Abstract

Maternal Breast Growth and Body Mass Index in Relation to Milk Production †

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Low milk production poses a substantial challenge to exclusive and continued breastfeeding, which affects 10–15% of lactating mothers. This study aimed to explore the relationships between MP and both the maternal body mass index (BMI) and changes in breast volume during pregnancy and lactation.

Lactating mothers at 1–6 months postpartum conducted 24 h MP measurements using the test weighing method (n = 316; 74—low milk production (LMP), <600 mL; 242—normal milk production (NMP), ≥600 mL). Demographic and obstetric data, including maternal age, parity, infant sex, and birth mode, as well as pre-pregnancy and postpartum body mass index (BMI) and bra size, were provided. Maternal breast volume (cm³) was calculated based on both bra cup size and band size. Descriptive statistics, Student’s t-test, two-proportion z-test, correlation analysis and multivariable linear regression models were applied to elucidate maternal factors related to milk production.

The 24 h milk production in the LMP group was 466 ± 120 mL (80–599 mL) and 850 ± 191 mL (601–1682 mL) in the NMP group (p = 0.001). No significant differences were found between the groups in pre-pregnancy BMI, postpartum BMI, and BMI change (ΔBMI), as well as pre-pregnancy and postpartum breast volume, and breast volume increase (Δbreast volume). Both pre-pregnancy and postpartum BMI were positively correlated with pre-pregnancy and postpartum breast volume (r = 0.59–0.67, p = 0.001, for all). There was a higher proportion of mothers with Δbreast volume < 200 cm³ in the LMP group compared with the NMP group (63% (41/65) vs. 45% (91/204), respectively, p = 0.020). There was no difference in milk production between the LMP groups with Δbreast volume < 200 cm³ and Δbreast volume > 200 cm³. However, mothers in the LMP group with Δbreast volume < 200 cm³ had lower milk production compared to both the NMP group with Δbreast volume < 200 cm³ (mean difference ± standard error: 379 ± 34 mL, p < 0.001) and NMP group with Δbreast volume > 200 cm³ (414 ± 33 mL, p < 0.001). Similarly, the LMP group with Δbreast volume > 200 cm³ had a lower MP compared to both the NMP group with Δbreast volume < 200 cm³ (343 ± 42 mL, p < 0.001) and NMP group with Δbreast volume > 200 cm³ (377 ± 41 mL, p < 0.001). In addition, mothers in the LMP group with Δbreast volume > 200 cm³ had a higher postpartum BMI compared to both the NMP group with Δbreast volume < 200 cm³ (mean difference 4.1 ± 1.5, p < 0.033) and NMP group with Δbreast volume > 200 cm³ (mean difference 4.6 ± 1.5, p < 0.011).
These preliminary results highlight the complex relationships between maternal BMI, increase in breast volume and 24 h milk production, and suggest that BMI and breast growth are potentially important indicators of milk production. Further investigations of these inter-related factors may inform interventions aiming at achieving normal milk production in women with higher adiposity.


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