

Determinants of Formula Feeding among Mothers in Indonesia: The Role of Digital Media and Microeconomic Factors

Abstract

Background: Maternal decision-making regarding the use of infant formula milk in Indonesia is shaped by a complex interplay of social, economic, and informational factors. This study aimed to elucidate the determinants of mothers' choices when selecting formula milk in Sorong City, Indonesia, addressing gaps in previous research that overlooked the role of digital media and microeconomic factors in maternal decision-making. **Materials and Methods:** This study employed a cross-sectional observational design and was conducted from January to June 2024. A cohort of 180 mothers with children aged 0–24 months was selected using stratified random sampling. Data were collected using the Maternal Infant Nutrition Questionnaire (MIN-Q). Multivariate logistic regression analysis was performed to identify the significant factors contributing to the decision to use formula milk. **Results:** The findings indicated that most respondents [88 (48.90%)] exclusively used formula milk, while 92 (51.10%) adopted a mixed feeding pattern. Logistic regression analysis revealed that the use of digital media for nutritional information was significantly associated with formula milk use ($\beta = 0.21$, $P = 0.022$), as were microeconomic factors such as savings or financial assistance ($\beta = 0.18$, $P = 0.035$). **Conclusions:** These findings highlight the need for government-led interventions, including digital literacy programs and targeted financial subsidies for low-income breastfeeding mothers, to promote exclusive breastfeeding. Therefore, credible digital education programs and more stringent regulations on formula milk marketing are essential to support maternal and child health policies in Indonesia.

Keywords: Economic factors, exclusive breast feeding, health literacy, infant formula, maternal behavior

Introduction

Child nutrition remains a major public health concern in Indonesia, particularly in urban settings where social, cultural, and economic transitions influence maternal feeding practices. The World Health Organization (WHO) and UNICEF recommend exclusive breastfeeding for the first 6 months of life due to its protective effects against infections, enhanced cognitive development, and long-term health benefits.^[1-5] Despite multiple national programs to increase breastfeeding rates, formula milk use remains high. In 2023, the Indonesian Ministry of Health reported that exclusive breastfeeding coverage reached only 67.96%, below the national target of 80%, with even lower rates in Southwest Papua (47.70%).^[6] In Sorong City, although the proportion of children ever breastfed rose from 86.21% in 2023 to 93.63% in 2024, the mean breastfeeding duration remained short (8.78 to 9.00 months).^[7,8]

This gap highlights persistent reliance on formula milk, which is associated with nipple confusion, suboptimal growth, and increased household expenditure.^[9,10]

Maternal decisions to initiate or continue formula feeding are shaped by socioeconomic conditions, family influence, healthcare access, and pervasive formula marketing.^[11-14] Prior research has predominantly focused on sociodemographic and sociocultural determinants, yet limited attention has been paid to the interplay between economic vulnerability, mothers' digital health literacy, and the regulatory environment.^[11,15-18] In Sorong City, unique demographic characteristics, disparities in maternal healthcare, and rising digital information exposure present critical factors influencing infant feeding behaviors.^[19-26]

Therefore, this study aims to examine the determinants of maternal decisions to use

Nur Khasanah¹,
Riska Herliana²,
Alva Cherry
Mustamu³, Anita
Liliana¹, Endah Tri
Wahyuni⁴, Maria
Sriana Banul⁵, Nur
Hafni Hasim³

¹Department of Nursing, Universitas Respati Yogyakarta, Indonesia, ²Vocational School, Universitas Sebelas Maret, Surakarta, Indonesia, ³Department of Nursing, Ministry of Health Polytechnic of Sorong, Southwest Papua, Indonesia, ⁴Universitas Madani, Yogyakarta, Indonesia, ⁵Universitas Katolik Indonesia Santo Paulus Ruteng, East Nusa Tenggara, Indonesia

Address for correspondence:
Dr. Nur Khasanah,
Department of Nursing,
Universitas Respati,
Yogyakarta, Indonesia.
E-mail: Nurkhasanah@respati.ac.id

Access this article online

Website: <https://journals.iwv.com/ijnmr>

DOI: 10.4103/ijnmr.ijnmr_336_24

Quick Response Code:



This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 License (CC BY-NC-ND), where it is permissible to download and share the work provided it is properly cited. The work cannot be changed in any way or used commercially without permission from the journal.

For reprints contact: WKHLRPMedknow_reprints@wolterskluwer.com

How to cite this article: Khasanah N, Herliana R, Mustamu AC, Liliana A, Wahyuni ET, Banul MS, *et al.* Determinants of formula feeding among mothers in Indonesia: The role of digital media and microeconomic factors. Iran J Nurs Midwifery Res 2026;31:455-61.

Submitted: 10-Oct-2024. **Revised:** 01-Oct-2025.

Accepted: 03-Nov-2025. **Published:** 16-Jun-2026.

formula milk in Sorong City, Indonesia, with a particular focus on the role of digital media engagement and microeconomic factors. By addressing these gaps, the study seeks to provide evidence-based insights to guide policies promoting exclusive breastfeeding and maternal health education.

Materials and Methods

This study employed a cross-sectional observational design conducted in Sorong City, Southwest Papua, Indonesia, between January and June 2024. The target population was mothers with children aged 0–24 months who had resided in Sorong for at least 6 months. A stratified random sampling approach was used to ensure proportional representation across districts. Sample size was determined using Cochran's formula with 95% confidence and 5% margin of error, yielding 180 eligible participants. Inclusion criteria were mothers aged ≥ 18 years, with a child aged 0–24 months, while those with severe medical conditions or unwilling to provide informed consent were excluded. Recruitment was carried out through community health centers, maternal clinics, and empowerment programs, with each participant assigned a unique identification code.

Data collection utilized the Maternal Infant Nutrition Questionnaire (MIN-Q), a 50-item instrument developed for this study to capture seven domains: sociodemographic factors, knowledge of breastfeeding and formula milk, sociocultural influences, health and medical aspects, economic conditions, environmental factors, and formula brand-related considerations. Validity and reliability were established through expert review (Content Validity Index = 0.89) and pilot testing (Cronbach's $\alpha = 0.87$). Data were collected by trained enumerators under standardized procedures, with double-entry verification and periodic audits to maintain accuracy.

Statistical analysis was performed using Jamovi version 2.6.44. Descriptive statistics summarized participant characteristics, while logistic regression analysis assessed associations between independent variables and maternal decision to use formula milk. Additional procedures included multiple imputation for missing data, sensitivity analysis to test robustness, and calculation of effect sizes with 95% confidence intervals. Reliability of findings was further supported by per-protocol and intention-to-treat comparisons.

Ethical considerations

Ethical approval was granted by the Research Ethics Committee of Sorong Health Polytechnic, Ministry of Health, Indonesia (No. DM.03.01/4.1/1987/2024). All participants provided written informed consent, and confidentiality was ensured through anonymization and restricted data access.

Results

Respondent characteristics

A total of 180 mothers participated, comprising 88 (48.90%) who exclusively used formula milk and 92 (51.10%) who practiced mixed feeding. The mean age was 25.50 years in the exclusive group and 26.40 years in the mixed group, with maternal ages ranging from 18.00 to 40.00 years. Most respondents were of Papuan ethnicity, particularly in the exclusive group (59.10%). As shown in Table 1, children in the exclusive group were predominantly male (59.10%), while sex distribution was balanced in the mixed group. Educational attainment was generally low, with 19.30% of exclusive users and 15.20% of mixed users having no formal education. Employment status differed, with 50.00% of exclusive group mothers being unemployed versus 56.50% employed in the mixed group. Income levels were largely below the minimum wage across both groups. Notably, widowed mothers were more common in the exclusive group (40.90% vs. 29.30%), while multiparity was higher in the mixed group (43.50% had ≥ 3 children). Social media access was similar across groups, though slightly higher in mixed feeding (53.30% vs. 48.90%).

Factors influencing the use of formula milk among mothers with children under 2 years in Sorong City: A linear regression analysis

Logistic regression analysis identified two primary predictors of formula milk use. Engagement with digital media for nutritional information was significantly associated with higher use ($\beta = 0.21$, $P = 0.022$), as were microeconomic factors such as savings or financial assistance ($\beta = 0.18$, $P = 0.035$). Cultural factors related to food and nutrition ($\beta = -0.16$, $P = 0.054$) and breast milk supply limitations ($\beta = -0.14$, $P = 0.110$) approached statistical significance, suggesting potential areas for further exploration. Other sociodemographic and sociocultural variables, including education, employment, ethnicity, access to information, and community support, were not significantly associated with maternal decisions on formula feeding [Table 2].

Discussion

This study identified two primary determinants influencing the use of formula milk among mothers with infants under 2 years of age in Sorong City: the utilization of digital media for nutritional information and microeconomic factors, such as household savings or financial aid. These findings indicate a shift in maternal decision-making toward digital health engagement and financial practicality rather than traditional sociodemographic influences.

While variables such as maternal education, employment, ethnicity, access to information, and community support did not achieve statistical significance, cultural perceptions and

Table 1: Demographic characteristics of respondents

Characteristic	Exclusive formula (n=88)	Mixed feeding (n=92)
Child's gender		
Male	52 (59.10%)	45 (48.90%)
Female	36 (40.90%)	47 (51.10%)
Parental education		
No schooling	17 (19.30%)	14 (15.20%)
Elementary school	21 (23.90%)	24 (26.10%)
Junior high school	15 (17.00%)	20 (21.70%)
Senior high school	16 (18.20%)	15 (16.30%)
Higher education	19 (21.60%)	19 (20.70%)
Employment status		
Unemployed	44 (50.00%)	40 (43.50%)
Employed	44 (50.00%)	52 (56.50%)
Household income		
<Minimum wage	45 (51.10%)	50 (54.30%)
≥Minimum wage	43 (48.90%)	42 (45.70%)
Number of children		
1 child	25 (28.40%)	20 (21.70%)
2 children	30 (34.10%)	32 (34.80%)
≥3 children	33 (37.50%)	40 (43.50%)
Marital status		
Single	28 (31.80%)	26 (28.30%)
Married	24 (27.30%)	39 (42.40%)
Widowed	36 (40.90%)	27 (29.30%)
Ethnicity		
Papuan	52 (59.10%)	47 (51.10%)
Non-Papuan	36 (40.90%)	45 (48.90%)
Social media access		
No	45 (51.10%)	49 (53.30%)
Yes	43 (48.90%)	43 (46.70%)
Tv ownership		
Not available	41 (46.60%)	50 (54.30%)
Available	47 (53.40%)	42 (45.70%)
Delivery at Health Facility		
No	51 (58.00%)	47 (51.10%)
Yes	37 (42.00%)	45 (48.90%)
Breast milk supply limitation		
No	37 (42.00%)	53 (57.60%)
Yes	51 (58.00%)	39 (42.40%)

limitations in breast milk supply approached significance, suggesting their potential importance in specific subgroups. Notably, within indigenous communities, formula milk may be perceived as a status symbol indicative of modernity and economic stability, thereby reinforcing its use despite public health initiatives advocating breastfeeding.

These findings are consistent with global trends, wherein digital platforms increasingly influence health-related decisions, including those pertaining to infant feeding practices. Evidence from other low- and middle-income countries indicates that online formula marketing and economic challenges can substantially affect feeding patterns. Consequently, digital media literacy and economic empowerment should be integral components of future breastfeeding promotion programs.

The lack of a significant influence of education, employment, or community support may be attributed to the study's context, where access to education and structured employment remains limited. Furthermore, the increasing autonomy in decision-making facilitated by online content may diminish reliance on traditional advice from family or community health workers. Similar trends have been observed in other low- and middle-income countries, including parts of Asia, where aggressive formula milk marketing and digital misinformation have contributed to increased formula milk usage. In countries such as China and Singapore, unregulated or inadequately regulated online advertising has led to widespread misconceptions regarding the benefits of formula milk, thereby influencing maternal feeding choices. These findings suggest that policies regulating digital marketing and enhancing maternal digital literacy are essential to counteract misleading information and promote exclusive breastfeeding.^[27,28]

The study's findings indicate a positive correlation between digital media usage and formula milk consumption. This suggests that online information may influence mothers' perceptions regarding the benefits and availability of formula milk. These results are consistent with research by Rollins *et al.*^[29] and Hidayana *et al.*,^[9] indicating that digital

Table 2: Key factors influencing the use of formula milk: Linear regression analysis

Predictor	Estimate	SE	t	P	β	95% CI (lower)	95% CI (upper)	VIF
Significant predictors								
Use of digital media for nutrition search	0.21	0.09	2.32	0.022	0.21	0.03	0.39	1.55
Microeconomic factors (savings, financial aid)	0.18	0.08	2.13	0.035	0.18	0.01	0.34	1.34
Approaching significance								
Food and nutrition-related cultural factors	-0.16	0.08	-1.95	0.054	-0.16	-0.32	0.00	1.30
Breast milk limitations	-0.14	0.09	-1.61	0.110	-0.14	-0.31	0.03	1.44
Nonsignificant predictors								
Education	0.09	0.12	0.75	0.455	0.07	-0.11	0.24	1.51
Employment	0.12	0.09	1.38	0.170	0.12	-0.05	0.30	1.49
Ethnic or cultural background	0.16	0.09	1.87	0.063	0.16	-0.01	0.34	1.48
Access to information	0.11	0.09	1.16	0.248	0.11	-0.07	0.29	1.59
Influence of community support	-0.12	0.09	-1.31	0.193	-0.12	-0.30	0.06	1.62

advertising and online marketing play a role in promoting formula milk products, especially in developing countries.

In Indonesia, where Internet penetration is on the rise, the availability of information regarding infant nutrition on social media platforms may influence mothers' attitudes toward formula milk, either directly or through engagement in online communities. Microeconomic factors also play a significant role in shaping mothers' decisions to use formula milk. Previous research has indicated that families with stable economic conditions are more inclined to purchase formula milk as a substitute or supplement for breast milk.^[11,28] In contrast, within economically disadvantaged families, the choice to use formula milk may be shaped by the availability of financial assistance or subsidy programs. These findings support the evidence that economic access directly influences infant feeding practices, particularly in societies characterized by significant economic inequality.

Several studies have indicated that maternal educational level and employment status significantly influence formula-feeding decisions.^[30-32] However, in the present study, these factors did not demonstrate a significant association. This discrepancy may be attributed to the characteristics of the study population as most mothers originated from regions with limited access to higher education and formal employment opportunities. Consequently, decisions regarding formula milk use were influenced more by economic factors and access to information than by demographic variables.

An unanticipated outcome of this study was the lack of a significant correlation between community support and mothers' decisions to utilize formula milk. Previous research has indicated that social support, including that from family and healthcare providers, is frequently a critical factor in exclusive breastfeeding practices.^[33,34] This divergence may be attributed to the increasing individualization of maternal decision-making facilitated by broader access to digital information. Consequently, mothers may increasingly depend on online sources rather than advice from their social environment.

This study makes a substantial contribution to decision-making theories on infant feeding. The findings indicate that traditional models that emphasize social and cultural factors may need revision to incorporate digitalization as a primary factor influencing decisions regarding formula milk use. Consequently, intervention models that promote exclusive breastfeeding should consider how online information can be leveraged to educate mothers more effectively. These findings have significant implications for public health policies in Indonesia. Exclusive breastfeeding education programs must adapt their communication strategies to align with digitalization trends, such as enhancing breastfeeding promotion campaigns through social media and online platforms. Furthermore, policies that support family economic stability, including financial assistance programs

for breastfeeding mothers, could serve as strategic measures to increase exclusive breastfeeding rates.

In addition to educational and communication strategies, a holistic approach is essential to effectively promote exclusive breastfeeding in Indonesia. Although digital platforms serve as valuable resources for breastfeeding education, it is imperative to address socioeconomic factors to enhance breastfeeding practices. Research indicates that socioeconomic disparities significantly affect both the initiation and continuation rates of breastfeeding.^[35,36] In numerous high-income countries, mothers with socioeconomic advantages are more inclined to breastfeed, highlighting the necessity for targeted interventions in less-advantaged regions.^[36] However, this pattern may not be applicable to extremely marginalized populations. A study conducted among homeless families in Paris demonstrated that cultural origins and migration experiences exerted a more profound influence on breastfeeding practices than socioeconomic factors alone.^[37] This finding suggests that interventions must consider both cultural and socioeconomic contexts to achieve efficacy.

Policymakers should prioritize the implementation of workplace policies that support breastfeeding mothers as empirical evidence suggests that such policies can positively impact breastfeeding rates and maternal wellbeing. Numerous studies have identified extended maternity leave as a critical factor. In the Philippines, although maternity protection policies are in place, the duration of leave does not align with WHO recommendations for exclusive breastfeeding.^[38] Similarly, in the Netherlands, many mothers perceive the duration of maternity leave as inadequate.^[39] Extending maternity leave could potentially address the early cessation of exclusive breastfeeding observed when mothers return to work.^[40,41]

Flexible work arrangements and designated lactation spaces are crucial components of a supportive workplace environment. In Kenya, over 80% of mothers indicated a willingness to utilize flexible schedules, and a substantial proportion endorsed the availability of on-site lactation rooms.^[42] Such supportive environments, including flexible working hours and dedicated areas for expressing breast milk, have been identified as significant facilitators of exclusive breastfeeding among employed mothers in Bangkok.^[43] Nevertheless, many workplaces continue to lack these essential facilities, as evidenced by reports from Dutch universities, where inadequate and inaccessible lactation rooms remain a prevalent issue.^[39]

Despite their advantages, the implementation and efficacy of these policies vary. In Vietnam, for example, extended maternity leave policies have had limited impact on women in the informal sector and rural areas.^[44] Furthermore, community-based interventions involving local health workers and peer support groups could enhance the emphasis on exclusive breastfeeding and offer practical

assistance to new mothers. The Indonesian government should also incorporate exclusive breastfeeding promotion into broader maternal and child health initiatives. It is crucial to strengthen the healthcare system to provide improved prenatal and postnatal care, with a particular focus on breastfeeding support. Collaborations among the health sector, educational institutions, and private companies have successfully enhanced healthcare access and outcomes, especially for underserved populations. The Ventanillas de Salud (VDS) and Mobile Health Units (MHUs) initiative—a partnership between the Mexican government and US public health organizations—has delivered health services to millions of Hispanic and underserved populations across the United States.^[45] This model exemplifies the potential of collaborative approaches to address health disparities.

In the domain of breastfeeding support, the emergence of telelactation services utilizing information and communication technologies has effectively mitigated geographic barriers to traditional community support.^[46] Nevertheless, while urban areas benefit from both in-person breastfeeding support resources and robust broadband infrastructure for telelactation, numerous rural areas lack access. This underscores the need for targeted interventions to address these disparities. The development of innovative solutions, such as mobile applications for personalized breastfeeding guidance or telelactation services for remote areas, could be facilitated through collaboration among the health sector, educational institutions, and private enterprises. These partnerships could harness sectoral expertise to create comprehensive and accessible solutions. However, it is imperative to ensure that such collaborations prioritize public health objectives over commercial interests. Concerns have been raised regarding the influence of commercial milk formula companies on health professionals, highlighting the need for ethical considerations and regulatory oversight.^[47] Balancing innovation, ethical integrity, and regulatory compliance is crucial in developing effective and responsible breastfeeding support solutions. By addressing both the digital divide and economic disparities, Indonesia can foster a more supportive environment for exclusive breastfeeding, ultimately enhancing maternal and child health nationwide.

This study demonstrated that maternal decisions to use formula milk in Sorong City are strongly influenced by digital media engagement and microeconomic conditions. These findings suggest that maternal decision-making is increasingly shaped by access to online health information and household financial stability rather than traditional sociodemographic determinants.

This study has several limitations that should be acknowledged. First, its cross-sectional design restricts the ability to infer causal relationships between predictors and formula milk use. Second, the study was limited to Sorong

City, which may reduce generalizability to other Indonesian regions with different cultural and socioeconomic profiles. Third, reliance on self-reported measures, particularly regarding digital information use, may have introduced recall or reporting bias. Finally, although the study used validated instruments, unmeasured confounding variables such as healthcare worker influence or peer pressure may still have played a role.

Future research should adopt longitudinal designs to examine how maternal decisions regarding infant feeding evolve over time. Investigations into the quality and reliability of online health information, as well as how mothers interpret and act upon such information within their cultural and economic contexts, are warranted. Qualitative studies could provide deeper insights into maternal perceptions, while multiregional comparative studies would enhance the external validity of findings. Furthermore, exploring the effectiveness of digital health literacy interventions and targeted economic support policies could inform more tailored strategies to promote exclusive breastfeeding.

Conclusion

This study shows that maternal decisions on formula milk use in Sorong City are primarily driven by digital media exposure and household economic conditions. These factors appear to outweigh traditional determinants such as education, employment, or community support. To strengthen exclusive breastfeeding practices, policies should focus on improving maternal digital health literacy and providing targeted economic support for low-income families. Interventions that combine credible online education with financial protection for breastfeeding mothers may help reduce dependence on formula milk and support child health in Indonesia.

Acknowledgements

We would like to express our sincere gratitude to the mothers in Sorong City, Southwest Papua, Indonesia, for their participation in this study. We also thank our colleagues at Unikversitas Sebelas Maret, Surakarta Indonesia for their support and insights.

Financial support and sponsorship

None.

Conflicts of interest

Nothing to declare.

References

1. Pérez-Escamilla R, Tomori C, Hernández-Cordero S, Baker P, Barros AJD, Bégin F, *et al.* Breastfeeding: Crucially important, but increasingly challenged in a market-driven world. *Lancet* 2023;401:472-85.
2. Lokossou GAG, Kouakanou L, Schumacher A, Zenclussen AC. Human breast milk: From food to active immune response

- with disease protection in infants and mothers. *Front Immunol* 2022;13:849012.
3. World Health Organization. Infant and Young Child Feeding. Geneva: WHO; 2023. Available from: <https://www.who.int/news-room/fact-sheets/detail/infant-and-young-child-feeding>.
 4. World Health Organization. Breastfeeding. Geneva: WHO; 2023. Available from: https://www.who.int/health-topics/breastfeeding#tab=tab_1. [Last accessed on 2025 Mar 9].
 5. World Health Organization. Exclusive Breastfeeding for Optimal Growth, Development and Health of Infants. Geneva: WHO; 2023. Available from: <https://www.who.int/tools/elena/interventions/exclusive-breastfeeding>. [Last accessed on 2025 Mar 9].
 6. Indonesian Ministry of Health. Hasil Utama SKI 2023. Jakarta: BKKP Kemenkes; 2023. Available from: <https://www.badankebijakan.kemkes.go.id/daftar-frequently-asked-question-seputar-hasil-utama-ski-2023/hasil-utama-ski-2023/>. [Last accessed on 2025 Mar 9].
 7. Central Bureau of Statistics. Persentase penduduk berumur 0-23 bulan yang pernah diberi ASI dan rata-rata lama pemberian ASI menurut karakteristik di Kota Sorong, 2024. Sorong: BPS; 2024. Available from: <https://sorongkota.bps.go.id/id/statistics-table/1/NTM4IzE=/persentase-penduduk-berumur-023-bulan--baduta--yang-pernah-diberi-asi-dan-rata-rata-lama-pemberian-asi-menurut-karakteristik-di-kota-sorong--2024.html>. [Last accessed on 2025 Mar 9].
 8. Central Bureau of Statistics. Percentage of Children Aged 0-23 Months who were ever Breastfed and the Average Duration of Breastfeeding by Characteristics in Sorong City, 2023. Sorong: Statistics Indonesia (BPS); 2023. Available from: <https://sorongkota.bps.go.id/id/statistics-table/1/NDQ2IzE=/persentase-penduduk-umur-0-23-bulan--baduta--yang-pernah-diberi-asi-dan-rata-rata-lama-pemberian-asi--bulan--menurut-karakteristik-di-kota-sorong--2023.html>. [Last accessed on 2025 Mar 9].
 9. Hidayana I, Prawindarti L, Umar N, Ambarwati K, Rosatriani F. Marketing of commercial milk formula during COVID-19 in Indonesia. *Matern Child Nutr* 2023;19:e13491.
 10. National Legal Documentation and Information Network. Ministry of Health Legal Documentation and Information System (JDIH). Jakarta: Ministry of Health; 2024. Available from: <https://jdih.kemkes.go.id>. [Last accessed on 2025 Mar 9].
 11. Paramashanti BA, Dibley MJ, Huda TM, Prabandari YS, Alam NA. Factors influencing breastfeeding continuation and formula feeding beyond six months in rural and urban households in Indonesia: A qualitative investigation. *Int Breastfeed J* 2023;18:48.
 12. Topothai C, Tan GPP, van der Eijk Y. Commercial milk formula marketing following increased restrictions in Singapore: A qualitative study. *Matern Child Nutr* 2023;20:e13562.
 13. Horwood C, Mapumulo S, Haskins L, Doherty T, Kingston G, Rollins N, *et al.* Women's exposure to commercial milk formula marketing: A WHO multi-country market research study. *Glob Health* 2024;20:85.
 14. Zhu Z, Narayan A, Zhang S, Wang L, Zhu Y, Yang W, *et al.* How the marketing practices of commercial milk formula companies impact infant breastfeeding practices in China. *BMJ Glob Health* 2023;8:e012803.
 15. Scarpa G, Berrang-Ford L, Twesigomwe S, Kakwangire P, Galazoula M, Zavaleta-Cortijo C, *et al.* Socio-economic and environmental factors affecting breastfeeding and complementary feeding practices among Batwa and Bakiga communities in south-western Uganda. *PLoS Glob Public Health* 2022;2:e0000144.
 16. Kopp SJ, Kelly EA, DeFranco EA. Influence of social determinants of health on breastfeeding intent in the United States. *Birth* 2023;50:858-67.
 17. Wood NK, Odom-Maryon T, Smart DA. Factors associated with exclusive direct breastfeeding in the first 3 months. *Nurs Womens Health* 2022;26:299-307.
 18. Thompson GH, Sefa E, Deshpande AS, Mensah R, Lenzi-Weisbecker R, Wilder R, *et al.* Factors associated with exclusive breastfeeding for the first six months among caregivers of children under five years in northern Ghana: A cross-sectional study. *PLoS Glob Public Health* 2024;4:e0003887.
 19. Central Bureau of Statistics. Poverty Line (GK) in Sorong City. Sorong: BPS; 2024. Available from: <https://sorongkota.bps.go.id/id/statistics-table/2/MzY2IzI=/garis-kemiskinan--gk--di-kota-sorong.html>. [Last accessed on 2025 Mar 9].
 20. Central Bureau of Statistics. Sorong City in Figures 2023. Sorong: BPS; 2023. Available from: <https://sorongkota.bps.go.id/id/publication/2023/02/28/bb6baf507c092797f3879308/kota-sorong-dalam-angka-2023.html>. [Last accessed on 2025 Mar 9].
 21. Central Bureau of Statistics. Percentage of Population Aged 0-17 Years with Birth Certificates by Characteristics in Sorong City, 2024. Sorong: BPS; 2024. Available from: <https://sorongkota.bps.go.id/id/statistics-table/1/NTI5IzE=/persentase-penduduk-berumur-017-tahun--yang-memiliki-akta-kelahiran-menurut-karakteristik-di-kota-sorong--2024.html>. [Last accessed on 2025 Mar 9].
 22. Tahir M. Sorong City and Regency Social Service Ensures Effective Poverty Alleviation. Jakarta: RRI.co.id; 2023. Available from: <https://www.rri.co.id/daerah/882328/dinas-sosial-kota-dan-kabupaten-sorong-pastikan-pengentasan-kemiskinan-efektif>. [Last accessed on 2025 Mar 9].
 23. Gifelem M, Masinambow VAJ, Tumangkeng SYL. The effect of economic growth and inflation rate on poverty levels in Sorong City. *J Berk Ilm Efisiensi* 2023;23:25-36.
 24. Central Bureau of Statistics. Economic Growth of Sorong City 2023. Sorong: BPS; 2023. Available from: <https://sorongkota.bps.go.id/id/pressrelease/2024/03/01/284/pertumbuhan-ekonomi-kota-sorong-2023.html>. [Last accessed on 2025 Mar 9].
 25. Pugu MR. Free from stunting as an indicator of human security for communities in Southwest Papua Province from the perspective of international relations. *Syntax Lit J Ilm Indones* 2023;8:6236-51.
 26. Ramli U, Hasbi H, Basri L. The role of women in achieving family resilience in Klamana Village, East Sorong District, Sorong City. *J Noken Ilmu-Ilmu Sos* 2022;8:111-21.
 27. Alshowair A, Bail J, AlSuwailam F, Mostafa A, Abdel-Azeem A. Use of virtual reality exercises in disaster preparedness training: A scoping review. *SAGE Open Med* 2024;12:20503121241241936.
 28. Baker P, Smith JP, Garde A, Grummer-Strawn LM, Wood B, Sen G, *et al.* The political economy of infant and young child feeding: Confronting corporate power, overcoming structural barriers, and accelerating progress. *Lancet* 2023;401:503-24.
 29. Rollins N, Piwoz E, Baker P, Kingston G, McCoy D, Murukutla N, *et al.* Marketing of commercial milk formula: A system to capture parents, communities, science, and policy. *Lancet* 2023;401:486-502.
 30. Neves PAR, Barros AJD, Gatica-Domínguez G, Vaz JS, Baker P, Lutter CK. Maternal education and equity in breastfeeding: Trends and patterns in 81 low- and middle-income countries between 2000 and 2019. *Int J Equity Health* 2021;20:20.
 31. Yue A, Cui M, Yang Z, Shi Y, Guo C, Song Q. Formula feeding: Evidence for health, nutrition and early childhood development

- during the critical first 1000 days from rural China. *J Asian Econ* 2023;85:101580.
32. Ali MS, Zegeye AF, Workneh BS, Zeleke GA, Mekonen EG, Aemro A, *et al.* Determinants of formula feeding among mothers with infants and young children in six Sub-Saharan African countries: Multilevel analysis of demographic and health survey data. *PLoS One* 2024;19:e0311945.
33. He J, Yimyam S, Namprom N. Breastfeeding self-efficacy, social support, and breastfeeding among Chinese mothers with late preterm infants. *J Neonatal Nurs* 2022;28:21-5.
34. Isiguzo C, Mendez DD, Demirci JR, Youk A, Mendez G, Davis EM, *et al.* Stress, social support, and racial differences: Dominant drivers of exclusive breastfeeding. *Matern Child Nutr* 2022;19:e13459.
35. Ekholuenetale M, Mistry SK, Chimoriya R, Nash S, Doyizode AM, Arora A. Socioeconomic inequalities in early initiation and exclusive breastfeeding practices in Bangladesh: Findings from the 2018 demographic and health survey. *Int Breastfeed J* 2021;16:73.
36. Hunt L, Thomson G, Whittaker K, Dykes F. Adapting breastfeeding support in areas of socio-economic deprivation: A case study approach. *Int J Equity Health* 2021;20:83.
37. Fernandez P, Velasco S, Araujo A, Castillo V, Ruiz RB, Jimenez MF, *et al.* Demographic, socioeconomic, and sociocultural factors associated with any breastfeeding in homeless mothers. *Matern Child Nutr* 2021;17:e13167.
38. Maramag CC, Samaniego JAR, Castro MC, Zambrano P, Nguyen TT, Cashin J, *et al.* Maternity protection policies and the enabling environment for breastfeeding in the Philippines: A qualitative study. *Int Breastfeed J* 2023;18:60.
39. Hentges M, Pilot E. Making it “work”: Mothers’ perceptions of workplace breastfeeding and pumping at Dutch universities. *Int Breastfeed J* 2021;16:87.
40. Ickes SB, Sanders H, Denno DM, Myhre JA, Kinyua J, Singa B, *et al.* Exclusive breastfeeding among working mothers in Kenya: Perspectives from women, families and employers. *Matern Child Nutr* 2021;17:e13194.
41. Mgongo M, Ickes SB, Leyaro BJ, Mboya IB, Grounds S, Seiger ER, *et al.* Early infant feeding practices among women engaged in paid work in Africa: A systematic scoping review. *Adv Nutr* 2024;15:100179.
42. Ickes SB, Lemein HS, McKay A, Arensen K, Singa B, Kinyua J, *et al.* Mothers’ willingness to use workplace lactation supports: Evidence from formally employed mothers in Central Kenya. *Curr Dev Nutr* 2023;7:102032.
43. Topothai C, Topothai T, Suphanchaimat R, Waleewong O, Putthasri W, Patcharanarumol W, *et al.* Exclusive breastfeeding experiences of Thai mothers in metropolitan Bangkok. *Int J Womens Health* 2022;14:155-66.
44. Payán DD, Zahid N, Glenn J, Tran HT, Huong TTT, Moucheraud C. Implementation of two policies to extend maternity leave and further restrict marketing of breast milk substitutes in Vietnam: A qualitative study. *Health Policy Plan* 2022;37:472-82.
45. Flynn MA, Rodriguez Lainz A, Lara J, Rosales C, Feldstein F, Dominguez K, *et al.* An innovative United States-Mexico community outreach initiative for Hispanic and Latino people in the United States: A collaborative public health network. *Public Health Rep* 2021;136:287-94.
46. Grubestic TH, Durbin KM. The complex geographies of telelactation and access to community breastfeeding support in the state of Ohio. *PLoS One* 2020;15:e0242457.
47. Doherty T, Pereira-Kotze CJ, Luthuli S, Haskins L, Kingston G, Dlamini-Nqeketo S, *et al.* They push their products through me: Health professionals’ perspectives on and exposure to marketing of commercial milk formula in Cape Town and Johannesburg, South Africa – A qualitative study. *BMJ Open* 2022;12:e055872.