

# Association of Physical Activity and Health Related Quality of Life in Elderly Diabetic Individuals among Rural Community - A Cross Sectional Study

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**Abstract:** **Background:** Diabetes mellitus type 2 (T2D) is a chronic metabolic disease with a great impact on physical activity and Health related quality of life (HRQoL) in terms is measured as physical and social functioning, and perceived physical and mental well-being. The aim of the present study is to measure physical activity and affecting HRQoL in patients with T2D. The prevalence of T2DM is increasing in relation to the rapidly changing lifestyles in developed and developing countries. Physical activity is bodily movement produced by the contraction of skeletal muscle that requires energy expenditure in excess of resting energy expenditure. **Aim:** The aim of this study to find out the association of physical activity and quality of life in elderly diabetic individuals from rural community. **Objectives:** 1) To assess the physical activity in elderly diabetic individuals. 2) To assess the health related quality of life in elderly diabetic individuals. **Procedure:** Ethical clearance taken from institutional ethical committee of DVVPF's COPT Ahmednagar, Informed consent was taken from patient and patients were included based on inclusion and exclusion criteria then after demographic data collection patients were examine. In this study we assessed 10 elderly subjects with type 2 diabetes mellitus through the informed consent form and we assessed the Physical Activity Scale for Elderly and Health related quality of life of elderly individuals. **Data analysis:** The demographic data was analysed by the mean, median and standard deviation. unpaired t test was used to test the significance in quantitative variables. The association between the physical activity and health related quality of life analysed and P value shows <0.0001 is considered significant. **Results:** All the health related quality of domains were assessed by mean, median values of the scale. The highest values were found in the and the lowest values found in the. All the quality of life scores decreased as the increasing age. The higher score of quality of life found in all the subjects who were physically active. **Conclusion:** This study shows that the physical activity has positive association with health related quality of diabetic individuals. The individuals with physically inactive shows the reduced quality of life also. In this study the result showed the domains of health related quality of life like energy/fatigue and health change shows positive result.

**Keywords:** Elderly, Diabetes mellitus, Physical activity, Health Related Quality of life

## 1. Introduction

The elderly population in India has undergone rapidly increasing with their improved life expectancy. The proportion of the older persons has risen from 7.7% in 2001, 8% in 2011, and projected 1% in 2025. Quality of life is the perception of the individual's position in life, expectations, standards and concerns. Physical activity produces increased range of motion, strength of the muscles, and the functional levels and it also helps to reduce obesity, delays decline in functional abilities and the onset of chronic diseases.<sup>1</sup> Diabetes mellitus is a major health problem that increases morbidity and the mortality rate in the developed and the developing countries. Type 2 diabetes mellitus is characterized by insulin resistance and deterioration of beta cell function. The prevalence of T2DM is increasing in relation the rapidly increasing lifestyle.<sup>2</sup> Diabetes, type 2 is common in the elderly (>65 years of age) patients which constitutes about one-half of the diabetic population. Diabetes, its complications, and its symptoms in the elderly may expected to affect the individual's quality of life.<sup>3</sup>

Physical activity is to be related to improving functional performance and health related quality of life. Physical exercise may assist older adults to sustain health of aging

people. Regular leisure time of physical exercise can lead to high level of HRQoL in elderly people.<sup>4</sup>

HRQoL is defined as an individual's perspective of well-being in physical, mental and social domains of life. Physical activity types and health.<sup>5</sup> WHO has defined health as a dynamic state of physical, psychological, social and spiritual well-being and just an absence of infirmity.<sup>6</sup> Health related quality of life is part of multi-dimensional approach that considers physical, mental, and social aspects. Aging, health status, physical activity all affect independence and QOL in elderly persons. QOL is related to an individual's perception of the position in life in the context of culture and value systems and is influenced in a complex way by the person's physical health, psychological state, level of independence, and social relationships.<sup>7</sup> The quality of life (QOL) of older adults is an important aspect of their lives, reflecting their health and conditioning their well-being. Good QOL of the elderly means that they function well in their environment, and its maintenance is essential in times of demographic changes resulting in longer life spans, and an increased proportion of older adults in society.<sup>8</sup> Measuring QOL values among older adults and determining its associated factors have significant importance for introducing preventive interventions among older adults. Quality of life older adults from rural areas need to take in

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consideration, their situation is more difficult because of housing conditions, income etc. usually older live in their houses, with low technical standard and inadequacy of equipments.<sup>9</sup>

There are, however, few studies that have examined the association between physical activity and health related quality of life in elderly among the rural population.

The purpose of this study to find out the association between the physical activity and health related quality of life in elderly among rural population.

## 2. Aim

The aim of this study to find out the association of physical activity and health related quality of life in elderly diabetic individuals from rural community

### Objectives

- To assess the physical activity in elderly diabetic individuals.
- To assess the health related quality of life in elderly diabetic individuals.

## 3. Materials and Methodology

- **Sample size:** 10 (Both male and female)
- **Study design:** A cross-sectional Study
- **Study duration:** 3 months
- **Sampling method:** Convenient sampling
- **Target Population:** Elderly with diabetic
- **Study setting:** Primary Health Centre and Tertiary Health Centres
- **Ethical considerations:** The study proposal approved for the ethical clearance from the institutional ethics committee of the DVVPF's COPT, Ahmednagar. Prior to data collection and assessment informed consent was obtained from each subjects.

### 3.1 Eligibility criteria

#### Inclusion criteria

- Age of more than 60 years
- Either sex
- Diabetes patients
  - Fasting plasma glucose  $\geq 126$  mg/dl (7.0 mmol/l),
  - 2-hours plasma glucose  $\geq 200$  mg/dl (11.1 mmol/l) during an oral glucose tolerance test.
- Absence of cognitive and perceptual problems
- A history of at least 6 months residing in nursing home for old people who were in this group

#### Exclusion criteria

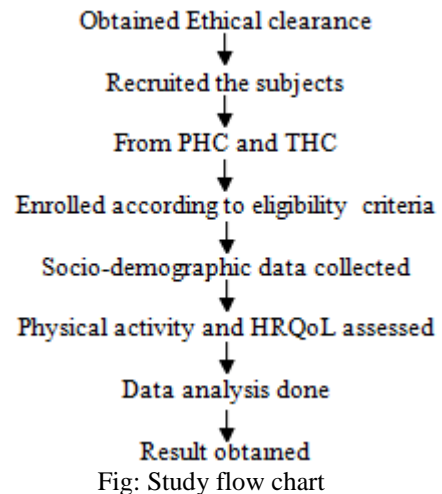
- Previous history of angina, severe vascular disease, any neurological disorders.
- Patients with neuropathy and/ or hypothyroidism, liver diseases.
- Patients with a history of drug or alcohol abuse.
- Patients with mental, communication, and behavioural disorders that may cause problems in understanding or answering the questions.

- Any recent surgeries

### 3.2 Outcomes

- Physical activity was assessed by physical activity scale for elderly.
- Health Related Quality of life of elderly diabetic individuals assessed with SF-36 Questionnaire.

## 4. Study Procedure



## 5. Data Analysis

The demographic data was analysed by the mean, median and standard deviation. unpaired *t* test was used to test the significance in quantitative variables. The association between the physical activity and health related quality of life analysed and P value shows  $<0.0001$  is considered significant.

**Table:** Mean and Standard Deviation of PASE Score and HRQoL Score

| Score       | Mean   | SD    |
|-------------|--------|-------|
| PASE score  | 86.35  | 29.24 |
| HRQoL Score | 540.09 | 56.45 |

\*CI= 95%, P value  $<0.0001$  significant

## 6. Result

Table 1 shows the Socio-demographic and the components of the physical and the domains of the quality of life of the respondents. The mean age of the respondents 68.1 years including all the respondents were diagnosed with diabetic mellitus. All the respondents shows lower values in strenuous sports and heavy household work in the Physical activity scale. On the health related quality of life all the respondents shows decreased score in the energy/fatigue and the health change domains.

Table 2 shows the association between the physical activity score and the Health related quality of life (SF-36 score). On the analysis, adequate physical activity is most strongly associated with age and those who do daily activities like household activities, grooming, leisure's activities independently and regularly. Health related quality of life in diabetic respondents were associated with the age and the

daily physical activities. As the age increases it may affect physical activities and the quality of life of the respondents.

Graph 1 shows the association between physical activity and the health related quality of life related to age. This graph shows that as the age increases the daily activities of the respondents may decrease because of the lower muscular strength or the any associated diseases like Diabetes Mellitus, Hypertension etc. Physical activities of all the respondents also decreases because of the living in the rural area, the living independently, poverty etc. and the quality life of that such respondents also changes as the physical activity decreases.

This study indicated statistically significant association between the adequate physical activity and the domains of health related quality of life such as energy/fatigue and the health changes because of the inadequate or routine hospital check-up in the rural population.

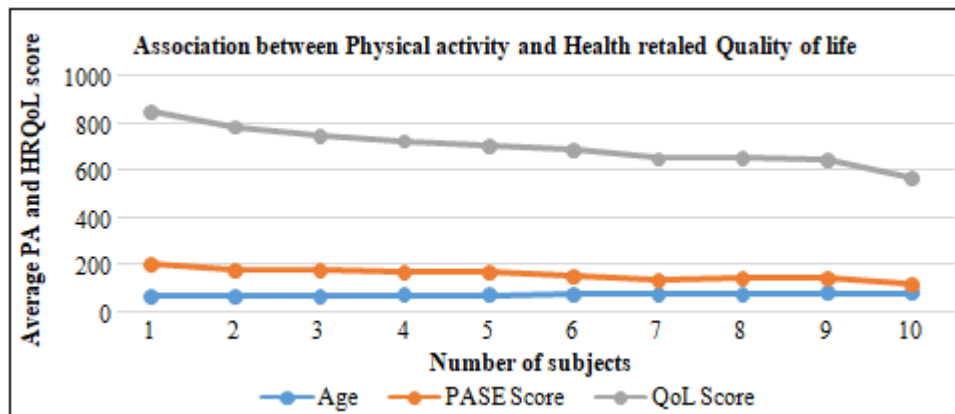
**Table 1:** Socio-demographic data and The Domains of PASE Scale and SF-36 Questionnaire

| Characteristics                 | Mean values              |
|---------------------------------|--------------------------|
| N                               | 10                       |
| Age                             | 68.1                     |
| Gender                          | Male(66.5), Female(70.5) |
| <b>• PASE Activity</b>          | <b>Score</b>             |
| Walking (h/day)                 | 15.5                     |
| Light sports (h/day)            | 6.69                     |
| Moderate sports (h/day)         | 6.7                      |
| <b>Strenuous sports (h/day)</b> | <b>5.29</b>              |

|  |              |
|--|--------------|
| Muscular strength/endurance (h/day)      | 11.85        |
| Outdoor gardening (%)                    | 11           |
| Light housework (%)                      | 10.5         |
| <b>Heavy housework (%)</b>               | <b>6.15</b>  |
| Home repair (%)                          | 8.25         |
| Lawn work/yard care (%)                  | 12.42        |
| <b>• HRQoL (SF-36) Domains</b>           | <b>Score</b> |
| Physical functioning                     | 79.5         |
| Role limitation due to physical health   | 59.5         |
| Role limitation due to emotional problem | 76.69        |
| <b>Energy/Fatigue</b>                    | <b>51</b>    |
| Emotional well-being                     | 60.4         |
| Social functioning                       | 55           |
| Pain                                     | 55           |
| General health                           | 55.5         |
| <b>Health change</b>                     | <b>47.5</b>  |

**Table 2:** Association between PASE activity score and HRQoL(SF-36) score

| Sr.No | Age/Gender | PASE Score | SF-36 Score |
|-------|------------|------------|-------------|
| 1     | 60         | 138        | 643.5       |
| 2     | 62         | 108        | 607.5       |
| 3     | 63         | 106.05     | 572.2       |
| 4     | 65         | 101.75     | 551.2       |
| 5     | 65         | 97.2       | 532.7       |
| 6     | 69         | 81.05      | 529.7       |
| 7     | 70         | 61.95      | 510.2       |
| 8     | 71         | 65.7       | 508.7       |
| 9     | 74         | 66.05      | 496.5       |
| 10    | 75         | 37.8       | 448.7       |



**Graph 1:** Association Between Physical Activity Scale and Health Related Quality of Life with age

## 7. Discussion

This study aimed to evaluate the association between physical activity in elderly HRQoL who were independent older people living in a rural area. The elderly were included in this study as their HRQoL evaluated because their functional level could affect the quality of life. Most participants in the study, thought that regular physical activity was important to control diabetes. Physical activity in the control of diabetes was thought to be more important for men and women for those above the 65 years of age.

The finding of this study and the previous literatures shows findings in populations of people with diabetes residing in other locations, relating to the awareness of physical activity

benefits. Brassill et al.<sup>10</sup> (2010) found in a sample of 115 people with diabetes residing in Ireland that 90% reported an awareness of the benefits of exercise in diabetes control. These data suggest that those with diabetes are indeed aware of the benefits of physical activity yet this awareness does not seem to translate into a high prevalence of physical activity.

Other studies have shown that organized, high-intensity exercise regimens can benefit HRQoL in both diseased and healthy populations.<sup>11</sup> This study extends these findings by showing that the less nature of physical activity is positively related to multiple domains of HRQL in healthy older adults.<sup>12</sup> An active lifestyle preserves physical function in older adults, which may possibly contribute to higher levels

of HRQoL scores in domains related to physical health. In a selected older adults, physical activity level was associated with less with energy/fatigue and health changes but not with the other domains of HRQoL.<sup>13</sup> It is possible that the range in physical activity level was too narrow within the sedentary older adults, thereby limiting the influence that physical activity may have exerted on HRQL domains. The present study supports that, as the group having higher physical activity levels had greater values in all of the domains of HRQL related to physical health (i.e., physical function, role limitations due to physical health, bodily pain, and general health) than their more sedentary lifestyle individual's.

## 8. Conclusion

It was concluded that the high level of physical activity has a significant effect on all dimensions of the HRQoL in elderly diabetic individuals. The individuals with physically inactive shows the reduced quality of life also. In this study the result showed the domains of health related quality of life like energy/fatigue and health change shows positive result. The HRQoL of elderly diabetic patients was low who were living in rural areas and with the less physical activity affects the quality of life of elderly diabetic patient.

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