

Original Article

A COMMUNITY-BASED SURVEY TO ASSESS THE PREVALENCE AND ETIOLOGICAL FACTORS FOR TYPE II DIABETES MELLITUS IN THE TWO REGIONAL STATES OF SOUTHERN INDIA–A PILOT STUDY

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ABSTRACT

Objective: The concurrent study aimed to assess and analyse the prevalence and etiological factors responsible for the occurrence of Type 2 diabetes mellitus among the labour population. A cross-sectional study was conducted among the labour in the two regional states of southern India. This study was conducted for 6 mo in the two states of the southern region of India.

Methods: A questionnaire was designed with various questions to study the prevalence and scrutinize the causes responsible for the occurrence of type 2 diabetes among the labour population. A total number of n=104 respondents participated, out of which 57 were diabetic and were further analysed. The results were compiled and subjected to the statistical analysis (Chi-square test).

Results: In the demographics, the majority of the participants were females (n=33), while the remaining were males. 75% of the participants were with age groups between 31-60 y, about 50% were uneducated and belonged to lower income category. Etiological factors like family history (>50%) and comorbid conditions (n=43) were more responsible for the prevalence of Type 2 diabetes. In the food habits assessment, carbohydrates and non-vegetarian consumption were more in majority (>45%) of the respondents. 86% of the participants were on medication, along with only 57.8% were recorded with HbA1c. Diet restrictions and timely intake of food were up to the level after the diagnosis of the disease. Nearly 50% of diabetics were confident about the management of the disease and 54 respondents were spotted to have a keen interest in acquiring knowledge further.

Conclusion: The findings concluded that the diabetic participants followed the necessary diet requirements and were on medication for the treatment of type 2 diabetes mellitus.

Keywords: Participants, Questionnaire, Prevalence, Type 2 diabetes mellitus, Causes

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INTRODUCTION

Diabetes is a potentially epidemic health issue that is quickly spreading throughout low-and middle-income nations like India. Globally, it is affecting more than 400 million people and predicted that there will be more than 640 million diabetics worldwide by 2040 [1]. Globally, nearly 422 million individuals with diabetes reside in low-and middle-income nations and are directly in charge of 1.5 million deaths a year. Both the incidence and prevalence of diabetes have consistently increased over the last few decades. By 2025, estimates indicate that 69.9 million people in India will have diabetes, the vast majority of which will remain untreated. According to current estimates from the International Diabetes Federation, Asia is home to 60% of the world's diabetics [2]. Prevention of type 2 diabetes is always a better option due to its rising prevalence. Several factors are responsible for the occurrence of diseases, such as food intake, inadequate or lack of physical activity, heavy alcohol consumption, and cigarette smoking that alters the physiology of the body environment. Obesity and insulin resistance are linked; since most individuals do not exhibit symptoms, insulin resistance is remarkably detected before prediabetes or type 2 diabetes [3]. The three most noticeable signs of diabetes were polyuria, polydipsia, and polyphagia; other symptoms included exhaustion, recurrent infections, sluggish wound healing, blurred vision, and digestive problems. Diabetes can also harm other organs, such as the kidneys, the heart, and blood vessels, resulting in neuropathy, blindness, heart-related diseases, and renal

illnesses. The only restoration for the prevention of complications of diabetes is to follow diet restrictions, lifestyle modifications, and routine blood glucose monitoring (Fasting, Post-prandial and HbA1c) followed by regular check-ups. Sometimes, it is very difficult to analyse and assess the complications unless the patient confesses the symptoms [4]. This necessitates health systems' ongoing participation in the continuum of care at all levels. Coordination between all echelons of the healthcare system is necessary for diabetes care.

In this context, when it comes to the exploration of different causative factors of type 2 diabetes mellitus, the limelight was thrown on the link between physical activity (PA) and diabetes. Until recently, high-quality research on the profit of physical activity and fitness in diabetics was lacking. However, it is now a well-known fact that engaging in regular PA improves blood glucose control and has favourable benefits on lipids, blood pressure, cardiovascular events, mortality, and quality of life. It can also prevent or postpone type 2 diabetes. People who work physically (maybe labourers, daily wage workers'/construction workers, painters, food vendors and domestic workers) from morning to evening may burn more calories than required are considered fitter, healthy with a strong body, and extremely very well-balanced core strength [5]. However, due to the high incidence of Diabetes, especially in India, the current survey was taken up in those individuals who work physically more, which might be as a part of their occupation [6]. One of the most widely used study types in healthcare epidemiology research is the survey. Surveys,

which are typically simpler to conduct and less expensive than many other study designs, can be extremely useful to peruse any factors related to diseases. They can be descriptive or used to investigate associations [7]. Person-reported outcome tools for chronic disorders are recorded through population health surveys, which also serve as a helpful data source for estimating prospective disease loads. Health surveys' measures of chronic illnesses provide insight into the prevalence of disease and the potential need for medical care for a range of ailments including those with higher mortality risk, including cardiovascular disease [8]. A community-based participatory approach places a strong emphasis on community empowerment as a key instrument in the promotion of health, particularly in low-and middle-income nations [9].

Thus, a questionnaire was prepared and a study was planned on people of a such category who were exposed to more physical activity by profession. Additionally, it sounds very important to analyse the causes of the disease and attempt to assess them when there is a significant burden on the healthcare system and it is our job to choose prevention over cure.

A survey was conducted in the daily labour population of different categories to analyse and assess the prevalence of type 2 diabetes mellitus.

MATERIALS AND METHODS

Subjects and sample size

This study was a cross-sectional approach that was conducted for a period of 6months, starting from June 2022 to Dec 2022. The main objective of the study was to assess and analyse the prevalence and etiological factors accountable for type 2 diabetes mellitus in labour/daily wage workers.

Inclusion and exclusion criteria

Adult populations who were above 18 y of age were included in the study. Children and adolescents, pregnant and nursing females were excluded from the study.

Study objectives

The current was directed to analyse the occurrence of type 2 diabetes among those individuals who were daily labourers in the population that belonged to the two regional states of south India.

Also, the study aimed to analyse the possible factors responsible for the development of diabetes in people who had sufficient physical activity.

Data collection through a questionnaire

A questionnaire was created with a variety of questions for the present study to gather the data. A method was developed to investigate real-world experiences related to eating behaviours, diabetes mellitus diagnosis, and therapy.

Demographic data and ethical standards

The participants of the study were adults greater than 18 y of age, a total number of respondents (n=104) participated in the study, out of which 57 people who were diabetic were further analysed. The team adhered to the moral requirements of confidentiality and participation freedom. The study was voluntary, and participants were given the option to voluntarily leave at any time. They were given with the promise that their secrecy and privacy would be upheld.

Ethical approval

The ethical committee of Care Hospitals, Hyderabad, India, reviewed the protocol and approved it with the number bearing number with MRMCP/35/2022.

The questionnaire contained socio-demographic information and also-food habits, genetic susceptibility, alcohol consumption, cigarette smoking, any behavioural changes after the diagnosis of diabetes, and keenness to get awareness about the disease.

Statistical analysis

The data collected was reviewed and entered into a computerized database and analysed using SPSS software. Descriptive statistics were employed to analyse the chosen socio-demographic data, using frequencies and percentages. The prevalence of diabetes among daily workers was assessed using the Chi-squared test. A $p \leq 0.01$ was considered statistically significant.

RESULTS

The findings of the KAP study showed the socio-demographic characteristics of the participants/respondents. A total number of 104 participants overall were interviewed to gather demographic information and other details on the existing diabetes mellitus.

Table 1: Demographic characteristics of participants in the study (n=57)

Characteristics of participants	Frequency (n)	Percentage (%)
Diabetic	57	54.8
Non-diabetic	47	45.2
Chi-square-3.88, p<0.04		
Gender (Diabetics)		
Female	33	57.9
Male	24	42.1
Chi-square-7.67, p<0.002		
Age of participants (years)		
20-30	8	8.36
31-40	13	12.6
41-50	14	13.1
51-60	16	14.49
>60	6	6.25
Total	57	54.8
Non-Diabetic	47	45.2
Married Status-		
Married	78	75
Unmarried	10	9.6
Divorced/separated/widowed	16	15.4
Chi-square-289.5, p<0.001		
Weight of the participants (kgs) (Diabetic)		
Normal	37	64.9
Underweight	5	8.7
Overweight/Obese	15	26.4
Chi-square-45.3, p<0.001		

Note: values in parenthesis are percentages. *Statistical significant at level of $p < 0.001$.

Table 1 depicts the demographic profile of participants in the study (n=104). Among the total number of 104 participants, 57 were diabetic and 47 were non-diabetic. In the present study, only the diabetic individuals were further interviewed (n=57). A higher number of respondents were females with a frequency of 33 (57.9%) while the male participants were

n=24, with a percentage of 42.1%. The respondents who were interviewed belonged to the age groups of 31 to 60 y of age with frequencies of 13,14 and 16 (% of 12.6, 13.1, 14.49), respectively. About the weight of the diabetic respondents, 37 weighed normally, 5 were underweight and 15 belonged to the overweight category.

Table 2: Socioeconomic status (SES) of participants in the study (n=57)

Socioeconomic status	Frequency	Percentage (%)
Occupation		
Labor/Daily wage workers	15	26.3
Domestic workers	20	35
Others	22	38.7
Chi-square-5.49, p<0.05		
Education		
No formal education	30	52.6
Primary school	15	26
Junior high school	3	5.2
Senior high school	4	7
College	5	9.2
Chi-square-184.15 p<0.001		
Socioeconomic status		
Lower	32	56.1
Middle-income	12	21
Normal	13	22.9
Chi-square-39.12, p<0.001		

*Statistical significant at level of p<0.001.

In the present survey study, participants were listed as labour/daily wage workers, domestic workers and others (cleaners, hawkers, and drivers who work physically also). Amongst these, 15 were daily wage workers, 20 were domestic workers and 22 belonged to the others category with percentages of 26.3, 35, and 38.7, respectively with p<0.001. The respondents

were questioned about their education, and was found that there was no formal education with n=30 (52.6%) and 15 (26%) diabetics with primary school completion. The socioeconomic status was lower with %56.1, with middle income at 21% and normal at 22.9%, considered as significant (p<0.001). All the corresponding values were represented in table 2.

Table 3: Etiological factors of diabetic participants in the study (n=57)

Etiological factors	Frequency	Percentage (%)
Family history of diabetes mellitus		
No	26	45.6
Yes	31	54.4
Chi-square-16.42, p<0.001		
Do you smoke?		
No	47	82.4
Yes	10	17.6
Chi-square-166.08, p<0.001		
Do you have alcohol consumption?		
No	47	82.4
Yes	10	17.6
Chi-square-166.08, p<0.001		
Undergone any surgery?		
No	53	92.9
Yes	4	7.1
Chi-square-645.5, p<0.001		
Use of any other medication for any other purpose (other than diabetes)?		
No	54	94.7
Yes	3	5.3
Chi-square-672.1, p<0.001		
Any existing comorbid condition?		
Hypertension	20	35
Thyroid disorders	13	22.8
Cardiovascular diseases	8	14
Cerebrovascular disease	0	0
Kidney related diseases	10	17.5
Others	6	10.7
Chi-square-9.78, p<0.04		

*Statistical significant at level of p<0.001.

In the assessment of etiological factors, family history was evaluated, and was found that 31 participants had a family history of occurrence of diabetes 54.4%, others who were 26 (45.6%) remained with no family inheritance. About smoking and alcohol consumption, 82.4% were non-smokers and devoid of alcohol consumption. Use of any medications was also considered and recorded, was observed that

about 94% were not in use of any medication. The respondents were questioned about any past surgeries undergone-, and with a % of 92.9. The influence of comorbid conditions was also evaluated and was found that Hypertension (n=20), thyroid disorders (n=13) and kidney-related diseases (n=10) were taken the upper hand with % of 35, 22.8 and 17.5 respectively, considered as significant (p<0.001) (table 3).

Table 4: Food habits and workouts of diabetic participants in the study (n=57)

Food intake	Frequency	Percentage (%)
Are you a Vegetarian (or) a non-vegetarian?		
Vegetarian	12	21
Non-Vegetarian	45	79
Chi-square-102.0, p<0.001		
What is your staple food?		
Rice	12	21
Roti	3	5.4
Both Rice and Roti	42	73.6
Chi-square-535.17, p<0.001		
Before you are diagnosed with DM, how was your diet?		
More carbohydrates	27	47.3
More proteins	5	8.7
More fats	2	3.5
Well balanced diet	23	40.5
Chi-square-6.57, *p>0.05 ^{NS}		
How many times do you consume rice in a day?		
One	15	26.3
Two	29	50.8
Three	13	22.9
>three		
Chi-square-1.66, *p>0.05 ^{NS}		
Do you include Vegetables and Fruits more in your diet?		
No	9	15.8
Yes	48	84.2
Chi-square-200.06, p<0.001		
Before you got diabetes how frequently (per week) you were eating Non-Veg food basically, meat, beef and chicken?		
One	9	15.7
Two	28	49.1
Thrice	20	35.2
Chi-square-48.44, p<0.001		
After you got diabetes how frequently (per week) you were eating Non-Veg food basically, meat, beef and chicken?		
One	19	33.3
Two	28	49.1
Thrice	10	17.6
Chi-square-23.93, p<0.001		
How many hours do you work per day?		
4	11	19.2
6	8	14
8	16	28
>8	22	38.8
Chi-square-37.24, p<0.001		

*Statistical significant at level of p<0.001.

Table 4 explored the food habits and physical activity which was by occupation in the participants. Among the participants, non-vegetarian food takers were more than 79% with a frequency of 45 while vegetarian food takers were only 12 with 21%. The majority of the respondents had their staple food of both Rice and Roti (Typical Indian food) with 73.6%, whilst only rice was staple food for 12 participants. Eating fruits and vegetables was higher with a percentage of 84.2 (n=48), whereas 9 participants (15.8 %) were not consumed with the same. About the ingestion of Non-veg food per week which included meat, beef and chicken, the intake was higher (2 times per week) with a % of 49 before and after the diagnosis of type 2 diabetes mellitus. However, after the diagnosis of the disease, the ingestion was reduced from 20 participants to 10 in terms of the basis of the number of times per week with a percentage reduction from 35.2 to 17.6, considered as significant (p<0.001).

About the symptoms, diagnosis, and treatment for type 2 diabetes, respondents were interviewed with various questions. Symptoms

for recognizing the disease were analysed, and it was found that only 37 participants (65%) noticed symptoms, whereas 20 respondents (35%) were with lack of symptoms. It was also noticeable that about 64% of the respondents were diagnosed and were suffering from the disease for 3 to >4 y, while others were recently diagnosed. 49 (86%) participants were on medication/insulin for the treatment of diabetes, while 8 (14%) were not kept on medication. Nevertheless, 6 (10.6%) diabetic patients were on alternative medication like herbal drugs/home remedies. Additionally, it was identified that 2 participants among 57 had not received/been treated with any sort of medicine for diabetes. The complications of diabetes were spotted in 26 participants (45.7%) while 31 patients were free of complications. Concerning the recording of HbA1c only 24 (42.2%) respondents were tested for the same at intervals whereas the other 33 (57.8%) diabetic patients were not under monitoring of HbA1c. All the variables (table 5) assessed under the symptoms, diagnosis, and treatment were analysed statistically and were found to be significant (p<0.01).

Table 5: Symptoms, diagnosis and, treatment of diabetes mellitus in diabetic patients (n=57)

Variables	Frequency	Percentage (%)
Any symptoms noticed prior to the diagnosis?		
No	20	35
Yes	37	65
Chi-square-16.65, p<0.001		
How long it has been since you are diagnosed with Diabetes mellitus?		
0-1 y	8	14.2
1-2 y	12	21
3-4 y	16	28
>4 y	21	36.8
Chi-square-23.79, p<0.001		
Are you on medication/Insulin for Diabetes mellitus?		
No	8	14
Yes	49	86
Chi-square-144.5, p<0.001		
Are you using any alternative medication like herbal therapy home remedies for Diabetes?		
No	51	89.4
Yes	6	10.6
Chi-square-203.8, p<0.001		
Did you face any complications of diabetes until now?		
No	31	54.3
Yes	26	45.7
Chi-square-9.32, p<0.002		
Are you recording HbA1c periodically?		
No	33	57.8
Yes	24	42.2
Chi-square-5.83, p<0.01		

*Statistical significant at level of p<0.001.

Table 6: Knowledge, awareness and management of diabetes mellitus in diabetics (n=57)

Variables	Frequency	Percentage (%)
Do you know anything about DM before you were diagnosed?		
No	33	57.8
Yes	24	42.2
Chi-square-4.56, p<0.001		
Are you following a proper diet after the diagnosis of diabetes?		
No	3	5.2
Yes	54	94.8
Chi-square-140.1, p<0.001		
Are you taking timely meals (Meal on time) in a day?		
No	4	7
Yes	53	93
Chi-square-134.7, p<0.05		
Are you depressed with the disease?		
No	31	54.3
Yes	26	45.7
Chi-square-9.32, p<0.002		
Are you aware of the complications of DM?		
No	20	35
Yes	37	65
Chi-square-22.26, p<0.001		
Are you confident that you can manage disease?		
No	3	5.2
Yes	54	94.8
Chi-square-672.1, p<0.001		
Do you want to know furthermore about the disease?		
No	7	12.2
Yes	50	87.8
Chi-square-194, p<0.001		

*Statistical significant at level of p<0.001.

Table 6 illustrates the knowledge, awareness, and management of type 2 diabetes mellitus in the diabetic population. In the evaluation of awareness about the disease before the diagnosis, a total number of 24 (42.2%) were found to possess some knowledge while 33 (57.8%) participants were without knowledge. Proper diet and timely meals were followed by a majority of the patients (94%),

while a few of the diabetic patients were reported to be depressed (n=26, 45.7%). The participants were questioned about the complications of type 2 diabetes mellitus and was found that 37 (65%) patients experienced complications while 20 (35%) had no complications. Concerning the management of disease, 54 (94.8%) participants were very confident that they could manage the disease.

Among the 57 participants 50 (87.8%) of them had shown a keen interest to know more about the disease.

DISCUSSION

According to statistics gathered from cross-sectional surveys carried out across the nation, diabetes is growing more common in developing countries [10]. Based on the urine analysis, in 1963, the first study was conducted in Mumbai with 18,243 participants indicating the prevalence of diabetes as 1.5% [11]. Later Diabetes mellitus has become a common and rapidly growing condition in India, affecting about 20% of urban and 10% of rural populations. According to the multi-center ICMR survey carried out between 1972 and 1975 in Ahmedabad, Calcutta, Cuttack, Delhi, Poona, and Trivandrum as well as nearby rural areas, revealed that the countrywide prevalence of diabetes was reported to be 2.1% [12]. The majority of diabetics resided in low-and middle-income nations, with India ranking second in terms of the prevalence of the disease [13]. According to data from rural areas, South India's rural areas experience a similar, if not greater, weightage of prevalence than its urban areas [14]. Given the above considerations, it has become a mandate to investigate the prevalence and causes responsible for diabetes, with proper assessment and analysis.

India, a nation of 1.3 billion, has a sizable number of unorganised sectors. Because they are a fluctuating workforce with employment uncertainty, daily wage employees make up the lowest rungs of the informal workplace in the nation [15]. In India, the type of work done by daily wage workers in the unorganized sections of the economy in the past was dependent on caste and tradition. Due to the forces of socioeconomic development, population increase, employment-related migration, and a decline in job options, daily wage workers are now required to work any type of job. As the labour are exposed to different physical, chemical and, biological agents they become susceptible to various health-related issues. Moreover, it was also observed that due to their physical fitness, they might not be attacked by certain diseases which were counted as a burden reliever for themselves and also for health care workers. However, due to the heavy load of incidence of diabetes on the health care system and society, the prevalence of type 2 diabetes mellitus needs to be scrutinized in those people whose occupation is related to physical work. As their physical work and fitness go shoulder by shoulder they might be at a lower risk of developing diabetes.

In healthcare epidemiology and research, surveys are frequently employed as a method. Surveys, which can be exploratory, descriptive, or explanatory, allow for the selection of a sizable sample of participants from a predetermined population and the subsequent gathering of data from those participants [16]. Patient-reported health surveys are a valuable source of data for health research in healthcare systems that are under development. A goal has been made by utilizing the data collected from surveys that might make prevalence estimates for some chronic illnesses like diabetes, CNS disorders, and Asthma.

A community-based survey would be always successful with the active participation of respondents, enabling them to identify the problems, and help to take necessary steps, as a result, the community would experience a decrease in unhealthy, improper behaviours. It was proven that some studies conducted at the University of California on community based participatory research in the year 2003 have shown a better understanding of complex community health problems [17].

Hence, the study was conducted with a total number of participants (n=104) out of which 57 respondents were diabetic. Only diabetics were chosen as participants for further assessment of the study. The demographics were analysed in the diabetics, females were 33 (57.9%) and males were 24 (42.1%). According to studies, type 2 diabetes affects men more frequently than women. However, females frequently experience more severe difficulties and a higher probability of passing away. When the prevalence of diabetes in different age groups was evaluated, 75% of the participants were aged between 31 and 60 y. Generally, reports said that the prevalence is higher at the age of 40 y, which is a middle-aged, again

depending on the lifestyle, quality of life, food habits, environmental factors, and so on.

The socioeconomic status (SES) of the participants was assessed, was observed that 30 respondents (52.6%) were illiterate absolutely, while 32 (56%) belonged to the low-income category. Among adults with diabetes, lower SES is associated with poor health outcomes, reduced and underuse of recommended preventive care, faulty metabolic control, and psychological distress.

The etiological factors responsible for the occurrence of type 2 diabetes mellitus were assessed and was found that 31 (>50%) respondents had a family history that supported the genetic predisposition/susceptibility. Several gene studies were conducted to identify the candidate genes responsible for type 2 diabetes; few were successful and were proven [18]. Cigarette smoking and alcohol consumption were analysed in the total number of diabetic participants and was found that about 82% of them were free from both; additionally, these were considered as ruled-out factors responsible for causing diabetes in the present study. The use of other medications and surgery were on par with each other in more than 50% of diabetic people, which might be sometimes a causative factor for the occurrence of diabetes. About the associated comorbid conditions, there is a link between diabetes and hypertension. Type 2 diabetes and hypertension frequently coexist. Those with diabetes have hypertension twice as often as those without the disease. Furthermore, compared to normal people, persons with hypertension frequently show signs of insulin resistance and are more likely to develop diabetes. Out of 57 participants, 20 (35%) were reported to possess hypertension, while >55% exhibited thyroid disorders and diabetes. The endocrine system is dysfunctional in both thyroid disorders and hypertension. Untreated thyroid conditions have an impact on the management of diabetes, and they can significantly alter glucose control. As a result, a methodical approach to thyroid testing in diabetic patients is advised.

As far as the food habits and diet restrictions were concerned, the staple food typically for the south Indian population was included with rice-based items, i.e., with more carbohydrates in it. The consumption of rice was 2 times per day in more than 50% of the participants, which nearly matched with the participants whose intake of carbohydrates (47.3%) was also higher. From the previous studies, it was noted that there is a strong association between carbohydrates and glycaemic control, though there exists a difference between carbohydrates with a low and high glycaemic index. In the present study, this might be the reason for the prevalence and occurrence of the disease in such community people. Importantly, compared to non-vegetarians, those who switched to a vegetarian diet had a 53% decreased chance of acquiring diabetes [19]. In the present study, the non-vegetarian food eaters were equal (n=28) both before and after the diagnosis of the disease. In people with type 2 diabetes, physical activity enhances glycaemic management and lowers the complications related to the cardiovascular system [20]. Participants with >64% were observed to work physically for 8 h which might be a part of their occupation. This emphasized clarity of mobilization of glucose from the blood and uptake by muscles, with their glycaemic reading under control.

When participants were questioned with the symptoms and diagnosis-related questions, only 37 of the total diabetics were identified with the symptoms of the disease, while the rest of them were not. A total number of 21 patients were suffering from the disease since >4 y, whereas 26 patients faced complications of the disease. The most unsatisfactory aspect of the study was that only 42.2% of the respondents were recorded with HbA1c periodically whilst others did not get tested. The cumulative glycaemic history of the previous two to three months (HbA1c) is an essential biomarker of long-term glycaemic control [21]. HbA1c not only offers a trustworthy indicator of chronic hyperglycaemia but also has a strong correlation with the likelihood of long-term consequences and organ damage that occurs from diabetes. In the treatment, 49 participants (86%) were on intake of medication/insulin which was up to the mark, while 6 participants were followed with alternative therapies like herbal-based or any home remedies. Only 2 patients

were not under any type of medication, which is challenging for them and at higher risk of progression of the disease.

About the knowledge, management and awareness of type 2 diabetes mellitus, the participants were not aware of the disease before they were diagnosed, but after the diagnosis of the disease majority of them (93-94%) were on the proper diet and timely intake of meals. About 65% of them were known of the complications of the disease, facilitating them to be cautious in the maintenance of optimum/controlled blood glucose levels, thus combating the complications further. A person who thinks/struggles to earn money to have food three times a day will have a concern/worry only about his/her starving or eating. The next priority would be about the disease he/she suffering from along with the intake of medication and acquiring knowledge about the disease. A total number of 54 (94%) patients agreed that they would be able to manage the disease, and 50 (87.8%) participants wanted to gain more knowledge about the disease which is very much appreciated and improves their well-being.

There are several reasons for the occurrence of diabetes in such a population like the nature of labour, working hours, low pay, cramped accommodation, being far from family, the lack of job security, and the deficiency of occupational health care contribute to workers' anxiety and stress. Though they work physically, stress may play a role in diabetes-related persistent hyperglycaemia [22]. When the participants were diagnosed with the disease, it was found that >60% were suffering since 3-4 y/>4 y, when we go into the past i.e., 3 y ago, the pandemic situation (Covid-19) hit the entire world to darkness. Daily wage workers were in the worst situation, and were not able to protect themselves from the virus but also struggled to keep up their jobs [23]. Daily wage employees' concerns about providing for their families are spiralling because they are frequently trapped without access to food and shelter. This might be considered one of the robust causative factors behind the prevalence of type 2 diabetes in such people. Therefore, the current survey was conducted in daily wage workers and also others concerned about the prevalence of diabetes, which might be helpful in the assessment and analysing of the same [24].

There were a few limitations in the present study. The sample size was small. The prescriptions were not collected and analysed because, this was only an epidemiological study that mainly was focused on the prevalence data. Moreover, it was a community-based study that was analysed for etiological factors responsible for the occurrence of type 2 diabetes mellitus in those populations who work physically by their occupation.

CONCLUSION

In India, diabetes mellitus presents a significant epidemiological and financial health concern. The present study explored the prevalence, and the causes of the occurrence of the disease in daily wage workers, who physically work by occupation. Various reasons/factors were assessed that were blameworthy for the occurrence of diabetes. However, HbA1c was not recorded in the majority of the participants, but almost all of them were on medication. The primary factors that were responsible for the occurrence of diabetes were confined to dietary intake and mental stress conditions. It was noticed that there was awareness and knowledge about the disease, along with the complications. They were confident about managing the disease and were keenly interested in gaining more information about type 2 diabetes. Society is more dependent on daily wage workers for their daily requirements; hence there is a need to have care and concern for them, and a well-deserved level of respectability has been attained as a result of their irreplaceable services.

Therefore, there is a pressing need to increase the conduction of diabetes-based health programs regarding to lifestyle changes, and food habits, thus preventing the disease rather than cure. A healthy work environment is advantageous to employees' health and also supports greater productivity.

DATA AVAILABILITY

The data obtained from the patients were analysed using SPSS software, which was taken on request from the authors affiliated to Information Technology, Jazan University, Kingdom of Saudi Arabia.

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Nil

AUTHORS CONTRIBUTIONS

P. S. R for conception, design and acquisition of data, S. B drafted the manuscript, S. A. M., F. T., M. A. S. and M. M. A had used the Software and performed data compilation, B. T. collected the data, revised the manuscript.

CONFLICTS OF INTERESTS

There are no conflicts of interest.

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