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Knowledge and Attitude towards Risk Factors and Complications of Diabetes among Housekeeping Staff at a Tertiary Care Center in India

ABSTRACT

Objective: This study aimed to assess the knowledge and attitude towards risk factors and complications of diabetes among housekeeping workers.

Material and methods: After obtaining institutional ethics approval, a cross-sectional survey was conducted among housekeeping staff working in a tertiary care center with an age group ranging from 18 to 60 years to assess knowledge and attitude towards risk factors and complications of diabetes. The correlation between knowledge and attitude scores was determined using Karl Pearson correlation coefficient analysis.

Results: A total of 287 housekeeping staff, with majority of females (73.9%) were included in the study. The average knowledge score was 16.24 ± 6.74, and the average attitude score was 7.22 ± 1.27. A weak correlation between knowledge and attitude scores was observed with a coefficient of 0.215 (p < 0.01). Multivariate linear regression analysis revealed that total knowledge and attitude scores and previously counseled people were statistically significant.

Conclusions: The findings revealed that the overall level of knowledge about diabetes among housekeeping staff is poor, but the overall attitude is positive. There was a weak correlation between knowledge and attitude scores. Coordinated educational initiatives focusing on lower socioeconomic background, rural, and less educated individuals are needed to avoid diabetes and its complications. (Clin Diabetol 2023; 12; 5: 283–289)

Keywords: knowledge, attitude, complications, diabetes, housekeeping workers

Introduction

Diabetes (DM) is one of the world's fastest-growing public health emergencies in the 21st century [1]. The term diabetes consists of a group of metabolic illnesses that share the characteristic of hyperglycemia and are produced by a complicated combination of hereditary and environment [2]. It is caused by insulin deficiency or insulin resistance, or both. Insulin is a hormone produced by the pancreatic cells to regulate blood glucose levels [3]. Type 1 diabetes (T1D), type 2 diabetes (T2D), and gestational diabetes mellitus (GDM) are the three primary categories of DM [1]. Ninety percent of all

diabetes cases are T2DM [4]. According to the International Diabetes Federation, global diabetes prevalence is 9.3 percent in 2019, rising to 10.2 percent by 2030 and 10.9 percent by 2045 [5]. Furthermore, the World Health Organization estimates that diabetes causes 3.2 million deaths per year, 8700 deaths per day, and six deaths each minute [6]. Diabetes was prevalent in 7.3 percent of Indians [7]. Males in Southern India and females in Northern India were found to have a higher prevalence of diabetes [8, 9]. Diabetes prevention requires understanding risk factors in the general population and high-risk groups. Genetic factors in specific ethnic communities, a family history of diabetes, and age (greater than 45) are unmodifiable risk factors. However, lifestyle factors such as poor diet, lack of physical activity, alcohol consumption, and smoking are the most common risk factors for diabetes epidemiology, leading to obesity, dyslipidemia, high blood pressure, and impaired glucose tolerance (IGT) [10]. DM that is not well controlled can cause life-threatening complications, including both microvascular and macrovascular problems [11]. DM will become a leading cause of illness and death in the future as its prevalence is increasing worldwide [2].

Diabetes treatment aims to reduce mortality and morbidity by returning blood glucose levels to normal. Diabetes patients can benefit from good eating habits, regular physical activity, and checkups. Due to their difficulty understanding and adhering to medical instructions, people with DM who lack health awareness and education are more likely to have poor blood glucose control and an elevated risk of complications [12]. The hospital's housekeeping staff is in charge of keeping the facility clean and hygienic so that patients can receive quality care. The activities related to cleanliness, upkeep of the hospital environment, and adequate sanitation services to keep the premises free of pollution are included in the hospital housekeeping services. Innovative training methods are required for this category, especially when their level of education is below average. Increasing awareness and general knowledge of diabetes can benefit them in the healthcare field.

India is on track to become the world's diabetic capital, resulting in 0.9 million deaths directly or indirectly. In the low and middle socioeconomic classes, where diabetes knowledge is lacking, 80% of all diabetes cases were found [7]. It is essential to understand the knowledge of housekeeping workers as they generally have low economic status and education level. Proper knowledge and the right attitude can assist them in determining their risk of diabetes, motivating them to seek proper treatment and care, inspiring them to take charge of their disease for the rest of their lives and reduce the financial burden caused due to treatment. There is a dearth of literature in the current study area. Therefore, we have conducted this survey to assess housekeeping employees' knowledge and attitude regarding diabetes risk factors, complications, and prevention at a tertiary care center in India.

Materials and methods

Study design

A cross-sectional study was carried out between May 2022 and April 2023 using a questionnaire.

Study participants

Study participants were housekeeping staff working in a tertiary care center.

Study criteria

A total of 287 housekeeping staff working in a tertiary care center aged 18–60 years were included. Those who did not know how to read and write were excluded from this study, as a third party who comes to assist them will probably be biased. As a result, it is not a response based on the participant's own knowledge.

Questionnaire design and validation

After reviewing the literature, the questions were collected and sorted under two domains: knowledge and attitude. The questionnaire was sent to five subject experts for validation. They assessed whether the questions effectively captured the topic under investigation and contained common errors such as double-barrelled, confusing, or leading questions. After collecting responses from experts, the questionnaire was modified. A modified questionnaire, each of the English and Kannada versions, was sent to the housekeeping staff of another setting for further validation. Participants were asked to comment on the questionnaire's clarity, format, and length. Responses from them were analyzed to check the efficacy of the questions. The Cronbach's alpha coefficient for questionnaire reliability statistics was 0.807. After completion of validation, the questionnaire was used for the study.

Data collection

The study was carried out after approval from the Institutional Ethics Committee, Kasturba Hospital, Manipal (IEC2: 402/2022). The study's objective was explained to every participant, and they were all given the assurance that their data would only be used for academic research and that it would be kept in strict confidence. Written informed consent was taken prior to the conduct of the study. The questionnaire was

distributed to all participants to measure their knowledge and attitude towards diabetic complications. The questionnaire (in English or regional language) form consists of "multiple choices" and "yes" or "no" questions pertaining to diabetes and its complications. The questionnaire was divided into three sections — Section 1 consisted of socio-demographic details. It included gender, age, educational status, family history of diabetes, duration of diabetes, and previously counseled about diabetes. Section 2 consisted of knowledge questions. A few questions will be given to evaluate their knowledge of diabetes, its risk factors, and complications. These questions are just intended to test their diabetes knowledge. Section 3 consisted of attitude questions. These questions were some statements about their feelings, thoughts, and opinions on diabetes and its complications. The participants were provided with the version of the questionnaire selected by them. The average time taken by participants to fill out the questionnaire was less than 10 minutes.

Statistical analysis

Data was entered in Microsoft Excel and analyzed using Excel EZR and Statistical Package for Social Science (SPSS) version 20. All categorical data were expressed in frequency and percentage. Mean and Standard Deviation were used to present knowledge and attitude levels. Karl Pearson correlation coefficient analysis was performed to find the correlation between them. Multivariable linear regression modeling was applied to determine the variable associated with diabetes-related knowledge and attitude. All associations were considered significant at the alpha level of 0.05.

Results
Characteristics of the study group

A total of 287 housekeeping staff working at the tertiary care center under the Quess Corp Limited (QUESS) department participated in the survey. Female participants were more predominant in the study (73.9%) than the male participants (26.1%). Most respondents (59.2%) were aged between 31 and 45. In our study, most of the participants were free from diabetes (255), while only a few had (32) diabetes (Tab. 1).

Distribution of respondents based on knowledge of diabetes

In our study, 192 (66.9%) participants were aware that diabetes could affect the kidneys, and 150 (52.3%) knew that diabetes could affect the feet. However, more than half of the study participants were unaware that diabetes could affect the eyes, nerves, heart, lungs, and brain. Most respondents were aware that polyuria is a symptom

Table 1. Demographic Details of the Study Participants

S. No	Variable	N (%)
1	Gender	
	Male	75 (26.1%)
	Female	212 (73.9%)
2	Age in years	
	18–30	23 (8%)
	31–45	170 (59.2%)
	46–60	94 (32.8%)
3	Education status	
	Primary	140 (48.8%)
	High School	117 (40.8%)
	Pre-university course	27 (9.4%)
	Graduation	3 (1%)
4	Family history of diabetes	
	Yes	53 (18.5%)
	No	234 (81.5%)
5	Diabetes	
	Yes	32 (11.1%)
	No	255 (88.9%)
6	Duration of diabetes	
	Less than 1 year	08 (2.8%)
	1–5 years	17 (5.9%)
	5–10 years	5 (1.7%)
	More than 10 years	2 (0.7%)
7	Previously counselled for diabetes	
	Yes	163 (56.8%)
	No	124 (43.2%)

of diabetes compared to other symptoms. More than 50% of the study participants did not know that family history, high BP, mental stress, sedentary lifestyle, overweight, age (older than 45), alcohol consumption, and smoking were risk factors for diabetes. A maximum number of participants in the study were unaware that retinopathy, cataract, foot ulceration, neuropathy, nephropathy, hearing impairment, and skin lesions are the complications of diabetes. When compared to other diabetes control measures, the majority of the participants (84%) were aware of the significance of diet (Tab. 2).

Total respondents' knowledge of diabetes-affected organs = total correct response/total potential correct response × 100% = 643/2009 × 100% = 32% (poor knowledge). Total awareness of responders on diabetes symptoms = total accurate response/total potential correct response × 100% = 632/1722 × 100% = = 36.7% (poor knowledge). Total respondents' awareness of diabetes risk factors = total correct response/ /total potential correct response × 100% = 705/2296 × 100% = 30.7% (poor knowledge). Total respondents' knowledge of diabetes complications = total correct

Table 2. Respondents Knowledge about Various Aspects of Diabetes

Characteristics	Category	N (%)
Affected body parts		
Kidney	Yes	192 (66.9%)
Feet	Yes	150 (52.3%)
Eyes	Yes	108 (37.6%)
Nerves	Yes	45 (15.7%)
Heart	Yes	87 (30.3%)
Lungs	Yes	32 (11.1%)
Brain	Yes	29 (10.1%)
Symptoms of diabetes		
Polyuria	Yes	216 (75.3%)
Dehydration	Yes	69 (24%)
Polyphagia	Yes	109 (38%)
Weight loss	Yes	139 (48.4%)
Loss of consciousness	Yes	50 (17.4%)
Mental confusion	Yes	49 (17.1%)
Risk factors for diabetes		
Family history	Yes	109 (38%)
High BP	Yes	119 (41.5%)
Mental stress	Yes	97 (33.8%)
Sedentary lifestyle	Yes	73 (25.4%)
Overweight	Yes	99 (34.5%)
Age (older than 45)	Yes	61 (21.3%)
Alcohol consumption	Yes	73 (25.4%)
Smoking	Yes	74 (25.8%)
Complications of diabetes		
Retinopathy	Yes	160 (55.7%)
Cataract	Yes	78 (27.2%)
Foot ulceration	Yes	130 (45.3%)
Neuropathy	Yes	39 (13.6%)
Nephropathy	Yes	88 (30.8%)
Hearing impairment	Yes	18 (6.3%)
Skin lesions	Yes	82 (28.6%)
Diabetes management		
Medication	Yes	171 (59.6%)
Diet	Yes	241 (84%)
Exercise	Yes	287 (65.2%)
Regular checkup	Yes	145 (50.5%)

response/total potential correct response × 100% = = 595/2009 × 100% = 29.6% (poor knowledge). The study respondents' mean knowledge score was (16.24 ± ± 6.74). This suggests that the majority of respondents were unfamiliar with diabetes.

Distribution of respondents based on attitude toward diabetes

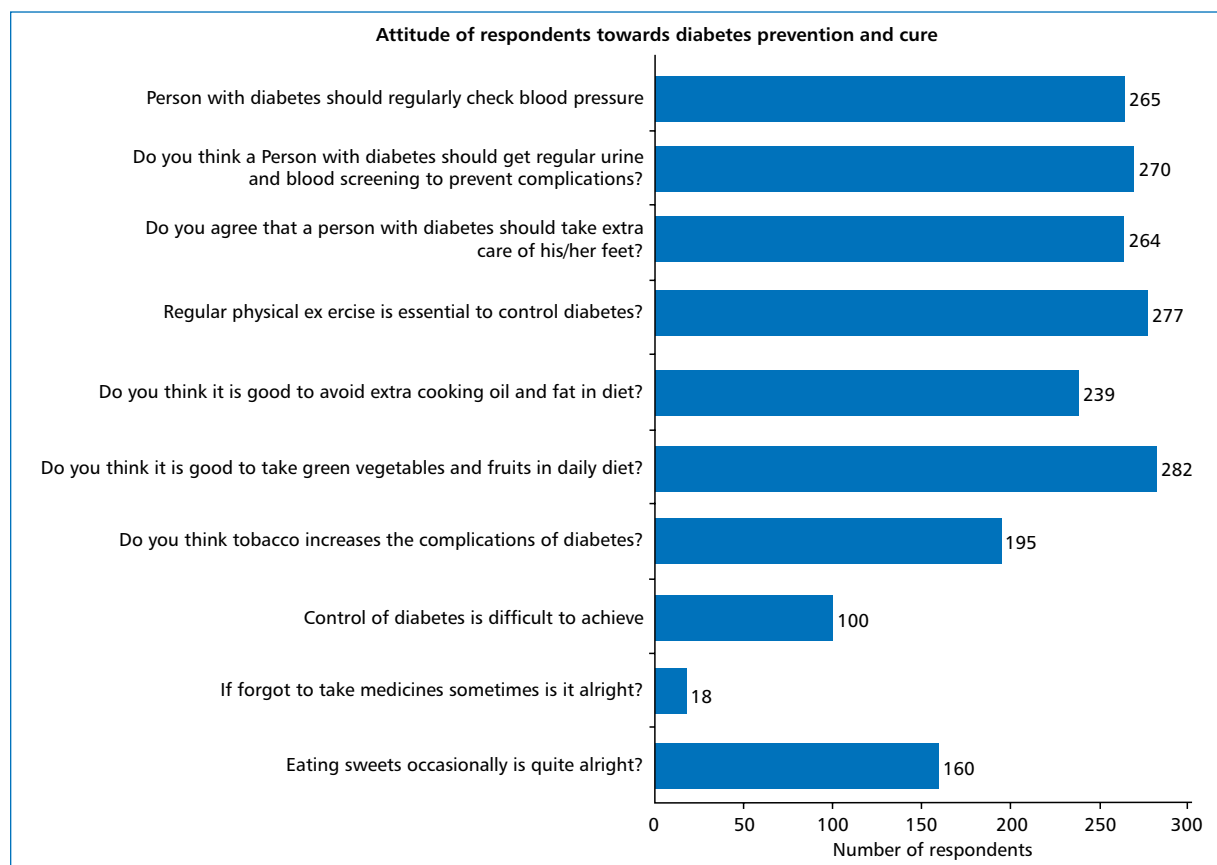One hundred and sixty (55.7%) respondents agreed that eating sweets occasionally is all right, while 127 (44.3%) disagreed. Few (6.3%) believe that forgetting to take medicine is all right, while the majority (93.7%) disagree. 34.8% of respondents agreed that control of diabetes is difficult to achieve, but 65.2% of respondents disagreed. Most respondents (67.9%) agreed that using tobacco increases the complications of diabetes, while 92 (32%) disagreed. Diabetes being prevented through eating good green vegetables and fruits were agreed upon by 282 (98.3%) of respondents; avoiding extra cooking oil and fat in the diet was agreed upon by 239 (83.3%); using regular exercise was agreed upon by 277 (96.5%); and taking extra care of foot examination was agreed upon by 264 (92%). 270 (94.1%) of respondents agreed on regular blood glucose monitoring, while only a few (5.9%) disagreed. Finally, 265 (92.3%) agreed that regular blood pressure checks can help avoid diabetes (Fig. 1).

The mean attitude score of the study participants was (7.22 ± 1.27). However, the respondents had a positive attitude toward the illness. Most respondents thought they were in charge of their own care, suggesting they were willing to change if properly motivated or educated.

A statistically significant weak correlation existed between knowledge and attitude score ($p < 0.01$). Multiple linear regressions for the total knowledge scores and total attitude scores on socio-demographic characteristics showed that the overall knowledge and attitude score was statistically significant, and the people who were previously counseled also showed statistically significant. Other characteristics showed that there was no statistical significance (Tab. 3).

Discussion

Diabetes knowledge and attitude are not constant subjects; they vary greatly from person to person based on socioeconomic conditions, cultural beliefs, educational level, and personal preferences. The gender distribution of study participants revealed that most study participants were females. The study included 73.9% females. Some similar studies on the prevalence of diabetes or its risk factors had a female predominance [13]. Most participants (59.2%) were between 31 and 45 years. A study conducted in Puducherry, India, which reports that age is one of the major concerns for the development of diabetes, reveals similar results [14]. According to the current study, most participants (48.8%) had primary education, and 40.8% had secondary education, with PUC and graduation accounting for 9% and 1%, respectively. A recent study found that twelve percent of the participants were uneducated or did not finish primary school, which contradicts our findings [15].

Attitude of respondents towards diabetes prevention and cure

Question	Number of respondents
Person with diabetes should regularly check blood pressure	265
Do you think a Person with diabetes should get regular urine and blood screening to prevent complications?	270
Do you agree that a person with diabetes should take extra care of his/her feet?	264
Regular physical ex ercise is essential to control diabetes?	277
Do you think it is good to avoid extra cooking oil and fat in diet?	239
Do you think it is good to take green vegetables and fruits in daily diet?	282
Do you think tobacco increases the complications of diabetes?	195
Control of diabetes is difficult to achieve	100
If forgot to take medicines sometimes is it alright?	18
Eating sweets occasionally is quite alright?	160

Figure 1. Attitude of Respondents towards Diabetes Prevention and Cure

Our findings revealed that 11.1% of participants had been diagnosed with diabetes. In the current study, 3.5% of individuals had diabetes for less than a year, 5.9% for one to five years, 1.7% for five to ten years, and 0.7% for more than ten years. In another investigation, the distribution of participants based on how long they had been diagnosed with diabetes revealed that 30.9% had suffered from the disease for five to ten years [13], which was opposite to our study. 56.8% of those surveyed had undergone at least one diabetes counseling session from a healthcare provider in any context, and 43.2% were unaware of diabetes in general. They are unaware that this condition is linked to blood glucose levels. This shows that diabetes counseling provided by healthcare providers may help enhance public awareness of the disease [16].

In the current study, participants' knowledge was assessed based on their comprehension of diabetes, which covered affected body areas, symptoms, risk factors, complications, along with care options. In our study, the overall knowledge score (32%) on the diabetes-affected body parts is low. The majority of those surveyed believed that diabetes most frequently affected the eye, according to Namperumalsamy et al.

[17]. It is essential to understand how diabetes affects the body. It can assist us in adhering to our treatment plan and maintaining our health.

Excessive urination was identified as a diabetes symptom by a substantial proportion of respondents (75.3%) compared to other diabetes symptoms. The overall knowledge score (36.7%) on diabetes symptoms is low. In another investigation, only 62.5% were aware of the asymptomatic nature, and an almost identical proportion (63.5%) were aware of polyphagia as a symptom of T2D patients [18]. Our participants' knowledge of risk factors was 30.7%; the majority did not recognize old age, obesity, high blood pressure, sedentary lifestyle, and a family history of diabetes as risk factors for diabetes.

Diabetes self-management requires a thorough understanding of the disease and its complications. It is essential for the decrease of inappropriate behaviors and the subsequent prevention and reduction of disease-related consequences. Most of the participants in this study had insufficient knowledge of diabetes complications. The overall knowledge score on diabetes complications is low (29.6%). The most common diabetes complications, according to

Table 3. Comparison of Knowledge and Attitude Scores with Socio-Demographic Characteristics

	F-value	P-value
a. Knowledge and Attitude	108.127	0.000***
Gender	0.759	0.469
Age	0.758	0.470
Education	1.236	0.292
Family history of diabetes	0.501	0.607
Diabetes	2.769	0.064
Duration of diabetes	1.591	0.206
Previously counselled for diabetes	12.847	0.000***
B. Knowledge		
Gender	0.290	0.590
Age	0.270	0.603
Education	0.378	0.539
Family history of diabetes	0.956	0.329
Diabetes	1.242	0.266
Duration of diabetes	1.129	0.289
Previously counselled for diabetes	1.658	0.199
C. Attitude		
Gender	0.943	0.332
Age	0.966	0.326
Education	2.395	0.123
Family history of diabetes	0.000	0.991
Diabetes	3.221	0.074
Duration of diabetes	1.391	0.239
Previously counselled for diabetes	25.738	0.000***

***p < 0.05 is statistically significant

a previous study by Sharma et al. in North India, were nephropathy (45.2%), retinopathy (47.3%), the heart (14.1%), the lungs (10.8%), the brain (8.3%), and the feet (5%) [16]. In our study, most participants (84%) understood the significance of diet, while 65.2% also knew the importance of exercise, 59.6% understood the significance of medication, and 50.5% understood the significance of routine checkups in preventing the development of diabetes.

The mean knowledge score of our study participants was 16.24 ± 6.74. This indicates that most respondents had limited knowledge of diabetes. This opposes the findings of other research carried out in South India by Hussain R et al. and Rani PK et al., who found that 40.7% and 49.9% of their individuals were knowledgeable [19, 20]. It is suggested that some standard diabetes awareness educational events be organized to raise public knowledge of this hidden and curable illness with numerous complications that exert significant pressure on the national healthcare system.

Individuals' attitudes towards a particular subject are defined by whether they have preconceived ideas about it and how they indicate their knowledge in order to control that specific condition. The mean attitude score of our study participants was (7.22 ± 1.27). Most of our respondents had favorable attitudes towards diabetes prevention. It is unexpected that the knowledge score was low, but the attitudes were higher. Another similar study found that the average attitude of study participants was (3.29 ± 1.15). The patients' attitudes towards balancing their diet, exercise, and medication control of diabetes and their approach to the doctor were also good [13].

Statistically significant mild correlations between knowledge and attitude scores were found despite this outcome. There is a weak but statistically significant association between participant knowledge and attitude scores (r = 0.215, p < 0.01). In another research study on diabetic KAP, it was discovered that knowledge as well as attitude had a strong correlation (r = 0.5308, p < 0.01) [21]. Regular medical education programs on diabetes should be conducted to keep people up to date on the disease so that they are better aware and educated.

Limitation

This study was conducted in a single center. The questionnaire form consists of multiple-choice questions. This does not provide an opportunity for the participant to think on their own, and they might choose random options.

Conclusions

This study found that housekeeping staff had a poor knowledge about diabetes but showed a positive attitude towards diabetes prevention. There was a weak correlation between knowledge and attitude scores. More research is required to explore the effect of cleaning staff members on the rate of diabetes, as well as the association between morbidity and mortality rates among housekeepers after increasing their performance.

Article information
Data availability statement
Data of the study will be available on request.

Ethics statement
The project was approved by the institutional ethics committee.

Author contributions
All authors are responsible for the study conception and design, data collection, analysis, interpretation of results and manuscript preparation.

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