

**THE EFFECTIVENESS OF PRENATAL  
BREASTFEEDING EDUCATION AND  
POSTNATAL BREASTFEEDING SUPPORT  
AMONG PRIMIPAROUS MOTHERS IN  
HOSPITAL UNIVERSITI SAINS MALAYSIA**

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**UNIVERSITI SAINS MALAYSIA**

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**by**

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**for the degree of**

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## LIST OF ABBREVIATIONS

BF	Breastfeeding
BFHI	Baby Friendly Hospital Initiative
BSES-SF	Breastfeeding Self-Efficacy Scale-Short Form
CG	Control Group
EDD	Expected Date of Delivery
GDM	Gestational Diabetes Mellitus
IG	Intervention Group
MOH	Ministry of Health
NHMS	National Health and Morbidity Survey
O&G	Obstetrics and Gynaecology
SIDS	Sudden Infant Death Syndrome
UNICEF	United Nations Children's Fund
USM	Universiti Sains Malaysia
WBW	World Breastfeeding Week
WHO	World Health Organization

**KEBERKESANAN PENDIDIKAN PENYUSUAN SUSU IBU KEPADA IBU  
MENGANDUNG DAN SOKONGON PENYUSUAN SELEPAS BERSALIN  
DIKALANGAN IBU YANG MELAHIRKAN ANAK PERTAMA DI  
HOSPITAL UNIVERSITI SAINS MALAYSIA**

**ABSTRAK**

**Latar Belakang:** Kadar Penyusuan secara eksklusif kekal rendah di Malaysia walaupun cadangan daripada Pertubuhan Kesihatan Sedunia di mana penyusuan eksklusif adalah sehingga enam bulan. Kerajaan berharap dan menjangkakan peratusan amalan penyusuan susu ibu secara eksklusif dalam kalangan bayi berumur enam bulan akan meningkat kepada 30% pada tahun 2015. **Objektif:** Untuk mengetahui keberkesanan pendidikan penyusuan pranatal dan sokongan penyusuan susu ibu selepas bersalin dalam meningkatkan amalan penyusuan susu ibu. **Kaedah:** Reka bentuk kajian kuasi-eksperimen telah digunakan untuk menguji kesan intervensi terhadap keyakinan, tahap eksklusif dan tempoh penyusuan susu ibu. Menggunakan persampelan bertujuan 96 ibu yang mengandung anak pertama (kumpulan intervensi (IG) = 48, kumpulan kawalan (CG) = 48) telah diambil daripada klinik perbidanan dan sakit puan dan wad antenatal di Hospital USM. Data telah dikumpulkan dengan menggunakan Skala Keberkesanan Diri Dalam Penyusuan Susu Ibu - Borang Ringkas (*BSES-SF*) dan borang soal selidik penilaian penyusuan. Ibu dalam IG menerima rawatan biasa terkini dan dua jam program pendidikan tambahan penyusuan susu ibu (Kuliah, video pendidikan, demonstrasi, praktikal dan perbincangan) dalam kumpulan kecil, buku penyusuan, nota dari modul, dan menerima sokongan penyusuan dalam masa seminggu selepas bersalin. Ibu dalam

CG hanya menerima rawatan biasa terkini. Ibu telah dinilai diminggu pertama dan keenam dan kemudian bulan keempat dan keenam selepas bersalin. **Keputusan:** Ibu dalam IG mempunyai keyakinan diri dalam penyusuan susu ibu yang lebih tinggi ( $M= 57.19$ ,  $SD= 6.49$ ) pada minggu pertama selepas bersalin berbanding ibu dalam CG ( $M= 53.85$ ,  $SD= 7.50$ ),  $p= 0.023$ . Peratusan yang lebih tinggi daripada ibu dalam IG mengamalkan penyusuan penuh pada kesemua minggu susulan: minggu 1 (77.1% vs 60.9%), minggu ke-6 (53.2% vs 42.2%), bulan ke-4 (54.3% vs 29.5%) dan bulan ke-6 (27.3% vs 16.7%) selepas bersalin. Keputusan menunjukkan terdapat perbezaan statistik yang signifikan antara kumpulan pada bulan keempat selepas bersalin ( $X^2=5.671$ ,  $p= 0.017$ ). Hasil menunjukkan kadar ibu dalam IG meneruskan penyusuan susu ibu lebih tinggi berbanding dalam CG pada semua tempoh susulan. Walau bagaimanapun, keputusan menunjukkan signifikan hanya pada dua minggu susulan (minggu ke-6,  $X^2=5.414$ ,  $p = 0.020$ , bulan ke-4,  $X^2=7.515$ ,  $p= 0.006$ ). Purata tempoh penyusuan susu ibu dalam IG adalah 20.8 minggu berbanding 17.0 minggu dalam CG. **Kesimpulan:** Pendidikan penyusuan pranatal dan sokongan penyusuan ibu selepas bersalin adalah berkesan dan boleh meningkatkan keyakinan, tahap eksklusif dan memanjangkan tempoh dalam penyusuan susu ibu boleh dicapai dalam kalangan ibu yang melahirkan anak pertama.

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**ABSTRACT**

**Background:** In Malaysia, the rates of mothers who are breastfeeding exclusively remain low, even though the World Health Organization had recommended the mother to breastfeed their infants exclusively for the first six months of age. The government hopes and expects that the percentage of exclusive breastfeeding practice among babies six months of age will increase to 30% by 2015. **Objective:** To determine the effectiveness of prenatal breastfeeding education and postnatal breastfeeding support in improving breastfeeding outcomes. **Method:** A quasi-experimental design was used to test the effects of intervention on breastfeeding confidence, exclusivity and duration. A purposive sample of 96 primigravida mothers (intervention group (IG) =48, control group (CG) =48) had been recruited from the Obstetrics and Gynaecology clinic and antenatal ward at Hospital USM. Data were collected using the Breastfeeding Self-Efficacy Scale-Short Form (BSES-SF) and the Breastfeeding Assessment Questionnaire. Mothers in the IG received current usual care and two hours of additional education programme on breastfeeding (lecture, educational video, demonstration, practical and discussion) in a small group, breastfeeding booklet, note from the module, and received postnatal breastfeeding support in the first week of postpartum. Mothers in CG received the current usual care only. The mothers were assessed at the first and sixth week and then the fourth and sixth month of postpartum. **Results:** Mothers in the IG had

greater breastfeeding self-efficacy score ( $M= 57.19$ ,  $SD= 6.49$ ) at the first week of postpartum than mothers in the CG ( $M= 53.85$ ,  $SD= 7.50$ ),  $p= 0.023$ . A greater percentage of mothers in the IG were practicing full breastfeeding compared to the CG at all of the follow up weeks: 1 week (77.1% vs. 60.9%), 6 weeks (53.2% vs. 42.2%), 4 months (54.3% vs. 29.5%) and 6 months (27.3% vs. 16.7%) postpartum respectively. The results indicated that there was a statistically significant difference between the groups at the fourth month postpartum ( $X^2=5.671$ ,  $p= 0.017$ ). The results indicated that the continuation of breastfeeding rates of the IG were higher than those of the CG at all four follow-up periods. However, the results showed only two follow up weeks that were significant (week 6,  $X^2=5.414$ ,  $p= 0.020$ , month 4,  $X^2=7.515$ ,  $p= 0.006$ ). The mean duration of breastfeeding in the IG was 20.8 weeks compared to 17.0 weeks in the CG. **Conclusions:** Prenatal breastfeeding education and postnatal support can effectively increase breastfeeding confidence, duration and exclusivity outcomes among primiparous mothers.

# CHAPTER 1

## INTRODUCTION

### 1.1 Background of the study

Breastfeeding is the best way to provide complete nutrients for infants to achieve the maximum healthy growth and development. Practically most of the mothers can breastfeed their infants with the accurate information distributed to the mothers regarding breastfeeding practice, by protecting and giving support to mothers, their spouse and family, the health care provider and community (World Health Organization [WHO], 2015a). The benefits of breastfeeding are countless and unquestionable, especially to the young infants, mothers, as well as society at large. For example, a previous study from Hauck, Thompson, Tanabe, Moon, and Vennemann (2011) had stated that breastfeeding can minimize the risk of sudden infant death syndrome (SIDS) among the infants in the first year of age and lessens the severity of bacterial infections including respiratory tract infection, bacteraemia, bacterial meningitis and diarrhoea.

Furthermore, according to Bernard et al. (2013), exclusive breastfeeding have been found to be associated with a slightly increased cognitive development and also have been reported to reduce the incidence of overweight and obesity among older children and adults who had received breastfeeding exclusively during infancy, compared to the people who did not. In addition, the benefits of breastfeeding on the economic situation to the family and the environment have also been reported in that study.

Exclusive breastfeeding is defined as an infant that receives only breast milk and no other fluids or foods are given until infants six months of age. However, infants who are exclusively breastfed may still receive vitamins, mineral supplements, oral rehydration solution or medicines in the form of drops or syrups, if needed (WHO, 2015b). Since 2003, WHO recommends mothers globally to give exclusive breastfeeding to their infants until six months of age. Thereafter, infants should start being introduced to safe complementary (solid) foods at six months and breastfeeding need to sustained for up to two years of life or longer (WHO, 2015b).

Baby Friendly Hospital Initiative (BFHI) has been implemented widely by the Ministry of Health Malaysia (MOH). Since 1992 until 2012, the data from MOH showed that there were a total of 142 from 355 hospitals in this country recognised as Baby Friendly Hospitals, mostly from government hospitals which were 121, 3 from teaching hospitals, 4 from armed forces hospitals and 14 from private hospitals. In 1998, Malaysia was recognized by the WHO as the third country in the world that has 100% government hospitals accredited as Baby Friendly Hospital (MOH, 2014). Hospital Universiti Sains Malaysia (Hospital USM) also applied this policy and it was awarded with the Baby Friendly Hospital Initiative since 1998. The hospital is fully implementing the "10 Steps to Successful Breastfeeding" as recommended by the WHO and United Nations Children's Fund (UNICEF). This hospital was reassessed in March 2014 and had successfully met the "WHO/UNICEF Baby Friendly Hospital Initiative Global Criteria", namely by maintaining its recognition as a Baby Friendly Hospital until March 7, 2017 (Lactation Unit Hospital USM, 2016).



Consequently, from the social and economic changes such as urbanization and aggressive formula milk marketing in this century, the initiation and duration of breastfeeding decreased worldwide. According to the report by WHO (2014a) globally, only 36% of infants aged between 0 to 6 months are receiving exclusive breastfeeding during the period between 2007 and 2014. However, in recent years, the global trend has turned towards improving breastfeeding practices. For example, the study from Cai, Wardlaw, and Brown (2012) found that the rate of infants younger than six months receiving exclusive breastfeeding was higher than before in almost all countries in the developing world, where the results showed that the rate increased from 33% in 1995 to 39% in 2010.

In Malaysia, even though more awareness campaigns on the benefits of breastfeeding were conducted among the public and mothers especially, the results of exclusive breastfeeding still remain low than the rate recommended by WHO. Based on the annual report from the MOH (2011), babies who were exclusively breastfed up to six months had remained low, even though there was an increase from 16.2% in 2010 to 23.3% in 2011. However, there was an increase in percentage of exclusive breastfeeding for babies up to four months of age from 37.7% (2010) to 44.9% (2011). Despite more awareness of the many benefits of breastfeeding, the rates are often decreased from the ones recommended practice by WHO. Based on the results of a study by Tengku Alina, Wan Abdul Manan, and Mohd Isa (2013), almost half of mothers (45.6%) who stopped giving exclusive breastfeeding to their infants at one month postpartum was associated with delayed initiation of breastfeeding and breastfeeding difficulties.

Resulting from the aggressive formula milk marketing from the breast milk substitute companies, the government has made commitments to protect current breastfeeding practices from continue to fall, by extending maternity leave from two to three months period and giving complete and accurate information regarding breastfeeding benefits and practice. The government also reinforces breastfeeding environment by encouraging involved parties to create breastfeeding facilities in public areas as well as workplace and support mothers who want to breastfeed by providing the appropriate health service to them. Mothers who attend the clinic and hospital either in rural or urban areas were encouraged by trained health care workers to continue breastfeeding their children until two years of age and beyond. Various efforts have been done by Hospital USM in Kubang Kerian, Kelantan as well to promote breastfeeding among mothers and the community in general. The encouraged, support and promotion of breastfeeding activity have been recognized by the WHO and UNICEF and one of the awards was received in 1998 which was the Baby Friendly Hospital Initiative (BFHI).

## **1.2 Statement of the problem**

Breast milk has been shown to give a positive effect to the mother and infant. Breast milk is a complex substance containing hormones, enzymes antibodies and all of which have protective functions, whereas formula milk is solely food (Hoddinott, Tappin, & Wright, 2008). Furthermore, the evidence from the study found that the benefits of breastfeeding were associated with exclusivity and duration (Duijts, Jaddoe, Hofman, & Moll, 2010). Unfortunately, according to a report from UNICEF (2012), the rate of breastfeeding practice throughout East Asia has decreased at an alarming rate, although many studies have demonstrated the benefits of breastfeeding which cannot be disputed.

UNICEF Nutrition Advisor, France Begin, stated that as little as 5% of all mothers in Thailand practised breastfeeding while in Vietnam, the rate of breastfeeding was less than 20% and in China, only 28% of infants were breastfed (UNICEF, 2012). However, in Malaysia, the Annual Report by the Ministry of Health Malaysia 2011, the statistic revealed that the percentage of infants who received exclusive breastfeeding below six months had slightly increased from 16.2% in 2010 to 23.3% in 2011. As mentioned by Tengku Alina et al. (2013) in their study, in Kelantan, it was found that most of the mothers did not intend to give exclusive breastfeeding for the duration recommended by WHO. The study findings highlighted that half of the mothers had stopped exclusive breastfeeding at one month postpartum because of breastfeeding difficulties and late initiation of breastfeeding. So that, it was important to understand why mother stopped give exclusive breastfeeding as early as in the first month of lactation.

It is not easy for the government to achieve that target, so all the health care providers, public and family must team up together to support and continuously strive to achieve that target in promoting breastfeeding practices among mothers in Malaysia. This happened because nowadays, it could be said that most mothers in this country are employed, thus many of them have limited time for the increasing demands on their time to breastfeed. Mothers may have limited time to breastfeed or pump their milk in the workplace and most of them also need to return to work early after giving birth. Furthermore, with the rapid economic growth in East Asia, the breast milk substitute companies are doing aggressive marketing campaigns to influence and persuade mothers to purchase their products and to give up breastfeeding, even though the breast milk has more benefits than formula milk for their children.

This area of study was chosen because at present, most mothers have stopped breastfeeding their infants partially or completely because they need to return to work. At the workplace, most of them complain that they do not have enough time to express or pump their breast milk or a place to breastfeed and do not have a refrigerator to keep the breast milk (Rahmah et al., 2011). This situation occurs because mothers lack the knowledge or exposure as well as lack the confident and skill to practice exclusive breastfeeding (Hapsah, Omar, & Mariam, 2002). This was supported by Nazura and Lee (2014) study which revealed that 47.5% of the primiparous mothers possessed ‘satisfactory knowledge’ of exclusive breastfeeding, whereas 52.5% of the mothers had poor knowledge. Emma (2011) reported that the public is commonly aware of the benefits of breastfeeding; however, most of them still have poor knowledge and lack the skill of breastfeeding such as the importance of skin-to-skin contact, latch on, breastfeeding position and how to sustain milk supply. In addition, lack of knowledge, lack of physical and emotional support from the society also contributed to one of the reasons in the barriers of breastfeeding. Therefore, mothers need the support from the people surrounding them to practice exclusive breastfeeding continuously until the babies reach the age of six months.

The effectiveness of this prenatal breastfeeding education and postnatal breastfeeding support is of paramount importance to consider because the education during prenatal period is accepted and can be a medium for nurses to give health education and support to the mothers regarding breastfeeding practice. According to a study by Su et al. (2007), prenatal breastfeeding education programme and postnatal breastfeeding support significantly increase the rates of exclusive breastfeeding for up to six months; however, the results from the study

showed that breastfeeding support given during the postnatal period is slightly more effective than giving education during the prenatal period.

A study by Imdad, Yakoob, and Bhutta (2011) reported that breastfeeding promotion intervention gave larger effects in developing countries, where the rates of exclusive breastfeeding were significantly increased at four to six weeks and at six months postpartum. The results from Imdad and colleague also revealed that prenatal counselling was found to be of more importance for breastfeeding at four to six weeks postpartum, while the combination of counselling during both prenatal and postnatal periods was more significant for mothers to give exclusive breastfeeding to their infants until six months of age. This was supported by Noel-Weiss, Rupp, Cragg, Bassett, and Woodend (2006), who revealed that the implementation of breastfeeding education during the prenatal period had a positive impact with the increase of the mothers' self-efficacy in breastfeeding and breastfeeding exclusivity.

Furthermore, in another study by Tengku Alina et al. (2013), they concluded that the promotion of exclusive breastfeeding should be targeted during pregnancy, which was before mothers actually faced the real breastfeeding experiences. In addition, they also suggested that the baby-friendly hospital initiative must be strengthened by giving early breastfeeding support and providing mothers with the skills to handle breastfeeding difficulties. Moreover, breast milk expression must be correct and the proper storage of milk might prevent the mother from throwing expressed milk. All these plans need to be emphasized during the prenatal education and postnatal support in improving breastfeeding intentions and the actual breastfeeding behaviour in mothers later. In initiating and maintaining

optimal breastfeeding practices, adequate breastfeeding counselling and support are essential for mothers and families (WHO, 2014b).

### **1.3 Research Questions**

The research questions of the study include the following:

1. Is there any significant difference on breastfeeding confidence in the first week of postpartum between the intervention group and the control group?
2. Is there any significant difference on breastfeeding exclusivity for up to six months postpartum between the intervention group and the control group?
3. Is there any significant difference on breastfeeding duration practice for up to six months postpartum between the intervention group and the control group

### **1.4 Objective of the study**

#### **1.4.1 General Objective**

To determine the effectiveness of prenatal breastfeeding education and postnatal breastfeeding support in improving breastfeeding outcomes among primiparous mothers at Hospital USM.

#### **1.4.2 Specific Objectives**

The specific objectives of this study are:

1. To compare the effect of prenatal breastfeeding education and postnatal breastfeeding support on breastfeeding confidence in the first week of postpartum between the intervention group and the control group.
2. To compare the effects of prenatal breastfeeding education and postnatal breastfeeding support on breastfeeding exclusivity up to six months postpartum between the intervention group and the control group.

3. To compare the effects of prenatal breastfeeding education and postnatal breastfeeding support on breastfeeding duration practice up to six months postpartum between the intervention group and the control group.

## **1.5 Hypotheses**

These were the three research hypotheses that were relevant to this study. The alternative hypotheses are:

- H<sub>A1</sub> There is a significant difference in breastfeeding confidence in the first week of postpartum between the intervention group and the control group.
- H<sub>A2</sub> There is a significant difference of breastfeeding exclusivity for up to six months of postpartum between the intervention group and the control group.
- H<sub>A3</sub> There is a significant difference in the breastfeeding duration practice for up to six months of postpartum between the intervention group and the control group.



## 1.6 Operational Definition

In this section, several key terms were defined conceptually and operationally. Those key terms are breastfeeding, prenatal breastfeeding education, postnatal breastfeeding support, breastfeeding confident, breastfeeding duration, and breastfeeding exclusivity.

*Breastfeeding:* Breastfeeding is defined based on the definition from WHO (2010). The infant receives breast milk, either directly from the breast or expressed and infant is allowed to receive any food or liquid including non-human milk and formula. In this study, breastfeeding is defined as infants receiving breast milk either directly from the breast or expressed, either without supplement or allowing the infant to receive one or more bottles of feeding of formula per day or any food or liquid.

*Prenatal Breastfeeding Education:* One or more actions are taken in order to modify an effect from the intervention (Venes, 2013). In this study, the intervention was given by giving breastfeeding education to the prenatal mothers at 28 week's age of gestation and later or as soon as possible and thereafter for those who enrolled in late. Prenatal breastfeeding education was given by the researcher in small groups in addition to the current usual care.

*Postnatal Breastfeeding Support:* In this study, postnatal breastfeeding support was given by giving one time support to the postnatal mothers within one week of postpartum to the intervention group. Postnatal breastfeeding support was given by the researcher face-to-face to the mothers. The support included information about breastfeeding, encouraging exclusive breastfeeding for six months, answering questions and discussing the doubts of practising breastfeeding, giving assistants in

the establishment of breastfeeding and management for any problem regarding breastfeeding.

*Breastfeeding Confident:* Confidence is the primary attitude consistently demonstrated to affect breastfeeding beliefs and behaviour (Blyth et al., 2002). Breastfeeding self-efficacy is a concept reflecting maternal confidence, which can influence a woman's judgment regarding her ability to initiate, persist in, and continue breastfeeding (Dennis, 2010). In this study, self-efficacy is defined as the mother's confident about her ability to breastfeed her baby.

*Breastfeeding Duration:* Breastfeeding duration is defined in the number of days the infant was fed at the breast, either without supplement or allowing a maximum of one bottle feeding of formula per day (Schlickau, 2005). In this study, breastfeeding duration is defined as the number of days the infant receive of any breast milk via bottle or breast, either without supplement or allowing to receive one or more bottle feeding of formula per day or any food or liquid. Six months was set as the criterion for the breastfeeding duration of this study. If a mother discontinued breastfeeding, either at one or six weeks or four months in postpartum, the breastfeeding duration would be recorded from the date of the infant's birth until the date of breastfeeding cessation. Note; if mothers stop breastfeeding for few days and resume it was consider as a continue breastfeeding.

*Breastfeeding Exclusivity:* The Level Exclusivity of breastfeeding was measured by the frequency of supplementation with the formula and other fluids, according to the scheme devised by Labbok and Krasovec (1990) in Table 3.1. Exclusive breastfeeding is defined as an infant that has received only breast milk (including milk express or from a wet nurse) and no other food or drink, not even water for six

months of life, with the exception of drops or syrups consisting of vitamins, mineral supplements or medicines (WHO, 2008). In this study, exclusive breastfeeding is the practice of feeding only breast milk, including expressed breast milk and allow the baby to receive vitamins, minerals, holy water or medicine since birth to the time of the data collection (0 week to 6 months of postpartum).

## CHAPTER 2

### LITERATURE REVIEW

This study aimed to find out the effects of prenatal breastfeeding education and postnatal support on breastfeeding practice among primiparous mothers at Hospital USM, in order to see the extent to which prenatal breastfeeding education and postnatal support could have an impact on the mother's confidence, exclusivity and duration of breastfeeding. The literature reviews begin with a discussion of the importance of breastfeeding for the mother and infant. It is important in helping the mother in understanding and promoting awareness about the benefits of breastfeeding to the infant and mother. Secondly, the literature review elaborates on general breastfeeding barriers faced by mothers and then discussed about breastfeeding self-efficacy. Thirdly, the literature review discusses the global rates of breastfeeding duration and exclusivity, followed by the topic of breastfeeding duration and exclusivity rates in Malaysia. Finally, the literature review discussed on the breastfeeding intervention.

#### **2.1 Importance of Breastfeeding**

The benefits of breastfeeding have been documented broadly in the literature for infants, mothers, and society. Breast milk is not just the best food for infant, but the highest standard for infant feeding as the natural first food for newborn. Optimal breastfeeding practices benefit the mothers and infants' health and strengthen the bond between mother and infant, help to achieve optimum growth and development for infant and protect against non-communicable diseases (WHO, 2014a). A study had shown that breastfeeding gives benefits to the mother and infant and is most

effective when mothers do so exclusively (Ip et al., 2007). As a global public health recommendation, WHO (2011) stated that infants should be exclusively breastfed for the first six months of life, with the continuation of breastfeeding for two years or longer. This is because the first two years of a child's life are mainly important for infants to receive the optimal nutrition that they need to reduce morbidity and mortality.

Despite the well-documented advantages of breastfeeding, the majority of mothers are not breastfeeding for the recommended duration, nor are they breastfeeding exclusively. In relation to the breastfeeding duration, many women discontinue breastfeeding in the early weeks or months of postpartum, before the recommended six months duration. For instance, the study by Tengku Alina, Wan Manan, and Mohd Isa (2013) in Kelantan demonstrated that almost half of the mothers (45.6%) had stopped practising exclusive breastfeeding at the first month of postpartum and in Klang, Tan (2011) reported that the percentage of exclusive breastfeeding for one month old infants was 63.3% and six month old infants was 32.4%. There are many benefits of breastfeeding. From the psychological benefits, breastfeeding improves the bonding between mother and infant, while from the physical advantage, it quickens postpartum weight loss, reduces health care costs and lessens the cases of child abuse. The following is a literature review discussing the benefits of breastfeeding to the mother and infant.

### **2.1.1 Maternal benefits**

Breastfeeding is a priceless and precious gift for the mothers as well as for the infants. Mostly, the mother feels the satisfaction and joy physically and emotionally when they breastfeed their babies. As we know, two hormones play important roles in breastfeeding, which are prolactin and oxytocin. The release of the

hormone prolactin can give a peaceful, nurturing feeling that allows the mother to calm, relax and focus on the baby and the oxytocin hormone can promote a nurturing and loving feeling between the mother and baby. Other than that, the benefits of breastfeeding include reducing the risk of certain cancers, cardiovascular disease, type II diabetes, promote postpartum emotional health, and other psychological benefits that will be discussed below.

A research had shown that a longer duration of breastfeeding is associated with reduced incidence of type II diabetes in later life in childbearing mothers and mothers who do not breastfeed have about 50% risk to develop type II diabetes (Liu, Jorm, & Banks, 2010). This is consistent with the findings from a number of studies on type II diabetes. Based on the findings from a high-quality systematic review and meta-analyses, initial breastfeeding was associated with a lower risk of type II diabetes in later life, compared to those who initially received formula feeding (Ip et al., 2007). In a separate study, O'Reilly, Avalos, Denny, O'Sullivan, and Dunne (2011) compared the results of a 75g oral glucose tolerance test between 300 mothers with Gestational diabetes mellitus (GDM) and 220 mothers with normal glucose tolerance during pregnancy and the test was performed at the 12<sup>th</sup> week of postpartum. The prevalence of mothers with impaired glucose tolerance or Type II Diabetes Mellitus had significantly dropped by 10% in mothers who breastfed, compared to mothers who bottle fed their babies. Based on these results, the authors concluded that breastfeeding might confer beneficial metabolic effects on GDM and should be encouraged.

Maternal health benefits of breastfeeding include reducing the risk of postpartum depression. Postpartum depression or postpartum blues is a common postnatal complication and can lead to bad consequence effects in the long term. The

research study by Ip et al. (2007) found that the mother who was not breastfeeding or early discontinuation of breastfeeding were associated with an increased risk to developed postpartum depression. Breastfeeding is associated with an attenuated stress response, involving cortisol and the lactogenic hormones, oxytocin and prolactin, which function as an antidepressant and have anxiolytic effects because by reducing distress, this may reduce the risk of depression (Mezzacappa & Endicott, 2007).

A study showed that mothers had less risk for developing diabetes, hypertension, cardiovascular disease or hyperlipidaemia when postmenopause if they breastfed their infants. In particular, the study found that mothers who are breastfeeding for longer than 12 months have a minimized risk to develop hypertension ( $p<0.001$ ), diabetes ( $p<0.001$ ), hyperlipidaemia ( $p<0.001$ ) and cardiovascular disease ( $p=0.008$ ) than the mother who never breastfed. Overall, these findings provided additional support for the benefits of breastfeeding when breastfeeding is exclusive and prolonged (Schwarz et al., 2009).

Beside the benefits of lowering down the risk of chronic illness, prolonging breastfeeding can also naturally suppress ovulation (Wei Li & Qiu Yi, 2007). In case-control studies, mothers who never practised breastfeeding were associated with a 1.3 fold higher risk to face ovarian cancer (95% *CI*, 1.1-1.5), compared with those who breastfed (Ip et al., 2007). The finding is consistent with the findings of a past study by Danforth et al. (2007), where it was found that mothers who had never breastfed have a 1.5 fold greater risk to develop ovarian cancer (95% *CI*, 1.0-2.2), compared with the mothers who breastfed for more than 18 months. Several studies had also stated and proven that breastfeeding can reduce the risk of breast cancer. For instance, according to Stuebe and colleague, mothers who never breastfed was

associated with a 2.4 fold increased risk of developing premenopause breast cancer (95% *CI*, 1.3-4.5), compared with those who breastfed (Stuebe, Willett, Xue, & Michels, 2009).

Mothers who succeeded with breastfeeding have an improvement in the relationship quality between mother and children (Papp, 2014), and breastfeeding also promotes greater weight loss for the mother (Hatsu, McDougald, & Anderson, 2008). The risk of vascular changes associated with future cardiovascular disease seemed to be increased for mothers who did not breastfeed their infants (Natland, Nilsen, Midthjell, Andersen, & Forsmo, 2012; Schwarz et al., 2010); obesity (Moss & Yeaton, 2014) ovarian cancer (Jordan, Cushing-Haugen, Wicklund, Doherty, & Rossing, 2012), breast cancer (Babita, Kumar, Singh, Malik, & Kalhan, 2014), and rheumatoid (Adab et al., 2014).

### **2.1.2 Infant benefits**

Among the infant feeding outcomes examined, Hauck, Thompson, Tanabe, Moon, and Vennemann (2011) found that breastfeeding can protect against sudden infant death syndrome (SIDS), and when infant received breastfeeding exclusively, this effect becomes much stronger. In SIDS risk reduction messages, the recommendation to breastfeed infants should be included to reduce the risk of SIDS and at the same time, to promote the benefits of breastfeeding to the infant and maternal health.

Research also points to the importance of breastfeeding on infant development. For instance, Oddy, Li, Whitehouse, Zubrick, and Malacova (2011) conducted a study at Western Australia at the major tertiary maternity hospital in Perth at nearby private practices. In this study, 2900 mothers were recruited and were



enrolled for 18 weeks of gestation. Then, 2868 children were also recruited prospectively until at the age of 10 years. The data from 1038 children were linked to standardized reading, writing, mathematics and spelling scores. Associations between breastfeeding duration and educational outcomes were studied. The results of the study showed a higher academic score among the ten year old children who were predominantly breastfed for six months or longer during infancy, compared to the children who were breastfed for less than six months. Academic achievement was positively associated with children who received predominant breastfeeding for six months or longer.

The finding is consistent with the findings of past study by Kramer et al. (2008), based on the largest randomized trial ever conducted in the area of human lactation at Belarussian maternity hospitals and their affiliated polyclinics. This study involved 17 046 healthy breastfeeding infants and 13889 were followed up till at the age of 6.5 years. This study provided strong evidence that prolonged and exclusive breastfeeding improved the children's cognitive development. In the assessment of the Wechsler Abbreviated Scales of Intelligence test, the experimental group had higher mean scores in all tests; verbal IQ (+7.5, ranged between +0.8 to +14.3), performance IQ (+2.9, ranged between -3.3 to +9.1) and for full scale IQ (+5.9 ranged between -1.0 to +12.8) with cluster adjusted mean differences (95% confidence intervals). The experimental group had significantly higher scores in the teachers' academic ratings for both reading and writing. The research findings by Sacker, Quigley and Kelly (2006) also pointed towards the motor development and superior cognitive of breastfed infants that may be contributed by the better mother-infant interactions and the easier infant temperament. The evidence from study suggested that the better child cognitive development was positively associated with

prolonged breastfeeding (Bernard et al., 2013; Quigley et al., 2012). The above finding was consistent with the findings of past studies by Deoni et al. (2013), who found that breastfeeding had a positive impact on brain development.

In addition, according to Barone et al. (2006), children who were breastfed for less than three months were more likely to have problems in bed wetting, compared to children who were breastfed for more than three months, they had enhanced and stronger immune system (Jackson & Nazar, 2006). Furthermore, adolescence who were breastfed for longer than six months during infancy had a modest protective effect against obesity (Yamakawa, Yorifuji, Inoue, Kato, & Doi, 2013), and children who were breastfed also had less risk in facing infections and in the first year of life, had less admission to the hospital due to infections (Ladomenou, Moschandreas, Kafatos, Tselentis, & Galanakis, 2010).

In a separate study, based on the data from Danish National Birth Cohort, Denmark, it was conclusively shown that breastfeeding may decrease epilepsy in childhood, thus adding a new reason for mothers to breastfeed their infants. The results of the study reported that children who were breastfed for less than one month had higher risk to develop epilepsy after the first year of life, compared to children who were breastfed for 3 to 5 months, 6 to 8 months, 9 to 12 months, and more than 13 months had 26%, 39%, 50%, and 59% less risk to develop epilepsy, respectively (Sun, Vestergaard, Christensen, & Olsen, 2011). Generally, longer durations and exclusive breastfeeding are positively associated with improved maternal and infant health outcomes.

## **2.2 General Breastfeeding Barriers**

Breast milk recognized as the optimal nutrition for infants in their first year of life and beyond. Although many mothers succeed in breastfeeding initiation, most of them would face the barriers to breastfeeding, which might put them at greater risk for early weaning. The Malaysian government has been actively promoting breastfeeding to all hospitals; even the growing body of knowledge on breastfeeding benefits and efforts have been done. Unfortunately, the prevalence of exclusive breastfeeding in Malaysia is still low and far from the target and the data showed that the rate of mothers who exclusively breastfed their infants for below six months were only 23.3 % (Ministry of Health Malaysia, 2011).

There had been several studies in the literature that identified why mothers discontinued breastfeeding and studies discovered that the returning to work factor and no breast milk or insufficient milk were the common reasons given by mothers. This finding highlighted the common reasons for terminating breastfeeding among rural mothers in Tumpat, Kelantan, where insufficient breast milk was 43% and the mother working was 30% , accounting to nearly half of the cases (Zulkjfli, Daw, & Abdul Rahman, 1996). This was supported by Tan (2009) who revealed that the main reason for giving formula feeding to the infant due to mothers' employment (29%) and another reason for failed breastfeeding was that the mother thought she had a lack of breast milk (48%). The above finding was consistent with the study by Nazatul Shiha, Hussain, Lanham-New, and Horton (2012) who reported that the main reason of mothers to stop breastfeeding was inadequate milk supply (54%), while 35% of mothers had returned to work and another 11% was because the infants refused to breastfeed and they received no support from their family and mother or the infant had health problems.

A qualitative study using in depth interviews by Tengku Alina et al. (2013) found reasons for giving infant formula and water was because there was no breast milk (33.3%), not enough breast milk (25.5%), caesarean section and returning to work (9.8%). Fatimah, Siti Saadiah, Tahir, Hussain Imam and Ahmad Faudzi (2010) studied the impact of returning to work on breastfeeding. Their analysis revealed that mothers who returned to work had a negative impact on breastfeeding practice and it was proven by the sudden drop in the rate of mothers who practised breastfeeding after two months of postpartum from 26.7% to 11.7% for the infants aged between two to three months.

In a different study, Nazatul and Ruby (2009) assessed the factors for breastfeeding cessation among working mothers. This study indicated that the lack of knowledge on breastfeeding, primiparous mothers, breastfeeding difficulties and lack of support from various parties were the challenges faced by breastfeeding mothers to continue and maintain breastfeeding. In another study by Tan (2011), it was demonstrated that the lowest rate of ethnic that practised exclusive breastfeeding was Chinese mothers, compared to other ethnic groups in that study. According to Tan (2011), Chinese mothers in Malaysia would typically employ an experienced helper to take care of their babies and the needs of households in the first month of postpartum. Other factor that may contribute to this issue was the mothers stopped breastfeeding because they were planning to return to work, mother fatigued, and this contributed to the difficulty in coping with the demands of work and breastfeeding. The study showed that Chinese mothers had a greater risk of breastfeeding cessation compared to Malay mothers (*AOR* 3.7, 95% *CI*: 1.7, 7.8) and Indian mothers (*AOR* 7.3, 95% *CI* 1.9, 27.4).

A study by Rahmah et al. (2011) found that mothers who were working in the private sector was associated with a higher tendency to discontinue breastfeeding. Studies had shown that the majority of mothers who worked with the government were less to discontinue breastfeeding (40%) compared to mothers who worked in the private sector (57%,  $p < 0.01$ ). In terms of facilities, working mothers were more inclined to discontinue breastfeeding when there was no refrigerator provided at their workplaces. The breastfeeding cessation was also associated with the lack of flexible time to express breast milk ( $p < 0.01$ ) and inadequate breastfeeding facilities at the workplace ( $AOR$  1.8, 95%  $CI$ : 1.05, 3.1). The evidence demonstrated that adequate breastfeeding support and facilities at the workplaces were important to encourage mothers to continue breastfeeding for significant periods after they returned to work. An employer should provide adequate facilities such as the establishment of a nursing room where mothers can express breast milk, refrigerator to storage the express milk, and give a flexible time to allow mothers to take appropriate breaks to express their milk. The finding was consistent with findings of past studies by Haughton, Gregorio, and Pérez-Escamilla (2010), who discovered that the lack of access to breastfeeding pumps, sore nipples, returning to work and lack of pumping facilities at workplace were all main obstacles to breastfeeding.

In a study conducted in the Klang Valley, Malaysia, Nazatul Shiha et al. (2012) described that not getting enough support from the family member was one of the reasons that contributed to the less mothers who were successful in breastfeeding. This meant that if the father (spouse) supported and preferred breastfeeding, women were more likely to breastfeed longer. The above finding was consistent with the study by Norzakiah and Nabilla (2013), who found that the reasons mothers discontinued breastfeeding were lack of or no breast milk supply, nipple pain,

planning and returning to work after the confinement period, infant refusing to breastfeed and mothers that normally practiced breastfeeding for only one month. Barriers to breastfeeding were categorised into five: insufficient support inside and outside the hospital, social/cultural barriers, practical issues, returning to work, and women/ infants/children issues (Hedberg, 2013). Important conclusions drawn from this literature was the common barriers to breastfeeding were due to inadequate support to the mothers during the antenatal period, immediate postpartum period and after the mother and baby were discharged from the hospital or after returning home.

According to Tenfelde, Finnegan, and Hill (2011), mothers who received delayed antenatal care were more likely to not practice exclusive breastfeeding, compared to those who received antenatal care at the first trimester. Langellier, Pia Chaparro, and Whaley (2012) found that mothers who breastfed exclusively at the hospital were eight times more likely to breastfeed for 12 months or at least more than those who did not breastfeed in the hospital. The critical time for initiation and successful breastfeeding was immediately during the postpartum period. Other issues related to higher risks of breastfeeding cessation were due to not getting the support from spouse or husband (Wojcicki et al., 2010), inadequate support from family member or friends and not having any experience in breastfeeding, (Tenfelde, Finnegan, Miller, & Hill, 2012), and breastfeeding in a public area which was a social barrier to mothers were all related to high risks of breastfeeding discontinuation. In Malaysia, exposing the breast during breastfeeding in a public area was viewed as a taboo (Tan, 2009).