

# Level of Physical Activity among Diabetic Patients of Rural and Urban Areas

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## ABSTRACT

**Background:** Rapid urbanization, economic development and Nutritional Transition in the developing world over the last 2 decades have dramatically increased diabetes in population. Diabetes mellitus is a global health crisis.

**Aim:** To compare the level of physical activity among Diabetic patients living in some sections rural and urban population in the major cities of Punjab i.e., Lahore and Sialkot.

**Methods:** It was cross sectional study comparing physical activity among patients from rural and urban areas presented in outpatient clinics from 1<sup>st</sup> Jan 2018 to 30 Aug 2018. It was a multicentre study conducted at different hospital in the city of Lahore and Sialkot in the province of Punjab, Pakistan. Hospital included in study were Chaudhary Mohammad Akram Teaching and Research Hospital Lahore, Sialkot Medical Complex, Civil Hospital Sialkot, CMH Sialkot; Kashmir Hospital Sialkot Sameena Nisaar Hospital Sialkot.

**Results:** Out of total patients, 156(39%) were rural and 244 (61%) urban. The mean age of the participants was 46.53±12.31. P value calculated through chi square test show that there is difference in the level of aerobic activity level and people from rural areas had increased aerobic activity. The mean score of total physical activity in rural participants was 5.73±1.93 and in urban participants was 5.75±1.98.

**Conclusion:** Although, participants from rural areas are physical more active than participants from urban areas in terms of aerobic activity but there is no difference in the strength and flexibility among both groups and as a whole participants from both group had equal level of physical activity.

**Keywords:** Physical Activity; Exercise; Diabetes Mellitus

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## INTRODUCTION

Diabetes has tremendously increased worldwide in the last two decades especially in developing countries. Due to rapid progress in prevalence, adults should be screened out for early detection and care. Approximately there are more than 451 million people suffering from diabetes globally and number increasing and 60% diabetes patient live in Asia. Current prevalence in Pakistan is 16.98% with 33.5 millions peoples suffering from it. The urban population is about 34%. Prevalence of diabetes in urban areas of Pakistan is 14.81% and in rural areas 11.44%. Over weight and obesity is about 25% and over 10% respectively, while prevalence of physical activity is 33% to 44%<sup>1</sup>.

According to a study, limited research is available on diagnosis and prevalence of diabetes in rural areas.<sup>2</sup> A study shows Diabetes is the sixth leading cause of death with approximately 210,000 deaths in the year 1999, Diabetes leads to long-term complications and hence becomes major public health issue. The presence of obesity, sedentary lifestyle or physical inactivity among the patients may increase the impact of diabetes.<sup>3</sup> Another

study shows that physical activity leads to physical fitness and endurance results in optimal control of diabetes, as well as regular aerobics help in its treatment<sup>4</sup>.

Physical activity is usually recommended for people with diabetes. However in some studies in addition to physical activity a diet plan or behavior or both were considered helpful in diabetic patients.<sup>5</sup> Diabetes mellitus is usually associated with its complications. Due to lack of awareness about diabetes over the years, there has been an increase in its complications. The result is decreased effective work force imparting economic burden on developing Pakistan. Studies have been conducted to determine the level of awareness of diabetic patients in rural and urban areas in Pakistan. The objective of one of such studies was to find areas that require more attention in the field of resources and planning.<sup>6</sup> The lifestyle of today's population is being changed especially among the youth as a result of rapid modernization and increase in urbanization rates, habits and fast foods factors. A strong genetic predisposition to metabolic diseases like diabetes the health related problems are more severe in Asian countries population.

Data on the level of awareness and the prevalence of diabetes in developing countries is suboptimal. This is important information for planning of public health

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programs. This study helps to identify happening, investigate and evaluate with the help of science and research in the research based trial.<sup>2</sup> Most patients with diabetes or at risk of developing diabetes do not perform physical activity regularly according to the national standard rate. There is a need to make efforts in order to increase the physical activity among these people<sup>7</sup>.

The objective of this study was to compare the level of physical activity among diabetic patients in some sections of rural and urban population of Sialkot and Lahore. The rationale of this study is conducted to assess the level of physical activity performed by diabetes patients in rural and urban areas and to compare them. To narrow the knowledge gap in terms of level of physical activity engaged in by diabetics as a part of their lifestyle modification to control the disease and to see its pattern in rural and urban areas for use as an input for possible education and other related interventions.

## MATERIAL AND METHOD

It was comparative cross-sectional study. This study is conducted to assess the level of physical activity performed by diabetes patients in rural and urban areas and to compare them. To narrow the knowledge gap in terms of level of physical activity engaged in by diabetics as a part of their lifestyle modification to control the disease and to see its pattern in rural and urban areas for use as an input for possible education and other related interventions. Lahore is second populous city of Pakistan with population of 11126285 and Sialkot is 13th populous city with population of 655852 according to census 2017. Urban population of Pakistan is 34%, which is about 40% in Lahore and 30% in Sialkot.

Hospitals selected for research work included Chaudhry Muhammad Akram Teaching and Research Hospital Raiwind Road Lahore, Sialkot Medical Complex Sialkot, Civil Hospital Sialkot, CMH Sialkot, Kashmir Hospital Sialkot and Sameena Nisaar Hospital Sialkot. The study was conducted for 6 months i.e., 1<sup>st</sup> Jan 2018 to 30 Aug 2018 with 400 Diabetic patients from both gender who were physically fit and having no musculoskeletal disorder. Patients with systemic complications of diabetes Mellitus like peripheral neuropathy, nephropathy or retinopathy were excluded. Patients suffering from respiratory, gastrointestinal, cardiovascular, neurological, hepatic or other infectious disorders were also excluded from study. Ethical Approval was taken from Institutional Review Board. An informed consent was taken from all the participants before collection of data. Subjects were selected according to inclusion criteria. Physical activity was determined through rapid assessment of physical activity (RAPA) questionnaire.<sup>1</sup> Participants were divided into two groups, 1<sup>st</sup> group included the rural area with diabetes mellitus while 2<sup>nd</sup> group include urban area with diabetes mellitus. The two groups were interviewed on basis of rapid assessment of physical activity questionnaire in the language they understood. This questionnaire was helpful in providing required information regarding the physical activity of both groups with diabetes mellitus. This

scale is reliable to check the level of physical activity. It has three parts Aerobic, flexibility and strength level. The scale is used here as mostly patients were above 50 yrs of age. Physical activity level of that group of age was even lacking in younger ones. This questionnaire consists of nine questions, if the scoring is less than 6 then the activity level will be suboptimal and if scoring is greater than 6 then the activity level will be optimal.

Data was collected after taking an informed consent by all participants. Both groups have total independency of leaving the study at any time. Data was analyzed by using SPSS 20.0 version. Mean±SD was calculated for numeric variables. Chi squared test was used.

## RESULTS

Out of 400 patients with diabetes mellitus, 156(39%) were rural and 244 (61%) were urban. The mean age of the participants was 46.53±12.31. Among participants from rural area 103(66%) were males and 53(34%) were females and among participants from urban areas 119(48.8%) were males and 125(51.2%) were females. The mean age of participants from rural area was 45.48±12.44 and from urban areas was 47.21±12.2. Out of total 156 participants from rural areas, 2(1.3%) were sedentary, 13(8.3%) were under active, 12(7.7%) were under active regular light activity, 26(16.7%) were under active irregular, and 103(66%) were active. Out of 244 participants from urban areas 9(3.7%) were sedentary, 8(3.3%) were under active, 15(6.1%) were under active regular light activity, 58(23.8%) were under active irregular, and 154(63.1%) were active. P value calculated through chi square test show that there is difference in the level of aerobic activity level and people from rural areas had increased aerobic activity. Out of total 156 participants from rural areas, 140(89.7%) were not performing strength and flexibility. Out of total 244 participants from urban areas, 214(87.7%) were not performing strength and flexibility. The mean score of aerobic activity in rural participants was 5.51±1.63 and in urban participants was 5.17±1.55. P value (0.05) calculated through independent sample t test show that there is significant difference in the level of physical activity. The mean score of Strength and Flexibility in rural participants was 0.22±0.71 and in urban participants was 0.28±0.81. P value (0.8) calculated through independent sample t test show that there is no significant difference in the level of physical activity. The mean score of total physical activity in rural participants was 5.73±1.93 and in urban participants was 5.75±1.98. P-value(0.88) calculated through independent sample t test show no significant difference in the level of physical activity. 400 patients (n=400) included. The minimum age of participants in socio demographic profile is 21 and maximum age is 71. Out of total 156 participants were from rural area and 244 were from urban area. Among participants from rural area 103(66%) were males and 53(34%) were females and among participants from urban areas 119(48.8%) were males and 125(51.2%) were females.

Table 1: Comparison of Age and Gender

Variable	Rural n=156	Urban n=244	Total
Male	103(66%)	119(48.8%)	222(55.5%)
Female	53(34%)	125(51.2%)	178(44.5%)
Age	45.48±12.44	47.21±12.2	46.53±12.31

Table 2: Comparison of Aerobic Activity

Aerobic Activity	Residence		
	Rural	Urban	Total
Sedentary	2(1.3%)	9(3.7%)	11(2.8%)
Under Active	13(8.3%)	8(3.3%)	21(5.3%)
Under Active Regular light Activity	12(7.7%)	15(6.1%)	27(6.8%)
Under Active Regular	26(16.7%)	257(64.3%)	84(21%)
Active	103(66%)	154(63.1%)	257(64.3%)

**P value 0.05**

Table 3: Comparison of Strength and Flexibility

Strength & Flexibility Activity	Residence		
	Rural	Urban	Total
None	140(89.7%)	214(87.7%)	354(88.5%)
Strength Activity	6(3.8%)	10(4.1%)	16(4%)
Flexibility Activity	2(1.3%)	2(0.8%)	4(1%)
Both	8(5.1%)	18(7.4%)	26(6.5%)

**P value 0.8**

Table 4: Comparison of score of activity

Variable	Rural	Urban	P value
Aerobic Activity	5.51±1.63	5.17±1.55	0.05
Strength and Flexibility	0.22±0.71	0.28±0.81	0.8
Total Activity Score	5.73±1.93	5.75±1.98	0.88

## DISCUSSION

It was taken into account that the diabetes patients showed a decrease level of motivation. The patients were more reluctant in doing physical activity as they had complaints of pain and swelling of feet whenever they started physical activity. In addition patients with DM had to face socioeconomic issues from the society that leads them more depressed and early fatigue. This results in lack of motivation towards physical activity or continuing any sort of exercise. Although, participants from rural area more physically active than participants from urban area in terms of aerobic activity but there is no difference in the strength and flexibility among both groups and as a whole participants from both group had equal level of physical activity.

A study shows that a higher level of physical activity is associated with a significant reduction in the risk of type 2 diabetes, including the physical activity of moderate intensity and duration.<sup>9,10</sup> Another study shows that risk of diabetes could be reduced by increasing physical activity. The effects of physical activity were observed in patients with excessive BMI and high levels of glucose. It shows

regular physical activity, weight control and normal blood glucose levels in diabetes patients are the important factors to prevent complications<sup>11</sup>.

A prospective cohort study is conducted by Rich Edwards et al, 1986, in which they examine physical activity of diabetics and benefits. The data is collected by quintiles of MET score for walking. Lindstrom J et al conducted a study to determine physical activity, BMI, risk of type2 diabetes with glucose regulation. The result concluded that there is still a good relationship between BMI and diabetes. The risk of diabetes could be reduced by increasing physical activity. The effects of physical activity were observed in patients with high BMI and high level of glucose. Regular physical activity, weight reduction and controlled blood glucose levels in patients with diabetes, are the important factors to prevent complications<sup>12</sup>.

Another study was conducted to evaluate trends in prevalence of diabetes in Asia especially in India and China. The research justified that, most of the countries in Asia especially India and China were at risk of diabetes. In the growing number of people there is a significant problem of diseases and their complications. The lifestyle of the population has changed especially among the youth due to the rapid modernization, urbanization rate, habits and readily available fast foods, moreover there is strong genetic predisposition to metabolic diseases like diabetes. The health related problems are more severe in Asian countries population. By modification of risk factors like physical inactivity that leads to obesity can prevent the diabetes primarily. In the health care agenda the national programs should be implemented from the young ages among the population for the healthy lifestyle<sup>13</sup>.

The patients with diabetes mellitus should be motivated to promote their level of physical activity and should be informed of the beneficial effects of physical exercise program. The treating physicians must have an effective direct two way communication between the patients and themselves to motivate the patients thus eliminating the risk factors leading to complications and educating the patients about the beneficiary effects of the regular physical activity program.<sup>14</sup> Thus our study intends to highlight the awareness gap between developing low socioeconomic countries and globally especially in developed countries regarding benefits of physical activity of diabetes patients to overcome complications and progression of disease.

## CONCLUSION

Although, participants from rural are physical more active than participants from urban area in terms of aerobic activity but there is no difference in the strength and flexibility among both groups and as a whole participants from both group had equal level of physical activity.

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