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Assess The Effectiveness Of Nurse Ministered Integrated Foot Care Bundle On Physical And Physiological Outcome Among Patients With Chronic Diabetes Mellitus In Selected Hospital At Coimbatore.

[1] Ms Kavipriya [2] Prof Anitha grace [3] Dr. Esther Rakel,
[4]Dr. Jebakumari Sutha, [5] Dr Grace Jebakani Sweety
[1]M.Sc(N) II year student [2] HOD, Department of Medical Surgical Nursing [3] Dean Cum Principal, [4] Vice Principal, [5] Professor
Ganga Institute of Health Sciences, Coimbatore
Affiliated to
The Tamil Nadu Dr MGR Medical University, Chennai.

Abstract

Diabetes mellitus is a chronic metabolic disorder that often results in foot complications. Effective foot care is vital to prevent adverse outcomes, and nurse ministered interventions such as integrated foot care bundles have shown promise in improving patient health.To assess the effectiveness of a nurse-administered integrated foot care bundle on physical and physiological outcomes among patients with chronic diabetes mellitus in a selected hospital at Coimbatore..A one-group pretest & posttest design was conducted among 60 patients, assessing knowledge, physical outcomes (skin, nails, deformities, footwear), and physiological outcomes (FBS, PPBS, HbA1C) before and after the intervention, with data analyzed using descriptive statistics, paired t-tests, and Chi-square tests.Post-intervention, 61.7% achieved excellent knowledge scores. Significant improvements were observed in physical outcomes (skin, nails, footwear, deformities) $p<0.001$) and physiological outcomes (FBS, PPBS, HbA1C) ($p>0.05$.The Nurse-Ministered Integrated Foot Care Bundle was highly effective in enhancing knowledge, improving physical outcomes, and controlling physiological outcomes among chronic diabetes mellitus patients. Nurse-Ministered Integrated Foot Care Bundle educational interventions play a critical role in preventing diabetes- related foot complications and promoting self-care practices.

Keywords : Diabetes mellitus, diabetic foot care, nurse ministered integrated foot care bundle.

INTRODUCTION

Diabetes mellitus (DM) is the consequence of inadequate blood glucose management. Type 1, type 2, juvenile diabetes, Maturity-Onset Diabetes of the Young (MODY), and steroid-induced diabetes are a few of its numerous subclassifications. Although both type 1 and type 2 DM subtypes can cause hyperglycaemia, they differ in their origin, presentation, and course of treatment. This exercise covers the diagnosis, evaluation, and treatment of Diabetic Mellitus (DM) and highlights the role that the interprofessional team plays in providing patient care . 80% of persons with diabetes mellitus (DM) have type 2 diabetes (T2DM), which affects almost one in eleven adults globally . Gradually, T1DM increases from juvenile and peaks between the ages of 4 and 6 as well as between 10 and 14 . Children under the age of ten make up little less than half (45%) of the arrivals. The incidence is roughly 2.3 per 1000 people under 20. The study is an

observational study conducted at **Imam Hassan Medical Center** in **Kerbala**, focusing on diabetic patients. The research utilized an online questionnaire distributed to patients, randomly selected diabetic individuals attending the center, and some relatives in the hospital ward. A total of **100 participants** were included, with a majority being **males (62%)** and most aged **50 years (43%)**. The study analyzed the participants' knowledge, attitudes, and practices regarding **type 2 diabetes mellitus (T2DM)**, revealing that while knowledge levels were generally good (mean of **0.72**), attitudes and practices were only moderate (means of **0.59** and **0.63**, respectively).

Improving diabetic foot care is crucial in minimizing foot ulceration and its negative impact on diabetic patients. A common cause of hospitalization and amputation is foot infections among most individuals with diabetes. Globally, foot ulceration affects 15% of diabetic patients and could lead to severe complications and even death. The incidence of depression in patients with Diabetic Foot Ulcers

(DFUs) in a meta-analysis paper found that nearly half of patients with foot assessment, diabetic education, foot care demonstration and practice. foot assessment, diabetic education, foot care demonstration and practice. Diabetic Foot Ulcers(DFU) experienced depression, with the incidence ranging from 26% to 85%.1 In Sudan, diabetes mellitus is a prevalent medical issue, and diabetic septic foot infection is a severe complication with significant morbidity and mortality. Diabetes is a chronic health problem with preventable consequences. Globally, the number of people with Type 2 diabetes is expected to increase significantly by 2030.[1]

In the United States, there are millions of adults with Type 2 diabetes, affecting both men and women. However, in Sudan, the prevalence is more horrible since the Diabetic Foot Ulcers (DFU) prevalence of 18.1%, with a significant association, resulting in a 3.16-fold increase in probability for those living with diabetes for more than ten years, even after adjusting for other risk factors. About 50% will develop peripheral neuropathy and 15–25% of these patients will develop foot ulcers.

Diabetic foot ulcers are a major risk factor for foot infection and amputations. These foot ulcers often result in decreased patient mobility and quality of life. The Nurse Ministered Integrated Foot Care Bundle, which includes components such as regular, foot assessment, diabetic education, foot care demonstration and practice. Physical & physiological outcome has emerged as a promising intervention strategy. This study aims to evaluate the effectiveness of a Nurse-Ministered Integrated Foot Care Bundle on both physical outcome (e.g. Skin, Nail, Deformities, Footwear) and physiological outcome (e.g. FBS,PPBS,HbA1C) among patients with chronic diabetes mellitus. By doing so, it seeks to reinforce the critical role of nursing interventions in the multidisciplinary management of diabetes and contribute to evidence-based practices that enhance patient quality of life and reduce healthcare costs.[2]

BACKGROUND OF THE STUDY

Diabetes mellitus (DM) is a complex condition with various subclassifications, including type 1, type 2, gestational diabetes, newborn diabetes, maturity-onset diabetes of the young (MODY), and steroid-induced diabetes. Despite sharing the commonality of hyperglycaemia, type 1 and type 2 Diabetes Mellitus(DM) differ significantly in their etiology, presentation, and treatment approaches. A recent observational study conducted at Imam Hassan medical center in Kerbala focused on understanding the knowledge, attitudes, and practices of patients with diabetes. The study involved 60 participants, predominantly with the majority falling above 50 years of age range (55.5%). Notably, 63% of participants held a no education, while 51% were unemployed, and 79% resided in urban areas. The study's findings revealed that participants generally possessed good knowledge about diabetes, with a mean score of 0.72. However, their attitudes and practices were moderate, with mean scores of 0.59 and 0.63, respectively. These results suggest that despite having a good understanding of diabetes, patients' attitudes and practices regarding type 2 diabetes mellitus (T2DM) are inadequate, highlighting the need for targeted interventions to improve overall diabetes management. The rising prevalence of diabetes mellitus, particularly in countries like India, has led to an increase in complications such as diabetic foot ulcers. These ulcers result from factors like peripheral neuropathy, peripheral arterial disease, and impaired wound healing, often leading to severe outcomes including infections and amputations. Approximately 19%–34% of individuals with diabetes are expected to experience a diabetic foot ulcer during their lifetime. Preventive foot care is crucial in mitigating these complications. However, studies indicate that a significant number of patients lack adequate knowledge and practice regarding diabetic foot care, leading to higher incidences of foot ulcers and related complications.[3]

Nurses play a pivotal role in diabetic foot care management. Their responsibilities encompass health promotion, disease prevention, patient education, and facilitating patient compliance Nurse-Ministered Integrated Foot Care Bundle interventions, including educational programs and routine foot assessments, have been shown to improve patient outcomes by enhancing knowledge, promoting self- care behaviors, and reducing the incidence of foot ulcers.

Despite the recognized importance of nursing interventions, there remains a gap in consistent and effective implementation of foot care education and practices. Many nurses report inadequate training in diabetic foot care, which hinders their ability to provide comprehensive care. Evaluating the effectiveness of Nurse-Ministered Integrated Foot Care Bundles on physical and physiological outcome among patients with chronic diabetes mellitus is essential. Such studies can inform best practices, enhance nursing education, and ultimately improve physical and physiological outcome.[4]

Nurse-ministered integrated foot care bundles have been shown to be effective in reducing the incidence of Diabetic Foot Ulcer (DFU) and improving foot health outcomes in individuals with diabetes. This approach emphasizes a comprehensive and multidisciplinary approach to foot care, incorporating:

1. Foot Assessment:

Nurses conducted comprehensive foot assessments using standardized tools to evaluate skin integrity, circulation, sensation, and structural abnormalities.

2. Patient education:

Individual and group education sessions were held focusing on:

- Importance of daily foot care.
- Proper hygiene practices.
- Appropriate footwear selection.
- Early identification of warning signs.

3. Foot care demonstration and practice:

Nurse demonstrated proper foot washing, moisturizing, nail trimming, and inspection techniques followed by patient return demonstrations to ensure skill acquisition .[5]

The global prevalence of diabetes, particularly type 2, is alarming, affecting approximately 1 in 11 adults worldwide. Type 1 diabetes incidence is increasing, with peaks observed between ages 4-6 and 10-14. In individuals under 20, the incidence rate is roughly 2.3 per 1000.Regarding foot care, diabetes is a significant risk factor for foot complications, including ulcers, infections, and amputations. According to the International Diabetes Federation (IDF), in 2021, approximately
4.9 million people with diabetes worldwide suffered from a foot ulcer. Proper foot care is essential for preventing these complications.[6]

The American Diabetes Association (ADA) recommends that people with diabetes perform daily foot inspections, trim their toenails carefully, and seek medical attention if they notice any signs of foot problems. The ADA also suggests that healthcare providers assess patients' feet at least annually, using a comprehensive foot examination, which includes inspecting the feet for ulcers, deformities, and neurological or vascular abnormalities.[7]

STATEMENT OF THE PROBLEM

Assess the effectiveness of nurse ministered integrated foot care bundle on physical and physiological outcome among patients in chronic diabetes mellitus in selected hospital at Coimbatore.

OBJECTIVES

1. To assess the pretest and posttest level of knowledge on physical and physiological outcome among patients with chronic diabetes mellitus.
2. To evaluate the effectiveness of nurse ministered integrated foot care bundle among patients with chronic diabetes mellitus.
3. To associate the posttest level of knowledge on physical and physiological outcome among patients with chronic diabetes mellitus with their selected demographical variables.

HYPOTHESES

H_1: There will be a significant difference between the pretest and posttest levels of physical and physiological outcome related to diabetic foot among patients with chronic diabetes mellitus.

H_2: There will be a significant effect of a nurse ministered integrated foot care bundle on physical and physiological outcome among patients with chronic diabetes mellitus.

H_3: There will be a significant association between the posttest levels of physical risk factor for foot complications, including ulcers, infections, and amputations. According to the International Diabetes Federation (IDF), in 2021, approximately
4.9 million people with diabetes worldwide suffered from a foot ulcer. Proper foot care is essential for preventing these complications.[6]

RESEARCH METHODOLOGY

RESEARCH APPROACH

Quantitative Research approach was used.

RESEARCH DESIGN

A pre experimental one group pretest and posttest research design was adopted for the present study.

VARIABLES

DEPENDENT VARIABLE

In this study, the dependent variable is physical and physiological outcomes among patients with chronic diabetes mellitus.

INDEPENDENT VARIABLE

In this study, the independent variable Nurse Ministered Integrated Foot Care Bundle among patients with chronic diabetes mellitus.

SETTING OF THE STUDY

"The study was conducted in the **Diabetic Outpatient Department at Ganga Hospital, Coimbatore**, where patients with chronic diabetes mellitus receive follow-up care."

POPULATION

The population under study constituted of patients age group above 50 years and who are receiving **Nurse Ministered Integrated Foot Care Bundle (NMIFCB)** among patients with chronic diabetes mellitus in selected hospital.

SAMPLE

In this study, the sample comprises selected patients with Chronic Diabetes Mellitus at Ganga Hospital, Coimbatore.

SAMPLING TECHNIQUE

"Participants were selected through purposive sampling, focusing on individuals who met the established inclusion criteria."

CRITERIA FOR SAMPLE SELECTION

Inclusion criteria

- Patients aged above 50 years.
- Patients who were have chronic diabetes mellitus above 5 years
- Patients who were medically diagnosed with chronic diabetes mellitus.

Exclusion criteria

- Patients who have amputation and severe complication.
- Patients who have Cognitive or physical impairment.

DESCRIPTION OF DATA COLLECTION TOOL

The tool used in this study has 3 sections.

SECTION A: Assessment of demographic variables

SECTION B: Assessment of diabetic foot

SECTION C: Assessment of diabetic foot care knowledge.

Section A-Assessment of demographic variables (self structured questionnaire) On Day 1, a pre-test assessment was conducted to gather demographic data, including age, gender, educational status, occupational status, marital status, duration since diagnosis, smoking and alcohol history, and level of physical activity.

Section B- Assessment of diabetic foot

"On Day 1, a pre-test assessment was conducted to gather demographic data, and the physical outcome status was evaluated using Inlow's 60-Second Diabetic Foot Scale Assessment. On Day 28, the investigator administered the intervention tool the Nurse-Ministered Integrated Foot Care Bundle (NMIFCB) to the entire accessible population."

Section C- Assessment of diabetic foot care knowledge (Self structured questionnaire)
On Day 1, a pre-test assessment was conducted to collect demographic data, and diabetic foot care knowledge was evaluated using a structured questionnaire with a checklist. On Day 28, the investigator administered the intervention tool to the entire accessible population.

PROCEDURE OF DATA COLLECTION

Data collection refers to the systematic gathering of information required to address a research problem. In this study, data were collected from patients diagnosed with chronic diabetes mellitus who were treated during the months of January and February at Ganga Hospital, Coimbatore. Initially, a report was established with the patients, and the purpose of the study was clearly explained to them. They were assured that all collected data would be kept strictly confidential and used solely for research purpose. After obtaining both verbal and written informed consent, the investigator collected demographic information from each participant. The intervention was carried out by the investigator. The Nurse Ministered Integrated Foot Care Bundle is a structured intervention designed to promote physical and physiological outcome and prevent complications. It comprises four main components: daily foot inspection and hygiene instruction, proper skin and foot care methods, education on appropriate footwear care, and education on the early detection of diabetic complications. A posttest was conducted on the 28th day using the Modified Inlow's 60 second Diabetic Foot Scale Assessment to evaluate the effectiveness of physical outcome & diabetic foot care knowledge assessed through the checklist.

DATA ANALYSIS AND INTERPRETATION

Data was analyzed by both descriptive and inferential statistics such as mean, standard deviation, paired T test, Karl Pearson's Correlation , one way ANOVA.

Demographic data signified that the above table 4.1 shows that majority of respondents were aged 51–60 years (46.7%) and 61–70 years (43.3%), with 10% above 70 years. Most were male (88.3%) and employed (55%), while 26.7% were unemployed. Nearly all were married (93.3%). Duration of diagnosis was mainly 7 years (41.7%) and 8 years (35%). Education levels showed 42.4% with no formal education, 30.3% with primary, and 18.2% with secondary education. A family history was reported by 41.7%, while 55% had none. Past smoking was common (77.6%), with 22.4% current smokers. Alcohol use was evenly split (50% yes, 50% no), as was activity level (50% low, 50% mild).

Table 4.1: Frequency and percentage distribution of demographic variables of the patients with chronic diabetes mellitus.
n = 60

Demographic Variables	Frequency (f)	Percentage (%)
1. Age in years		
a) 41 – 50	-	-
b) 51 – 60	28	46.7
c) 61 – 70	26	43.3
d) >70	6	10.0
2. Gender		
a) Male	53	88.3
b) Female	7	11.7
3. Education		
a) No education	28	46.7
b) Primary	20	33.3
c) High school	12	20.0
4. Occupation		
a) Unemployed	16	26.7
b) Employed	33	55.0
c) Self employed	8	13.3
d) Retired	3	5.0
5. Marital status		
a) Single	3	5.0
b) Married	5	93.3
c) Divorced	1	1.7
6. Duration of diagnosis		
a) 6 years	3	5.0
b) 7 years	25	41.7
c) 8 years	21	35.0
d) 9 years	2	3.3
e) 10 years	9	15.0

Table 4.2: Frequency and percentage distribution of pre and posttest level of knowledge of diabetic education among patients with chronic diabetes mellitus.
n = 60

Knowledge	Pretest		Posttest	
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
a) Poor (0 – 4)	-	-	-	-
b) Fair (5 – 6)	25	41.7	-	-
c) Good (7 – 8)	35	58.3	23	38.3
d) Excellent (9 – 10)	-	-	37	61.7

Table 4.3: Effectiveness of Nurse Ministered Integrated Foot Care Bundle on knowledge of diabetic education among patients with chronic diabetes mellitus.

n=60

Knowledge	Pretest			Mean Difference	Paired "t" test and p-value
	Median	Mean	SD		
a) Pretest	7.0	6.73	0.99	1.87	t=16.569 p=0.0001 S***
b) Posttest	9.0	8.60	0.59		

***p<0.001, S – Significant

Table 4.4: Effectiveness of Nurse Ministered Integrated Foot Care Bundle on Physical Outcome among patients with chronic diabetes mellitus.
n=60

Physical outcome	Pretest			Posttest			Mean Difference	Paired "t" test & p-value
	Median	Mean	SD	Median	Mean	SD		
a) Skin	4.00	3.95	1.24	2.00	1.68	0.91	2.27	t=15.497 p=0.0001 S***
b) Nail	1.00	0.57	0.56	0.00	0.23	0.43	0.34	t=4.511 p=0.0001 S***
c) Deformities	0.00	0.67	0.82	0.00	0.53	0.70	0.14	t=2.053 p=0.045 S*
d)Footwear	0.00	0.35	0.55	0.00	0.13	0.34	0.22	t=3.423 p=0.000 S***

***p<0.0001, S- Significant

Table 4.5: Effectiveness of Nurse Ministered Integrated Foot Care Bundle on Physiological Outcome among patients with chronic diabetes mellitus.
n=60

Physiological Outcome	Pretest			Posttest			Mean Difference	Paired "t" test and p-value
	Median	Mean	SD	Median	Mean	SD		
a) FBS	168.0	167.73	14.58	154.5	153.78	12.31	13.95	t=12.712 p=0.0001 S***
b) PPBS	166.0	162.72	15.62	148.0	149.25	12.78	13.47	t=12.158 p =0.0001 S***
c)H bA1C	8.6	8.48	1.34	7.7	7.80	1.19	0.68	t=14.607 p=0.0001 S***

***p<0.0001, S-Significant

CONCLUSION

The Nurse-Ministered Integrated Foot Care Bundle was highly effective in enhancing knowledge, improving physical outcomes, and controlling physiological outcomes among chronic diabetes mellitus patients. Nurse-Ministered Integrated Foot Care Bundle educational interventions play a critical role in preventing diabetes-related foot complications and promoting self-care practices.

REFERENCES

1. International Diabetes Federation. *IDF Diabetes Atlas.* 10th ed. Brussels: International Diabetes Federation; 2021.
2. Zhang P et.al. Global, regional, and national burden of diabetes from 1990 to 2021, with projections of prevalence to 2050: a systematic analysis for the Global Burden of Disease Study 2021. Lancet. 2023;402(10397):203-
3. 234. doi: 10.1016/S0140-6736(23)00912-5.
4. American Diabetes Association. Classification and Diagnosis of Diabetes. Diabetes Care. 2020;43(Suppl 1):S14-S31. doi: 10.2337/dc20-S002.
5. Zhang Y, et al. The effects of nurse-led interventions on foot ulcer prevention and care in patients with diabetes: A systematic review. International Journal Nurse Study. 2020;109:103653. doi: 10.1016/j.ijnurstu.2020.103653.
6. Fejfarová V, et al. Effects of nurse-led multidisciplinary team care on patients with diabetic foot ulcers. J Wound Care. 2018;27(12):775-784. doi: 10.12968/jowc.2018.27.12.775.
7. International Diabetes Federation. IDF Diabetes Atlas. 10th ed. Brussels, Belgium: International Diabetes Federation; 2021.
8. American Diabetes Association. Standards of Medical Care in Diabetes- 2023. Diabetes Care. 2023;46(Suppl 1):S1-S291. doi: 10.2337/dc23-Sint.
9. American Diabetes Association. Classification and Diagnosis of Diabetes. Diabetes Care. 2023;46(Suppl 1):S14-S31. doi: 10.2337/dc23-S002.
10. Galicia et al. Pathophysiology of Type 2 Diabetes Mellitus. Int J Mol Sci. 2020;21(17):6275. doi: 10.3390/ijms21176275.
11. Schmidt S, et.al. Nurses' knowledge and management of diabetic foot care: A systematic review. Clinical Nurse. 2019;28(15-16):2742-2754. doi: 10.1111/jocn.14873.