



EFFECTIVENESS OF PAPAYA DRESSING ON DIABETIC FOOT ULCERS AMONG CLIENTS ADMITTED TO THE SURGICAL WARD AT THE SELECTED HOSPITAL.

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Abstract:

Introduction: The morphological anomalies in the lower leg, referred as the diabetic foot, are among the most common as well as potentially fatal consequences of diabetes mellitus. The enzymes in *Carica papaya* are very useful for debriding ulcers and wounds. There are over 13 million people in the world who were diagnosed with diabetes; 15% of those people will develop a diabetic foot ulcer at some point in their lives; 30% to 50% of those people will need to have other foot amputated within 5 years; and also, numerous studies have revealed that papaya dressing is useful among diabetic foot ulcer patients. **Aim:** The purpose of this study is to estimate the efficacy of papaya dressing on diabetic foot ulcers in patients admitted to the Surgical ward of the chosen hospital. **Methodology:** The research has been done at Sri Muthu Kumaran Medical College Hospital and Research Institute, specifically in the Surgical ward. Located on Kundrathur Road, it has a 750-bed capacity. The surgical department's 180 beds are spread over three levels of care, or "III units." A quantitative research method with a Quasi-experimental study design was used with around 150–200 diabetes patients who visited OPD. **Results:** Diabetic foot ulcers treated with papaya dressing were evaluated after treatment and compared to control and experimental groups. Papaya dressing reduces ulcer score by 83% compared to baseline in the experimental group, while standard care reduces it by 43% in the control group. The efficacy of papaya dressing is shown by a 40 percent improvement. The percentage difference between the pre-and post-test has been examined utilizing a 95% confidence interval. **Conclusion:** The most prevalent consequence of diabetes mellitus is diabetic foot. A chronic complication of diabetes mellitus may have major consequences for nursing care planning, regardless of whether the patient is at home or in the hospital. Diabetic foot ulcers may be healed using *Carica papaya*, which helps remove dead cells. This research was conducted to determine how well diabetic foot ulcer treatment works. Diabetic foot ulcer prevalence was shown to increase significantly.

Introduction:

Type 1 and Type 2 diabetes are metabolic disorders brought on by inadequate

production of the hormone insulin. Over 150 million people, or about 4% of the adult population, are impacted by this disease. About 80% of people with diabetes live in developing nations, with the majority living in China and India. By 2030, experts predict that 87 million people in India would have diabetes. (Current Status of Diabetes in India and Need for Novel Therapeutic Agents). There is an immediate need to reevaluate methods and treatments for diabetic foot ulcer management in order to realize the objectives and lessen the burden of care in the most productive and economical manner possible. In several resource-poor nations, the easy availability of *Carica Papaya* (pawpaw) has led to its widespread usage as a wound-healing agent. Numerous studies have shown that using a papaya treatment for a diabetic foot ulcer speeds up the healing process. Papaya dressing has been demonstrated to be beneficial among patients with diabetic foot ulcers in several research trials. Chymopapain, Papain, caricain and glycyI endopeptidase are all cysteine endopeptidases that may be found in abundance in the latex of raw papaya.

Whether a patient is receiving treatment at home or in a hospital, the presence of a chronic condition like diabetes mellitus may have major consequences for care planning. His nurse should thoroughly evaluate his nursing care requirements, paying close attention to the potential for reduced circulation and feeling, increased infection risk, and slowed healing. Diabetes mellitus is a worldwide epidemic that needs urgent attention. Among the most extensively utilized pharmacologically and conveniently accessible natural medicine sources is the *Carica papaya*. Researchers hypothesized that wound healing would accelerate in the experimental group following the application of papaya pulp dressing, and thus they compared the two groups.

Literature review:

Melak Gedamu, Camilla Mulusew and Mamo Feyissa Senbeta (2022) Diabetic complications lead to long-term injury as well as organ failure, making diabetes mellitus a leading cause of death worldwide. The prevalence of diabetes complications in Ethiopia is unknown. The main aim of this research is to determine the frequency for diabetes complications among patients being followed at the diabetic center at Tikur Anbessa Specialized Hospital. The time frame for this cross-sectional research of institutional settings was April 14, 2020, to May 24, 2020. Information was gathered through in-person interviews and reviews of medical records utilizing a tried-and-true data-gathering instrument. Descriptive statistics were run on the data once input into SPSS version 25. There were 120 cases (33.2%) of diabetes complications, with neuropathy being the most common (47.5 percent). Both patients with an A1C of 7% and men had a more than 2-fold increased risk of

experiencing diabetes complications (AOR 2.6, 95% CI 1.59,4.25; P <0.01). Patients with diabetes at TASH have a significant prevalence of diabetic complications. Most patients had poorly controlled blood sugar levels. The most prevalent chronic microvascular consequence was neuropathy. Complications were predicted with high accuracy by male gender and HbA1c 7%.

Pin Deng, Hongshuo Shi, Xuyue Pan, Huan Liang, Shulong Wang, Junde Wu, Wei Zhang, Fasen Huang, Xiaojie Sun, Hanjie Zhu (2022)

One of the most serious problems associated with diabetes is diabetic foot ulcer (DFU). The rates of death and disability are quite high. There is now more literature available on DFUs than ever before. In order to help researchers better focus future studies, this study was created to investigate current worldwide trends and research hotspots pertaining to DFUs. Web of Science Core Collection's Science Citation Index Extended (SCI expanded) was scoured for relevant DFU literature from 2004 to 2020. (WoSCC). The WoSCC was used to conduct an analysis of the present state of DFU research, including a look at its current publications, journals, research trends, and hotspots, as well as performances of key nations, institutions, as well as authors. Cocitation, coauthor ship, cooccurrence, along with bibliographic coupling were all performed using VOSviewer v1.6.10.0. This study shed light on the present state of research and hotspots in the field of DFU during last 17 years, providing valuable information that can be used to better target future investigations into these areas.

Mehjabeen Fatimah, Saiyad Shah Alam and Hamiduddin (2023) The inability to produce enough insulin is the root cause of diabetes mellitus, a metabolic disorder. The most prevalent consequence of diabetes mellitus is diabetic foot. It's the leading reason for non-traumatic lower limb amputations and raises the risk of death for diabetes patients. Both the public and the government should be very worried about this. Blood sugar regulation, wound debridement, infection diagnosis and treatment, appropriate dressing, and final wound closure are the cornerstones of care for diabetic foot ulcers. Accelerating wound healing by using enzymes in the debridement process is a relatively new idea.

Objectives:

1. To evaluate the clinical as well as demographic variables among the control and experimental group.
2. To evaluate any significant differences in diabetic foot ulcer severity between the control and experimental groups.
3. To evaluate the efficacy of papaya dressing in treating diabetic foot ulcers in the experimental group.

Research methodology:

The present study was conducted in the Sri Muthu Kumaran Medical College Hospital and Research Institute Surgical ward. It is situated on Kundrathur Road with a bed capacity of 750. There are III units in the surgical department with a 180-bed facility. Approximately 150 to 200 diabetic patients are visiting OPD. This study employed a quantitative methodology and may be classified as a quasi-experimental investigation. Participants were selected using a systematic random selection process. A total of 60 adults with both Grade I and Grade II diabetic foot ulcers were included in the study. The 60 participants were randomized and separated into two parts (control and experiment) with even and odd numbers. The experimental group was assigned an odd number, whereas the control group was given an even number.

Ethical consideration:

Permission to perform the research has been approved by the Surgical Department at Sri Muthukumaran Medical College Hospital and Research Institute Mangadu and the Institutional Ethics Committee at Sri Muthukumaran Medical College. The confidentiality of the study's findings was ensured by thoroughly disclosing the study's goals to all participants. No normal treatment was changed or withheld, and the patient was allowed to exit the research whenever they wanted to. The researcher complied with the Ethics committee's regulations. Each participant provided written informed permission after receiving all necessary research information. Each participant's anonymity was protected by the researcher at all times.

Data collection instruments:

Section A of the current investigation includes clinical and demographic factors. Wagner's wound classification system is described in Section B. Sixty individuals with diabetic foot ulcers were surveyed before the start of either regimen. The experimental group (n=30) used the papaya dressing daily for four weeks. The cut was disinfected with regular saline. Finally, unripe papaya Epicarb grated (Inner portion). The papaya was covered with a sterile covering. Seven days, 14th days, 21st days, and 28th days after the intervention, evaluations were conducted.

The pre-intervention evaluation was conducted on the control group. Thirty samples were gathered, and the usual precautions were taken with them. On days 7, 14, 21, and 28, we followed up with an evaluation to see how things were going. Both the group have been evaluated after the fact. The Wagner wound classification scale was used to keep track of the results of the wound evaluation observations.

After a preliminary pilot study, the interpreter technique was used to evaluate the tool's

dependability, and the resulting R-value for the correlation coefficient was 0.81. With such a high R², papaya dressing may be effectively evaluated for its impact on patients with diabetic foot ulcers.

Statistical package:

Inferential and descriptive statistics have been used to examine the gathered data. The demographic factors of patients with diabetic foot ulcers have been described utilizing descriptive statistics for example mean, frequency, standard deviation, as well as percentage. Paired and unpaired t-tests, as well as chi-square analyses, were used for inferential statistics.

Results:

In the present research, the student participants (46.7%) were above the age of 60, whereas the control group had a median age of 59. (36.7 percent). Females comprise about 60% of the experimental group, whereas males and females comprise 50% of the control group. Both the experimental and control groups had similar educational levels, with 40% of persons having completed secondary school or above. Seventy percent of the control group samples are making moderate progress, and 70 percent are making moderate progress. In the control group, 46.7% of the sample was between the ages of 50 and 59, whereas in the experimental group, 36.75 % of the participants were in this age range. Sixty percent of the people in the test group are women, whereas fifty percent of the people in the control group are men. Both the experimental and control groups had similar educational levels, with 40% of persons having completed secondary school or above. Most of the samples in the control group are engaged in moderate activity, with a percentage of about 70%. Overall test score before and after comparison.

Patients in the experimental group had a pre-test dressing score of 1.00 and a post-test score of 0.17. The disparity is 0.83 points. In diabetic foot ulcers, there is a considerable and statistically significant difference between pre- as well as post-test scores. ($P = 0.001^{***}$). Clients in the control group scored 1.00 on the dressing subscale before the intervention and 0.57 thereafter. The disparity is 0.43 points. There is a big and statistically significant improvement in diabetic foot ulcer score between the before and after tests ($P = 0.05^*$).

Evaluate the efficacy of papaya dressing on diabetic ulcers by comparing the results of the treatment group with those of the control group. Papaya dressing reduces ulcer score by 83% compared to baseline in the experimental group, whereas standard care reduces it by 43% in the control group. This forty percent improvement is proof that papaya dressing works. The percentage with 95% CI was utilized to assess the differences between pre- and post-test scores.

Table 1: Distribution of Demographic Data and Clinical Data of the client with a diabetic foot ulcer:

Demographic variables		Experiment(n=30)		Control(n=30)		Chi - Square test
		F	%	F	%	
Age	40 – 49 years	8	26.6 %	5	16.6 %	$\chi^2 = 1.05$ p = 0.59
	50 – 59 years	11	36.7%	14	16.6%	
	60 – 70 years	11	36.7%	11	36.7%	
Gender	Female	18	60.0%	15	50.0%	$\chi^2 = 0.60$ p = 0.43
	Male	12	40.0%	15	50.0%	
Educational Status	Uneducated	7	23.3%	6	20.0%	$\chi^2 = 3.59$ p = 0.30
	Primary Education	8	26.7 %	11	36.7%	
	Secondary Education	12	40.0 %	13	43.3%	
	Graduate	3	10.0%	0	0.0%	
Occupation	Sedentary Work	5	16.7%	4	13.3%	$\chi^2 = 0.22$ p = 0.89
	Moderate Work	21	70.0%	21	70.0%	
	Heavy Work	4	13.3%	5	16.7%	
Dietary Habits	Vegetarian	7	23.3%	6	20.0%	$\chi^2 = 0.10$ p = 0.75
	Non - Vegetarian	23	76.7%	24	80.0%	
Exercise	Regular	6	20.0%	4	13.3%	$\chi^2 = 0.73$ p = 0.69
	Irregular	15	50.0%	18	60.0%	
	Occasional	9	30.0%	8	26.7%	
Residential Status	Slum	2	6.7%	1	3.3%	$\chi^2 = 1.22$ p = 0.54
	Rural	11	36.6%	8	26.7%	
	Urban	17	56.7%	21	70.0%	
Type of Family	Nuclear family	15	50.0%	12	40.0%	$\chi^2 = 0.60$ p = 0.43
	Joint family	15	50.0%	18	60.0%	
Duration of	1 - 6 Months	15	50.0%	13	43.3%	$\chi^2 = 0.26$

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Ulcer	6 - 12 months	15	50.0%	17	56.7	p = 0.60
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Table 2: Assessment of the pretest and posttest level of diabetic foot ulcer among experimental and control groups:

	No of clients	Group				Mean difference	Student-independent t-test
		Experiment		Control			
		Mean	SD	Mean	SD		
Pretest	30	1.00	0.00	0.17	0.38	0.83	t = 12.04
Posttest	30	1.00	0.00	0.57	0.50	0.43	T = 2.36
							P = 0.05*

Table 3: Assessment of the effectiveness of papaya dressing among the group:

		Mean dressing score	Mean Difference in ulcer score from baseline data with 95% Confidence interval	Percentage of ulcer score with 95% Confidence Interval
Experiment	Pretest	1.00	0.83	83.0
	Posttest	0.17	(0.69 - 0.97)	(69.0 - 97.0)
Control	Pretest	1.00	0.43	43.0
	Posttest	0.57	(0.25 - 0.62)	(25.0 - 62.0)

Discussion:

Patients with diabetic foot ulcers need intricate treatment planning. In order to prevent amputations and improve quality of life (QoL) for patients with diabetic foot ulcers, it is the nurse's main and ideal responsibility to monitor the progress of wound healing. The only reliable way to tell whether a diabetic foot ulcer is healing as planned is to use a standardized method of wound assessment. The healing process of a wound may be reliably monitored using consistent and exact measurements of its length and breadth.

The current research showed that, among patients hospitalized with diabetic foot ulcers, 80% or more had wound regeneration, and 0% had healthy tissue in the pretest, indicating that patients in both the groups had same score. Untreated diabetic ulcers increase the risk of serious infection and limb loss. Wound infections are more common and severe in people with diabetes because high glucose levels decrease granulocytic activity. Low oxygen levels, hospital-acquired infections, old age, stress, systemic hypertension, an unhealthy diet, alcohol, tobacco, and other drugs can slow the recovery of a diabetic foot ulcer. Poor wound treatment expertise results in an average of 95–105 new admissions of diabetes patients with wound degeneration each month at Muthukumaran Medical College Hospital and Research Institute. Due to a lack of understanding of how to control their diabetes, an inadequate diet, sickness, and the high expense of therapy that they cannot pay, many patients spend an excessive amount of time in the hospital. High blood sugar, poor circulation, nerve damage, and improper treatment of diabetes were shown to be the primary causes of wound degradation in 83.3% of diabetic customers in the pretest. They all experienced wound degeneration because of excessive blood sugar and improper dressing maintenance in the

hospital, as shown in previous research that corroborated the current findings. The degree of wound healing improved in the experimental group that had gotten the papaya dressing but not in the control group that had received standard care, as determined by the current study's extensive analysis.

Conclusion:

The most prevalent consequence of diabetes mellitus is diabetic foot. Whether a patient is at home or in the hospital, a chronic complication of diabetes mellitus might have significant implications for nursing care planning. Diabetic foot ulcers may be healed using *Carica papaya*, which helps remove dead cells. This research was conducted to determine how well diabetic foot ulcer treatment works. Diabetic foot ulcer prevalence was shown to increase significantly.

Since most patients with diabetes have impaired wound healing, nursing plays a crucial role in wound care. Before applying a papaya dressing or using papaya for medical purposes, nurses should have a thorough understanding of the topic. Nursing students should spend time in clinical settings and get experience with these treatments. This globally proven solution requires adjustments to the foundations of nursing education.

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