

# Rapid Appraisal Project: Nutrition Related to Wound Healing

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## PICO Question

In patients suffering from chronic wounds or pressure ulcers, does nutritional supplementation increase the rate of healing compared to those with adequate nutrition?

## Summary of Integrative Review

The article that was used for the rapid appraisal discusses how malnutrition is highly prevalent in patients with pressure ulcers. According to Cereda, Klersy, Seriola, Crespi, and D'Andrea (2015), supplementation with a nutritional formula enriched with arginine, zinc, and antioxidants was proven to have healing benefits. In a systematic review completed by Smith et al. (2013), 12 different studies were evaluated measuring the wound size reduction between a standard diet compared to protein supplemented diet. There was significant size reduction with protein supplementation.

## Summary of Interview

A clinician expert was interviewed, Ann Lif, MSN, RN, CWOCN, regarding her experience with wounds and nutrition. She stated that supplements with protein, arginine, and glutamine are typically given to patients to promote wound healing.

### Article #1 : EPA + DHA Supplementation Reduces PMN Activation in Microenvironment of Chronic Leg Ulcers: A Randomized, Double Blind, Controlled Study.

|                           |   |
|---------------------------|---|
| Study Aim                 | Assess the effectiveness of EPA + DHA oral supplementation vs. placebo in terms of reducing the number of polymorphonuclear leukocytes (PMNs) and activated PMNs (linked to chronic inflammation and delayed healing) in blood and wound fluid in patients with chronic venous leg ulcers |
| Research Design           | Quantitative Randomized Control   |
| Sample Method             | Non-probability convenience sample, one hospital.   |
| N                         | N = 40  |
| Statistical Analysis Type | Descriptive Statistics  |
| Results                   | EPA+DHA supplementation day 28 of therapy had a 27% reduction in wound area   |

### Article #2 : Nutritional Profile of Older Adults with Chronic Venous Leg Ulcers: A Pilot Study

|                           |   |
|---------------------------|---|
| Study Aim                 | Assess the dietary intake levels of nutrients important for wound healing and general health in a sample of older adults with CVLUs during one study visit wherein they self-reported nutritional data. |
| Research Design           | Descriptive Cross- Sectional Design   |
| Sample Method             | Non-probability convenience sample, one hospital  |
| N                         | N = 12  |
| Statistical Analysis Type | Descriptive Statistics  |
| Results                   | Participants with CVLUs were found to have consumed double the recommended amount of sodium, fat, and sugar.  |

### Article #3 : A Nutritional Formula Enriched with Arginine, Zinc, and Antioxidants for the Healing of Pressure Ulcers: a Randomized Trial.

|                           |  |
|---------------------------|--|
| Study Aim                 | To evaluate whether nutritional supplementation with arginine, zinc, and antioxidants within a high-calorie, high-protein formula improves pressure ulcer healing. |
| Research Design           | Quantitative Randomized Control  |
| Sample Method             | Non-probability convenience sampling, adult long term care services  |
| N                         | N=200  |
| Statistical Analysis Type | Descriptive Statistics   |
| Results                   | After 8 weeks of supplementation, the experimental group had a mean reduction of ulcer size of 60.9%, compared to the control group with 45.2%.                    |

## Recommendations for Implementation and Evaluation

Nursing collaboration with nutrition departments, and further nursing education on nutrition and wound healing. Facilities can add specific nutrition protocols to patients using weight-based calculations to make it specific to each patient. If the nutrition regimen protocol strategy were to be implemented, one possible way to evaluate would be to monitor lab values such as total protein and albumin each day with a baseline level before and after starting the regimen. In addition to monitoring lab values, photo documentation showing the progress of wound healing could be used to evaluate its efficiency.

## References

- Cereda, E., Klersy, C., Seriola, M., Crespi, A., & D'Andrea, F. (2015). A nutritional formula enriched with arginine, zinc, and antioxidants for the healing of pressure ulcers: a randomized trial. *Annals Of Internal Medicine*, 162(3), 167-174.
- McDaniel, J. C., Szalacha, L., Sales, M., Roy, S., Chafee, S., & Parinandi, N. (2017). EPA + DHA supplementation reduces PMN activation in microenvironment of chronic venous leg ulcers: A randomized, double-blind, controlled study. *Wound Repair Regeneration*, 25(4), 680-690.
- McDaniel, J. C., Kemmner, K. G., & Rusnak, S. (2015). Nutritional profile of older adults with chronic venous leg ulcers: A pilot study. *Geriatric Nursing*, 36(5), 381-386.
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