

Effectiveness Using of Transparent Film Dressing as Skin Barrier Protection to Prevent Maceration in The Wound Care Process at Bilqiss Medika Clinic Bekasi – West Java, Indonesia

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Abstract:-

Background : The moist wound healing concept with modern dressings has become the main foundation in wound care. But, the concept of dressings has side effects or complications that occur, including maceration, causing rupture due to damage to the wound edge. In an effort to prevent these complications, skin barrier protection is needed to overcome the problem of wound edges that are too moist or wet, called maceration.

Objectives : The purpose of this study was to determine the effectiveness used transparent film dressings to prevent maceration in the wound care process.

Methods : The study used one group pre-test and post-test intervention methods. The population was taken from acute and chronic wound out patients in Bilqiss Medika Clinic (Nursing private practice) from March to April 2020.

Results : This study has a value on the effectiveness of using transparent film dressings to prevent maceration. The results of the paired t test showed that the values for each variable were 0.025, 0.025, 0.02 and 0.038 (n = 11, t < 0.05). The data find that transparent film dressing could prevent maceration was 69% significant.

Conclusion : The results of this study can be useful for wound care practitioners with the moist wound healing concept to prevent maceration complications and to support the epithelization in the wound healing process. This study effective using transparent film dressing as skin barrier protection.

Keywords:- Transparent Film Dressing, Skin Barrier, Prevent Maceration, Wound Care

I. INTRODUCTION

1.1. Background

Fast food consumption without in aware will affect the health status that can lead to disease. In range 60% - 80% will effect on cholesterol deposits, obesity, heart coronary & diabetes mellitus. Diabetes mellitus is considered to be the cause of all health problems whose complications are very large, so that will go worse condition when a person with a disease, cause of less effective attention to food that is proper or suitable diet. Around 450 million people in the

world have diabetes mellitus and it is predicted will increase 15.4% in 2045. At the same time with an increase in the number of these figures so complications easily occur, the wounds that difficult to heal (WOCN, 2016). Reported Diabetic Foot Ulcers (DFU) incidence 25% and prevalence overall reached 6.3% of patients with diabetes mellitus in every country (JWC Int, 2018). The UK reports 20% of the effects of diabetes mellitus being 20% diabetic foot ulcer (National Health Service Diabetes Care, 2013). Diabetic foot ulcers is a condition of lower leg injuries with complicating problems due to diabetes (Wounds Int, 2013).

Diabetes is a major concern in many countries in the world because of that worsening effect of this is a leg injury that occurs due to neuropathy problems or loss of sense then will cause to occur calluses on the skin of the feet and changes in bone shape (deformity) resulting in tip skin sores and blisters without realizing it, when the continues condition, the patient will run into worsening because the wound becomes infected and inappropriate of wound care and even worse conditions end of leg amputation.

Wound is a condition where tissue damage occurs due to several causes including trauma, surgery, pressure, malignancy and then the body's vascular problems will protect himself by carrying out the wound healing process (Patrakusuma. D, 2018). Wounds are abnormalities structure and function of the skin and soft tissue that occur due to pressure, infection, trauma and the surgical process (WOCN, 2016). We are cannot predict when it will occur. As an example accidents that are classified as acute wounds, and wounds due to complications that fail in the healing process called chronic wounds. The wound must get treatment or correct wound care both in the process of washing and cleansing onto the wounds and dressing selection material according to the wound condition.

Naturally the wound healing on itself through the normal wound healing process, however when the wound is acute is inappropriate to handle of wound in the healing phase or delay healing that will become chronicles, or even when in chronic conditions will run into worsening conditions due to infection problems. Wound healing process which is not physiologically so it needs wound care

with way the right kind of wound dressing material, in the right wound care follow a process that occurs and performs treatment according to the phase of wound healing.

The normal stages in the wound healing process are Hemostasis or the coagulation process, Inflammation, Proliferation or regeneration and Maturation or remodeling. Refer to the above that wound care will follow the phase and process of healing so it must be done in the right procedure. The concept that is believed and recognized following the process in wound care that is known today is modern dressing with a occlusive concept. This concept was introduced by experts in wound care known as moist wound healing (Schultz, 1993; WOCN, 2014, 2016) or the process of wound healing with the moist concept. Theory which was first introduced by George D. Winter of 1962 was done with a closed technique to achieve moist levels. This concept was first published in the journal Nature, that is "conditions that are closed, the healing rate is two times faster than the open conditions".

However there are complications breast feeding that occurs in closed wound healing process namely maceration causing there is stagnation of epithelial cells or it can even occur rupture due to damage to the wound edge condition. Maceration comes from language Latin that is maceratio i.e. make it wet, which is used as a cause of moisture that is too long and can complicate wound healing (JWC, 2002). Maceration can complicate the wound healing process (Cullum, 2000) and can be a problem in wound care (Cutting 1999, Cutting and White, 2002b). Maceration is a condition where there is damage to the skin at the edges of the wound due to the process being too moist so that the epithelial cells unable to impact migration there is a lag strength in the wound healing process (Thyarogan & Silver, 1984; Trengove et al., 1999; Cutting & white 2002b, WOCN, 2014).

The TIMES as model framework is carried out to prevent damage to the wound edges due to maceration using techniques skin barrier protection or protect the skin at the edges of the wound with put on the right dressing material, usually used is zinc oxides and hydrocolloid. Currently the author will using other materials, that is transparent film dressing (TFD) in the process wound care used as skin barrier protection. Maceration is considered to be a complication in the wound care process because it can cause a lot of trouble for patient recovery.

1.2. Problems

From the description on the background, the problem of this research can be formulated as follows:

"How and to what the level of effectiveness transparent film dressing used as skin barrier protection to prevent maceration in the wound care process at Bilqiss Medika Clinic Bekasi "

1.3. Research purposes

1.3.1.General purpose

Knowing how much effectiveness it is to use transparent film dressing to prevent maceration in the wound care process at Bilqiss Medika Clinic Bekasi.

1.3.2.Special purpose

1. Know the frequency distribution before use transparent film dressing to prevent maceration in the wound care process at the Bilqiss Medika Clinic, Bekasi.
2. The frequency distribution is known after using transparent film dressing to prevent maceration in the wound care process at the Bilqiss Medika Clinic, Bekasi.
3. Know the frequency distribution of the pre-test and post-test intervention in the category of skin color around the wound in the wound care process at the Bilqiss Medika Clinic, Bekasi.
4. Know the frequency distribution of the pre-test and post-test intervention in the category of the total wound fluid or exudates in the wound care process at the Bilqiss Medika Clinic, Bekasi.
5. Know the frequency distribution of pre-test and post-test intervention for wide of wounds categories in the wound care process at Bilqiss Medika Clinic, Bekasi.
6. Know that the frequency distribution of the pre-test and post-test intervention in the category of the amount of epithelialization in the wound care process at the Bilqiss Medika Clinic, Bekasi.
7. The known effectiveness of using transparent film dressing before maceration occurs in the wound care process at the Bilqiss Medika Clinic, Bekasi.
8. The correlation of usage is known transparent film dressing against maceration prevention in the wound care process at the Bilqiss Medika Clinic, Bekasi.

II. RESEARCH METHODOLOGY

2.1. Research design

The research design used is a quantitative research design using experimental method design approach one group pretest – posttest. Research focused in every documented with photo, then given treatment by using transparent film dressing as skin barrier then evaluated the results of the treatment at subsequent wound care without a control group. This study used one group pre-test and post-test intervention methods, reporting data before intervention with transparent film dressing and reporting data after intervention transparent film dressing to look the different of periwound skin or maceration characteristic such as; periwound skin (level pink, red, pale), wound area (level small, moderate, large), amount of exudate (small, moderate, large) and epithelialization (good, moderate, bad), this is modification Bates Jansen wound assessment tools (2011).

2.2. Location and Time of Research

1. The location of the study was conducted in a health clinic that focuses on closed concept wound care with modern dressings, the clinic being targeted is the Bilqiss Medika Clinic, Bekasi.

2. Research activities begin March 01, 2020 to April 12, 2020 starting from using transparent film dressing first to all respondents each evaluation in wound care, for all categories of new patients and old patients clinical.
3. In one period of March until April 2020 the outpatient did the treatment every 2-3 days. The nurse and patient were meet 5-8 times in that period.

2.3. Population and Sample

1. Population

The population was taken from acute and chronic wound out patients in Bilqiss Medica Clinic wound care division (private practice nursing) with treatment using a closed concept and modern dressing materials.

2. Sample

The sample amount in this study is 11 respondents (out patient) who are in a treatment process acute wounds due to lacerations and chronic wounds due to causes: vein problems, diabetes, burns, and post operation wounds with infection and tissue necrosis.

The sampling technique in this study uses non probability purposive sampling that is a method of selection based on the specific aims and objectives of the researcher (Kusuma, 2015). This study has the aims and objective to prevent maceration effects in the modern wound care process, because modern wound care is based on the use of dressings / materials used based on the wound conditions that occur. Purposive sampling it is used with considerations to be more cost effective because it is focused on skin barrier by using materials transparent film dressing.

III. RESEARCH RESULT

3.1. Univariate Analysis Results

After the research was carried out, the data obtained and processed were univariate, explaining each variable and the results of the study were presented using the following table:

3.1.1. Variable Transparent Film Dressing

Table 3.1.

Distribution of Frequency Dimensions of Skin Color Around Wounds in Bilqiss Medika (n = 11)

No.	The color of the skin peri wound	Pre		Post	
		Qty	%	Qty	%
1.	Pink / normal	1	9	6	55
2.	Red	8	73	4	36
3.	Pale	2	18	1	9
Total		11	100	11	100

From a total of 11 respondents, it was found that 2 patients (18%) were in the pale skin color category, 8 patients (73%) were in the red category, 1 patient (9%) was in the normal category. After the use intervention transparent film dressing obtained 1 patient (9%) in the pale category, 4 patients (36%) in the red category and 6 patients (55%) in the normal category.

3.1.2. Variable Occurrence of Maceration

Table 3.2.

Dimensional Frequency Distribution of the Amount of Exudates in Bilqiss Medika (n = 11)

No.	Amount of Exudate	Pre		Post	
		Qty	%	Qty	%
1	Small <2cc	2	18	6	55
2.	Moderate 3-4cc	5	45	4	36
3.	Large > 4 cc	4	36	1	9
Total		11	100	11	100

From 11 respondents, it was found that 4 patients (36%) were in the high exudate category, 5 patients (45%) in the moderate category, 2 patients (18%) in the low category. After the use intervention transparent film dressing obtained 1 patient (9%) in the large category, 4 patients (36%) in the moderate category and 6 patients (55%) in the low category.

Table 3.3.

Frequency Distribution of Wound Area Dimensions in Bilqiss Medika (n = 11)

No.	Wound Area	Pre		Post	
		Qty	%	Qty	%
1.	Small <4 cm	2	18	6	55
2.	Moderate 5-10cm	6	55	5	45
3.	Large > 10c m	3	27	0	0
Total		11	100	11	100

From a total of 11 respondents, it was found that 3 patients (27%) were in the large wound area, 6 patients (55%) were in the moderate category, 2 patients (18%) were in the small category. After the use intervention transparent film dressing, there were no patients in the large wound area (0%), 5 patients (45%) in the moderate category and 6 patients (55%) in the small category.

Table 3.4.

Total Dimension Frequency Distribution Epithelialization in Bilqiss Medika (n = 11)

No.	Epithelialization	Pre		Post	
		Qty	%	Qty	%
1.	Good	1	9	1	9
2.	Moderate	2	18	6	55
3.	Bad	8	73	4	36
Total		11	100	11	100

From a total of 11 respondents, it was found that 8 patients (73%) were in the bad epithelialization category, 2 patients (18%) in the moderate category and 1 patient (9%) in the good category. After the use intervention transparent film dressing, there were 4 patients (36%) in the bad category, 6 patients (55%) in the moderate category and 1 patient (9%) in the good category.

3.2. Bivariate Analysis

3.2.1. Normality Test Results

Data on the comparison of frequencies between pre intervention and post intervention from patients were presented before they were put on transparent film dressing and after use transparent film dressing. The normality test is carried out to determine whether the data is normally distributed or not.

Table 3.5.

Normality Test Results Dimensions of the color of the skin around the wound with One Sample Konglomorov-Smirnov

	Unstandardized
N	11
Mean	0.0000000
Std. Deviation	0.63245553
Statistical Test	0.240
Asymp. Sig (2-Tailed)	0.076

Based on table 3.5, the significance value on the dimensions of the skin color around the wound is in the value 0.076. These results indicate that the significance value > 0.05 is in accordance with the basis for decision making from the Konglomorov-Smirnov test, the results normal if the significance value $\alpha > 0.05$, which means that the data from the variable dimensions of skin color around the wound are normally distributed.

Table 3.6.

Normality Test Results Dimensions Amount of Exudates with One Sample Konglomorov-Smirnov

	Unstandardized
N	11
Mean	0.0000000
Std. Deviation	0.44901326
Statistical Test	0.236
Asymp. Sig (2-Tailed)	0.089

Based on table 3.6, the significance value on the dimension of the number of exudates is in the value 0.089. These results indicate that the significance value > 0.05 is in accordance with the basis for decision making from the Konglomorov-Smirnov test, the results normal if the significance value $\alpha > 0.05$, which means that the data from the variable dimensions of the number of exudates are normally distributed.

Table 3.7.

Normality Test Results Dimensions Wound Area with One Sample Konglomorov-Smirnov

	Unstandardized
N	11
Mean	0.0000000
Std. Deviation	0.37515429
Statistical Test	0.225
Asymp. Sig (2-Tailed)	0.126

Based on table 3.7 the significance value on the dimension of the wound area is at the value 0.126. These results indicate that the significance value > 0.05 is in

accordance with the basis for decision making from the Konglomorov-Smirnov test, the results normal if the significance value $\alpha > 0.05$, which means that the data from the variable dimensions of the wound area are normally distributed.

Table 3.8.

Normality Test Results Dimensions Total of Epithelialization with One Sample Konglomorov-Smirnov

	Unstandardized
N	11
Mean	0.0000000
Std. Deviation	0.45607017
Statistical Test	0.237
Asymp. Sig (2-Tailed)	0.86

Based on table 3.8, the significance value on the dimension of the amount of epithelialization is at the value 0.086. These results indicate that the significance value > 0.05 is in accordance with the basis for decision making from the Konglomorov-Smirnov test, normal if the significance value $\alpha > 0.05$, which means that the data from the variable dimensions of the total of epithelialization are normally distributed.

3.2.2. Result of Paired T-Test

Table 3.9.

Paired T test on variable usage Transparent Film with the Paired Samples Test

Pair 1 PreColor - Post Color		
Mean	.54545	
Std. Deviation	.68755	
Std. Mean Error	.20730	
95% Confidence	Lower	.08355
	Upper	1.00736
t	2.631	
df	10	
Sig. (2 tailed)	.025	

Based on table 3.9, it is known that the significance value at paired sample t-test that is Transparent Film which is equal to 0.025, then the pre-test and post-test on the variable dimensions of skin color around the wound experienced a significant change. This indicates that use transparent film dressing can effectively prevent maceration seen from the skin color around the wound has improved.

Table 3.10.

Paired T Test on Variable Occurrence of Maceration with Paired Samples Test

	Exudate	Large	Epithelium
Mean	.54545	.63636	.36364
Std. Deviation	.68755	.50452	.50452
Std. Mean Error	.20730	.15212	.15212
95% Conf.	Lower	.08355	.29742
	Upper	1.00736	.97531
T	2.631	4.183	2.390
Df	10	10	10
Sig. (2 tailed)	.025	.002	.038

Based on table 3.10 it is known that the significance value at paired sample t-test that is be accepted. The significance value of the dependent variable on the occurrence of maceration is 0.025 on the dimension of the amount of exudates, so the pre-test and post-test on the dimension of the number of exudates are significant. The significance value on the dimension of the wound area variable is 0.002 or <0.05, so the pre-test and post-test on the dimensions of the wound area are significant. The significance value on the dimension of the amount of epithelialization is 0.038 or <0.05, so the pre-test and post-test on the dimension of the number of epithelializations are significant.

3.3. Correlation Test Results

Table 3.11.
Correlation test results
(pearson product moment)

	Transparent film dressing against maceration
Total data (N)	11
Pearson correlation results	0.690
Sign value. (2 tailed)	0.019

It is known that the significance value between variables if the significance value is <0.05 means that there is a correlation between effectiveness transparent film dressing and the result did not occur maceration. Correlation results pearson product moment among the effectiveness variables transparent film dressing, the maceration in the table above shows a value of 0.690, meaning the correlation between the effectiveness variables transparent film dressing and maceration there is an inter-variable effectiveness of 69%. In other words it can be said that transparent film dressing as skin barrier protection can effectively prevent maceration with a success rate of 69%.

IV. DISCUSSION

4.1. Univariate Discussion

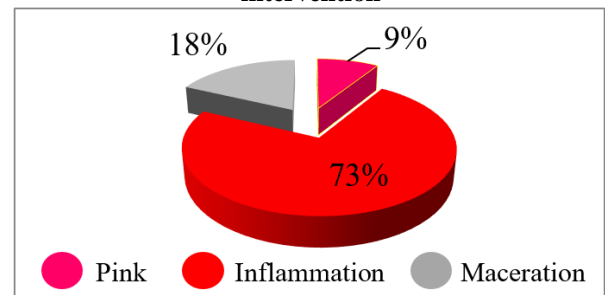
4.1.1.Frequency Distribution Before Using Transparent film dressing

The results of research conducted in Bilqiss Medika Clinic Bekasi, found 11 respondents with acute and chronic wounds in the wound care process. Transparent film dressing as skin barrier protection to prevent maceration around the wound that is at risk of worsening the wound condition. Sampling data was collected by observing patients before and after use Transparent film dressing as skin barrier protection. The basis for observations is made by taking a modified measuring instrument Bates-Jensen wound assessment tools, 2011 to measure the categorical and magnitude intervals of these conditions from a scale of good, midle and bad.

The research carried out is related to transparent film dressing pre intervention, data is known from the results of observations which are documented on the observation sheet. Observations made by researchers before the

respondents used Transparent film dressing, it is known that 1 client (9%) with skin color around the normal wound (pink), 2 clients (18%) whose skin color around the wound looks pale due to maceration in the area of inflammation. In addition, the red color in the wound area indicates that the area around the wound is inflammation, it is known that 8 clients (73%) inflammation in the skin area around the wound.

Figure 4.1. Skin area around the wound pre – intervention



The results of previous research conducted by Rolstad et al (1994), stated that there were differences in skin conditions around the wound between the use of alcohol-based products and polymer-based products (transparent film) as a skin management product on periwound. The research was conducted with how to gradually manage the edges of the wound based on a sample of 30 patients with chronic wounds. The result was 19 wounded patients who managed to give better progress in terms of the color of the skin around the wound using skin barrier protection with polymer base ingredients.

According to Dowsett .C, Gronemann and Harding (Wounds International, 2015) it is stated that maceration is skin softening and damage due to prolonged exposure to moisture and wound exudates and can prevent cell migration across the wound surface and cause pain and discomfort to the patient. Maceration can appear white / pale around the area of inflammation, The first research into use transparent film dressing made from polymer by George D. Winter with the concept of using moist wound care parafilm or first generation transparent film dressing (Journal Nature, 1962). According to woundcare handbook (2018), transparent dressing effectively used to reduce the inflammatory phase.

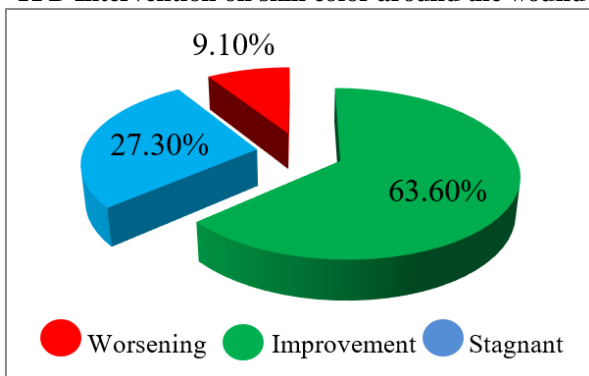
It is known that the most number of respondents are clients with inflammatory conditions (inflammation) in the skin area around the wound, if this condition is accompanied by a large amount of exudate (wound fluid), the risk of maceration will increase. Prevention of inflammation that leads to maceration needs to be applied skin barrier. Transparent film dressing is an option skin barrier which is appropriate in inflammatory conditions in the wound area, because it can effectively protect the skin around the wound and also supports the migration of epithelial cells. Transparent film dressings is a dressing that is used to control the inflammatory phase and is used in the condition the first stadium of wound, because most of the risk of damage to the skin at the edges of the wound is worsened due to the

process, delay inflammation. The nature of the material transparent film dressing is a waterproof based material or does not absorb water so it is used to protect the wound edges from the risk of maceration periwound.

4.1.2. Frequency Distributions Pre-test and Post-test TFD Intervention on Skin Color around the Wound

Post pairing intervention transparent film dressing in a period of 4 meetings, the result was an improvement in wound edges in 7 clients (63.6%), worsening in 1 client (9.1%) and a stagnant condition in 3 clients (27.3%). Based on this explanation, it can be seen that the totally of patients with improved skin color around the wound was 7 clients with a percentage of 63.6% of the total 11 respondents studied. These results provide that information transparent film dressing experimentally able to maintain and improve the condition of the skin around the wound to prevent deterioration and even recovered 63.6% of the total 11 respondents who were observed.

Figure 4.2. Frequency distribution pretest and posttest TFD Intervention on skin color around the wound



The theory of Rottmann et al (1993) states that skin barrier protection, the good thing is to use a bandage that can stick tightly, preventing the risk of damage to the integrity of the skin, materials that can be used include film. In the wound care handbook (2018) stated that transparent film dressing can be used to reduce the inflammatory phase. According to Dhypya S (2015) states that transparent film dressing is a form of dressing transparent and polyurethane as air transmission and evaporation.

Analysis of the frequency distribution carried out by the researcher, before using transparent film dressing, from 11 samples of respondents, there were 8 clients (73%) in the inflammatory category (red), 1 client (9%) in the normal category (pink) and 2 clients (18%) in the maceration category (pale). After using transparent film dressing there were 4 clients (36%) in the inflammatory category, 6 clients (55%) in the normal category and 1 client (9%) in the pale category.

The results of the univariate analysis of the study provided information that there was an increase in the total of patients with an improvement in skin color around the wound to normal. The skin condition in most respondents avoids the risk of skin integrity due to the nature of the sticking strength (adhesive) on transparent film which

effectively protects the wound edges. Normal skin color around the wound or pink color indicates that transparent film dressing succeeded in preventing maceration. The condition of maceration which is white or pale in color due to the moist area around the wound, this condition can be effectively prevented by the material polyuretan transparent film which can transmits the air. Due to the fact that no one has conducted studies related to skin color around the wound using transparent film dressings, so the authors cannot compare the results of this study with other studies. Meanwhile, the results obtained by the authors are quite significant transparent film dressing provides an improvement in the color of the skin around the wound which indicates an improvement in preventing maceration.

4.1.3. Frequency Distribution After used Transparent film dressing

Used transparent film dressing carried out as an effort to prevent maceration in the skin area around the wound. The basis of observation was carried out using the Betes-Jensen modification indicator pre and post intervention methods transparent film dressing for 4 meetings. Indicators of maceration can be seen from the amount of exudate in the wound, the extent of the wound and the amount of epithelialization that occurs. If everything is good, it indicates that there is effectiveness after using transparent film dressing.

Research conducted by researchers after observing 11 respondents with acute and chronic wound conditions showed that there were 8 clients (73%) with maceration levels in red or at the level of inflammation. Patients with this condition if do not management to skin barrier, it will worsen maceration. Based on the frequency distribution before using transparent film dressing, there were 2 clients (18%) in the small exudate category, 5 clients (45%) in the moderate category and 4 clients (36%) in the large exudate category. After using skin barrier protection transparent film dressing, carried out post intervention observations. As a result, there were 6 clients (55%) with a small amount of exudate, 4 clients (36%) in the moderate category and 1 client (9%) with a large number of exudates. The frequency distribution of the amount of repair in wound fluid (exudate) that occurred after post intervention was 7 clients (63.6%). This means that there is success from using a transparent film dressing to reduce the amount of exudate.

Figure 4.3. Amount of exudate pre-intervention

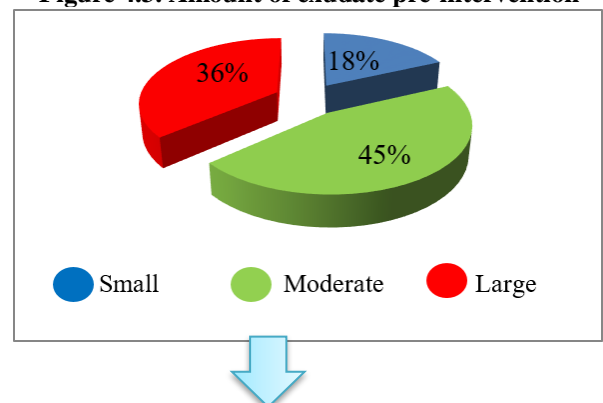
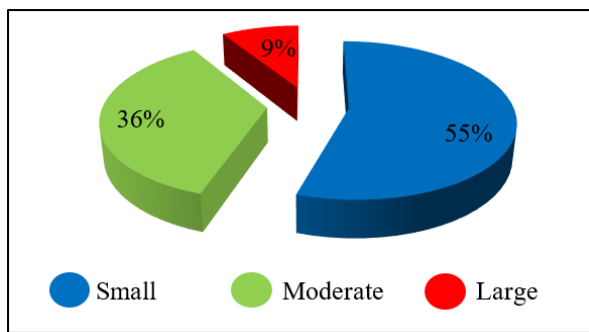


Figure 4.4. Amount of exudate post – intervention

The results of post-intervention in the epithelialization category were 4 clients (36%) with poor epithelialization conditions, 6 clients (55%) with moderate epithelialization conditions, about 40-75% epithelialization, and 1 client (9%) with good epithelialization conditions, 100% epithelial repair occurs. It means that there is skin barrier transparent film dressing can support the migration of epithelial cells to repair in wound healing process. The epithelium that has undergone repair can be seen from the area of the wound that has small size. The results of post intervention in the category of wound area were 5 clients (45%) with a moderate area of about 5-10 cm, then in the small area category there were 6 clients (55%), there was no wound area with a large wound area category after post intervention observation. This means that there is improvement in the wound, which is known from the smaller size of the wound.

The results of the study by Cutting F. (2002) evaluated 53 patients with a set dressing used to skin barrier using polymeric materials such as transparent film dressing. The average patient condition had a lot of exudate with the time parameter of completion of observation for 4 weeks. The results showed that 42 clients from a total of 53 wounded patients who had more exudate began to decrease and resulted in a percentage value of 71.5% not maceration.

White & Cutting (2003) states that the greater the amount of exudate can increase the risk of maceration in the skin area around the wound. The cause of maceration itself occurs due to fluid from the production of wounds (exudate), a problem with urinary or fecal incontinence (Cutting and White, 2002) which results in damage to the wound edges (JWC, 2002). The source of the liquid in the discussion maceration as a cause of epithelial damage is different in terms of acute and chronic wounds, of course, the type of fluid is also different. The fluid in acute wounds contains a metalloproteinase derived from an active enzyme such as PolyMorpho Nuclearcyte (PMN). The fluid in chronic wounds contains blood serum such as platelets, erythrocytes and sometimes appears purulent due to the presence of electrolyte-type fluids as a result of the body's resistance to microorganisms (Romanelli, 2016). Indications that indicate the occurrence or will occur maceration are also found in the Bates-Jensen (2011) modification measurement tool, namely amount of exudates, the area of the wound and the amount of epithelialization that occurs. If the amount of exudate is in the large category, it indicates

that maceration will occur if the application is not carried out skin barrier protection. The large amount of wound fluid will affect the moisture level in the area around the wound.

The smaller amount of exudate provides an indicator that it can control the risk of maceration becoming smaller. The amount of exudate is getting less and indicating that the wound is starting to be in the direction of repair so that it can move to a stage proliferation tissue. Existence transparent film can be support repair of wound edges, encouraging epithelial cells to migrate more. The condition of the amount of exudate can be controlled in an interrelated way, preventing worsening of the wound starting from the edge of the wound first so that it is maintained and there is no widening of the wound. Transparent film dressing effectively prevent worsening of inflammation and maceration, starting from the improvement of the amount of exudate that is not controlled. Previous research showed that the indicator of non-occurrence of maceration focused on amount of exudates that had decreased by intervening skin barrier. However, what the researchers did, the indicator did not only focus on the amount of exudate, but was added with another indicator, namely the amount of epithelialization and ended up calculating the area of the wound. The success rate is more significant with assessing these three indicators as an illustration that the amount of exudate is decreasing, the epithelium will increase so that the effect on the area of the wound will be smaller. This is a sign of success from transparent film dressing as skin barrier protection.

4.1.4. Frequency Distribution of TFD Intervention Pre-test and Post-test on the amount of Exudates

Analysis of the distribution of pre-test and post-test interventions carried out by the researcher, after using transparent film dressing the result is an improvement in 7 clients (63.6%), worsening in 1 client and stagnant conditions in 3 clients. After the intervention transparent film dressing, it can be seen that the number of patients with the improvement of the amount of exudates is getting smaller, there are 7 clients with a percentage of 63.6% from the total 11 samples studied so that it has an effect on decreasing the rate of maceration.

According to Cutting and White (2002), it is explained that the cause of maceration occurs because of the fluid from the exudate which causes damage to the wound edges. The wetness of the wound and the wound edges causes too long moisturization and makes it difficult to heal the wound (JWC, 2002). The skin around the wound is unprotected skin barrier protection will happened swelling and epithelial damage or widespread damage to the wound. Indications for using transparent film dressing it is very necessary, so that the wound edge area does not deteriorate due to maceration.

The small amount of exudates happened by respondents during the post-test observation period indicates that Transparent film dressing has a significant effect on the amount of exudate in the wound which provides a risk for maceration. Skin barrier can be said to be successful if it can overcome the risk of worsening the wound, help dressing and wound healing processes to reduce exudate levels in

acute and chronic wounds. It can be concluded that use transparent film dressing can prevent the risk of maceration in wounds, because of the purpose of using the material transparent film dressing to block the wound fluid from affecting the edges of the wound so that damage does not occur and support the epithelium goes according to the physiological stage of the wound healing process.

4.1.5. Frequency Distribution of the Pre-test and Post-test TFD Intervention on the Wound Area

The results of the observation of the area of the wound before the intervention transparent film dressing there were 3 clients (27%) in the large category, 6 clients (55%) in the medium category and 2 client (18%) in the small category. The extent of the wounds found in the 11 respondents, after the intervention Transparent film dressing, the results of the pre-test and post-test observations showed that 7 clients (63.6%) an improvement in the area of the wound which was getting smaller, 4 clients (36.4%) were in a stagnant condition and there were no clients worsening. After the intervention transparent film dressing, Amount of respondents in the small category became 6 clients (55%) and the moderate category became 5 clients (45%), no number of respondent with large wound category.

Figure 4.5. Wound area pre - intervention

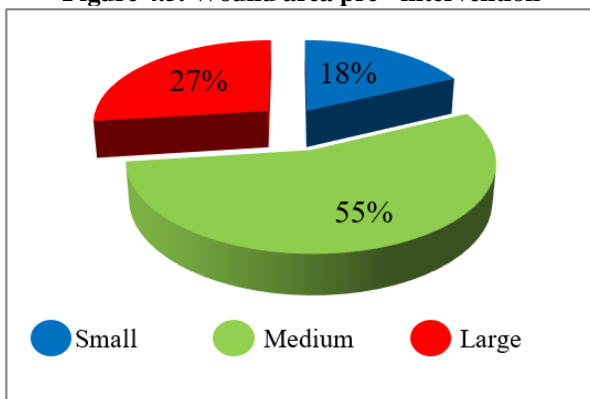
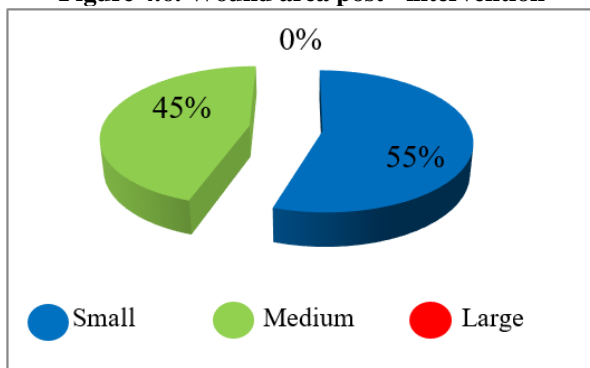


Figure 4.6. Wound area post - intervention



According to the measuring instrument in the form of the Bates Jensen tools assesment (2011), the wound healing process can be seen from the wound area indicator, and it can be calculated how long the wound has healed based on the score of each indicator including the area of the wound.

Cameron and Newton (2003) explained that the significance of injury to the edge of the wound can be different depending on the area or location of the wound on the leg or chest. A large wound area and a small wound area will provide different types of maceration depending on the location of the wound on the body area.

Maceration is an indicator of deterioration in wounds, if maceration occurs the area of the wound will widen. Use Transparent film dressing on the skin area around the wound on the contrary, shown to maintain wound area at a stagnant diameter and repair. Treatment of damaged skin around the wound will be the same using skin barrier protection as a form of prophylactic therapy appropriate for prevent maceration. The point is to protect the width of the wound, the epithelialization must be maintained and formed starting from the well-preserved wound edges. The area of wound will improvement marked by the reduction in size of the wound. This indicates that the epithelium is successfully protected, meaning that Transparent film dressing succeeded in preventing maceration in the wound healing process and preparing the process for the next phase.

4.1.6. Frequency Distribution of TFD Intervention Pre-test and Post-test on Amount of Epithelialization

Observation results before using transparent film dressing in terms amount degrees of epithelialization there were 8 clients (73%) with poor epithelialization, 2 clients (18%) with moderate epithelialization, and 1 clients (9%) with high epithelialization. After using transparent film dressing there were 4 clients (36%) with poor epithelialization, 6 clients (55%) with moderate epithelialization, and 1 clients (9%) with high epithelialization. A decrease in the worsening of epithelialization indicates that the epithelial cells can be properly maintained skin barrier transparent film dressing. The observation result of pre-test and post-test intervention showed that there was a 45.4% improvement. The stagnant condition which indicates that the epithelium is awake and do not worsening is known to be 54.6%.

Figure 4.7. Amount of epithelialization pre intervention

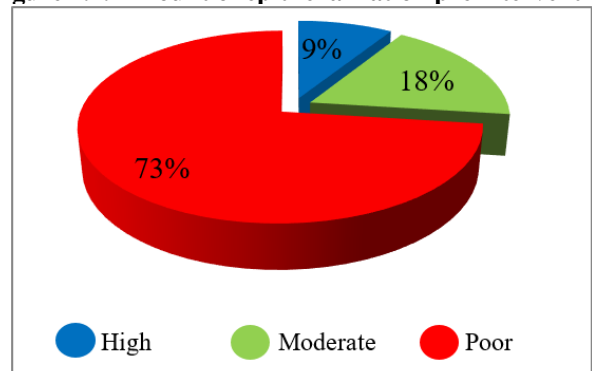
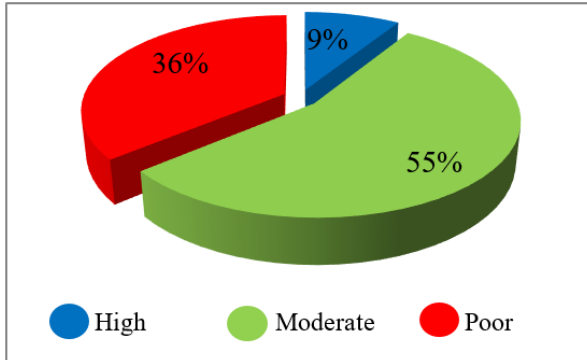


Figure 4.8. Amount of epithelialization post intervention

Purpose of use transparent film dressing is to protect the epithelium by protecting the skin area around the wound from infection, inflammation and deterioration such as maceration. According to Halim et al (2012), controlling infection and inflammation must be increased to reduce the protease level to a normal level which makes the skin's biochemical balance conditions, so that epithelial cells can replicate. According to WOCN (2016) skin barrier protection needed to support the epithelium from being damaged. Transparent film dressing is skin barrier which is right because of its thinness and nature adhesive can prevent of infection and inflammation.

The epithelium that is shrinking and not deterioration indicates that transparent film dressing successfully intervened in the prevention of maceration, seen from the degree of epithelialization which is getting better and not getting worse. The skin around of wound that is still in the inflammatory stage which can be handled properly can provide a stimulus to the epithelium, so that it can proceed to the next stage, namely the proliferation phase. An improved amount of epithelialization may indicate that transparent film dressing succeeded as a skin barrier protection to prevent deterioration of the skin area around the wound or prevent maceration.

4.2. Bivariate Discussion

To test the average of two groups of data with a comparison of the time before and after the intervention used the Paired Sample T-Test. The average of the two data groups can be said to be the same if the significance value of the t test (2 tail sig.) Is smaller than the significance level (α) = 0.05.

4.2.1. Effectiveness of Use Transparent film dressing Before Maceration Occurs

The distribution of data in the pre-test and post-test dimensions of skin color around the wound was normally distributed, indicated Normality Test by the Konglomorov-Smirnov. The basis for decision making from the Konglomorov-Smirnov test is normal if the significance value > 0.05. The significance value on the dimensions of skin color around the wound is at a value of 0.76, which means that the data is normally distributed. The results of the study on the pretest-posttest dimensions of skin color around the wound showed significant results (improvement), marked by a significant t-value after doing paired sample t-

test which is 0.025 or < 0.05 Transparent film dressing as skin barrier. This result is in accordance with the opinion of Dowsett, Gronemann and Harding (Wounds International, 2015) that the indication of maceration is white / pale in the area around the wound, by doing treatment the right one can reduce the occurrence of inflammation in the area around the wound.

The significance value in the Amount of Exudate Dimension is at a value of 0.89, which means that the data is normally distributed. The results of the research on the pretest-posttest dimension amount of exudates showed significant results (improvement), marked by the significance value of the t-value after paired sample t-test is 0.025 or < 0.05. It means effectiveness using Transparent film dressing as skin barrier. These results are in accordance with the opinion of Cutting and White (JWC, 2002), the cause of maceration occurs due to fluid from the production of wounds (exudate), problems with urinary or fecal incontinence, resulting in damage to the wound edges. Opinions regarding use Transparent film dressing as skin barrier also strengthened by Dhypya. S (2015), transparent film dressing a form of transparent and thin adhesive polyurethane dressings as air transmission and evaporation forms.

The significance value of the Wound Area Dimension is at a value of 0.126, which means that the data is normally distributed. The results of the study on the pre-test - post-test dimensions of the wound area showed significant results (improvement), marked by the significance value of the t-value after the test was carried out paired sample t-test which is 0.002 or < 0.05. Its mean effectiveness using Transparent film dressing as skin barrier because the dimensions of the wound area are significant and shrink or smaller. The results of this study are in accordance with the research and opinion of Cameron and Newton (2003) that the area of the wound on the leg will be different from the wound on the chest or abdomen, so that prophylactic therapy or more accurately known as skin barrier protection is necessary to prevent maceration.

The significance value on the dimension of the amount of epithelialization is at a value of 0.86, which means that the data is normally distributed. The results of the research on the pretest - posttest dimension of the amount of epithelialization showed significant results (improvement), which was indicated by the significance value of the t-value after the test was carried out. paired sample t-test which is 0.038 or < 0.05. Its mean effectiveness usng transparent film dressing as skin barrier. This result This is directly proportional to the opinion of Halim, Khoo & Saad (2012) that controlling infection and inflammation must be increased to reduce the protease level to a normal level which makes the skin biochemical conditions balance, so that epithelial cells can replicate. The amount of epithelialization that is improving indicates that transparent film dressing effectively intervention in the prevention of maceration.

4.2.2. Usage Correlation Analysis Transparent film dressing against Maceration Prevention

The results of this study indicate that pre-test and post-test each dimension on the Usage variable Transparent Film as skin barrier shows significant results, there is a significance in the use variable transparent film on the dimensions of the color around the wound which is equal to 0.025. Then there is a significance in the variable occurrence of maceration in the dimensions of amount exudates, the area of the wound and the occurrence of epithelialization of 0.025; 0.002 and 0.038. In accordance with research by Garish Patel (2011) that use dressing right on the area around the wound can effectively prevent maceration in the area around the wound. Use transparent film dressing as skin barrier protection to prevent maceration giving positive results for patients with acute and chronic wounds. Besides being able to control inflammation so that it doesn't get to the maceration stage (worsening) transparent film dressing can maintain epithelial cells to encourage repair. Researchers advise all wound care practitioners to use transparent film dressing as skin barrier protection for wound care with a closed concept in order to get the maximum moisture balance.

The results of this analysis, it can be concluded that the use of transparent film dressing can effectively prevent the level of maceration in the skin area around the wound, as evidenced by the t-test value in all aspects of the indicator which shows a significant value. Table 5.21 shows the value The significance is 0.019 or < 0.05 its mean transparent film dressing and the result did not occur maceration. Result of correlation analysis pearson product moment among the effectiveness variables transparent film dressing, the maceration in table 5.21 shows a value of 0.690. This means that the correlation between the effectiveness variables transparent film dressing and maceration there is an inter-variable effectiveness of 69%. The results of this study are in accordance with research conducted by cutting (2002) which give 71.5% results that by doing management skin barrier which can effectively prevent worsening towards maceration. In other words it can be said that transparent film dressing as skin barrier protection can effectively prevent maceration with a success rate of 69%.

V. CONCLUSIONS AND SUGGESTIONS

5.1. Conclusion

After doing research on usage transparent film dressing as skin barrier on the edges of the wound with various types of wound types and causes, the results were proven to be effective in preventing maceration. This study provides results that H_0 is accepted, meaning that there is effectiveness in use transparent film dressing as skin barrier protection to prevent maceration in the wound care process with an effectiveness value of 69% in acute and chronic wound conditions. Skin barrier protection in the process of wound care is the main capital to migrate epithelial cells with the aim of the wound healing process occurring physiologically, therefore in this study using transparent film dressing which is proven to be effective in preventing maceration complications and can support as well as the

migration of epithelial cells to perform their duties in the wound healing process.

Some of the conclusions obtained include:

1. Frequency distribution data before use transparent film dressing it is known that the most number of respondents are clients with conditions inflammation in the skin area around the wound, if the condition is accompanied by a large amount of exudate (wound fluid) then there is a risk maceration occurs will increase.
2. Frequency distribution data after using transparent film dressing is known transparent film dressing effectively prevent worsening of inflammation and maceration, starting from the improvement of the amount of exudate that is not controlled. Existence transparent film can be support repair the edges of the wound, push up the epithelial cells to do more migrations. The condition of the amount of exudate can be controlled in an inter related way, preventing worsening of the wound starting from the edge of the wound first so that it is maintained and not happened wide injury to the wound.
3. Data on the frequency distribution of pre-test and post-test intervention on skin color categories around the wound provide information that there is an increase in the number of patients with improvement of skin color around the wound towards normal. The skin condition in most respondents avoids the risk of skin integrity due to the nature of the sticking strength (adhesive) on transparent film which effectively protects the wound edges. Normal skin color around the wound or pink color indicates that transparent film dressing succeeded in preventing maceration.
4. The pre-test and post-test frequency distribution data of the intervention category of the amount of exudates provide information about less amount of exudate by respondents during the post-test observation period, show that Transparent film dressing has a significant effect on the amount of exudate in the wound which provides a risk for maceration.
5. Data on the frequency distribution of pre-test and post-test intervention broad categories of wounds provide information regarding use transparent film dressing in the area of the skin around the wound, proven to keep the wound area at a stagnant diameter and repair. Handling of damage the skin around the wound will be the same using skin barrier protection as an appropriate form of prophylactic therapy to prevent maceration.
6. Data on the frequency distribution of pre-test and post-test intervention categories of the amount of epithelialization showed epitel that shrinks and do not worsening. These data can be concluded that transparent film dressing succeeded in intervention to prevent maceration, seen from the degree of epithelialization which is getting better and do not worsening. The skin around the wound that is still in the inflammatory stage that can be handled properly can provide a stimulus to the epithelium, so that they can continue to the next stage, the proliferation phase.
7. Effectiveness of use transparent film dressing before maceration occurs, it can be seen from the significance value on each variable dimension, the amount of

exudate, wound area and epithelialization. The significance value of each variable dimension shows a significant result (improvement). This means that there is effective use transparent film dressing as skin barrier.

8. The correlation between the use of transparent film dressings and the prevention of maceration showed a positive relationship. The meaning transparent film dressing as skin barrier protection can effectively prevent maceration.

5.2. Suggestion

1. For the Bilqiss Medika institution, the results of this research can be used as a reference or as a new way of doing skin barrieredge of the wound in preventing maceration by using transparent film dressing. Standard operational procedures at Bilqiss Medika materials are used skin barrier protection with hydrocolloid dressing and zinc oxydes so by assessing the effectiveness transparent film dressingcan be used as another option in the choice to prevent maceration.
2. For the wound nurse, the results of this study are suggested to be used and applied as a new method for conducting focused wound care management skin barrier wound edges to speed up the wound healing process at a lower cost than using hydrocolloid, however, special skills are required in the application of transparent film dressing to protect the edges of the wound.
3. For educational institutions, the results of this research can be used as a reference for conducting other studies, especially in wound care methods and can be used as a model for the development of modern wound care science.
4. For further researchers, The results of this study can be used as materials for further research with different variables so that developments in the science of wound care can continue to be improved and can provide new breakthroughs as a modification to achieve the results of the wound healing process by prioritizing value. Cost effective as a principle of modern wound care.

Declaration of competing interest

The author declares no competing interests that might be perceived as influencing the results of this paper.

Source of funding

None

Ethical approval

I declare on my honor that the ethical approval has been exempted by my establishment

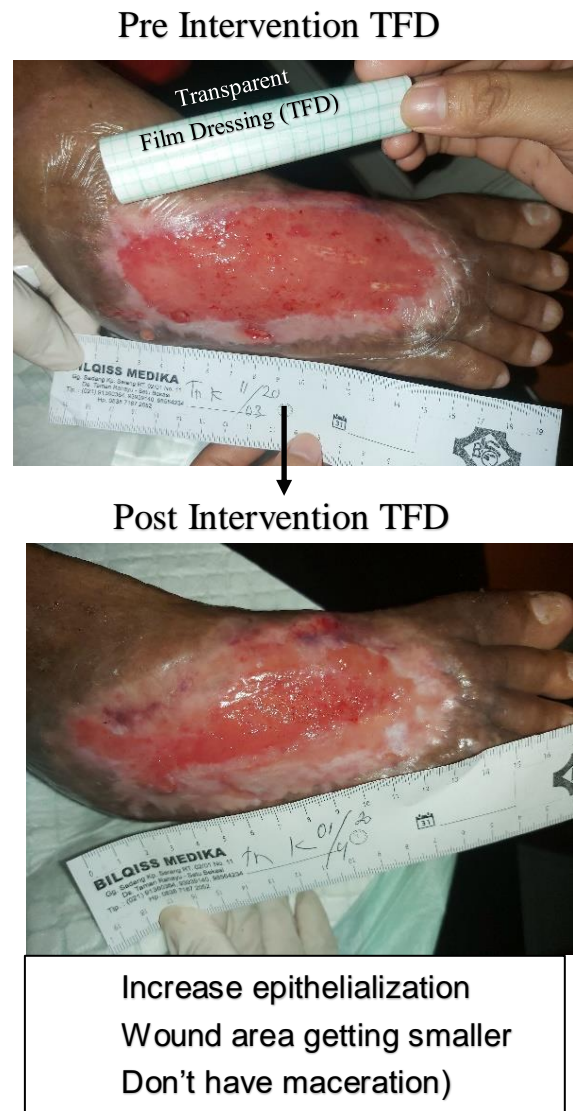
Data availability

The author declares that the data contained in this study are true and available. Written informed consent for publication of their clinical image from the patient.

GRAPHICAL ABSTRACT

Normal skin that is too moist for long time will become macerated. Likewise with the condition of the wound that is in the healing period using modern dressings with a moist concept, the skin around the wound can be

protected with a transparent film dressing as skin barrier so that maceration does not occur.



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