The efficacy of Dunstan baby language in decreasing the parenting stress levels of housewives with 0-2 month old infants: A quasi-experimental study

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Abstract

Introduction Literature shows that infant distress and care-giving can be sources of stress of primary care givers, especially for first-time mothers. This study aimed to determine the efficacy of Dunstan baby Language in decreasing parenting stress among first time mothers compared with those receiving standard newborn care alone.

Methods This research utilized a quasi-experimental approach, where 18 first-time mothers with babies 0-2 months old were allocated to receive standard care plus Dunstan baby language training or standard care alone. Maternal stress was measured at baseline and after the intervention period with the Parental Stress Scale. The scores were compared within and between the two study arms. A repeated measures mixed model was used for the Parental Stress Scale (PSS) results.

Results A total of 27 participants were enrolled in the study. The Dunstan baby language group had 18 participants, while the control group had 9 participants. An apparent decrease was noted in the week 1 to week 2 and the week 2 to week 3 Parental Stress Scale scores in the Dunstan baby language group compared with the control group which had minimal changes in their mean scores. The mean difference between the two groups was not significant.

Conclusion The use of Dunstan baby language in addition to standard care may decrease stress among first time mothers with 0-2 month old babies.

Key words: Dunstan baby language, parenting stress

A new baby brings so much joy to the family but parents cannot deny that caring for their babies involves frustration as well. As every new parent discovers, a newborn can sometimes spend hours crying every day and night. A study found out that 20% of all babies are classified as "colicky babies," defined as an infant crying for at least three hours per day, three days a week for three weeks.[1] Another study showed that persistent crying in infancy frequently occurs at 2-3 weeks of age, continuing for up to 3 months and peaking at 1-2 months.[2] This may cause emotional distress, especially to first-time mothers and may lead to loss of self-confidence in their parenting skills. Caregivers experience exhaustion and sleepless nights as they strive to meet their baby's needs. Moreover, a study showed that

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the quality of the baby's sleep significantly influences the quality of maternal sleep which predicts maternal mood, stress and fatigue.[3] To reduce distress brought about by unrelenting infant crying, supportive interventions can help the mothers understand the causes so as to be able to give appropriate responses.[2] Support from significant others also contributes to the mother-infant bonding.[4] If the mother has a positive environment and greater self-esteem, she would be able to foster a positive environment for her infant.[4] A study devised a prevention program about normal infant sleep and cry patterns, settling techniques, medical causes of crying, and parent self-care.[5] This prevention program taught mothers via booklet and video, telephone consultation and parent support group, leading to the conclusion that it reduced postnatal depression symptoms, as well as sleep and cry problems in infants.

If the demands of the infant are not appropriately addressed, this may cause mothers to develop emotional distress and resulting in low self-confidence in their parenting skills. In addition, mothers experience exhaustion as they strive to meet their baby's needs. This can further affect the quality of the mood, concentration, planning, decision-making and functional efficiency of the mother. Persistent crying of the infant may increase the chances of the mother having a higher level of depression and anger, affecting the maternal-infant bonding. The investigators felt a need to address this problem by finding a method that would ease this kind of stress.

Dunstan baby language (DBL) is an innovative discovery that focused on understanding the language of babies, particularly those from 0-3 months and changed the lives of over a hundred mothers.[1,6] Based on the idea that language is a form of communication and that all language has meaning, the investigators analyzed the pre-cries, or the sounds babies make before they actually cry and identified five sounds distinctive of each need: "NEH" for hunger, "EH" - for upper wind (burp), "EAIRH" - for lower wind (gas), "HEH" - for discomfort (hot, cold, wet) and"OWH" for sleepiness.[6]

The Maternal Self Esteem and Parenting Stress Index in both studies yielded consistent results.[5,6] Key findings include: 90% of mothers found DBL valuable and recommendable, 70% of mothers settled their child faster after using DBL, 70% felt more confident as a mother, 50% of the mothers slept better. Meanwhile, 2 out of 3 fathers had reduced levels of stress, greater involvement in the care of the infant, and more positive relationships with their wives. Researches that used DBL as a tool[1-6] have found out that 100% of first-time mothers reported that it was valuable and would recommend it to other mothers. DBL significantly decreased parenting stress, increased maternal self-esteem, and made mothers feel more relaxed and in control. Mothers who experienced and practiced DBL reported to have bonded more with their babies. Correctly interpreting a baby's language leads to appropriate responses and better communication, which further leads to a closer mother-infant bonding. A stronger bond promotes decreased maternal stress, lesser crying and increased maternal self-esteem. Caregivers other than the mother could also benefit from this not only by improving their caregiving skills, but also by decreasing levels of stress. This led the researchers to come up with a study to determine if DBL is indeed efficacious in lowering parenting stress levels, especially among those without previous experience in child care. In this study, the researchers determined the efficacy of DBL in decreasing parenting stress levels of primiparous housewives with 0-2 month old infants over standard care alone, as measured by the Parenting Stress Scale (PSS). This study fills in a gap since no research has been done on teaching DBL to parents living in a community with low socioeconomic status. This study also serves as a springboard for future researches, especially those concerning infantile care and DBL.

Methods

This research utilized a quasi-experimental approach, where 18 first-time mothers with babies 0-2 months old, coming from two communities in Manila, were allocated to receive standard care plus Dunstan baby language training or standard care alone. Maternal stress was measured at baseline and after the four-week intervention period with the Parental Stress Scale. The scores were compared within and between the two study arms. A repeated measures mixed model was used for the Parental Stress Scale (PSS) results.

Primiparous Filipino mothers from two barangays in Manila who were at least 18 years old and a high school graduate and the sole caregivers

of their 0-2 month old infants were recruited. Mothers with significant hearing and visual problems, a history of hospitalization due to psychiatric causes and/or a current psychiatric illness were excluded. Infants of the study subjects should have been born full term, with normal birth weight, and not possessing any genetic condition or medical problems and no postnatal hospitalization.

The demographic profile, non-parenting stress and baseline parental stress of eligible mothers who consented to join the study were determined with the use of a data collection form, Holmes and Rahe Stress Scale, and Parenting Stress Scale, respectively. Mothers from one barangay were allocated to the intervention group and were instructed on standard care and the use of DBL while mothers from the other barangay were allocated to the control group and instructed on standard care alone. Treatment was assigned at the community level to avoid contamination and to facilitate the training of the mothers on the DBL at designated places conducive for such training. Mothers were instructed to follow up at their respective health centers after the first, second and fourth weeks. Mothers from the DBL group were asked to maintain a diary of their experiences; the researchers checked the diaries at each visit. The study ran for four weeks after which a post-intervention PSS was administered to both groups.

Both groups were taught standard care for their infants, but DBL was taught only to the experimental group. Standard care is usual care given by primiparous mothers to their 0-2 month old infants. It was taught using a pamphlet showing pictures on how to feed their baby through breastfeeding and bottle feeding, put their baby to sleep, burp their baby, relieve infant colic, and make their baby comfortable. The DBL was taught using a video and oral explanation in the Filipino language. The video showed all the five baby sounds, including a variety of babies from other races vocalizing the baby sounds. Only one researcher facilitated the DBL lessons to ensure consistency and repetitiveness. The researchers held the teaching sessions in a place in every community conducive for learning because environmental factors could affect the results of this study: the activity room in the barangay hall in Brgy. San Perfecto and Brgy. Progreso, and the reception area of Santana-Basilio Lying-In Clinic and Maria Clara Lying-In and Health Center. The venue in all communities was an enclosed area which offered privacy, had adequate lighting, chairs and tables for all the participants, a microphone and speakers for good audio quality, and adequate ventilation. The participants were made to repeat each sound for reinforcement of learning. The experimental group was also given mini pamphlets that contained the baby sounds and their meanings for additional reinforcement. Diaries were distributed to the mothers in the experimental group for them to write down their experiences with their babies every day, i.e., what sound they heard and what intervention they did as they practiced what the researchers have taught them.

This study considered alpha error only having a 95% confidence level. Parenting stress is defined as stress experienced by the primiparous mother in the care of her first-born child measured via the Parental Stress Scale.[7]

The stress experienced by the participants from non-parental causes was measured through the Holmes-Rahe Scale,[8] a list of 43 stressful life events that can contribute to illness. Each event, called a Life Change Unit (LCU), had a different "weight" for stress. The more events the respondent checks on the list, the higher the score. The higher the score, and the larger the "weight" of each event, the more likely the patient was to become ill; in this case, the more the caregiving abilities of the mother will be affected. The reliability and validity of the Holmes-Rahe Scale has been improved over the years.

The Parental Stress Scale[7] is an 18-item measure appropriate for parents of children with and without clinical problems representing pleasure or positive themes of parenthood (emotional benefits, self-enrichment, personal development) and negative components (demands on resources, opportunity costs and restrictions). Respondents are asked to agree or disagree with items in terms of their typical relationship with their child or children and to rate each item on a five-point Likert scale: strongly disagree [1], disagree [2], undecided [3], agree [4], and strongly agree [5]. The 8 positive items are reverse scored so that possible scores on the scale can range from 18-90. To compute the parental stress score, items 1, 2, 5, 6, 7, 8, 17, and 18 should be reverse scored as follows: (1=5) (2=4) (3=3) (4=2) (5=1). The item scores are then summed. Higher scores on the scale indicate greater stress. The Parental Stress

Scale demonstrated satisfactory levels of internal reliability (.83), and test-retest reliability (.81). The scale demonstrated satisfactory convergent validity with various measures of stress, emotion, and role satisfaction, including perceived stress, work/family stress, loneliness, anxiety, guilt, marital satisfaction, marital commitment, job satisfaction, and social support. Discriminant analyses demonstrated the ability of the scale to discriminate between parents of typically developing children and parents of children with both developmental and behavioral problems.[9,10,11]

Priscilla Dunstan discovered the Dunstan Baby Language (DBL).[6] These are infantile vocal reflexes that serve as signals for caregivers. It is composed of the five main sounds that babies make when they need something. These are as follows:

- "Owh"- I'm sleepy
- "Heh"- Change me
- "Eh"- Burp me
- "Neh"- I'm hungry
- "Eairh"- I have gas

The data were encoded using the STATA 12. Intent to treat analysis using multilevel mixed-effects linear regression was used for the analysis of the PSS scores.

Results

Of 56 mothers screened, 27 were randomized to either DBL or control group. There were 9 dropouts in the DBL group, leaving nine particpants and another nine in the control group. The age of the mothers included in the study ranged from 18 to 27 years old, and the age of the infants from a few days old to 2 months old. Majority of the participants were high school graduates. The Holmes-Rahe Scale scoring of the participants showed a range of scores from 79 until 430. There was no significant difference between the means of the Holmes-Rahe scores of the DBL and control groups as seen in Table 1.

The PSS scores of the DBL group showed an initial increase at week 1 followed by decreases in the subsequent weeks. The control group showed a consistent but smaller decrease from baseline through week 4. At the end of the observation period, the DBL group had a lower mean PSS score compared with the control group. The difference was not significant (Table 2) but as seen in Figure 1, the downward slope of the DBL group was steeper than that of the control. Table 3 shows a larger mean decrease in the PSS scores of the DBL group compared with the control (4.7 vs 1.6); however, the difference was not significant.

Table 2. Comparison of Parental Stress Scale Scores between the DBL and control groups.

DBL vs control at each follow-up	Mean score DBL (n=18)	Control (n=9)	Z	p
Baseline	30.4	37.8	-1.67	0.09
Week 1	33.8	37.6	-0.82	0.42
Week 2	31.0	36.9	-1.02	0.31
Week 4	25.7	36.2	-1.93	0.05

Table 1. Demographic profile of the DBL and control groups.

Characteristics	DBL (n=18)	Control (n=9)	p-value
Age of Participants (mean)			
Mother (yr)	25.8	22.6	-
Infant (mo)	1	2	-
Educational attainment Frequency (%)			
High school graduate	14 (77.8)	7 (77.8)	-
College undergraduate	2 (11.1)	1 (11.1)	-
College graduate	1 (5.6)	1 (11.1)	-
Postgraduate	0	0	-
Vocational	1 (5.6)	0 (0)	-
Non-parenting stress (mean)	242.9	188.3	0.27

Table 3. Comparison of Parental Stress Scale scores within groups (Week 4 vs. Baseline).

	Mean score		Z	p
	Baseline	Week 4		
DBL (n=18)	30.4	25.7	-1.28	0.20
Control (n=9)	37.8	36.2	-0.48	0.63

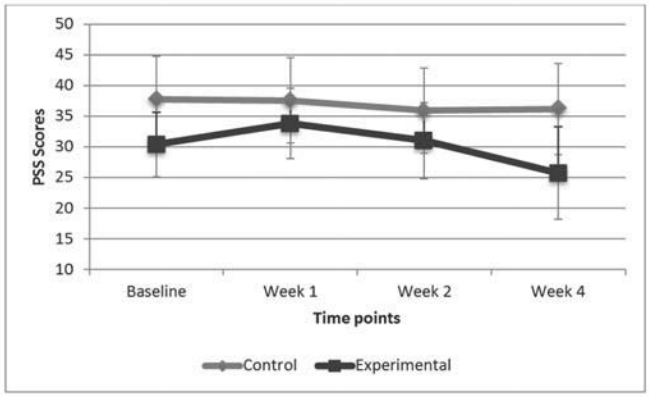

Figure 1. Comparison of the PSS scores of DBL and control groups through time.

Diaries given out to the mothers in the experimental group in order for them to write down their day-to-day experiences with their baby while practicing their learnings on DBL contained reports of mothers about their observation of the sounds produced by their babies like EAIRH, HEH, NEH and EH, depending on the needs of the baby during a specific point in time, the condition of the baby while the sound was heard, and the solutions they applied and the response of the baby to their solution. Some of them applied the correct solution to the sound heard and noted a good response of the baby. The mothers also included the associated meaning of the sound heard. The reports, which included that the mothers were able to observe the sounds and do the appropriate interventions implied that the health teachings during the implementation had helped them identify clues and provided appropriate solution to the problem or need of their babies. Since the clues were identified, proper solutions were provided and the needs of the baby were addressed immediately. Immediate interventions for the needs of the baby had a good impact on the child's well-being and also to the mother's confidence in their motherhood.

Discussion

Parenting stress was measured using the Parental Stress Scale (PSS), and results showed that mean PSS scores were comparable in all 4 PSS determinations through time. It is interesting to note, however, a steeper downward slope is observed with the DBL group at times 1 and 2 and 2 and 3 compared with that of the control. This could be due to decreasing parenting stress levels, although conclusions could not be made due to a lot of factors such as a small sample size and short duration of the implementation. These findings correlate with the findings of the researchers of the Dunstan Baby Language[1-6] that DBL is indeed effective in decreasing parenting stress measured using the Parental Stress Index (PSI), the expanded version of the PSS.

Music therapy was proven in a study abroad[10] to have decreased parenting stress of both parents to preterm babies in the intensive care unit. Preterm infants have more needs than full term infants, especially those admitted in an intensive care unit, and it would be stressful for parents to care for them. Identifying the signs of infant stresses, then providing music therapy during those times relieved the infant of his stresses and improved parent-child bonding and decreased parenting stress as well. The results are similar to this current study in the sense that an intervention, i.e., DBL, was used to identify infant needs through his cries and further decrease parenting stress by appropriately responding to his needs.

Between baseline and week 1, there was an increase in the PSS scores of the DBL group. This may be attributed to the adjustment of the mothers while incorporating their learnings from the DBL teachings to their daily infant caregiving. Between week 1 and week 4, a significant difference was noted in the PSS scores of the DBL group. This could mean that the DBL was effective in decreasing parental stress as evidenced by the decrease in PSS scores after the said adjustment period between baseline and week 1.

Despite lack of significant difference in the mean PSS scores between the primiparous housewives with 0-2 month old infants who practiced the use of Dunstan Baby Language and those who practiced standard care alone, the researchers concluded that there is a trend towards attaining a significant difference in the mean PSS scores. Difficulties in the

implementation of the protocol had led the group to recommend that better recruitment process should be employed to attain desired sample size. A bigger scale of participants and longer duration of follow-ups are needed to better appreciate a more significant difference in trends. A more efficient follow-up protocol must be used to avoid respondents from dropping out of the study. Follow-up protocols such as making phone calls, sending SMS, and going from house to house are suggested. Diaries may be replaced by questionnaires that document the sound heard, interventions done, and response of the baby, and that they are to be collected daily instead of weekly. Mothers must have at least one companion during the implementation to attend to the needs of the baby to ensure the mother's full attention. To obtain a quantitative evaluation of their learning about the teachings, individual return demonstrations and posttests may be given. This study focused on decreasing the parenting stress levels of primiparous mothers living in the community, but may be done using other sample populations such as fathers and other caregivers of the baby, other settings, and to prove other benefits determined by the researchers of the Dunstan Baby Language. Furthermore, this study can be used as a springboard for future studies that will utilize DBL, PSS, and/or Holmes Rahe Stress Scale as tools.

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