

Compare the Effectiveness of Honey Dressing Vs Existing Dressing Practices on Wound Healing, Wound Infection and Pain among Patients with Diabetic Foot Ulcer in Selected Hospital, Kanyakumari District

Dr. Arul Valan.P

Professor cum HOD, Department of Medical Surgical Nursing, Dr Kumaraswamy Health Centre College of Nursing, Kanyakumari, India

Abstract – Patients with diabetes are at great risk of developing lower extremity ulcers. The management of diabetic foot ulcers typically includes early recognition and appropriate clinical care. Recent advances in wound treatment include honey dressing, which has been successful in diabetic wounds. The present study was conducted to compare the effectiveness of honey dressing Vs existing dressing practices on wound healing, wound infection and pain among patients with Diabetic foot ulcer in selected hospital, Kanyakumari District.

The objectives of this study were, to compare the effectiveness of honey dressing Vs existing dressing practices on wound healing, wound infection and pain among patients with diabetic foot ulcer in study group I and II, to correlate between wound healing, wound infection and pain among patients with diabetic foot ulcer in study group I and II, and to associate the post interventional levels of wound healing, wound infection and pain among patients with diabetic foot ulcer with selected socio demographic and clinical variables.

The secondary objectives of the study were to find out the prevalence of bacterial pathogens among patients with diabetic foot ulcer in study group I and II, to determine the chemical composition and antibacterial properties of honey, to evaluate the effectiveness of Information booklet on diabetic foot ulcer management upon knowledge among patients in study group I and II and to infer the cost of diabetic foot ulcer management in study group I and II. The major findings of the study were, there was statistically significant improvement in wound healing between day 1 and day 15 in study group I ($t=12.37$ $p<0.0001$). There was statistically significant improvement in wound healing between day 1 and day 15 in study group II ($t=5.9108$ $p<0.0001$). The post test score reveals that the mean score of day 15 for study group I was 19.39 and for study group II, it was 15.88. Therefore, it concludes that there is significant difference between study group I and II with respect to wound healing. Mean level of wound healing of study group I are better than study group II.

There was statistically significant reduction in level of pain between Day 1 and Day 15 in study group I ($t=26.93$ $p<0.0001$). There was statistically significant reduction in level of pain between Day 1 and Day 16 in study group II ($t=14.52$ $p<0.0001$). The mean score of day 15 for honey dressing group was 1.24 and for existing dressing group it was 2.72. Also, it shows that P value is less than 0.01. Therefore, it concludes that there is significant difference between study group I and II with respect to level of pain. Mean level of pain of study group I are better than study group II.

Keywords— Honey Dressing, Dressing, Wound Healing, Wound Infection, Pain, Patients, Diabetic, Ulcer, Hospital, Kanyakumari

1. Introduction

Diabetes mellitus is one among the most common non communicable disease as like hypertension. Diabetes mellitus is an endocrine disorder that develops either due to inability of the pancreas to produce adequate Insulin or the body cannot utilize the Insulin appropriately. Diabetes increases the risk of numerous serious health problems including Cardio vascular disorders, Kidney disorders, Neurological disorders, Foot disorders and so on. Amongst major complications, foot problems play a major threat and it holds the leading position.

Globally, 70 % of people lost their leg because of diabetes. People with known Diabetes mellitus have 25 times greater prevalence of losing their leg than other any other condition. Peripheral neuropathy, foot deformities, minor foot trauma, infection and peripheral vascular disease are the major contributory factors for the development of diabetic foot ulcer. The other risk factors include cigarette smoking, poor glycaemic control, previous foot ulcerations or amputations, diabetic nephropathy, and ischemia of minor and major blood vessels.

The present study was conducted to compare the effectiveness of honey dressing Vs existing dressing practices on wound healing, wound infection and pain among patients with Diabetic foot ulcer in selected hospital, Kanyakumari District.

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The hypothesis formulated were,

H₀₁ There is no significant difference between the pre and post interventional level of wound healing, wound infection, and pain among patients with diabetic foot ulcer in study group I and II

H₀₂= There is no correlation between wound healing, wound infection, and pain among patients with diabetic foot ulcer in study group I and II

An extensive review of literature for the study was collected from various books, journals, Medline data base, EBSCO and CINAHL by the investigator. Conceptual framework for the present study was based on Pender's Health promotion model. Comparative Experimental research design was adopted to study the effectiveness of honey dressing Vs existing dressing practices on wound healing, wound infection and pain among patients with diabetic foot ulcer.

The independent variables were honey dressing and existing wound dressing practices. The dependent variables were wound healing, wound Infection and pain. The extraneous variables were dietary pattern, BMI, co morbidity; antibiotics used, and study setting. The demographic variables used in the study were age, sex, religion, marital status, educational status, occupational status and family income.

The clinical variables used in the study were dietary pattern, duration of illness, co morbid conditions, color and temperature quality of peripheral pulse, sensation of peripheral skin, capillary refill time, size of ulcer, duration of Diabetic ulcer, presence of complication, treatment for diabetic ulcer, history of smoking and alcoholism, use of foot wear.

The Bio chemical variables used in the study were blood sugar value and wound culture.

The study was conducted in Dr Kumaraswami Health Centre hospital at Kanyakumari District. This hospital has an average census of 10 to 15 diabetic ulcer patients per day.

The Inclusion criteria were, Patients with Type II diabetes mellitus treated with oral hypoglycaemic drugs like Tab. Daonil, Tab. Glyciphage, and Tab. Metformin, Patients with controlled blood sugar value for up to 200 mg/dl, Patients with diabetic foot ulcer that falls on Wagner grade I and II of 2 to 5 cms size, Patients who were cooperative and willing to give consent to participate in the study, and Study included both men and women from the age group of 30 and above and Patients with chronicity of Diabetes more than 5 years of duration.

The Exclusion criteria were, Patients who were critically ill, Patients with diabetic ulcer with elevated blood sugar values of more than 200 mg/dl, Patients those who had complications of arterial occlusive disorders including Buerger's disease, Raynaud's disease and Deep vein thrombosis, Patients with existing mental illness and Patients who were selected for pilot study.

The researcher used purposive sampling technique to draw 50 samples. Anticipating the drop outs, the investigator selected 26 samples in study group I and 24 sampling in study group II.

The tools such as, Socio Demographic Variable Questionnaire, Clinical Variable Questionnaire, Bio Physiological Variable Proforma, Bio Chemical Variable Proforma, Numerical Pain Rating Scale, Bates Jenson Wound Assessment Scale, Knowledge Questionnaire and Wagner's classification for diabetic foot disease were used. The tools were tested for its

reliability and content validity was also obtained from various experts in related fields. A pilot study was conducted to assess the feasibility and practicability of the study.

Pertest assessment of wound healing, pain and wound infection was done for patients with Diabetic foot ulcer in study group I & II. After the pretest, honey dressing was done by the investigator to patients with Diabetic foot ulcer for the study group I and existing wound dressing for study group II for 15 consecutive days. The wound parameters were assessed along with dressing protocol using Bates Jenson wound assessment scale on 1st, 3th, 6th, 9th, 12th and 15th day of wound dressing. Pain was also assessed using numerical pain rating scale. Wound culture swab was taken to assess the wound infection on 1st and 15th day before dressing. Information booklet on prevention and management of Diabetic foot ulcer was distributed on 15th day to the study group patients to create awareness on Diabetic foot ulcer.

The major findings of the study were, there was statistically significant improvement in wound healing between day 1 and day 15 in study group I ($t=12.37$ $p<0.0001$). There was statistically significant improvement in wound healing between day 1 and day 15 in study group II ($t=5.9108$ $p<0.0001$). The post test score reveals that the mean score of day 15 for study group I was 19.39 and for study group II, it was 15.88. Therefore, it concludes that there is significant difference between study group I and II with respect to wound healing. Mean level of wound healing of study group I are better than study group II.

There was statistically significant reduction in level of pain between Day 1 and Day 15 in study group I ($t=26.93$ $p<0.0001$). There was statistically significant reduction in level of pain between Day 1 and Day 16 in study group II ($t=14.52$ $p<0.0001$). The mean score of day 15 for honey dressing group was 1.24 and for existing dressing group it was 2.72. Also, it shows that P value is less than 0.01. Therefore, it concludes that there is significant difference between study group I and II with respect to level of pain. Mean level of pain of study group I are better than study group II.

The study findings inferred that, the combined influence of socio demographic and clinical variables caused 39.6% variance (R^2 value 0.396, F value 5.559, t value 0.85). The table shows that, 13 variables had increased beta coefficient score and other variables had decreased scores. P value shows a significant association with size of foot ulcer at $p<0.001$ level, where as other variables show a significant association with wound healing of patients with Diabetic foot ulcer.

Findings related to sensitivity of honey, isolated compounds of honey and standard antibiotics with selected aerobic bacteria showed the comparative value antibacterial effect of compounds (1, 2, and 3) isolated from whole honey along with a standard antibiotic and whole honey. The results showed compound-2 had a good antibacterial effect against pathogens like E-coli, Klebsiella, staphylococcus albus, staphylococcus aureas while comparing with compound 1 and compound 2. Against Pseudomonas the compound has no effective antibacterial effect.

Findings to evaluate the effectiveness of Information booklet on diabetic foot ulcer management upon knowledge among patients in group I and II showed that the mean score of day 15 for honey dressing group was 14.79 and for existing dressing group it was 14.28. Also, it shows that P value is less than 0.01. Therefore, it concludes that there is significant difference between Honey and Existing dressing with respect to level of knowledge.

2. Conclusion

The present study recommends honey as an alternative therapy for Diabetic foot ulcer healing. It suggests that honey dressing can be used as an effective non pharmacological approach for wound healing thereby alleviating the wide range of complications developed due to Diabetic foot ulcer.

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