



Philips AVENT Relaxation Study

Study Summary

Philips AVENT. For the best start in life.





More comfort, more milk

Published research has shown that when a mother is stressed, breastfeeding is more difficult because stress inhibits milk ejection and decreases milk volume [3-5]. Conversely, it has been postulated that for an adequate let-down response, psychological relaxation is necessary: the more comfortable a mother feels, the more relaxed she will be, and the easier the milk will start and continue to flow. Only a few studies have investigated this, either in a hospital setting or with infants still hospitalized while the mother had returned

home, and the results indicate that relaxation improves milk expression [6-8]. Our most recent clinical study on evaluating the efficacy and preference of electric breast pumps with mothers

of pre-term babies strengthen these results: we found that the subjective evaluation of comfort in using a breast pump was a significant predictor of milk production, with higher comfort ratings associated with greater milk volume, irrespective of the breast pump used [9-10]. We also found that ease-of-use was positively associated with greater milk volume.

To seek confirmation of these indications, we specifically investigated whether more comfort results in more milk as this was yet to be demonstrated in a clinical study using breast pumps.



Philips AVENT: Helping mothers breastfeed longer

At Philips AVENT, we are dedicated to helping mothers breastfeed longer because we recognise the importance of breastfeeding for the healthy development of the infant and the health of the mother.

To give babies the healthiest start in life, we support the WHO recommendations [1] and the recently reaffirmed AAP guidelines [2] to help mothers aim for 6 months of exclusive breastfeeding and continued breastfeeding onwards while other foods are being introduced. We provide parents with educational materials,

online forums, professional support and evidence-based products; and we work with healthcare professionals to support them in helping parents achieve breastfeeding success.

Ever since AVENT started 27 years ago, we have been combining professional expertise with consumer understanding in working with scientific experts, clinical researchers, healthcare professionals and parents alike to research breastfeeding and to develop and evaluate our products and services, as shown through our extensive collection of research and network of experts.

Methods

With Philips Research, we have investigated the hypothesis that greater relaxation results in greater milk volume in a clinical study evaluating the effect of relaxation on the efficacy of milk expression [11].

Figure 1 summarizes the study design. In this study, 48 lactating and breast pumping mothers were asked to express milk with their breast pump on two consecutive days: once directly after a relaxation exercise and once without this exercise. By random assignment, half the mothers had the relaxation exercise on the first day, whereas the other half had it on the second day. To relax, mothers could choose from either a breathing exercise or listening to music for about 10-15 min.

We then used questionnaires to measure the extent of which the mothers were relaxed and felt comfortable. Relaxation was measured with the validated STAI questionnaire (State-Trait Anxiety Inventory) which measures the level of anxiety on a 60 point scale with 20 being fully relaxed and 80 being least relaxed. The level of comfort and relaxation were also measured with VAS (Visual Analog Scale) ranging from 0 to 100 (maximum). Next, the mothers were asked to express their breast milk from both breasts using their own pumps after which we measured the total amount of milk produced. By comparing the situation with and without relaxation exercise, we could compare the change in relaxation with changes in milk volume and comfort.

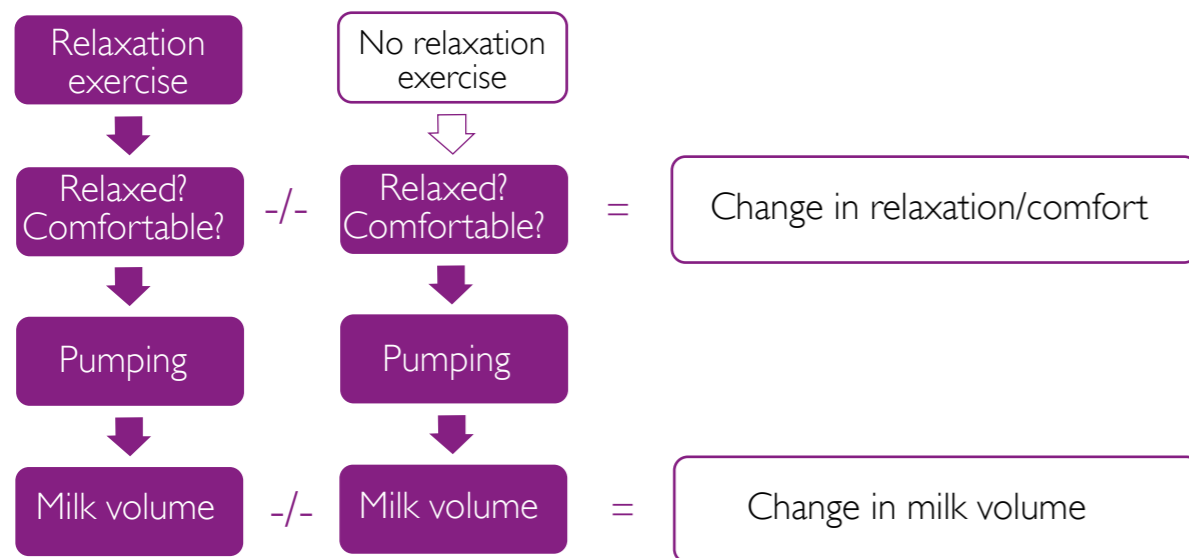


Figure 1: Overview of clinical study design



Results

As shown in Figure 2, we found for most mothers that when they were more relaxed they produced more milk. The horizontal axis shows whether mothers became more or less relaxed, and the vertical axis shows whether they produced more or less milk. The upper-left corner then demonstrates that the majority of mothers (21 out of 48) was both more relaxed and produced more milk.

Only 2 mothers became somewhat less relaxed and expressed slightly less milk – thus also supporting the hypothesis. In 13 mothers, the relaxation score did not change, though 9 expressed more milk and 4 less milk after the relaxation exercise. Finally, 12 mothers expressed less milk despite having an improved relaxation score – thus, contradicting the hypothesis.

Overall, after the relaxation exercise, 33 mothers became more relaxed and 30 expressed more milk. Taking all data points together of these 48 mothers, on average they became more relaxed and produced significantly more milk after the relaxation exercise. This confirms that greater relaxation results in more milk while breast pumping.

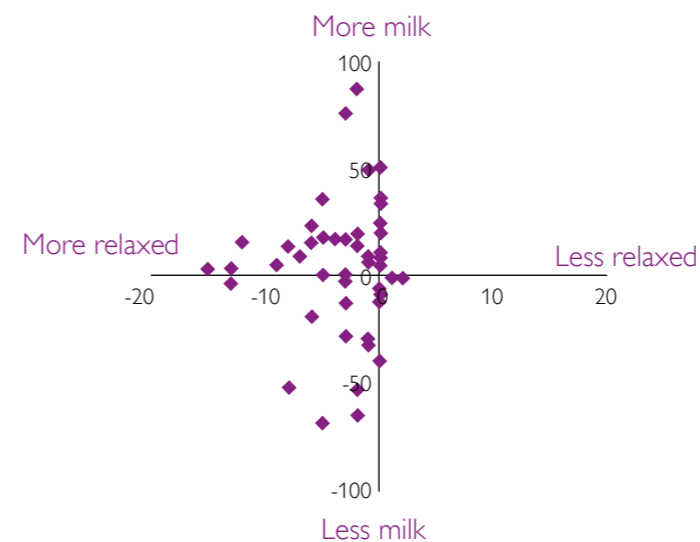


Figure 2. The relationship between change in STAI score and the change in total milk volume (in gram) of each mother following the relaxation exercise when compared to no relaxation.

Similarly we also found that when mothers were more relaxed they also felt more comfortable. In Figure 3 we correlated how relaxed they felt, either using the STAI or VAS score, respectively, with how comfortable they were. The correlation was strong to very strong with correlation coefficients of -0.67 and 0.95, respectively. Also, the correlation between STAI and the VAS for relaxation was -0.74. This confirms that greater relaxation results in more comfort.

Taken together, these results demonstrate that when mothers were more relaxed they felt more comfortable and were able to express significantly more milk.

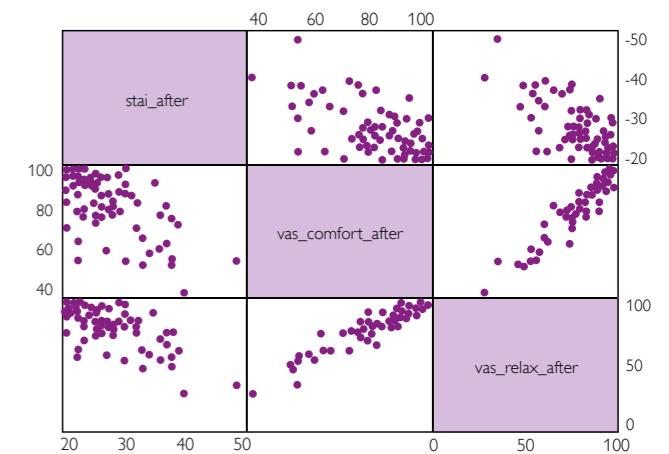


Figure 3. Correlations between STAI score for relaxation and the VAS for relaxation and comfort after the relaxation exercise

Conclusion

The results of this study confirm that for greater milk flow mothers would need to be as relaxed and comfortable as possible while expressing.

Implications for breast pump design

Thus, to minimize anxiety with breastfeeding and to enhance relaxation, breast pumps should be designed such that they are most comfortable to use, so that milk ejection and milk flow are promoted. In working with mothers we have identified that

critical aspects of overall comfort include a relaxed expressing position, ease of use, and a gentle experience while expressing. As a result, The Philips AVENT Comfort breast pump range has been designed to provide more comfort for more milk.



Unique, natural expressing position



Clinically proven massage cushion with soft petals and velvety texture



Effortless expressing



Simple settings*



Philips AVENT Classic breast pump



New Philips AVENT Comfort manual breast pump

*Comfort electric breast pumps only

References

1. World Health Organization. Infant and young child nutrition – Global strategy on infant and young child feeding. A55/15, Fifty-fifth World Health Assembly, 2002. http://www.who.int/nutrition/publications/gi_infant_feeding_text_eng.pdf
2. American Academy of Pediatrics. Policy Statement: Breastfeeding and the use of human milk. Pediatrics 2012. <http://pediatrics.aappublications.org/content/early/2012/02/22/peds.2011-3552>
3. Lau C. Effects of stress on lactation. *Pediatr Clin North Am* **48**: 221-234, 2001.
4. Newton M, Newton NR. The let-down reflex in human lactation. *J Pediatr* 33: 698-704, 1948.
5. Ueda T, Yokoyama Y, Irahara M, Aono T. Influence of psychological stress on suckling-induced pulsatile oxytocin release. *Obstet Gynecol* **84**: 259-262, 1994.
6. Feher SD, Berger LR, Johnson JD, Wilde JB. Increasing breast milk production for premature infants with a relaxation/imagery audiotape. *Pediatrics* **83**: 57-60, 1989.
7. Hauck YL, Summers L, White E, Jones C. A qualitative study of Western Australian women's perceptions of using a Snoezelen room for breastfeeding during their postpartum hospital stay. *Int Breastfeed J* **3**: 20, 2008.
8. Keith DR, Weaver BS, RN, Vogel RL. The effect of music-based listening interventions on the volume, fat content, and caloric content of breast milk—Produced by mothers of premature and critically ill infants. *Adv Neonatal Care* **12**: 112-119, 2012.
9. Burton PM et al. *Data on file*, 2011.
10. Burton PM, Kennedy K, Ahluwalia J, Nicholl R, Lucas A, Fewtrell M. Breast pump design and milk production: A randomised control trial. Poster presentation at the American Academy of Pediatrics National Conference & Exhibition, October 2010.
11. Yu et al. *Data on File*, 2012.



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