normal weight.^{21,22} However, little attention has been paid to whether the relation between overweight/obesity and SRH varies between different population groups. SRH is a broad summary measure of different domains of health that include the psychosocial domain. Hence the present study aimed to assess the association between self-rated health and physical activity among the south Indian population.

METHODS

The study was conducted in the department of general medicine, Velammal medical college hospital and research institute. The study was a cross-sectional observational study of the adult population attending the study setting for the screening master health check-up for 30 days period between May 2018 to June 2018. The study had included people aged above 18 years, of both genders, with BMI above 25kg/m². People with a known history of CAD, prior history of stroke, severe degrees of COPD, people with a physical disability affecting the physical activity or any other disease condition restricting their ability to do physical activity were excluded from the study.

All the study participants were recruited by convenient sampling. The data was collected using a structured proforma, which has assessed the participant's demographic parameters, anthropometry parameters, self-reported physical activity, health status and stress levels.

The data was analyzed by using IBM SPSS statistical software version 21. Descriptive analysis of quantitative variables was done by mean and standard deviation; categorical variables were done by frequency and proportion. The association between the self-reported health status physical activity was done by cross tabulation and comparison of proportions, using chi square test/Fisher's exact test. P value <0.05 was considered statistically significant.

RESULTS

The mean age was 48.44±11.23 in the study population. Among the study population, 6 (4.55%) participants were aged up to 30 years, 26 (19.70%) participants were aged between 31 to 40 years, 47 (35.61%) participants were aged between 41 to 50 years, 32 (24.24%) participants were aged between 51 to 60 years and 21 (15.91%) participants were aged >61 years. Among the study population, 65 (49.24%) participants were male remaining 67 (50.76%) participants were female. Among the study population, 4 (3.03%) participants had high physical activity, 18 (13.64%) participants had low physical activity, 2 (1.52%) participants had low/medium physical activity, 27 (20.45%) participants had medium physical activity and 81(61.36%) participants had normal physical activity (Table 1).

Table 1: Descriptive analysis of baseline parameter in the study population (N=132).

Baseline parameter	Summary
Age (Mean ±SD)	48.44±11.23
Age group	
Up to 30 years	6 (4.55%)
31 to 40 years	26 (19.70%)
41 to 50 years	47 (35.61%)
51 to 60 years	32 (24.24%)
61 years and above	21 (15.91%)
BMI (Mean ±SD)	29.54±3.99
Gender N (%)	
Male	65 (49.24%)
Female	67 (50.76%)
Physical activity N (%)	
High	4 (3.03%)
Low	18 (13.64%)
Low/medium	2 (1.52%)
Medium	27 (20.45%)
Normal	81 (61.36%)

Among the people who feel stress in our daily life, 19 (14.39%) participants had little stress, 38 (28.79%) participants had moderate stress, 18 (13.64%) participants had quite a lot stress and 5 (3.79%) participants had extreme stress. Among the study population, 5 (3.79%) participants had very poor health, 57 (43.18%) participants had poor health, 60 (45.45%) participants had fair, 8 (6.06%) participants had good health and 2

(1.52%) participants had very good health. The mean number of hours spent by sitting/sedentary activity in a week was 32.32±21.09 in the study population (Table 2).

Table 3 describes the relationship between physical activity with SRH and BMI. Among the 20 people who had low medium physical activity and low 19 (95%) participants had bad health status and 1 (5%) participant had good health status. Among the 81 people who had normal physical activity 77 (95.06%) participants had bad health status and 4 (4.93%) participants had good health status. Among the 31 people who had high and medium physical activity, all of them 31 (100%) participants had bad health status.

Among the 20 people who had low medium physical activity and low, 12 (60%) participants had over weight and 8 (40%) participant had obese. Among the 81 people who had normal physical activity 46 (56.79%) participants had over weight and 35 (43.20%) participants had obese. Among the 31 people who had high and medium physical activity, 19 (61.29%) participants had over weight and 12 (38.70%) participants had obese.

The difference in the proportion of BMI category across physical activity score was statistically not significant (P value 0.899) (Table 3).

Table 2: Descriptive analysis of self-reported health status in the study population (N=132).

Questionnaire	Summary
Do you feel stress in your daily life N (%)	
No	52 (39.39%)
Little	19 (14.39%)
Moderate	38 (28.79%)
Quite a lot	18 (13.64%)
Extreme	5 (3.79%)
How do you feel your present health is N (%)	
Very poor	5 (3.79%)
Poor	57 (43.18%)
Fair	60 (45.45%)
Good	8 (6.06%)
Very good	2 (1.52%)
Number of hours spent by sitting/sedentary activity in a week (Mean±SD)	32.32 ± 21.09

Table 3: Comparison of physical activity score between self-rated health status, body mass index (BMI) category (N=132).

Parameter	Physical activity score			Chi square	P value
	Low medium and low (N=20)	Normal (N=81)	High and medium (N=31)		
Self-rated health status					
Bad	19 (95%)	77 (95.06%)	31 (100%)	**	**
Good	1 (5%)	4 (4.93%)	0 (0%)		
BMI category					
Over weight	12 (60%)	46 (56.79%)	19 (61.29%)	0.214	0.899
Obese	8 (40%)	35 (43.20%)	12 (38.70%)		

**No statistical test was performed due to 0 subjects in the cells.

DISCUSSION

Self-rated health (SRH), generally captured by a single item inviting respondents to provide an overall assessment of their health using some form of a five-point scale, is currently one of the most commonly used health measures in surveys to assess the health status of adult populations in developed countries.^{11,12}

SRH reflects a complex process of internalized reckoning that takes into account both disease exposure experiences and knowledge of disease causes and consequences. Self-rating of health is a broad summary measure of different domains of health that includes the psychosocial domain. The mean age of the study subjects was 48.44±11.23 years with 35.61% of them aged 41-50 years and 40% of them over 50 years. Research suggests that age is one of

the most important socio-demographic factors affecting both what possible components of health a person considers and how they are taken into account in SRH.²³ Thus, according to social comparison theory, older people have lower expectations regarding health than do younger people, and these expectations can lead to more positive assessments among the elderly and more negative assessments in the young.^{23,24}

Sex is another key variable that can modify the relationship between SRH and physical and mental health. Compared to men, women have been found to be less “stoic” and thus more likely to take less serious illnesses into account when assessing their health.²⁵ Case and Paxson C et al, showed that, even if women more often report worse health than men, women and men with the same chronic conditions have the same SRH.²⁶

Among the study population male (49.24%) and female (50.76%) distribution was almost equal.

The mean BMI of the study subjects was 29.54 ± 3.99 belonging to the overweight or obese categories. In comparison, a German study reported overweight in 10.2% of adolescents and obesity in 7.6% of them. Overweight and obese adolescents have, for example, reduced health-related quality of life, more mental health problems, and lower self-esteem than those of normal weight.

About 45.45% of the study population rated their health as fair while a considerable proportion of them (43.18%) felt they had poor health. Comparatively, Krause L et al, in their study on obese adolescents noted good SRH in half of the subjects (49.4%), fair SRH in 11% of them while only 0.4% of them reported poor SRH.²⁷ Although most studies suggest that there is a strong association between obesity and ill health, a few investigations have found a negative association between obesity and significant psychopathology.²⁸ Some investigators have suggested that the rationale behind some studies lacking a positive relationship between obesity and psychological health is due to biases and negative attitudes toward obese persons inherent in the study design.²⁹

The mean a number of hours spent by sitting/sedentary activity in a week were 32.32 ± 21.09 in the study population. Comparatively, Granger E et al, studying 12,770 European adolescents noted that 54.9% of them were sedentary for <4 hours/day while 39.3% of them were sedentary for >4 hours/day.³⁰

Association between SRH with physical activity showed most almost all subjects in all the three categories of (100% in high and medium) physical activity reported bad health. Contrastingly Abu-Omar K et al, in their study on 16,230 individuals above 15 years concluded that there was a mild positive relationship between physical activity and self-rated health.³¹ However, in most nations sufficient levels of physical activity were not positively related to self-rated health which might be explained by difficulties in assessing moderate forms of physical activity, and also differences of the context (at home, for leisure, at work, for transportation) where physical activity takes place.

BMI and its association with physical activity comparison showed a majority of them being overweight in all the three categories of physical activity, while a relatively lesser number of them (38.7%) being obese in high and medium physical activity and the difference was not statistically significant. Comparatively Young DR et al, reported that among overweight subjects, 24.6% of them belonged to moderate-to-vigorous physical activity (MVPA) and 20.1% of them in moderate physical activity (MPA), while those who were obese, 21.8% were in MVPA group and 17.3% in MPA group.³²

Self-reported health status is known to be a strong and independent predictor of future health problems and mortality.⁵ Accordingly, it is valuable to identify the modifiable risk factors that have an impact on health status. In this context, it is of concern that only 20.45% of the overall study subjects achieved the WHO physical activity recommendations of 60 minutes moderate or vigorous exercise per day. These findings highlight the necessity of increasing engagement in physical activity amongst adolescents and adults in South India.

In low-income and middle-income countries, the use of self-reported measures of health statuses, like the SRH item and other health status measures (diabetes, cancer, etc.), is viewed with scepticism as the respondents may fail to perceive illness or health deficits because of lack of awareness.³³ However, Cullati S et al in their construct validity study of SRH reliability in India concluded that the single SRH item is a reliable indicator of general health in the population of India.³⁴ Moreover, Falk H et al, supported the use of SRH as a simple measure in survey settings to identify vulnerable groups and evaluate targeted health interventions in resource-scarce settings.³⁵

A major limitation of this study is that as the study is cross-sectional, no causality can be established between physical activity and health status. There are a number of possible hypotheses to explain the relationship between physical activity and health status. There are two main physiological hypotheses. The first of these states the beneficial effects of increased endorphin release on pain reduction and therefore on health status following physical activity, and the second describes the role of physical activity in affecting the monoamine release in the brain, which affects neurotransmission patterns and results in improved health status.³⁶ The psychological hypothesis describes the beneficial effects of physical activity on self-concept, which in turn reduces anxiety and depression and increases resilience, thus improving health status.³⁷

The WHO recommends that adults aged 18-64 should do at least 150 minutes of moderate-intensity aerobic physical activity throughout the week, Aerobic activity should be performed in bouts of at least 10 minutes duration and Muscle-strengthening activities should be done involving major muscle groups on 2 or more days a week. The updated recommendations by the American college of sports medicine (ACSM) and the American heart association (AHA) the promotion of physical activity in older adults should emphasise moderate-intensity aerobic activity, muscle-strengthening activity, activities that maintain or increase flexibility, reducing sedentary behavior, and risk management.³⁸

CONCLUSION

The study findings revealed that the physical activity among the obese subjects was normal and their self-rated health was generally fair to poor. Present study findings

can have implications for public health interventions. Given the relationship between self-rated health with BMI, these measures could be a better option as the indicators to improve the self-perceptions of health among specific social and economic subgroups of the South Indian population, hence maximize the effectiveness of public health interventions towards obesity, diabetes and other metabolic diseases.

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REFERENCES

- DeSalvo KB, Blosner N, Reynolds K, He J, Muntner P. Mortality prediction with a single general self-rated health question: A meta-analysis. *J General Int Med.* 2006;21(3):267-5.
- Brook RH, Ware JE, Davies-Avery A, Stewart AL, Donald CA, Rogers WH, et al. Overview of adult health status measures fielded in Rand's Health Insurance Study. *Med Care.* 1979;17(7):i-131.
- Krause NM, Jay GM. What do global self-rated health items measure?. *Med Care.* 1994;930-42.
- Piko B. Health-related predictors of self-perceived health in a student population: the importance of physical activity. *J Comm Heal.* 2000;25(2):125-37.
- Shields M, Shooshtari S. Determinants of self-perceived health. *Health reports.* 2001;13(1):35-2.
- Idler EL, Benyamini Y. Self-rated health and mortality: a review of twenty-seven community studies. *J Health Social Behavior.* 1997:21-3.
- Organisation WH. The world health report 2002: reducing risks, promoting healthy life: World Health Organization. 2002. Available at: <https://www.who.int/whr/2002/en/>.
- Idler EL, Kasl SV. Self-ratings of health: do they also predict change in functional ability? *J Gerontol B Psychol Sci Soc Sci.* 1995;50(6): S344-53.
- Idler EL, Russell LB, Davis D. Survival, functional limitations, and self-rated health in the NHANES I epidemiologic follow-up study, 1992. *Am J Epidemiol.* 2000;152(9):874-3.
- Miilunpalo S, Vuori I, Oja P, Pasanen M, Urponen H. Self-rated health status as a health measure: the predictive value of self-reported health status on the use of physician services and on mortality in the working-age population. *J Clin Epidemiol.* 1997;50(5):517-28.
- Onadja Y, Bignami S, Rossier C, Zunzunegui MV. The components of self-rated health among adults in Ouagadougou, Burkina Faso. *Populat Health Metrics.* 2013;11(1):15.
- Simon JG, De Boer JB, Joung IM, Bosma H, Mackenbach JP. How is your health in general? A qualitative study on self-assessed health. *Euro J Pub Heal.* 2005;15(2):200-8.
- Bergeron MF, Mountjoy M, Armstrong N, Chia M, Côté J, Emery CA, et al. International Olympic Committee consensus statement on youth athletic development. *Br J Sports Med.* 2015;49(13):843-51.
- Roberto CA, Swinburn B, Hawkes C, Huang TT, Costa SA, Ashe M, et al. Patchy progress on obesity prevention: emerging examples, entrenched barriers, and new thinking. *Lancet.* 2015;385(9985):2400-9.
- Emerging risk factors collaboration. Separate and combined associations of body-mass index and abdominal adiposity with cardiovascular disease: collaborative analysis of 58 prospective studies. *Lancet.* 2011;377 (9771):1085-95.
- Singh GM, Danaei G, Farzadfar F, Stevens GA, Woodward M, Wormser D, et al. The age-specific quantitative effects of metabolic risk factors on cardiovascular diseases and diabetes: a pooled analysis. *PLoS One.* 2013;8(7):e65174.
- Lauby-Secretan B, Scoccianti C, Loomis D, Grosse Y, Bianchini F, Straif K. Body fatness and cancer-viewpoint of the IARC Working Group. *New Eng J Med.* 2016;375(8):794-8.
- Freyer-Adam J, Gaertner B, Tobschall S, John U. Health risk factors and self-rated health among job-seekers. *BMC Public Health.* 2011;11(1):659.
- Manderbacka K, Lundberg O, Martikainen P. Do risk factors and health behaviours contribute to self-ratings of health?. *Social Sci Med.* 1999;48(12):1713-20.
- Myers A, Rosen JC. Obesity stigmatization and coping: relation to mental health symptoms, body image, and self-esteem. *Int J Obesity.* 1999;23(3):221.
- Myers A, Rosen JC. Obesity stigmatization and coping: relation to mental health symptoms, body image, and self-esteem. *Int J Obesity.* 1999;23(3):221.
- Imai K, Gregg EW, Chen YJ, Zhang P, De Rekeneire N, Williamson DF. The association of BMI with functional status and self-rated health in US adults. *Obes.* 2008;16 (2):402-8.
- Jylhä M. What is self-rated health and why does it predict mortality? towards a unified conceptual model. *Social Sci Med.* 2009;69(3):307-16.
- Schnittker J. When mental health becomes health: age and the shifting meaning of self-evaluations of general health. *Milbank Quart.* 2005;83(3):397-423.
- Spiers N, Jagger C, Clarke M, Arthur A. Are gender differences in the relationship between self-rated health and mortality enduring? Results from three birth cohorts in Melton Mowbray, United Kingdom. *Gerontol.* 2003;43(3):406-11.
- Case A, Paxson C. Sex differences in morbidity and mortality. *Demograp.* 2005;42(2):189-214.
- Krause L, Lampert T. Relation between overweight/obesity and self-rated health among adolescents in Germany. Do socio-economic status and type of school have an impact on that relation?. *Int J Environm Res Pub Heal.* 2015;12(2):2262-76.
- Carr D, Friedman MA. Is obesity stigmatizing? Body weight, perceived discrimination, and

- psychological well-being in the United States. *J Health Soc Behav.* 2005;46(3):244-59.
29. Friedman MA, Brownell KD. Psychological correlates of obesity: moving to the next research generation. *Psychol Bull.* 1995;117(1):3.
 30. Granger E, Williams G, Di Nardo F, Harrison A, Verma A. The relationship between physical activity and self-rated health status in European adolescents: Results of the EURO-URHIS 2 survey. *Euro J Pub Heal.* 2017;27 (2):107-11.
 31. Abu-Omar K, Rutten A, Robine JM. Self-rated health and physical activity in the European Union. *Soz Praventiv Med.* 2004;49(4):235-42.
 32. Young DR, Jerome GJ, Chen C, Laferriere D, Vollmer WM. Peer reviewed: Patterns of physical activity among overweight and obese adults. *Prevent Chronic Dis.* 2009;6(3).
 33. Freidoony L, Chhabi R, Kim C, Park M, Kim CB. The components of self-perceived health in the Kailali District of Nepal: a cross-sectional survey. *Int J Environ Res Pub Heal.* 2015;12(3):3215-1.
 34. Cullati S, Mukhopadhyay S, Sieber S, Chakraborty A, Burton-Jeangros C. Is the single self-rated health item reliable in India? A construct validity study. *BMJ Global Health.* 2018;3(6):e000856.
 35. Falk H, Skoog I, Johansson L, Guerchet M, Mayston R, Hörder H, Prince M, Prina A, et al. Self-rated health and its association with mortality in older adults in China, India and Latin America-a 10/66 Dementia research group study. *Age Ageing.* 2017;46(6):932.
 36. Paluska SA, Schwenk TL. Physical activity and mental health. *Sports Med.* 2000;29(3):167-80.
 37. Strauss RS, Rodzilsky D, Burack G, Colin M. Psychosocial correlates of physical activity in healthy children. *Arch Pediatr Adolescent Med.* 2001;155(8):897-902.
 38. Nelson ME, Rejeski WJ, Blair SN, Duncan PW, Judge JO, King AC, et al. Physical activity and public health in older adults: recommendation from the American college of sports medicine and the American heart association. *Circ.* 2007;116(9):1094.

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