

Compatibility of the 'Fun and Fit with Baby Exercise Programme' for mothers

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ABSTRACT

Background: The positive effects of physical activity on health have been extensively recorded; however, mothers with young children often face difficulties when it comes to engaging in exercise.

Aim and Objective: The objective of this study was to assess the programme's suitability for mothers with young children.

Materials and Methods: A programme called 'Fun and Fit with Baby' was created, consisting of 5-week exercise routines. The programme included weekly gatherings, and participants were given assistance in following the guided exercise routines while carrying young children in a baby carrier. These routines were as follows: (1) exercises for balance and posture, (2) exercises for muscle toning, (3) exercises for fat loss, (4) exercises for core pelvic muscles and (5) cardio exercises. Twelve mothers with children under the age of 6 years volunteered to participate in this programme. The compatibility of this programme was measured through body composition measurement, questionnaire after the participants completed the programme and participant observation.

Results: The findings indicate that the programme provided an acceptable and supported opportunity for mothers with young children to participate in physical activity.

Conclusion: This initiative demonstrates that a group exercised with similar goals have a key role in influencing, enabling, and supporting people to participate in health activities.

Key Words: Group exercise, mother-and-young child exercise, physical activity

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INTRODUCTION

As women transition into motherhood, they often experience a mix of excitement and challenges as they navigate the physical, social and psychological adjustments required (Gross and Marcussen, 2017). It is essential to comprehend the positive and negative effects on women's mental health following childbirth (post-partum) in order to provide optimal care and support for both the mother and her child. According to Downs et al. (2008), two crucial factors that affect a woman's well-being are alterations in body image and physical activity behaviours. Yet, the complexity

and relationship between body image and physical activity are still not clearly known.

Montgomery et al. (2013) stated that during pregnancy, women usually assumed themselves to regain their pre-pregnancy state of being thin and fit, expecting the accumulated body fat and weight gained during pregnancy to disappear after childbirth. However, studies have shown that women's dissatisfaction with their body image not only takes place 1–9 months after giving birth but also

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continues for more than 12 months after giving birth to their child (Abbasi and van den Akker, 2015).

Exercise is said to be a subset of physical activities that involve planned and structured physical movements, while physical activities refer to body movements that use energy (Ashdown-Franks *et al.*, 2020). Doing regular exercises is reported to benefit physiological (physical) and psychological (emotional) well-being. Yet, studies have shown that mothers who give birth to children (<24 months old) have performed fewer exercises (Abbasi and van den Akker, 2015; DeLuca and Bustad, 2017).

Previous research has also shown a decline in the involvement in physical activities and exercises across transitioning towards the phase of becoming a mother (DeLuca and Bustad, 2017; Macrae, 2016; Mailey *et al.*, 2014) and working mothers (Mailey *et al.*, 2014). Working mothers are reported to feel highly responsible towards their infants, thus the feeling of guilt when spending time exercising. They would spend time with their children or spouse, they lack community support and time constraint has become a barrier to prioritising physical activities after having children (Mailey *et al.*, 2014).

Many women have experienced significant weight gain that leads to obesity (Montgomery *et al.*, 2013) during pregnancy and the post-partum period (Izumi *et al.*, 2016; Cheng *et al.*, 2011). Their subsequent years have contributed to weight maintenance (Izumi *et al.*, 2016; Montgomery *et al.*, 2013). Therefore, an exercise programme for mothers needs to be planned to encourage physical activities and exercises for maintaining and increasing body image confidence and well-being amongst mothers.

Through social media and internet sources, parents have researched knowledge related to 'parenting' and the convenient ways to care for their babies. Baby carriers are often used by society today to facilitate the movement of parents/caregivers while ensuring that the baby always feels safe with his/her mother (Williams and Turner, 2020). The commonly used terminology is babywearing, which means carrying a baby on the front, side or back of the body with a baby carrier [Figure 1]. This practice gives mothers opportunities to be physically connected to their babies while doing other activities. Baby carrying is also believed to improve bonding, reduce the infant's crying and promote the child's healthy emotional development (Little *et al.*, 2019).

The popularity of using baby carriers is also increasing in Malaysia and can be seen from the registration of non-government organisations (NGOs) related to baby care, such as Selat Tebrau Babywearers and Malaysian Babywearers, amongst others. Many activities have been carried out by support groups like NGOs to help parents use baby carriers safely.

Also increasing are the studies related to the benefits of using a baby carrier during activities. Amongst the studies in other countries are Hallenbeck (2018), Williams and Turner (2020) and Little *et al.* (2019). Research on the use of baby carriers is also increasing amongst researchers in Malaysia. Areas that have been studied included the relationship between the use of baby carriers and oxygen consumption (Kamal *et al.*, 2014), energy consumption (Md Ghani *et al.*, 2014) and comfort while using baby carriers (Adawiyah Mahasan *et al.*, 2014). Some websites encourage the use of baby carriers in performing physical activities, for example, during ballet (<https://wrapyourbaby.com/babywearing-ballet/>) and yoga (<https://wrapyourbaby.com/babywearing-yoga/>).

Due to self-image issues and the availability of information on exercises with babies through 'babywearing', the Selat Tebrau Babywearers requested researchers' collaboration to design a suitable exercise programme for mothers with babies aged around 6 up to 36 months. Accordingly, the 'Fun and Fit with Baby Exercise Programme' was implemented for 5 weeks or five sessions, each lasting for 2 h. The programme comprised the following five different exercise routines: (1) balance and posture exercise, (2) muscle toning exercise, (3) fat loss exercise, (4) core pelvic muscle exercise and (5) cardio exercise. The objective of this article was to assess the suitability of the exercise programme for the participants.

METHODOLOGY

Participants

This study involved 12 mother-with-baby pairs who participated in the 'Fun and Fit with Baby Exercise Programme' (mothers aged between 27 and 35 years and 12 babies aged between 6 months and 3 years.).

Data collection

Data were collected through three methods: (1) body composition measurement, (2) questionnaire regarding



Figure 1: Position of carrying children in a baby carrier. (a) Carrying baby on the front, (b) carrying baby on the side, (c) carrying baby on the back

participants' experience of the Fun and Fit with Baby Exercise Programme and (3) participant observation during the five exercise sessions.

The body composition measurement required the participants to stand on the Tanita foot-to-foot bioelectrical impedance analysis (BIA) system (Tanita Corporation of America, Inc., Arlington Heights, IL, USA) before and after the programme. While, questionnaires that consisted of a 5-point Likert scale regarding their experience in the programme were distributed to the participants immediately after each exercise session. Participant observation, an ethnographical observation approach, was used to gain insight into participants' behaviour during the Fun and Fit with Baby Programme. It explores the types of activities and interactions during each session. The observations were driven by an open approach to the explored information. This led to observations of both specific activities and specific participants. The researcher passively observed the participant from a distance. Observations were documented with field notes and photos and included the participants' behaviour while participating in the exercise activities and self-activities (such as calming the baby, breastfeeding and others) during the exercise session.

Exercise programme

The planned exercise programme was called 'Fun and Fit with Baby Exercise Programme'. Each session of the training programme lasted 2 h and comprised several slots, including a briefing, warm-up, exercises 1–5, interval breaks for mothers to calm their babies and breastfed and a cooling down. The exercise programme contained the following five different exercise modules every week: (1) balance and posture exercise, (2) muscle toning exercise, (3) fat loss exercise, (4) core pelvic muscle exercise and (5) cardio exercise. All the five sessions were conducted by a group of Sport Science students (trained by researchers), who were responsible for developing the module and conducting the exercises.

Data analysis

The quantitative data in this study contained sociodemographic information frequency, as well as mean and standard deviation obtained from body composition analyses. To evaluate the changes before and after participating in the Fun and Fit Programme, a *t*-test was utilised for comparison. The compatibility of this programme was measured through a 5-point Likert scale questionnaire after the participants completed the programme. On the other hand, qualitative data were obtained through open-ended questionnaires and participant observations.

RESULTS

Demographic data were obtained on age, marital status, number of children, employment and education. Data were also obtained on individual height and weight, which was used for determining body mass index (BMI). The participants filled out the questionnaire at the end of each session. A quantitative approach allowed the research measurement outcomes to be used

to determine the suitability of the intervention programmes for mothers with young children.

Participants' demographics

In summary [Table 1], most of the participants were aged between 27 and 35 years, were in a married relationship and had between two and four children. Most of the mothers had tertiary education and were workers in government sectors. Regarding exercise habits before giving birth, most of the mothers engaged in physical activity twice a week, but this frequency decreased after childbirth.

Body composition

Previously, body composition analysis primarily depended on basic anthropometric measurements such as height, weight and BMI. Therefore, BIA was utilised to address these limitations and provide a more comprehensive understanding of body composition in this study, as shown in Table 2.

Height, weight and body mass index

According to Table 3, the participants' weight had a mean of 61.9 ± 11.0 kg, while their height had a mean of 156.4 ± 6.0 cm.

Table 1: Sociodemographic characteristics of participants

Characteristic	Frequency
Age (years)	-
27–35	-
Marital status	
Married	12
Others	0
Number of children	
<2	3
2–4	7
>4	2
Employment	
Homemaker	1
Government sector	7
Non-government	2
Others	2
Education	
High school	2
Tertiary qualification	10
Others	0
Exercise habit pre-birth	
None	1
Twice a week or less	7
More than twice a week	3
Exercise habit post-birth	
None	8
Twice a week or less	3
More than twice a week	1

Table 2: Body composition of participants

Items	Before	After	t-test (P)
Body fat (%)	40.61±7.5	38.85±7.1	0.168
Total body water	27.15±2.5	26.91±2.3	0.215
Fat mass (kg)	25.2±8.8	24.7±9.1	0.04*
Fat-free mass (kg)	37.4±3.5	36.7±3.0	0.007*

*Significance $P > 0.05$

These findings indicate that approximately half of the participants had a normal BMI, while the remaining participants had a BMI above the normal range.

Body composition analyses

Changes in body composition before and after the exercise programme are shown in Table 2. The findings indicated a decrease in all body composition measurements, although only two measurements, namely fat mass ($t = 2.28, P < 0.05$) and fat-free mass ($t = 1.31, P < 0.05$), exhibited significant differences.

Programme assessment

Participants who attended the Fun and Fit Programme for the five consecutive sessions were provided with a questionnaire to assess their experience. The questionnaire consisted of five Likert scale items and revolved the effectiveness of the programme. Table 4 shows some of the mean and standard deviation of responses towards the programme implemented. In general, the participants expressed high levels of satisfaction with the implemented programme and found it well suited to their needs.

Qualitative analysis

The addition of this study was the qualitative open-ended questionnaire that was distributed to participants. The questions explored the positive and negative experiences of participants, which were divided into different themes. These additional questionnaires aided the developed programme (Fun and Fit with Baby programme) provided an acceptable and supported

opportunity for mothers with young children to participate in physical activity.

The fun aspect

Approximately 75% of the participants expressed their enjoyment and satisfaction with the exercise programme, stating that they felt happy and had fun. They acknowledged and valued the support provided by the facilitators throughout the programme. The following excerpts exemplify this emotion:

- '... Facilitatory was very friendly'
- '... It's fun! Keep it up...'
- '... Keep up the good work!...'
- '... It was fun to do this activity with the baby. Keep it up! Good job'
- '... Good job...'

Proposal to continue programme

The second theme derived from the open-ended comments relates to suggestions for the participants to continue the exercise programme. More than half of the participants (58%) (7 out of 12) expressed their desire for the exercise programme to persist in the future. Some participants proposed conducting the programme periodically, while others specifically recommended a weekly programme. The following comments illustrate this viewpoint:

- '... May this activity be continued from time to time...'
- '... May there be a programme like this in the future...'
- '... Keep up the good work! Can be done as a weekly activity for mothers...'
- '... Hopefully programmes like this are held from time to time to increase awareness about exercise...'

Time management

One negative aspect addressed by the respondents was time management. Although they enjoyed the programme, the time management aspect distracted their emotions as they had to wait longer:

'..... We had fun! Except that the time to begin the activity was later than planned. Participants should arrive on time. Good job'.

Table 3: Weight and body mass index of participants

Items	Value/frequency
Weight (kg), mean±SD	61.9±11.0
Height (cm), mean±SD	156.4±6.0
BMI	
Normal	6
Overweight	4
Obese class 1	2

BMI: Body mass index, SD: Standard deviation

Table 4: Mean and standard deviation of responses towards the programme implemented

Details	Mean±SD
The facilitator provided clear and effective explanations	4.49±0.65
Level of difficulty in perceiving the exercise	4.35±0.75
Suitability of exercise activity to participant	4.57±0.73
Exercise demonstration	4.49±0.77
Suitability of exercise with the position of carrying baby	4.69±0.52
Knowledge gained while doing the activities	4.62±0.55
Assistance given while facing difficulty in performing activity	4.68±0.53
Freedom to engage own activities during the programme	4.89±0.31
Suitability of space and facility	4.78±0.53
Level of satisfaction in the programme conducted	4.76±0.49

SD: Standard deviation

Participant observation

According to the observation, the participant behaviours can be divided into two main behaviours: (a) related to participating in the exercise programme and (b) related to personal activities during the exercise programme sessions. Most of the participants were able to follow the exercise routine and offered mutual assistance in correcting postures or exercise techniques if they were performed incorrectly. The participants were enthusiastic about performing the exercise routine and were receptive to receiving feedback when engaging in the activities. The participants also took time to comfort or breastfeed their babies when needed or take a break due to exhaustion during the programme. In addition, they supported each other by looking after each other's babies while mothers attended to their infants' needs, such as changing diapers, fetching cloth

and other related tasks. Through direct observation of these behaviours, it was evident that the participants determined and anticipated throughout the programme, received support from others and displayed satisfaction at the end of the programme. Figure 2a and b shows the enthusiasm of the mothers who participated in the exercise programme.

DISCUSSION AND CONCLUSION

The Fun and Fit with Baby Programme aims to promote physical activities amongst mothers with young children. This study reveals the programme compatibility by exploring the quantitative aspects (body composition) before and after the programme and qualitative aspects (participants' experience) during the programme. The findings indicated that the Fun and Fit with Baby Exercise Programme was well suited to the needs of mothers with young children. They could adhere to the exercise routine while attending to their babies' needs, such as soothing them in a baby carrier, breastfeeding, performing simple exercise movements and enjoying supportive and enjoyable elements within the programme.

The lack of significant impact on weight and body composition-related secondary outcomes can be attributed to the absence of a significant effect on objectively measured physical activity (Gilinsky, 2014). The slight changes in weight and body composition observed in this study may indicate a natural progression towards pre-pregnancy weight or could be influenced by the fact that more than a third of participants reported employing dietary control strategies to manage their weight.

According to Macrae (2016), women's ability to engage in exercise and sports is influenced by their life cycle stage, including marriage and parenthood, which has significant implications for their physical and emotional well-being. This phenomenon raises concerns about weight maintenance and body image, as these conditions can contribute to various health issues. Consequently, promoting awareness about the significance of physical activity and exercise is crucial for women in their pursuit of physical and psychological well-being. A continual exercise programme, as requested by the participants in this study, implies a demand for a 'family-friendly' programme (Mulvaney, 2011).

The exercise programmes tailored for mothers, including those during pregnancy, are essential for addressing the challenges related to obesity resulting from the demands of motherhood (DeLuca and Bustad, 2017), especially amongst working mothers



Figure 2: (a and b) Participants performing activities in the Fun and Fit with Baby Programme

(Mailey *et al.*, 2014). Moreover, such programmes play a crucial role in promoting a healthy lifestyle. Creating a supportive exercise environment that caters to individual needs, such as incorporating physical activities involving babies, can encourage mothers' active participation in exercise programmes. Whiteman-Sandland *et al.* (2018) highlighted the importance of facilities like 'creche' in exercise gyms, as they contribute to increased attendance rates. Overall, the exercise programme implemented in this study amongst mothers and pregnant women demonstrated a positive impact on the participants.

Thus, the Fun and Fit with Baby Programme provided an acceptable and supported opportunity for mothers with young children to participate in physical activity. This initiative demonstrates that a group exercised with similar goals have a key role in influencing, enabling and supporting people to participate in health activities.

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Conflicts of interest

There are no conflicts of interest.

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