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Enhancing the ability of nurses and midwives to promote breastfeeding: A longitudinal study

Jill Downie, Valentina Rakic, Dianne Juliff.

Abstract: The research aimed to determine the effectiveness of the Lactation Adviser Program (LAP), six months following an educational intervention for nurses and midwives. Sixty-one (61) participants were involved in the research, the second phase of a two-phase, longitudinal study. The intervention involved twelve two-hour sessions designed to increase nurses' and midwives' *knowledge, attitudes and confidence* toward lactation management in order to enable them to more appropriately promote breastfeeding among their clients. Using repeated measures MANOVA, the results showed the LAP intervention produced significantly higher *knowledge* scores in the experimental group compared to the control group over the time period. In addition, the interaction between knowledge and study group was significant demonstrating that the intervention had an effect on participant's knowledge six-months following the program. Similarly, the results showed that the experimental group participants had significantly higher *attitude* scores than the control group across the time periods. Further analysis revealed that those who experienced the LAP developed more positive attitudes over the six-month period, however, this was not maintained consistently at each time point. In the analysis of *confidence* scores across time, participants in the experimental group were no different to those in the control group. However, confidence was shown to be significantly higher in experimental group participants six months following the intervention. Overall, the results of the study were very positive in support of the Lactation Adviser Program as an effective initiative to increase knowledge and confidence and enhance positive attitudes of participants, in the long-term, in regard to breastfeeding management.

Key words: lactation, education, midwives, nurses, breastfeeding, confidence, knowledge, attitudes.
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Introduction

Breastmilk is the preferred form of nutrition for infants for at least the first six months of life.¹ For this reason, it is important that health professionals are able to provide ongoing education, counselling and support for their clients to ensure that breastfeeding is successful.² The purpose of this paper is to report the second phase of a two-phase, longitudinal study aimed at determining the effectiveness of the Lactation Adviser Program (LAP) six months following the educational intervention for nurses and midwives. The first phase of the study, involving a pre-test/post-test study design, has been reported earlier in *Birth*

Issues, along with the details of the Lactation Adviser Program.³ Briefly, the intervention involved twelve two-hour educational sessions

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designed to increase nurses' and midwives' knowledge, attitudes and confidence toward lactation management in order to enable them to more appropriately promote breastfeeding among their clients.

Background

Researchers acknowledge that the attitudes, knowledge and communication of health professionals have a powerful effect on the mother's confidence in breastfeeding, particularly in relation to the initiation and continuation of lactation.³⁻⁶ However, little has been reported in the recent Australian literature concerning the actual knowledge, attitudes and confidence of nurses and midwives in regard to lactation management. Martens⁷ surveyed thirty-nine Canadian nursing staff and demonstrated an increase in their breastfeeding knowledge seven months after a mandated lactation education session, but no change in breastfeeding attitudes over time for either the control or experimental group in the study was reported. The researcher acknowledged the need for ongoing, specifically targeted education rather than a one-off session to address this issue.

A single educational experience has also been reported by Cox and Turnbull⁸ as important to enable nurses to update their knowledge; however, they caution that this is insufficient to enable health professionals to provide specialist care in breastfeeding, recommending ongoing annual education. As lactation is a burgeoning area of knowledge and research, it is suggested that continuing breastfeeding education for health professionals is essential on a regular basis. Thus, nurses and midwives require more than one opportunity to update their knowledge, attitudes and confidence concerning breastfeeding so that they can provide the best care for their clients.

Method

A longitudinal study design, involving nurses and midwives who enrolled in the Lactation Adviser Program (experimental group) and a comparison group of nurses and midwives from another metropolitan health service (control group), was used in this research. In this second phase, the study participants were again contacted and asked to complete the same self-administered questionnaire as used in the first phase of the study, six months following the initial LAP intervention. Although some participants were not contactable because they had resigned from the health services involved,

the response rate was satisfactory for the longitudinal approach. Hence, only those who completed questionnaires at all three time points, pre-test, after the intervention and six months following, were included in the final analysis.

Statistical Analysis

Analysis of data was performed using the Statistical Package for Social Science (SPSS for Windows Version 10.0). All results are expressed as means (*M*) and standard deviations (*SD*) and the alpha level of significance was set at 0.05 (*p* value). Student's independent *t*-test was used to compare age and years of clinical experience as well as knowledge, attitude and confidence scores between the control and experimental group at pre-test. Repeated measures Multiple Analysis of Variance (MANOVA) was used for between-group and within-group comparisons of the knowledge, attitude and confidence scores over the three time points. The actual loss to follow-up in the longitudinal study was 24% with a response rate of 76%.

Results

Sample Characteristics

The average age of the 61 participants in the study was 48.5 (*SD*=8.7) years and the average number of years' clinical experience was 23.3 (*SD*=9.1) years. Fifty-four percent (54%) of participants had hospital-based training and 5% had a tertiary qualification. Further education was undertaken by 84% of the participants compared to 16% who had no further education. More specifically, continuing education in the area of lactation was completed by 53% of the participants while 47% had undertaken no previous lactation education. The current employment position of participants included 18 midwives, 36 Child Health Nurses (CHN) and 6 other, with one participant failing to address the question. There were 40 participants classed as level two registered nurses, 11 as level one, five as level three and five as other. Thirty percent (30%) of the participants were in full-time employment, 28% in part-time and 3% in casual employment.

Control and Experimental Group

Of the 61 participants, there were 33 in the experimental group and 28 participants in the control group. No significant differences were found between the two groups in regard to the age of the control group (*M*=49.3, *SD*=7.9) compared to the age of the experimental group (*M*=47.8, *SD*=9.4; *p*=NS). Similarly, the years of

clinical experience for the control group ($M=22.3$, $SD=9.4$) compared to the experimental group ($M=24.5$, $SD=8.9$; $p=NS$) were no different. The number of participants whose highest level of education was hospital based was not significantly different from the number with a combination of hospital based and tertiary, tertiary or other as the highest level of education, in both the control and experimental group ($\chi^2=4.60$, $p=NS$). The number of participants who completed nursing courses or had further education in lactation was not statistically different between the control and experimental group. That is, the control and experimental groups were shown to be similar for all demographic variables.

Knowledge

The pre-test correct knowledge score for the 61 participants ranged from 2 to 10 from a possible score of 16 ($M=6.8$, $SD=1.8$). Using an independent t -test to compare the knowledge scores of the control and experimental group, it was found that there was no significant difference in the mean knowledge score between the control and experimental group at pre-test (6.8 (1.6) vs 6.8 (1.9); $t=-0.06$, $df=59$, $p=0.95$).

Table 1 shows the mean correct knowledge score at pre-test, post-test1 and post-test2 for control group and experimental group.

Table 1. Mean (SD) knowledge scores over time for control and experimental group

Study Group	Pre-test	Post-test1	Post-test2
Control (n=28)	6.8 (1.6)	7.1 (1.9)	6.4 (2.2)
Experimental (n=33)	6.8 (1.9)	8.4 (2.2)	8.4 (2.9)

Table 2. Estimated Marginal Means

Study Group	Mean (SE)	95% Confidence Interval	
		Lower Bound	Upper Bound
Control (n=28)	6.8 (0.2)	6.3	7.2
Experimental (n=33)	7.9 (0.2)	7.4	8.3

Results of the longitudinal study revealed that the between-subject effect, study group, showed a significant difference in the knowledge scores of the two groups ($F=11.4$, $df=1$, $p=0.001$). A univariate analysis was used to test the within-subject factor, knowledge, and the interaction of within-subject factor and between-subject factor, knowledge and study group. The results showed that the effect on knowledge was not significant ($F=2.9$, $df=2$, $p=0.059$). However, the knowledge and study group effect was significant ($F=3.4$, $df=2$, $p=0.035$), indicating that the intervention in the experimental group had a significant effect, over time, on the number of correct knowledge scores obtained. Within-subject contrasts showed that the change in knowledge scores from pre-test to post-test2 was linear ($F=5.9$, $df=1$, $p=0.090$). The estimated mean knowledge scores over the three time periods for the control and experimental group are shown in Table 2. The knowledge score for the experimental group was significantly higher than for the control group, indicating that the intervention had a significant impact on the knowledge scores achieved by the participants in the experimental group.

Notes

M = mean SD = standard deviation t = t value df = degrees of freedom p = alpha level of significance 0.05

Attitude

Performance on attitude was scored with 75 rated as the most positive score. The pre-test attitude score for the 61 participants ranged from 44 to 65 ($M=56.0$, $SD=4.3$). Both the control and experimental group achieved similar pre-test attitude scores, 56.0 (SD 3.6) and 56.0 (SD 4.9), respectively ($t=-0.03$, $df=59$, $p=0.98$). Table 3 shows the mean attitude score at pre-test, post-test1 and post-test2 for control group and experimental group.

Analysis of the between-subject effect showed that study group had a significant effect on the attitude scores obtained by the participants ($F=5.1$, $df=1$, $p=0.027$). Univariate analysis was used to test the within-subject effects. The test showed that the attitude scores changed significantly over time ($F=4.9$, $df=2$, $p=0.011$), decreasing in the control group and increasing then decreasing in the experimental group. However, the interaction between attitude score and study group was not statistically significant over time ($F=3.0$, $df=2$, $p=0.060$). The estimated mean attitude score for the two study groups are shown in Table 4.

The attitude scores for the experimental group were higher than for the control group at both post-test1 and post-test2, indicating that the intervention had improved the attitude scores in the experimental group in the short term, but the effect was not sustainable.

Confidence

The pre-test confidence score for the 61 participants ranged from 14 to 34 from a possible score of 35 ($M=24.4$, $SD=3.7$). The control group had a higher pre-test confidence score of 25.5 (3.7) than the experimental group that scored 23.4 (3.4) ($t=2.4$ $df=59$, $p=0.023$). Table 5 shows the mean confidence score at pre-test, post-test1 and post-test2 for control group and experimental group.

The between-subject results showed that study group did not have a significant influence on the confidence scores obtained by the participants over the time points ($F=0.87$, $df=1$, $p=0.354$). Multivariate analysis was used to assess within-subject effect and showed that confidence over time changed significantly ($F=21.0$, $df=2$, $p=0.000$) as did confidence with respect to study group ($F=10.5$, $df=2$, $p=0.000$).

Table 3. Mean (SD) attitude scores for control and experimental group.

Study Group	Pre-test	Post-test1	Post-test2
Control (n=28)	56.0 (3.6)	55.6 (0.6)	54.8 (3.6)
Experimental (n=33)	56.0 (4.9)	58.7 (0.6)	57.8 (7.5)

Table 4. Estimated Marginal Means

Study Group	Mean (SE)	95% Confidence Interval	
		Lower Bound	Upper Bound
Control (n=28)	55.7 (0.6)	54.5	56.9
Experimental (n=33)	57.6 (0.6)	56.4	58.7

Table 5. Mean (SD) confidence scores for control and experimental group.

Study Group	Pre-test	Post-test1	Post-test2
Control (n=28)	25.5 (3.7)	25.5 (0.6)	26.7 (3.1)
Experimental (n=33)	23.4 (3.4)	27.4 (0.6)	28.7 (3.2)

From Table 6, the estimated marginal means for the two study groups over the three time periods showed confidence was significantly higher in the experimental group than the control group.

Table 6. Estimated Marginal Means

Study Group	Mean (SE)	95% Confidence Interval	
		Lower Bound	Upper Bound
Control (n=28)	25.9 (0.5)	24.9	27.0
Experimental (n=33)	26.6 (0.5)	25.7	27.6

Discussion and Recommendations

The findings of the study reveal there was no difference in age, years of experience or previous education between the participants from the Fremantle and North Metropolitan Health Services who formed the experimental group and those from Swan Health Service who formed the control group. Consequently, in terms of demographic variables both groups share the same characteristics.

Knowledge

Although little has been reported in the recent Australian literature concerning the actual knowledge and attitudes of nurses and midwives in regard to lactation, the current study illuminates the attributes of practitioners in this regard. The study shows that both groups were similar in relation to their knowledge of lactation prior to the intervention and the experimental group achieved significantly higher knowledge scores than the control group following the intervention. The results of the study are encouraging, and indicate that participants retained their increased knowledge of lactation six months after the Lactation Adviser Program (LAP). However, even participants in the experimental group achieved only 50% correct responses on the 16-item knowledge scale with a mean score of only 8.4 at post-test2 and this supports the notion of follow-up education as essential to improve knowledge. Previous quantitative research with a small sample (n=39) also demonstrated an increase in breastfeeding knowledge seven months after a mandated breastfeeding education session for nursing staff, but the researchers acknowledge the need for on-going, specifically targeted education.⁷

Cox and Turnbull⁸ reported that a single educational session was restricted in enabling nurses to provide appropriate care in

breastfeeding with only foundational aspects covered through such a limited intervention. They suggested the need for annual education to adequately prepare health professionals for their specialist role in lactation. The current study suggests that continuous professional education is necessary to change knowledge, attitudes and confidence in lactation management with the need for regular updates to ensure changes are maintained. Hence, it is evident that nurses and midwives require regular opportunities to update their knowledge and practice concerning breastfeeding.

Although the participants in the intervention group improved their knowledge and maintained this improvement over a six-month timeframe, they appear not to have the advanced level of lactation knowledge required to promote breastfeeding effectively in practice. One possible explanation for this may be the unprecedented explosion in the amount of information and research published in lactation in recent years. As the average age of the nurses and midwives in the study is forty-seven years, with only half having completed tertiary studies and a similar percentage involved in previous lactation education, it is not surprising that the baseline knowledge of lactation was not satisfactory. While the LAP is an effective educational resource to improve participants' knowledge, the findings suggest reinforcement of the educational objectives in repeated sessions may be one way to ensure health professionals have appropriate lactation knowledge to the required level.

Attitude

Over the six-month period, breastfeeding attitudes changed positively for the intervention group with a significant difference noted between the control and experimental groups.

Although, at pre-test, the attitude score of both groups was similar, six months later the attitudes of those in the control group had decreased while those in the experimental group has risen at post-test1 and fallen slightly at post-test2, although remaining higher than the baseline. This indicates that while attitudes were more positive for those who completed the LAP, this finding was not maintained consistently over the three time points. The results, however, are quite promising compared to Martens⁷ study of breastfeeding attitudes seven months after an educational intervention. She was unable to demonstrate any change in breastfeeding attitudes over time for either the control or experimental group. In interpreting the findings of the current study, it is necessary to consider the difficulty of impacting attitudes through education alone. Thus, the fact that nurses and midwives who participated in the LAP did develop more positive attitudes signifies the ability of the educational program to engage practitioners in reflection about lactation management.

By examining their own attitudes, midwives and nurses are better able to assist mothers with lactation and enhance breastfeeding success through reflection and enlightened exchange.⁹ While the LAP has been shown to be effective in creating more positive attitudes, further structured dialogue with colleagues, in the form of monthly interactional case studies, is recommended. The LAP intervention includes strategies to assist attitudinal change but further and continued development of health professionals in this way will support and nurture the promotion of a positive approach.

Confidence

Interestingly, the control group had significantly more confidence initially in the management of lactation than the experimental group. This is not easily explained but may relate to the perceived self-efficacy of some individuals within the group. In the study, the results show that initially being in the control group or the experimental group did not significantly influence the confidence scores achieved by participants. However, over a six-month timeframe, there was an increase in the confidence of participants involved in the LAP compared to the control group. This means that those nurses and midwives involved in the education continued to benefit long after the program was completed, as their confidence in lactation management continued to improve. This is an important point given the initial findings at pre-test which showed that the

control group was more confident than the experimental group. It is clear that the LAP not only provides participants with knowledge and offers the opportunity to reflect on attitudes to lactation, but also provides a sense of self-efficacy that ensures the nurses and midwives have a more confident approach to their work with breastfeeding mothers.

Recommendations

Although the design of the current study limits the generalisability of the findings, the LAP has been shown to be effective with this sample. All attempts were made by the researchers to reduce the potential for bias but the limitations of the study design are acknowledged.

Overall, the results of the study were very positive in support of the Lactation Adviser Program as an effective initiative to increase knowledge and confidence and enhance positive attitudes of participants, in the long-term, in regard to breastfeeding management. The Lactation Adviser Program is an effective health promotion package for child health nurses and midwives, developed to assist them to promote breastfeeding. The recommendation is that all nurses and midwives should regularly update their knowledge and improve their attitudes and confidence in breastfeeding management. This intervention study has highlighted the need for further research in the area as currently there is a variety of options cited in the literature on this issue with little research evidence to support the best outcome. It is now important to determine the optimum length of any future education courses and the frequency at which continuing education programs in lactation should be offered. Ultimately, there is also a need for further research to explore the effect of the nurses' and midwives' lactation education to determine breastfeeding outcomes in the client population, as the overall goal of any program is to increase the initiation and duration of breastfeeding.

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