# THE PREVENTION OF ULCERS DECUBITUS WITH MOBILIZATION AND THE USAGE OF OLIVE OIL ON STROKE PATIENTS

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**Abstract**: Decubitus ulcers are one of the problems experienced by bed rest patients, such as stroke patients, caused by immobilization. Prevention of decubitus ulcers can be done with mobilization and topical application of olive oil. Olive oil contains saturated fatty acids, unsaturated fatty acids, vitamin E, and phenols which are healthy for the skin. This research aims to identify the effects of mobilization and application of olive oil on the prevention of decubitus ulcers in stroke patients. A control group pretest-posttest quasi-experimental design was used in the research. Convenience (non-probability) sampling was also carried out, resulting in 64 research samples. Mobilization intervention of right-left oblique positions and application of olive oil on the area prone to decubitus ulcers were then executed for seven days. Data analysis using the Wilcoxon signed-rank test showed the effects of mobilization and application of olive oil on the preventions of decubitus ulcers in stroke patients with a value of P= <0.05.
**Keywords**: Stroke; Decubitus ulcers; Mobilization; olive oil

**Abstrak**: Ulkus dekubitus merupakan salah satu masalah yang dialami pasien tirah baring seperti pasien stroke, dengan faktor penyebabnya adalah immobilisasi, tindakan pencegahan ulkus dekubitus dapat dilkukan dengan mobilisasi dan pemberian bahan oles seperti minyak zaitun, minyak zaitun kandungannya terdiri dari asam lemak jenuh, asam lemak tak jenuh, vitamin E dan fenolik yang baik untuk kesehatan kulit. Penelitian ini bertujuan untuk mengidentifikasi pengaruh mobilisasi dan penggunaan minyak zaitun terhadap pencegahan ulkus dekubitus pada pasien stroke. Penelitian menggunakan desain *Quasi-experimental* dengan *pretest- posttest with countrol gruopdesign.Convenience (Non-probability)* dilakukan untuk pengambilan sampel, jumlah sampel penelitian 64. Intervensi mobilisasi miring kanan dan kiri kemudian bagian yang akan terjadi ulkus dekubitus diolesi minyak zaitun,intervensi dilakukan selama tujuh hari. Analisa data *Wilcoson signed -rank test* menunjukan adanya pengaruh mobilisasi dan penggunaan minyak zaitun terhadap pencegahan ulkus dekubitus pada pasien stroke dangan nilai P= <0,05. Mobilisasi miring kanan dan kiri penggunaan minyak zaitun dapat mencegah ulkus dekubitus.
**Kata kunci**: Stroke; ulkus dekubitus; mobilisasi; minyak zaitun

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## Introduction

Stroke is a disturbance of blood supply that causes neurological change, it has two types namely ischemic stroke and hemorrhagic stroke, ischemic stroke is the damage of brain tissue caused by a blocked artery, while a hemorrhagic stroke occurs when there is bleeding into the brain (Black & Hawks, 2014).

It was reported that, in 2013, globally, there were 6.5 billion people died due to stroke, stroke is the fifth rank of non-communicable disease that causes death (AHA, 2017). Stroke is the cause of the primary neurologic occurrence, it was reported in 2013, 100.000 people per year suffering from a stroke in Latin America (Stambler &Scazzuso, 2016). In South Korea, some people are over 30 years old suffering from stroke, and 80% had an ischemic stroke (Lee et al., 2019)

Stroke is the third leading cause of death and the cause of disability in Indonesia (Indonesia Stroke Society, 2018). Stroke is especially a serious problem in Indonesia, there were 8.3 stroke survivors among 1,000 Indonesian, the highest prevalence of stroke occurs in East Kalimantan was 14.7%, and North Sulawesi was 14.3% (RISKEDAS, 2018).

A long time bed rest on Stroke patient causes Decubitus Ulcer, The most commonplace of Decubitus Ulcer are at the back of the head, back, elbow, sacrum, joints in the feet and heels (Rosdahl & Kawalski, 2015). Decubitus Ulcer a localized injury to the skin or underlying tissue, usually over a bony prominence, as a result of prolonged pressure, exerted s in bed-ridden patients due to incontinence, a long period time decreased awareness, and malnutrition (Potter & Perry, 2010).

The incidence of Pressure Ulcers depends on the quality of Nursing Care, it was reported in Europe 22.7% of 1083 European was registered Pressure Ulcers in England, there were 22% of 122 hospitals was registered Decubitus Ulcers ( Chitambira & Evans, 2018). In 2016, research conducted in four hospitals in Indonesia was found that 91 of 1132 respondents were registered Decubitus Ulcer (Amir et al., 2016). In Indonesia, stroke suffer was found 25%, It was reported that 88.8% of Decubitus Ulcer usually occurs in immobilization patients after three days of hospitalization (Tarihoran et al., 2010).

One of the nursing interventions to prevent Decubitus Ulcer from immobilization patients is by doing mobilization. Risk factors of immobility, lack of sensation, the occurrence of friction, and blood supply disturbance can be solved through routine patient mobilization prevention (Chitambira & Evans, 2018).

Skincare is one of the interventions to prevent Decubitus Ulcer, beside mobilization. Herbal Oil that is used to prevent Decubitues Ucler patients is Olive or Zaitun. The Olive tree is the oldest blessed tree given by Allah SWT, it has many benefits, the wood can be used for firewood, the fruit and the oil can be used for food and good medicine to cure many diseases, as narrated by Umar bin Khattab r.a that Rasulullah SAW said," eat and be greasy with olive oil because it is the blessed (Khilyatun, 2018). Olive oil is composed of triglycerides (saturated and non-saturated fatty acids), vitamin E, and phenolic w\which serves for skincare.

A lot of research was conducted on mobilization and olive oil prevention, such as Ho do et al (2016), it aims to see the repositioning effectiveness 0 °, 15 °, 30 °, dan 45 °, it was found that 30 ° dan 45 ° reposition was effective to prevent a pressure ulcer. Nasiri et al. (2015) conducted research which aims to see the effect of olive oil intervention on diabetic wound patient. It was found that olive oil intervention affects the healing of wounds on a leg of diabetes respondent.

All this time, nursing is seldom to do prevention in term of combination between mobilization and olive oil intake to prevent Decubitus Ulcer, the situation carry out the researcher interest in exploring whether mobilization and olive oil prevention are more effective to prevent Decubitus Ulcer, especially to stroke patient that registered immobilization and bed rest. This research aims to know how mobilization and olive oil intervention effect in preventing decubitus ulcers in stroke patients.

**Methods**

The research design was a quasi-experimental, pretest-posttest method with control design. The research was conducted in Ruang Rindu A at H. Adam Malik hospital in Medan. Sample of the research were those patients who were included in inclusion criteria were, newly hospitalized patient in inpatient room with a diagnosis, immobilized patient, paralysis with muscle strong 0 up to four extra part dextra (right side), sinistra (left side), or both, no sensitive history of products containing olive, meanwhile the exclusion criteria were uncooperative patient condition, experiencing intracranial pressure, has been registered decubitus ulcer and oedema (+) in the lower extremities.

The number of samples obtained was 64 respondents, with 32 respondents was assigned to the intervention and control for each. The research preparation was started by conducting ethical clearance with number 1571/X/SP/2018, it continued with proposing a research permit from the Nursing Faculty of Universitas Sumatera Utara Medan which was given to research and community service affairs in H. Adam Malik Hospital, Medan.

**Pre-test Stage**

The first stage was looking for the inclusion respondent after receiving the research permit, after founding the respondent, the researcher introduced himself and told on his purpose and research procedure to the respondent or respondent's family, to get a legal agreement, the respondent or his family signed informed consent to become a respondent of the research.

**Intervention Stage**

The researcher conducted risk measurement of decubitus ulcer by using a decubitus ulcer observation sheet by using Braden scale before giving intervention, then after getting the risk measurement the researcher continued with given mobilization intervention, and olive oil, mobilization is given in form of changing the position to the left and right side with the following ways, respondent was lying, then the researcher adjusted the position in the right and left side of the patient, then sad the patient to before you, then put the pillow between the chest, abdomen, and legs of the respondent, these position changes was conducted for two hours (Kozier & Erb's, 2010) and then did skincare by using olive oil containing 70 % fatty acid, it was given for 15ml, then poured into hand-rubbed evenly over the skin surface where decubitus Ulcer occurred such as back head, back, hand, feet, and knees, giving olive oil twice a day for 10 – 15 minutes (Madadi, Zeighami, & Javadi, 2015). The Control group was given only intervention on the left and right tilt mobilization without olive oil skincare.

**Post-test stage**

Mobilization intervention and olive oil intake were given for seven days for the control group by room nurse. After seven days of intervention, a risk measurement on decubitus ulcer was conducted on the eighth day by using the observation sheet Barden scale to know whether there is decubitus ulcer reduced risk, then it was documented in the observation tabulation sheet. This research employed univariate analysis with descriptive analysis (frequency distribution) and bivariate analysis with a Wilcoxon signed-rank test.

**A** **B**

**Figure 1. A.** Left and right tilt mobilization and olive oil intake. **B**. Skin that has been smeared with olive oil

## Result and Discussion

### Respondent Characteristics

The Respondent Characteristics are shown in the table below (Table 1).

**Table 1.** Frequency (f) Distribution of Respondent Characteristics of the Intervention and the Control group in Rindu A Room RSUP Haji Adam Malik Medan (n-64)

| Indicator | Intervention Group | | Control Group | |
|---|---|---|---|---|
| | f | % | f | % |
| **Age in Years** | | | | |
| 36-45 | 3 | 9.4 | 2 | 6.3 |
| 46-55 | 8 | 25 | 4 | 12.5 |
| 56-65 | 15 | 46.9 | 15 | 46.9 |
| > 65 | 6 | 18.8 | 11 | 34.4 |
| **Total** | 32 | 100 | 32 | 100 |
| **Sex** | | | | |
| Male | 26 | 81.3 | 25 | 78.1 |
| Female | 6 | 18.8 | 7 | 21.9 |
| **Total** | 32 | 100 | 32 | 100 |
| **Body Mass Index** | | | | |
| Less Weight | 2 | 6.3 | 1 | 3.1 |
| Normal Weight | 25 | 78.1 | 28 | 87.1 |
| Excess Body Weight | 5 | 15.6 | 3 | 9.4 |
| **Total** | 32 | 100 | 32 | 100 |
| **Smoke** | | | | |
| Yes | 26 | 81.3 | 25 | 78.1 |
| No | 6 | 18.8 | 7 | 21.9 |
| **Total** | 32 | 100 | 32 | 100 |
| **History of Stroke** | | | | |
| Never Had Stroke | 22 | 68.8 | 20 | 62.5 |
| 1-2 years ago stroke | 6 | 18.8 | 8 | 25.0 |
| 2-3 years ago stroke | 4 | 12.5 | 4 | 12.5 |
| **Total** | 32 | 100 | 32 | 100 |

Table 1 shows that most of the respondents were elderly mostly aged between 56-65 years old (46.9%) in the intervention and Control Group, and a small proportion of adult category aged between 36–45 years old (9.3%) in the intervention group and (6.3%) in the control group, the late old age had a very high risk of being exposed to stroke. It is in line with research by Malek et al. (2015) that mostly stroke respondents aged was between 56 -65 years old and a small portion aged under 50 years old. Most of the sample were male, there were (81.3%) in the intervention group and (78.1%) in the control group. In line with research by Zhang et al. (2017) that male respondents were 63.0% and 27% of female. Most respondents were in normal weight, there were (78.1%) in the intervention group and (87.1%) in the control group. It is in line with research by

Zhang et al. (2017) that Body Mass Index to Stroke Patient was normal weight. In term of smoke habit, research respondent was smoke. There were (81.1%) in the intervention group and (78.1%) in the control group. It is in line with Malek et al. (2015) that most of the respondents were a smoker. In term of History of stroke, most of the respondent was the first time stroke survivor, there were (68.8%) in the intervention group and (62.5%) in the control group. Research conducted by Cong et al. (2018) confirmed that most respondents were the first time suffering of stroke.

**Risk of Decubitus Ulcers Before and After the Intervention**

The results of the risk assessment of the decubitus ulcer before and after intervention are shown in the table below (Tabel 2).

**Table 2**. Frequency Distribution on Decubitus Ulcer of the intervention and the control group in Rindu A Roomat RSUP Haji Adam Malik Medan

| | **Intervention group** | **f** | **%** | **Control group** | **f** | **%** |
|---|---|---|---|---|---|---|
| ***Pre*** | Very High Risk | 4 | (12.5) | Very High Risk | 3 | (9.4) |
| | High Risk | 19 | (59.4) | High Risk | 20 | (62.5) |
| | Moderate Risk | 9 | (6) | Moderate Risk | 9 | (28.1) |
| | At Risk | | | At Risk | | |
| ***Post*** | Very High Risk | | | Very High Risk | 2 | (6.4) |
| | High Risk | | | High Risk | 21 | (65.6) |
| | Moderate Risk | 8 | (25) | Moderate Risk | 9 | (25) |
| | At Risk | 24 | (75) | At Risk | | |

Table 2 shows the results of the intervention and the control group before the intervention, it was found that data on the risk of decubitus ulcers is a very high risk, high risk, and moderate risk, and after giving mobilization intervention and olive oil intake, reduction in decubitus ulcer became medium risk and at risk. The risk assessment of the control group in the first and the second assessment found that there is no changing of risk assessment, it was in the category very high risk, high risk, and moderate risk. Decubitus Ulcer occurred due to impaired skin integrity, shear force, friction, immobilization, humidity can increase the risk of decubitus ulcer spreads and causing poor healing (Potter &Perry, 2010) therefore left and right tilt mobilization intervention and olive oil intake is highly suggested to prevent decubitus ulcer. It is in line with Tenriwati & Asnidar (2018) that conducted research aims to know the effect of left and right tilt mobilization on stroke patient, the findings reported that there was a significant difference on Decubitus ulcer between intervention group whose given left and right tilt mobilization with the control group was p value=0.004, left and right tilt mobilization intervention might reduce decubitus ulcer. It is in line with Mondal et al. (2015) where the content of antioxidant compounds, fatty acids, phenolic

and Vitamin E in olive oil have an essential role for human health and have benefits to prevent skin irritation, the skin will also remain smooth and soft. Another research conducted by Costa, Trancoso, & Souza (2016), oleic acid in olive oil is the main constituent which can reduce lipid hydroperoxides level so it can improve collagen synthesis or the formation of new skin tissue. The Intervention group whose given mobilization intervention and olive oil intake experienced significant changes in decubitus ulcer.

**The relationship between Respondent Characteristics and Barden Scale**

The result of the relationship between respondent characteristics and Barden Scale is shown in the table below (Table 3).

**Table 2**. The Relationship between respondent characteristics and Barden Scale

| | Barden Scale | | | | | | |
|---|---|---|---|---|---|---|---|
| | **High Risk** | **%** | **Risk** | **%** | **total** | **%** | ***P*** |
| **Age** | | | | | | | |
| > 65 years old | 12 | 25.5 | 35 | 74.5 | 47 | 100 | 0.01 |
| < 65 years old | 10 | 58.8 | 7 | 41.2 | 17 | 100 | |
| **Gender** | | | | | | | |
| Male | 17 | 33.3 | 34 | 66.7 | 51 | 100 | 0.75 |
| Female | 5 | 38.5 | 8 | 61.5 | 13 | 100 | |
| **Weight** | | | | | | | |
| Normal | 18 | 34.6 | 34 | 65.4 | 52 | 100 | 1.0 |
| Abnormal | 4 | 33.3 | 8 | 66.7 | 12 | 100 | |
| **Smoke** | | | | | | | |
| Yes | 16 | 31.4 | 35 | 68.5 | 51 | 100 | 0.34 |
| No | 6 | 46.2 | 7 | 53.8 | 13 | 100 | |
| **History of Stroke** | | | | | | | |
| Never | 13 | 31 | 29 | 69 | 42 | 100 | 0.58 |
| >1 year | 9 | 40.9 | 13 | 59.1 | 22 | 100 | |

Table 3 shows the result of the intervention and the control group with 64 respondents, there were 12 (25.5%) of aged <65 were high risk, and 35 (74.5%) of aged < 65% were a risk, 10 (58.8%) of respondents were high risk, and 7 (41.2%) were risk with P= 0.01. Doughty (2016) states that the occurrence of the decubitus ulcer might be stimulated by age factor so the relationship between respondent age and Barden Scale is related. In term of Gender, there were 17 (33.3%) males were high risk and 34 (66.7%) were at risk, meanwhile, for the female, there were 5 (38.5%) females were high risk, and there were 8 (61.5%) females were risk with P= 0.75. It is in line with Setoguchi (2016) that found there is no gender relationship between the occurrence of the decubitus ulcer, in term of Body Mass Index, there were normal weight 18 (34.6%) were high risk, 34 (65.4%) were a risk, for abnormal, there were 4 (33.3%) was high risk, 35 (68.5%) was at risk with P=1.0, however, it is not in line with the research

conducted by Setoguchi (2016) that found a relationship between Body Mass Index and Decubitus Ulcer occurrence. In the smoke category, there were 16 (31.4%) was high risk, and 35 (68.5%) was at risk, for a passive smoker, there were 6 (46.2%) was high risk, and 6 (46.2%) was at risk, with P= 0.34. It is on the contrary with Tarihoran (2011) where smoke has a relationship with the occurrence of the decubitus ulcer, in term of history of stroke category, for nor experience stroke history there were 13 (31%) was high risk, and 29 (69.5%) was at risk, and for less than 1 years stroke survivor 9 (40.9%) were high risk, 13 (59.1%) were at risk, with P= 0.60, it is in line with research conducted by Schoot et al. (2018) found that there is no relationship between the history of stroke and decubitus ulcer occurrence.

## The effect of Decubitus Ulcer Intervention and Olive Oil Intake on Intervention and Control Group

The results on the effect of mobilization and olive oil intake to prevent decubitus ulcer in Intervention and Control Group shows in the table below (Tabel 4 and Tabel 5).

**Table 4.** Prevention of Decubitus Ulcer through mobilization intervention and olive oil intake to Intervention Group (n=32)

| **Variable** | ***Mean*** | ***SD*** | ***P*** |
|---|---|---|---|
| Prevention score of decubitus ulcer | | | |
| *Pre-test* | 10.94 | 1.480 | |
| | | | 0.001 |
| *Post-test* | 15.03 | 0.933 | |

**Table 5.** Prevention of Decubitus Ulcer through mobilization intervention and olive oil intake to Control Group (n=32)

| **Variabel** | ***Mean*** | ***SD*** | **P** |
|---|---|---|---|
| Prevention score of decubitus ulcer | | | |
| *Pre-test* | 10.97 | 1.379 | |
| | | | 0.060 |
| *Post-test* | 11.13 | 1.408 | |

Table 4 and 5 show the statistical analysis by using Wilcoxon signed rank-test before and after giving mobilization intervention and olive oil intake, for intervention group P <0.05 and control group P= >0.05. It can be inferred from the statistical analysis above that there is an influence of mobilization intervention and olive oil intake on risk prevention of decubitus ulcer to Stroke patients. Decubitus Ulcer is rarely happening in the intervention group rather than the control group. Immobilized stroke patient causes the blood circulation is not smooth (Potter & Perry, 2010), Decubitus Ulcer occurred due to progressive pressure, also pressure and friction which tends to decrease tissue tolerance on the

immobilized patient or bed-ridden patient (Bhattachariya & Mishra, 2015). One of the preventions given to decubitus ulcer patient is by giving mobilization intervention and olive oil intake. Rosdahl & Kowalski (2015) states that mobilization could cause improve blood circulation so it can accelerate wound healing, and also maintains muscle tone and bodily functions. Skincare by using olive oil intake is given to prevent the occurrence of the decubitus ulcer, inflammation, wound healing process is caused by fatty acids, vitamin E, Phenolic containing in olive oil, where fatty acid such as triglycerols or triglycerides that saturated and non-saturated acid consisting of two variants, namely oleic acid and linoleic acid and could be liquid in normal temperature. There are two kinds of Saturated fatty acids namely Palmitic acid and Stearic acid and these two acids could be solidified in normal temperature, the fatty acid in olive oil could inhibit leukocytes and the activity of platelets to proliferate blood vessel muscles (Valenzuela et al., 2019). Vitamin E in Olive Oil functions as an anti-oxidant and stimulates immunological response so it can improve the immune system and could reduce infection, as it functions as an anti-oxidant, Vitamin E plays important role in maintaining role skin (Mondal et al., 2015). Phenolic which functions as an antioxidant (such as hydroxytyrosol and tyrosol) has high power on oxidative that can reduce inflammation. Phenolic functions as antimicrobial which could stunt the growth of bacterial species, fungi and viruses that can inhibit wound tissue healing, Oleuropein is the effective phenolic to positive and negative on human Pathogens (Lanza & Ninfali, 2019). The olive oil intervention for seven days in the morning and afternoon in skin surface could prevent skin damage, keep skin moist, blood circulation, anti-inflammatory, and maintain skin elasticity, so it can prevent the occurrence of decubitus ulcer to immobilized stroke patient. It is in line with research conducted by Miraj, Pourafzali, Ahmadabadi, & Rafie (2020) to intensive care patient in Isfahan hospital Iran, it was found that olive oil containing triglycerides especially oleic acid that functions as anti-inflammatory proved importance evidence point for skincare and could accelerate wound healing, besides olive oil is also could be antimicrobial and antifungal that can prevent injury. It is also found in Cordero et al. (2015) that olive oil could prevent sore on the nipple on a breastfeeding mother and also help to prevent cracks in the nipple on breastfeeding mother, Olive oil is herbal oil containing flavonoids as anti-bacterial and anti-fungal that functions to dermatological disorders such as atopic dermatitis, psoriasis, diaper dermatitis, and wound healing, besides olive oil are also save to eat, and safe to use for the nipple of a breastfeeding mother who often experiences skin irritation.

## Conclusion

It could be concluded that there is a significant relationship between mobilization intervention and olive oil intake to the occurrence of decubitus ulcer

to stroke patients, in which the intervention group reach p-value = < 0.05, and the control group with p-value P = > 0.05 means there is no relationship for the control group.

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