

# Knowledge of Diabetic Foot Care among Diabetic Individuals of Ahmedabad

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## ABSTRACT

**Background:** Diabetes is an incremental danger for the world health. Good knowledge and practice regarding diabetic foot care will reduce the risk of diabetic foot complication.

**Aims and Objective:** To assess the level knowledge of diabetic foot care among diabetic individuals of Ahmedabad.

**Method:** A cross sectional study was performed among community dwelling diabetic individuals of Ahmedabad. A survey of 250 diabetic individuals was conducted with a self-administrated questionnaire of 15 'yes' or 'no' question on foot care knowledge and foot care. Score of 1 was given for each 'yes' answer. The level of knowledge was determined based on their answers. A score of >70% was measured as good, 50 to 70% as satisfactory and <50% as poor.

**Results:** 250 diabetic individuals were participated in the study. Among 250 participants, 67 had good knowledge regarding diabetic foot care, 136 participants had satisfactory knowledge and 47 participants had poor knowledge of diabetic foot care.

**Conclusion:** Majority of the participants had satisfactory knowledge regarding the diabetic foot care.

**Key words:** Knowledge, diabetic foot care, diabetes mellitus

## INTRODUCTION

Diabetes mellitus refers to a group of disease that affect how body uses blood sugar (glucose). Glucose is necessary to health because it's an important source of power for the cells that make up muscles and tissues. It's also our brain's main source of nourishment. The underlying cause of diabetes varies by type of diabetes mellitus. But, no matter what type of diabetes one has, it can lead to excess sugar in blood. Too much sugar in blood can lead to serious health problems. Chronic diabetes condition includes type 1 diabetes and type 2 diabetes. Potentially reversible diabetes condition include prediabetes occurs when blood sugar levels are higher than normal, but not high enough to be classified as diabetes. And prediabetes is often the predecessor of

diabetes unless appropriate steps are taken to prevent progression of this disease. Gestational diabetes occurs during pregnancy but may resolve after the child is delivered. <sup>(1)</sup>

All kidney diseases in Ayurveda are described under "Prameha", and Madhumeha" is one amongst them, equated to type 2 diabetes mellitus (DM). Dietetic incompatibilities and lifestyle incompatibilities both are the major risk factors for diabetes. <sup>(2)</sup>

With type 1 diabetes, body doesn't make insulin. With type 2 diabetes, body doesn't make or use insulin well, glucose can't get into cell as quickly as usual. The glucose build up in blood and causes high blood sugar levels. Foot problems are common in individuals with diabetes mellitus. They can

happen over time when high blood sugar damage the nerves and blood vessels in the feet. In diabetic neuropathy nerve damage occurs which leads to numbness, tingling, pain or a loss of feeling in your feet. If diabetic patient feel pain, patient may not know when patient have a cut, blister, or ulcer (open sore) on patient's foot. A wound could get infected. The infection may not heal well because the damaged blood vessels can cause poor blood flow in feet. Infection and poor blood flow leads to gangrene. That means the muscle, skin and other tissues of the body start to die. If patients have gangrene or foot ulcer that does not get better with treatment, they may need an amputation. This is a surgery to cut off damaged toe, foot or part of leg. That may prevent spreading of infection and could save life.<sup>(3)</sup>

"In every country and in every community worldwide, we are losing the battle against this cruel and deadly disease." said Jean Claude Mbanaya, president of the International Diabetes Federation (IDF).<sup>(4)</sup>

Indian population is complex in nature involving different sociocultural, geographical, environment, rural -urban, vegetarian-non-vegetarian food habit.<sup>(5)</sup>

India leads the world with largest number of diabetic individuals earning the suspecting distinction of being termed the "Diabetes capital of the world". According to the Diabetes atlas 2006 published by the International Diabetes Fedration, the number of people with diabetes in India currently around 40.9 millions is expected to increase to 69.9 million by 2025 unless urgent preventive measures taken.<sup>(6)</sup>

Studies carried out in past two decades employing standardized methodologies indicate that prevalence of diabetes is increasing in both urban and rural India varying from 5 to 15 % among urban population, 4 to 6 % in semi -urban population and 2 to 5 % in rural population.<sup>(7,8)</sup>

Globally, about 422 million individuals have diabetes. The majority of them are from developing countries.<sup>(9)</sup> It is estimated

that the numbers will increase 1.4 times by 2045 due to a sedentary lifestyle and changing dietary patterns.<sup>(10,11)</sup> Prolonged hyperglycaemia results in several Diabetes mellitus complications, such as peripheral neuropathy, peripheral vascular disease, foot ulcers, high risk of sepsis, poor wound healing, and limb amputations.<sup>(12,13)</sup>

Diabetic neuropathy often leads to the development of diabetic foot ulcers (DFUs),<sup>(14,15)</sup> where a thickened open sore wound commonly located at the bottom of the feet forms regardless of the duration.<sup>(16)</sup> Foot ulcer is the most common, but serious and costly complication of Diabetes mellitus,<sup>(17,18,19)</sup> accounting for 7% to 11% of all hospital admissions in diabetic patients.<sup>(20)</sup> This affects societies and leaves a huge financial impact on low-income families and the health care system in countries.<sup>(21)</sup>

The consequence of Diabetic foot ulcers is amputation. An estimated 52% to 68% of diabetic patients with amputation experienced stable frailty, loss of movement, and significant reduction in the lifespan.<sup>(22)</sup> Inferior extremity amputations are greater in DM patients than in non-DM patients.<sup>(23)</sup>

The self care practices of individuals are influenced by their knowledge about diabetes; the more they know about their illness, more they would have self management skills.<sup>(24)</sup>

According to the American Diabetes Association (ADA), there are certain guidelines to be followed by diabetic persons.<sup>(25)</sup> This study was carried out to assess the knowledge of diabetic foot care among the diabetic individuals of Ahmedabad.

## METHOD

A cross-sectional study was carried out in 250 diabetic individuals of Ahmedabad. A questionnaire of knowledge of diabetic foot care based on American diabetes Association was used and spread through google forms. The link of the questionnaire was shared through social media and hard

copies of the questionnaire regarding diabetic foot care also shared among diabetic individuals of Ahmedabad. After they accepted to take part in the survey, they fill up the demographic details and several questions related to diabetic foot care.

Type 1 and Type 2 diabetic patients both male and females were included in the study. Those who are not able to understand English and participants with any visual disabilities were excluded from the study.

Closed ended Questionnaire containing 15 questions regarding the diabetic foot care. Each correct answer was given one mark.

Data analysis was carried out by Microsoft excel 2019.

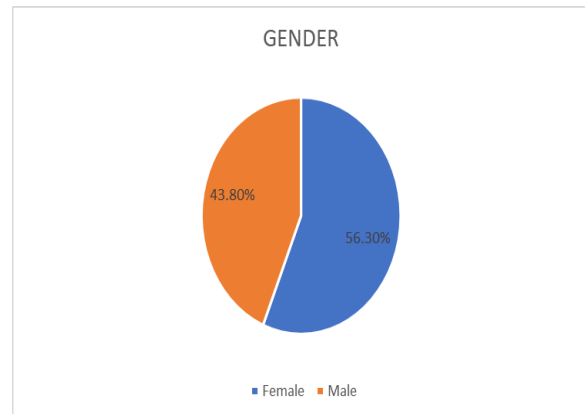
Good knowledge: if score is more than 70% (11-15)

Satisfactory knowledge: if score is 50-70% (10-8)

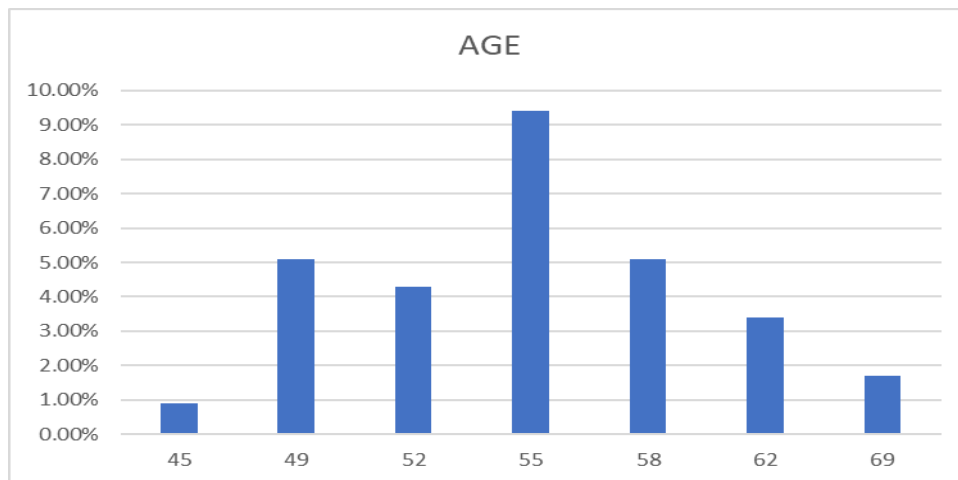
Poor knowledge: Score is less than 50% (<8).

## RESULTS

Total 250 diabetic individuals were participated in this study.56.3% Participants were females and 40.8 %Participants were males. Majority of the participants were 55 years old.

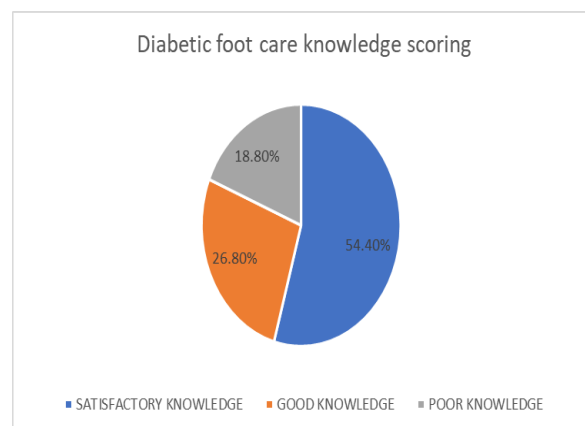


(Figure-1 Gender distribution of 250 participants)



(Figure-2 Age analysis of 250 participants)

Among 250 Diabetic individuals,67 participants had good knowledge regarding diabetic foot care,136 participants had satisfactory knowledge and 47 participants had poor knowledge regarding diabetic foot care.



(Figure-3 Scoring of Diabetic foot care knowledge of 250 participants)

**Table-1 Analysis of all the 15 questions regarding Diabetic Foot Care**

NO.	KNOWLEDGE OF DIABETIC FOOT CARE	YES	NO	DON'T KNOW
1.	Importance of taking antidiabetic treatment to prevent complication	242	6	2
2.	Daily washing the feet	221	18	11
3.	Using warm water for washing/bathing	207	20	23
4.	Checking temperature of water before using	208	26	16
5.	Drying the feet after washing	204	19	27
6.	Talcum powder usage for keeping interdigital space dry	133	74	43
7.	Keeping skin of the feet soft to prevent dryness	122	79	49
8.	Lotion not to be applied in the interdigital space	101	84	65
9.	Daily change of socks	125	72	53
10.	Trimming nails of feet straight with care	81	100	69
11.	Inspection of feet straight with care	113	72	65
12.	Wearing comfortable coat shoes	134	65	51
13.	Checking the shoes from inside before wearing	109	86	55
14.	Not walking bare foot	111	68	71
15.	Warning signs for which consultation is required.	170	37	43

## DISCUSSION

In the present study to find out knowledge of diabetic foot care among diabetic individuals of Ahmedabad. We found that majority of diabetic individuals of Ahmedabad had satisfactory knowledge of diabetic foot care.

26.8% had good knowledge of diabetic foot care, 54.4% had satisfactory knowledge of diabetic foot care and 18.8% had poor knowledge of diabetic foot care among diabetic individuals of Ahmedabad.

The role of physicians is very important in improving the knowledge and practices regarding foot care. In a study from Italy, more than 50% of the patients reported that they did not have their feet examined by their physician and 28% referred that they had not received foot education. Thus patients' knowledge and practices based on physicians' attitudes.<sup>(26)</sup>

In current study, 43.6% Participants had knowledge regarding checking the shoes from inside before wearing and 44.4% Participants had knowledge regarding not walking bare foot where as 68% Participants had knowledge regarding warning signs for which consultation required.

Bahreini et al conducted study in Iran found that the male awareness rate was more than that of female<sup>(27)</sup>. In present study, 88.4% participants had knowledge regarding the daily washing feet and 82.8% participants had knowledge regarding using warm water for washing/bathing.

The study conducted regarding the knowledge and practice of diabetic foot care and the prevalence of diabetic foot ulcers among diabetic patients of selected hospitals in the volta region, Ghana found that most of the participants were aware that diabetic individuals develop a loss of sensation in their feet, which go along with a study conducted in Saudi Arabia.<sup>(28)</sup>

In the current study the lowest knowledge scores 81 were regarding the trimming nails of feet straight with care and highest knowledge scores 242 were regarding the importance of taking antidiabetic treatment to prevent complication. 83.2% participants had knowledge regarding checking temperature of water before using and 82% participants had knowledge regarding drying the feet after washing.

Ayodia Pourkazemi et al conducted a study on diabetic foot care and they found that the lowest knowledge scores were regarding the not applying lotions between the toes, while the lowest practice scores were regarding the talcum powder should be used to keep the areas between the toes dry.<sup>(29)</sup>

Diabetic individuals need to keep the space between toes dry by application of talcum powder and avoid use of lotion. Even they should also apply skin moisturizers daily to keep the skin of the feet soft. Diabetic individuals should trim their toenails straight to prevent damage to their toes.

53.2% Participants had knowledge regarding talcum powder usage for keeping the interdigital space dry and 48.8% Participants

had knowledge regarding keeping skin of the feet moisturize.

According to the principle of “prevention is better than cure”, the knowledge of diabetic foot care should be provided by health care professionals to prevent further complication.

40.4%Participants had knowledge regarding lotion not be applied in interdigital space,50%Participants had knowledge regarding daily change of socks, 45.2%Participants had knowledge regarding inspection of feet straight with care and 53.6%Participants had knowledge regarding wearing comfortable shoes.

## CONCLUSION

Present study found that 56.3% diabetic individuals had Satisfactory knowledge of diabetic foot care. Adequate knowledge is necessary to control diabetes mellitus and prevent further complication. Knowledge about diabetes mellitus and its risk factors should be provided through mass media in order to effectively control it in the community.

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**Ethical Approval:** Approved

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