



HONEY DRESSING VS NORMAL SALINE ON WOUND HEALING AMONG CLIENTS WITH VENOUS ULCER: AN EXPERIMENTAL STUDY

Nursing

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ABSTRACT

Venous ulcer is a common and long-term issue with ageing population, which incapacitates the patient with a prolonged period of hospitalization. This study was conducted to assess the effectiveness of honey dressing versus normal saline in wound healing and also aimed to find out the association of mean improvement score with the selected demographic variable in the experimental and control group. A true experimental pretest-posttest design was used. Sixty subjects with venous ulcer were selected using simple random sampling technique and were randomly assigned to experimental (n=30) and control group (n=30), groups were treated with honey dressing and normal saline dressing respectively for a period of 7 days. The pretest and posttest wound status was assessed by modified Bates-Jensen wound assessment tool. The study revealed that venous ulcer in the experimental group showed a highly significant ($p < 0.001$) improvement in the status of wound with honey dressing when compared to normal saline dressing. The study also revealed that there was significant association with duration of wound ($p < 0.05$) with mean improvement wound status score in experimental group. The findings of this study suggested the need for honey dressing in venous ulcer subjects for better wound healing.

KEYWORDS

venous ulcer, honey dressing, wound healing

INTRODUCTION

Venous ulcer represents a chronic condition resulting from an incompetent venous system in the legs. It is responsible for 70% of chronic leg ulcers (Nicolaidis et al 2000). Leg ulceration is a chronic relapsing and remitting condition, which has a significant personal impact on people health and quality of life, their ability to work and the fear of impending limb loss (Pearson, et al.2006)

Chronic venous ulcer is costly in economic terms as well as in the quality of life. Nearly about 1 in 50 people develop venous ulcer at some stage of their life. An estimated 5% to 8% of the world population is afflicted with venous disease (Jennifer, T. et al. 2005)

In the United States, venous ulcers are seen in 2.5% of the patients in long term care facilities. The prevalence of venous ulcers ranges from 1% to 2% of the population in U. K (Moffatt et al,2004). In Ireland and Australia 80% of chronic leg ulcers are caused by venous rather than arterial diseases.

In India, of the total population of 1.07 billion, venous leg ulcers are present in 1-2% of adult population. Women suffer from this disease 4 times more than men. (Pradeep Muley,2008)

Natural products such as papaya, sugar granules, banana leaf, aloe vera and wound healing promoters, e.g., tretinoin, benzoyl peroxide, cytokines and other herbal products have been used. Some alternative biologic forms of treatment have also been used and are gaining recognition; these include apitherapy (application of honey), maggots and leeches. Of these, honey is shown to be more successfully used to heal wounds in hospital care facility (Jull, A.B,2005)

Honey has anti-oxidant, anti-bacterial and anti-inflammatory properties. The high osmolality, secondary to its sugar content is sufficient to inhibit microbial growth (Molan,2001). The sugar molecules within honey hold onto the water molecules, thus denying the bacteria enough water to support their growth. The low level of hydrogen peroxide produced by the dilution of honey in wound exudates also have an antibacterial action. The osmotic action of honey draws lymph out of cells, thereby reducing edema (Molan,2005)

As honey dressing provides a moist environment, this may encourage autolytic debridement of sloughy and necrotic wounds. The proteases within the tissues may be activated by the hydrogen peroxidase, which is slowly released by the action of enzyme glucose oxidase to the honey added by the bees, thus leading to the rapid debriding property of honey. It also promotes the formation of granulation and epithelial tissue within a wound following debridement by encouraging the creation of collagen and subsequent angiogenesis (Young,2005). The reduction in malodor following topical application of honey, can, in part be attributed to its antibacterial properties (Lay-Flurrie,2008)

Aziz et al, Jull et al and Vandamme et al. examined the effectiveness of honey versus silver sulfadiazine for the treatment of burns. They found that honey was significantly favoured for complete healing time of superficial thickness wounds with an average of a 5 days reduction in healing time. Swabs taken from burns treated with honey was negative for infection at 7 days. One trial reported reduced pain in patients in the honey group.

Kateel et al found that 3 of 5 RCTS concluded that topical honey was better than conventional dressings for healing of diabetic foot ulcer. They concluded that the study reported greater efficacy, decreased amputation and better compliance with honey for diabetic foot ulcer.

Ayse Celik Yilmaz (2020) reported that honey in acute and chronic wounds provided rapid epithelization and wound contraction in wound healing, had anti-inflammatory and debridement effect, decreased the pain, ensured infection control, shortened the time of wound management and was cost-effective.

MATERIALS AND METHODS

This is a true experimental study conducted in the surgical ward of St Thomas Hospital, Chethipuzha. The hospital had approximately 330 patients with venous ulcer visiting inpatient & out patient department every month. Majority were females (appro.202) & males (128). After obtaining clearance from the institutional ethics committee. Thirty samples were selected each for experimental and control group who fulfilled the inclusive criteria (venous ulcer grade C6 (CEAP classification). Informed consent was obtained from each participant. Quantitative research approach, true experimental pretest - posttest design was used. Randomized sampling technique was used. Samples who were on corticosteroids antibiotics, immunosuppressive drugs, peripheral arterial diseases and with wound area > 16 sq.cm and active infection were excluded. The tool for data collection consisted of 2 sections which included demographic variables and clinical observation record by using modified Bates Jensen wound assessment tool. The assessments included were wound size, depth of wound and presence of necrotic tissue, exudates and granulation tissue. The wound size was assessed using graphic acetate sheet. Demographic data was collected using interview method. A Pure unprocessed undiluted Honey from beehive was applied for the experimental group and Normal saline dressing for control group once a day for 7 days. The pre and post wound assessment was done using modified Bates-Jensen wound assessment tool. The assessment was done on first and again on seventh day and severity scores were assessed.

RESULTS

Demographic variables

In the experimental group & control group, majority 10(33.33) were in the age group of 61-70 years, of which 16(53.33) were females.14 (16.67) had secondary & higher secondary education. With regard to occupation, BMI and duration of wound in experimental group,

majority 33.33% were employed, 70% of samples had BMI of 20-24 and 15 of them with a wound duration of 1 to 2 months whereas in control group majority 36.67% were unemployed, 90% of samples had BMI of 20-24 and 50% with a duration of wound between 1-2 months.

Comparison of pretest and posttest status of wound with honey dressing & Normal saline in experimental & control group

n=60

		mean	S. D	't' value
Experimental group (Honey)	pretest	27.67	5.27	14.61***
	Posttest	21.90	4.11	
Control group (Normal saline)	Pretest	28.57	4.58	3.17*
	Posttest	27.97	4.39	

The above table depicts that the pretest mean value was 27.67 with S.D 5.27 and in the post test mean value was 21.90 with S.D 4.11. The calculated 't' value was highly significant at $p < 0.001$ level. Hence there is a significant difference between pre and posttest status of wound in the experimental group. In the control group, the pretest mean value was 28.57 with S. D 4.58 and in the post test mean value was 27.97 with S. D 4.39. The calculated 't' value was 3.17 indicating that there is a low statistical difference between pre and posttest status of wound.

Comparison of posttest status of wound between experimental and control group

n=60

Post test	Mean	S. D	't' value
Experimental Group	21.90	4.11	5.52***
Control Group	27.97	4.39	

The above table shows that the posttest status of wound, the calculated 't' value of 5.52 at $p < 0.001$ indicate that there is a high statistical difference in status of wound between two groups after intervention.

Association of mean improvement wound status score with selected demographic variables in experimental and control group.

In experimental group, there was statistically significant association with duration of wound at $p < 0.05$ with calculated 't' value being 3.574.

DISCUSSION

The comparison of posttest status of wound of experimental group with control group showed a mean value of 21.90 and S.D 4.11 in the experimental group when compared with mean value of 27.97 and S.D 4.39 in the control group. The calculated t value was found to be highly significant at $p < 0.001$ level indicating that there was a highly significant difference between the posttest status of wound between experimental and control group. The above findings were consistent with the following study by Yap (2007) to assess the effectiveness of honey dressing and ethoxy – diaminoacidic plus nitrofurazone dressing on ulcer among 26 patients in University Hospital, Turkey. Ulcers were measured using acetate tracings. 15 patients were treated with honey dressing and 15 were treated with ethoxy- diaminoacidic plus nitrofurazone. After 5 weeks of treatment, patients who were treated by honey dressing had better score (6.55 +/-2.14 vs 12.62 +/-2.15) than the other dressing which is highly significant at $p < 0.001$. This revealed that there was high significant difference between honey and other dressings.

Kamaruddin et.al (2012) conducted a study at university Malaya Medical Centre. 102 samples were selected with chronic wounds and ulcers that had failed to heal under conventional wound dressing like saline and povidone-iodine along with systemic antibiotics. Topical honey was applied on these wounds. It was found that the wound became sterile within 2 weeks and healed with 100% success within a remarkable period of between 4 to 7 weeks. The study concluded that honey dressing had great potential in wound healing and was also economical.

Subrahmanian (1996) conducted a prospective randomized controlled trial on 100 patients to find the effectiveness of boiled potato peel and honey on fresh partial thickness burns. Pure, unprocessed undiluted honey dressing was used on fresh partial thickness burns. Of the 50 patients treated with honey, who had positive swab culture at time of admission, had persistent infection after 7 days. Of the wound treated with honey, 100% healed within 15 days compared to 50% in wound treated with boiled potato peel dressing. The mean time to heal, 10.4

days with honey Vs 16.2 days with boiled potato peel, were significantly different at ($p < 0.001$).

CONCLUSION

The study has proved that honey dressing improves the wound healing with faster granulation tissue formation on venous ulcer in comparison with normal saline. As a result, honey can be used as a standard treatment in preference to Normal saline. Honey has wound debridement, anti-bacterial, anti-inflammatory properties and helps in the formation of granulation tissue. These properties and findings show that it can be best used as a treatment to hasten wound healing on venous ulcer patients.

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