ORIGINAL ARTICLE

Effectiveness of Selected Nursing Intervention on Healing of Diabetic Foot Ulcer

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Abstract

Diabetic foot is often quiet a dreaded disability, with long stretches of hospitalization, and impossible mounting expenses, with ever dangling end result of an amputed limb. Citric acid treatment of chronic infected wounds offers excellent results. A Quantitative true experimental study was conducted in SVMCH & RC Hospital with 40 diabetic foot ulcer samples. 20 in experimental and 20 in control group are chosen by simple random sampling technique. Pre test and post test was conducted in both groups. Citric acid dressing was provided to experimental group for I week. The post test mean and SD of experimental group was 15.40±3.12 with 't' value of 5.493 which was significant at $p < 0.001$ level. It was proven that the citric acid dressing is effective for diabetic foot ulcer patients.

Keywords: Diabetes Foot Ulcer; Citric Acid Dressing; Wound Healing.

Problem Statement

"A study to assess the effectiveness of selected nursing intervention on healing of diabetic foot ulcer among diabetes patients attending SVMCH& RC at Puducherry"

Objectives of the Study

- To evaluate the effectiveness of selected nursing interventions on healing of diabetic foot ulcer among experimental group.
- To compare the effectiveness of selected nursing interventions on healing diabetic foot ulcer among control group and experimental group.
- To associate the effectiveness of selected nursing intervention on healing of diabetic foot ulcer with selected demographic variables.

Hypotheses

- H_{01}: There is no significant difference in wound status among experimental group before and after the application of citric acid .
- H_{02}: There is no significant difference in wound status among control group before and after routine wound dressing.

Methodology

A Quantitative true experimental pre test - post test design was adopted for the study. The study was conducted in Sri Venkateshwara Medical College Hospital And Research Centre, Ariyur, puducherry The sample of this study comprises of patients with diabetic foot ulcer. The 40 patients,20 in experimental and 20 in control group were selected by Simple Random sampling technique.Clients with type I and type II diabetes mellitus with diabetic foot ulcer were included. Clients who are critically ill, clients who are on treatment with corticosteroids, radiation therapy and Immunosuppressive drugs, clients who are all undergoing surgical intervention were

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excluded from this study.

The tool was developed in English after thorough literature reviews. It consist of Demographic & physiologic data like age, gender, and history of smoking, duration of diabetes mellitus, history of foot ulcer, fasting blood sugar and, dietary pattern, exercise. Modified Bates Jensen Wound Assessment Tool consist of 10 characteristics of wound status ,scored using a Likert type scale; a score of 1 - indicates the healthy wound and 5 - indicates the most unhealthy wound attribute for each characteristics. Item sub scores are added to obtain a total score.

Wound Status	Score
Healthy (1-13)	1
Minimal Severity (13-20)	2
Mild Severity (21-30)	3
Moderate Severity (31-40)	4
Extreme Severity (41-50)	5

Validity of the tool was obtained from 3 experts in the field of Medical Surgical Nursing a. The tool was found adequate and the reliability of the tool was computed using karlpearson's coefficient of correlation. Coefficient of correlation between the split half, r = 1.00. Thus the tool was reliable proceeded for pilot study. Prior to the collection of data written permission was obtained from the Ethical committee. Pilot study was conducted. The wound healing was measured by bates Jensen wound assessment tool and assessed the effectiveness. It proves that the reliability and feasibility for the study.

The data was collected over a period of four weeks after obtaining consent from authorities, Pre test and Post test was conducted in both experimental and control group. Experimental group patients received Citric acid dressing once a day. While in control group patient received only routine dressing . The intervention was given for 7 days the post test was

conducted for both the groups on the final day of the intervention by Modified bates Jensen wound assessment scale. The collected data was analyzed and tabulated by descriptive and inferential statistics.

Appropriate statistical technique such as descriptive statistics was used to analyze demographic and physiologic variables. Inferential statistics ('t' test) was used to assess the significance in wound status score in experimental and control group and to assess the effect of citric acid dressing. Chi square test was used to find out the association between the selected demographic & physiologic variables with final wound status scores.

Results and Discussion

Distribution of Patients According to their Demographic and Physiological Variables in Experimental and Ccontrol Group

In experimental group 8 (40.0%) were in the age group of 51-60 yrs and 5(25.0%) of them between 61-70 yrs. In control group 6 (30%) of them were between the age of 40-50 yrs years and 5(25.0%) of them between 61-70 yrs. Majority of 11 (55.0%) of them were males in experimental group and in control group 11 (55.0%) of them were females. Regard to education, 8 (40.0%) in experimental group were illiterate and primary and 4(20.0%) were secondary schooler. In control group 8 (40.0%) had primary education. 13 (65%) in experimental group were non smokers and 4(20.0%) were smoking more than 10 yrs. In control group 12 (60 %) were non smokers and 3(15.0%) were smoking for 5-10 yrs. 7(35%) in control group were having diabetes for 5-10 yrs and 5(25.0%) were more than 10 yrs. 8(40%) of experimental group were 5-10 yrs. Duration of foot ulcer in control group 8(40%) were less than 3 month and 10(50.0 %) of experimental group were 1-2 month, 7(35.0%) were less than 1 month

Pre Test Level of Wound Status in Experimental and Control Group
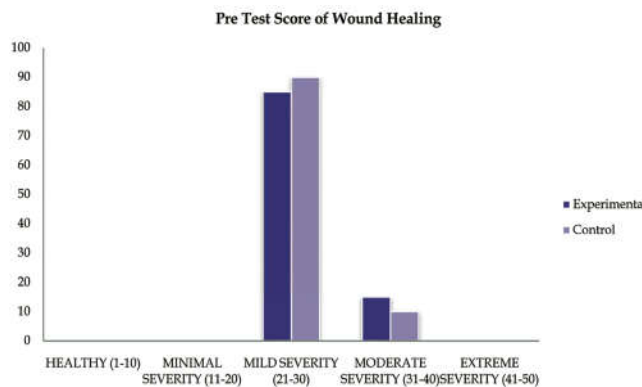
Fig. 1: Pre test level of wound status in experimental and control group

In experimental 17 (85.0%) of them had mild severity and 3(15.0%) of them had moderate severity, whereas in control group 18 (90.0%) of them had mild severity and 2 (10.0%) of them had moderate severity.

Post Test Level of Wound Healing Status in Experimental and Control Group
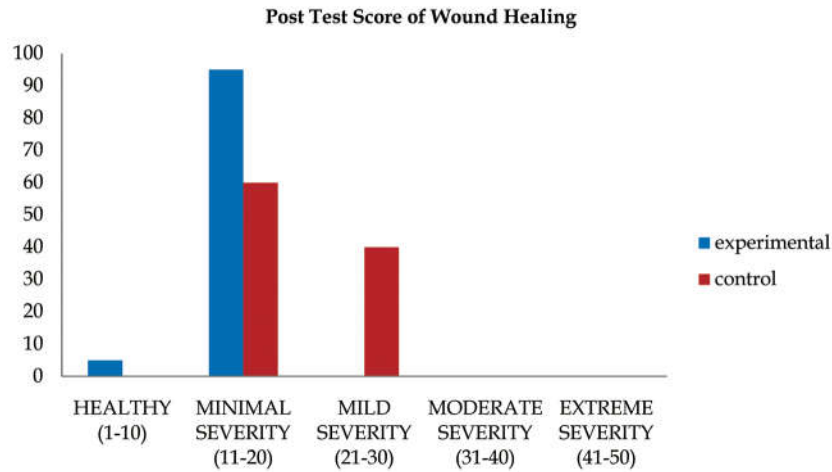

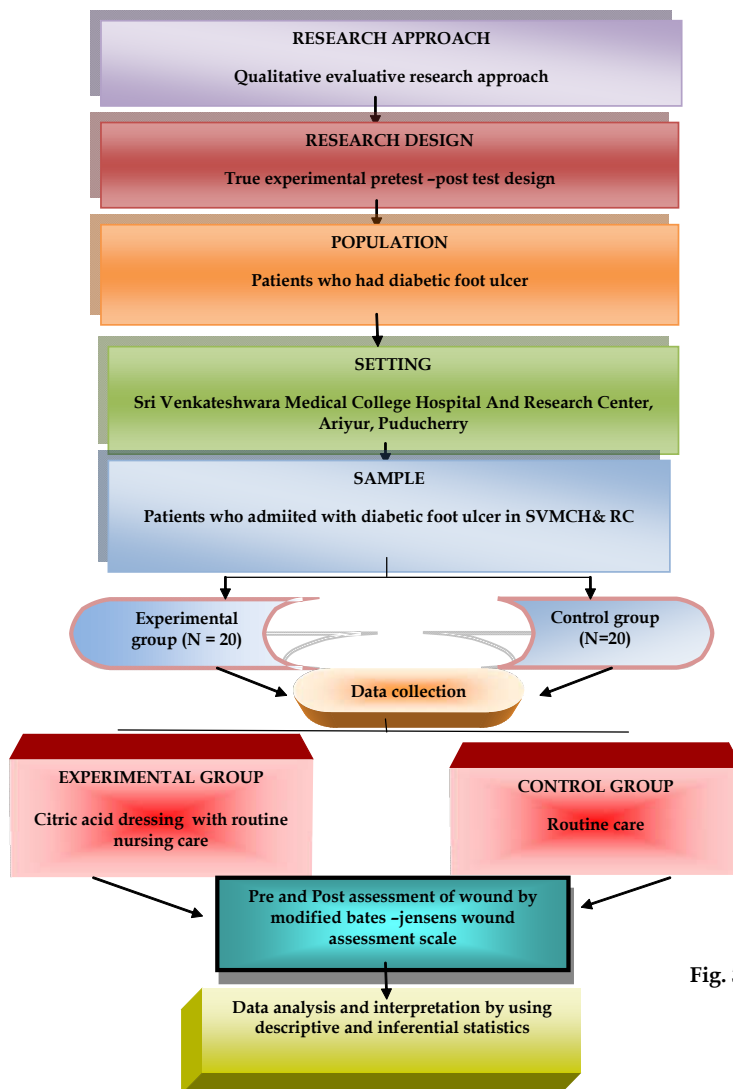**Fig. 2:** Post test level of wound healing status in experimental and control group

Fig. 3: schematic presentation of research design

In experimental 19 (95.0%) of them had minimal severity and 1(5.0%) of them had healthy, whereas in control group 12 (60.0%) of them had minimal severity and 8 (40.0%) of them mild severity. This reveals that experimental group patient had reduced level of wound healing than control group.

Effectiveness of Citric Acid Dressing on Level of Wound Healing in Experimental and Control Group

S. No.	Group	Mean	SD	't' value	p value
1.	Experimental	15.40	3.12	5.493	P < 0.0001
2.	Control	19.85	1.84		

The posttest Mean and SD on level of wound healing among patient in experimental group was 15.40±3.12 and in control group was 19.85±1.84. The Calculated 't' value of 5.493 which was statistically significant at p<0.001 level It was proven that the citric acid dressing is effective for healing of diabetic foot ulcer patients.

Association between Level of Wound Healing in Experimental with their Selected Demographic Variables

S. No.	Demographic variables	Experimental group Healthy	Minimal Severity	Chi-Square	DF	p value
1.	**Age** a) 40- 50 Years	0	4	5.965	3	0.113 NS
	b. 51 – 60 Years	0	8			
	c. 61 – 70 Years	0	5			
	d. >71 Years	1	2			
2.	**Sex** a. Male	0	11	1.287	1	0.257 NS
	b. Female	1	8			
3.	**Occupation** a. Unemployee	1	5	2.456	2	0.293 NS
	b. Daily wages	0	11			
	c. Private employee	0	3			
	d. Govt employee	0	0			
4.	**History of smoking** a. Non smokers	1	12	0.567	3	0.904 NS
	b. 1- 5 yrs	0	1			
	c. 5-10 yrs	0	2			
	d. > 10 yrs	0	4			
5.	**Duration of diabetes mellitus** a. 1-3	1	2	5.965	3	0.113 NS
	b. 3-5 yrs	0	6			
	c. 5-10 yrs	0	8			
	d. > 10 yrs	0	3			
6.	**Duration of history of foot ulcer** a. < 1 month	0	6	1.053	2	0.591 NS
	b. 1-2 month	1	9			
	c. > 3 month	0	4			
7.	**Family history of diabetes mellitus** a. Yes	0	6	0.451	1	0.502 NS
	b. No	1	13			
8.	**Mean fasting blood sugar level** a. 80 – 120 mg%	0	5	1.287	3	0.732 NS
	b. 121- 160 mg%	1	8			
	c. 161- 200 mg%	0	3			
	d. > 200 mg%	0	3			

From the above table, there is no significant association found between the level wound healing of patients receiving citric acid dressing in experimental group.

Conclusion

Diabetic foot infections are the major cause of morbidity. Inappropriate treatment and infections is the common sequel of diabetic foot ulceration that leads to delayed wound healing. Diabetic foot ulcers at its later stages highly affect the persons' quality of life and image. Citric acid is a product which contains the healing properties and anti microbial properties and it is effective in the successful management of foot ulcers in an affordable and simple way.

Implications

The findings of the study have the following implications in the various areas of nursing.

➢ The nurse should understand the importance of citric acid dressing in nursing practice for healing status of diabetic foot ulcer.

➢ The nurse working in the surgical unit should be trained in implementing citric acid dressing as complementary therapy to bring out positive physical and psychological responses.

➢ Citric acid dressing as an adjunctively to other pharmacological treatment to promote comfort and well being among the diabetic foot ulcer patients.

➢ These findings help the administration to arrange continuing education programme for nurses regarding diabetic foot ulcer and its management.

➢ More researches can be done to establish effectiveness of citric acid dressing.

Recommendations

➢ Local application of citric acid dressing can be used as a routine intervention among patients with diabetic wound in hospitals.

➢ A similar study can be conducted for larger number of samples in the other health care settings.

➢ Further research can be conducted with the help of other wound assessment scale.

➢ A comparative study can be conducted with other products used for wound dressing..

➢ A study can be conducted to find out effectiveness of citric acid dressing in the healing of general wound.

➢ A study can be conducted to find out effectiveness of citric acid dressing in the healing of burns wound.

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