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Infant Feeding Practices among Mothers with a History of Gestational Diabetes Mellitus in Selangor

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ABSTRACT

This study aims to determine infant feeding practices including breastfeeding initiation, exclusive breastfeeding, duration of breastfeeding and complementary feeding, feeding practices related factors among mothers with Gestational Diabetes Mellitus (GDM) history, and the association between Infant and Young Child Feeding indicators and GDM status. A cross-sectional study (n=130) was conducted from February to June 2023 in Meru and Bandar Botanic health clinics. Data on infant feeding practices were gathered from GDM mothers and children aged below two years. Findings showed that 43.8% (n=57) of the mothers had initiated breastfeeding within an hour, 57.7% (n=75) infants were exclusively breastfed, 30.0% (n=39) continued breastfeeding for one year and 81.9% (n=68) had an appropriate time of complementary feeding. Mothers who had caesarean-section delivery and GDM were more likely to initiate breastfeeding after an hour of delivery, $p<0.05$. Exclusive breastfeeding was highly practiced by older, multiparous, and higher education mothers. Unemployed mothers were more likely to continue breastfeeding for one year. GDM mothers were more inclined to delay breastfeeding initiation and introduced complementary feeding appropriately, $p<0.05$. This study's findings bridge the gap in providing information on infant feeding practices among mothers with a history of GDM and therefore might be beneficial for related personnel to figure out how to overcome this concerning issue in the future.

Keywords: complementary feeding, exclusive breastfeeding, gestational diabetes mellitus, infant feeding practices

INTRODUCTION

The World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) (2021) defined Infant and Young Child Feeding (IYCF) practices that precisely influence children below the age of 2 years' health, growth, and status of nutrition as well as the effect on their survival. The optimal child feeding process is an essential component in a child's development, growth, and overall health in the years of childhood. Inappropriate feeding practices can lead to many risk factors for developing stunting (Birungi & Ejalu 2022) and obesity (Tulpule *et al.* 2022). About 45% of children's death is at the age of five and below due to lack of nutrition (WHO 2019).

According to the National Health and Morbidity Survey (NHMS) 2019 the childhood obesity prevalence in Malaysia is 14.8% which is the highest in recent years. Enhancing feeding practices of newborns specifically for children under the age of two, should therefore be the world's leading top concern. The WHO and UNICEF have outline recommendations for infant feeding which includes breastfeeding initiation within an hour of delivery, exclusively breastfeeding before the age of six months, breastfeeding continued up to two years and more, introducing solid, semi-solid, and soft food at six to eight months, minimum dietary diversity, minimum meal frequency, and minimum acceptable diet. The guidelines include the recommendation of breastfeeding initiation within an hour of delivery, exclusively breastfeeding before the age of six months, breastfeeding continued up to two years and more, introducing solid, semi-solid, and soft food at six to eight months, minimum dietary diversity, minimum meal frequency, and minimum acceptable diet.

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However, a meta-analysis of Gestational Diabetes Mellitus (GDM) pooled prevalence in Malaysia is approximately 21.5%, which seems to be higher than other Asian countries accounting for 10.1 to 11.5% (Teng *et al.* 2022). Most earlier studies listed that GDM prevalence is indeed rising in Malaysia, which could be due to interactions between sociodemographic, variables and lifestyle (Dualis *et al.* 2020). GDM imposes an enormous health burden in the short and long term, putting both mother and baby at higher risk of complications during pregnancy and delivery (Teng *et al.* 2022). At six months following delivery, the exclusive breastfeeding prevalence was 23% among Thai women with GDM (Jirakittidul *et al.* 2019).

Although numerous studies on infant feeding practices and their associated characteristics have been undertaken, information is still limited, particularly among targeted participants in the desired location. There were no studies in Malaysia on infant feeding practices and factors associated with feeding practices among GDM history mothers. Therefore, this study aims to determine infant feeding practices including breastfeeding initiation, exclusive breastfeeding, duration of breastfeeding and complementary feeding, feeding practices related factors among mothers with GDM history.

METHODS

Design, location, and time

This cross-sectional study was conducted in Bandar Botanic and Meru Health Clinic. Data was gathered from postpartum mothers with children under the age of 24 months between February and June 2023. This research has been registered in the National Medical Research Register (NMRR) and has been approved by the Medical Research and Ethics Committee (REC) under Research ID:NMRR-19-4204-52471 (IIR).

Sampling

Purposive sampling was used in line with predetermined requirements to select the study's target participants. Raosoft software was utilized to calculate the sample size of 287 participants, with a total population of 2,000 subjects for the study. Raosoft software was used to calculate the respondents, with a 90% confidence level, 5% margin of error, 50% response distribution, and 20% sample size was set aside to account for research dropouts.

GDM and non-GDM postpartum mothers aged 18 to 45 years with children below the age of 24 months who lived in Selangor and visited Bandar Botanic or Meru Health Clinic and can understand English and Malay language were eligible to participate in this study. However, pregnant, non-Malaysian, with psychotic disorders diagnosed and having severe pre-existing health conditions mothers have been excluded from participating.

Data collection

The participants were approached and briefly explained about the study. Then, the participants were given the consent form and need to sign the form if they are willing to participate in this study without any compulsion. The data for this study was collected using a structured questionnaire that participants self-administered. This study utilized a validated Infant Feeding Practices questionnaire adapted from Emmanuel and Clow (2017); Leow *et al.* (2017); WHO & UNICEF (2021). The collected information includes maternal age, race, educational level, residential area, employment status, number of children, marital, smoking, GDM status, child's age, gender, weight, feeding planning before born, skin-to-skin contact, breastfeeding intention, breastfeeding initiation, breastfeeding duration, feeding frequency, exclusive breastfeeding, previous children feeding experience, weaning off breastfeeding, breastfeeding encouragement from husband, family, and friends, and bed-sharing practices. Furthermore, the questionnaire addresses if any of the stated food groups have been introduced into the child's diet, introductory age, and consumption frequency.

Data analysis

The data gathered was transferred to the Statistical Package for the Social Sciences (SPSS) Version 27 for numerical data statistical analysis. The mean, standard deviation, frequency, and percentage have been utilized to present descriptive results. The chi-square test was used to determine the association between infant feeding practices and socio-demographic factors, along with GDM status and infant feeding practices.

RESULTS AND DISCUSSION

The sociodemographic profile of the participants is presented in Table 1. About 130 participants who completed the survey were recruited in this study. One participant had been excluded due to an incomplete response survey. All participants had a mean age of 30.89±5.5 years. Many participants were Malay (n=124, 95.4%). The most common educational level among participants is college/bachelor (n=75, 57.7%). There were about 69 (n=53.1%). All participants were married and did not smoke. Most of the participants had two to three children (n=67, 51.5%), had vaginal birth (n=100, 76.9%). About 90 (70%) were non-GDM and 39 (30%) had GDM

Table 2 shows the profile of the child participants. The child's mean age and standard deviation are 9.70±7.1 months. Most common child's age is 0 to 6 months (n=58, 44.6%). About 77 of the child were female (59.2%) and 53 were male (40.8%). The mean and standard deviation of birth weight is 2.96±0.5 kg. Most of the children weighed 2,500 g or more at birth (n=114, 87.7%), have less than average weight-for-length (n=57, 43.8%). Majority of the children have less than average weight (n=73, 56.2%), normal stature (n=49, 37.7%) and normal BMI-for-age (n=61, 46.9%).

The infant feeding practices were shown in Table 3. Most of the mothers have intention to feed breast milk (n=103, 79.2%). NGDM mother intent to feed breast milk solely (n=76, 73.8%) before delivery, whereas GDM mothers intent to feed breast milk only (n=27, 26.2%). About 93 mothers (71.5%) had skin-to-skin contact with the child within the first hour after birth, with 71 were NGDM (76.3%) and 22 were GDM (23.7%) mothers. Most mothers (n=108, 83.1%) choose breast milk during the child's first feeding. Approximately 81 (75.0%) were NGDM and 27 (25.0%) were GDM mothers gave their infant breast milk as the first feeding.

About 57 (43.8%) mothers have initiated breastfeeding within an hour with 47 (82.5%) were NGDM and 10 (17.5%) were GDM mothers. Sandhi et al. (2020) discovered that mothers who had skin-to-skin contact had greater confidence in breastfeeding and better-expressed milk supplies, but not early breastfeeding initiation. In one case series study, their findings demonstrated a delay in the first attempt to breastfeed, delayed secretory activation, and lower milk production in GDM mothers (Suwaydi et al. 2022). The mean and standard deviation of duration first attached to the breast for total participants, NGDM and GDM were 16.88±14.7 minutes, 17.68±15.7 minutes, and 14.95±11.9 minutes. Most of the participants fed breast milk 8 to 11 times (40.0%, n=52) per day. More NGDM mothers fed breast milk more than 11 times (80.4%, n=37) while GDM mothers fed breast milk more than 11 times and less than 8 times having the same number (71.0%, n=22).

Exclusive breastfeeding requires that newborns be given only their mother's milk, with no other food or drink, including water. The rate of exclusive breastfeeding in Malaysia was 47.1% (IPH 2016). Our present study found that 57.7% of mothers have practiced exclusive breastfeeding with 74.7% are NGDM mothers and 25.3% GDM mothers. Oza-Frank *et al.* (2016), discovered that GDM mothers reported feeding their infants formula within the first two days of life which is more than 75%. It is acknowledged that this might be related to shorter breastfeeding duration among mothers who commence breastfeeding. Several strategies must be implemented to extend breastfeeding duration and delay the introduction of formula. Jirakittidul *et al.* (2019) revealed that approximately 23% of GDM mothers exclusively breastfed for 6 months after birth, which was lower than our results in this present study (25.3% at 6 months). Individualized instruction on breastfeeding during postnatal appointments has been found to enhance breastfeeding rate and confidence among women with history of GDM (Shuhaimi & Abd Hamid 2023).

About 42 (71.2%) of NGDM and 17 (28.8%) of GDM mothers had exclusively breastfed their older children. Most participants still breastfeeding. About 61 (72.6%) of NGDM and 23 (27.4%) of GDM mothers have not stopped breastfeeding yet. Our study findings presented 30.0% of the mothers who continued breastfeeding for one year with 25.3% NGDM and 41.0% GDM. According to Oza-Frank *et al.* (2016), the overall breastfeeding duration in women with GDM is declining.

Almost all participants' husbands and families support the mothers to breastfeed (98.5%, n=128), with 70.3% (n=90) of NGDM and 29.7% (n=38) of GDM mothers. About 58.4% (n=76) of participants had started their child on solid, semi-solid, or soft food. Regardless of GDM status,

Table 1. Sociodemographic profile of participants (n=130)

Sociodemographic data	Total (n=130) n (%)	NGDM (n=91)	GDM (n=39)
Age (years)	30.89±5.5	30.37±5.8	32.1±4.6
Race			
Malay	124 (95.4)	87 (95.6)	37 (94.9)
Chinese	1 (0.8)	0 (0.0)	1 (2.6)
Indian	5 (3.8)	4 (4.4)	1 (2.6)
Education level			
Primary school	1 (0.8)	0 (0.0)	1 (2.6)
Secondary school	52 (40.0)	36 (39.6)	16 (41.0)
Tertiary education	77 (59.2)	55 (60.4)	22 (56.4)
Residential area			
Urban	11 (8.5)	7 (7.7)	4 (10.3)
Suburban	119 (91.5)	84 (92.3)	35 (89.7)
Employment status			
Employed	69 (53.1)	48 (52.7)	21 (53.8)
Unemployed	61 (46.9)	43 (47.3)	18 (4.2)
No. of children			
1	45 (34.6)	29 (31.9)	16 (41.0)
2−3	67 (51.5)	50 (54.9)	17 (43.6)
4+	18 (13.8)	12 (13.2)	6 (15.4)
Delivery types			
Vaginal	102 (78.4)	77 (84.6)	25 (64.1)
Cesarean	28 (21.5)	14 (15.4)	14 (35.9)
Health complications			
No	125 (96.2)	87 (95.6)	38 (97.4)
Yes	5 (3.9)	4 (4.4)	1 (2.6)

*NGDM: Women without GDM; GDM: Women with GDM

more than half of them had introduced solid, semi-solid, or soft food into their child's diet; NGDM (52.8%, n=48) and GDM (71.8%, n=28).

About 79.5% of mothers had achieved minimum dietary diversity with NGDM (80.4%) and GDM (78.1%) in this present study. Morover, (41.0%) of the children met minimum meal frequency and 81.9% met the minimum acceptable diet. In contrast with a study by Bong *et al.* (2018) on Penan children in Sarawak, reported 76.4% of them had minimum dietary diversity, high minimum meal frequency (83.0%) and 55.3% achieved a minimum accepatable diet, which is slightly higher than Malaysia's (53.1%) achievement (IPH 2016).

The relationship between sociodemographic factors and infant feeding practices were presented in Table 4. Half of the vaginal delivery mothers (50.5%) initiated breastfeeding within an hour of birth, while 78.6% of cesarean delivery mothers had initiated breastfeeding after an hour of birth, with a significant association between delivery types and breastfeeding initiation, $p<0.05$. Based on Gedefaw *et al.* (2020), their study is consistent with our present study in which cesarean-delivery

Table 2. Profile of the youngest child (n=130)

	Mean±SD	n (%)
Age, months	9.70±7.1	
0−6		58 (44.6)
7−11		19 (14.6)
12 and above		53 (40.8)
Gender		
Male		53 (40.8)
Female		77 (59.2)
Birth weight (g)	2.96±0.5	
≥2,500		114 (87.7)
<2,500		16 (12.3)
Weight-for-length		
Low		18 (13.8)
Less than average		57 (43.8)
Average		11 (8.5)
Above average		30 (23.1)
High		14 (10.8)
Weight-for-age		
Low		19 (14.6)
Less than average		73 (56.2)
Average		19 (14.6)
Above average-High		19 (14.6)
Length/height-for-age		
Short		18 (13.8)
Moderate short		41 (31.5)
Normal		49 (37.7)
Moderate-High		22 (16.9)
BMI-for-age		
Severely thin		44 (33.9)
Normal		61 (46.9)
Overweight		13 (10.0)
Obese		12 (9.2)

BMI: Body Mass Index; SD: Standard Deviation

mothers were four times more likely to delay breastfeeding initiation than vaginal-delivery mothers. Vaginal birth mothers were significantly more likely to begin early breastfeeding than cesarean birth mothers (Yılmaz *et al.* 2017).

This present study found that GDM mothers are more susceptible to initiate breastfeeding after an hour of birth (73.7%) compared to half of non-GDM mothers who initiated breastfeeding within an hour of birth, with a significant association between GDM status and breastfeeding initiation, $p<0.05$. This present study's findings are consistent with a study from Suwaydi *et al.* (2022) which concluded that GDM mothers are more susceptible to having a poor start to breastfeeding due to multiple factors and may require extra assistance to breastfeed within an hour of delivery or to express milk when breastfeeding is not feasible. Compared to non-GDM women, about 12% more GDM women reported difficulty producing enough milk (Oza-Frank *et al.* 2016).

Older mothers tend to exclusively breastfeed than younger mothers, with a significant association between age and exclusive breastfeeding practices, $p<0.05$. There is a study underpinned that 25 to 34-year-old mothers (26%) are more inclined to exclusive breastfeeding during the first eight months of their lives (Parnis *et al.* 2020). The breastfeeding knowledge and experience influenced exclusive breastfeeding (Shohaimi *et al.* 2022) as older mothers may have more knowledge and experience in infant feeding and hence practice exclusive breasfeeding more than younger and inexperienced mothers. However, our findings are supported by another study where older women with longer breastfeeding duration have a reduced likelihood of having another child and need to continue breastfeeding compared to younger mothers who have another child, requiring them to stop breastfeeding earlier (Mulugeta *et al.* 2022).

Mothers that have higher educational levels tend to practice exclusive breastfeeding than mothers that have lower educational levels, with a significant association between educational level and exclusive breastfeeding practices, $p<0.05$. Our present findings are in line with the study from Indonesia which revealed that a higher level of education increases the chances of exclusive breastfeeding (Laksono *et al.* 2021). The association between mothers' education and breastfeeding practices has positive consequences since education increases the likelihood that mothers acknowledge the advantages of exclusive breastfeeding and thus

Table 3. Infant feeding practices among mothers with and without GDM (n=130)

	Total (n=130) n (%)	NGDM (n=91)	GDM (n=39)
Intention to feed before delivery			
Breast milk	103 (79.2)	76 (73.8)	27 (26.2)
Formula	2 (1.5)	0 (0.0)	2 (100.0)
Combination of breast milk and formula	25 (19.2)	15 (60.0)	10 (40.0)
Skin-to-skin contact (in the first hour after birth)			
Yes	93 (71.5)	71 (76.3)	22 (23.7)
No	37 (28.5)	20 (54.1)	17 (45.9)
First feeding			
Breast milk	108 (83.1)	81 (75.0)	27 (25.0)
Formula	22 (16.9)	10 (45.5)	12 (54.5)
Timepoint when breastfeeding started			
Within an hour	57 (43.8)	47 (82.5)	10 (17.5)
Within 24 hours	49 (37.7)	30 (61.2)	19 (38.8)
After 1 day	23 (17.7)	14 (60.9)	9 (39.1)
Duration first put to the breast (minutes)	16.88±14.7	17.68±15.7	14.95±11.9
Frequency fed breast milk a day			
<8 times	31 (23.8)	22 (71.0)	9 (29.0)
8−11 times	52 (40.0)	32 (61.5)	20 (38.5)
>11 times	46 (35.4)	37 (80.4)	9 (19.6)
Exclusive breastfeeding for 6 months			
Yes	75 (57.7)	56 (74.7)	19 (25.3)
No	55 (42.3)	35 (63.6)	20 (36.4)
Previous child feeding in first 6 months			
Breast milk	59 (45.4)	42 (71.2)	17 (28.8)
Formula	0 (0.0)	0 (0.0)	0 (0.0)
Combination of breast milk and formula	28 (21.5)	21 (75.0)	7 (25.0)
Not related	43 (33.1)	28 (65.1)	15 (34.9)
Age weaned off breastfeeding, months	9.11±8.2	8.1±7.7	11.0±8.9
Have not stopped	84 (64.6)	61 (72.6)	23 (27.4)
0−6	24 (18.5)	17 (70.8)	7 (29.2)
7−11	8 (6.2)	5 (62.5)	3 (37.5)
12 and above	14 (10.8)	8 (57.1)	6 (42.9)
Introduction of solid/semi-solid/soft food			
No	54 (41.5)	43 (47.3)	11 (28.2)
Yes	76 (58.4)	48 (52.8)	28 (71.8)
Minimum dietary diversity			
<3 food types	11 (13.3)	6 (11.8)	5 (15.6)

Continur from Table 3

	Total (n=130) n (%)	NGDM (n=91)	GDM (n=39)
3 food types	6 (7.2)	4 (7.8)	2 (6.3)
>3 food types	66 (79.5)	41 (80.4)	25 (78.1)
Minimum meal frequency			
No food taken	5 (6.0)	1 (2.0)	4 (12.5)
1–2 times	44 (53.0)	29 (56.9)	15 (46.9)
3 or more times	34 (41.0)	21 (41.2)	13 (40.6)
Minimum acceptable diet			
No	15 (18.1)	9 (17.6)	6 (18.8)
Yes	68 (81.9)	42 (82.4)	26 (81.3)

*NGDM: Women without GDM; GDM: Women with GDM

implement it (Pilus *et al.* 2019).

Uniparous (60.0%) mothers do not practice exclusive breastfeeding, but multiparous (67.1%) mothers do, with the association between number of children and exclusive breastfeeding practices is significant, $p<0.05$. According to the research (Theodorah & Mc'Deline 2021), their findings are consistent with our results that uniparous mothers lack experience and experience other common breastfeeding difficulties. Based on their qualitative study, the problems that first-time mothers have are a lack of needed assistance, an inability to initially attach and place the infant during breastfeeding, and a lack of breast milk production. According to Al-Jawaldeh and Abul-Fadl (2018); Rollins *et al.* (2016), intervention programs to encourage breastfeeding and raise women's confidence in supplying adequate milk for their children have been established which include counseling sessions, instant assistance with breastfeeding after delivery, and managing lactation.

Furthermore, half of the employed mothers continued to breastfeed for one year while unemployed mothers having a high percentage continued to breastfeed for one year (89.3%) with a significant association between occupation and continued breastfeeding at one year, $p<0.05$. This study is supported by Inano *et al.* (2021) study, who stated that working mothers leaving their infant to another's care are more likely to cease breastfeeding earlier since the mother needs to get back to work. According to research by Al-Jawaldeh & Abul-Fadl (2018); Rollins *et al.* (2016), the primary challenge to exclusive breastfeeding is the mothers' employment status, which is due to short periods of leave, lack of parental care, unsupportive employer, the flexibility of time and inadequate facilities for expressing breast milk at the workplace.

About 61.5% (n=56) NGDM and 48.7% (n=19) GDM mothers had exclusively breastfed their child, with no significant association between exclusive breastfeeding practices and GDM status, $p>0.05$ (Table 5). Mothers without GDM have a higher percentage of initiating breastfeeding within one hour of birth, with a significant association between breastfeeding initiation within one hour of birth and GDM status, $p<0.05$. This study's findings are consistent with the study of Suwaydi *et al.* (2022) which concluded that GDM mothers are more susceptible to having a poor start to breastfeeding due to multiple factors and may require extra assistance to breastfeed within an hour of delivery or to express milk. Compared to non-GDM women, about 12% more GDM women reported difficulty producing enough milk (Oza-Frank *et al.* 2016). More than half of NGDM (71.9%, n=23) and GDM (69.6%, n=16) had continued breastfeeding for one year. The association is not significant between continued breastfeeding at one year and GDM status, $p>0.05$.

CONCLUSION

This present study concludes that there is no significant difference in infant feeding

Table 4. Relationship between sociodemographic factors and infant feeding practices (n=130)

Socio-demographic data	Breastfeeding initiation		*p*	Exclusive breastfeeding		*p*	Continued breastfeeding at 1 year		*p*	Complementary feeding		*p*
	Within an hour	After an hour		Yes	No		Yes	No		Appropriate	Not appropriate	
Age												
<25 years	8 (14.0)	8 (11.1)	0.725	5 (29.4)	12 (70.6)	**0.034***	2 (40.0)	3 (60.0)	0.179	5 (71.4)	2 (28.6)	0.611
25−35 years	38 (66.7)	47 (65.3)		54 (63.5)	31 (36.0)		28 (77.8)	8 (22.2)		49 (84.5)	9 (15.5)	
>35 years	11 (19.3)	17 (23.6)		16 (57.1)	12 (42.9)		9 (64.3)	5 (35.7)		14 (77.8)	4 (22.2)	
Education level												
<12 years	26 (50.0)	26 (50.0)	0.275	24 (45.3)	29 (54.7)	**0.018***	14 (60.9)	9 (39.1)	0.165	29 (82.9)	6 (17.1)	0.851
>12 years	31 (40.3)	46 (59.7)		51 (66.2)	26 (33.8)		25 (78.1)	7 (21.9)		39 (81.3)	9 (18.8)	
Employment status												
Employed	29 (42.6)	39 (57.4)	0.710	35 (50.7)	34 (49.3)	0.087	14 (51.9)	13 (48.1)	**0.002***	35 (83.3)	7 (16.7)	0.736
Unemployed	28 (45.9)	33 (54.1)		40 (65.6)	21 (34.4)		25 (89.3)	3 (10.7)		33 (80.5)	8 (19.5)	
No. of children												
One	15 (43.1)	29 (65.9)	0.097	18 (40.0)	27 (60.0)	**0.003***	13 (61.9)	8 (38.1)	0.248	22 (78.6)	6 (21.4)	0.571
More than one	42 (49.4)	43 (50.6)		57 (67.1)	28 (32.9)		26 (76.5)	8 (23.5)		46 (83.6)	9 (16.4)	
Delivery types												
Vaginal	51 (50.5)	50 (49.5)	**0.006***	63 (63.0)	39 (38.2)	0.073	31 (73.8)	11 (26.2)	0.489[a]	53 (82.8)	11 (17.2)	0.738[a]
Cesarean	6 (21.4)	22 (78.6)		12 (42.9)	16 (57.1)		8 (61.5)	5 (38.5)		15 (78.9)	4 (21.1)	
GDM status												
GDM	10 (26.3)	28 (73.7)	**0.008***	19 (48.7)	20 (51.3)	0.175	16 (69.6)	7 (30.4)	0.852	26 (81.3)	6 (18.8)	0.899
Non-GDM	47 (51.6)	44 (48.4)		56 (61.5)	35 (38.5)		23 (71.9)	9 (28.1)		42 (82.4)	9 (17.6)	

*Significant value (p<0.05)

NGDM: Women without GDM; GDM:Women with GDM; p-value from chi-square and Fisher's exact test with significant association (p<0.05)

[a]: Fisher's exact test

Table 5. Associations between the Infant and IYCF indicators and GDM status (n=130)

IYCF indicator	NGDM (n=91) n (%)	GDM (n=39) n (%)	*p*
Exclusively breastfed	56 (61.5)	19 (48.7)	0.175
Breastfeeding initiation within one hour of birth	47 (51.6)	10 (26.3)	**0.008**
Continued breastfeeding at one year	23 (71.9)	16 (69.6)	0.852
Introduction of solid, semi-solid, or soft foods	48 (52.7)	28 (71.8)	**0.043**
Minimum dietary diversity	41 (62.1)	25 (37.9)	1.000[a]
Minimum meal frequency	21 (61.8)	13 (38.2)	0.813[a]
Minimum acceptable diet	42 (82.4)	26 (81.3)	0.899

NGDM: Women without GDM; GDM:Women with GDM; IYCF: Young Child Feeding

*p-value from chi-square and Fisher's exact test with significant association (p<0.05)

[a] :Fisher's exact test; *Significant value (p<0.05)

practices among mothers with and without a history of GDM. Cesarean section delivery and GDM mothers were more likely to initiate breastfeeding after an hour of delivery. Mothers' age, education level, and number of children are closely associated with exclusive breastfeeding. The status of GDM has been associated with the initiation of breastfeeding within one hour of birth and the introduction of solid, semi-solid, or soft foods.

Future research with a bigger scale of participation can investigate the cultural traditions and perceptions of infant feeding practices including breastfeeding initiation, exclusive breastfeeding, duration of breastfeeding, and complementary feeding across ethnicity in Malaysia. This may assist in investigating the cultural differences of infant feeding practices following local culture, beliefs, and family perceptions towards infant feeding practices support.

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DECLARATION OF CONFLICT OF INTERESTS

The authors declare that there are no conflicts of interest.

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