

## Original Research Article

# Self-care activities and quality of life among people with type II diabetes in rural east India: a cross-sectional study

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## ABSTRACT

**Background:** Unattended diabetes led to severe diabetic complications. Self-care activities are specific activities of self-management that lead to well-regulated glycaemic levels and eventually to better quality of life. This study is aimed to assess the level of self-care activities and quality of life among individuals with type 2 diabetes mellitus (T2DM) in selected villages of East India.

**Methods:** The summary of diabetes self-care activities (SDSCA) scale was used to evaluate self-care activities, while the world health organization quality of life-Bref (WHOQOL-Bref) scale was employed to measure quality of life. A total of 150 participants clinically diagnosed with diabetes for more than 6 months were included in the analysis.

**Results:** The results indicated that the mean score for overall quality of life was  $61.66 \pm 15.35$ , with 17.3% of participants reporting poor overall quality of life. The majority of participants (66.6%) did not engage in any form of exercise in the last week, and a significant number (86%) had not checked their blood sugar levels in the previous week. Regarding foot care, 46.6% regularly washed their feet, while 80% did not check their shoes regularly. Medication adherence was relatively high, with 73.3% of participants reporting adherence to prescribed medication.

**Conclusions:** These findings highlight the need for interventions to improve self-care activities and enhance the overall quality of life among individuals with T2DM in the selected villages of East India. Strategies targeting dietary habits, physical activity, blood sugar monitoring, foot care, and medication adherence should be implemented to promote better management of T2DM.

**Keywords:** Self-care activities, Quality of life, T2DM

## INTRODUCTION

Diabetes is monopolizing the health system over the world and spiralling out of control. As per IDF (2021), approximately 537 million people, aged 20-79 years are living with diabetes currently across the globe and it also forecasts that the current number of diabetic people will outreach 643 million by 2030, and 783 million by 2045. Currently, India is home to the second-largest diabetic population in the world with 74.2 million and expected to reach 124.9 million by 2045. Currently, 53.1% of

diabetics living in India are unaware of their condition. Globally, one in every seven diabetic patients belongs to India and one diabetic patient lives in every third household.<sup>1,2</sup>

When diabetes is unattended or uncontrolled, poses a greater risk for diabetic complications, premature death, and a lower quality of life. The seven self-care practices are the best-proven defense against the abrupt glycaemic index and diabetic complications.<sup>3,4</sup> Self-care practices are a bunch of activities undertaken by diabetic patients or vulnerable groups in order to manage their diabetes

efficiently by themselves.<sup>5-7</sup> Karthik et al reported on self-care practices among rural diabetic patients of Tamil Nādu. Merely 5.6% of participants engaged in good self-care activities, while 52.4% engaged in extremely poor self-care. The majority of participants exhibit high adherence to blood sugar testing and medication, but they had very low adherence to other domains like exercise, diet, and foot care.<sup>8</sup> Besides this fact, ample studies reported that poor self-care practices are evident in almost all domains, and the reported barriers are marital status, gender, age, low education, places of residence, no family support, co-morbidities, and inadequate knowledge related to diabetes.<sup>5,9,10</sup>

Neglected and poorly managed diabetes, not only has awful consequences for health but also has a creepy effect on well-being and other spectrum of life. One such spectrum is quality of life.<sup>11</sup> Diabetes has its own psychological and social impacts on individuals in addition to these physical ones. Thus, many diabetic patients feel overburdened due to the continuous demand for their disease and its management, and this persistent physical misery associated with diabetes may make these psychological and social obligations even more severe. Therefore, diabetes alone may cause a person's quality of life to decline.<sup>12,13</sup>

Early detection and proper self-management can not only lessen the burden of diabetes but can be the key to a better quality of life. As diabetes is irreversible in nature, awareness, treatment and control are crucial to lowering its impact. But, in Odisha, it was seen that barely 5.4% had their diabetes under control, 17.4% were under treatment, and just 22.6% of the population was aware of their diabetes status quo.<sup>2</sup> As mentioned earlier, a sufficient degree of self-care activities serves as a defence against uncontrolled diabetes, though in Odisha nearly 95% of individuals were uncontrolled diabetes. Therefore, this study was planned and undertaken with the purpose to identify the level of self-care activities and quality of life among diabetic patients of rural Odisha.

## METHODS

A community-based cross-sectional survey was conducted in the villages in east India for individuals clinically diagnosed with T2DM for more than 6 months. We excluded people who had co-morbidities like cancers, mental illness, or any diseases that were debilitating in nature, as we expected those conditions to affect our outcome variables. The study period was from October 2022 to December 2022.

Non-communicable disease (NCD) clinics are operational in almost all villages under NCD programs which require ASHA workers to enable a list of all individuals diagnosed with different NCDs. We utilized this list for filtering all the people with diabetes in our selected four villages (Mendhasala, Bindhyagiri, Madanpur and Mahula) and visited them at their homes to explain the

objectives and expectations of the individuals. Individuals who gave consent for the study were informed to fast the next day for the fasting blood sugar (FBS) collection in the early hours of the morning, following which all the outcome measures were collected through interview schedules.

A total of 150 people with diabetes were interviewed for the socio-demographic variable with a self-structured socio-demographic performa, self-care activities with summary of diabetes self-care activities (SDSCA) scale, and quality of life with the WHO quality of life-BREF scale. Blood Pressure, FBS, and waist circumference of all the participants were also recorded.

The data were analyzed using IBM SPSS statistics version 26.0 and Microsoft excel sheets. Demographic and physiological measurements were categorized and reported with frequency and percentage distribution. The quality of life raw scores was transformed as per the WHO quality of life manual into 0-100 scores. The mean score was taken as 50, and a score below 50 was considered a poor quality of life and vice versa. The SDSCA scores were divided according to the number of days the individual performed a particular self-care activity and categorized into 0 days, 1-3 days, and 4-7 days.

The study was approved by the institutional ethical committee of Siksha O Anusandhan deemed to be university, Bhubaneswar. All the participants were notified about the study objectives, response confidentiality was assured, and written consent was obtained.

## RESULTS

A total of 150 participants were analyzed who were clinically diagnosed with diabetes for more than 6 months. The participants were almost equal with respect to gender, the majority of the participants 64% belonged to the age group between 41-60 years, 49% of them had education up to high school level and the majority 52.6% of the participants reported their diabetes duration as more than 5 years. Almost none of the participants reported any complications, except one person with retinopathy and another two participants reported diabetic foot. But 56.6% of the participants were living with hypertension as a comorbidity. On analysis of the BMI, one-third of the participants were either overweight or obese, majority of the participants (51.3%) had stage 2 hypertension. Of the study population, two men and 16 women had waist circumference which was over the normal limits, and almost half (47.3%) of the participants had glycaemic levels well above 125 mg/dl (Table 1).

The WHO quality of life BREF scale responses were analysed. The mean score of overall quality of life was calculated to 61.66±15.35, and it was also observed that the mean score of physical quality of life was lowest

among all the domains of quality of life, at  $55.02 \pm 7.70$  (Table 2).

The quality of life scores was converted into categorical variables by taking the score of 50, which would be the middle point of the maximum and minimum score (0-100). They were labelled as good and poor quality of life as shown in Table 3. On analyzing the total quality of life 17.3% of participants reported having poor overall quality of life. The distribution of participants by how many days they engaged in a particular form of self-care is shown in Table 3.

Table 4 was shown that the majority of the participants adhered to a healthy eating plan (spacing carbohydrates evenly, eating 5 or more fruits/vegetables) except for the consumption of fatty food. A total of 56% of participants had fatty food 4-7 days a week. The majority of the participants (66.6%) were not engaged in any kind of exercise in the last week. Another finding was that 86% of individuals hadn't checked their blood sugar in the previous week. In regard to foot care, 46.6% and 45.3% of the participants washed their feet regularly and dry them after washing respectively, whereas 80% did not check their shoes regularly. The highest adherence was found in medication with 73.3%.

**Table 1: Frequency and Percentage distribution of sociodemographic characteristics of people with T2DM (n=150).**

| Socio-demographic variables   | Categories            | N (%)      |
|-------------------------------|-----------------------|------------|
| <b>Age (in years)</b>         | ≤40                   | 11 (7.3)   |
|                               | 41-50                 | 36 (24)    |
|                               | 51-60                 | 63 (42)    |
|                               | 61-70                 | 32 (21.3)  |
|                               | 71-80                 | 8 (5.3)    |
| <b>Gender</b>                 | Male                  | 74 (49.3)  |
|                               | Female                | 76 (50.7)  |
| <b>Education</b>              | Illiterate            | 25 (16.6)  |
|                               | Primary school        | 30 (20)    |
|                               | Middle school         | 14 (9.3)   |
|                               | High school           | 49 (32.6)  |
|                               | Graduation and above  | 32 (21.3)  |
| <b>Marital status</b>         | Unmarried             | 3 (2)      |
|                               | Married               | 134 (89.3) |
|                               | Widow                 | 13 (8.6)   |
| <b>Occupation</b>             | Unemployed            | 10 (6.6)   |
|                               | Business/farmer       | 49 (32.6)  |
|                               | Skilled worker        | 5 (3.3)    |
|                               | Service Job           | 22 (14.6)  |
|                               | Housewife             | 64 (42.6)  |
| <b>Diabetic complication</b>  | Retinopathy           | 1 (0.7)    |
|                               | Diabetic foot         | 2 (1.3)    |
|                               | No complications      | 147 (98.0) |
| <b>Co-morbidities</b>         | Hypertension          | 85 (56.6)  |
|                               | Arthritis             | 17 (11.3)  |
|                               | Gastritis             | 7 (4.6)    |
|                               | Asthma                | 2 (1.3)    |
|                               | No co-morbidities     | 39 (26.0)  |
| <b>BMI (kg/m<sup>2</sup>)</b> | Underweight (≤18.5)   | 15 (10)    |
|                               | Normal (18.6-24.9)    | 85 (56.6)  |
|                               | Overweight (25-30)    | 40 (26.6)  |
|                               | Obesity (>30)         | 10 (6.6)   |
| <b>Waist circumference</b>    | <b>Men</b>            |            |
|                               | Normal (<90 cm)       | 39 (26)    |
|                               | Disease risk (>90 cm) | 35 (23.3)  |
|                               | <b>Women</b>          |            |
|                               | Normal (<80 cm)       | 39 (26)    |
|                               | Disease risk (>80 cm) | 37 (24.6)  |
| <b>FBS</b>                    | Up to 110 mg/dl       | 58 (28)    |
|                               | ≥111-140 mg/dl        | 37 (24.6)  |
|                               | ≥141 mg/dl            | 55 (47.3)  |

**Table 2: Mean and standard deviation of quality of life of people with T2DM.**

| Domains                       | N   | Minimum | Maximum | Mean  | SD    |
|-------------------------------|-----|---------|---------|-------|-------|
| Physical quality of life      | 150 | 31      | 81      | 55.02 | 7.70  |
| Psychological quality of life | 150 | 31      | 81      | 69.40 | 14.29 |
| Social quality of life        | 150 | 19      | 81      | 64.42 | 19.74 |
| Environmental quality of life | 150 | 25      | 88      | 57.81 | 19.64 |
| Overall quality of life       | 150 | 42      | 81.25   | 61.66 | 15.35 |

**Table 3: Frequency and percentage of quality of life of people with T2DM.**

| Domains                       | Good score ( $\geq 50$ ), N (%) | Poor score ( $< 50$ ), N (%) |
|-------------------------------|---------------------------------|------------------------------|
| Physical quality of life      | 126 (84)                        | 24 (16)                      |
| Psychological quality of life | 127 (84.6)                      | 23 (15.3)                    |
| Social quality of life        | 77 (51.3)                       | 73 (48.6)                    |
| Environmental quality of life | 138 (92)                        | 12 (8)                       |
| Overall quality of life       | 124 (82.6)                      | 26 (17.3)                    |

**Table 4: Frequency and percentage distribution of self-care activities of people with T2DM.**

| Self care activities                                                   | In last seven days, how many: | N (%)      |               |                 |
|------------------------------------------------------------------------|-------------------------------|------------|---------------|-----------------|
|                                                                        |                               | 0 days     | $\leq 3$ days | $\leq 4-7$ days |
| General diet: days have you followed your eating plan?                 |                               | 15 (10)    | 37 (24.6)     | 98 (65.3)       |
| Specific diet: times did you eat, 5 or more fruits/Vegetables?         |                               | 15 (10)    | 34 (22.6)     | 101 (67.3)      |
| times, did you eat high-fat foods?                                     |                               | 12 (8)     | 54 (36)       | 84 (56)         |
| times, did you space carbohydrates evenly?                             |                               | 13 (8.6)   | 28 (18.6)     | 109 (72.6)      |
| Exercise: times, did you do physical activity for at least 30 minutes? |                               | 96 (64)    | 21 (14)       | 33 (22)         |
| Times, did you do specific exercises, in the last seven days?          |                               | 100 (66.6) | 17 (11.3)     | 33 (22)         |
| Blood sugar testing: times, did you test blood sugar?                  |                               | 129 (86)   | 20 (13.3)     | 1 (0.7)         |
| Foot care: times, did you check your feet?                             |                               | 64 (42.7)  | 36 (24)       | 50 (33.3)       |
| Times, did you inspect your shoes?                                     |                               | 120 (80)   | 18 (12)       | 12 (8)          |
| Times, did you soak your feet?                                         |                               | 65 (43.3)  | 36 (24)       | 49 (32.6)       |
| Times, did you wash your feet?                                         |                               | 46 (30.6)  | 34 (22.6)     | 70 (46.6)       |
| Times, did you dry your toes after washing?                            |                               | 52 (34.6)  | 30 (20)       | 68 (45.3)       |
| Medicine: Times, did you take your diabetic medication,                |                               | 37 (24.6)  | 3 (2)         | 110 (73.3)      |

## DISCUSSION

One of the rapidly spreading epidemics of the 21<sup>st</sup> century is diabetes, swamping the world fast. We require some sustainable long-term approaches which will incorporate both self-care practices and quality of life to stem the diabetes epidemic. This was a community-based observational study carried out in rural areas of eastern India which attempted to understand the pattern of self-care practices and the extent of quality of life among diabetic patients in rural areas.

In the current study, the overall quality of life score was  $61.66 \pm 15.35$ , similar to the studies from Odisha and Vellore, where it was reported that 64% and 68% respectively.<sup>13,14</sup> Some other studies also reported similar findings, however, they used different instruments other than WHQOL BREF.<sup>12,15</sup> It was observed that the physical health domain was the most affected domain followed by the environmental domain, at  $55.02 \pm 7.70$  and  $57.81 \pm 19.64$  respectively, supported by a study conducted in Nepal Mishra et al reported similar findings in their studies for physical quality of life domain  $50.7 \pm 11.8$ .<sup>13,16</sup>

With regard to self-care activities, it was reported that even though a high percentage of individuals practiced healthy diet (65.3%), including 5 or more fruits or vegetables (67.3%) and spacing the carbohydrates well (72.6%), when it comes to physical exercise (22%), blood glucose monitoring (0.7%) and foot care (33.3%) they are falling behind. Mostly these barriers to self-management are reported to be poor knowledge, prevailing misconceptions and lack of culturally specific management.<sup>17</sup> Contrasting findings were found in a study done in Maharashtra where high satisfactory results were seen in physical activity (61.91%), foot care (54.28%), and high unsatisfactory result in diet (51.43%). The use of medications seems to be similar with our findings, with higher percentage (93.83%) of individuals consuming medications satisfactorily, which may be due to the urban sample group.<sup>18</sup> Yet similar findings to our study were seen in a survey conducted in a tertiary care hospital in Vijaywada which caters to rural population with results showing inadequate physical activity (63%), foot care (69%) as well as adequate use of medication (61%).<sup>19</sup>

There are some limitations of this study. This is a study done among the individuals of a limited geographical location and with a small sample size, which makes it difficult to generalize the findings. Moreover, diabetic specific quality of life scales was not used, instead WHO quality of life-BREF scale was used which assesses quality of life in general population, which may have altered the quality-of-life scores. The study results motivate the researcher to go further step with a larger sample size and rigorous methodology, utilising appropriate measures for more results

## CONCLUSION

In conclusion, this survey study sheds light on the practices and quality of life among individuals with T2DM. The findings reveal that while there are areas of concern, such as poor physical activity, foot care, and blood glucose monitoring practices, participants demonstrated better adherence to diet and medications. Importantly, despite these challenges, the quality of life among the participants was reported as good. These results emphasize the need for targeted interventions and education programs to promote healthy lifestyle practices and further enhance the overall well-being of individuals living with T2DM.

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The study was approved by the institutional ethical committee of Siksha O Anusandhan deemed to be university, Bhubaneswar. All the participants were notified about the study objectives, response confidentiality was assured, and written consent was obtained.

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