

# Effectiveness of virgin coconut oil and regular repositioning in preventing pressure ulcers in children

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## ABSTRACT

**Introduction:** Pressure ulcers have adverse effects on health. Thus, early detection of damage to skin integrity is important for preventing the occurrence of pressure sores. Virgin Coconut Oil (VCO) is a nonpharmacological therapy that can be applied to overcome the problem of damage to skin integrity. Virgin coconut oil contains antioxidants and is rich in vitamin E. Meanwhile, two-hourly repositioning is a nursing intervention performed to prevent pressure ulcers.

**Materials and Methods:** This study aimed to evaluate the implementation of Virgin Coconut Oil and regular repositioning for preventing pressure sores. The designs used quasi experiment pretest and posttest nonequivalent control group; 86 participants were selected through a nonprobability sampling technique by consecutive sampling.

**Results:** The fundings suggest that there is a significant difference in the Braden QD scores from before and after virgin coconut oil of the intervention group and repositioning of the control group ( $p < 0.001$ ).

**Conclusion:** Nurses are expected to be able to detect early damage to skin integrity by using the Braden QD Scale and to implement use Virgin Coconut Oil and repositioning.

## KEYWORDS:

Braden QD, Pressure ulcer, Repositioning, Virgin Coconut Oil

## INTRODUCTION

Pressure sores occur as a result of local injury to the tissue under the skin that occurs due to prolonged pressure.<sup>1</sup> The prevalence of pressure ulcers in children in Indonesia last 10 years was 2.25%.<sup>2</sup> Indonesia the incidence of pressure sores occurs due to the use of medical devices, such as the use of 13% ETT, 12% OGT, 11% NGT, and 6% oxygen saturation probe<sup>3</sup> and the incidence of pressure ulcers in the pediatric units was in 2017 0,1% and in 2018 become 0.22%, the ulcers mostly appeared on children who had prolonged bed rest anak.<sup>4</sup>

Pressure ulcers are affected by tissue pressure and tolerance. Pressure intensity and the duration of being in a certain position could increase the risk of developing pressure ulcers.<sup>5</sup> Pressure ulcers require a long healing process and might have risk of infection, prolonged hospital stay, decreased rest time,

increase the cost of hospitalization.<sup>6</sup> One application of non-pharmacological therapy can be applied to overcome the problem of damage to the integrity of the skin, namely the administration of virgin coconut oil (VCO). VCO contains antioxidants and vitamin E.<sup>7</sup> Besides that, regular repositioning could reduce pressure and prevent prolonged ischemia.<sup>8</sup> it could be the most effective way to prevent pressure ulcers because it could modify pressure sores.<sup>4</sup> Preventing pressure ulcers and repairing damaged tissue integrity are the main focus with regard to health services. Initial assessments are expected to prevent pressure ulcers.<sup>9</sup> Early detection could be conducted by using the Braden QD Scale, which is an instrument that assesses the risk of pressure ulcers and predicts risky and risk-free clients. Nurses can use this tool to assess the risk of pressure injuries in pediatric patients.<sup>10</sup>

## MATERIALS AND METHODS

The study designs were quasi experiment pre test and post test nonequivalent control group. The researcher assigned respondents into two groups. The intervention group was given virgin coconut oil and the control group was regular repositioning with 2-hourly repositioning should be given regularly within 24 hours. The provision of VCO is genuine coconut oil that has BPOM RI certification, Good Manufacturing Practice (GMP), ISO Factory Quality Management, and Halal Assurance Certificate. VCO is given to the back area, heels and areas of the body that are pressed against the surface, done once every day for 14 days or until the child can go home. The respondents were selected through a nonprobability sampling technique by consecutive sampling. The inclusion criteria were being aged between 1 month and 18 years and having a treatment length of 24 hours. The exclude criteria were children who were anxious, lacked cooperation, edema, and had previous pressure ulcers. The total sample of this innovation project involved 86 children. The instrument used in this study to collect data on questionnaire and Braden QD scores. The data analysis comprised univariate and bivariate analyses.

## DISCUSSION

The study designs were quasi experiment pre test and post test nonequivalent control group. The researcher assigned respondents into two groups. The intervention group was given virgin coconut oil and the control group was regular repositioning with 2-hourly repositioning should be given

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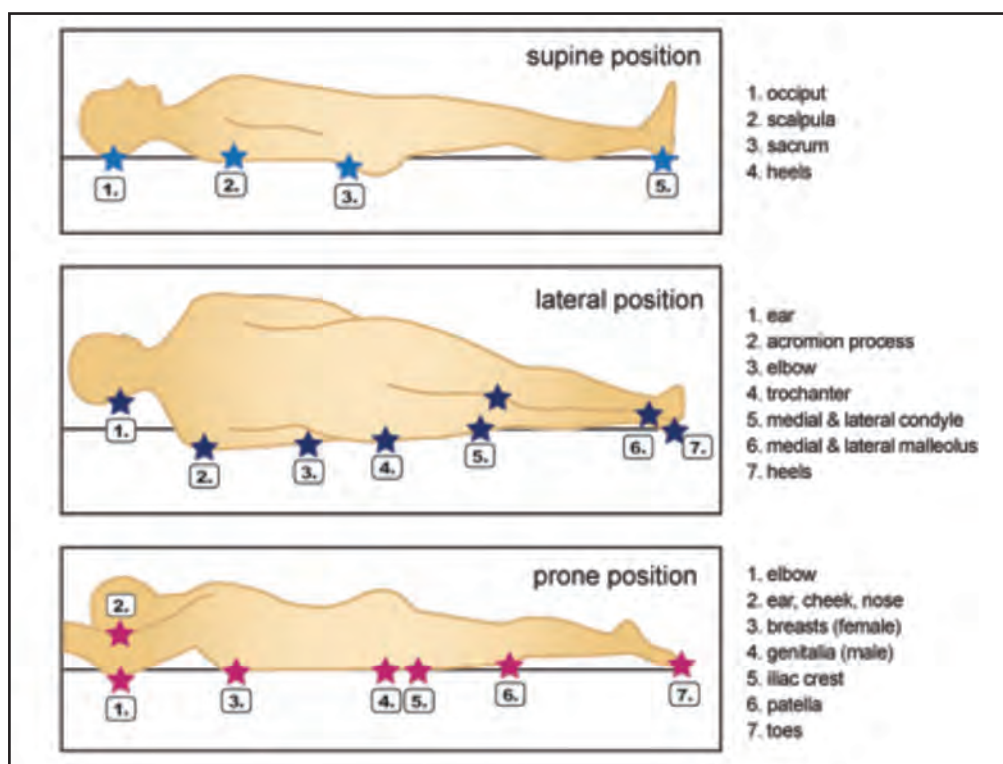
Table I: Respondents Braden QD Score

Group	Mean ± SD	CI 95%
Intervention		
Before	10.09 ± 2.266	9.40 – 10.79
After	8.44 ± 1.803	7.89 – 9.00
Control		
Before	10.02 ± 1.655	9.51 – 10.53
After	8.07 ± 1.470	7.62 – 8.52

Table II: Differences in Braden Q Scores Before and After Given Virgin Coconut Oil and Repositioning

Variable	Intervention			p	Control			p
	Mean	SD	95%CI		Mean	SD	95%CI	
Braden QD Score								
Before	10.09	2.266	1.266 ; 2.036	<0.001*	10.02	1.655	1.574 ; 2.333	<0.001*
After	8.44	1.803			8.07	1.470		

\*Significant at p<0.05



Locations at risk for pressure sores:

regularly within 24 hours. The provision of VCO is genuine coconut oil that has BPOM RI certification, Good Manufacturing Practice (GMP), ISO Factory Quality Management, and Halal Assurance Certificate. VCO is given to the back area, heels and areas of the body that are pressed against the surface, done once every day for 14 days or until the child can go home. The respondents were selected through a nonprobability sampling technique by consecutive sampling. The inclusion criteria were being aged between 1 month and 18 years and having a treatment length of 24 hours. The exclude criteria were children who were anxious, lacked cooperation, edema, and had previous pressure ulcers. The total sample of this innovation project involved 86

children. The instrument used in this study to collect data on questionnaire and Braden QD scores. The data analysis comprised univariate and bivariate analyses.

Based on the results of this study, it was found that giving VCO was effective in reducing the Braden QD score and there was a significant difference in the Braden QD score before being given VCO (10.09) and after (8.44) with a value of  $p < 0.05$  and in the control group too there is a significant difference in the Braden QD score before (10.02) and after (8.07) with a  $p > 0.05$ . The intervention group was pediatric patients who received VCO given every day. VCO functions as an antioxidant and anti-stress, anti-inflammatory, analgesic, antipyretic, accelerates wound healing, repairs

damage to VCO contains 50.33% lauric acid, 14.32% capric acid, 10.25% caproic acid, 12.91% myristic acid and 4.92% palmitate which function as antimicrobials and are rich in vitamin E to prevent skin infections.<sup>13</sup> Treatment by giving VCO to the back of the body is effective in reducing the risk of pressure sores in patients with chronic diseases who are treated in the inpatient unit.<sup>14</sup>

Positioning is one of the nursing interventions that nurses can perform independently to prevent the risk of damage to the integrity of the skin in children, especially in children who are immobilized due to neurological disorders, such as children with a medical diagnosis of encephalitis and hydrocephalus. In this study, those who experienced impaired motor function, so that nurses or parents needed patience in changing positions every 2 hours so that pressure sores did not occur.

The results of this study explained that in the intervention group with VCO administration there was a significant difference before being given VCO which was 10.09 and after giving VCO 8.44. Whereas in the control group with two hours of repositioning there was also a significant difference in the Braden QD score before that was 10.02 and after treatment 8.07 ( $p < 0.05$ ). This shows that giving VCO and repositioning every 2 hours is effective in reducing the incidence of pressure sores in children.

The intervention group was pediatric patients who received VCO given every day. According to some experts, VCO has many health benefits, including being an antioxidant and anti-stress, anti-inflammatory, analgesic, antipyretic, accelerating wound healing, repairing damage to skin integrity, can lower blood pressure, increase immunity, can control blood sugar and reduce weight. bodies.<sup>7</sup> VCO is pure coconut oil which is produced from processed meat on coconuts without heating so that they are protected from free radicals and are clear in color. VCO contains 50.33% lauric acid, 14.32% caprylic acid, 10.25% caproic acid, 12.91% myristic acid and 4.92% palmitate.<sup>13</sup>

Treatment by giving VCO to the back of the body is effective in reducing the risk of developing pressure sores in patients with chronic diseases who are treated in inpatient rooms.<sup>14</sup> Other studies also explain that using VCO can prevent the incidence of pressure sores in patients in the Intensive Care Unit.<sup>15</sup> VCO contains Medium Chain Fatty Acids (MCFA) which are fatty acids consisting of lauric acid, oleic acid, capric acid and caproic acid and functions as an antimicrobial. VCO that is used topically will react with skin bacteria to form free fatty acids such as those contained in sebum. Sebum consists of medium chain fatty acids such as those in VCO so that it protects the skin from the dangers of pathogenic microorganisms. Free fatty acids help create an environment which is acidic on the skin so that it can kill disease-causing bacteria.<sup>16</sup> VCO also functions as an antioxidant which is rich in polyphenolic vitamin E which is useful for preventing skin infections and treating skin damaged by free radicals.<sup>13</sup>

Besides that, repositioning is also an effective step to prevent pressure sores, by positioning the client regularly to different positions, it can modify the area of pressure points. If the body is repositioned regularly, the lack of oxygen in the tissues will not last too long so that the risk of developing pressure sores is reduced. Every child who is at risk of experiencing prolonged bed rest in the hospital will be given a decubitus mattress. Provision of a decubitus mattress must still be accompanied by comprehensive care, without ignoring the risk of pressure sores due to prolonged bed rest. Therefore, giving decubitus mattresses alone is not enough as a measure to prevent pressure sores, but intervention by giving VCO and repositioning every 2 hours with attention to comfort in children needs to be done to avoid pressure sores in children.

The intervention group was given virgin coconut oil and the control group was regular repositioning with 2-hourly repositioning should be given regularly within 24 hours. The advantage of these two modalities is that they are equally easy to apply. Does not require special skills and can be applied by the patient's family. the disadvantage of providing VCO is that it requires additional costs by buying VCO oil, but it does not require expensive costs and is easy to obtain. Whereas for regular positioning every 2 hours does not require additional costs and tools, it only requires cooperation and discipline from parents who support the success of the intervention. The authors recommend these two interventions so that they can be applied as independent nursing interventions in preventing pressure sores in children.

## CONCLUSION

Avoiding the occurrence of pressure sores and improving tissue integrity is the main focus of health services. An important implementation in preventing pressure sores is identifying the risk of pressure sores. The measurement tool used to assess damage to skin integrity is the Braden QD Scale which can predict the incidence of pressure sores in children which can predict the incidence of pressure sores in children which consists of 7 subscales, each subscale with a score of 0, 1, and 2. Values  $\geq 13$  patients are said to be at risk of HAPI (Hospital Acquired Pressure Injury). Administration of virgin coconut oil and two hours of repositioning effectively reduced Braden's QD score and thus these two interventions could be performed to prevent hospitalized children from developing pressure sores. The results of this evidence-based practice can be implemented as a nursing intervention to prevent pressure ulcers in children. The limitation of this study is that it requires the cooperation of parents to apply virgin coconut oil and 2-hour repositioning because it requires the cooperation of parents in providing regular repositioning every 2 hours.

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