

A Comparative Study on Physical Activity Pattern among General and Shift Duty Workers with Diabetes Mellitus

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ABSTRACT

The present study explored the physical activity pattern of the diabetic workers. India is considered as “Diabetic capital of the world”, Since the Indian work force undergo irregular duty hours, due to their personal and work pressure, the importance they give for physical activity is highly questionable. Physical activity and diet helps in the treatment part of diabetic individual. Thus it is essential to focus on the physical activity pattern of the diabetic workforce of the nation. About 200 diabetic workforce (100 General duty workers and 100 rotation shift workers) were selected for the study using purposive random sampling technique. Interview schedule was used to collect the relevant information on the research paper. Obtained information was subjected to statistical analysis. From the results it is found that only 23% performed physical activity. Walking was more preferred (97%) by the participants. Maximum of the subjects performed physical activity for 30 minutes per day. Most of our workforce availed Government bus as the mode of transport to the work place. Rotation shift workers perform their work in sitting posture. Whereas standing and walking postures are performed more by rotation shift workers. Indian workers are the pillars of the nation. Performing physical activity must be motivated to maintain the blood glucose level. Every Institution must be provided with recreation club to encourage the sport activity of the worker. By this, we can improve the mental and physical ability of the work force

Keyword: Physical activity, work posture, exercise, barrier, walking,

INTRODUCTION

Physical activity is defined as “any bodily movement produced by skeletal muscles that requires energy expenditure”. [1] Moderate to vigorous intensity physical activity, is highly recommended for preventing cardiovascular diseases, type-2 diabetes, some kinds of cancers, and improving the quality of life. [2] The amount of physical activity has a dose-response relationship with all causes of mortality and cardiovascular diseases. [3] Physical activity is also shown to counter depression, anxiety disorders, and other mood dysfunctions. Apart from diet therapy and pharmacological therapy, another factor considered to have a major significance in diabetes treatment is movement therapy. All diabetic patients are recommended to change their lifestyle from sedentary to a more active one, bearing in mind that all forms of daily activity are helpful. [4]

Numerous studies demonstrate that the risk of diabetes increases as physical activity decreases. As a staple of life, physical activity is necessary for preserving human health, preventing and delaying the onset of type 2 diabetes, properly treating diabetes and reducing mortality. Achieving the recommended level of physical activity is considered to be a priority in the area of public health and a key measure in the treatment of chronic diseases, especially type 2 diabetes. In type 2 diabetes, regular moderate-intensity physical exercise (walking, cycling, running and swimming) makes it possible to improve control over the blood glucose level, reduce the cardio-

vascular risk, lose weight and improve well-being. [5]

Patients suffering from diabetes are recommended to take regular, preferably daily moderate-intensity physical effort, based on pleasurable and safe exercises, 30 minutes a day or more at best, through most of the week (for adults with diabetes). Irrespective of the type of diabetes, in order to reduce insulin resistance, it is recommended to take exercise daily or at least not to have more than 2 days of break between exercise sessions. The latest research demonstrates that all people, especially those suffering from diabetes, should reduce the duration of daily sedentary lifestyle. [5]

The research demonstrates that, compared to less active patients, more active patients, who take physical activity also in their free time, are more often in a better health condition and have a fewer accompanying diseases and complications. [6]

MATERIALS AND METHODS

Adopting Purposive random sampling method, 200 Diabetic ESI beneficiaries were selected from ESIC Medical College and Hospital, Chennai. They were equally grouped into General shift workers and Rotation shift workers. Permission was obtained from hospital authority to conduct the study. The selected ESI beneficiaries were briefed about the purpose of the research and written consent was obtained from them. Subjects within the age group of 20- 60 years were selected. Pregnant, lactating women, subjects with micro and macro vascular complications were excluded from the study. A pilot study was conducted among one-tenth of the total population to check the reliability and validity of the interview schedule. Interview schedule was used to collect the information about the physical activity pattern of the subjects, which includes the type, frequency; duration of physical activity performed and also mode of transportation, working posture were also collected. The

obtained information was coded, and subjected to statistical analysis and results were interpreted.

RESULTS AND DISCUSSION

Table-1: Performance of Physical activity

Performance of Physical activity	General shift N=100	Rotation Shift N=100	Total N=200 (%)
Yes	27	19	46 (23)
No	73	81	154 (77)

It is evident from the table that only 23% of the diabetic workforce performs physical activity. Among them 13.5% were General shift workers and only 9.5% were rotation shift workers.

Many people state 'lack of time' as a major barrier for exercise. Over 50% of employees reported that they have little time to exercise because of a busy work schedule and also, a busy home or family schedule was a barrier for nearly 50% of participants [7] (Bowles, 2002).

Table-2: Type of physical activity

Type of physical activity	General shift N=27	Rotation Shift N=19	Total N=46
Walking	27	18	45 (97.8)
Yoga	-	1	1 (2.2)

Among the study participants who performed physical activity, walking is performed by more number of the diabetic workforce (97.8%). About 60% General shift workers and 40% rotation shift diabetics performed walking, followed by only 2.2% performed yoga.

Table-3: Duration of physical activity

Duration of physical activity	General shift N=27	Rotation Shift N=19	Total N=46(%)
30 minutes	20	17	37 (80.4)
45 minutes	3	-	3 (6.5)
One hour	2	2	4 (8.6)
More than one hour	2	-	2 (4.3)

In the present study, most of the diabetic workforce (80.4%) performed physical activity or exercise for 30 minutes per day. Among them 54% and 45.9% were general and rotation shift workers respectively. About 6.5 % participants (General shift workers) performed for 45 minutes per day. About 8.6% (50% General shift and 50% rotation shift diabetics)

executed exercise for one hour per day. Only about 4.3% performed physical activity for more than one hour.

The World Health Organization (WHO) provided recommendations for physical activity to benefit health in 2010. These recommendations stated that for additional health benefits, adults should increase their moderate intensity aerobic physical activity to 300 minutes per week, or engage in 150 minutes of vigorous intensity aerobic physical activity per week, or an equivalent combination of moderate and vigorous intensity activity. [8]

Table-4: Mode of transport

Mode of transport	General shift N=100	Rotation Shift N=100	Total N=200 (%)
Auto	1	-	1 (0.5)
Bicycle	4	8	12 (6)
Company bus	5	5	10 (5)
Government bus	49	56	105 (52.5)
Train	9	5	14 (7)
Two wheeler	22	19	41 (20.5)
Van	1	-	1 (0.5)
Walking	9	7	16 (8)

Our study reported that the majority (50.5%) of the study participants' availed Government bus as their mode of transport, followed by 20.5% used two wheelers. About 5% of the subjects used company bus. About 0.5% availed van and auto respectively. Train commuters were 7%. It is interesting to report that only 6% used bicycle and 8% went to their work place by walking. Thus it is evident that walking and bicycle usage is less among our diabetic work force and people used comfort mode of transportation. Thus this also had an impact on physical activity of the subjects.

Table-5: Work posture

Work posture	General shift N=100	Rotation Shift N=100	Total N=200
Sitting	63	42	105 (52.5)
Standing	26	35	61 (30.5)
Walking	11	23	34 (17)

About 60% of General shift workers and 40% of Rotation shift workers perform their work in sitting posture. Whereas standing and walking postures are performed more by rotation shift workers than general shift workers.

The intervention strategies introduced was a workplace walking program which encouraged walking instead of sitting during work tasks. Every Institution must be provided with recreation club to encourage the sport activity of the worker. By this, we can improve the mental and physical ability of the work force [9] (Gilson, 2009). Another study stated that mandatory activity of middle-to-high intensity for 2.5 hours per week during their work hours. [10]

Table-6: Duration of work

Duration of work	General shift N=100	Rotation Shift N=100	Total N=200
Seven hours	2	-	2
Eight hours	52	25	77
Nine hours	12	17	29
Ten hours	28	49	77
Eleven to twelve hours	6	7	13
More than twelve hours	-	2	2

Our study clearly evident that lesser work duration is performed more by General shift workers and on the other hand, longer work duration is performed by Rotation shift workers. Two general shift workers work for seven hours daily and none of the rotation shift workers work for seven hours. 67.5% and 32.5% of General shift and rotation shift workers respectively work for eight hours. About 41.3% and 58.7% of General and rotation shift workers work for nine hours. About 21% and 79% General and rotation shift workers respectively work for ten hours. About 46% and 54% of General and rotation shift workers work for more than eleven hours. It is also interesting to note that none of the general shift workers work for more than 12 hours whereas two rotation shift workers work for 12 hours in a day. Thus the work timing is found to be more among Rotation shift workers than the General duty workers. Leisure time availability of General shift workers made them to perform physical activity when compared to Rotation shift workers.

CONCLUSION

Physical activity and diet plays a major role in diabetic patients as part of the treatment. But from our study it is explored rotation shift workers spend more time in work place and also perform strenuous work. The time unavailability and lack of awareness found to be the reasons for poor physical activity among the diabetic workforce. Indian workers are the pillars of the nation. It is very essential to maintain their health especially the blood glucose of the diabetic workers. All diabetic workers should be encouraged to perform physical activity for atleast 30 minutes per day. Diabetic workers should be encouraged to use bicycles instead of any comfort mode of transport to increase the physical activity. Performing physical activity must be motivated to maintain the blood glucose level such as walking, swimming, running, gardening, aerobic exercises and other outdoor games of their choice. Every Institution must be provided with recreation club to encourage the sport activity of the worker. By this, we can improve the mental and physical ability of the work force and thereby efficacy improves and the productivity from the work forces increases. This has triple benefits on the employer, employees and the nation.

Recommendation of the Future Research

Comparative study between male and female workers can be done.

Huge sample size can be selected

Non- ESI beneficiaries can be selected and compared.

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