

## ORIGINAL ARTICLE

# Predictors of Exclusive Breastfeeding Among Mothers Attending Rural Health Clinics in Hulu Langat District

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## ABSTRACT

**Introduction:** Even though exclusive breastfeeding prevalence has increased from 19.3% in 2006 to 47.1% in 2016, this practice was slightly higher in urban areas (48.3%) compared to rural area (45.1%) in Malaysia. National Plan of Action for Nutrition of Malaysia III has set an indicator to achieve at least 70% exclusive breastfeeding by 2025. Therefore this study is to identify predictors that influenced exclusive breastfeeding practice in rural areas. **Methods:** This cross-sectional study was conducted in six rural health clinics in Hulu Langat District, Selangor among mothers with youngest child aged 6-48 months old. Respondents were selected through systematic random sampling. Validated self-administered questionnaire was used to assess sociodemographic factors, maternal factors, external factors and child's factors. Mother's height and weight was measured and body mass index was calculated. Data were analyzed using SPSS version 23. Multivariate logistic regression was used to determine the predictors for exclusive breastfeeding practice. **Results:** Response rate was 96% with a total of 311 mothers participated in this study. More than half of the mothers exclusively breastfed (52.4%). The predictors for exclusive breastfeeding were Malay ethnicity (AOR=3.951, 95% CI: 1.374-11.358), having tertiary education (AOR=2.401, 95% CI: 1.100-5.241) and positive attitude toward breastfeeding (AOR=7.755, 95% CI: 1.382-43.502). **Conclusion:** Prevalence of exclusive breastfeeding was higher in this study than the national level. Programme planners should pay special attention to Chinese and Indian ethnicities, mothers with lower level of education and negative attitude in order to improve breastfeeding practice among rural mothers.

**Keywords:** Exclusive breastfeeding, Ethnicity, Attitude, Sociodemographic factors, Rural

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## INTRODUCTION

Breastfeeding provides numerous benefits for mothers and children (1-5). However, currently, only 40% of the global average rate of infants below six months of age was exclusively breastfed, with only 23 countries managed to achieve rates of 60% or higher (6). World Health Organization (WHO) Global Nutrition Targets 2025 has set targets to achieve at least 50% rate of exclusive breastfeeding among members' countries (7). The National Plan of Action for Nutrition of Malaysia III (NPANM III), 2016-2025 has set another indicator under Promoting Maternal, Infant and Young Child Nutrition whereby the indicator is to achieve at least 70% of infants below 6 months of age who are exclusively breastfed by 2025 (8). In Malaysia, the prevalence of exclusive breastfeeding was 19.3% (95% CI 15.5-23.9) in 2006 and has increased to 47.1% (95% CI: 43.13-51.18) in

2016 (9,10). Even though there was an increment, this prevalence was still less than the targeted prevalence by WHO and NPANM III. The possible reason behind the improvement in the rate of exclusive breastfeeding in Malaysia could be due to the adoption of Baby Friendly Hospital Initiative (BFHI) in 1993 by the Ministry of Health Malaysia (11). Baby-Friendly Initiative Clinic was also being implemented in view of most of antenatal and postnatal mothers were seen in the clinic setting (11).

It was observed that more mothers in urban areas were exclusively breastfed compared to rural areas (10). The National Health and Morbidity Survey (NHMS) 2006 showed that the prevalence of exclusive breastfeed in urban areas was 12.9% (95% CI: 8.9-18.5) and in rural areas was 30.7% (95% CI: 23.3-39.2)(9). Subsequent data by the NHMS in 2016 showed that this practices was slightly higher in urban areas 48.3% (95% CI: 42.88-53.68) compared to rural areas 45.1% (95% CI: 39.56-50.76)(10). In view of this trend, this study was conducted at rural areas in order to determine the current prevalence and the contributory factors that may influenced exclusive breastfeeding practices.

## MATERIALS AND METHODS

### Study Design and Samples

The cross sectional study was conducted between September 2017 and August 2018 in government health clinics in Hulu Langat District. The district has a population of 1,138,198 of which 551,337 are female (12). There are a total of 13 health clinics, however six clinics were chosen as they were considered as rural health clinics which served population with sociodemographic characteristics of rural areas in Malaysia and the population density was less than 1,000 per mile<sup>2</sup> (13-17). Those involved clinics were Klinik Kesihatan Semenyih, Klinik Desa Broga, Klinik Desa Sungai Lalang, Klinik Kesihatan Beranang, Klinik Desa Rinching Tengah and Klinik Desa Sesapan Batu Minangkabau. Inclusion criteria were mothers with their youngest children aged 6 - 48 months and exclusion criteria include non-citizen, baby with any sign of major birth defects and mothers who were prescribed drugs which are not suitable for breastfeeding such as anticancer drugs and anticonvulsant drugs. Sample size was calculated based on two population proportions formula by Lemeshow and Lwanga (1990) with estimated non-response rate of 20%. Thus, final sample size of 300 was calculated. For the sample size of each clinic, it was calculated based on the proportion of new case attendance for each clinic. The sampling frame was the attendance registration list of children aged 6-48 months old who came to the rural maternal child health clinics. Systematic random sampling method with interval,  $k = 2$  was used to randomly select the eligible mother and child dyads with the selection of the first respondent was done by using table of random numbers.

National Medical Research Registry (NMRR) (NMRR-18-270-39837) and the Ethics Committee for Research Involving Human Subjects Universiti Putra (JKEUPM-2018-219) approved this study and the participants provided their written consent before enrolment in this study.

### Study Measures

The dependent variable for this study was exclusive breastfeeding as defined by WHO including wet nursing babies (18). The independent variables were sociodemographic characteristic (age, ethnicity, education level, employment status and total monthly household income), maternal factors (breastfeeding knowledge, breastfeeding attitude, initiation of breastfeeding, previous experiences of breastfeeding, mode of delivery and body mass index), external support (family support and workplace support) and child factors (sex, gestational age at birth, birth weight, multiple birth and place of birth).

This study used validated self-administered questionnaire and calibrated measurement to measure height and weight. The questionnaire has 46 items divided into five

sections (A, B, C, D, and E). For section A, B, C and D, the items were adapted from the study by Tanash (19). For section A, 6 items explained about mother's sociodemographic information (age, ethnicity, education level, employment status and total monthly household income) and 4 items explained about external support (spouses and family support and workplace support). For external support, options was either "yes" or "no" for each item. Each of the "yes" answer was given "1" mark while "no" answer was given "0" mark. For section B, 7 items on children factors such as sex, gestational age at birth, birth weight and place of delivery. Section C contains 5 items on breastfeeding experience such as time of initiation of breastfeeding and duration of exclusive breastfeeding for last child. Section D contains 6 items to assess mothers' knowledge about breastfeeding. Each of the correct answer was given "1" mark while wrong or not answering there was "0" mark. The total marks range between "0-6". Then mean and median were calculated. The level of knowledge was based on median 6.0 as it was not normally distributed data. Category for poor knowledge was  $\leq 5$  marks and good knowledge was 6 marks. For this section, back to back translation was conducted by an expert who was proficient in both languages followed by pretesting of the questionnaires and tests re-test Cohen's Kappa value ranged from 0.7 to 1.0. Section E contained 16 items that assessed mothers' attitudes toward breastfeeding. The questionnaire was adopted from "Iowa Infant Feeding Attitude Scale (IIFAS)(20). The IIFAS have been translated and validated in Malay language and have been used among mothers in Malaysia (21). The Cronbach's alpha for this instrument was 0.7-0.8 (22). Mothers were asked to indicate the extent to which they agreed with each statement on a 5-point Likert scale ranging from 1 ("strongly disagree") to 5 ("strongly agree"). Items that favour formula feeding were reverse scored and a total attitude score were computed by means of an equally weighted sum of responses to the individual items. Total attitude scores were range from 16 (reflecting positive formula feeding attitudes) to a high of 80 (indicating attitudes that favoured breastfeeding). A total score of 50 indicated a neutral "overall" attitude.

Anthropometric measurement (height in metre and weight in kilogram) were performed for each respondent. Body weights were measured by using Omron 4 (model HBF 212, Kyoto, Japan) point body fat analyser while height being measured by using Secca stadiometer (Model 213, Hamburg, Germany). Measurements were done based on WHO study protocol (23, 24).

### Statistical Analysis

Data were analysed using IBM Statistical Package for Social Science (SPSS) version 23. Normality testing using skewness, kurtosis, histogram, Kolmogorov-Smirnov Statistic and Shapiro Wilk has been performed. Descriptive analyses include Mean (SD) or median (IQR) for continuous variables and percentage and

frequencies for categorical variables. Bivariate analysis using Chi-Square test/Fisher's exact tests were being applied for categorical data. Simple logistic regression was conducted to determine significant variable to be included in multiple logistic regression where variables with p-value < 0.25 was selected (Hosmer and Lemeshow, 2000). There was no multicollinearity between the variables identified. Finally, multivariate logistic regression was used to calculate the odds ratios and associated 95% confidence interval for predictors of exclusive breastfeeding practices among mothers attending rural health clinics in Hulu Langat District.

## RESULTS

A total of 324 questionnaires were distributed to eligible respondents. The response rate of the study was 96% where 311 mothers consented and completed the questionnaire.

### Sociodemographic Distribution of Respondents

Table I shows sociodemographic characteristics of the study respondents. The age ranges from 17 to 46 years. The mean age was 31.41 (SD=5.29). Mean maternal age when child was born was 29.85 (SD=5.13). Lowest monthly household income was RM300 while highest monthly household income was RM15000. Malay ethnicity was the majority among the study respondents (79.8%). Most of the respondents obtained secondary education (49.4%) and tertiary education (48.7%).

**TABLE I: Sociodemographic characteristics of respondents (N=311)**

Variables	Mean (SD)	Median (IQR)	Frequency (%)
Mother's current age (year)	31.41 (5.29)		
Mother's age when child was born (year)	29.85 (5.13)		
Total monthly household income (RM)		3000 (3000)	
Ethnicity			
Malay			249 (79.8)
Chinese			25 (8.0)
Indian			25 (8.0)
Orang Asli			8 (2.6)
Others			4 (1.3)
Education level			
No formal education			2 (0.6)
Primary education			3 (1.0)
Secondary education			154 (49.4)
Tertiary education			152 (48.7)
Mother's employment status			
Unemployed			133 (42.6)
Self employed			34 (10.9)
Government sector			60 (19.2)
Private sector			84 (26.9)

Majority of mothers were housewife (42.6%).

Table II shows child's characteristics. Sex of the youngest child was predominantly boy. Most of the children were term babies (37-42 weeks pregnancy) (90.7%) with normal birth weight (2500gm-4000gm) (85.6%). Majority of the babies were delivered at government hospitals (88.1%).

**TABLE II: Child's characteristics (N=311)**

Child factor	Frequency (%)
Child's sex	
Boy	164 (52.6)
Girl	146 (46.8)
Gestational age at birth	
37-42 weeks	282 (90.7)
Preterm	29 (9.3)
Baby's birth weight	
< 2500gm	34 (10.9)
2500-4000gm	267 (85.6)
>4000gm	10 (3.2)
Twin/Single	
Single	302 (96.8)
Twin	9 (2.9)
Place of birth	
Home	0
Health clinic/Rural health clinic	0
Government hospital	275 (88.1)
Private hospital	36 (11.5)

### Exclusive Breastfeeding Practice

More than half of the mothers (52.4%) had exclusively breastfed their youngest child up to six months.

### Predictors of Exclusive Breastfeeding Practices

Table III and IV shows the significant predictors of practicing exclusive breastfeeding which include Malay ethnicity, tertiary education and positive attitude with odd ratio of 3.9 (95% CI 1.37-11.36), 2.4 (95% CI 1.10-5.24) and 7.76 (95% CI 1.38-43.50) respectively.

## DISCUSSION

This study aimed to measure prevalence and predictors of exclusive breastfeeding among rural mothers. It was found that more than half (52.4%) of the sample breastfed exclusively. The predictors were Malay ethnicity, tertiary education and positive attitude.

This prevalence was higher than the 2016 Malaysia's prevalence of exclusive breastfeeding in non-urban areas (45.1%). However, it is still below from the national target of at least 70% to be reached by 2025, despite the respondents were mainly housewives and educated. One of the plausible explanations was the fact that the new mothers had to respect their older relatives' views. It is common for older relatives especially the grandmothers

**TABLE III: Sociodemographic and child predictors of exclusive breastfeeding**

Factors	Exclusive Breastfeeding		Unadjusted OR (95% CI)	Adjusted OR (95% CI)
	Yes n=163 (52.4%)	No n= 148 (47.6%)		
Mother's current age				
< 30	48 (43.2)	63 (56.8)	1	-
≥ 30	115 (57.5)	85 (42.5)	0.575* (0.360, 0.918)	
Mother's age when child was born				
< 30	65 (45.1)	79 (54.9)	1	-
≥ 30	97 (58.8)	68 (41.2)	1.783* (1.135, 2.802)	
Ethnicity				
Non Malay	151 (60.6)	98 (39.4)	1	1
Malay	12 (19.4)	50 (80.6)	6.313* (3.201, 12.452)	3.951** (1.374, 11.358)
Education level				
Lower and secondary	70 (44.0)	89 (56.0)	1	1
Tertiary	93 (61.2)	59 (38.8)	1.950* (1.241, 3.062)	2.401** (1.100, 5.241)
Mother's employment status				
Unemployed	76 (57.1)	57 (42.9)	1	-
Self employed	20 (58.8)	14 (41.2)	2.280* (1.301, 3.993)	
Government sector	36 (60.0)	24 (40.0)	2.442* (1.082, 5.513)	
Private sector	31 (36.9)	53 (63.1)	2.394* (1.215, 4.716)	
Total monthly household income				
< RM3000	66 (47.1)	74 (52.9)	1	-
≥ RM3000	96 (57.1)	72 (42.9)	1.459* (0.930, 2.290)	
Child's sex				
Boy	84 (50.9)	81 (49.1)	1	-
Girl	79 (54.1)	67 (45.9)	1.106 (0.708, 1.728)	
Gestational age at birth				
< 37 weeks	10 (34.5)	19 (65.5)	1	-
≥ 37 weeks	153 (54.3)	129 (45.7)	2.222* (0.997, 4.948)	
Birth weight				
< 2500gm	16 (47.1)	18 (52.9)	1	-
≥ 2500gm	147 (53.1)	130 (46.9)	1.254 (0.614, 0.256)	
Single or twin				
Single	157 (52.0)	145 (48.0)	1	-
Twin	6 (66.7)	3 (33.3)	0.534 (0.131, 2.176)	
Place of birth				
Government hospital	145 (52.7)	130 (47.3)	1	-
Private hospital	18 (50.0)	18 (50.0)	1.099 (0.549, 2.202)	

\*Significant at P value &lt; 0.25

\*\* Significant at P value &lt; 0.05

to accompany mothers during the confinement period and their lack of support for breastfeeding could have influenced mothers not to breastfeed (15). Another common practice was to provide plain water to infants as they believe that the infants did not receive enough breast milk (25). Other reasons could be due to environmental, emotional, psychological, as well as social factors (26). For examples of which were stresses, uncomfortable breastfeeding, breast or nipple conditions, aversion to breastfeeding in public, exhaustion, resumption of work, unsupportive superiors, undesirable past episodes of breastfeeding, and weight-loss concerns (26).

In terms of ethnic group, Malays were around four times more likely than their non-Malay counterparts to

exclusively breastfeed. This is consistent with findings from other Malaysian researchers (15,27,28). Chinese Malaysian mothers usually employed experienced helpers to nurse and feed their babies during confinement (15). Hence, this could contribute to low in mothers' efforts to exclusively breastfeed. Furthermore, discrepancies in the practice could be affected by culture-based traditions, beliefs, and values that were passed on to the subsequent generations (29).

This study found that mothers who attained tertiary education were more likely to perform exclusive breastfeeding than their non-tertiary-educated counterparts. Likewise, Nigerian (30), Ethiopian (31), and Belgian (32) studies have reported similar findings. The

**TABLE IV: Maternal and external support predictors of exclusive breastfeeding**

Factors	Exclusive Breastfeeding		Unadjusted OR (95% CI)	Adjusted OR (95% CI)
	Yes n=163 (52.4%)	No n= 148 (47.6%)		
Knowledge				
Poor knowledge	63 (46.7)	72 (53.3)	1	-
Good knowledge	100 (57.1)	75 (42.9)	1.489 (0.948, 2.338)	
Attitude				
Negative	3 (16.7)	15 (83.3)	1	1
Neutral	70 (43.2)	92 (56.8)	3.804* (1.060, 13.655)	1.802 (0.336,9.667)
Positive	89 (68.5)	41 (31.5)	10.476* (2.875, 38.170)	7.755**(1.382,43.502)
Previous experience of breastfeeding				
Yes	57 (41.0)	82 (59.0)	1	-
No	106 (61.6)	66 (38.4)	2.255* (1.429, 3.558)	
Mode of delivery				
Normal delivery	119 (51.7)	111 (48.3)	1	-
Caesarean section	44 (54.3)	37 (45.7)	0.886 (0.533, 1.472)	
BMI				
Normal	48 (53.3)	42 (46.7)	1	-
Overweight	57 (57.6)	42 (42.4)	1.140 (0.642, 2.023)	
Obesity	58 (47.5)	64 (52.5)	0.793 (0.459, 1.368)	
Spouse support				
Yes	161 (53.7)	139 (46.3)	1	-
No	2 (18.2)	9 (81.8)	11.583 *(1.464, 91.618)	
Family support				
Yes	158 (53.2)	139 (46.8)	1	-
No	5 (35.7)	9 (64.3)	2.842* (0.872, 9.264)	
Employer provide breastfeeding room				
Yes	51 (52.6)	46 (47.4)	1	-
No	28 (40.0)	42 (60.0)	0.627* (0.336, 1.168)	
Availability of refrigerator to store breast milk				
Yes	45 (48.4)	48 (51.6)	1	-
No	34 (45.9)	40 (54.1)	0.947 (0.513, 1.746)	

\*Significant at P value < 0.25

\*\* Significant at P value < 0.05

relationship of maternal education with breastfeeding practices is positive, because the level of education increases the likelihood of the mother being aware of the benefits of exclusive breastfeeding and hence, performing the same (27). They are also in a better position to seek information and have more flexible jobs (31). Conversely, poorly-educated mothers might not appreciate the necessity of exclusive breastfeeding, even though they are likely to do this for a longer period in view of tradition (1). Thus, awareness campaigns with regards to the benefits of exclusive breastfeeding should be conducted in different languages to promote the practice, more so among poorly-educated mothers.

The study also found that mothers with positive attitude towards breastfeeding have odds around eight times higher to perform exclusive breastfeeding compared to negative attitude. This is comparable with a study in Japan where exclusive breastfeeding was likelier to be performed by positive attitude mothers relative to neutral or negative attitude (OR: 1.05; 95% CI: 1.02 – 1.08)

(33). A number of factors could contribute to negative breastfeeding attitude. These include insufficient maternal knowledge of the constituents and advantages of breast milk, unavailability of breastfeeding facilities at the workplace, aversion to breastfeeding at public sites, lack of support from spouse as well as social constraints and traditions (34,35). As such, all these factors need to be addressed in an attempt to foster positive attitude towards breastfeeding. A study at the National University of Malaysia Hospital has reported that mothers who underwent ante- or post-partum breastfeeding counselling sessions scored significantly higher in the Iowa Infant Feeding Attitude Scale (IIFAS) score (mean difference: 1.9), thereby denoting their greater positivity with regards to breastfeeding (28). Appropriate measures should be devised and effectuated in order to help mothers adopt a more positive outlook towards exclusive breastfeeding. This goal can be achieved by means of the dissemination of evidence-based information via compulsory antenatal and postnatal classes. Through this effort, the mothers are expected to be more skilful

and confident in breastfeeding (35).

The limitation of this study includes recalled bias especially among mothers with older children, related to the needs to recall child's age during breastfeeding cessation and the age of introduction of formula milk or other complementary foods. Besides, this study population was in Hulu Langat districts, thus may not be representative to other rural areas.

## CONCLUSION

The prevalence of exclusive breastfeeding among rural mothers was 52.4% which was higher than the national prevalence reported in 2016. The predictors of exclusive breastfeeding found from this study were Malay ethnicity, tertiary level of education and positive attitude. Antenatal and postnatal educational programmes on importance of breastfeeding should be implemented as compulsory for all mothers. More extensive breastfeeding programmes should be conducted at national, state and district level to increase exclusive breastfeeding rate in Malaysia. Health education material and health promotion program should be tailored to Chinese and Indian ethnicity and lower education group of mothers.

## ACKNOWLEDGEMENTS

This study was supported by grant from Universiti Putra Malaysia (GP-IPS: 9616400). We would like to thank the staffs of Hulu Langat Health District Office for their generous assistance and support. We are also very thankful to all mothers who had participated in this study.

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