

Effect of Health Education and Monitoring Of Physical Fitness on Level of Physical Activity in Class III Hospital Workers

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Abstract : Hospital workers form an integral part of the health system but awareness about health behavior and participation in physical activities outside working hours is lacking. Effect of health education and monitoring of cardio respiratory endurance using performance based test on level of physical activity in Class III hospital workers was studied . Outcome measures used were International physical activity questionnaire (IPAQ) score and 6 minute walk distance (6MWD). The workers were educated about health behavior as per WHO guidelines for physical activity. A second assessment was performed four weeks later.67% of the people showed increase in walking distance. 34% of the workers incorporated 30 minutes of brisk walking in their daily schedule and showed a clinically significant rise in 6MWD. Health related education and monitoring improved physical activity level in class III hospital workers. Increase in leisure time and occupational activity led to improvement in 6 minute walk distance and IPAQ score.

Introduction

Regular physical activity when performed regularly with specific goals improves physical functioning and fitness. Self regulation of physical activity level is an important risk reduction strategy in management of non-communicable diseases. Despite well documented health benefits of regular physical activity approximately 50% adults do not participate in regular physical activity. [8,17,19,12]

Non-communicable diseases are estimated to account for over 50% deaths and 43% of disability adjusted life years lost in India in 2004. [13]. One of the core behavioural noncommunicable risk factor is physical inactivity. [19, 20] WHO has quantified physical activity in adults and provided guidelines for maintenance of fitness [21].

Although Class III health workers exist in a health related background however knowledge about health behavior may be lacking. It has been reported that in the South Asian region females, skilled workers, professionals and those with higher education are more inactive. [3,8]. A large percentage of people in India are inactive with fewer than 10% engaging in recreational physical activity [13, 14]. Health education and responsible health behaviour is an important but often under-utilized self-management technique [5, 6]. This study was conceptualized to evaluate Class III hospital workers for their physical activity level and cardio respiratory endurance



Methods

Fifty nine class III workers were recruited from various departments of MGM Hospital, Kamothe, Navi Mumbai after seeking ethical approval, permission from concerned authorities and screening. People having history of unstable angina, myocardial infarction, resting heart rate more than 120 beats/minute, systolic blood pressure more than 180mmHg, diastolic blood pressure more than 100mmHg, respiratory, metabolic, musculoskeletal, neurological and psychiatric disorders were excluded. Informed consent was sought from participants. Physical activity level was quantified using short form - International Physical Activity Questionnaire (IPAQ). Scores obtained using IPAQ were classified into low, moderate, and high level of physical activity. [7]

Six minute walk test was performed as per American Thoracic Society (ATS) guidelines [1]. Pulse rate, blood pressure and respiratory rate were recorded at basal level, immediately after stopping the test and during recovery period. Rate of perceived exertion was recorded using Modified Borg's Scale. Distance walked in six minutes was recorded in meters (6MWD). Predicted walk distance was calculated using formula published by American Thoracic Society, as mentioned below. For males - $6MWD = (7.57 * \text{height in cm}) - (5.02 * \text{age}) - (1.76 * \text{weight in kg}) - 309m$, For females - $6MWD = (2.11 * \text{height in cm}) - (2.29 * \text{weight in kg}) - (5.78 * \text{age}) + 667m$ [11]

Participants were informed about their achieved walk distance, predicted distance and IPAQ level and given the following fitness related health education.- Importance, consequences, recommended level of physical activity including at least 30 minutes of moderate-intensity aerobic activity (e.g. brisk walking, jogging, etc.), 15 minutes of work-related activity (e.g. carrying heavy loads, climbing stairs etc.) and 15 minutes of muscle-strengthening exercises done at least 3-4 times per week. Inactive people were advised to start slow and gradually increase physical activity. Dietary modifications and weight management guidelines were given. Equivalent of 150 minutes/week of moderate intensity physical activity was advised for substantial health benefits [10, 16, 21].

Participants were made aware of their performance as per current level of 6 minute walk distance (6 MWD) and capacity based on predicted walk distance. Difference between the two was emphasized and ability to be able to bridge the gap after following above instructions was reiterated. After a period of one month a second 6MWT was performed and IPAQ score was recorded.

Data was analyzed using SPSS version 16. Descriptive statistics was performed and measures of central tendency were calculated. Paired t test was used to compare the 2 walk test distance and IPAQ score with level of significance set at $p < 0.05$.

Results

Demographic and clinical parameters of 59 participants, (23 male and 36 females) aged 20 to 60 have been presented in Table 1 and 2. Mean age of the population was 36 years (± 9.05), mean height was 156 cm (± 8.5), mean weight was 54 kg (± 11.3) and mean BMI was 22.2 (± 4.45). Out of the total sample 56% had normal BMI, 20% were underweight, 15% were overweight and 9% were obese. (As per WHO - BMI criteria).

Mean 6 minute walk distance (6 MWD) at first assessment was 587.5 m (± 126.7)

and that at second assessment after four weeks was increased to 604.5 meters (± 115.04). Difference between actual and predicted 6 MWD was not significant ($p = 0.999$). Comparison of 6MWD revealed that 67.8% people demonstrated an increase in the distance after a period of 4 weeks. 50% of these samples with increased distance had a clinically significant change (≥ 54 meters) from 554 (+ 92.1) to 614.3 (+ 93.3). 25.4% of the workers showed a decrease in the 6MWD and 7% showed no change.

Mean IPAQ score at first assessment was 4675.9 MET minutes/week (± 2962.3) and at second assessment after 4 weeks increased to 5570.3 MET minutes/week (± 3155.8). At first assessment, 64.4% of the population scored high level of MET minutes/week and 35.6% moderate level. After 4 weeks, 76.3% of the population scored high level of MET minutes/week, which clearly indicated that 12% of the population had improved their level of daily physical activity.

Discussion

Physical activity profile of class III hospital workers lies in the moderate to heavy category as observed by higher IPAQ scores in this population due to activities like lifting heavy objects, climbing stairs and cleaning the entire workplace for a time period of more than 2 hours/day. Although BMI is closely associated with physical activity profile and half of the population was in the ideal weight category still 24% of the people were overweight. During the interventional health education session, the sample population was instructed about 6 minute walk test and was informed about the distances achieved by them in this test. They were educated that this distance needed to be improved and were motivated for the same. The workers were quite interactive and curious about the facts and concepts of physical fitness. It was noted that males were more enthusiastic than females about physical activity. Females had queries about weight reduction strategies and dietary modifications. At the health education session, majority of the sample population had one common query viz. ways to improve physical activity and cardio respiratory fitness levels in spite of the amount of physical activity done as a part of their daily work activities already being between moderate and high levels.

The workers took up to increasing their physical activity by walking briskly for 30 - 60 minutes on a daily basis which could be the reason for increase in the walk distance. Overall improvement was not significant which could be due to the fact that some workers demonstrated a fall which negated this effect. Workers who showed a decrease in the 6MWD reported musculoskeletal pain (53%) and the remaining demonstrated poor motivation during the second assessment (47%). Some of the workers demonstrated no change (7%), which could mean that further motivation and a long term training program may need to be implemented for these workers to have a significant effect on cardio respiratory endurance.

Majority of this population was inactive during their leisure time [2,] Most of the time spent in moderate to vigorous intensity activity was at the workplace. Inactivity in females was higher and associated with socio-demographic characteristics like females needing to carry out household chores, the individual being the only earning member of the family and low economic levels. Similar findings have been reported by Shah et al. [9, 14] in 2005 in six regions of India. High prevalence of insufficient leisure physical activity observed across the sample population and both genders could reflect on limited access to and availability of



facilities for recreational and leisure physical activity [18].

WHO recommends that individuals perform at least 150 minutes of moderate to vigorous physical activity per week for the maintenance of health [12]. In India, individuals appear to derive most of their physical activity from the occupational domain [7]. This physical activity can be evaluated using the 6MWT which can be used to quantify the changes that occur in the cardio respiratory fitness as physical activity levels change for the better or worse.

It may take 12 weeks to show a significant improvement in the physical fitness level of the individuals [4]. As was observed in our study that a minimal clinically significant change was seen in 34% of the participants in a time span of just 4 weeks, thus, with the right amount of enthusiasm and accurate interventional knowledge provided to the sample population, significant improvement may be observed in higher percentage of the participants in longer duration of time.

Longitudinal studies carried out with greater reflection on changes in diet and activity levels after health education need to be carried out.

Conclusion

Health education had a significant effect on level of cardio respiratory capacity and physical activity level of class III hospital workers. Quantification of physical activity using 6MWT and IPAQ as effective tools to monitor and assess physical activity levels at an individual level and promoting awareness of difference between performance and capacity may lead to better health behaviour in people.

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