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Urban-rural Gaps in Early Initiation of Breastfeeding (IEBF) Practices: Evidence from Thailand

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Abstract

Evidence that several factors can play a role as risk factors for breastfeeding initiation. This study aimed to examine the risk factors of early breastfeeding initiation in Thailand which are differentiated by place of residence. This study used secondary data from the Thailand MICS (Multiple Indicators Cluster Survey) in 2022. The total sample lived in an urban area is 1226, and those living in rural areas is 1,430. The analysis of this study has differentiated to urban areas. The statistical test used is STATA. The prevalence of EIBF in urban. The findings of both places of residence revealed that delivery by cesarean section was a risk factor in the urban and rural areas, with AOR 2.5 and 1.93 times, respectively. Another risk factor in an urban is formal marriage, while in a rural area is delivery with a practical nurse and low birth weight. The factors supporting EIBF implementation are the wealth index with AOR 0.48 and 1.46, respectively. Government and stockholders can focus on supporting the financial issues in the households to decrease the probability of not EIBF. Future studies can include more variables at household and community levels and add a qualitative approach.

INTRODUCTION

The World Health Organization (WHO) recommends exclusive breastfeeding for the first 6 months of life, followed by continued breastfeeding with complementary foods until two years (Pérez-Escamilla et al., 2019). The duration of lactation has been widely associated with significant health benefits for both the child and the mother. Longer breastfeeding duration is linked to a reduced risk of obesity, infectious diseases, morbidity, and mortality (North et al., 2022). However, global breastfeeding rates remain suboptimal. From 2015 to 2020, only 44% of infants worldwide were exclusively breastfed, falling short of the WHO global target of 70% by 2030 (World Health Organization, 2021). In the context of Thailand, several supportive initiatives

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have been implemented, such as promoting baby-friendly hospitals, enforcing the Code of Marketing of Breast-milk Substitutes, and introducing maternity leave policies (Topothai & Tangcharoensathien, 2021). Despite these efforts, exclusive breastfeeding rates up to one year remain low. National surveys revealed a breastfeeding rate of 32.4% in 2012, 33.3% in 2015, and a further decline to 24.6% in 2019, indicating that more targeted strategies are needed to reach the national and global targets.

Exclusive breastfeeding is influenced by multiple factors, as demonstrated by various studies. These include maternal knowledge of breastfeeding, workplace conditions such as the length of maternity leave and available support, social support, and the balance between family and work life (Maponya & Matlala, 2022; Purvis et al., 2022). Early initiation of breastfeeding, particularly within the first hour of birth, is crucial for extending the duration of exclusive breastfeeding, highlighting the importance of immediate postpartum care (Dhakal & Thapa, 2021). Moreover, maternal education, marital status, socioeconomic status, and the child age have all been shown to impact exclusive breastfeeding practices (Saputra, 2022). It is also important to consider the impact of psychosocial factors, such as breastfeeding-related self-efficacy, stress levels, and family support, on exclusive breastfeeding practice (Shiraishi et al., 2020). Psychosocial factors, including breastfeeding self-efficacy, stress levels, and family support, are important determinants (Shiraishi et al., 2020). Medical factors, such as the use of oxytocin, vacuum extraction delivery, and low birth weight, further influence breastfeeding initiation (Hirai et al., 2022).

A deeper focus on early breastfeeding initiation reveals additional factors acting as predictors. For instance, in South Asia, socioeconomic status, access to media, and the lack of breastfeeding education programs present significant barriers to timely initiation. Studies have shown that mothers assisted by traditional birth attendants, those delivering via cesarean section, and mothers from disadvantaged ethnic groups were less likely to initiate breastfeeding early (Islam et al., 2024). Cultural factors, such as food taboos in the Dayak tribe, further contribute to reluctance towards early breastfeeding (Suyitno et al., 2023). In rural West Ethiopia, access to health information was identified as vital in promoting early breastfeeding initiation (D. D. Ayalew et al., 2022). Moreover, evidence from Vietnam highlights that the Baby-Friendly Hospital Initiative significantly improved breastfeeding support and early initiation rates (Joyce et al., 2021).

Comparative insights from rural and urban contexts emphasize the need to tailor breastfeeding promotion strategies based on place of residence. In Ethiopia, rural mothers, who often have limited access to information sources, were identified as a key group needing special attention for improving breastfeeding practices. Contrastingly, while pre-lacteal and bottle feeding were more common in urban areas, overall feeding practices were poorer in rural settings (Lokesh et al., 2023). These findings underscore the influence of socioeconomic and cultural factors on breastfeeding behaviors. This study aims to examine the risk factors affecting breastfeeding initiation in Thailand, with a particular focus on how these factors vary by place of residence, providing valuable insights for region-specific interventions.

METHOD

This study used cross-sectional secondary data. The Thailand Multiple Indicator Cluster Survey (MICS) was carried out in 2022 by the National Statistical Office of Thailand (NSO) in collaboration with UNICEF as part of the Global MICS Programme. Technical support was provided by the United Nations Children's Fund (UNICEF), with government funding and financial support from UNICEF. The Global MICS Programme was developed by UNICEF in the 1990s as an international multi-purpose household survey program to support countries in collecting internationally comparable data on a wide range of indicators on the situation of children and women. MICS surveys measure key indicators that allow countries to generate data for use in policies, programs, and national development plans, and to monitor progress towards the Sustainable Development Goals (SDGs) and other internationally agreed-

upon commitments. The original survey MICS Thailand 2022 took time from June to October 2022. The interviewer training was done in two batches. The first batch was from 9 – 17 June 2022, and the second was from 30 June – 8 July 2022. MICS Thailand 2022 has been done in all regions, including Bangkok, Central, North, Northeast, and South. This current study only focuses on the Southern part of Thailand, which takes 12.8% of the total population. The Southern region of Thailand in this study consists of 14 Province: Nakhon Si Thammarat, Krabi, Phangnga, Phuket, Surat Thani, Ranong, Chumpon, Songkhla, Satun, Trang, Phatthalung, Pattani, Yala, and Narathiwat.

The sample frame of this study was carried out from the original survey, which was the 2022 Household Basic Information Survey (HBIS). The total number of households interviewed was 30,008 of the 34,540 sampled (94.7% response rate). The total number of children under five that mothers/caretakers interviewed was 10,502 from eligible 10,638 (98.7% response rate). The urban and rural areas by province were identified as the primary sampling strata, and the sample was selected in two stages. Within each stratum, a specified number of 2022 Household Basic Information Survey enumeration areas (EAs) were selected systematically with Probability Proportional to Size (PPS) at the first stage. After a household listing was carried out within the selected enumeration areas, households with and without children under 5 years were identified. A systematic sample of households was selected separately from each group within the sample EA at the second stage. A total of 1,727 sample EAs and 34,540 households were selected at the national level. As the sample is not self-weighted, sample weights are used for the survey results report.

There were five questionnaires in the original survey MICS Thailand 2022, including household, women (age 15 – 49), men (age 15 – 49), children under five, and children aged 5-14. The questionnaires were based on the MICS6 standard questionnaires.2 From the MICS6 model English version, the questionnaires were customized and translated into Thai and were pre-tested in Pathum Thani province from April 5-7, 2022. Based on the pre-test results, modifications were made to the wording and translation of the questionnaires. The dependent variable in this study was whether children ever breastfeed or not. The definition of this indicator is the percentage of most recent live-born children to women with a live birth in the last 2 years who were ever breastfed. MICS surveys utilize Computer-Assisted Personal Interviewing (CAPI). The data collection application was based on the CSPro (Census and Survey Processing System) software, Version 7.6, including a MICS-dedicated data management platform. Procedures and standard programs3 developed under the global MICS program were adapted to the Thailand MICS 2022 final questionnaires and used throughout. The data were collected by 98 teams. Each was comprised of two to four interviewers and a supervisor. In some areas in which non-Thai households are prevalent, the team also had a translator. Fieldwork began in June 2022 and concluded in October 2022. Data was collected using tablet computers running the Windows 10 operating system, utilizing a Bluetooth application for field operations, enabling the transfer of assignments, and completed questionnaires between supervisor and interviewer tablets.

Data were received at the National Statistical Office's central office via the CSWeb System integrated into the management application on the supervisors' tablets. Whenever logistically possible, synchronization was done daily. The central office communicated application updates to field teams through this system. During data collection and following the completion of fieldwork, data were edited according to the editing process described in detail in the Guidelines for Secondary Editing, a customized version of the standard MICS6 documentation. Data were analyzed using the Statistical Package for Social Sciences (SPSS) software, Version 24. Model syntax and tabulation plan developed by UNICEF were customized and used for this purpose. However, this study used the STAT version 17 software for univariate, bivariate, and multivariate analysis (UNICEF, 2023). Verbal consent was obtained for each respondent participating, and for children aged 15-17 years individually interviewed, adult consent was

Table 1. The General Characteristics of Respondents and Bivariate Analysis of Factors Associated with EIBF

Variables	Urban			Rural		
	EIBF			EIBF		
	Yes (%)	No (%)	p-value	Yes (%)	No (%)	p-value
EIBF	**845 (67.12)**	**414 (32.88)**		**962 (66.21)**	**491 (33.79)**	
Age	Mean = 30.03, Std dev = 6.43		0.946	Mean = 29.86, Std dev = 6.44		0.175
Education level			0.980			0.050
Uneducated	30 (71.43)	12 (28.57)		24 (75.00)	8 (25.00)	
Primary	82 (67.21)	40 (32.79)		116 (64.80)	63 (35.20)	
Lower secondary	180 (66.42)	91 (33.58)		266 (68.03)	125 (31.97)	
Upper secondary	221 (67.38)	107 (32.62)		242 (60.65)	157 (39.25)	
Higher	332 (66.94)	164 (33.06)		314 (69.47)	138 (30.53)	
Times of prenatal care			0.141			0.548
8 times or more	563 (66.08)	289 (33.92)		648 (65.79)	337 (34.21)	
7 times or less	279 (70.28)	118 (29.72)		310 (67.39)	150 (32.61)	
Place of delivery			0.899			0.328
Public hospital	761 (66.93)	376 (33.07)		912 (65.80)	474 (34.20)	
Private hospital	76 (69.09)	34 (30.91)		35 (74.47)	12 (25.53)	
Others	8 (66.67)	4 (33.33)		15 (75.00)	5 (25.00)	
Assistance of delivery			0.486			**0.044**
Medical doctor	76 (72.38)	29 (27.62)		97 (69.78)	42 (30.22)	
Nurse/midwife	534 (66.58)	268 (33.42)		656 (67.63)	314 (32.37)	
Practical nurse	235 (66.76)	117 (33.24)		209 (60.76)	135 (39.24)	
Delivery by caesarean section			**0.000**			**0.000**
No	562 (73.46)	203 (26.54)		668 (70.39)	281 (29.61)	
Yes	283 (57.29)	211 (42.71)		294 (58.33)	210 (41.67)	
Marital status			**0.048**			0.814
Currently married/in union	818 (67.66)	391 (32.34)		913 (66.35)	463 (33.65)	
Formerly married/in union	25 (52.08)	23 (47.92)		48 (64.00)	27 (36.00)	
Never married/in union	2 (100.00)	0 (0.00)		1 (50.00)	1 (50.00)	
Children ever born	Mean = 1.91, Std dev = 1.06		0.888	Mean = 2.01, Std dev = 1.04		0.667
Wealth index			0.108			0.100
First	131 (65.17)	70 (34.83)		215 (62.50)	129 (37.50)	
Second	157 (62.80)	93 (37.20)		208 (65.00)	112 (35.00)	
Middle	193 (66.32)	98 (33.68)		218 (64.50)	120 (35.50)	
Fourth	176 (67.18)	86 (32.82)		196 (71.53)	78 (28.47)	
Richest	188 (73.73)	67 (26.27)		125 (70.62)	52 (29.38)	
Baby has low birth weight			0.113			0.057
No	761 (68.31)	353 (31.69)		869 (67.57)	417 (32.43)	
Yes	76 (61.29)	48 (38.71)		91 (59.87)	61 (40.13)	

obtained in advance of the child's assent. All respondents were informed of the voluntary nature of participation and the confidentiality and anonymity of information. Additionally, respondents were informed of their right to refuse to answer all or particular questions, as well as to stop the interview at any time.

RESULT AND DISCUSSION

Paragraph The result of this study consisted of univariate, bivariate, and multivariate. Table 1 below describes the general characteristics of the informants between urban and rural. It shows that, in urban and rural areas, around 33% and 34%, respectively, women of reproductive age did not practice the early initiation of breastfeeding (EIBF). According to age, the mean women's age in urban and rural was 30 on average. The table below also described the bivariate findings that examined the correlation between each independent and dependent variable. In an urban setting, several variables, including marital status and delivery by cesarean section, correlate with unpracticed IEBF. Additionally, in rural settings, the assistance of delivery and delivery by cesarean section correlated with unpracticed IEBF. However, other independent variables, including age, educational level, times of prenatal care, place of delivery, children ever born (CEB), wealth index, and baby has low birth weight found no correlation to IEBF.

Table 2 below shows the result of binary logistic regression comparing urban and rural setting. In urban settings, marital status, delivered by cesarean section, and wealth index were significantly associated with IEBF. In more detail, women who delivered by cesarean section were 2.54 times more likely to not practice IEBF compared to women who delivery by vaginal, after adjusting to other independent variables. Women who were formerly married/ in a union were 1.89 times more likely to not practice IEBF compared to women who were currently married/in union, after controlling to other independent variables. Compared to

Table 2. The Multivariate Analysis Results of Factors Associated with Initiation of Breastfeeding

Variables	Urban (n=1,226)			Rural (n=1,430)		
	AOR	95% Confidence Interval		AOR	95% Confidence Interval	p-value
Age	0.99	0.97 – 1.01	0.649	0.98	0.97 – 1.01	0.257
Education level						
Uneducated (ref)						
Primary	1.10	0.49 – 2.46	0.814	1.46	0.60 – 3.52	0.403
Lower secondary	1.17	0.55 – 2.49	0.673	1.27	0.54 – 3.01	0.586
Upper secondary	1.19	0.57 – 2.52	0.635	1.89	0.79 – 4.50	0.149
Higher	1.22	0.58 – 2.59	0.600	1.35	0.56 – 3.25	0.504
Times of prenatal care						
8 times or more (ref)						
7 times or less	0.84	0.64 – 1.10	0.206	0.90	0.70 – 1.15	0.398
Place of delivery						
Public hospital (ref)						
Private hospital	0.91	0.57 – 1.44	0.681	0.59	0.29 – 1.18	0.137
Others	1.24	0.36 – 4.28	0.735	0.70	0.25 – 1.99	0.510
Assistance of delivery						
Medical doctor (ref)						
Nurse/midwife	1.21	0.75 – 1.96	0.428	1.25	0.83 – 1.89	0.288
Practical nurse	1.27	0.76 – 2.11	0.362	1.73	1.10 – 2.71	0.016
Delivery by caesarean section						
No (ref)						
Yes	2.54	1.94 – 3.32	0.000	1.93	1.51 – 2.47	0.000
Marital status						
Currently married/in union (ref)						
Formerly married/in union	1.89	1.03 – 3.46	0.039	0.97	0.58 – 1.62	0.922
Never married/in union	N/A			1.72	0.10 – 29.90	0.709
Children ever born	1.03	0.90 – 1.19	0.615	1.03	0.90 – 1.17	0.691
Wealth index						
First (ref)						
Second	0.93	0.62 – 1.40	0.734	0.88	0.63 – 1.23	0.462
Middle	0.79	0.53 – 1.20	0.276	0.87	0.61 – 1.23	0.439
Fourth	0.72	0.47 – 1.21	0.148	0.63	0.42 – 0.93	0.022
Richest	0.48	0.29 – 0.78	0.003	0.65	0.41 – 1.03	0.066
Baby has low birth weight						
No (ref)						
Yes	1.32	0.88 – 1.98	0.179	1.46	1.02 – 2.09	0.036
Pseudo R2						

poorest women, richest women had decrease 52% probability to not practice IEBF after adjusting to other independent variables.

In the rural setting, it shows that assistance of delivery, delivery by cesarean section, wealth index, and low birth weight are significantly associated with unpracticed IEBF. In particular, women assisted by a practical nurse were 1.73 times more likely to not practice IEBF than those assisted by a medical doctor after adjusting to all independent variables. Women who delivered by cesarean section had 1.93 times more likely to not practice IEBF compared to those who delivered by vaginal after adjusting to other independent variables. Compared to the poor, rich women have a 37% lower probability of unpracticed IEBF after controlling for other independent variables. Women who delivered babies with low birth weight were 1.46 times more likely to not practice IEBF compared to women who delivered babies with normal birth weight after adjusting to all independent variables. However, the variables of women's age, education level, times of prenatal care, place of delivery, and number of children ever born were not significantly associated with IEBF practice in urban or rural settings. There are some gaps between urban and rural areas to define the factors associated with IEBF. In rural settings, the factors correlated are more complex than urban settings.

The findings of this study showed the rate of initiation of early breastfeeding in urban areas is higher than in rural. In urban areas, the risk factors found are formerly being married. This finding supports the current study in Ethiopia that found marital status is significantly associated with breastfeeding practice (Muluneh, 2023). Wealth indexes are significantly associated with breastfeeding practice based on research in Ethiopia, Indonesia, and Bangladesh (Kabir & Islam, 2022; Muluneh, 2023; Nurokhmah et al., 2022). In rural areas, the risk factors found are assistance of delivery, wealth index, and infant low birth weight. The risk factors in urban and rural areas are delivery by cesarean section and wealth index. Other risk factors of IEBF in urban areas are being married and a rich household index. Other risk factors of IEBF in rural areas are delivery assistance by practical nurses, fourth wealth index, and low birth weight of the baby. In more detail about delivery by SC, the adjusted odd ratio is higher in urban areas compared to rural areas (2.54 and 1.93 times more likely, respectively).

Existing studies revealed similar findings. Only 50% of newborns in Bangladesh initiated breastfeeding within 1 hour of birth (Raihana et al., 2019). Studies in other developing countries' communities have found pre-lacteal feeding and discarding of colostrum to be common (T. Ayalew & Asmare, 2021). In a study from rural Niger, poverty was found to be negatively associated with early breastfeeding initiation (Goyal, 2019). Descriptive statistics were used to demonstrate the prevalence of early breastfeeding initiation (John et al., 2019). Rates and factors associated with early breastfeeding initiation in rural and urban Nigeria were assessed (Shobo et al., 2020). Closer surveillance of changes in breastfeeding practices alongside appropriate intervention strategies is recommended for emerging economies (Darboe et al., 2023). The practice of breastfeeding among urban respondents was found to be low in a comparative study of mothers in urban and rural communities of Lagos, Southwest Nigeria (Adebayo & Oluwaseyi, 2020).

Cesarean section delivery has been consistently identified as a factor associated with delayed initiation of breastfeeding in various studies. Cesarean section delivery was linked to decreased odds of timely initiation of breastfeeding (Getaneh et al., 2021). Emphasized the importance of establishing practices that enable timely breastfeeding, especially after caesarean sections (Belachew, 2019). Furthermore, the cesarean section was associated with a lower prevalence of early initiation of breastfeeding (Yisma et al., 2019). This negative association between cesarean section and early breastfeeding initiation was also supported by the study in Tanzania and Sub-Saharan Africa (Appiah et al., 2021). Moreover, the impact of cesarean section on breastfeeding initiation has been observed in various settings. Studies in Kuwait and Scandinavia indicated that breastfeeding initiation rates were lower

among mothers delivering by cesarean section compared to those delivering vaginally (Dashti et al., 2010; Lagerberg et al., 2020). Lower breastfeeding initiation and increased difficulties in breastfeeding among women who had caesarean sections could be influenced by physiological factors affecting lactogenesis (Hussain et al., 2022).

Early breastfeeding initiation is a crucial practice associated with improved neonatal and child survival outcomes. In Thailand, similar to many other countries, the rate of early initiation of breastfeeding significantly impacts infant health. Research has indicated that factors such as cesarean section deliveries can present challenges to timely breastfeeding initiation (Shakya & Shakya, 2021). Cesarean section births have been linked to delayed initiation of breastfeeding, potentially affecting breastfeeding establishment and leading to breastfeeding difficulties (Li et al., 2021). Additionally, maternal health service utilization, including delivering at health facilities, has been found to positively influence early initiation of breastfeeding among mothers (Ghimire, 2019).

Early breastfeeding initiation in Asia is a critical aspect of infant health and well-being. Despite the recognized benefits of immediate breastfeeding initiation, rates in South Asia have been reported as low, with variations among countries (Mallick & Shenassa, 2024). Factors influencing early breastfeeding initiation in South Asia include socioeconomic status, access to media, and lack of breastfeeding education programs (Ekholuenetale et al., 2021). Addressing these barriers is crucial to promoting timely breastfeeding initiation.

Studies have highlighted the importance of proper support and guidance from healthcare professionals, especially during cesarean section deliveries, to encourage early breastfeeding initiation (Hobbs et al., 2016). Additionally, socioeconomic inequalities have been observed in early initiation and exclusive breastfeeding practices (Rowe-Murray & Fisher, 2002). Efforts to enhance skin-to-skin contact and breastfeeding practices have been identified as essential in addressing disparities in early breastfeeding initiation (Bartick et al., 2020).

The association between cesarean section deliveries and delayed breastfeeding initiation has been noted in various studies (Erbaydar & Erbaydar, 2020). Women undergoing cesarean sections are at higher risk of late breastfeeding initiation, emphasizing the need for targeted interventions to support breastfeeding after surgical deliveries. Furthermore, factors such as rural residence, educational status, and place of delivery have been identified as predictors of early breastfeeding initiation in Ethiopia (Birhan et al., 2021).

Early initiation of breastfeeding in Southeast Asia is influenced by various factors. Studies have shown that mothers assisted by traditional attendants during childbirth, those delivered by cesarean section, and those from ethnically disadvantaged families were less likely to initiate breastfeeding early (Syam et al., 2021). In rural parts of West Ethiopia, appropriate health information was identified as vital in promoting early initiation of breastfeeding (T. Ayalew & Asmare, 2021). Additionally, research has highlighted the association between early essential newborn care and positive breastfeeding outcomes (Zhao et al., 2020). In Vietnam, the implementation of a Baby-Friendly Hospital Program was linked to improved support for breastfeeding, addressing the low rates of early initiation in the region (Joyce et al., 2021).

The studies cited provide valuable insights into the differences in early breastfeeding initiation between rural and urban areas. The study in the United States highlights that associations observed for rural-urban breastfeeding initiation differ based on maternal race/ethnicity and poverty status (Trinh et al., 2023). Moreover, the study in India identified education as a key determinant of early breastfeeding initiation, with slight variations between rural and urban areas in India (Senanayake et al., 2019). Additionally, one study suggests that rural mothers in Saudi Arabia are more likely to initiate breastfeeding early compared to urban mothers (A. E. Ahmed & Salih, 2019). Another study stresses the importance of targeting interventions for women in rural areas to enhance early breastfeeding initiation (Mbuya et al., 2019). One study found that poverty was negatively

associated with early breastfeeding initiation in rural Niger (Kazmi et al., 2021). Another study reported that in Ethiopia, mothers in urban areas had the highest proportion of early initiation of breastfeeding but the lowest prevalence of exclusive breastfeeding compared to rural areas (K. Y. Ahmed et al., 2019). These findings collectively underscore the influence of factors such as education, poverty, and location on breastfeeding practices.

Insights into the determinants of early initiation of breastfeeding in rural and urban settings can be gained from several studies (A. Ahmed, 2023). The importance of providing special attention to rural mothers due to their limited access to information sources, which may impact breastfeeding practices. These findings suggest a high prevalence of early breastfeeding initiation in both settings. Understanding the factors influencing early initiation of breastfeeding in rural and urban contexts, as discussed in these studies, can provide valuable insights that may be relevant for examining similar patterns in Thailand.

CONCLUSION

The prevalence of early breastfeeding initiation (EIBF) in urban and rural area is 67.12% and 66.21%, respectively. There are some differences in risk factors affecting the EIBF in both urban and rural areas. The risk factors of unpracticed EIBF in urban areas, such as delivery by cesarean section and formally married or currently not married. The probability of EIBF is increasing for those with a rich wealth index in urban areas. The risk factors of not practicing EIBF in rural areas, such as delivery assistance by a practical nurse, delivery by cesarean section, and having low birth weight. The odds of EIBF are increasing for those in the fourth level of the household wealth index. Government and stakeholders can focus on supporting the financial issue in the households to decrease the probability of not EIBF. Future studies can include more variables in households and community levels and add the qualitative approach.

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