

ORIGINAL ARTICLE

Awareness and Practices of Hand Care in Individuals with Type II Diabetes: A Cross-Sectional Study

D'souza Jude* and Jain Aayushi

Department of Neuro-Physiotherapy,
Mahatma Gandhi Mission's College of
Physiotherapy, Plot No. 46, Sector-30,
Vashi, Navi Mumbai - 400705
Maharashtra, India; juded40@gmail.com

Keywords: Awareness, Diabetes Mellitus,
Diabetic Hand, Disability, Limited Joint
Mobility, Practice

Manuscript Received: 14-01-2026

Manuscript Revised: 18-03-2026

Manuscript Accepted: 20-05-2026

How to cite this article: Jude D, Jain A.
Awareness and Practices of Hand Care
in Individuals with Type II Diabetes: A
Cross-Sectional Study. VIMS J. Phys. Ther.
2026; 8(1):46-50.

Abstract

Background: This study aimed to evaluate the awareness and practice related to diabetic hand care in individuals with Type II DM aged 50-75 years. **Methods:** A cross-sectional study was conducted in a tertiary health care institution and community dwellings, and 150 participants with confirmed type II DM aged 50 – 75 years were recruited in the study. A self-formulated questionnaire was designed, and the domains, such as awareness and practice related to diabetic hand care, were selected as constructs. **Results:** 80% of the participants were unaware of diabetic hand, especially about limited joint mobility and hand weakness secondary to diabetes. 79.40% of the individuals were unaware of symptoms related to a diabetic hand. 71.02% of individuals never practised hand hygiene care, and on self-examination, 15 % of the individuals experienced hand stiffness and weakness. **Conclusion:** Most of the participants lacked awareness of diabetic hand, and there was poor practice related to hand hygiene and exercise among the study participants.

INTRODUCTION

Diabetic hand is defined as a syndrome of musculoskeletal manifestations of hand deformity usually associated with long-standing diabetes, suboptimal glycemic control, and microvascular complications^{1,2}. Commonly known as Diabetic Hand Syndrome, it is a group of disorders leading to hand pathology like limited joint mobility, Dupuytren's

contracture, trigger finger, hand infections, peripheral neuropathy (ulceration, carpal tunnel syndrome), ulnar neuropathy, skin and nail pathology, reduced hand strength, *etc.*, which limits functional activity and, if not addressed, may hamper hand functions, specifically grips, and pinches^{3,4}. Evidence suggests that in India, the prevalence of hand disorders in type II DM is 67% whereas limited joint mobility was found in 40.5%, Dupuytren's contracture in 19%, trigger finger in

.....
This is an open access article under the terms of the © CC BY: Allows others to copy, distribute, and build upon the work for any purpose, provided they credit the original creator

© 2026 The Author(s). VIMS Journal of Physical Therapy published by Informatics Publishing Limited

16.5%, and carpal tunnel syndrome in 14%^{5,6}. With an increasing number of diabetic cases, conditions related to the musculoskeletal system are rising proportionally in these patients, and yet patients are rarely referred for rehabilitation to prevent functional limitation and disability. People with diabetes are vulnerable to infectious diseases due to their hyperglycemic condition, which favors immune dysfunction⁷. Thus, maintaining good hand care practices is a critical part of self-care for people with diabetes.

Awareness of the individual about the prevention, protection, and daily practice of the condition may help in preventing the disability⁸. Literature suggests that self-care behaviors are positively correlated with good glycemic control, education about complications, and improvements in quality of life^{9,10}. As life expectancy rises and the number of persons with type 2 diabetes rises sharply, more study is needed to address the standard of living and self-reliability in both fine and general tasks. Type 2 Diabetes Mellitus (T2DM) is becoming increasingly common both globally and in India, and its associated complications have the potential to impair daily living activities and quality of life. In contrast to diabetic foot, T2DM hand problems are often overlooked¹¹. Therefore, our study aimed to evaluate the awareness and practice related to diabetic hand care in individuals with Type II DM aged 50–75 years.

MATERIALS AND METHODS

This cross-sectional study was conducted following approval from the Institutional Research Committee and in accordance with the Helsinki Declaration of 1975. Using convenience sampling, adult participants of both genders with confirmed type 2 diabetes mellitus, aged 50–75 years, who consented to participate, were recruited from the community or from participants visiting the institution. The study was conducted over eight months. Individuals who denied consent to participate and to share routine investigations had a history of gestational or juvenile diabetes or terminal illnesses like cancer, Alzheimer's, *etc.*, and other musculoskeletal pathologies such as rheumatoid arthritis were excluded from the study. The sample

was determined using the following formula: $SS = (z^2 pq/d^2)$ where SS is the estimated sample size; z is the standard value for a 5% level of significance ($z = 1.96$); d , the relative error taken as 5% and the sample size was estimated to be 150 participants⁸.

A self-formulated questionnaire was designed and the domains such as awareness and practice related to diabetic hand care were selected as constructs. A committee of experts comprising a diabetologist, a general physician, and a physiotherapist validated the questionnaire using Lawshe's criteria¹² and a Content Validity Index (CVI) of 0.80 was obtained¹³. The questionnaire was divided into three domains, the first domain included consent of the participants to participate in the study and willingness to share their lab reports, the second domain included a case record form encompassing demographic details, medication, duration of diabetes, HbA1C /fasting plasma glucose reports, and past medical history. The third domain included a questionnaire to assess the awareness and practice related to hand care. A pilot study was conducted on ten participants to understand the effectiveness of the responses received and data obtained from these ten participants was not included in the analysis¹⁴.

Awareness Score

17 questions assessed the awareness of the participants about diabetes and diabetic hand, each question had the answers (yes or no), yes indicated the knowledge of the specified item of knowledge; accordingly, the awareness of the patient was calculated as the accumulation of the correct answers as follows:

- The participant who mentioned 13-16 correct answers rated as a good level of knowledge.
- The participant who mentioned 8-12 correct answers rated as moderate level of knowledge.
- The participant who mentioned <8 correct answers rated as poor level of knowledge.

Practice Score

The practice domain included hygiene, medical care, and exercise followed to prevent diabetic hands, and

accordingly the practice of the patients calculated as the accumulation of their answers.

Responses were obtained by approaching the participants in residential areas, old age homes, and diabetic outpatient departments.

Statistical Analysis

The responses collected were tabulated in Microsoft Excel 2016. Using Excel-based formulae, the responses were coded and analyzed and percentages of the responses were derived. The responses were further represented using tables and graphs.

RESULTS

A total of 150 participants with a mean age of 68 ± 12 years, 49% male and 51% female were recruited (Table 1). Figure 1 showed that 52.7% of hand weakness and 48.7% of the participants were aware of limited joint mobility, and 4.7% of brittle nails and skin nodules secondary to diabetes. Figure 2 states the self-reported symptoms of diabetes showing that 33% reported hand weakness, 32% of participants reported hand stiffness, and 10% skin discoloration. Figure 3

Table 1. Demographic details of the participants (n=150)

Parameter	n (%)
1. Gender	
Male	73 (49%)
Female	77 (51%)
2. Age: Mean $\pm$ SD	68 ± 12 years
3. Family history of diabetes	
Positive	90 (60%)
Negative	60 (40%)
4. Dominance	
Right	147 (98%)
Left	3 (2%)
5. Hypertension	
Present	86(57%)
Absent	64(43%)
6. Duration of diabetes	
Less than 10 years	47 (31.3%)
11-15 years	66 (44%)
16-20 years	21 (14%)
20+ years	16 (10.7%)

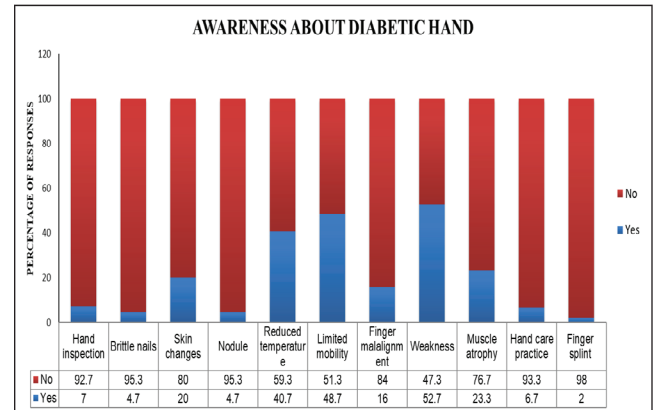


Figure 1. Awareness of diabetic hand (n=150).

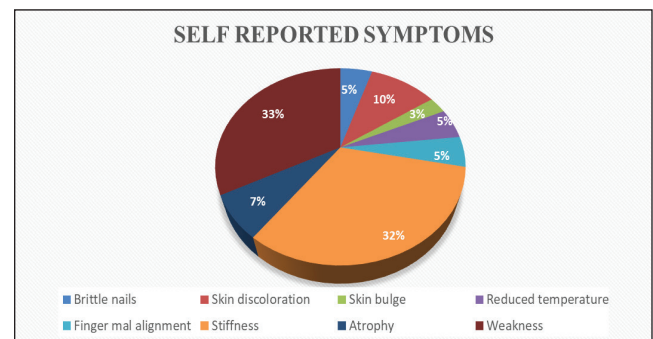


Figure 2. Self-examination of hands (n=150).

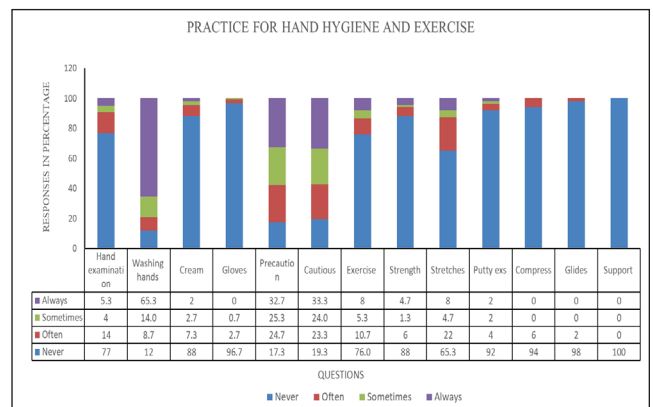


Figure 3. Practice for hand hygiene and hand-related exercise (n=150).

stated the participants practiced hand care regularly, such as hand washing, wearing gloves during daily chores, cautiously handling sharp objects, performing wrist stretches, wrist strengthening, applying cream, hot and cold compress, etc.

DISCUSSION

Our study aimed to evaluate the awareness and practice related to diabetic hand care in individuals with Type

II DM aged 50–75 years. Diabetic hand syndrome is a prevalent condition that receives little attention. Although the pathologies grouped under the heading of diabetic hand syndrome are more prevalent in diabetic patients, they do occur in the general population as well. When compared to the general population, diabetics may exhibit these in different ways in terms of presentation, natural course, and response to therapy.

The present study demonstrated that 79.40% of participants had poor knowledge about diabetic hand, and 71.02% never practiced any hand care or exercises while attending to the same. Our study findings are consistent with those of Sharma 2013, who stated that individuals with diabetes had poor knowledge (88.2%) and practice (83.8%) related to its management¹⁵. As suggested by the literature, people are aware of diabetes but little is known about hand complications related to diabetes. Its complications often remain neglected and underscored; hence, this could be one of the reasons that participants in the present study were unaware of the diabetic hand.

Awareness about Diabetic Hand

Figure 1 showed that 52.7% of the participants were aware of hand weakness, limited joint mobility (48.7%), muscle atrophy (23.3%), and diminished ability to discriminate temperature in the hands (40.7%) secondary to diabetes. One possible reason could be that the participants might have encountered similar symptoms in their family members who were diabetic. Literature has also stated a similar result: individuals with a family history of diabetes were more aware of risk factors than those without a family history¹⁶.

Self-Examination

Figure 2 demonstrated that 15% of participants reported symptoms such as stiffness (32%), and weakness (33%), compared to rest. As stated by Larkin (1984) weakness and limited joint mobility are the primary symptoms of a diabetic hand¹⁷. Limited joint mobility has been linked to increased glycosylation of collagen, while the associated microangiopathy is explained by increased glycosylation of basement membranes¹⁸. As a part of disease management, patient education on diabetic

care should incorporate hand care practices to ensure better functional mobility and reduce the disease burden.

Practice Related to Preventing Diabetic Hand

As stated in Figure 3, the participants practiced hand care regularly, such as hand washing, wearing gloves during daily chores, cautiously handling sharp objects, performing wrist stretches, wrist strengthening, applying cream, hot and cold compress, etc. Within the practice domain, when a comparison was made between hand hygiene and hand exercises, 23% of participants practiced hand hygiene more diligently, such as hand washing (65.3%), with an approximately equal number of individuals cautiously handling (33.3%) and taking preventive measures (32.7%) to avoid harm while handling objects, however a relatively poor trend (3.2%) was observed in participants practicing hand exercises, the majority doing hand stretches (12%), wrist strengthening (7%) and putty exercises (3%).

Hand problems in T2DM patients might interfere with everyday tasks and cause impairments in self-care. These lead to fewer social contacts, a decline in self-reliance, financial strain, and a general decline in life quality. Microvascular problems such as retinopathy may be reflected in the hand presentation of diabetes mellitus. The cornerstone of care in these situations is the attainment of ideal glucose control and, in certain situations, targeted orthopaedic therapies.

The limitation of our study was that the temporal relationship might not be possible given the study's cross-sectional design and the population was recruited from a limited geographical area such as Mumbai and Navi Mumbai. Notwithstanding this drawback, we think our study was novel and it makes a strong case for the need to raise awareness of diabetic hand conditions and encourage self-care and practice through patient education. Our study may help enhance care, independence in daily living activities, and quality of life, given the rising number of patients with type II diabetes and the longer life expectancy.

CONCLUSION

To conclude, we can state that most of the participants in our study had poor awareness of symptoms associated with diabetic hand, and hand hygiene practices were poor. Participants also had poor awareness of exercises to prevent diabetic hand and reduce the disability caused by diabetic hands. Thus, raising awareness of the condition, its symptoms, and available treatments is imperative to begin early preventive and curative rehabilitation.

Abbreviations

1. DM: Diabetes mellitus
2. HbA1C: Hemoglobin A1C

REFERENCES

1. Aschner P. New IDF clinical practice recommendations for managing type 2 diabetes in primary care. *Diabetes Res Clin Pract.* 2017; 132:169-70. <https://doi.org/10.1016/j.diabres.2017.09.002> PMID:28962686.
2. Patterson CC, Karuranga S, Salpea P, Saeedi P, Dahlquist G, Soltesz G, Ogle GD. Worldwide estimates of incidence, prevalence and mortality of type 1 diabetes in children and adolescents: Results from the International Diabetes Federation Diabetes Atlas. *Diabetes Res Clin Pract.* 2019; 157:107842. <https://doi.org/10.1016/j.diabres.2019.107842> PMID:31518658.
3. Ramachandran A, Mary S, Yamuna A, Murugesan N, Snehalatha C. High prevalence of diabetes and cardiovascular risk factors associated with urbanization in India. *Diabetes care.* 2008; 31(5):893-898. <https://doi.org/10.2337/dc07-1207> PMID:18310309.
4. Anjana RM, Ali MK, Pradeepa R, Deepa M, Datta M, Unnikrishnan R, Rema M, Mohan V. The need for obtaining accurate nationwide estimates of diabetes prevalence in India - rationale for a national study on diabetes. *Indian J Med Res.* 2011; 133(4):369-380.
5. Kaveeshwar SA, Cornwall J. The current state of diabetes mellitus in India. *Australas. Med. J.* 2014; 7(1):45. <https://doi.org/10.4066/AMJ.2014.1979>
6. Papatheodorou K, Banach M, Bekiari E, Rizzo M, Edmonds M. Complications of diabetes 2017. *J Diabetes Res.* 2018. <https://doi.org/10.1155/2018/3086167> PMID:29713648 PMCID:PMC5866895.
7. Papanas N, Maltezos E. The diabetic hand: a forgotten complication? *J. Diabetes Complicat.* 2010; 24(3):154-162. <https://doi.org/10.1016/j.jdiacomp.2008.12.009> PMID: 19217319.
8. Pandey A, Usman K, Reddy H, Gutch M, Jain N, Qidwai SA. Prevalence of hand disorders in type 2 diabetes mellitus and its correlation with microvascular complications. *Ann med health sci res.* 2013; 3(3):349-354. <https://doi.org/10.4103/2141-9248.117942> PMID: 24116312 PMCID:PMC3793438.
9. DECODA Study Group. Age-and sex-specific prevalence of diabetes and impaired glucose regulation in 11 Asian cohorts. *Diabetes care.* 2003; 26(6):1770-1780. <https://doi.org/10.2337/diacare.26.6.1770> PMID:12766108.
10. Shrivastava SR, Shrivastava PS, Ramasamy J. Role of self-care in management of diabetes mellitus. *J. Diabetes Metab. Disord.* 2013; 12(14). <https://doi.org/10.1186/2251-6581-12-14> PMID:23497559 PMCID:PMC3599009.
11. Babazadeh T, Dianatinasab M, Daemi A, Nikbakht HA, Moradi F, Ghaffari-Fam S. Association of self-care behaviors and quality of life among patients with type 2 diabetes mellitus: Chaldoran county, Iran. *Diabetes Metab. J.* 2017; 41:449-456. <https://doi.org/10.4093/dmj.2017.41.6.449> PMID:29272083 PMCID:PMC5741554.
12. Ayre C, Scally AJ. Critical values for Lawshe's content validity ratio: Revisiting the original methods of calculation. *Meas Eval Couns Dev.* 2014; 47(1):79-86. <https://doi.org/10.1177/0748175613513808>
13. Whitehead AL, Julious SA, Cooper CL, Campbell MJ. Estimating the sample size for a pilot randomised trial to minimise the overall trial sample size for the external pilot and main trial for a continuous outcome variable. *Stat Methods Med Res.* 2016; 25(3):1057-1073. <https://doi.org/10.1177/0962280215588241> PMID:26092476 PMCID:PMC4876429.
14. Berger JO. Statistical decision theory and Bayesian analysis. Springer Science and Business Media; 2013; 14.
15. Sharma B, Mahajan H, Gill N. Impact of health education on knowledge, attitude, self-care practices and life style modification factors in diabetic patients. *Int J Gen Med Pharm.* 2013; 2(3):29-38.
16. Casqueiro J, Casqueiro J, Alves C. Infections in patients with diabetes mellitus: A review of pathogenesis. *Indian J Endocrinol Metab.* 2012; 16(1):27-36. <https://doi.org/10.4103/2230-8210.94253> PMID:22701840 PMCID: PMC3354930.
17. Larkin JG, Frier BM. Limited joint mobility and Dupuytren's contracture in diabetic, hypertensive, and normal populations *Br Med J.* 1986; 292(6534): 1494. <https://doi.org/10.1136/bmj.292.6534.1494> PMID: 3087489 PMCID:PMC1340496.
18. Unnikrishnan R, Anjana RM, Mohan V. Diabetes mellitus and its complications in India. *Nat Rev Endocrinol.* 2016; 12(6):357-370. <https://doi.org/10.1038/nrendo.2016.53> PMID:27080137.