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THE EFFECT OF VIRGIN COCONUT OIL (VCO) IN HEALING AND PREVENTING PRESSURE ULCERS IN IMMOBILIZATION PATIENTS: A LITERATURE REVIEW

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ABSTRACT
Pressure ulcers or bedsores are a serious problem in patients experiencing long-term immobilization or bed rest. This condition is caused by prolonged pressure on specific body areas, leading to tissue damage and potentially increasing the duration of patient care. Virgin Coconut Oil (VCO) is known to contain lauric acid, antioxidants, and vitamin E, which can help maintain skin moisture, increase elasticity, and prevent irritation and infection. Some studies show that VCO, especially when applied with effleurage massage techniques, has the potential for the prevention and healing of pressure ulcers. Objective: This study aims to review the effectiveness of using VCO as a preventive and therapeutic agent for patients at high risk of pressure ulcers. Method: This study is a literature review of several studies published between 2020 and 2024. Research results related to the application of VCO in immobilized patients were analyzed, focusing on its effects on pressure ulcer risk, Braden score, and tissue healing improvement.Results: The literature review identified eight studies for inclusion in the final analysis. All articles used quasi-experiments. he application of VCO significantly increased the Braden scores of patients receiving care. Effleurage massage with VCO effectively reduced the risk of pressure ulcers and accelerated granulation tissue formation in grade I and II wounds. Additionally, comparisons between VCO and virgin olive oil showed that VCO was superior in reducing the risk of pressure ulcers in ICU patients.Kesimpulan: Virgin Coconut Oil (VCO) has been proven effective as a natural intervention for the prevention and healing of pressure ulcers in patients with limited mobility. The use of VCO in nursing practice can improve patients' quality of life, reduce the risk of skin complications, and shorten the duration of care. Further research is recommended to explore the use of VCO with additional methods and technology to maximize its benefits in pressure ulcer care.

Keywords: decubitus; immobilization; virgin coconut oil (VCO)

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INTRODUCTION

Pressure ulcers are defined as injuries to the skin and underlying tissue caused by prolonged, unrelieved pressure. This pressure restricts blood flow, reducing the oxygen and nutrients essential for skin health. Consequently, the skin tissue deteriorates, forming ulcers (Oklahoma Foundation for Medical Quality, 2020). Pressure ulcers commonly occur in vulnerable patient groups, such as the elderly, individuals with neurological disorders, ICU patients, and those immobilized due to trauma (Lyder & Ayello, 2008)Globally, pressure ulcers are a significant nursing challenge requiring preventive and intensive care measures, as they impact patients' quality of life and prolong hospital stays. Current preventive and treatment methods for pressure ulcers include regular body positioning, specialized mattresses, and topical applications to maintain skin moisture (Primalia & Hudiyawati, 2020). Virgin Coconut Oil (VCO) has drawn interest in pressure ulcer care due to its rich content of lauric acid, antioxidants, and vitamin E, which support skin integrity and aid in moisture retention, thus reducing irritation and infection ris (Ludya Pulung et al., 2016). Studies have indicated that

VCO application, especially through effleurage massage techniques, can promote blood circulation and skin elasticity, lowering the risk and accelerating healing of pressure ulcers,

Previous studies have shown positive results in using VCO for immobile patients, notably with significant increases in pressure ulcer risk scores (e.g., Braden scale). For instance, Wahyudi & Savage (2023) observed improved Braden scores in patients receiving VCO, indicating decreased pressure ulcer risk. Similarly, research by Salesius Onggang et al (2024) found that VCO significantly sped up granulation tissue formation in stage I and II ulcers.Given VCO's potential as a preventive and healing agent for pressure ulcers, further investigation is warranted to confirm its effectiveness and safety and to determine the most optimal application methods.

METHOD

Identify the research question

The research question investigated in this literature review was: 'How can virgin coconut oil prevent pressure ulcer?'. This research question was intended to be broad, as was the aim of the literature review, to ensure the inclusion of several concepts to provide researchers with a deeper understanding of how virgin coconut oil prevent pressure ulcer.

Identify relevant studies

The research design used in this research is a literature review. The literature review protocol and evaluation uses the PRISMA checklist to determine the selection of studies that have been found and adapted to the literature review. The literature search was carried out using three databases: Google Scholar and PubMed. The inclusion criteria for the literature search were articles with publication years 2020-2024, in Indonesian or English, and were complete articles that could be open access. Searches utilized vital terms relating to the disease condition (e.g., pressure ulcer (Decubitus), Stroke or Immobilization, the intervention (e.g., Virgin Coconut Oil (VCO); massage therapy), and the outcome is prevent of decubitus.

Study selection

The number of articles used was 9 articles out of 850. Researchers used critical appraisal to assess studies that meet standards. The researcher excluded low-quality studies to avoid bias in the validity of results and review recommendations, so the final screening of articles used in the literature review was 9 articles.

Charting the data

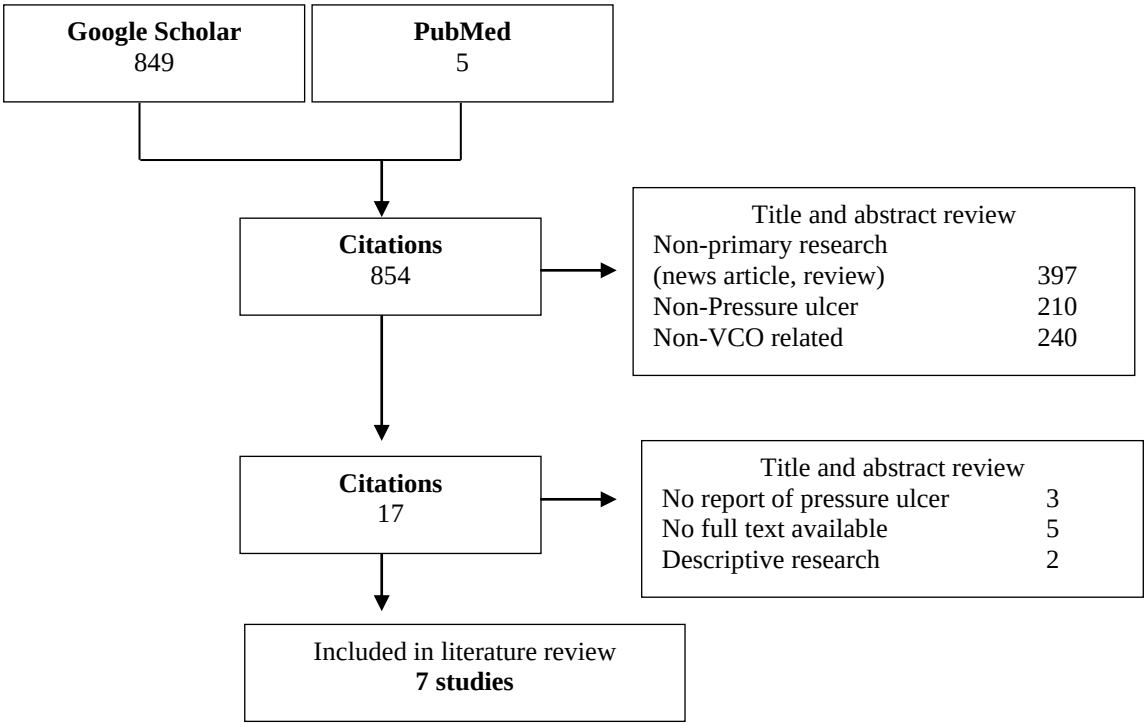
Data in a literature review should be charted logically and descriptively, remaining relevant to the research question. From these data, two themes were identified:

1. Virgin coconut oil
2. Pressure ulcer

These themes were noted to be recurring throughout the articles and relevant to the research question.

Collating, summarising, and reporting the results

Of the 9 articles identified, they were focused on nursing. All studies were of an experiment design. The results of the selection of study articles can be depicted in the flow diagram below.



RESULT

A total of fifteen studies were selected for inclusion in the final analysis. All articles used quasi-experiments. Here is a categorized summary of the findings based on the aim to determine the effects of virgin coconut oil on pressure ulcer in patients immobilization:

Table 1.
Summary of the literature review

Author and year	Hasil	Ringkasan
(Wahyudi & Savage, 2023)	After a five-day intervention with a frequency of twice daily, the patients' Braden scores improved. For the first patient, the Braden score increased from 8 (very high risk) to 13 (high risk), while for the second patient, the score rose from 7 (very high risk) to 9 (still very high risk but showing improvement). This increase in scores indicates a reduction in the risk of pressure ulcers for both patients.	The application of effleurage massage with Virgin Coconut Oil (VCO) twice daily for five days has proven effective in reducing the risk of pressure ulcers (decubitus) in immobilized patients. The effleurage massage technique improves blood circulation, while VCO protects the skin from free radicals and maintains moisture. This study shows that patients who received this intervention experienced an increase in their Braden scores, indicating a reduced risk of pressure ulcers. Therefore, using VCO as an addition to nursing practices can help prevent skin complications in immobilized patients and is recommended to be integrated into routine nursing interventions. Besides the increase in Braden scores, there was also a reduction in early signs of pressure ulcers in patients, such as redness, increased skin temperature in vulnerable areas, and changes in skin texture.
(Salesius Onggang et al., 2024)	During the seven-day intervention, respondents treated with VCO showed significantly greater improvement compared to before treatment. Statistical analysis using the Wilcoxon	Virgin Coconut Oil (VCO) has proven effective in accelerating the formation of granulation tissue in stage I and II pressure ulcers. This study shows that topical application of VCO, accompanied by light massage, significantly enhances wound healing over a seven-day period with a frequency of twice daily. Statistical results from the Wilcoxon test indicate that

Author and year	Hasil	Ringkasan
	test resulted in a p-value < 0.05, confirming the significance of this improvement. These findings indicate that VCO has the potential to be an effective preventive and healing therapy for pressure ulcers, especially in high-risk patients, such as those undergoing prolonged immobilization.	VCO has a meaningful effect on wound tissue improvement (p-value < 0.05). Therefore, VCO can be considered a promising natural treatment method to enhance the healing process of pressure ulcers. Further research is recommended to explore combinations with modern technologies, such as laser or ultrasound therapy, to speed up and improve wound healing quality.
(Supriyanti et al., 2024a)	In the group that received VCO intervention, 19 out of 21 respondents (90.5%) experienced a reduction in pressure ulcer scale to 0 after the intervention. Previously, 4 respondents (19%) had pressure ulcers at scale 2. The Wilcoxon test showed a significant effect in reducing pressure ulcer scale in both groups, with a p-value of 0.023 (≤ 0.05) for the VCO group.	Based on these results, the use of Virgin Coconut Oil (VCO) and lotion can be recommended as an effective method for preventing pressure ulcers in patients with long-term immobilization or bed rest. Virgin Coconut Oil (VCO) and lotion are effective in reducing the scale of pressure ulcers (decubitus) in patients experiencing immobilization in high dependency nursing care areas.
(Linggi et al., 2021)	This study examines the effect of Virgin Coconut Oil (VCO) on the prevention of pressure ulcers in patients undergoing prolonged bed rest at Stella Maris Hospital, Makassar. The research design used a quasi-experimental approach with an intervention group (receiving VCO and alternating left-right positioning) and a control group (receiving only left-right positioning without VCO) for three days. The Mann-Whitney test yielded a p-value of 0.011 ($\alpha<0.05$), indicating a significant effect of VCO administration in reducing the risk of pressure ulcers in patients with prolonged bed rest compared to those using only the alternating left-right positioning.	The application of Virgin Coconut Oil (VCO) along with alternating left-right positioning is effective in preventing and reducing the risk of pressure ulcers in patients undergoing prolonged bed rest. VCO helps maintain skin moisture, reduces friction, and protects the skin from bacterial infection, making it a beneficial addition to care methods for preventing pressure ulcers.
(Putri Andayani et al., 2023)	The use of Virgin Coconut Oil (VCO) and repositioning every two hours is effective in preventing pressure ulcers in children hospitalized for extended periods. VCO helps maintain skin moisture and integrity, reduces infection risk, and accelerates healing. Regular repositioning alleviates pressure on tissues, thereby lowering the risk of pressure ulcers. These two interventions	This study evaluated the effectiveness of Virgin Coconut Oil (VCO) and regular repositioning every two hours in preventing pressure ulcers in children. The results showed that the application of VCO significantly reduced the Braden QD score, indicating a decreased risk of pressure ulcers. VCO, rich in antioxidants and vitamin E, helps maintain skin integrity and accelerates healing. Repositioning every two hours also effectively reduces pressure and the risk of tissue ischemia. This study recommends the use of VCO and repositioning as preventive interventions for pressure ulcers in pediatric patients hospitalized for extended periods.

Author and year	Hasil	Ringkasan
	can be implemented as independent care steps by nurses to prevent pressure ulcers in pediatric patients.	
(Fatimah et al., 2022)	The application of Virgin Coconut Oil (VCO) through effleurage massage is effective in preventing and reducing the risk of pressure ulcers in bedridden patients in the ICU. The study results showed an increase in the Braden score in the intervention group receiving VCO, indicating better skin integrity compared to the control group. VCO helps maintain skin elasticity and moisture, thus reducing the likelihood of pressure ulcers in patients with high immobility.	This study aimed to determine the effect of applying Virgin Coconut Oil (VCO) through effleurage massage on preventing pressure ulcers in bedridden patients in the ICU. Using a quasi-experimental method, the study involved 26 respondents divided into an intervention group (receiving VCO) and a control group (standard care). The results showed that the intervention group experienced a significant increase in the Braden score (an indicator of skin health) compared to the control group. In conclusion, VCO is effective in enhancing skin elasticity, reducing the risk of pressure ulcers, and accelerating wound healing in bedridden patients.
(Riduansyah et al., 2020)	This study used a quasi-experimental design to compare the use of virgin olive oil and virgin coconut oil. The analysis showed that virgin coconut oil produced significantly better results in reducing the risk of pressure ulcers compared to virgin olive oil. Therefore, incorporating VCO as part of patient care in the ICU can be an effective preventive strategy to reduce the incidence of pressure ulcers.	This study aimed to compare the effectiveness of virgin coconut oil (VCO) and virgin olive oil in preventing pressure ulcers in patients undergoing prolonged bed rest in the ICU at Ulin Hospital, Banjarmasin. A quasi-experimental design with a pre-post test model was used, involving at-risk patients hospitalized for more than three days. Before the intervention, most patients had a pressure ulcer risk score between 12-15 (vulnerable) and <12 (high risk). After receiving VCO, all patients showed improvement, with pressure ulcer risk scores rising to 12-15 (vulnerable) for all respondents. VCO proved to be more effective than virgin olive oil in preventing pressure ulcers in patients with prolonged bed rest. This study recommends the use of VCO as part of patient care to improve skin health and prevent pressure ulcers in the ICU environment.

DISCUSSION

Virgin Coconut Oil (VCO) is a clear, tasteless liquid derived from coconut meat. It is processed through gradual heating, oil extraction, and fermentation methods (Idris & Armi, 2022). VCO is widely used in health products like baby oil, hand creams, or face moisturizers(Miladiarsi et al., 2022). ts high antioxidant content, such as tocopherol, helps prevent premature aging and promotes vitality. Additionally, VCO acts as a skin moisturizer, increasing hydration (Wahyuningsih et al., 2023). These benefits have led many researchers to explore VCO's potential in addressing decubitus ulcers in immobilized patients and its role in wound healing.Multiple studies suggest that VCO, particularly through effleurage massage, significantly raises Braden scores in patients prone to pressure ulcers due to immobilization. Wahyudi & Savage (2023) reported Braden score improvements, with ulcer risk decreasing from very high to high in patients treated with VCO. Similarly, Fatimah et al. (2022) observed improved skin elasticity and moisture retention in ICU patients, aiding pressure ulcer prevention in bedridden patients.

Nurses play a crucial role in comprehensive care, especially in managing patient positioning (right- and left-side turning) to prevent decubitus ulcers (Liputo et al., 2018). Monitoring is carried out on patients, especially during the mobilization process (right side-left side) to

prevent decubitus (Setiawan et al., 2023). Decubitus prevention involves more than ambulation; additional support measures are required (Dewi et al., 2024).Salesius Onggang et al. (2024) highlighted VCO's potential in speeding granulation tissue formation in stage I and II ulcers, with statistical significance ($p < 0.05$) over a seven-day intervention, his finding aligns with research by Linggi et al. (2021) which showed that VCO effectively maintains skin moisture, reduces friction, and protects against bacterial infections in long-term bedridden patients. VCO contains lauric acid which has antibiotic, anti-fungal and anti-viral properties (Sumiasih et al., 2016).

VCO also proves effective in preventing decubitus cases, especially for bedridden patients in hospitals. Putri Andayani et al. (2023) found that VCO combined with two-hour repositioning effectively lowered pressure ulcer risk scores, maintained moisture, and minimized infection risk in hospitalized children, Similarly Supriyanti et al. (2024) found a 90.5% reduction in pressure ulcer scores among patients receiving VCO interventions, with significant effects ($p = 0.023$) in the VCO group. In various studies, VCO is compared to alternative interventions, like virgin olive oil, showing that VCO outperforms in ICU settings by improving patient pressure ulcer risk scores from vulnerable to safer levels post-intervention (Riduansyah et al., 2020). Supriyanti et al. (2024) also observed that VCO was more effective than lotion in reducing pressure ulcer incidence in High Nursing Dependency (HND) wards.

CONCLUSION

Overall, various studies in this document demonstrate VCO's significant benefits as a topical agent in preventing and accelerating the healing of pressure ulcers in patients vulnerable due to immobilization. VCO enhances skin moisture and offers antioxidant properties that support skin integrity. Its effectiveness is heightened when combined with massage techniques or repositioning strategies.

REFERENCES

Dewi, C., Amalia, R., & Safuni, N. (2024). Asuhan Keperawatan Pada Pasien Dengan Stroke Iskemik. Jurnal Penelitian Perawat Profesional, 6(3), 1081–1092. http://jurnal.globalhealthsciencegroup.com/index.php/JPPP

Fatimah, F., Djubaedah, S., & Febrianti, D. (2022). Pengaruh Pemberian Virgin Coconut Oil (VCO) Melalui Massage terhadap Pencegahan Luka Tekan terhadap Pasien Tirah Baring di Ruang ICU RSUD Dr. Chasbullah Abdulmadjid Kota Bekasi. Jurnal Kesehatan Masyarakat Perkotaan, 2(2), 23–38. https://doi.org/10.37012/jkmp.v2i2.1553

Idris, M., & Armi, P. A. (2022). Rancang Bangun Alat Pengolahan Santan Kelapa Menjadi Virgin Coconut Oil. METANA, 18(1), 71–76. https://doi.org/10.14710/metana.v18i1.45103

Linggi, E. B., Wirmando, W., Kurnia, M., & A, N. T. (2021). Pengaruh Pemberian Virgin Coconut Oil (VCO) Terhadap Luka Dekubitus Pada Pasien Tirah Baring. Jurnal Penelitian Kesehatan Suara Forikes, 12, 120–123. https://doi.org/10.33846/sf12nk122

Liputo, G. P., Silla, N. A., Pu, Z. E., Abidin, Z., Revai, A., Yusuf, A., & Keperawatan, F. (2018). A Literature Review: Stress Management in The Family of Intensive Care Patients. Jurnal INJEC, 3(1), 44–51. https://repository.unair.ac.id/88431/6/A%20literature%20Review.pdf

Ludya Pulung, M., Yogaswara, R., Fajar, D., & Sianipar, R. D. N. (2016). Potensi Antioksidan Dan Antibakteri Virgin Coconut Oil Dari Tanaman Kelapa Asal Papua. Chem. Prog, 9(2). https://doi.org/10.35799/cp.9.2.2016.27991

Lyder, C. H., & Ayello, E. A. (2008). Chapter 12. Pressure Ulcers: A Patient Safety Issue. http://www.bradenscale.com.braden.pdf.

Miladiarsi, M., Wahdaniar, W., Irma, A., Aswad, H., Binti Lukman, J., Ihram Fatany, A., Nurfadillah, A., & Ayu Adri, T. (2022). Pembuatan Dan Peyuluhan Manfaat Virgin Coconut Oil Dalam Bidang Kesehatan Sebagai Alternatif Pengobatan Herbal Pada Kelurahan Kalegowa Kabupaten Gowa. Dharma JNANA, 2(2). https://e-journal.unmas.ac.id/index.php/dharmajnana/about

Oklahoma Foundation for Medical Quality. (2020). PrevenTing Pressure ulcers: a PaTienT's guide. https://www.cdss.ca.gov/agedblinddisabled/res/VPTC2/8%20Paramedical%20Services/Preventing_Pressure_Ulcers_Patient_Guide.pdf

Primalia, P., & Hudiyawati, D. (2020). Pencegahan dan Perawatan Luka Tekan pada Pasien Stroke di Ruang ICU. Jurnal Berita Ilmu Keperawatan, 13(2), 110–116.

Putri Andayani, R., Wahyuni, F. S., Ausrianti, R., Reni, I., Werdi Dwi Edo, C., & Amir, H. (2023). Effectiveness of Virgin Coconut Oil and Regular Repositioning in Preventing Pressure Ulcers in Children. Med J Malaysia, 78, 511–514.

Riduansyah, M., Tasalim, R., & Hakim, L. (2020, July 23). Comparative Virgin Olive Oil and Virgin Coconut Oil of Decubitus Prevention in Patients with Long Rest Beds in Intensive Care Unit (ICU) at Ulin Hospital Banjarmasin. https://doi.org/10.4108/eai.23-11-2019.2298404

Salesius Onggang, F., Batbual, B., Romana, A., & Mau, A. (2024). East Nusa Tenggara Indonesia 3 Study Program Education Nurse, Major Nursing, Polytechnic Health Ministry Health Kupang. AHMAR METASTASIS HEALTH JOURNAL, 4(2), 20–23. http://journal.ahmareduc.or.id/index.php/AMHJ

Setiawan, I., Susyanti, D., & Pratama, M. Y. (2023). Penerapan Posisi Miring Kanan dan Miring Kiri (Ambulasi) terhadap Pencegahan Dekubitus pada Pasien Stroke Hemoragik. SCRIPTA SCORE Scientific Medical Journal, 4(2), 78–82. https://doi.org/10.32734/scripta.v4i2.10511

Sumiasih, N., Somoyani, N., & Armini, N. (2016). Virgin Coconut Oil Mempercepat Penyembuhan Luka Perineum Di Puskesmas Rawat Inap Kota Denpasar. Jurnal Skala Husada, 13(1), 39–49.

Supriyanti, T. E., Pratama, A. Y., Keperawatan, I., Bethesda, S., & Yogyakarta, Y. (2024a). Efektifitas Pemberian Virgin Coconut Oil (Vco) Dan Lotion Terhadap Kejadian Luka Tekan (Decubitus) Di Ruang High Nursing Dependency (Hnd) Rumah Sakit Telogorejo Semarang Tahun 2023 Effectiveness Of Applying Virgin Coconut Oil (Vco And Lotion) To The Prevalence Of Pressure Wounds (Decubitus) In High Nursing Dependency (Hnd) Ward Of Telogorejo Hospital Semarang In 2023. Jurnal Ilmu Keperawatan Komunitas, 7(1), 33–41.

Supriyanti, T. E., Pratama, A. Y., Keperawatan, I., Bethesda, S., & Yogyakarta, Y. (2024b). Effectiveness Of Applying Virgin Coconut Oil (Vco And Lotion) To The Prevalence Of Pressure Wounds (Decubitus) In High Nursing Dependency (Hnd) Ward Of Telogorejo Hospital Semarang In 2023. Jurnal Ilmu Keperawatan Komunitas, 7(1), 33–41.

Wahyudi, W. T., & Savage, E. (2023). Effectiveness Of Massage With Virgin Coconut Oil In The Prevention Of Decubitus Ulcers In High-Care Units. Synthesis Global Health Journal, 1(2), 86–92.

Wahyuningsih, E. S., Nurhalifa, & Nursidiq, K. M. (2023). Pembuatan Vco Dan Manfaatnya Bagi Kesehatan di Desa Kosambibatu, Cilebar, Karawang, Jawa Barat. Konferensi Nasional Penelitian dan Pengabdian (KNPP) Ke-3, 1603–1611.