



**FACTORS ASSOCIATED WITH EXCLUSIVE BREASTFEEDING
DURATION AMONG MOTHERS OF INFANTS WITH STRIDOR**

by

JAMILAH BINTI SHAHDAN

**Dissertation Submitted to Universiti Putra Malaysia, in Fulfilment of the
Requirements for the Degree of Master in Nutritional Sciences**

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ABSTRACT

FACTORS ASSOCIATED WITH EXCLUSIVE BREASTFEEDING DURATION AMONG MOTHERS OF INFANTS WITH STRIDOR

By

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September 2022

Chair : Dr. Nurul Husna binti Mohd Shukri

Breastfeeding is well known for providing the most optimal nutrition for newborn infants. Even in healthy infants with an uncomplicated perinatal course, sustaining exclusive breastfeeding until six months of life can be influenced by many factors. Infants with stridor often have difficulties with feeding practices due to their inability to control breathing and swallowing, disruption of the suck-swallow-breathe sequence and airway protection during feeding. At present, there were extensive studies on the etiologies of stridor. However, there is no published research on the association of exclusive breastfeeding among infants with stridor conducted globally or in Malaysia. Information on exclusive breastfeeding duration among infants with stridor is essential to prevent adverse effects on both mother and infant. Therefore, this study aims to identify the associations of maternal characteristics, obstetric and birth outcomes, infant's health characteristics, and lactation characteristics with the duration of exclusive breastfeeding among mothers of infants with stridor referred to the Otorhinolaryngology Department of Hospital Serdang and Hospital Ampang. This data study was obtained from a primary research study focused on weight gain. A total of 153 mother-child dyads with a child mean age of 3.14 ± 1.2 years participated in this study. An interviewer-administered questionnaire was given to mothers over the phone to gather information about breastfeeding practices, while consented secondary data was accessed through the hospital system (e-His) to gather information on infants' health characteristics. At six months, the exclusive breastfeeding duration rate was 43.8%, with an average of 4.50 ± 2.07 months. The majority were presented with a mild severity of stridor ($n = 75, 49\%$). Mothers often experienced difficulties during breastfeeding due to the baby's having trouble sucking (10.0%), which indicated the symptoms of stridor. Duration of exclusive breastfeeding was negatively associated with the severity of stridor ($\beta = -0.478, p = 0.001$), while positively associated with the age starts with formula feeding ($\beta = 0.532, p = 0.001$), the age for complementary feeding ($\beta = 0.398, p = 0.001$), the age start for bottle feeding, including expressed breastmilk ($\beta = 0.150, p = 0.004$), and the gestational week at birth ($\beta = 0.153, p = 0.048$). Overall, the condition of stridor was associated with breastfeeding duration. The need to tackle this problem with proper management and guidelines is essential so that mothers of infants with stridor or other related health conditions may get the benefits from breastfeeding.

ABSTRAK

FAKTOR-FAKTOR YANG BERKAITAN DENGAN TEMPOH PENYUSUAN SECARA ESKLUSIF DALAM KALANGAN IBU DAN BAYI YANG MENGALAMI PENYAKIT STRIDOR

Oleh

JAMILAH BINTI SHAHDAN

September 2022

Chair : Dr. Nurul Husna binti Mohd Shukri

Penyusuan susu ibu sangat terkenal kerana dapat memberikan nutrisi yang paling optimum untuk bayi yang baru lahir. Malah pada bayi yang sihat dalam tempoh peranakan yang mudah, untuk mengekalkan penyusuan susu ibu secara eksklusif sehingga enam bulan boleh dipengaruhi oleh banyak faktor. Bayi yang mengalami penyakit stridor sering menghadapi kesukaran semasa penyusuan kerana ketidakupayaan mereka untuk mengawal pernafasan dan menelan, akibat gangguan pada urutan hisap-telan-nafas dan gangguan saluran pernafasan semasa penyusuan. Sehingga kini, kajian meluas hanya mengenai gejala dan etiologi stridor. Namun, tiada maklumat atau penyelidikan yang diterbitkan mengenai perkaitan amalan penyusuan khususnya penyusuan susu ibu secara eksklusif dalam kalangan bayi yang mengalami stridor yang dijalankan secara global atau di Malaysia. Maklumat mengenai tempoh penyusuan susu ibu secara eksklusif dalam kalangan bayi dengan stridor adalah penting untuk mengelakkan kesan buruk kepada ibu dan bayi. Maka, tujuan kajian ini adalah untuk mengenal pasti perkaitan ciri-ciri ibu, hasil obstetrik dan kelahiran, ciri-ciri kesihatan bayi, dan ciri-ciri laktasi dengan tempoh penyusuan susu ibu secara eksklusif dalam kalangan ibu dan bayi yang mengalami penyakit stridor di Jabatan Otorinolaringologi Hospital Serdang dan Hospital Ampang. Kajian data ini diperolehi daripada kajian penyelidikan primer yang memfokuskan kepada penambahan berat badan bayi. Sebanyak 153 dyad ibu-anak dengan purata umur anak 3.14 ± 1.2 tahun telah mengambil bahagian dalam kajian ini. Soal selidik yang dilakukan oleh penemuduga diberikan kepada ibu melalui telefon untuk mengumpul maklumat tentang amalan penyusuan susu ibu, manakala data sekunder yang dibenarkan telah diakses melalui sistem hospital (e-His) untuk mengumpul maklumat tentang ciri kesihatan bayi. Pada enam bulan, kadar tempoh penyusuan susu ibu secara eksklusif ialah 43.8%, dengan purata 4.50 ± 2.07 bulan. Majoriti bayi mengalami stridor yang ringan ($n = 75, 49\%$). Ibu sering mengalami kesukaran semasa penyusuan kerana bayi mengalami masalah menghisap (10.0%), yang menunjukkan gejala penyakit stridor. Tempoh penyusuan susu ibu secara eksklusif mempunyai hubungan signifikan secara negatif dengan keterukan penyakit stridor ($\beta = -0.478, p = 0.001$), manakala hubungan signifikan secara positif dengan umur permulaan susu formula ($\beta = 0.532, p = 0.001$), umur pemberian makanan tambahan ($\beta = 0.398, p = 0.001$), umur permulaan untuk penyusuan botol, termasuk susu perahan ibu ($\beta = 0.150, p = 0.004$), dan minggu kehamilan semasa kelahiran ($\beta = 0.153, p = 0.048$). Secara keseluruhannya, keadaan penyakit stridor yang dialami dikaitkan dengan tempoh penyusuan susu ibu. Keperluan untuk menangani masalah ini dengan pengurusan dan garis panduan yang betul adalah penting supaya ibu dan bayi yang mengalami penyakit

stridor atau keadaan kesihatan lain yang berkaitan boleh mendapat manfaat daripada penyusuan susu ibu.



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DECLARATION

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DR. NURUL HUSNA BINTI MOHD
SHUKRI

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TABLE OF CONTENTS

ABSTRACT	ii
ABSTRAK	iii
ACKNOWLEDGEMENT	v
DECLARATION	vi
LIST OF TABLES	xi
LIST OF FIGURES	xiii
LIST OF APPENDICES	xiv
CHAPTER 1	1
1.1 Background	1
1.2 Problem Statement	2
1.2.1 Research Questions	4
1.3 Significance of Study	4
1.4 Objectives	5
1.5 Hypotheses	5
1.6 Research Framework	5
CHAPTER 2	7
2.1 Stridor	7
2.2 Duration of exclusive breastfeeding among mothers of infants with stridor	9
2.3 Maternal demographic and socio-economic factors	10
2.4 Obstetric and birth outcome factors	10
2.5 Health characteristics among infants with stridor	11
2.6 Lactation characteristics factors	11
2.7 Chapter Summary	12
CHAPTER 3	13
3.1 Study Design	13
3.2 Study Location	13
3.3 Sample size determination	14
3.4 Respondents	16

3.5 Sampling Design	16
3.6 Measure	18
3.7 Study Approval	20
3.8 Pre-testing	20
3.9 Data Collection	21
3.10 Data Analysis	22
CHAPTER 4	23
4.1 Maternal Demographic and Socio-Economic	23
4.2 Obstetric and Birth Outcome	24
4.3 Stridor Characteristics	26
4.4 Lactation Characteristics	27
4.5 Association between maternal demographic and socio-economic (maternal age) and exclusive breastfeeding duration.	33
4.6 Association between maternal demographic and socio-economic (maternal ethnicity, employment status, level of education and monthly household income) and exclusive breastfeeding status at six months	34
4.7 Association between obstetric and birth outcome (infant's age, birth weight, birth length, and gestational week at birth) and exclusive breastfeeding duration	35
4.8 Association between obstetric and birth outcome (infant's gender, skin-to-skin contact, neonatal experiences) and exclusive breastfeeding status at six months	36
4.9 Association between stridor characteristics (age stridor starts, age of diagnosis, duration of stridor, frequency of hospital admissions and age stridor resolved) with exclusive breastfeeding duration	37
4.10 Association between stridor characteristics factors (cause of stridor and severity of stridor) with exclusive breastfeeding status at six months.	38
4.11 Association between lactation characteristics factors (age started for bottle feeding, age started formula feeding, the age for complementary feeding, duration of breastfeeding, and the total number of lactation problems) with exclusive breastfeeding duration.	39

4.12 Association between lactation characteristics (lactation management) with exclusive breastfeeding status at six months.....	40
4.13 Association between lactation characteristics factors (lactation difficulties) with exclusive breastfeeding status at six months.....	41
4.14 Association between lactation characteristics factors (lactation support) with exclusive breastfeeding status at six months	44
4.15 Predictors of exclusive breastfeeding duration among mothers of infants with stridor.....	46
CHAPTER 5	49
5.1 Maternal demographic and socio-economic characteristics	49
5.2 Obstetric and birth outcome characteristics.....	50
5.3 Stridor characteristics.....	51
5.4 Lactation characteristics factors	52
5.5 Association of exclusive breastfeeding duration on several factors	55
CHAPTER 6	59
6.1 General conclusion	59
6.2 Strengths	60
6.3 Limitation.....	61
6.4 Recommendation.....	61
REFERENCES.....	63
APPENDICES	72

LIST OF TABLES

Table 3.1 Sample size calculation for variance explained by the whole model based on the previous studies investigating factors associating duration of exclusive breastfeeding among infants	15
Table 3.2 Additional adjustment in computing the sample size	15
Table 3.3 Inclusion and exclusion criteria for the selection participants	16
Table 3.4 The list of questions used in the primary study	18
Table 4.1 Distribution of mothers by their demographic and socio-economic characteristics (n=153)	23-24
Table 4.2 Distribution of infants by their obstetric and birth outcome characteristics. (n=153)	25
Table 4.3 Stridor characteristics of the infants (n=153)	26
Table 4.4 Infant feeding practices characteristics (n=153)	27
Table 4.5 Lactation management	29-30
Table 4.6 Distribution of infants and mothers by the lactation difficulties (n=153)	30-31
Table 4.7 Distribution of characteristics of breastfeeding support (n=153)	32-33
Table 4.8 Correlation between maternal demographic and socio-economic factors with exclusive breastfeeding duration	33
Table 4.9 Association between maternal demographic and socio-economic factors (maternal ethnicity, employment status, level of education, and monthly household income) and exclusive breastfeeding status at six months	34-35
Table 4.10 Correlation between obstetric and birth outcome factors (infant's age, birth weight, birth length, and gestational week at birth) with exclusive breastfeeding duration	35

Table 4.11 Association between obstetric and birth outcome factors (infant's gender, skin-to-skin contact, neonatal experiences) and exclusive breastfeeding status at six months	36-37
Table 4.12 Correlation between stridor characteristics factors (age stridor started, age of diagnosis, duration of stridor, frequency of hospital admissions, and age stridor resolved) with exclusive breastfeeding duration	38
Table 4.13 Association between stridor characteristics factors (cause of stridor and severity of stridor) with exclusive breastfeeding (BF) status at six months	38-39
Table 4.14 Correlation between lactation characteristics (age starts for bottle feeding, age starts for formula feeding, the age for complementary feeding, duration of breastfeeding, and total number of lactation problems) with exclusive breastfeeding duration	39
Table 4.15 Association between lactation characteristics factors (lactation management) with exclusive breastfeeding status at six months	40-41
Table 4.16 Association between lactation characteristics factors (lactation difficulties) with exclusive breastfeeding status at six months	42-44
Table 4.17 Association between lactation characteristics factors (lactation support) with exclusive breastfeeding status at six months	45-46
Table 4.18 Distribution of predictors influencing exclusive breastfeeding duration among mothers of infants with stridor	48

LIST OF FIGURES

Figure 1.1 Research Conceptual Framework	6
Figure 2. 1 Normal-appearing vocal folds, and no airway obstruction	8
Figure 2. 2 Laryngomalacia with omega-shaped epiglottis due to short aryepiglottic folds resulting in significant airway obstruction.	8
Figure 3.1 Flow chart of sampling design	17
Figure 4.1 Percentage (%) of exclusive breastfeeding at six months postpartum (n=153)	28
Figure 4.2 Percentage (%) of duration of breastfeeding (n=153)	28

LIST OF APPENDICES

Appendix A: Approval letter from Medical Research & Ethics Committee

Appendix B: Respondent's Information Sheet and Consent Form

Appendix C: Questionnaire

Appendix D: Status Confirmation for Dissertation and Copyright



CHAPTER 1

INTRODUCTION

1.1 Background

Breast milk contains all the energy and nutrients that an infant need for the first months of life, and it continues to provide up to half or more of a child's nutritional needs during the six months of the first year, and up to one-third during the second year of life. Breastfeeding has many health benefits in protecting from adverse health effects for infants and mothers as well as could reduce their disease burden. Breastfeeding protects the infant from pathogenic bacteria and has also been associated with reduced asthma and reduced obesity rates in children (Bigman, 2020; Liu et al., 2022). Breastfeeding also can enhance sensory and cognitive development and protects the infant against diarrhoea and common childhood illnesses such as pneumonia (World Health Organization, (WHO), 2019). In addition, breastfeeding also may provide both immediate and long-term benefits to mothers such as helping to space children and reducing the risk of ovarian or breast cancer (World Health Organization, (WHO), 2019), particularly if recommendations for exclusivity and duration are followed. The WHO and United Nations Children's Education Fund (UNICEF) recommended that infants should be exclusively breastfed for the first six months of life and complementary foods should be introduced at the age of six months (WHO/UNICEF, 1989).

Although the benefits of exclusive breastfeeding are well-established, currently at a global rate, only 44% of infants under six months of age are exclusively breastfed (UNICEF, 2021). Based on National Health and Morbidity Survey (NHMS, 2016), the prevalence of exclusive breastfeeding (47.1%) among infants under six months old had drastically increased compared to the prevalence of exclusive breastfeeding (14.5%) reported in NHMS 2006. Even though there was an increment, this prevalence was still less than the targeted prevalence by 2025 which at least 70% of infants below 6 months of age who are exclusively breastfed by The National Plan of Action for Nutrition of Malaysia III (NPANM III), 2016-2025 under Promoting Maternal, Infant and Young Child Nutrition.

Despite the benefits of exclusive breastfeeding, there are some circumstances in which infants with congenital malformation, specifically congenital stridor tends to experience difficulty to practice exclusive breastfeeding in their first six months of life. Stridor can occur in infants as an abnormal and observable high-pitched breathing sound produced by turbulent airflow through a partially obstructed stenotic upper airway at the level of the larynx and trachea (Clark et al., 2018). Stridor can occur commonly in inspiratory or expiratory, whereas in severe cases it could occur in both respiratory phases called biphasic stridor (Patnaik et al., 2021).

Generally, most stridor conditions appear as early as the first 10 days of life and worsen during the first few months of infancy (Irace et al., 2019). A study by Lum et al., (2016) involving all pediatric patients with stridor in the Otorhinolaryngology Department of Hospital Serdang found that (n= 72, 59.5%) of stridor occurs in the first 3 months of life with 25.6% which 31 of the patients were neonates. This finding is consistent with a recent study in South India that showed that 69% of stridor patients are below 1 year old with a subsequent of 18.3% in the 1–3-year age group and 12.7% in the 3-5 age group (Supriya et al., 2020).

Laryngomalacia, often present in inspiratory stridor during the first few weeks of life, generally increases in severity at around 6 months of age, accompanied by progressive symptom improvement. Most patients are symptom-free by 18-24 months of age (Simons et al., 2016). The severity of laryngomalacia is categorized as mild, moderate, and severe. Mild laryngomalacia can be adequately treated without specialist referral but must be diagnosed with a high degree of certainty (Bluhner & Darrow, 2019). Flexible fiberoptic laryngoscopy is currently the gold standard for the diagnosis of laryngomalacia due to the convenience and ability to directly assess the dynamic collapse of the supraglottic airway during awake respiration (Klinginsmith et al., 2021). About 10% to 20% of infants with laryngomalacia will have severe symptoms and often require surgical intervention (Thompson et al., 2010).

Noisy breathing that appeared to worsen with feeding or while in a supine position is indicating laryngomalacia. The trouble in controlling breathing and swallowing, due to disruption of the suck-swallow-breathe sequence and airway protection during feeding, will cause feeding difficulties such as coughing, choking, gagging, regurgitation, emesis and slow/or inefficient feeding (Irace et al., 2019). More often, infants with laryngomalacia have a difficulty in the normal sequence of suck-swallow-breathe, which has a negative impact on feeding practices including breastfeeding eventually leading to poor weight gain or failure to thrive (LactaMap,2020).

1.2 Problem Statement

Laryngomalacia compromise may have consequences in feeding practices including breastfeeding which is particularly challenging for both mother and infant. Early breastfeeding difficulties may jeopardize effective milk removal at the breast and impact the establishment of milk supply, which may precipitate an early transition to bottle feeding (Mills et al., 2020). According to NHMS 2016, about 8.6% of mothers stop to continue breastfeeding their baby when they are facing certain difficulties related to trouble suckling or latching on. A cohort study by Rendon et al., (2002) showed that less than half (48%) of infants in the study with congenital malformations had exclusive breastfeeding in the first month of life. During the follow-up at six months of life, only 9% of the infants had completed exclusively breastfeeding with the three months of average duration of them exclusively breastfed.

Infants with laryngomalacia classically have worsening stridor associated with increased effort of breathing during feeding, as well as often being reported to have frequent interruption of feeding caused by coughing and choking episodes (Thomspon et al., 2017). These symptoms raise concern regarding aspiration possibly occurring in some of these infants, with the acknowledgement that silent aspiration could be occurring even in the absence of these clinical signs. This condition takes a long time to resolve at least 18 months (Bhatt et al., 2018). Therefore, the recommendation for an exclusive breastfeeding duration of at least six months is equally important for infants with laryngomalacia.

At present, there were extensive studies on the symptoms and etiologies of stridor. However, there is no published information or research on the association of feeding practices particularly on exclusive breastfeeding among infants with stridor conducted globally or in Malaysia. In addition, there was a lack of guidelines on feeding management or feeding problem screening among infants with stridor, especially in Malaysia, either for patients at the hospital or follow-up patients at home. Despite the fact that guidelines outline the best medical treatment, research continually shows that they are unlikely to change practice behavior unless they are accompanied by an effective implementation plan (W W Klein, 2002). Guideline adaptation is the crucial step in implementing process (Wang et al., 2018). As a result, developing a guideline that targets a specific local need especially on may be easier to adapt and implement.

To date, there were a few guidelines; LactaMap is one of the online lactation care support systems from Australia designed to assist the mother to breastfeed her baby including special needs baby. Expert opinions by the members of the International Paediatric Otorhinolaryngology Group (IPOG) had provided recommendations for comprehensive management of infants with symptoms of laryngomalacia (Carter et al., 2016). The experts provide management guidelines that may best be done in combination with feed or speech therapy programs when it is available to direct feed suggestions and therapy (texture modification, bottle pacing, augmenting feeding schedule, etc.). In Malaysia, Clinical Practice Guidelines (CGP) on Pneumonia and Respiratory Tract Infections provide a guideline for patients with croup, which refers to clinical symptoms characterized by inspiratory stridor (Omar et al., 2013). However, the guideline did not emphasize feeding management instead of medication and clinical intervention for the condition. Hence, the study on breastfeeding practices and breastfeeding management among infants with stridor is critical to improving their feeding difficulties.

Information on exclusive breastfeeding duration among infants with stridor is essential to prevent adverse effects on both mother and infant. Therefore, this study aims to determine the association of a maternal demographic and socio-economic, obstetrical and birth outcome, stridor characteristics, and lactation characteristics factors with the duration of exclusive breastfeeding among mothers of infants with stridor.

1.2.1 Research Questions

1. What is the common type of stridor among infants?
2. What is the rate of exclusive breastfeeding at 6 months among mothers of infants with stridor?
3. What is the average exclusive breastfeeding duration among mothers of infants with stridor?
4. What are the factors that are associated with exclusive breastfeeding duration among mothers of infants with stridor?

1.3 Significance of Study

The findings of this study will determine the maternal demographic and socioeconomic, obstetrical and birth outcome, stridor characteristics, and lactation characteristics factors with exclusive breastfeeding duration among mothers of infants with stridor. This study will provide benefits in several aspects. The findings could provide baseline information for health professionals or health care providers to plan proper guidelines or intervention programs in order to promote breastfeeding practices among mothers of infants with stridor with the available information.

At present, there is no published information in Malaysia regarding factors associated with exclusive breastfeeding duration among mothers of infants with stridor. Therefore, this information will be useful for future studies and can add to existing knowledge and literature data on maternal and child health and nutrition in Malaysia. Besides that, this study information also will be useful in promoting feeding practices and feeding management in order to reduce feeding difficulties among mothers of infants with stridor.

By conducting this study, this information can provide in determining the need for clear guidelines on the feeding practices and management of the mothers of infants with stridor. In addition, this information also could help in contributing data for future guidelines or can be used by policy maker to develop a policy regarding this issue. In the meantime, nutritionists, or health practitioners such as nurses, and pediatrics also could play an essential role in assisting the proper guideline on feeding practices and management for this group of populations.

1.4 Objectives

1.4.1 General objective

To determine factors associated with exclusive breastfeeding duration among mothers of infants with stridor in two general hospitals in Hulu Langat, Selangor.

1.4.2 Specific objectives

- 1) To assess maternal demographic-socioeconomic, obstetrical and birth outcomes, stridor characteristics and lactation characteristics factors among mothers of infants with stridor.
- 2) To assess duration of exclusive breastfeeding among mothers of infants with stridor.
- 3) To determine the association of maternal demographic-socioeconomic, obstetrical and birth outcomes, stridor characteristics and lactation characteristics factors with exclusive breastfeeding duration among mothers of infants with stridor.
- 4) To determine the contribution of maternal demographic-socioeconomic, obstetrical and birth outcomes, stridor characteristics and lactation characteristics factors with exclusive breastfeeding duration among mothers of infants with stridor.

1.5 Hypotheses

1.5.1 Null Hypotheses

- 1) There is no significant association between maternal demographic-socioeconomic with the duration of exclusive breastfeeding among mothers of infants with stridor.
- 2) There is no significant association between obstetrical and birth outcomes with the duration of exclusive breastfeeding among mothers of infants with stridor.
- 3) There is no significant association between stridor characteristics with the duration of exclusive breastfeeding among mothers of infants with stridor.
- 4) There are no contributions between all the mentioned factors or variables with the duration of exclusive breastfeeding among mothers of infants with stridor.

1.6 Research Framework

Figure 1.1 shows the research conceptual framework for this study. Maternal demographic-socioeconomic, obstetrical and birth outcomes, stridor characteristics, and

lactation characteristics factors are independent variables associated with the duration of exclusive breastfeeding among mothers of infants with stridor. The duration of exclusive breastfeeding will be determined by the weeks/months the infant had exclusively breastfed referring to the infant receiving only breastmilk with no water, tea, juice, or food except vitamins, minerals, and medication in the form of drops or syrup (WHO, 1991).

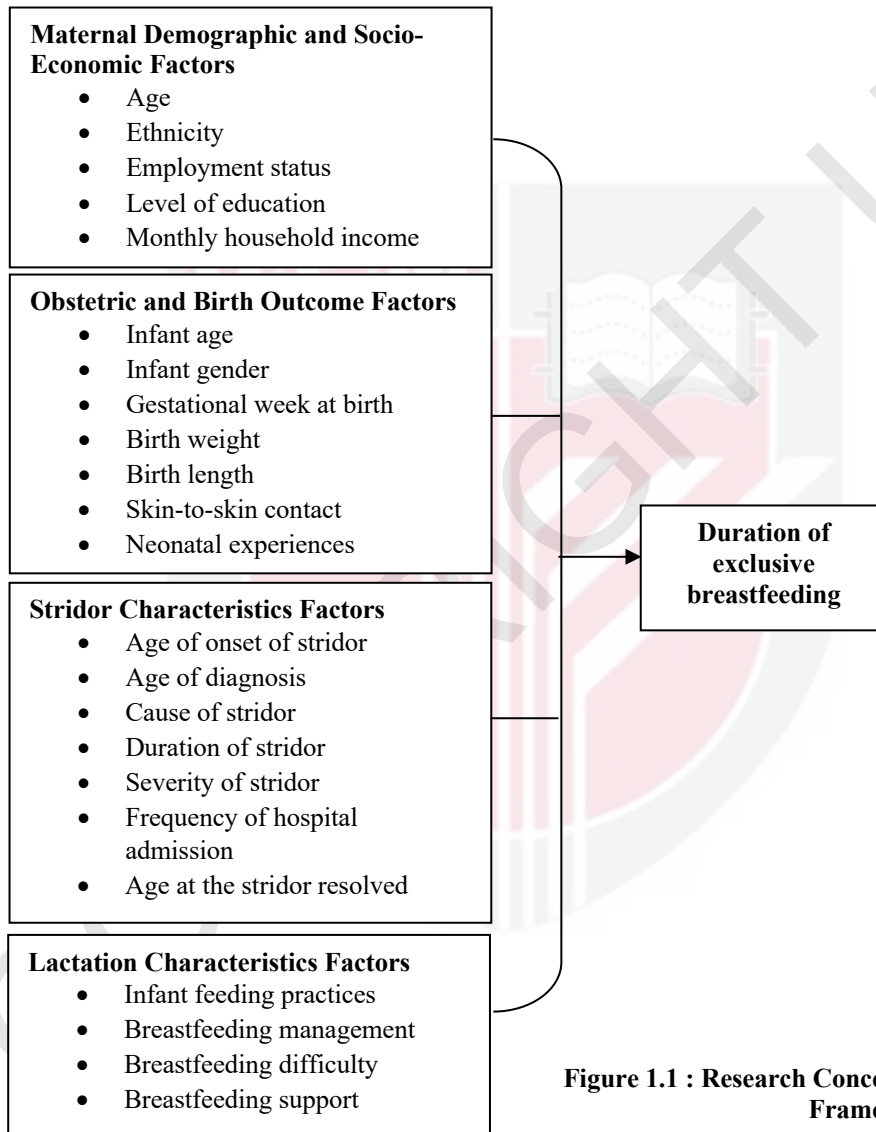


Figure 1.1 : Research Conceptual Framework

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