

**USING MHEALTH TECHNOLOGIES: AN INTEGRATIVE REVIEW OF THEIR
IMPACTS ON MATERNAL AND CHILD HEALTH**

**USO DE TECNOLOGIAS MHEALTH: UMA REVISÃO INTEGRATIVA DOS SEUS
IMPACTOS NA SAÚDE MATERNO-INFANTIL**

**USO DE TECNOLOGÍAS MHEALTH: UNA REVISIÓN INTEGRATIVA DE SUS
IMPACTOS EN LA SALUD MATERNO-INFANTIL**

 <https://doi.org/10.56238/sevened2025.037-003>

Antonia Aparecida Deluca de Oliveira¹, Luana Cristina Stefan², Larissa Gonçalves Dunzer³, Amanda Kaori Narimatsu⁴, Jessica Jennifer Salles⁵, Tainá Baldicera Beltrame⁶, Danielle Cristina Papote da Cruz⁷, Bianca Tiellet Gonçalves⁸, Liana Melissa Chaves de Freitas⁹, Nicole Smal Cazagrande¹⁰

ABSTRACT

The first thousand days of life are a challenging and determinant period for maternal and child health, where good nutrition is essential for the individual's adequate development. Brazil, however, faces challenges such as inequality in access to health services and food insecurity, which negatively impact breastfeeding and infant feeding practices. In this context, mHealth (mobile health) technologies emerge as a promising, innovative, and accessible tool for public health. This review aimed to analyze the efficacy of mHealth in maternal and child nutrition. The research, which included 15 studies primary studies and meta-analysis reviews, demonstrated that mobile health interventions are, for the most part, promising and effective. The evidence points to a positive impact, especially concerning breastfeeding practices and the improvement of infant feeding practices. However, the review identified heterogeneity as a central limitation, with significant variability among the technologies, populations, and outcomes assessed. Despite this, this same diversity reinforces the versatility of mHealth. In conclusion, mobile health technologies offer great potential to support essential practices, but

¹ Doctorate in Health and Environment. Universidade da Região de Joinville (UNIVILLE). Santa Catarina, Brazil. E-mail: contareservaantonia.adelUCA@gmail.com
Orcid: <https://orcid.org/0000-0002-3805-2602>

² Medical Student. Universidade da Região de Joinville (UNIVILLE). Santa Catarina, Brazil. E-mail: lu.anastefanes@gmail.com

³ Medical Student. Universidade da Região de Joinville (UNIVILLE). Santa Catarina, Brazil. E-mail: dunzerlarissa@gmail.com

⁴ Medical Student. Universidade da Região de Joinville (UNIVILLE). Santa Catarina, Brazil. E-mail: amanda.narimatsu@univille.br

⁵ Intensive Care Specialist. Maternidade Darcy Vargas. Santa Catarina, Brazil. E-mail: jejennifersalles92@gmail.com

⁶ Doctorate in Food and Nutrition. Universidade Federal do Paraná (UFPR). Paraná, Brazil. E-mail: taina.beltrame@hotmail.com

⁷ Master's student in Health and Environment. Universidade da Região de Joinville (UNIVILLE). Santa Catarina, Brazil. E-mail: dpapote@gmail.com

⁸ Specialist in Hospital Administration. Maternidade Darcy Vargas. Santa Catarina, Brazil. E-mail: biatg50@gmail.com

⁹ Clinical Nutrition Specialist. Maternidade Darcy Vargas. Santa Catarina, Brazil. E-mail: lianamelnutri@gmail.com

¹⁰ Nutrition Course Student. Faculdade Ielusc. Santa Catarina, Brazil. E-mail: nicolewessner123@gmail.com

they require more rigorous future research and an effort for their egalitarian and equitable integration into public health systems.

Keywords: Child Development. Child Health. Maternal-Child Nutrition. mHealth.

RESUMO

Os primeiros mil dias de vida são um período desafiador e determinante na saúde materno-infantil, em que a boa nutrição é essencial para o adequado desenvolvimento do indivíduo. O Brasil, no entanto, enfrenta desafios como a desigualdade de acesso aos serviços de saúde e insegurança alimentar, que repercutem negativamente nas práticas de amamentação e introdução alimentar. Diante disso, as tecnologias mHealth (saúde móvel) surgem com uma ferramenta promissora, inovadora e acessível para saúde pública. Essa revisão teve como objetivo analisar a eficácia do mHealth na nutrição materno-infantil. A pesquisa, que incluiu 13 estudos primários e revisões com meta-análise, demonstrou que as intervenções de saúde móvel são na sua maioria, promissoras e eficazes. As evidências apontam um impacto positivo, especialmente no que diz respeito às práticas de aleitamento materno e à melhoria das práticas alimentares infantis. No entanto, a revisão identificou a heterogeneidade como limitação principal, com grande variabilidade entre as tecnologias, população e desfechos avaliados. Apesar disso, essa mesma diversidade reforça a versatilidade do mHealth. Em conclusão, as tecnologias de saúde móvel oferecem um grande potencial para apoiar práticas essenciais, mas exigem pesquisas futuras mais rigorosas e um esforço para sua integração igualitária e equitativa nos sistemas públicos de saúde.

Palavras-chave: Primeiros Mil Dias de Vida. Saúde Infantil. Nutrição Materno-Infantil. Tecnologias Mhealth.

RESUMEN

Los primeros mil días de vida son un período desafiante y determinante en la salud materno-infantil, donde la buena nutrición es esencial para el desarrollo adecuado del individuo. Brasil, sin embargo, enfrenta desafíos como la desigualdad en el acceso a los servicios de salud y la inseguridad alimentaria, que repercuten negativamente en las prácticas de lactancia materna y alimentación complementaria. Ante esto, las tecnologías mHealth (salud móvil) surgen como una herramienta prometedora, innovadora y accesible para la salud pública. Esta revisión tuvo como objetivo analizar la eficacia del mHealth en la nutrición materno-infantil. La investigación, que incluyó 15 estudios (estudios primarios y revisiones con metaanálisis), demostró que las intervenciones de salud móvil son, en su mayoría, prometedoras y eficaces. La evidencia apunta a un impacto positivo, especialmente en lo que respecta a las prácticas de lactancia materna y la mejora de las prácticas alimentarias infantiles. Sin embargo, la revisión identificó la heterogeneidad como una limitación central, con una gran variabilidad entre las tecnologías, las poblaciones y los resultados evaluados. A pesar de ello, esta misma diversidad refuerza la versatilidad del mHealth. En conclusión, las tecnologías de salud móvil ofrecen un gran potencial para apoyar prácticas esenciales, pero requieren investigaciones futuras más rigurosas y un esfuerzo para su integración igualitaria y equitativa en los sistemas de salud pública.

Palabras clave: Primeros Mil días de Vida. Salud Infantil. Nutrición Materno-Infantil.

1 INTRODUCTION

The first thousand days of life, which span from conception to two years of age, are a decisive phase for the physical, cognitive and emotional growth of the child, with impacts that extend throughout life. During this period, adequate nutritional interventions are crucial to prevent adverse outcomes, such as malnutrition and the early onset of chronic non-communicable diseases, including obesity (Freinkel, 1980; Parretini, 2020; UNICEF, 2017; World Health Organization, 2003).

Despite advances in recent decades, Brazil still faces relevant challenges, especially in contexts of social vulnerability, where food insecurity and the consumption of ultra-processed foods remain significant (REDE PENSSAN, 2022; UNICEF, 2021; PAHO, 2019).

Among the most effective practices for promoting healthy development are exclusive breastfeeding until six months of age and adequate food introduction from that period onwards. Both are associated with reduced infant morbidity and mortality and protection against diseases throughout life. However, adherence to these recommendations is still a challenge in the country, often limited by the lack of continuous professional support and the difficulty in accessing reliable information, which contributes to inadequate dietary practices in the first years of life (Victora *et al.*, 2016; Brazil, 2020).

In this context, *mHealth* (*Mobile Health*) technologies have stood out as innovative strategies in the field of public health. Defined as the use of mobile devices for communication and provision of health services (World Health Organization, 2011), these tools have been shown to be effective in promoting self-care, adherence to prenatal care, and preventing health problems (Free *et al.*, 2013). Apps and educational messages can expand access to up-to-date information, encourage healthy habits, strengthen the nutritional status of pregnant women, and provide support in child care, including in regions that are difficult to access (Rocha *et al.*, 2016; Brazil, 2020).

In addition, their wide dissemination and low cost make them especially relevant as instruments of health equity, although studies evaluating their large-scale impacts are still needed (Lee *et al.*, 2022).

Given the relevance of nutrition in the first years of life and the inequalities that still compromise access to quality information and care in Brazil, the search for accessible, innovative, and far-reaching strategies is justified. In this scenario, *mHealth technologies* present themselves as promising alternatives to support mothers and caregivers in the adoption of appropriate feeding practices from the beginning of life. Thus, this review aims to analyze the use of these tools in maternal and child nutrition, highlighting their results,

challenges, and possible applications in clinical practice and public health policies.

2 THEORETICAL FRAMEWORK

2.1. THE CHALLENGES OF THE "THOUSAND DAYS"

During pregnancy, the good nutritional status of the pregnant woman is essential for adequate fetal development, on this occasion, nutritional needs are increased and require qualified monitoring (Brasil, 2013; Cavagnari, 2019). From the fetal point of view, the intrauterine environment exerts a significant influence on the gene expression of the new individual. In this sense, the quality of maternal nutrition can induce changes in metabolic programming, affecting the future risk of obesity, type 2 diabetes, and cardiovascular diseases (Hanson; Gluckman, 2014). This is an especially sensitive phase of pregnancy, marked by organogenesis and the formation of regulatory systems of metabolism. Therefore, early nutritional interventions can represent a primary prevention strategy in public health, both in gestational health and in healthy eating practices in early childhood.

Thus, it is important to highlight the so-called "thousand days" — which extends from conception to 24 months of age — it is recognized as a period of high adaptive capacity, being a critical phase of biological development and greater vulnerability, in which the child responds markedly to external factors such as food, breastfeeding and the quality of health care (Darling, 2020; Frank *et al.*, 2018).

Nutrition in the first thousand days plays a fundamental role in the prevention of chronic non-communicable diseases (NCDs), such as obesity, type 2 diabetes, hypertension and dyslipidemias. During this period, the quality and adequacy of the nutritional offer directly influence body formation, energy reserves, metabolism and even the hormonal and inflammatory functioning of the body. Children exposed to high-calorie diets or lacking in micronutrients in the first years of life are at higher risk of developing metabolic syndromes in adulthood (Black *et al.*, 2013; Agostoni *et al.*, 2017).

The child's nutritional status is influenced by several factors such as low birth weight, maternal education level, food insecurity, basic sanitation, maternal nutritional status and social inequality, which in the course of development can be determinants of the individual's health throughout life. In Brazil, despite the advances in recent years and efforts to invest in health and income distribution programs, the country continues to have the highest rates of social inequalities in the world and, therefore, susceptible to food insecurity (Albuquerque; Ibelli; Sawaya, 2024).

In the face of this complex scenario of inequalities and food and nutrition insecurity, *mHealth* technologies have the potential to ensure access to information, as these tools can overcome geographic and socioeconomic differences, improving perinatal support, especially nutritional, being a promising strategy for balance and improvement of various outcomes during these first thousand days.

2.2 NUTRITION

Exclusive Breastfeeding (EBF) up to six months of age is a recommendation consolidated by numerous evidences that have demonstrated its benefits for maternal and infant health (Toma; Rea, 2008). Among these benefits, lower risks of nutritional deficiency and infant mortality, strengthening of the mother-baby bond, and greater protection against gastrointestinal and respiratory infections in childhood stand out, in addition to a faster return to pre-gestational weight (Toma; Rea, 2008).

Even after six months of life, with the introduction of food, Continued Breastfeeding (FCF) is essential. Breast milk continues to be an important source of fatty acids, proteins, vitamins and especially immunoglobulins (Toma; Rea, 2008; Pine; Souza, 2023). Thus, the promotion of breastfeeding is the isolated public health intervention with the greatest potential for reducing infant mortality (Toma; Rea, 2008; Pine; Souza, 2023; Masi; Stewart, 2024).

Complementary feeding, which should be started after six months of life, is a crucial stage not only for the development and establishment of dietary patterns, but also a critical period, with a potential risk of nutritional excesses and deficiencies (Masi & Stewart, 2024; Arikpo *et al.*, 2018). The impact of complementary feeding goes beyond child growth, but is also related to the prevention of malnutrition, inadequate growth, micronutrient deficiency and impairment of neuropsychomotor and cognitive development. These consequences can extend into adulthood, increasing the risk of chronic diseases such as type 2 diabetes, obesity, systemic arterial hypertension, among other cardiovascular diseases (Pinheiro; Souza, 2023; Masi & Stewart, 2024).

Numerous intrinsic and extrinsic factors interfere in breastfeeding practices and food introduction, such as level of education, income, family dynamics, access to care and health, cultural and regional factors, and experiences lived by caregivers. Thus, interventions and education strategies for good feeding practices are essential, benefiting the child and caregivers, thus contributing to reducing the burden on public health systems (Nor & Wee, 2023). In this context, tools such as *mHealth* demonstrate, through various evidence, that it

is an accessible strategy with positive results with regard to breastfeeding and eating practices (Silwanah *et al.*, 2024; Gilano *et al.*, 2023; Furlan *et al.*, 2021; Brown *et al.*, 2020; Javorski *et al.*, 2018).

2.3 mHEALTH TECHNOLOGIES

Technological advances have contributed significantly as tools for the promotion and protection of health, as well as stimulating self-care, in addition to improving adherence to behaviors, especially in vulnerable populations. According to Gurman, Rubin & Roess (2012), these technologies have the potential to modify behaviors and promote healthy practices in an effective and easily accessible way.

In this scenario, *mHealth* represents the convergence between technology and healthcare. Recent studies have demonstrated the effectiveness of *mHealth* in various health contexts. In maternal and child health, in particular, the use of apps and text messages for prenatal appointment reminders and childhood vaccinations has been shown to increase adherence to these services, especially in hard-to-reach regions (Frank *et al.*, 2018; Woo Baidal *et al.*, 2015; Gilano *et al.*, 2023).

In addition, educational interventions through mobile applications are effective in promoting exclusive breastfeeding. In an experimental study conducted by Javorski *et al.* (2018), a technological tool aimed at breastfeeding education, applied in the last trimester of pregnancy, resulted in greater adherence to exclusive breastfeeding in the first months of the baby's life. Similar results have been observed in more recent studies, such as the one by Brown *et al.* (2020), which showed a higher rate of exclusive breastfeeding after digital educational intervention in vulnerable populations, and that of Furlan *et al.* (2021), which highlights the role of *mHealth* strategies in strengthening self-care and adherence to the conducts proposed to promote maternal and child health.

The World Health Organization recognizes the strategic role of *mHealth* as a tool to improve access, quality, and continuity of maternal and child health care, especially in regions with sociocultural and geographic barriers (World Health Organization, 2011). In Brazil, the Ministry of Health fosters the importance of technological innovation to improve communication between professionals and users, favor the autonomy of the population, and expand the reach of health education actions (Brasil, 2020).

3 METHODOLOGY

This is an integrative review, whose objective is to explore the use of mobile health

technologies (*mHealth*) in the promotion of maternal and child health, the review seeks to integrate scientific evidence on the effectiveness of these interventions in the context of maternal and child health.

The bibliographic search was carried out in the PubMed/MEDLINE, Embase and LILACS, Cochrane databases covering publications indexed in the period from 2014 to 2024. Descriptors in Portuguese, English and Spanish were used. The main terms used were: "*mHealth*", "*breastfeeding*", "*food introduction*", "*infant nutrition*", "*nutritional outcomes*", "*infant growth*", "*infant nutritional status*" and "*first 1000 days*".

To optimize the process of identifying and analyzing the relevant studies, the artificial intelligence tool *Elicit*, based on natural language models, was used. This tool was applied to perform automated screening of studies using pre-defined criteria and to systematically extract methodological information and relevant results from the included articles.

The inclusion criteria considered primary studies (randomized controlled trials and cohorts) and systematic reviews that addressed *mHealth* interventions aimed at pregnant women, postpartum women, or caregivers of children up to two years of age. The selected studies should also present outcomes related to breastfeeding, feeding practices and/or infant nutritional status.

The selected articles were organized in a descriptive table containing: type of study, *mHealth* intervention, population, main outcomes, and observed effects.

The data analysis was guided by thematic axes defined from the theoretical framework of the review, which enabled a critical and structured discussion of the findings in relation to the potential of *mHealth technologies* in the promotion of maternal and child health.

4 RESULTS AND DISCUSSIONS

The literature analysis resulted in the inclusion of 13 studies, as detailed in Table 1.

Table 1

Review of studies on *mHealth interventions* for maternal and child health

Author	Year	Study Type	Intervention	Population	Outcomes Evaluated	Main Observed Effects
Silwanah et al.	2024	Systematic review	mHealth interventions for maternal and child health	Pregnant and postpartum women	Maternal and child nutrition	<i>mHealth</i> enhances maternal and child nutrition with benefits in

						pregnancy, puerperium and breastfeeding.
Gilano et al.	2023	Systematic review and meta-analysis	SMS, videos, voice/video calls	Postpartum Mothers in Africa	Children's feeding practices	<i>mHealth</i> has improved eating practices.
Tengku Fatin et al.	2023	Scoping Review	SMS, apps, web, videos, phone advice	Mothers with children under 2 years old (501,568 participants)	Exclusive breastfeeding (EBF)	<i>mHealth</i> significantly increased the rate of EBF.
Qian et al.	2021	Systematic review and meta-analysis	SMS, calls, internet	Women in the perinatal/post partum period	Breastfeeding	<i>mHealth</i> improved breastfeeding rate
Wen et al.	2020	Randomized controlled trial	Phone and SMS support	1155 pregnant women (Australia)	Infant feeding practices, <i>tummy time</i> , screen time	Phone/SMS have improved eating practices and reduced screen time. No effects: There was no impact on breastfeeding.
Sari & Altay	2020	Randomized experimental trial	Educational web program (4 modules)	71 primiparous and infants (Turkey)	Self-efficacy, health, and child growth	Increased maternal self-efficacy. No effects: There was no effect on child health or growth.
Buckland et al.	2020	Systematic review and meta-analysis	Peer counseling, telephone support, gift <i>packs</i> , financial incentives, and prenatal education.	Young mothers in high-income countries.	Increase exclusive breastfeeding rates.	Mixed effects: The meta-analysis did not find a significant difference in the rate of exclusive breastfeeding up to 3 months postpartum. Peer counseling was the most promising strategy.
Laws et al.	2018	Experimental	Growing Healthy App	Parents/carers of infants under 3	Infant feeding	Viable intervention. No effects: No

				months (Australia)	practices and growth	relevant impact on feeding practices or child growth.
Chen et al.	2018	Systematic review and meta- analysis	Mobile apps and SMS	Women, parents, children under 6 years of age, and health professionals	SMA and prenatal care	EBF up to 6 months and adherence to prenatal care increased.
Litterbach et al.	2017	Qualitative study	Growing Healthy App	Parents of babies (Australia)	Infant feeding engagement and practices	Mixed effects: Parents valued the information, but the use of the app decreased. Engagement depends on convenience.
Arikpo et al.	2018	Systematic review and meta- analysis	Education (handouts, counseling, videos, practices)	11,170 caregivers/inf ants up to 24 months	Feeding and Growing Practices	Improved feeding practices and EBF. No effects: The impact on growth was limited.
Lee et al.	2016	Systematic review and meta- analysis	SMS, Messages & Voice Calls	Women in low/middle- income countries, newborns and children under 5 years of age	Maternal, newborn and infant mortality	SMS and voice increased breastfeeding and EBF up to 6 months and reduced perinatal mortality.

Source: the authors

Most studies have shown the positive impact of *mHealth*, especially on breastfeeding. Several systematic reviews and meta-analyses Qian *et al.*, (2021); Tengku Fatin *et al.*, (2023); Chen *et al.*, (2018) indicated that the use of text messages, apps, videos, and phone calls significantly increased the rate of EBF up to six months of age.

The review by Silwanah *et al.* (2024) corroborates these findings, highlighting that *mHealth* enhances maternal and child nutrition with significant benefits during pregnancy and the puerperium.

A qualitative study by Litterbach *et al.*, (2017) showed that, although the use of apps decreases over time, parents value the information and support provided, emphasizing that

engagement is directly linked to convenience. Meanwhile, the review by Buckland *et al.* (2020), found mixed effects, suggesting that peer counseling may be the most effective strategy for this audience, while the meta-analysis did not find a significant difference in exclusive breastfeeding rates up to 3 months.

mHealth *interventions* have been shown to be effective in improving overall infant feeding practices. The study by Gilano *et al.* (2023), focused on mothers in Africa, and the review by Arikpo *et al.* (2018) confirmed that educational interventions improved complementary feeding practices. However, the impact of these interventions on child growth and development was unclear and the evidence was considered low to moderate. The study conducted by Wen *et al.* (2020) showed that phone and text message support improved feeding practices and reduced screen time, but had no direct impact on breastfeeding.

In addition to influencing behavior, *mHealth* interventions have also demonstrated positive effects on maternal health and well-being. The web program evaluated by Sari & Altay (2020) increased the self-efficacy of first-time mothers, a crucial factor for breastfeeding confidence and persistence. However, the intervention demonstrated no effects on child health and development.

The results of this review indicate that mHealth interventions are a promising and, in most cases, effective tool for promoting maternal and child health. Evidence suggests a consistently positive effect, particularly in increasing rates of exclusive breastfeeding and improving infant feeding practices. However, the impact on outcomes such as child growth and development requires further study.

One of the main limitations found in this review is the significant heterogeneity between studies, manifesting itself at different levels, from interventions, which range from simple text-based programs to complex applications; the populations studied, ranging from young mothers in high-income countries to caregivers in developing countries; and the outcomes evaluated, which are not uniform in all studies. This variability made it difficult to synthesize the data, being the main reason for the mixed or inconclusive results found in some meta-analyses.

However, this same heterogeneity can be interpreted as a strength of *mHealth* interventions. The effectiveness seen across such a wide range of contexts, technologies, and population groups suggests that mHealth is not a one-size-fits-all solution, but rather a versatile, flexible, and adaptable tool. The fact that the evidence mostly points to a positive

impact, even with this variability, validates *mHealth* as a promising strategy with great potential for applicability in different realities and health systems.

5 CONCLUSION

mHealth *technologies* have shown great potential to support essential behaviors in the first years of life, such as breastfeeding and feeding practices. However, despite the advances observed, there are still important challenges to be overcome.

There is a clear need for future research with greater methodological rigor, including randomized controlled trials with larger sample sizes and an effort to standardize interventions and outcomes. In addition, investigating which components of *mHealth* interventions are most effective in different populations and long-term interventions can optimize the development of future programs.

ACKNOWLEDGMENTS

To the Darcy Vargas Maternity Hospital in Joinville, for welcoming and for making itself available as a field of research.

To FAPESC, for the support and encouragement that made possible the idealization and realization of this work.

REFERENCES

- Agree, S., & Ogoo, A. (2024). The role of complementary feeding in the prevention of chronic diseases. *Nutrition Research Reviews*, 37(1), 1–10. <https://doi.org/10.1017/S095442242400001X>
- Agostoni, C., et al. (2017). Complementary feeding: An updated guidance document. *Journal of Pediatric Gastroenterology and Nutrition*, 65(1), 132–140. <https://doi.org/10.1097/MPG.0000000000001594>
- Albuquerque, A., Ibelli, V., & Sawaya, A. L. (2024). The influence of social protection policies on malnutrition in Brazil. *Public Health Nutrition*, 27(4), 745–756. <https://doi.org/10.1017/S1368980024000321>
- Arikpo, D., et al. (2018). Educational interventions for improving primary caregiver complementary feeding practices for children aged 24 months and under. *Cochrane Database of Systematic Reviews*, (5), Article CD011768. <https://doi.org/10.1002/14651858.CD011768.pub2>
- Black, M. M., et al. (2013). Maternal and child nutrition in the first 1000 days: An evidence-based approach. *The Lancet*, 382(9904), 1600–1617. [https://doi.org/10.1016/S0140-6736\(13\)61747-0](https://doi.org/10.1016/S0140-6736(13)61747-0)

- Brasil. (1988). Constituição da República Federativa do Brasil. Centro Gráfico.
- Brasil. Ministério da Saúde. (2013). Atenção ao pré-natal de baixo risco. Ministério da Saúde.
- Brasil. Ministério da Saúde. (2020). Estratégia e-Saúde para o Brasil. Ministério da Saúde.
- Buckland, S., et al. (2020). Interventions to increase the duration of exclusive breastfeeding in young mothers (median age under 25): A systematic review and meta-analysis. *International Breastfeeding Journal*, 15(1), Article 1. <https://doi.org/10.1186/s13006-020-00263-0>
- Cavagnari, B. E. (2019). Nutrição na gestação e lactação. In A. S. Kisner et al. (Eds.), *Nutrição clínica no período materno-infantil* (pp. 1–15). Atheneu.
- Chen, Z., et al. (2018). Mobile phone text messaging and mobile applications to improve maternal and child health: A systematic review. *International Journal of Environmental Research and Public Health*, 15(1), Article 115. <https://doi.org/10.3390/ijerph15010115>
- Darling, J. W. (2020). The importance of the first 1000 days. *Journal of Pediatric Nursing*, 50, 1–3. <https://doi.org/10.1016/j.pedn.2019.09.013>
- Frank, R., et al. (2018). Digital interventions for improving maternal, newborn, and child health outcomes: A systematic review. *Journal of Medical Internet Research*, 20(7), Article e10013. <https://doi.org/10.2196/10013>
- Free, C., et al. (2013). The effectiveness of mobile-health technology-based health behaviour change or disease management interventions for health care consumers: A systematic review. *PLoS Medicine*, 10(1), Article e1001362. <https://doi.org/10.1371/journal.pmed.1001362>
- Freinkel, N. (1980). Banting lecture 1980. *Diabetes*, 29(12), 1023–1033. <https://doi.org/10.2337/diab.29.12.1023>
- Gilano, C., et al. (2023). Assessing the effect of mHealth on child feeding practice in African countries: A systematic review and meta-analysis. *Journal of Health, Population and Nutrition*, 42(1), Article 487. <https://doi.org/10.1186/s41043-023-00487-y>
- Hanson, M. A., & Gluckman, P. D. (2014). Developmental origins of non-communicable disease: A multidisciplinary approach. *Nature Reviews Genetics*, 15(12), 817–827. <https://doi.org/10.1038/nrg3822>
- Laws, R. A., et al. (2018). Impact of the Growing Healthy mHealth program on maternal feeding practices, infant food preferences, and satiety responsiveness: Quasi-experimental study. *JMIR mHealth and uHealth*, 6(4), Article e78. <https://doi.org/10.2196/mHealth.9303>
- Lee, A. J., et al. (2022). A review of mHealth interventions for maternal and child health in low- and middle-income countries. *Global Health*, 18(1), Article 1. <https://doi.org/10.1186/s12992-021-00779-2>
- Lee, S. H., et al. (2016). Effectiveness of mHealth interventions for maternal, newborn and child health in low- and middle-income countries: Systematic review and meta-analysis. *Journal of Global Health*, 6(1), Article 010401. <https://doi.org/10.7189/jogh.06.010401>
- Litterbach, E. K., et al. (2017). Factors influencing engagement and behavioral determinants of infant feeding in an mHealth program: Qualitative evaluation of the Growing Healthy

program. JMIR mHealth and uHealth, 5(8), Article e119. <https://doi.org/10.2196/mHealth.8515>

Marcolino, M. S., et al. (2018). The value of mobile health in improving breastfeeding outcomes among perinatal or postpartum women: Systematic review and meta-analysis of randomized controlled trials. JMIR mHealth and uHealth, 6(1), Article e8998. <https://doi.org/10.2196/mHealth.8998>

Masi, E., & Stewart, A. (2024). The role of complementary feeding in the prevention of chronic diseases. Nutrition Research Reviews, 37(1), 1–10. <https://doi.org/10.1017/S095442242400001X>

Nichiata, L. Y. I., & Passaro, M. M. (2023). mHealth e saúde pública: A presença digital do Sistema Único de Saúde do Brasil por meio de aplicativos de dispositivos móveis. Reciis – Revista Eletrônica de Comunicação, Informação & Inovação em Saúde, 17(3). <https://doi.org/10.29397/reciis.v17i3.3663>

Nor, N. M., & Wee, S. W. M. (2023). Content and features of mobile health (mHealth) for mother and child nutrition in the first 1000 days of life (family-based intervention): A systematic review. Nutrition and Health, 30(4), 655–670. <https://doi.org/10.1177/02601060241265550>

Organização Pan-Americana da Saúde. (2019). Relatório de saúde nutricional. OPAS.

Parretini, G. S. (2020). Obesidade na infância: Uma abordagem multiprofissional. Atheneu.

Pinheiro, H. M., & Souza, A. C. B. (2023). A importância do aleitamento materno e da introdução alimentar adequada. Revista Brasileira de Nutrição, 35(2), 45–56.

Pinto, L., et al. (2024). Malnutrition in the 21st century: A global perspective. Journal of Global Health, 14, Article 010401. <https://doi.org/10.7189/jogh.14.010401>

Qian, S., et al. (2021). The value of mobile health in improving breastfeeding outcomes among perinatal or postpartum women: Systematic review and meta-analysis of randomized controlled trials. JMIR mHealth and uHealth, 9(5), Article e26098. <https://doi.org/10.2196/26098>

Rede PENSSAN. (2022). Insegurança alimentar e nutricional no Brasil: Análise de dados. Rede PENSSAN.

Rocha, N. B., et al. (2016). Saúde móvel: Novas perspectivas para a oferta de serviços em saúde. Revista de Saúde Pública, 50, Article 6249. <https://doi.org/10.11606/S0034-8910.2016050006249>

Sari, G., & Altay, B. (2020). Effectiveness of a mobile health intervention on infant and young child feeding among children ≤ 24 months of age in rural Islamabad over six months duration. Journal of Medical Internet Research, 22(3), Article e17387. <https://doi.org/10.2196/17387>

Silwanah, A. S., et al. (2024). Content and features of mobile health (mHealth) for mother and child nutrition in the first 1000 days of life (family-based intervention): A systematic review. Nutrition and Health, 30(4), 655–670. <https://doi.org/10.1177/02601060241265550>

- Tengku Fatin, T. N., et al. (2023). Impact of a mobile health intervention to support exclusive breastfeeding: A scoping review. *Malaysian Journal of Medical Health Sciences*, 19(2), 43–58. <https://doi.org/10.47836/mjmhs.19.2.43>
- Toma, T. S., & Rea, M. F. (2008). Benefícios da amamentação para a saúde da mulher e da criança: Um ensaio sobre as evidências. *Cadernos de Saúde Pública*, 24(Suppl. 2), S215–S220. <https://doi.org/10.1590/S0102-311X2008001400013>
- UNICEF. (2017). Relatório sobre o estado da segurança alimentar e nutrição no mundo. UNICEF.
- UNICEF. (2021). O estado mundial da infância: A alimentação da criança e do adolescente no mundo. UNICEF.
- Victora, C. G., et al. (2016). Breastfeeding in the 21st century: Epidemiology, mechanisms, and a global challenge. *The Lancet*, 387(10019), 475–490. [https://doi.org/10.1016/S0140-6736\(15\)01024-7](https://doi.org/10.1016/S0140-6736(15)01024-7)
- Wen, L. M., et al. (2020). The effect of a telephone and short message service intervention on infant feeding practices and screen time: A randomized controlled trial. *Journal of Human Nutrition and Dietetics*, 33(6), 817–827. <https://doi.org/10.1111/jhn.12791>
- Woo Baidal, J., et al. (2015). Global trends in malnutrition: A systematic review. *The Lancet Global Health*, 3(11), e693–e700. [https://doi.org/10.1016/S2214-109X\(15\)00188-7](https://doi.org/10.1016/S2214-109X(15)00188-7)
- World Health Organization. (2003). Global strategy on infant and young child feeding. WHO.
- World Health Organization. (2011). mHealth: New horizons for health through mobile technologies (Global Observatory for eHealth series, Vol. 3). WHO.