# Prevalence of overall clinical features in Type 2 Diabetes Mellitus

**Adeeba Salahuddin Khan[1], Anam Javed Soleja[2], Areeba Shaikh[3], Muhammad Sajid Khan[4], Ahsan Ali Siddiqui[5] and Adnan Anwar[6]**

[1]Emergency Medicine, Ziauddin Medical University
[2]Department of Pharmacology, Dow University of Health and Sciences
[3]Department of Medicine, Ziauddin Medical University
[4] Department of Dermatology, Shahida Islam Medical College Lodhran
[5]Department of Family Medicine , Ministry of Health, Riyadh
[6]Department of Physiology, Hamdard College of Medicine and Dentistry, Hamdard University, Karachi

## ABSTRACT

The wide range of clinical signs and symptoms of diabetes must be understood since people with type 2 diabetes are commonly misdiagnosed, mistreated, or inadequately managed. Therefore, the aim of this study was to assess the prevalence of overall clinical presentation in patients with type 2 diabetes.

**Methodology:** This was a multicenter, cross-sectional study that was conducted at different hospitals, using a non-probability sampling technique. The duration of the study was about six months, from August 1, 2022, to January 31, 2023. The study included 500 type 2 diabetes patients ranging in age from 40 to 60 years. The socio-demographic characteristics, including (age, gender, and socioeconomic status), health status, concomitant diseases, and diabetic symptoms, were noted.Means and standard deviation were determined for continuous variables. Different demographic factors (such as gender, and clinical features linked to type 2 diabetes) were documented as frequencies and percentages.

**Results:** The study findings showed that the mean age was $54.75 \pm 15.38$ years, and the mean BMI was $24.88 \pm 10.56 kg/m^2$. Renal manifestations in diabetic patients revealed that 155(31.0%) urinate frequently, while 345 (69.0%) urinate three times at night.The majority of patients 420(84.0%) reported fatigue, and 335(67.0%) reported unexplained weight loss.Tingling or numbness 315(63.0%), swelling of hands or feet 315(63.0%), burning pain 270(54.0%),

muscular pain in 440(88.0%), were also noticed. Moreover, dermatological manifestations in diabetic patients revealed that the majority 325(65.0%) had dry, cracked skin.

**Conclusion:** This study concluded that fatigue, and muscle pain or cramps in legs or feet were the most prevalent symptomsin type 2 diabetes patients, followed by swelling of feet, ankles, hands or eyes, mood swings, tingling or numbness in the hands or feet, cold sweating, increased frequency of urination at night, dry and cracked skin.

**Keywords:** Fatigue,muscle pain or cramps, dry and cracked skin, frequent urination, type 2 Diabetes.

## INTRODUCTION

Diabetes mellitus (DM) is a chronic metabolic illness, which is characterized by persistent hyperglycemia. It could be brought on by decreased insulin production, insulin resistance, or both. Since this number is anticipated to increase by another 200 million by 2040, DM is proving to be a burden on global public health. [1] The prevalence of DM has increased globally due to changing lifestyles and rise in obesity. In 2017, 425 million people in the world had diabetes. About 10% of Americans had diabetes in 2015, as reported by the International Diabetes Federation (IDF). Seven million of them went undetected. Furthermore, age also raises the likelihood of developing DM. Over 65-year-older people make up about 25% of the population that have diabetes. [2]

By etiology and clinical manifestations, DM can be generally categorized into three types: type 1 diabetes, type 2 diabetes, and gestational diabetes (GDM). Monogenic diabetes and secondary diabetes are a couple of additional less frequent types of diabetes. [3-5]

The autoimmune death of insulin-producing beta cells in the pancreatic islets characterizes type 1 diabetes mellitus (T1DM), which represents 5% to 10% of all cases of diabetes. Consequently, there is a complete lack of insulin. Autoimmunity has been linked to a mix of genetic predisposition and environmental triggers including virus infection, toxins, or certain dietary components. T1DM can occur at any age, however it is most frequently found in children and adolescents [6].

About 90% of all types of diabetes are Type 2 diabetes mellitus (T2DM). Insulin resistance is the term used to describe the reduced insulin response in T2DM. Since insulin is ineffective in this

condition, the body produces more insulin to maintain glucose homoeostasis at first, but over time, this diminishes, leading to T2DM. T2DM is most frequently detected in those over the age of 45. However, due to rising rates of obesity, inactivity, and energy-dense foods, it is more frequently observed in kids, teenagers, and younger adults [7].

Both type 1 diabetes, which develops rapidly into severe hyperglycemia, as well as type 2 diabetes, which has very high levels of hyperglycemia, frequently experience the traditional symptoms of diabetes, such as frequent urination, excessive thirst and increased hunger. Undiagnosed diabetes is frequently indicated by inexplicable weight loss, slow wound healing, tiredness, irritability, and body aches. Additionally, some patients may experience visual impairments or numbness in their hands or feet. Mild symptoms or those that appear gradually may also remain undiagnosed [8].

Overweight and obesity (60 percent of adults with diabetes are overweight and 20 percent are obese), bad dietary patterns, and insufficient physical activity all raise the probability of developing type 2 diabetes [9,10]. Epidemiological data shows that diabetes reduces lifespan on average by 6 years, and that a 60-year-old person with diabetes and cardiovascular disease has a 12 year shorter life expectancy than the general population [10,11].

T2DM is considered as a critical public health issue with a significant impact on health care costs and human lives. In many regions of the world, the prevalence of diabetes is increasing due to urbanization and rapid economic development [12]. Diabetes has a negative impact on a person's functional abilities and quality of life, which increases morbidity and causes early death [13]. More than one-third of diabetes-related mortalities in adults under the age of 60, which has recently prompted concerns [14]. These increases have been attributed to rising levels of poor diet consumption and sedentary behavior, which result in raised Body Mass Index (BMI) and fasting plasma glucose [15]. Particularly, type 2 diabetes is more prevalent in people with higher BMIs [16]. Another factor is the ageing of the population, as diabetes typically affects older people [17].

DM is linked to an elevated risk of atherosclerotic cardiovascular disease (ASCVD), therefore reducing risk involves managing blood pressure, taking statins, exercising regularly, and quitting smoking. Although it varies greatly, the excess rate of mortality for people with T2DM is generally 15% higher. In the US, persons with diabetes have a prevalence of roughly 4.4% of

vision-threatening diabetic retinopathy, compared to 1% for end-stage diabetic nephropathy. Today, vascular problems can be effectively managed with pharmacotherapy for hyperglycemia, in conjunction with LDL cholesterol reduction, blood pressure management with ACE/ARB therapy, other antihypertensive medicines, and aspirin in secondary prevention. This lowers morbidity and mortality. [18,19].

Information on the prevalence of the clinical presentation of DM is still scarce. Furthermore, it is crucial for public to understand the clinical manifestations of DM at the initial stage in order to make a timely diagnosis. Therefore, the aim of this study was to assess the prevalence of overall clinical manifestations of type 2 diabetes mellitus among the Pakistani population.

**METHODOLOGY**

This was a multicenter, cross-sectional study that was conducted at different hospitals, using a non-probability sampling technique. The duration of the study was about six months, from August 1, 2022, to January 31, 2023. The ethical approval was obtained from the ethical review board of the concerned hospital. The study included 500 type 2 diabetes patients ranging in age from 40 to 60 years. Extreme weight loss, type 1 diabetes, low fasting glucose, low glucose tolerance, any surgery, and those who underwent for chemotherapy were all excluded from the study.

The current HbA1c, an indicator of glycemic control, was used to identify patients with T2DM. The socio-demographic characteristics, including (age, gender, and socioeconomic status), health status, concomitant diseases, and diabetic symptomswere noted. Additionally, height and weight were noted for body mass index (BMI)calculation. Additionally, depressed, tense, and anxious symptoms were assessed. Researchers measured heart rate, respiration rate, and blood pressure. The average of three measures of the pulse rate was calculated, along with the maximum blood pressure after three measurements. A questionnaire was used to gather data on recent medical history and prior sleep disturbances (insomnia, abnormal actions or behaviors during sleep, and an inability to sleep at the desired time). On the basis of a history of ocular pain, including soreness, a gritty sensation, itching, and redness, as well as blurred vision that gets better with blinking and heavy tears, dry eyes were suspected. Random blood sugar levels as well as

associated biochemical indicators like total cholesterol, triglycerides, high-density lipoprotein cholesterol, and low-density lipoprotein cholesterol (HDL-C) were also recorded.

Data was entered and analyzed by using SSPS version 20.0. Means and standard deviation were determined for continuous variables. Different demographic factors (such as gender, and clinical characteristics linked to type 2 diabetes) were documented as frequencies and percentages.

**RESULTS**

A total of 500 patients with type 2 DM were included in the study. The mean age was 54.75±15.38 years. The mean weight was 68.22±14.70 kg. The mean height was 67.67±10.71 inches. The mean BMI was 24.88±10.56kg/m$^2$. The mean respiratory rate was 18.96±5.81 breath/min. The mean temperature was 69.56±25.79 $^o$F. The blood pressure was 172.45±49.27 mm Hg and the mean duration was 4.95±4.61 years. The mean heart rate was 85.11±11.49 beats/min. The mean number of cigarettes per day was 2.29±4.58. The mean RBS was 277.03±104.24, as shown in Table I.

The majority of diabetics were male 300(60.0%) and 200(40.0%) were female. The majority of diabetic patients300(60.0%) were middle-class, with high-income patients 120(24.0%) coming in second. Comorbidities revealed, 325(65.0%) had hypertension, 360(72.0%) had dyslipidemia, and 175(35.0%) had history of depression. About, 170(34.0%) were smokers, as shown in Table II.

The prevalence of renal manifestation in diabeticpatients revealed that 155(31.0%) urinate frequently, 345(69.0%) urinate three times at night, and 140(28.0%) urinate every two hours. Light-colored urine was observed in 350(70.0%) while dark yellow urine was observed in 135(27.0%)patients. Blood pressure control becomes worse in 235(47.0%), as shown in Table III.

The prevalence of ocular manifestations in diabetic patients revealed that flashes were observed in only 95(19.0%) patients, blind spots in 155 (31.0%) patients, distortion in 80 (16.0%) patients, night blindness in 135 (27.0%) patients, eye floaters in 155 (31.0%) patients, and visual disturbances in 230 (46.0%) patients. Blurred vision and vision loss was observed in 160(32.0%) and 215(43.0%), respectively. Respiratory manifestations in diabetic patientsrevealed that shortness of breath was observed in 290(58.0%) patients. About 225(45.0%) experienced

dyspnea while climbing stairs, 170(34.0%) experienced dyspnea while walking for more than 6 hours in a day, and 60(12.0%) experienced dyspnea while walking for less than 6 hours in a day. Dyspnea severity showed that 170(34.0%) had mild, 245(49.0%) had moderate, and 85(17.0%) had severe difficulty in breathing. More than half of the patients 280(56.0%) experienced chest tightness that improved with rest in 265(53.0%) diabetic patients and pain-relieving medication in 185(37.0%), while only 50(10.0%) required a hospital visit, as shown in Table IV.

The prevalence of oral manifestations in diabetic patients revealed that red, swollen, and painful gums were observed in 180 (36.0%) patients, dry mouth in 105(21.0%), burning sensation in 140 (28.0%), and wounds that healed longer after dental surgery in 175(35.0%) patients. Whereas sweet-smelling breath was observed in 210(42.0%) patients. Dermatological manifestations in diabetic patients revealed that the majority 325(65.0%) had dry, cracked skin; 145(29.0%) had light brown scaly patches; and 185(37.0%) had yellowish-reddish or brown patches on their skin; velvet-like dark skin was observed in 250(50.0%). Moreover, hard, thickened skin was only noticed in 115(23.0%), whereas blisters were found in 95(19.0%), as shown in Table V.

The prevalence of gastrointestinal and psychological manifestations in diabetic patients revealed that increased thirst and hunger were noticed in 190(38.0%) and 115(23.0%) respectively. The majority of patients 420(84.0%) reported fatigue, and 335(67.0%) reported unexplained weight loss. 290(58.0%) individuals reported appetite loss, which occurred suddenly in 225(45.0%) patients and more than one week later in 275(55.0%)patients. In 220(44.0%) of the patients, the likelihood of infection and its severity increased. Delayed healing of wounds was noticed in 350(70.0%) patients. Cold sweating occurred in 290(58.0%) of the patients, and 365(73.0%) of the patients felt tired on occasion. Mood swings were observed in 360(72.0%) patients. Tingling or numbness 315(63.0%), swelling of hands or feet 315(63.0%), burning pain 270(54.0%), muscular pain 440(88.0%), too sensitive feet on touch 115(23.0%) were also noticed. About 205(41.0%) patients had insomnia. Moreover, confusion or difficulty in concentration was detected in 160(32.0%) patients. The symptoms became worse at night in 230(46.0%) patients, as shown in Table VI.

**Table I: Demographic characteristics of type 2 diabetic patients. (n=500).**

| Variable | Mean±SD |
|---|---|
| **Age (Years)** | 54.75±15.38 |
| **Weight (kg)** | 68.22±14.70 |
| **Height (Inch)** | 67.67±10.71 |
| **BMI (kg/m$^2$)** | 24.88±10.56 |
| **Respiratory Rate (breath/min)** | 18.96±5.81 |
| **Temperature $^o$F** | 69.56±25.79 |
| **Blood pressure (mmHg)** | 172.45±49.27 |
| **If yes Years** | 4.95±4.61 |
| **Heart rate beats/min** | 85.11±11.49 |
| **Smoking If Yes number of cigarettes per day** | 2.29±4.58 |
| **Random blood sugar (RBS)** | 277.03±104.24 |

**Table II: Prevalence of comorbidities, age groups and socioeconomic status.**

| Variable | | n | % |
|---|---|---|---|
| **Gender** | **Male** | 300 | 60.0 |
| | **Female** | 200 | 40.0 |
| **Socioeconomic Status** | **Low** | 80 | 16.0 |
| | **Middle** | 300 | 60.0 |
| | **High** | 120 | 24.0 |
| **History of Hypertension** | **Yes** | 325 | 65.0 |
| | **No** | 175 | 35.0 |
| **History of Dyslipidemia** | **Yes** | 360 | 72.0 |
| | **No** | 140 | 28.0 |
| **History of Depression** | **Yes** | 175 | 35.0 |
| | **No** | 325 | 65.0 |
| **History of Smoking** | **Yes** | 170 | 34.0 |

| | No | 330 | 66.0 |
|---|---|---|---|

**Table III: Distribution of renal manifestations in type 2 diabetic patients.**

| Variable | | n | % |
|---|---|---|---|
| **Frequent urination** | **Yes** | 155 | 31.0 |
| | **No** | 345 | 69.0 |
| **Urination at night** | **3 times at night** | 345 | 69.0 |
| | **at every two hour** | 140 | 28.0 |
| | **at every hour** | 15 | 3.0 |
| **Color of urine** | **Light-colored urine** | 350 | 70.0 |
| | **Dark yellow urine** | 135 | 27.0 |
| | **Very dark or bloody urine** | 15 | 3.0 |
| **BP control becomes worst** | **Yes** | 235 | 47.0 |
| | **No** | 265 | 53.0 |

**Table IV: Distribution of ocular and respiratory manifestations in type 2 diabetic patients.**

| Variable | | n | % |
|---|---|---|---|
| **Flashes** | **Yes** | 95 | 19.0 |
| | **No** | 405 | 81.0 |
| **Blind spots** | **Yes** | 155 | 31.0 |
| | **No** | 345 | 69.0 |
| **Distortion** | **Yes** | 80 | 16.0 |
| | **No** | 420 | 84.0 |

| | | | |
|---|---|---|---|
| **Poor night vision/night blindness** | **Yes** | 135 | 27.0 |
| | **No** | 365 | 73.0 |
| **Small dark spots eye floaters or streaks in vision** | **Yes** | 155 | 31.0 |
| | **No** | 345 | 69.0 |
| **Trouble in reading or seeing faraway objects** | **Yes** | 250 | 50.0 |
| | **No** | 250 | 50.0 |
| **Visual Disturbances** | **Yes** | 230 | 46.0 |
| | **No** | 270 | 54.0 |
| **Blurry vision** | **Yes** | 160 | 32.0 |
| | **No** | 340 | 68.0 |
| **Vision loss** | **Yes** | 215 | 43.0 |
| | **No** | 285 | 57.0 |
| **Shortness of breath** | **Yes** | 290 | 58.0 |
| | **No** | 210 | 42.0 |
| **Dyspnea grading** | **While climbing stairs** | 225 | 45.0 |
| | **While walking for more than 6 hours in a day** | 170 | 34.0 |
| | **While walking for less than 6 hours in a day"** | 60 | 12.0 |
| | **While at rest** | 45 | 9.0 |
| **Dyspnea severity, If Yes** | **Mild** | 170 | 34.0 |
| | **Moderate** | 245 | 49.0 |
| | **Severe** | 85 | 17.0 |
| **chest tightness** | **Yes** | 280 | 56.0 |
| | **No** | 220 | 44.0 |
| **Severity of chest pain** | **Improves with rest** | 265 | 53.0 |
| | **Need pain relieving medication"** | 185 | 37.0 |
| | **Requires hospital visit** | 50 | 10.0 |

**Table V: Distribution of oral and dermatological manifestations in type 2 diabetic patients.**

| Variable | | n | % |
|---|---|---|---|
| **Red, swollen and painful gums** | **Yes** | 180 | 36.0 |
| | **No** | 320 | 64.0 |
| **Dry mouth** | **Yes** | 105 | 21.0 |
| | **No** | 395 | 79.0 |
| **Burning sensation in the mouth** | **Yes** | 140 | 28.0 |
| | **No** | 360 | 72.0 |
| **Any dental surgery that had taken longer to heal** | **Yes** | 175 | 35.0 |
| | **No** | 325 | 65.0 |
| **Sweet Smell breath** | **Yes** | 210 | 42.0 |
| | **No** | 290 | 58.0 |
| **Dry cracked skin** | **Yes** | 325 | 65.0 |
| | **No** | 175 | 35.0 |
| **Light brown scaly patches** | **Yes** | 145 | 29.0 |
| | **No** | 355 | 71.0 |
| **Yellow reddish or brown patches on skin** | **Yes** | 185 | 37.0 |
| | **No** | 315 | 63.0 |
| **Darker area of skin that feels like velvet** | **Yes** | 250 | 50.0 |
| | **No** | 250 | 50.0 |
| **Hard thickened skin** | **Yes** | 115 | 23.0 |
| | **No** | 385 | 77.0 |
| **Blisters** | **Yes** | 95 | 19.0 |
| | **No** | 405 | 81.0 |

**Table VI: Distribution of gastrointestinal and psychological manifestations in type 2 diabetic patients.**

| Variable | | n | % |
|---|---|---|---|
| **Increased thirst** | **Yes** | 190 | 38.0 |
| | **No** | 310 | 62.0 |
| **Fatigue** | **Yes** | 420 | 84.0 |
| | **No** | 80 | 16.0 |
| **Increased hunger** | **Yes** | 115 | 23.0 |
| | **No** | 385 | 77.0 |
| **Unexplained weight loss** | **Yes** | 335 | 67.0 |
| | **No** | 165 | 33.0 |
| **Loss of appetite** | **Yes** | 290 | 58.0 |
| | **No** | 210 | 42.0 |
| **If yes, time period of appetite loss** | **Suddenly** | 225 | 45.0 |
| | **More than one week** | 275 | 55.0 |
| **Increased incidence and severity of infections** | **Yes** | 220 | 44.0 |
| | **No** | 280 | 56.0 |
| **Slow/delayed healing of wounds** | **Yes** | 350 | 70.0 |
| | **No** | 150 | 30.0 |
| **Cold sweating** | **Yes** | 290 | 58.0 |
| | **No** | 210 | 42.0 |
| **Feeling tired and weak occasionally** | **Yes** | 365 | 73.0 |
| | **No** | 135 | 27.0 |
| **Tingling or numbness in the hands** | **Yes** | 315 | 63.0 |

| or feet | No | 185 | 37.0 |
|---|---|---|---|
| **Irritability or mood swings** | Yes | 360 | 72.0 |
| | No | 140 | 28.0 |
| **Swelling of feet ankles hands or eyes** | Yes | 315 | 63.0 |
| | No | 185 | 37.0 |
| **Confusion or difficulty in concentration** | Yes | 160 | 32.0 |
| | No | 340 | 68.0 |
| **Burning pain in legs or feet** | Yes | 270 | 54.0 |
| | No | 230 | 46.0 |
| **Too sensitive feet on touch** | Yes | 115 | 23.0 |
| | No | 385 | 77.0 |
| **Muscular pain or cramps in legs or feet** | Yes | 440 | 88.0 |
| | No | 60 | 12.0 |
| **Symptoms worsening at night** | Yes | 230 | 46.0 |
| | No | 270 | 54.0 |
| **Insomnia** | Yes | 205 | 41.0 |
| | No | 295 | 59.0 |

## DISCUSSION

Diabetes is a global epidemic. The prevalence of DM has increased globally due to changing lifestyles and rising obesity [2]. As a result, this study illustrated the clinical symptoms experienced by type 2 diabetic patientsat a multi-center system.

To improve clinical diagnosis of diabetes in low resource settings, one of the case series assessments includes clinical parameters of 103 recently diagnosed diabetic patients in a rural hospital. According to their research, the majority of newly diagnosed diabetics are between the ages of 40 and 59, with a mean age of 49 [20]. This is in accordance with studies showing that the prevalence of diabetes grew steadily with age from a population-based survey conducted in the same environment [21]. Furthermore, the age of the study participants differs significantly

from that of participants from higher income nations, where diabetes incidence is thought to peak between the ages of 60 and 70 [22]. They observed that 75% of newly diagnosed cases of diabetes were younger than 60 years old. The present study, which contradicted the previously mentioned studies, found that the mean age of T2DM patients was 54.75±15.38 years, with a range of 39 to 69 years, demonstrating that the middle-aged group was more seriously affected by T2DM.

Similarly, one of the studies found that 52% of newly diagnosed diabetes patients were female with a mean age 49±14.4 years. Moreover, almost all newly diagnosed patients had two clinical symptoms: increased urination (100%) and excessive thirst (79%). Blurred vision, excessive eating, and frequent perspiration were among the moderately frequent symptoms (i.e., 25–50% of patients) [20]. This is in line with research that demonstrate diabetes in low-income nations exhibits symptoms late [23]. The present study showed partial similarity with the previous study and found that 155 (31.0%) diabetic patients reported frequent urination. Moreover, 190 (38.0%) people reported feeling more thirsty. While 160 (32%) people reported blurred vision, 115 (23%), and 290 (58%) reported increased appetite and cold sweats, respectively.

In another study, participants' prevalence of overweight and obesity was 2.5 times greater than that of adults aged 35 to 60 in a recent national survey [24]. The prevalence of hypertension was also twice as high among individuals aged 35 to 60 in Uganda [24,25], and at the national level [26]. According to some of the research, hypertension has been found to be the most prevalent concomitant cardiovascular risk factor in diabetic patients in Africa, with prevalence rates ranging from 44 to 65% [27]. According to the present study, 325 (65.0%) of the diabetic patients had a history of hypertension and a mean BMI of 24.88 ±10.56 kg/m2, which indicates a higher chance of acquiring clinical signs of diabetes.

A study by Shrimali et al.compared the oral manifestations in controlled and uncontrolled DM. They found that in 68% of cases with controlled diabetes, hypo-salivation was the most prevalent oral symptom, followed by bad breath in 52%, periodontitis in 32%, a burning mouth feeling in 32%, candida infection, and taste changes in 28% of cases. Furthermore, hypo-salivation was observed in 84% of patients with uncontrolled DM in the same study, followed by bad breath in 76%, periodontitis in 48%, altered taste in 44%, candida infection in 36%, and a burning mouth

feeling in 24% of individuals [28].Similarly, according to Maike et al., DM status and the degree of hyperglycemia have an impact on the prevalence and severity of periodontitis. Additionally, these findings suggest that the presence of severe periodontitis may have a negative impact on the management of DM [29]. In contrast, the present study was not in accordance with the above reported studies as the oral manifestations were not prevalently severe. Only 105(21.0%) noticed dry mouth, and burning sensation was felt by 140(28.0%) patients whereas and red, swollen and painful gums were noticed in 180(36.0%)patients.

Interestingly, another study reported that the most striking finding was a three- to four times increase in dyspnea in those with type 2 diabetes compared to the general population [30]. As a result, the available research endorses the claims that type 2 diabetes is linked to decreased lung volumes and airflow restriction [31], and that the lung is a primary target for diabetic pathology [32]. The present study supported the aforementioned findings and found that 290 (58.0%) of diabetic patients reported experiencing dyspnea. About 225(45.0%) reported shortness of breath while climbing stairs, however, mostly patients 245(49.0%) had moderate dyspnea.

Concerning dermatological presentation in T2DM patients, in the former study, it was found that older people with type 2 diabetes had a higher prevalence of eczema. In spite of contraindications, topical steroids are frequently used to manage eczema over the long term, which has the potential to aggravate the condition and cause insulin resistance [30]. Additionally, because of their thinner skin, older people may absorb more steroid during topical treatment [33]. Alternately, eczema could be brought on by insulin resistance status by lowering the production of a hepatic enzyme such -6-desaturase [34]. The present study corroborated with the above findings and showing a increased prevalence of dry,cracked skin 325(65.0%) that was induced by the development of insulin resistance in type 2 DM.

In Western countries, smoking is the leadingcausative factor for respiratory illnesses, and is the primary cause of up to 80–90% of COPD cases [35], andincreases the chance of acquiring type 2 diabetes [36,37]. The present study showed that about 170(34.0%) diabetic patients were smokers, enhancing the risk of developing type 2 diabetes.

It's important to acknowledge some restrictions as well. First, without directly assessing all functions, data on all clinical manifestations linked to T2DM were gathered via a self-administered questionnaire.

## CONCLUSION

This study concluded that fatigue, and muscle pain or cramps in legs or feet were the most prevalent symptoms in type 2 diabetes patients, followed by swelling of feet, ankles, hands or eyes, mood swings, tingling or numbness in the hands or feet, cold sweating, increased frequency of urination at night, dry and cracked skin. Additionally, having comorbid conditions including dyslipidemia, hypertension, and obesity enhanced a person's risk of developing type 2 diabetes. Therefore, it is clear that increasing physical activity and adopting a healthier diet can help those who are pre-diabetic avoid developing diabetes. These methods will also significantly reduce the risk of developing diabetes complications.

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