NHSJ Nursing and Health Sciences Journal

Volume 2, Number 1 (March 2022)
e-ISSN: 2798-5067
p-ISSN: 2798-5059

A Literature Review: The Application of Virgin Coconut Oil (VCO) on Dermatitis Patients with Impaired Skin Integrity in Agricultural Areas

Rizeki Dwi Fibriansari[1*], Siti Eka Yuni[2], Arista Maisyaroh[3], Eko Prasetya Widianto[4]

[1,2,3,4]Prodi D3 Keperawatan Fakultas Keperawatan Universitas Jember, Indonesia;
rizekifibriansari@unej.ac.id (Corresponding Author)

Article Info:
Submitted:
05-01-2022
Revised:
07-03-2022
Accepted:
11-03-2022

DOI:
https://doi.org/10.53713/nhs.v2i2.88

ABSTRACT

Virgin Coconut Oil is a non-pharmacological therapy that can be applied to overcome the problem of impaired skin integrity. Virgin coconut oil contains anti-oxidants and is rich in vitamin E. The aim of the review was to determine the effect of VCO on impaired skin integrity in farmers with dermatitis. Initial searches for articles were made on Google Scholar and PubMed. Studies on the application of virgin coconut oil found 2,560 articles / journals but only 8 articles met the search criteria. According to search results, virgin coconut oil therapy can solve the problem of impaired skin integrity. Besides, it is also very important to be applied as a non-pharmacological therapy for farmers who are at risk of contact dermatitis. It is hoped that health professionals can recommend this as a therapy for disease problems related to impaired skin integrity such as dermatitis.

Keywords: dermatitis; farmer; virgin coconut oil

INTRODUCTION

Indonesia is an agricultural country that relies on the agricultural and plantation sectors as a source of stages and to meet community needs. One of the supporters of an agricultural and plantation sector is control efforts (Raini, 2015). They fertilize, harvest agricultural fields or plantations, clean and repair all agricultural equipment which can affect the prevalence of occupational contact dermatitis (Tombeng, Darmada, & Darmaputra, 2014). Pesticides are substances that can be toxic, but on the other hand, pesticides are needed by farmers to protect their crops. Pesticides can enter the body through the skin (dermal), respiration (inhalation) or the mouth (oral). Pesticides will be absorbed immediately if contact is through the skin or eyes (Yuantari, Widianarko, & Sunoko, 2015)

Chemicals in the form of pesticides are one of the causes of occupational skin disease (Sharma, Behrens, Chernoff, & Bommarius, 2018). Farmers are exposed to pesticides from mixing pesticides to harvesting previously treated crops. Apart from being exposed to pesticides, fertilizers are also often associated with contact dermatitis and contact dermatitis due to work in both industry and agriculture. A case in farmers is an acute reaction to calcium ammonium nitrate which is a content of urea fertilizer (Loukil, Mallem, & Boulakoud, 2015).. Other research conducted by Suryani on rice farmers stated that the working period, use of personal protective equipment, a history of skin diseases and personal hygiene are risk factors for contact dermatitis in rice farmers (Suryani; & Martini; & Susanto, 2017).

Data from the recapitulation conducted by the Pediatric Dermatology Study Group (KSDAI) from five major cities in Indonesia in 2010, dermatitis still ranked first (23.67%) of the top 10 skin diseases in adults from ten major hospitals spread across Indonesia. throughout Indonesia and in 2010 the incidence of dermatitis reached 36% of the incidence (Syaiful Ludfi et al., 2012). The prevalence of dermatitis in Indonesia is quite high, reaching 67.8%, where in South Kalimantan it reached (13.0%), followed by Central Sulawesi (10.58%), DKI Jakarta (9.99%), East Nusa Tenggara (9, 99%), Aceh (9.88%), Southeast Sulawesi (6.22%). The lowest prevalence is in West Sulawesi Province (2.57%) (Riskesdas, 2012).

Many factors are likely to affect skin diseases, especially dermatitis, which has a fairly high case, such as environmental factors, personal hygiene (personal hygiene) and the lack of public knowledge about dermatitis, resulting in increased use of substances that can trigger the occurrence of allergens, causing dermatitis. Based on the theory from experts, it is estimated that the factors that cause dermatitis can come from direct factors (contact with chemicals),

Volume 2, Number 1 (March 2022)
e-ISSN: 2798-5067
p-ISSN: 2798-5059

and indirect factors, namely (temperature, humidity, occupation, age, gender, race, previous history of allergic skin disease, personal hygiene and personal hygiene). environment) (Rahmatika, Saftarina, Anggraini, & Mayasari, 2020).

VCO contains Medium Chain Fatty Acids (MCFA) which is a fatty acid consisting of lauric acid, oleic acid, capriic acid, and caproic acid and functions as an antimicrobial. VCO 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 acidic environment on the skin so that it can kill disease-causing bacteria (Sebayang et al., 2020)

The treatment of Allergic Contact Dermatitis is currently developing rapidly. Dermatitis treatment using VCO innovation is a new innovation that is being discussed, in social groups, proper and correct treatment of dermatitis using VCO accelerates healing Dermatitis treatment. Virgin Coconut Oil (VCO) is thought to be effective because this oil is easily absorbed by the skin and contains substances to accelerate tissue regeneration. In addition, the content of virgin coconut oil (VCO) contains Lauric and Oleic Acid in VCO which softens the skin. In addition, VCO is also believed to be good for skin health because it is easily absorbed by the skin and contains vitamin E (Fatonah & Dewi, 2016). From the above problems, dermatitis is a skin integrity problem that requires treatment using VCO (Virgin Cococnut Oil) to avoid complications.

From the data obtained, the authors are interested in applying the VCO (Virgin Coconut Oil) method as an action to support nursing actions that can be done in treating dermatitis wounds. Therefore, based on this background, researchers are interested in conducting a review of the literature on the application of VCO (Virgin Coconut Oil) in dermatitis patients with nursing problems with skin integrity disorders in agricultural areas.

METHOD

A comprehensive summary in the form of a literature review regarding the application of VCO (Virgin Coconut Oil) in patients with dermatitis with nursing problems with impaired skin integrity in agricultural areas. The protocol and evaluation of the literature review will use the PRISMA checklist to determine the selection of studies that have been found and adapted to the objectives of the literature review. The method applied in conducting this research is a literature review, while the purpose of this study is to collect and analyze articles or journals related to the application of VCO (Virgin Coconut Oil) in patients with dermatitis with nursing problems with impaired skin integrity.

The literature search was carried out in February-March 2021. The data used in this study were secondary data obtained not from direct observation, but obtained from the results of research conducted by previous researchers. The literature search in this literature review used six databases with high and medium quality criteria, namely ScienceDirect, Spinger Link, Pubmed, and Google Schoolar. Search articles or journals using keywords and boolean operators (AND, OR NOT or AND NOT) which are used to expand or specify the search, making it easier to determine the articles or journals used. The keywords used when searching for “Dermatitis” AND “VCO (Virgin Coconut Oil)” AND “Agriculture”.

Table 1. Keywords literature review

Database	Keywords	Result
Scholar	((Dermatitis) AND (Agriculture) AND (VCO))	24
Springer Link	((VCO) AND (Dermatitis))	331
PubMed	((VCO) AND (Dermatitis) AND (Agriculture))	188
SINTA	((VCO) AND (Dermatitis))	3

Volume 2, Number 1 (March 2022)
e-ISSN: 2798-5067
p-ISSN: 2798-5059

Strategy used to search articles using PICO, which consists of Population/ problem, Intervention, Comparation, and Study design.

Table 2. format PICO in the Literature Review

Criteria for	Inclusion	Exclusion
Population	Adults including the elderly with dermatitis	Children
Intervention	VCO (Virgin Coconut Oil)	Not VCO (Virgin Coconut Oil)
Comparators	-	-
Outcomes	There is an effect of VCO application on impaired skin integrity	There is no effect of VCO application on impaired skin integrity
Study Design and publication Type	Randomized Controlled Trial, systematic review, and Meta-Analysis	-
Publication Years	Post 2016	Pre 2016
Language	English, Indonesian	Language other than English and Indonesian

This literature uses data bases such as ScienceDirect, Springer Link, Libgen, PubMed, Schoolar through the link of the National Library of the Republic of Indonesia and access from the University of Jember. At the initial search stage, 541 articles were found. Articles (Springer Link=331, PubMed=183, SINTA=3, and Schoolar=24), filtered from 2017-2021. After being filtered, there were 530 irrelevant articles based on titles and abstracts. Then obtained as many as 15 articles. Of the 15 articles, there were 8 articles with no effect on the outcome of VCO (Virgin Coconut Oil) application. The total number of articles reviewed is 8 articles. Articles reviewed are indexed by Scopus Q1-Q2. Below is a flow chart image of the article selection process that will be used in the literature review, starting from an initial search on the electronic database, selection of appropriate titles and abstracts, selection of conformity with inclusion criteria, and selected journal articles used in this literature review.

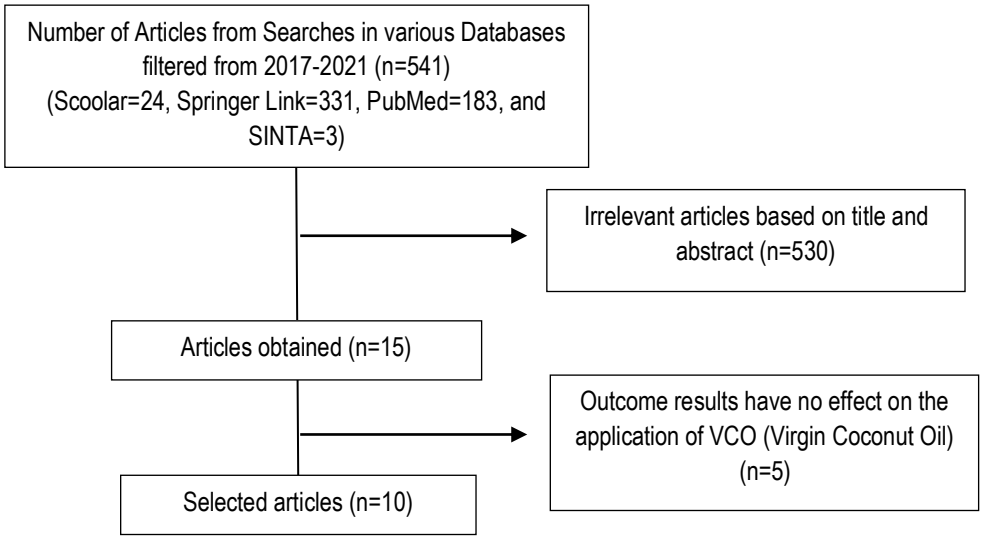

Figure 1. Diagram flow literature review

RESULT

Characteristics of Study Articles

Of the 8 articles, the research used the Randomized Controlled Trial, Systematic Review, or Meta Analysis method. 3 articles used the Randomized Controlled Trial method, 2 articles were Systematic Reviews with Meta Analysis, and 2 articles used the Meta Analysis method. The population and samples of the 8 articles were adult dermatitis patients. The intervention carried out was the application of giving VCO (Virgin Coconut Oil) as an antioxidant

Volume 2, Number 1 (March 2022)
e-ISSN: 2798-5067
p-ISSN: 2798-5059

rich in vitamin E polyphenols which are useful for preventing skin infections and treating skin damaged by free radicals based on Sumah, et al (2020).

Characteristics of Respondents in Study Articles

Respondents or samples in this Literature Review are adults who have dermatitis. In a study conducted by Soomin et al. (2017) used a participant who was diagnosed with dermatitis aged 35-55 years. The participants in another study by Mithun et al. (2018) is a dermatitis patient aged 28-60 years. Participants who were dermatitis patients with atopic dermatitis were 36 people in the study of (Panahi, Rastgar, Zamani, & Sahebkar, 2020).

Table 3. Theoretical Mapping

No	Author/year	Title	Design	Sample	Result
1.	(Niken et al, 2020)	Contact dermatitis Among chicken farmers	This research is a quantitative study with a cross-sectional design	The population in this study was a total sample of 35 people.	A total of 35 respondents, 25 of whom did good personal hygiene and the rest were not good in personal hygiene, as many as 10 respondents. Of the 35 respondents who performed good personal hygiene, 13 of them complained of symptoms of contact dermatitis and 12 had no symptoms of dermatitis, those who did not have good personal hygiene, 4 of whom complained of symptoms of contact dermatitis and 6 there were no symptoms of dermatitis. This shows that there is a significant relationship between personal hygiene and symptoms of contact dermatitis. Personal hygiene activities carried out include washing hands, feet, face, and changing clothes after workers have finished working or in contact with raw materials.
2.	(Setyo et al, 2019)	Factors Associated with Personal Hygiene, use of Personal Protective Equipment, and the Risk of Contact Dermatitis among Scavengers: A Path Analysis Evidence from Surakarta, Central Java	Cross sectional design	A sample of 203 scavengers was selected by total sampling. The dependent variable was contact dermatitis. The independent variables were personal hygiene, PPE, perceived susceptibility, perceived severity, perceived benefit, self-efficacy, cues to action, social support, education, and age	The risk of contact dermatitis was directly and positively affected by poor personal hygiene and incomplete use of PPE. The risk of contact dermatitis was affected indirectly and positively by the perceived benefits of personal hygiene and low PPE, the originator of individual hygiene actions and low PPE, self-efficacy of personal hygiene and low PPE, social support of personal hygiene and low PPE, low perceived vulnerability, low perceived severity, <Middle school education, and age 15-35 years old.
3.	(Achisna Rahmatika et al, 2020)	Relationship of Contact Dermatitis Risk Factors in Farmers	Cross-sectional method	379 respondents	Based on the results of the research and discussion, it can be concluded that the following risk factors are statistically significant, including the use of PPE, length of contact with farmers, personal hygiene, types of pesticides and types of fertilizers with the incidence of contact dermatitis in farmers.
4.	(Ike	Correlation	Cross-sectional	61 Tobacco	The results of the frequency analysis of

Volume 2, Number 1 (March 2022)
e-ISSN: 2798-5067
p-ISSN: 2798-5059

No	Author/year	Title	Design	Sample	Result
	Puspitasari et al, 2020)	between Environmental and Individual Factors with Dermatitis Contact on Tobacco Farmers	approach	Farmers	tobacco farmers' contacts have a p value of 0.020, smaller than 0.05, meaning that there is a relationship, the length of contact, p value of 0.000, is smaller than 0.05, which means that there is a relationship between length of contact and contact dermatitis. For the variable period of service there is no relationship with contact dermatitis with a p value of 0.210 greater than 0.05, while for the results of the analysis of age, a p value of 0.455 is obtained, which means that there is no relationship between ending and contact dermatitis.
5.	(Annisa Febriana et al, 2020)	Health Education Interventions on Changes in Knowledge about Dermatitis Incidence and its Prevention in Pantai Cermin Kanan Village, Pantai Cermin District, Serdang Bedagai Regency	Cross-sectional method	50 fishermen in Pantai Cermin Kanan District	The data analysis used in this study consisted of univariate and bivariate analyzes. This analysis uses descriptive statistics to describe the frequency distribution of the independent and dependent variables which are presented in tabular form. The bivariate analysis used in this study was the Paired Sample T-test. There is a difference in the knowledge of fishermen in Pantai Cermin Kanan Village regarding the use of good PPE between before and after a health education intervention regarding the potential dangers of dermatitis and its prevention.
6.	(Rifka Putri Andayani, 2021)	EFFECTIVENESS OF GIVING VIRGIN COCONUT OIL AGAINST DAMAGE SKIN INTEGRITY IN CHILDREN	Pre and post test control group design	50 respondents (intervention group and group) control).	The results showed that there were differences in the Braden QD scores before and after being given virgin coconut oil in the intervention group ($p<0.001$) and there was no significant difference to the Braden QD score in the control group ($p>0.001$). VCO can be used as an alternative therapy that can be applied by pediatric nurses in the pediatric inpatient room to reduce the risk of damage skin integrity in hospitalized children.
7.	(Panahi et al., 2020)	Comparing the Therapeutic Effects of Aloe vera and Olive Oil Combination Cream versus Topical Betamethasone for Atopic Dermatitis: A Randomized Double-blind Clinical Trial	This randomized clinical trial was performed during July 2009-July 2010 in Dermatology clinics of Tehran Baqiyatallah University.	36 patients with atopic dermatitis	Total SCORAD severity scores showed significant decrease in both groups, while it was more prominent in Olivederma group (64.5% improvement in Olivederma vs. 13.5% improvement in Betamethasone, p-value < 0.001). Quality of life (DLQI questionnaire) of AD patients was significantly improved after 6 weeks treatment with Betamethasone (22.3%, $p < 0.001$) and Olivederma (60.7%, p-value < 0.001). Olivederma group showed a significantly lower DLQI score in comparison with Betamethasone treated patients after 6 weeks of therapy ($p < 0.001$). Improvements in eosinophil count and serum IgE was observed.

Volume 2, Number 1 (March 2022)
e-ISSN: 2798-5067
p-ISSN: 2798-5059

No	Author/year	Title	Design	Sample	Result
8.	(Mithun Chandra Konar et all, 2019)	Effect of Virgin Coconut Oil Application on the Skin of Preterm Newborns: A Randomized Controlled Trial	A randomized controlled trial was conducted in the rural field practice area of Department of Community Medicine, Burdwan Medical College from March 2014 to August 2018.	Neonatal skin condition was assessed on 7th, 14th, 21st and 28th day of life. Neurodevelopmental status was assessed on 3rd, 6th and 12th months.	A total of 2294 preterm were included in the study. Groups A and B consisted of 1146 and 1148 preterm infants, consecutively. Mean gestational age of the study population was 31.963.4 weeks and 50.4% were male. Mean weight loss in first few days was less in group A but mean weight gain per day was higher in group B. Lesser incidences of hypothermia and apnea, and better skin maturity and neurodevelopmental outcome were noted in group A. No significant adverse effect was noted with coconut oil application.
9.	(Soomin Kima et, all 2017)	Enhanced barrier functions and anti-inflammatory effect of cultured coconut extract on human skin	Study desain	Residual human skin specimens (from women, age: 35–55 years)	CCE showed barrier-enhancing and anti-inflammatory effects against ex vivo UVB radiationinduced changes. To our knowledge, this is the first such experimental study demonstrating the efficacy of CCE in human skin. The promising anti-inflammatory activity of CCE may be attributed to increased levels of polyphenols and FAs in CCE. Due to its beneficial in vitro molecular profile, we can expect various clinical implications of CCE in both diseased and healthy skin.
10.	(Mara Therese Padilla Evangelista, et all 2013)	The effect of topical virgin coconut oil on SCORAD index, transepidermal water loss, and skin capacitance in mild to moderate pediatric atopic dermatitis: a randomized, doubleblind, clinical trial	Patients and study design	Children aged 1–13 years were recruited between March 2011 and June 2012 to study the effects of topical VCO	Among pediatric patients diagnosed with mild to moderate AD, topical application of VCO for eight weeks was superior to that of mineral oil based on clinical (SCORAD) and instrumental (TEWL, skin capacitance) assessments.

DISCUSSION

Virgin coconut oil (VCO) is a vegetable oil obtained from coconut oil (coconut oil) through the extraction process of coconut flesh (Cocos nucifera). Coconut oil is traditionally produced into VCO through a wet extraction system of coconut oil without chemicals and further processed through the refining, bleaching, and deodorizing (RBD) process. In vitro studies have proven that VCO has antibacterial activity against Staphylococcus aureus in adults with AD. Virgin coconut oil has been shown to be comparable to mineral oil as an emollient which is an occlusive ingredient that helps skin hydration by occludes the skin surface and retains water in the stratum corneum (Mardiana, Ditama, & Tuslaela, 2020).

Dermatitis treatment using VCO innovation is a new innovation that is being discussed, in social groups, the treatment of dermatitis using VCO is good and correct to accelerate healing Dermatitis treatment. Virgin Coconut Oil (VCO) is thought to be effective because this oil is easily absorbed by the skin and contains substances to accelerate tissue regeneration. In addition, the content of virgin coconut oil (VCO) contains Lauric and Oleic Acid in VCO which

Volume 2, Number 1 (March 2022)
e-ISSN: 2798-5067
p-ISSN: 2798-5059

softens the skin. effective and safe to use as a moisturizer to increase skin hydration. In addition, VCO is also believed to be good for skin health because it is easily absorbed by the skin and contains vitamin E (Fatonah & Dewi, 2016).

Coconut oil has been used for generations to prevent and treat dry skin that is prone to irritation. In particular, virgin coconut oil (VCO) is reported to have high levels of polyphenols and fatty acid components. A 2017 study in the journal Food and Chemical Toxicology said that applying VCO extract to the skin is beneficial for reducing inflammation and increasing its protective function (skin barrier). Virgin coconut oil also contains monolaurin. Monolaurin is a fatty acid that suppresses the development of the infection-causing Staphylococcus aureus bacteria that usually lives on eczema-prone skin (Meliyana & Rosaria Ika, 2017)

Coconut oil is a safe solution to prevent dryness and peeling of the skin, the benefits of coconut oil on the skin are comparable to that of mineral oil, it has no adverse side effects on the skin. This coconut oil also helps in treating various skin problems including psoriasis, dermatitis, and other skin infections (Meliyana & Rosaria Ika, 2017)

Dermatitis treatment using VCO innovation is a new innovation that is being discussed, in social groups, the treatment of dermatitis using VCO is good and correct to accelerate healing Dermatitis treatment. Virgin Coconut Oil (VCO) is thought to be effective because this oil is easily absorbed by the skin and contains substances to accelerate tissue regeneration. In addition, the content of virgin coconut oil (VCO) contains Lauric and Oleic Acid in VCO which softens the skin. In addition, VCO is also believed to be good for skin health because it is easily absorbed by the skin and contains vitamin E (Fatonah & Dewi, 2016).

The provision of VCO (Virgin Coconut Oil) in general is the most widely used according to research from (Shoomin et al., 2017; Kima et al., 2017; Setyo et al., 2020) that the technique of giving VCO (Virgin Coconut Oil) in dermatitis patients is by Apply on the injured part of the skin by allowing it to dry. In the study of Summah et al, (2020), the intervention used was to treat dermatitis wounds and VCO (Virgin Coconut Oil) was used as a topical drug to help wound healing in dermatitis patients.

Application of VCO (Virgin Coconut Oil) can be done 5 times per week, according to Shoomin et al. (2017). As for research based on Kima et al. (2017) VCO administration was carried out for 3 consecutive days, and waited for 15 minutes until it dries. Meanwhile, based on the research of Salman & Hervian, (2020) VCO is given once every 2 days according to the schedule for treating dermatitis wounds. Meanwhile, according to Konar et al, (2019) the best VCO provision is every 2 days because the fatty acid content contained in coconut oil can function as a moisturizer to prevent dry skin and as a topical ingredient.

Table 4. Duration of VCO (Virgin Coconut Oil)

No.	Journal Articles	Duration
1.	(Shomin-Levi & Yarden, 2017)	5 times per week (by applying to the injured or reddened skin area).
2.	(Kim et al., 2017)	15 minutes (after treating the wound on the dermatitis patient, then waiting for it to dry) carried out for 3 consecutive days.
3.	(Salman et al., 2020)	2 times a day (according to the schedule for treating dermatitis wounds).
4.	(Konar et al., 2019)	The best duration is once every 2 days by giving a topical method by applying it to the reddened skin area.

Seven articles were reviewed according to the inclusion criteria using several instruments to assess an impaired skin integrity in dermatitis patients using the Braden Scale (QD) which consists of 7 subscales. The lowest score was 0 for the lowest risk of dermatitis and 20 for the highest risk score (Shoomin et al, (2017); Kima et al, (2017); Niken et al, (2020); Konar et al, (2019); Yunes et al, (2020); Setyo et al, (2019); Handayani et al, (2011); and Konar et al, (2019).

Table 5 Skin Integrity Damage Assessment Instrument

No.	Journal Articles	Assessment Instrument
1.	Shoomin et.all (2017)	Skala Barden (QD)
2.	Kima et.all (2017)	Skala Barden (QD)
3.	Konar et.all (2019)	Skala Barden (QD)
4.	Panahi et al., (2020)	Skala Barden (QD)
5.	Konar et.all (2019)	Skala Barden (QD)

Volume 2, Number 1 (March 2022)
e-ISSN: 2798-5067
p-ISSN: 2798-5059

CONCLUSION

Based on research reviews from several journals published previously, the problem of skin integrity is reduced after clients use Virgin Coconut Oil (VCO) on skin areas that have impaired skin integrity. Virgin Coconut Oil (VCO) innovation, because after using Virgin Coconut Oil (VCO) the patient's redness began to improve. Thus the author can provide an overview in general and specifically regarding the application of VCO (Virgin Coconut Oil). Based on the journal article that the author has reviewed using the duration of giving VCO (Virgin Coconut Oil), it is carried out every 2 days for 2 weeks with the treatment technique that the author chooses, namely by applying VCO (Virgin Coconut Oil) on the skin that has impaired skin integrity.

Suggestions for nursing care, VCO can be considered as a non-intervention pharmacology as a rehabilitation effort in stroke patients especially in the community groups. Further researchers is the need for further research in the development of literature reviews related to the application of giving VCO (Virgin Coconut Oil) to dermatitis patients with nursing problems, impaired skin integrity in agricultural areas, especially in Indonesia because research related to this in Indonesia is still relatively limited.

ACKNOWLEDGEMENT

Thank you to all who have participated and helped in the process of compiling this literature review. This literature review is prepared without conflict in the writing.

REFERENCES

Fatonah, S. &, & Dewi, R. (2016). *Efektifitas Penggunaan Virgin Coconut Oil (Vco) Secara Topikal Untuk Mengatasi Luka Tekan (Dekubitus) Grade I dan II*. 264–270.

Kim, K. M., Kang, N. S., Jang, H. S., Park, J. S., Jeon, B. H., & Hong, J. W. (2017). Characterization of Heterochlorella luteoviridis (Trebouxiaceae, Trebouxiophyceae) isolated from the Port of Jeongja in Ulsan, Korea. *Journal of Marine Bioscience and Biotechnology*, *9*(2), 22–29. https://doi.org/10.15433/ksmb.2017.9.2.022

Konar, B., Mitchell, T. J., Iken, K., Coletti, H., Dean, T., Esler, D., … Weitzman, B. (2019). Wasting disease and static environmental variables drive sea star assemblages in the Northern Gulf of Alaska. *Journal of Experimental Marine Biology and Ecology*, *520*(May), 151209. https://doi.org/10.1016/j.jembe.2019.151209

Loukil, B., Mallem, L., & Boulakoud, M. S. (2015). Study of the effect of fertilizers on biochemical parameters in the workers of the petrochemical complex. *Advances in Environmental Biology*, *9*(8), 34–37. https://doi.org/10.5829/idosi.aejts.2015.7.1.9172

Mardiana, T., Ditama, E. M., & Tuslaela, T. (2020). an Expert System for Detection of Diabetes Mellitus With Forward Chaining Method. *Jurnal Riset Informatika*, *2*(2), 69–76. https://doi.org/10.34288/jri.v2i2.121

Meliyana, P., & Rosaria Ika, P. (2017). Analisis Faktor-Faktor Yang Mempengaruhi Kepatuhan Pasien Hipertensi Dalam Penggunaan. *2nd Seminar Nasional IPTEK Terapan (SENIT)*, 15–17.

Panahi, Y., Rastgar, N., Zamani, A., & Sahebkar, A. (2020). Comparing the therapeutic effects of aloe vera and olive oil combination cream versus topical betamethasone for atopic dermatitis: A randomized double-blind clinical trial. *Journal of Pharmacopuncture*, *23*(3), 173–178. https://doi.org/10.3831/KPI.2020.23.3.173

Rahmatika, A., Saftarina, F., Anggraini, D. I., & Mayasari, D. (2020). Relationship of Contact Dermatitis Risk Factors in Farmers. *Jurnal Kesehatan*, *11*.

Raini, M. (2015). Kajian Pestisida Berbahan Aktif Antibiotika. *Media Penelitian Dan Pengembangan Kesehatan*, *25*(1), 33–42. https://doi.org/10.22435/mpk.v25i1.4094.33-42

Salman, M., Mustafa, Z. U., Asif, N., Zaidi, H. A., Hussain, K., Shehzadi, N., … Saleem, Z. (2020). Knowledge, attitude and preventive practices related to COVID-19: a cross-sectional study in two Pakistani university populations. *Drugs and Therapy Perspectives*, *36*(7), 319–325. https://doi.org/10.1007/s40267-020-00737-7

Sebayang, S. K., Dibley, M. J., Astutik, E., Efendi, F., Kelly, P. J., & Li, M. (2020). Determinants of age-appropriate breastfeeding, dietary diversity, and consumption of animal source foods among Indonesian children. *Maternal and Child Nutrition*, *16*(1), 1–19. https://doi.org/10.1111/mcn.12889

Sharma, A., Behrens, S. H., Chernoff, Y. O., & Bommarius, A. S. (2018). Modulation of the Formation of Aβ- and Sup35NM-Based Amyloids by Complex Interplay of Specific and Nonspecific Ion Effects. *Journal of Physical Chemistry B*, *122*(19), 4972–4981. https://doi.org/10.1021/acs.jpcb.7b12836

Shomin-Levi, H., & Yarden, O. (2017). The Neurospora crassa PP2A regulatory subunits RGB1 and B56 are required for proper growth and development and interact with the NDR kinase COT1. *Frontiers in Microbiology*, *8*(SEP), 1–15. https://doi.org/10.3389/fmicb.2017.01694

Suryani;, N. D., & Martini; & Susanto, H. S. (2017). Perbandingan Faktor Risiko Kejadian Dermatitis Kontak Iritan Antara Petani Garam Dan Petani Sawah Di Kecamatan Kaliori Kabupaten Rembang. *Jurnal Kesehatan Masyarakat*, *5*(4), 444–455.

Syaiful Ludfi, A., Agustina, L., D, F., A, B., S, G., & Effendi, C. (2012). Asosiasi Penyakit Alergi Atopi Anak Dengan Atopi Orang Tua

Volume 2, Number 1 (March 2022)
e-ISSN: 2798-5067
p-ISSN: 2798-5059

Dan Faktor Lingkungan. *Journal of Internal Medicine*, *13*(1), 53–62.

Tombeng, M., Darmada, I., & Darmaputra, I. (2014). Dermatitis Kontak Akibat Kerja Pada Petani. *Bagian/SMF Ilmu Kesehatan Kulit Dan Kelamin Fakultas Kedokteran Universitas Udayana/Rumah Sakit Umum Pusat Sanglah Denpasar*, (6), 2. Retrieved from https://ojs.unud.ac.id/index.php/eum/article/download/4882/3668/

Yuantari, M. G. C., Widianarko, B., & Sunoko, H. R. (2015). Analisis Risiko Pajanan Pestisida Terhadap Kesehatan Petani. *Jurnal Kesehatan Masyarakat*, *10*(2), 239. https://doi.org/10.15294/kemas.v10i2.3387