

Research Article

Integration of Nurturing Care Framework for Early Childhood Development in the Care of HIV-Exposed Infants in Yaounde

Felicitee Nguetack^{1*}, Racheal Ngonde Wakouwa², Palma Haoua Abouame³, Isabelle Mekone Nkwelle¹, Selangai Hélène Kamo³, Haman Soureya³, Félicie Cindy Dongmo Tsopack¹, Mboringong Fanny Ngwafukwedi¹, Jeanette Epee¹ and Nelly Kamgaing¹

¹Faculty of Medicine and Biomedical Sciences, University of Yaounde I, Cameroon

²Faculty of health sciences "Université des Montagnes", Cameroon

³Faculty of Medicine and Biomedical Sciences, University of Garoua, Cameroon

Abstract

Background: Nurturing care is essential for adequate growth and development, particularly in HIV-Exposed Infants (HEIs). The Nurturing Care Framework (NCF) represents a standardized set of information that can potentially optimize the development of children between 0 and 3 years. It comprises five interrelated and indivisible components and its implementation is crucial in resource-limited settings. This study aimed at assessing the implementation of the nurturing care components and barriers to HEIs postnatal visits in Yaounde.

Methods: A quantitative and qualitative descriptive cross-sectional study was conducted in four hospitals. For the quantitative survey, data concerning available NCF services, infants' growth tools, and development monitoring by Health Care Workers (HCWs) were assessed. The qualitative study assessed caregivers' and Health Care Workers' (HCWs) knowledge, attitude, and practices related to NCF components and barriers to HEIs postnatal visits. Quantitative data were analysed using the Epi Info version 3.5.3 software and expressed in percentages. For qualitative data, transcripts were coded and analysed using the ATLAS.ti software.

Results: The early learning opportunities component was not implemented in any hospital. All infants' health booklets contained growth charts and 96.77% of infants had their weight reported meanwhile, HCW monitored none of the growth. In addition, 67.16% of infants' development was monitored. No caregiver or HCW interviewed had ever heard about this framework. Only one out of the 24 caregivers interviewed demonstrated an appropriate complementary feeding practice. Major barriers to infants' postnatal follow-up were; a negative first PCR result, the financial cost of services and long waiting time during visits.

Conclusion: The development of strategies to integrate all nurturing framework care components and the monitoring of the growth of HEIs by HCWs is crucial. As global health implications, failure to implement all components of the NCF represents a serious obstacle in addressing malnutrition-related deaths among HIV-infected children.

Keywords: Nurturing care; Development; HIV-exposed infants

Introduction

Nurturing care is essential for adequate growth and development in infants, particularly in HIV-Exposed Infants (HEIs). Stunting and developmental delays have been linked to factors such as HIV, Antiretroviral (ARV) drugs exposure, and other common factors. Thus, HEIs require optimal care, especially during the first 1000 days, a critical period for substantial growth accounting for approximately 80% of an infant's brain development. Promising options to address a multitude of child health and developmental challenges have been developed, [1] identified as the Nurturing Care Framework

(NCF) [2]. The NCF represents a standardized set of information with the potential to optimize the development of children between 0 and 3 years. This framework has five interrelated and indivisible components and its implementation is crucial in Low- and Middle-Income Countries (LMICs). It includes good health, adequate nutrition, responsive caregiving, early learning opportunities, and security and safety. Each component is made up of several services and interventions [3]. Components are partially implemented and many factors threaten Early Childhood Development (ECD) among which are sub-optimal breastfeeding, malnutrition, illnesses, limited stimulation, maltreatment, and HIV infection [4]. Over 1.4 million children are born to HIV-infected mothers annually with more than 90% living in sub-Saharan Africa [5,6]. Cameroon contributes to approximately 2.2% of the global prevalence with a 3.2% national prevalence [5,6]. The implementation of Option B+ led to an increasing number of women of childbearing age being treated with Antiretroviral (ARV) drugs. Thus, it is estimated that 67% of pregnant women worldwide are on ARV drugs [7]. In Cameroon, 82.5% of mothers were on lifelong ARV treatment in 2019 for their health and for the Prevention of Mother-to-Child Transmission (PMTCT) of HIV [8]. This has given rise to a growing population of HIV-exposed uninfected children. HEIs have been reported to experience higher morbidity and mortality rates [9] as well as poorer growth [10] and

Citation: Nguetack F, Wakouwa RN, Abouame PH, Nkwelle IM, Kamo SH, Soureya H, et al. Integration of Nurturing Care Framework for Early Childhood Development in the Care of HIV-Exposed Infants in Yaounde. *J Pediatr Neonatol.* 2024;5(2):1046.

Copyright: © 2024 Felicitee Nguetack

Publisher Name: Medtext Publications LLC

Manuscript compiled: Oct 31st, 2024

***Corresponding author:** Felicitee Nguetack, Faculty of Medicine and Biomedical Sciences, University of Yaounde I, Cameroon

neurodevelopmental outcomes compared to their HIV-unexposed counterparts. These health outcomes among HEIs have been linked to HIV exposure [11], ARV drugs [12], inadequate diet, and childhood illnesses. Failure to invest in the early childhood of these children will lead to an increasing number of them being stunted and not reaching their full developmental potential. This study aimed to assess the implementation of the NCF components in the postnatal care of HEIs in Health Facilities (HFs).

Materials and Methods

Study design and participant selection

A descriptive cross-sectional study with a mixed-method approach using qualitative and quantitative studies was conducted in Yaounde in four Health Facilities (HF) that provide services for PMTCT. It concerned caregivers having HEIs aged 6-24 months and the frontline Health Care Workers (HCWs) made up of paediatricians, general practitioners, nurses, as well as the psychosocial agents involved in the care of HEIs for at least one year who consented to the study.

Data collection

A total of eight health provider with two at each hospital were enrolled. Key Informant Interviews (KII) lasting 20 minutes each were conducted on NCF. In addition to this, three Focus Group Discussions (FGDs) including caregivers of HIV-exposed infants contacted in the selected health facilities were performed. Twenty-four of them consented and were distributed in groups of eight each. The discussions were planned to take over one and a half hours. Field notes were taken by the researcher and responses were audio-recorded.

Concerning the assessment of the knowledge, the health provider were asked about: a) what they know on the NCF, b) some of the need necessary for optimal growth and development in children, as well as c) the best period for stimulating infants' learning and brain development.

About their practices on NCF, they were interviewed on the counsel they give to parents to ensure: a) infant and maternal good health, b) adequate maternal and child nutrition, c) responsive caregiving among caregivers, d) early learning opportunities in children, e) child's protection and safety and, 5) how often do they monitor growth and development in these children.

We also assessed booklets of HEIs with growth charts and tools used in measuring weight and length as well as barriers to HIV-exposed infants' follow-up.

Statistical analysis

Quantitative variables were expressed in percentage using the Epi Info version 3.5.3 software. In addition, content analysis and statistics were processed using the qualitative data analysis software, ATLAS.ti version 9. The verbatim of the different transcripts was coded according to the analysis grid, following an open-ended approach of evaluation and translation of the study indicators. The syntactic units identified by the coding were grouped into categories. The word phrases behind each category were then generated automatically.

Ethical considerations

We obtained the approval of the national ethics committee for human health research and the institutional review board of the "Universite des Montagnes" ethical committee.

Results

A total of 421 health booklets of HEIs were assessed, 341 fulfilled the inclusion criteria and were analysed. There were 38.71% of infants between 12 and 17 months of age. Caregivers' ages ranged from 18 to 42 years with a mean age of 27 ± 6 years. More than half (54.17%) were 18-27 years old and all were females. Over two thirds (66.67%) were unemployed and 83.33% had attended at least secondary school (Table 1).

Table 1: Infants' and caregivers' socio-demographic characteristics.

	Variable	Frequency n=341	Percentage (%)
Child's Characteristics			
Sex	Male	176	51.61
	Female	165	48.39
Age (months)	06-Nov	101	29.62
	Dec-17	132	38.71
	18-24	108	31.67
Caregiver's characteristics			
Age (years)	18-27	13	54.17
	28-37	9	37.5
	>37	2	8.33
Sex	Female	24	100
Marital status	Married	15	62.5
	Cohabiting	7	29.17
	Single	2	8.33
Primary Caregiver	Babysitter	1	4.17
	Mother	23	95.83
Profession	Employed	5	20.83
	Unemployed	16	66.67
	Student	3	12.5
Educational Background	Primary	4	16.67
	Secondary	18	75
	Graduate	3	8.33

Infants' growth and development monitoring

All HFs had adequate tools for infant growth monitoring and 96.77% of them had their weight and 79.18% of length reported, but none were plotted on growth charts. Development was monitored in only 67.16% of infants while 31.38% had their last visit at 1.5 months (Table 2).

Table 2: Monitoring of infants' weight, length, Middle Upper Arm Circumference (MUAC), weight/age, length/age, weight/length, and development.

Variables	Frequency n=341	Percent (%)
Age of the child at his last visit (months)		
1.5	107	31.38
2-5	88	25.81
6-8	58	17.01
9-11	32	9.38
≥12	56	16.42
Monitoring of growth and development		
Weight measurement	330	96.77
Length measurement	270	79.18
MUAC measurement	259	75.95
Weight/length monitoring	0	0
weight/age monitoring	0	0
Length/age monitoring	0	0
Monitoring of child's development	229	67.16

MUAC: Middle Arm Circumference

Synoptic view of the qualitative survey

Knowledge of caregivers and HCWs on NCF: No HCW or caregiver had ever heard about the framework. They had a relatively high knowledge of good health and adequate nutrition.

The components of responsive caregiving, security, and safety were practiced by both caregivers and HCWs whereas the early learning opportunities were only practiced by caregivers.

"I have never heard it for the first time. My child needs to be well-fed, be in good health, and also requires love and affection to grow normally." (25y/o mother)

"I have never heard about I know children need to be in good health, well-fed, shown love and affection" (Paediatrician).

Practice of caregivers and HCWs on NCF related to the NCF For ECD: To keep children in good health, 70.83% of caregivers ensure vaccination, and attend all postnatal visits; for 79.17%, it consists of cleanliness and 87.5% seek timely medical care during infants' illness.

"I always attend my child's visit and vaccination. I don't want her to become sick" (32 y/o mother, YGOPH).

"I keep my environment clean, I wash my hands regularly and sterilize my baby's" (27 y/o mother).

"In case my child is sick, I rush her immediately to the hospital" (24 y/o mother).

HCWs shared similar views and they said they gave regular advice. For some, the absence of some services makes it difficult to offer quality care.

"We advise them on the importance of regular hand washing, and also on bringing their children to the hospital during illness" (General Practitioner).

"But our health facility doesn't offer services to help those children. Whenever they are referred, some parents refuse to go and most of their infants don't survive" (Nurse).

Concerning adequate nutrition, caregivers benefitted from counselling, and 95.83% exclusively breastfed for the first six months, whereas only 4.17% practiced appropriate complementary feeding.

"I give pap mixed with groundnuts, milk, and fruits to my child at each feed. I make sure my child eats as advised at the hospital" (28 y/o mother).

"I don't complicate my child's food because complicating his food will give him diarrhoea. I give pap and add milk in my child's food at 6 months" 38 y/o mother.

"I breastfeed my child exclusively while taking my ARV drugs at six months of age, I give pap mixed with soya beans, groundnuts. I continue breastfeeding my child till 12 months" (23 y/o mother).

Although 75% of HCWs assessed infants' growth they did not plot it on charts.

"We measure infants' anthropometric parameters but we don't record findings on curves due to our negligence"(Nurse).

Regarding responsive caregiving and early learning opportunities, HCWs provided limited information to caregivers concerning infants' protection and none on early learning opportunities. Most caregivers (87.5%) practiced responsive caregiving.

"My children are my only reason for being alive. My friends. I play with them, communicate with them. I always make them eat by tasting the food so she can feel happy while eating" (22 y/o lady).

"I teach my 18 months old infant how to draw circles, I put

programs that teach the Alphabet and rhymes for him"(34 y/o mother).

"To be honest with you, we don't counsel parents since infants' learning isn't part of the national recommendation for HEI care" (GP).

With a glance at security and safety, HCWs could intervene in cases of partner violence but they do not provide counselling on children's protection even though 91.67% of caregivers applied it.

"I don't allow my child to play outside because he might injure himself and fall from the stairs" (30 y/o mother).

"I keep sharp objects such as used blades, knives and needles away from the child to prevent him from being infected" (22 y/o mother).

"If we suspect any case of intimate partner violence, we invite him if he persists, we involve the social service which might later lead to police involvement if unchanged" (GP, CBF).

Barriers to HEIs' postnatal follow-up visits

Four with three major themes emerged as barriers to infant's postnatal follow-up visits: financial cost in accessing services, a negative 1st PCR result, and distance from health facilities (Figure 1).

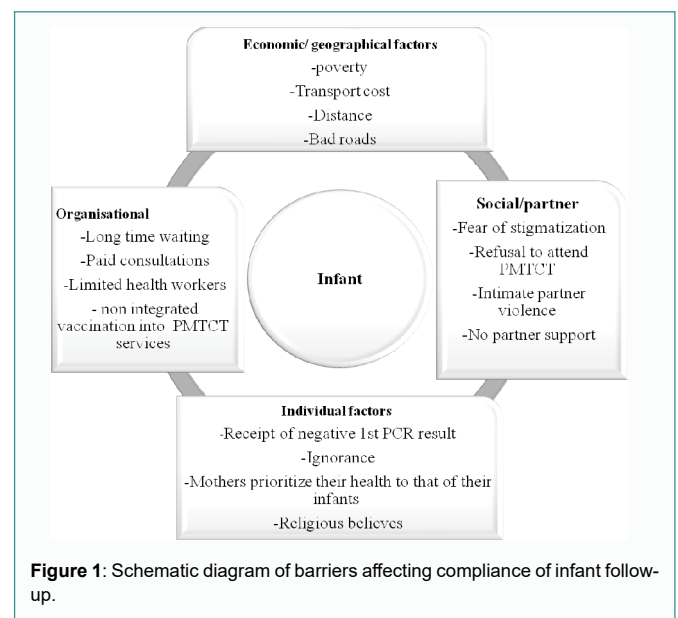


Figure 1: Schematic diagram of barriers affecting compliance of infant follow-up.

Caregivers' attitude and geographical or financial barriers to infant's follow-up: Caregivers were unaware of the benefits of children's follow-up. Some parents could have prioritized their health.

"I know parents who visit the HF to collect their drugs but, refuse to bring their children for follow-up. They believe a negative PCR result at 6 weeks renders their children HIV negative" (52 y/o nurse).

"I live I travel a distance over 2 hours 30 minutes coupled with bad roads I was reminded of my missed visits but I decided to stay at home after my child's PCR result and return to the clinic at 18 months I don't have money to pay for transport at each visit" (45y/o mother).

Organizational factor: "I expect doctors to do a general check-up but only his weight and length were measured. It doesn't motivate me except my child becomes sick" (31 y/o mother).

Social/Partner factor: Fear of social and partner stigmatization coupled with violence was also reported.

"My husband always tells me nobody can accept me with my condition. I feel stigmatized and I get beaten because he fears someone might see me entering into a place where only HIV-infected people" (24 y/o lady).

Discussion

The present study has the following limitations: We did not reach out to the health authorities to assess their perspectives on this framework. Third-category health facilities were not included in our study.

Components of the nurturing care framework

Although the NCF with its five interrelated and indivisible components provides a road map to ensure that all children thrive, its components have only been partially implemented in Cameroon in 2021 [15]. An estimated 43% of children less than five years in LMICs fail to reach their development potential each year proxy to stunting and poverty [16]. In Cameroon, over 52% of under 5 children were at risk of poor development in 2015 [17].

Early learning opportunities

Interactions help the child learn about other people. We found that interventions on the early learning opportunities component were not provided in any of the HFs. Lucas et al. [18] conducted a similar study in 23 countries and found that ECD programs were fully integrated into diverse sectors. In our country, some nurturing care policies such as universal health coverage, baby-friendly hospital initiatives, and universal access to good-quality daycare are inexistent.

Health and nutrition

The health and nutrition sectors provide opportunities for coordinated early childhood development services in early life [19,20]. We noticed that although most infants had their weight and length measured, these were not plotted on growth curves. Naidoo et al. [21] reported a lower rate of anthropometrical indices recording. Nonetheless, Chudasama et al. [22] reported a 92.30% accurate use of growth charts by HCW in India. The difference might be because ECD programs have already been integrated in India and not in Cameroon. The negligence of HCWs was highlighted in our qualitative study; also the ignorance of the impact of stunting on children's development and the country's economy has been reported by Grantham et al. [23].

Our study revealed that the knowledge of caregivers and HCWs regarding good health and adequate nutrition components was high but very low for early learning opportunities. Although they were not aware of this framework, they practiced some components of the NCF. Their knowledge of some components is an advantage in the process of implementing the program. We also observed that there was a gap in complementary feeding since only 4.16% of caregivers had an appropriate practice. Studies conducted in Nigeria and Ghana by Samuel and Ibadago [24] and Saaka et al. [24,25] respectively reported similar findings. This problem needs to be addressed in all HFs as a preventive action for adequate growth and development of infants. The same intervention concerns the early learning and responsive caregiving components. It requires reinforcement of knowledge and skills of the stakeholders with strategies like videos, books, and play materials sharing into the primary health care as noticed in Caribbean [26]. We found that many infants had their last follow-up visit at six weeks of age. This implies that more than 30% of HEIs were lost-to-follow-up as the result of a negative 1st PCR. This finding is similar to that conducted by Milanzi et al. [27] in Malawi who reported

that a negative PCR result contributed to over 70% of infants' non-retention in PMTCT services. Elsewhere, we discovered that most of the caregivers were unemployed, and seeking care represented an additional financial burden on transportation, and health care costs. A study conducted in Malawi by Nkhonjera et al. [28] reported similar findings. Some difficulties were linked to the health system as noticed by Blanco et al. [29].

Conclusion

It is crucial that nurturing care interventions focus on improving caregivers' knowledge, attitude, and practices related to child care involving male partners in the postnatal PMTCT service. Training of HCWs on the nurturing care components will enable full integration in the frame of the PMTCT services.

Authors' Contributions

Nguefack Félicitée, Racheal Ngonde Wakouwa designed the study; Nelly Kamgaing analyzed the data, Palma Haoua Abouame, Héléne Selangai Kamo, Félicie Dongmo Tsoufack Cindy, Nkwelle Mekone Jeanette Epee Isabelle, Haman Soureya and Mboringong Fanny Ngwafukwedi produced the first draft of the study. All authors approved the final version of the manuscript.

References

- Klingberg S, Sluijs EMF van, Jong ST, Draper CE. Can public sector community health workers deliver a nurturing care intervention in South Africa? The Amagugu Asakhula feasibility study. *Pilot Feasibility Stud.* 2021;7(1):1-13.
- Black MM, Trude ACB. Conceptualizations of Child Development Benefit from Inclusion of the Nurturing Care Framework. *J Nutr Aotd.* 2019;149(8):1307-8.
- Daelmans B, Manji S, Raina N. Nurturing Care for Early Childhood Development: Global Perspective and Guidance. *Indian Pediatr.* 2021;58:Suppl 1:S11-S15.
- Black MM, Walker SP, Fernald LCH, Andersen CT, DiGirolamo AM, Lu C, et al. Advancing Early Childhood Development: from Science to Scale 1. *Lancet.* 2017;389(10064):77-90.
- Slogrove AL, Powis KM, Johnson LF, Stover J, Mahy M. Estimates of the global population of children who are HIV-exposed and uninfected, 2000–18: a modelling study. *Lancet Glob Health.* 2020;8(1):e67-75.
- UNAIDS leads the world's most extensive data collection on HIV epidemiology, programme coverage and finance. 2021.
- Yotebieng M, Thirumurthy H, Moracco KE, Edmonds A, Tabala M, Kawende B, et al. Conditional Cash Transfers to Increase Retention in PMTCT Care, Antiretroviral Adherence, and Postpartum Virological Suppression: A Randomized Controlled Trial. *J Acquir Immune Defic Syndr.* 2016;72(Suppl 2):S124-9.
- Fokam J, Santoro MM, Chimbi I, Chindiura J, Deula R, Rombe A, et al. Programmatic Challenges in Implementing PMTCT Option B+ and Pediatric HIV Care: Baseline Assessment from "Save the Families for Africa" in Malawi. *Health Sci Dis.* 2019;20(3).
- Boerma RS, Wit FWNM, Orock SO, Schonenberg-Meinema D, Hartdorff CM, Bakia A, et al. Mortality risk factors among HIV-exposed infants in rural and urban Cameroon. *Trop Med Int Health.* 2015;20(2):170-6.
- Uthman OA, Nachega JB, Anderson J, Kanters S, Mills EJ, Renaud F, et al. Timing of initiation of antiretroviral therapy and adverse pregnancy outcomes: a systematic review and meta-analysis. *Lancet HIV.* 2017;4(1):e21-30.
- Toledo G, Côté HCF, Adler C, Thorne C, Goetghebuer T. Neurological development of children who are HIV-exposed and uninfected. *Dev Med Child Neurol.* 2021;63(10):1161-70.
- Cassidy AR, Williams PL, Leidner J, Mayondi G, Ajibola G, Makhema J, et al. In Utero Efavirenz Exposure and Neurodevelopmental Outcomes in HIV-Exposed Uninfected Children in Botswana. *Pediatr Infect Dis J.* 2019;38(8):828-34.
- World Health Organization. Nurturing care for early childhood development: a framework for helping children survive and thrive to transform health and human

- potential. World Health Organization. 2018;55p.
14. Khandekar R, Harby SA, Harthy HA, Lawatti JA. Knowledge, attitude and practice regarding eye complications and care among Omani persons with diabetes - A cross sectional study. *Oman J Ophthalmol.* 2010;3(2):60-5.
 15. WHO, World Bank Group, Unicef. Country profiles- Nurturing Care Framework for Early Childhood Development. 2021.
 16. Wedderburn CJ, Evans C, Yeung S, Gibb DM, Donald KA, Prendergast AJ. Growth and Neurodevelopment of HIV-Exposed Uninfected Children: a Conceptual Framework. *Curr HIV/AIDS Rep.* 2019;16(6):501-13.
 17. Cameroon – Nurturing Care. 2021.
 18. Lucas JE, Richter LM, Daelmans B. Care for Child Development: an intervention in support of responsive caregiving and early child development. *Child Care Health Dev.* 2018;44(1):41-9.
 19. Engle PL, Fernald LC, Alderman H, Behrman J, O'Gara C, Yousafzai A, et al. Strategies for reducing inequalities and improving developmental outcomes for young children in low-income and middle-income countries. *Lancet.* 2011;378(9799):1339-53.
 20. Engle PL, Black MM, Behrman JR, Mello MC de, Gertler PJ, Kapiriri L, et al. Strategies to avoid the loss of developmental potential in more than 200 million children in the developing world. *The Lancet.* 2007;369(9557):229-42.
 21. Naidoo H, Avenant T, Goga A. Completeness of the Road-to-Health Booklet and Road-to-Health Card: Results of cross-sectional surveillance at a provincial tertiary hospital. *South Afr J HIV Med.* 2018;19(1):765.
 22. Chudasama RK, Patel UV, Kadri AM, Mitra A, Thakkar D, Oza J. Evaluation of integrated Child Development Services program in Gujarat, India for the years 2012 to 2015. *Indian J Public Health.* 2016;60(2):124-30.
 23. Grantham-McGregor S, Cheung YB, Cueto S, Glewwe P, Richter L, Strupp B. Developmental potential in the first 5 years for children in developing countries. *Lancet.* 2007;369(9555):60-70.
 24. Samuel FO, Ibadapo EG. Complementary Feeding Practices and Associated Factors Among Nursing Mothers in Southwestern Nigeria. *Int J MCH AIDS.* 2020;9(2):223-31.
 25. Saaka M, Wemakor A, Abizari AR, Aryee P. How well do WHO complementary feeding indicators relate to nutritional status of children aged 6-23 months in rural Northern Ghana? *BMC Public Health.* 2015;15:1157.
 26. Chang SM, Grantham-McGregor SM, Powell CA, Vera-Hernández M, Lopez-Boo F, Baker-Henningham H, et al. Integrating a Parenting Intervention With Routine Primary Health Care: A Cluster Randomized Trial. *Pediatrics.* 2015;136(2):272-80.
 27. Milanzi E, Mwapasa V, Joseph J, Jousset A, Tchereni T, Gunda A, et al. Receipt of infant HIV DNA PCR test results is associated with a reduction in retention of HIV-exposed infants in integrated HIV care and healthcare services: a quantitative sub-study nested within a cluster randomised trial in rural Malawi. *BMC Public Health.* 2020;20(1):1879.
 28. Nkhonjera J, Suwedi-Kapesa LC, Kumwenda B, Nyondo-Mipando AL. Factors Influencing Loss to Follow-up among Human Immunodeficiency Virus Exposed Infants in the Early Infant Diagnosis Program in Phalombe, Malawi. *Glob Pediatr Health.* 2021;8:2333794X211004166.
 29. Blanco AJ, Micek MA, Frenkel LM, Montoya P, Karagianis M, Matunha L, et al. Loss to Follow-Up Among HIV-Exposed Children in an HIV Clinic in Beira, Mozambique. *SAGE Open.* 2015;5(3):2158244015590841.