

# November Study of the Month

## The Efficacy of Medium-Chain Triglyceride Oil Massage on Preterm Infant Growth

### Summary by Kiara Kallio, 2<sup>nd</sup> year CCNM student

**Introduction:** Massage has been used to stimulate the vagus nerve and encourage weight gain in premature infants. Infants are at a higher risk of trans-epidermal water loss and infection and massage with different oils (coconut, sunflower, olive, and sesame) has been shown to act as a skin barrier and source of dietary fats. Medium-chain triglyceride (MCT) oil is more easily absorbed and provides more calories than long-chain triglycerides, making it of particular interest in the management of low birthweight infants. The purpose of this study was to determine the efficacy of MCT oil massage on weight gain, height, and head circumference in generally healthy preterm infants.

**Study Design:** Prospective, single-blinded, randomized controlled trial.

**Population:** Premature male (n=23) and female (n=25) infants with generally good health and on breastmilk, formula, or mixed feeding.

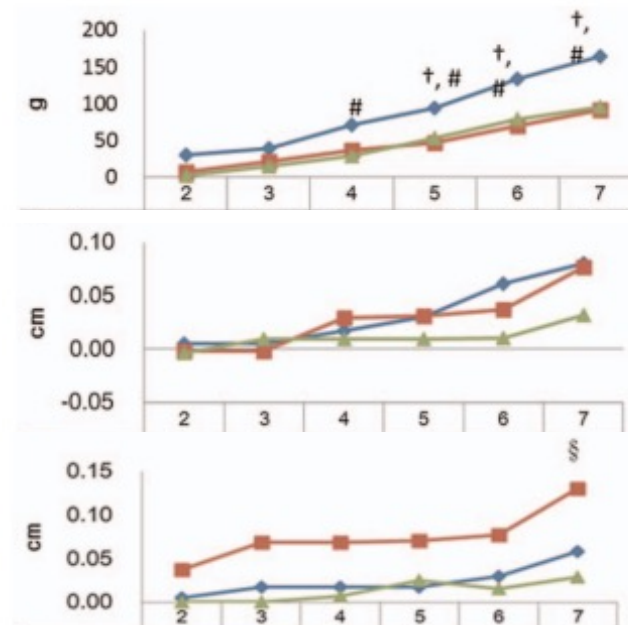
**Intervention:** Participants were randomly assigned to one of three groups using SPSS software:

1. Massage with MCT oil (10mL/kg/day MCT oil) (n=16; 10 females, 6 males)
2. Massage without MCT oil (n=16; 8 females, 8 males)
3. No intervention (n=16; 7 females, 9 males)

The two massage groups underwent two 5-min phases (tactile and kinesthetic) with force applied at ~300g for 7 consecutive days by trained nurses.

**Outcome Measures:** Weight, length, and head circumference were measured at days 1 and 7 in each of the three groups.

**Results:** Infants in group 1 showed a higher increase in weight than infants in both groups 2 and 3. At day 4, the weight gain in group 1 was statistically significantly greater than in group 3 (71.30 vs 29.39g;  $P < 0.05$ ). From days 5-7, the weight gain in group 1 was significantly greater than both group 2 and 3 ( $P < 0.05$ ). There was no statistical difference between the groups for height and head circumference. There were no adverse effects reported.



**Figure 1.** Mixed-effects model showing the least squares means of change in weight (A), height (B), and head circumference (C) at days 2 through 7 compared to day 1. ♦ = Group 1, ■ = Group 2, ▲ = Group 3. #: Group 1 compared to Group 3 ( $P < 0.05$ ). †: Group 1 compared to Group 2 ( $P < 0.05$ ). §: Group 2 compared with group 3;  $P < 0.05$ .

**Discussion:** The results showed an increase in weight among infants undergoing MCT oil massage compared to the other two groups, making it a possible cost efficient and safe intervention for low birthweight. One limitation of this study was the short duration of study (7 days). Because the study was conducted out of a hospital, preterm infants were discharged when they were healthy enough and thus unable to continue in the study.

Would a longer treatment of MCT oil massage show an increase in infant length and head circumference? Are there any other populations that could benefit from MCT oil massage? The type of milk feeding was relatively equal among each of the groups aside from Group 3. Could the type of milk feeding influence the results since breastmilk feeding has been linked to a slower weight gain in preterm infants compared to formula-fed preterm infants?

### Reference:

Liao YC, Wan YH, Chen PH, Hsieh LY. Efficacy of medium-chain triglyceride oil massage on growth in preterm infants: a randomized controlled trial: A CONSORT-compliant article. *Medicine (Baltimore)*. 2021;100(30):e26794. doi:10.1097/MD.00000000000026794

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