

An Analysis of the Implementation of Infant Nutritional Feeding Policy: The Case of the Limpopo Province

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Abstract: Nutritional deficiencies account for millions of deaths among children under five years of age globally and are common in poorer regions of the world, such as sub-Saharan Africa. Poorer areas such as the Limpopo province, for example, are the most vulnerable and affected. The consensus from the international and local health governance is that there should be continuous nutritional feeding assessments and interventions, especially for children under five years of age in public health facilities. This study analyses the implementation of the Infant and Young Child Feeding Policy in the Limpopo Province, South Africa. The study also specifically explores the implications of the health workers' response to the policy for the optimisation of the health of children under five years of age in the province. The study adopted a desktop descriptive approach. It focused on nutritional feeding assessments, interventions, and administrative practices at all levels of care in Limpopo province, South Africa, from 2014-2019. The study analysed performance indicators of Vitamin A at 12-59 months' coverage, children under five years' acute malnutrition case fatality rate, and the number of facilities accredited for baby-friendly initiatives. The results revealed flaws and omissions in the implementation of this policy in the health facilities. Close monitoring and decisive actions for the improvement of nutritional assessment, community, and individual nutritional education is recommended to improve the health indicators in the province. There is a need for data ownership to ensure full policy implementation from top management to the operational level to improve the reported poor-performing indicators.

Keywords: Breastfeeding, Feeding policy, Infant, Malnutrition, Nutritional assessment, Vitamin A

1. Introduction

In 2002, the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) developed the Global Strategy for Infant and Young Child Feeding (WHO & UNICEF, 2003). The strategy was intended to guide actions towards improved nutritional status, growth, and development, health, and survival of infants and young children. These are regarded as necessary interventions in tackling nutrition-related morbidity and mortalities. The interventions were directed by best practices focusing on infant feeding, breastfeeding, and reducing child morbidity and mortalities caused and related to a lack of optimal feeding and nutritional practices (WHO & UNICEF, 2003). The strategy was adopted by member states, including the Department of Health (DoH) South Africa (SA) (DoH, 2013). The background and literature review surveyed the prevalence of malnutrition, Vitamin A deficiency, and breastfeeding practices in SA and elsewhere in the developing regions, with a particular focus on African regions. The review also presented literature on the implications of poor feeding and nutritional practices globally and locally. The study's design,

data collection methods and analyses, results, discussions, conclusions and recommendations are also presented.

Malnutrition accounts for 33% of child deaths globally (Ntila, Siwela, Kolanisi, Abdelgadir & Ndhlala, 2017; WHO, 2017). Malnutrition is characterised by under-nutrition (stunting, wasting, underweight) and over-nutrition (overweight and obesity) (WHO, 2017; UNICEF, 2019a). The UNICEF (2019b) reported that nearly 200 million children are stunted, wasted, or both, while 340 million suffer from hidden hunger due to a lack of micronutrients such as vitamins and minerals. In the period between 2000 and 2018, the prevalence of stunting among children under five years (CUFY) increased by 1.4 million in eastern and southern Africa, and 6.5 million in the western and central African regions (UNICEF, 2019b). Conversely, China, another developing country, faced a transition from a decrease of stunting from 16 to 2%, to an increase of overweight and obesity from 2 to 20% among children in the period between 1985 and 2014. In SA, malnutrition is the primary cause of mortalities among CUFY (RSA Annual Report, 2016/17). Growth stunting among CUFY remains

high, despite the government's poverty intervention strategies through increased child support grants (SA Early Childhood Review, 2017; UNICEF 2019a).

In South Africa, the 2016 community survey (Statistics South Africa (Statssa), 2016) reported that 27% of CUFY of age are stunted. Such prevalence of stunting is observed to be higher among the lowest wealth quintile at 36%, and 24% among the middle wealth quintile, and lower among the high wealth quintile. Studies conducted in some parts of Limpopo province, most recently in Lebokgomo (Ntila *et al.*, 2017), reported the 38.8% of children aged seven to eight months being undernourished, and 22.5% were severely underweight in the same age group. Another study by Phoko-Rabodiba, Tambe, Nesamvuni and Mbhenyane (2019) in the same province at Sekhukhune found that 39.6% of CUFY were stunted, with low rates of wasting and under-nutrition, and 20 and 18.8% were overweight and obese, respectively. Reasons behind such incidences include eating low quality and quantity food, unemployment, and uneducated heads of the family who are mostly females or grandmothers living under the poverty line (Ntila *et al.*, 2017; Phoko-Rabodiba *et al.*, 2019).

South Africa is battling the triple burden of unemployment, inequality, and poverty (Limpopo Provincial Treasury, 2019). Despite the various measures to redress the inequity and social ills of the past, it is distressing that 65% of young children live in households that have per capita incomes below the poverty line (Hall, Sambu, Almeleh, Mabaso, Giese & Proudlock, 2019). The majority of these households are female-headed, thereby widening inequality and poverty. The poverty implications are that such families cannot afford to buy nutritious meals, leading to inadequate dietary intake, resulting in malnutrition among children (Devereux & Waidler, 2017; FAO, IPAD, UNICEF, WFP & WHO, 2019). Such prevalence of nutritional morbidities requires careful monitoring and prompt interventions.

Nutritional assessments and interventions are closely associated with CUFY of age's development (FAO *et al.*, 2019). According to UNICEF (2019b), 340 million CUFY suffer from a deficiency of essential micronutrients such as vitamins and minerals, putting children at risk of infection, poor health, and possible death. Nutritional support is among the five domains required in monitoring the progress of early development among children under six years of age (Hall *et al.*, 2019). In the current global

economic development state, for most families and communities, including those living in Limpopo, there is an undeniable transition of nutritional status of both under and over-nutrition (FAO *et al.*, 2019; Modjadji & Madiba, 2019). A study conducted across 16 villages in the north-west of Polokwane, Limpopo (Modjadji & Madiba, 2019) reported high rates of mild-acute malnutrition among children aged between six and nine years of age (29%). This is concerning because this is just one year from the under five years' age group growth monitoring transition, reflecting incidences of perpetual malnutrition within the province.

The prevention of Vitamin A deficiency plays a significant role in the prevention of morbidities such as night blindness, measles, and diarrhoea among children (Ntila *et al.*, 2017). Globally, approximately 44% of children are not adequately fed any fruits or vegetables, which are a great source of such nutrients (UNICEF, 2019b). Moreover, only one in five children aged six to 23 months from the poorest households and rural areas consumed foods from the minimum number of food groups. This prevents them from receiving sufficient nutrition for physical and cognitive growth and development (UNICEF, 2019b). In addition, from six months' children's growth and development require the introduction of foods of animal origin, including meat, fish, eggs, and dairy products. These foods provide essential nutrients and Vitamin A, iron, zinc, and calcium (UNICEF, 2019b), and animal source nutrients are known to support growth, physical activity, and strengthen cognitive performance. This is the age when regular nutritional food supplements such as Vitamin A and zinc should be prioritised at each well-baby clinic visit (EPISA, 2015). In sub-Saharan Africa, at least 72% of children aged six to 59 months in western and central Africa received two doses of Vitamin A, compared to 57% in eastern and southern Africa.

Children under two years of age are nutritionally vulnerable due to poor breastfeeding, a lack of nutrients, and exposure to infections (SA Childhood Review, 2017). Exclusive breastfeeding for six months is among the top three strategies for infant survival with evidence of reducing infant mortalities by 13% (Mosimah, 2015; Mphasha & Skaal, 2019), decreasing the risk of iron-deficiency anaemia, reducing the risk of various types of cancer, and providing psychological benefits. In 1991, the WHO launched the Baby-Friendly Hospital Initiative (BFHI), now Mother-baby friendly Initiative (MBFI)

(Mgolozeli, Shilubane & Khoza, 2019), to ensure the protection, promotion, and support of breastfeeding in health facilities (UNICEF & WHO, 2017). Despite the fact the SA is declared a breastfeeding country, the 2017 Health Review reported that only one in four children are reported to be breastfed (Hall *et al.*, 2019). In Limpopo, only half of all children younger than four months are exclusively breastfed. This exposes children to possible infections leading to mortalities. Moreover, the UNICEF (2019a) recommended that the first two years' of an infant's life is crucial for promoting growth and development.

The Road to Health Booklet (RTHB) is a vital tool to assess, diagnose, record, monitor, and refer growth and development, stunting, and child-related health occurrences by healthcare workers (HCWs) (Du Toit, London, de Keukelaere, Reagon, Paremoer, Rizvi, Lake & Heap, 2018). Contact with HCWs presents an opportunity for infant feeding counselling for both healthy and sick children (Nsiah-Asamoah, Pereko & Intiful, 2019; UNICEF, 2019b). It is worrisome that despite the inclusion of this aspect on the RTHB, several studies have reported non-compliance and inconsistencies by HCW in empowering parents/guardians during clinic visits to obtain further doses of Vitamin A supplements and perform growth monitoring (Feleke, Adole & Bezabih, 2017; Mudau & Human, 2017). The inclusion of young infant feeding counselling by HCW at any contact with mothers/guardians has long been identified as a fitting strategy to address global feeding and under-nutrition challenges (Mosimah, 2015; Nsiah-Asamoah *et al.*, 2019; UNICEF & WHO, 2017).

Nationally and internationally, nutritional and feeding options, growth and development assessments are reported through the Health Information System (HIS) for accurate and prompt communication across the health spectrum. The HIS has been introduced to improve service provision and cost containment across the health sector. In SA, the District Health Information System (DHIS) was established in 1996 to merge data collected from the facilities to the national database to monitor health service delivery across all the facilities (RSA, National Department of Health, 2011; Nicol, Bradshaw, Uwimana-Nicol, 2017). This was to ensure easy access to data for analysis, and improved planning and services from local facilities at the provincial and national level. Accordingly, data collected from various health facilities must be interpreted and acted upon to improve the health outcomes of citizens. This will

promote a drive towards the achievement of the identified indicators towards SDGs and improve the quality of services and lives (Harries, Zachariah & Maher, 2013).

The DHIS reports on important Health Service Coverage Indicators (HSCI) (WHO, 2011) and data sets related to targeted priority programmes to achieve national goals and objectives. Malnutrition fatality incidences, Vitamin A deficiency, and breastfeeding are among such indicators. Moreover, the HSCI has been developed to track and monitor health service interventions provided to those population groups who need them most. This includes reproductive-health services; the provision of skilled care to women during pregnancy and childbirth; immunisation to prevent common childhood infections; Vitamin A supplementation in children; and the prevention and treatment of disease in children, adolescents, and adults, among others. In SA, the provision of Vitamin A for CUFY of age is included in the expanded programme on immunisation (EPI) (EPISA, 2015). This paper was driven by the statement that, "inappropriate feeding practices; sub-optimal or no breastfeeding and inadequate complementary feeding, remain the greatest threat to child health and survival" (DoH, 2013:5).

2. Primary Aim and Specific Objectives

The aim of this study was to analyse the implementation of an infant nutritional feeding policy in Limpopo province, SA. The primary objective was to analyse the implementation of the Infant and Young Child Feeding Policy in the Limpopo Province.

2.1 Specific Objectives

The specific objectives of the study were:

- To assess the level of Vitamin A supplementation among CUFY of age in the Limpopo province.
- To analyse the implementation of breastfeeding practices among CUFY of age in the Limpopo province.
- To analyse the level of malnutrition fatality cases among CUFY of age in the Limpopo province.
- Analyse implications of the policy's implementation concerning the attainment of optimal health for infants in the Limpopo province.

2.2 Research Questions

The paper sought to answer the question: How is the Infant and Young Child Feeding Policy implemented in the Limpopo province? This study was guided by the following research questions:

- What is the level of Vitamin A supplementation among CUFY in the Limpopo province?
- What is the level of implementing breastfeeding practices among CUFY in the Limpopo province?
- What is the rate of malnutrition fatality cases among CUFY in the Limpopo province?
- What are the implications of implementing the Infant and Young Child Feeding Policy towards the attainment of optimal health of CUFY in the Limpopo province?

3. Presentation of the Study Area, Study Design, and Methods

This section presents the description of the study area, research design, and methods used in the study.

3.1 Description of the Study Area

SA is divided into nine provinces, of which Limpopo is one (Ntila *et al.*, 2017). Limpopo is regarded as one of the poorest provinces after the Eastern Cape and KwaZulu-Natal (Statssa, 2016). According to the 2019 mid-year demographic survey, the province's population is more than 5.9 million, of which 33.3% is children under 15 years of age (Statssa, 2019). The survey reported that infant mortality was at 28.5%, which is an increase of 1.1 from 2005. Economically, the province is faced with unemployment, inequality and poverty (Limpopo Provincial Treasury, 2019). The province is divided into five administrative districts (Vhembe, Capricorn, Mopani, Greater Sekhukhune and Waterberg), and the population is largely distributed to the rural areas with an urbanisation rate of at least 20%. On a positive note, there are 81% formal dwellings, with 92.2% electrical supply.

3.2 Research Design

The study used a quantitative, retrospective, descriptive document analysis design to assess the identified performance indicators from the Limpopo

Department of Health annual reports 2014 to 2019 (Limpopo DoH, 2013/2014-2015/2019).

3.3 Data Collection, Methods and Instruments

Desktop data collection was conducted through different search engines and websites, including research gate, government websites, and research books. Keywords, such as 'Limpopo health annual reports', 'national health reports', 'breastfeeding practices in Limpopo', 'Limpopo Vitamin A reports', 'Vitamin A deficiencies in Limpopo', 'Limpopo morbidity and mortality rates', 'utilisation of road to health booklet in Limpopo', 'malnutrition in Limpopo', 'nutritional deficiency in Limpopo', 'breastfeeding' and 'Infant and Young Child Feeding Policy' assisted in locating sources. Two annual reports were identified and screened (2013/2014 and 2015/2019) for the identified indicators. The data sets and annual reports that focused on other forms of deficiencies and ages beyond five years were excluded. The results were analysed guided by the systems theory and the 1999 UNICEF conceptual framework on malnutrition (UNICEF, 2013). The systems theory was relevant because the DoH does not exist in a vacuum but is interrelated to other systems, such as the family; in this case, the mother plays a major role in achieving these indicators, along with HCWs, and the community at large (Chikere & Nwoka, 2015). The framework on malnutrition was applicable because it connects the myriad relationships in the provision of a nutritionally enabling environment wherein women are empowered with knowledge (UNICEF, 2013). This environment needs administrative support by the countries' leadership and commitment in ensuring accessible and appropriate maternal and child-care services, among others, that result in a lower disease burden among CUFY (FOA *et al.*, 2019). Moreover, based on the objectives of the DHIS, continuous monitoring of performance indicators is regarded as important to ensure the use of data to consciously develop measures to improve public health where shortcomings are identified.

3.4 Data Analysis

Data were manually analysed. The annual statistics of individual performance indicators Vitamin A, CUFY of age, severe acute malnutrition case fatality rates, and number of facilities accredited for baby-friendly initiatives, were respectively compared to check for either a decrease or increase within the province.

4. Results and Discussion

4.1 The Results

The systemic review of Limpopo's annual reports (2014-2019) reveals the implementation weakness of the Infant and Young Child Feeding Policy; in particular, Vitamin A, breastfeeding, and the state of malnutrition (Table 1). The provision of Vitamin A supplements for CUFY has been lagging behind at an average performance of 45.5% over the last five years. In essence, the province has never reached the set target of 60%, presumably due to supplement stock-outs, and mothers' failure to routinely bring their children for these supplements. However, the report is self-contradicting because the same report indicated high measles immunisation indicators, which are given simultaneously with Vitamin A supplements according to the immunisation programme (EPISA, 2015).

Nurses' failure to implement opportunistic care-giving when mothers present babies for routine services hampers the efforts to reduce neonatal morbidity and mortality, and improve health outcomes for CUFY in the province. The COVID-19 pandemic may lead to worsened indicators – the UNICEF (2020b) reported vaccinations reduced from 75% to 55% in SA (UNICEF, 2020b). This will perpetuate health inequality, poverty and class differences in SA. For example, Phooko-Rabodiba *et al.* (2019) investigated socioeconomic determinants influencing the nutritional status of children in the Sekhukhune area at Makhudutamaga local municipality, and determined the depths of the continued malnutrition problems: 39% of CUFY of age

had stunted growth, 2.2% were overweight, and 8.9% were obese.

Poor feeding practices are reported as the main cause of acute malnutrition case fatality rates among CUFY. Furthermore, the 2015/16 report provides the highest mortality numbers (11.6%), which is concerning. Facility breastfeeding practices were last included in the 2013/14 report. The results further indicate inconsistencies in the accreditation of health facilities as 'baby-friendly', as only 38 facilities in the province are accredited; there was no accreditation of facilities for more than five years.

4.2 Discussion

The findings indicate inconsistent implementation of the policy among health providers. The poor implementation of the policy undermines several efforts from the government to improve quality of life, especially among historically disadvantaged groups like those in Limpopo province. The reasons for such failures are drug unavailability and parental factors, including not adhering to follow-up dates. This is concerning, especially among children between six and 23 months; an age which is the pinnacle of growth and cognitive development (UNICEF, 2019b). Parental failure to adhere to follow-up Vitamin A doses suggests poor information is given at well-baby visits, which might improve healthcare-seeking behaviour. Educating mothers is vital because women's health determines that of their children, and goes towards breaking the intergenerational cycle of malnutrition and poverty (UNICEF, 2019a). The provincial year plan concurs with study findings (Mudau & Human, 2017) on poor

Table 1: Vitamin A, Breastfeeding, Malnutrition Indicators

Performance Indicator	Actual Achievement 2013/14	Actual Achievement 2015/16	Actual Achievement 2016/2017	Actual Achievement 2017/2018	Planned Target 2018/19	Actual Achievement 2018/19	Deviation from planned target to Actual Achievement	Comment on deviations
Vitamin A 12-59 months coverage	33.8%	50%	54.6%	47.2%	51%	42%	(9)	Mother not bringing children for well-baby clinic
CUFY severe acute malnutrition case fatality rate	4.2/1000	11.6%	8.3% (178 of 2141)	5% (102/2021)	8% (171/2141)	6.3% (125/1 987)	1.7%	Poor feeding practices
Number of facilities accredited for baby-friendly initiatives	38	No information	No information	No information	No information	No information	No information	No information

Source: Limpopo 2013/2014 and 2018/19 Annual report

recordings on Vitamin A supplementation, breastfeeding practices and growth monitoring activities for CUFY of age in the six clinics in Makhado, Limpopo. According to Khan (2016), capacitating the frontline workers is also vital to ensure successful policy and goal attainment.

The issue of Vitamin A stock-outs for five years should have been noticed by the health leadership and management in the supply chain, from the pharmacy depot to the district managers. This finding reflects that monthly and quarterly reports are not acted upon based on the identified weaknesses in ensuring the achievement of set targets. Instead, parents are blamed for things beyond their control (drug availability). According to UNICEF (2019b), poor nutritional supply makes children victims who will carry the lifetime burden caused by health and socioeconomic complications. The non-reduction of acute malnutrition fatality cases from 2015/16 up to 2018/19 defeats the vision of SDG goals for no poverty (G1), zero hunger (G2), good health and wellbeing (G3), gender equality (5G), and reduced inequality (G10) (UN, 2017).

In the case of South Africa, particularly the Limpopo province, non-compliance with policy implementation enforces the vicious cycle of poverty and food insecurity. It has also been determined that malnutrition conditions are inherent even in the midst of the SA government's efforts, such as the introduction of child support grants (Devereux & Waidler, 2017), and feeding schemes in schools (Phooko-Rabodiba *et al.*, 2019). The inefficient implementation of the breastfeeding policy in promoting MBFI impacts community empowerment on infant feeding choices and practices. Without such efforts to assess and accredit facilities as breastfeeding-friendly, measures to cultivate and educate communities on exclusive breastfeeding are defeated. As noted above, exclusive breastfeeding is regarded as vital in preventing infections and promoting child survival (UNICEF, 2019b). Sadly, the poor accreditation of the health facilities for MBFI confirms the findings of a study conducted in Vhembe Districts where mothers showed poor breastfeeding practices despite their knowledge of its benefits (Motadi, Malise & Mushaphi, 2019).

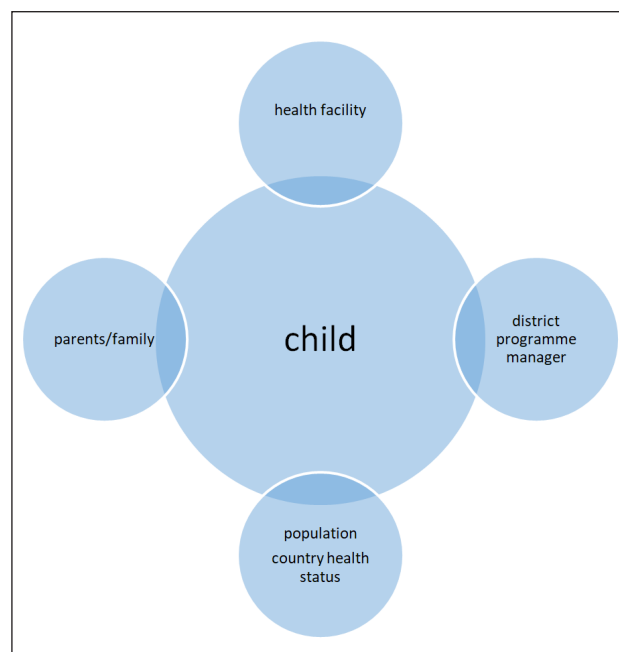
5. Conclusion and Recommendations

The results reveal unconvincing political will among health leaders to advance and protect the right to

health and quality of life among CUFY of age. It is therefore recommended that awareness is raised among senior managers within the DoH to understand the importance of supporting and monitoring the Infant and Young Child Feeding Policy. Secondly, there must be awareness among HCWs, especially nurses who are at the frontline, to promote child health and prevent unwanted future complications for children as the future of the country. The promotion of health and equity for all children cannot be an isolated responsibility but requires collaborative efforts from political leaders, HCWs across the spectrum, and all community leaders. It is also vital that nutritional assessments and feeding education should continuously be provided for parents/guardians at every contact or visit to achieve optimal health among children.

There is a need for vigorous programmes to ensure contextual community education that addresses local gaps and needs. The most important is community-based research aimed at empowering communities on the intergenerational effects of malnutrition at individual, community, and population levels. A study on the level of understanding among HCWs on the impact of policy non-compliance is necessary. This paper proposes a paradigm shift across the eco-systems in which the child grows and develops, such as the one presented in Figure 1 below.

Figure 1: Eco-Systems in which the Child Grows



Source: Author

References

- Chikere, C. & Nwoka, J. 2015. The Systems Theory of Management in Modern Day Organizations – A Study of Aldgate Congress Resort. *International Journal of Scientific and Research Publications*, 5(9):1-7.
- Devereux, S. & Waidler, J. 2017. "Why does malnutrition persist in South Africa despite social grants?" Food Security SA Working Paper Series No.001. DST-NRF Centre of Excellence in Food Security, South Africa.
- Du Toit, M., London, L., de Keukelaere, A., Reagon, G., Paremoer, L., Rizvi, Z., Lake, L. & Heap, M. 2018. Health rights, issues and recommendations Joint Submission of Health Stakeholders in South Africa to the United Nations Committee on Economic, Social and Cultural Rights, 64th Session, 24 September – 12 October 2018.
- FAO, IFAD, UNICEF, WFP and WHO. 2019. The State of Food Security and Nutrition in the World 2019. Safeguarding against economic slowdowns and downturns. Rome, FAO. Licence: CC BY-NC-SA 3.0 IGO.
- Feleke, F.W., Adole A.A. & Bezabih A.M. 2017. Utilization of growth monitoring and promotion services and associated factors among under two years of age children in Southern Ethiopia. *PLoS ONE*, 12(5):e0177502. Available at: <https://doi.org/10.1371/>
- Hall, K., Sambu, W., Almeleh, C., Mabaso, K., Giese, S. & Proudlock, P. 2019. *South African Early Childhood Review*. Cape Town: Children's Institute, University of Cape Town and Ilifa Labantwana.
- Harries, A.D., Zachariah, R. & Maher, D. 2013. The power of data: using routinely collected data to improve public health programmes and patient outcomes in low- and middle-income countries. *Trop Med Int Health*, 18(9):1154-1156.
- Khan, A. 2016. Policy implementation: some aspects and issues. *Journal of Community Positive Practices*, XVI(3):3-12. ISSN Print: 1582-8344; Electronic: 2247-6571.
- Limpopo Department of Health. 2013/14. Annual Report for 2013/14 Financial Year Vote 7.
- Limpopo Department of Health. 2016/17. Annual Report for 2016/17 Financial Year Vote 7.
- Limpopo Department of Health. 2015/19. Annual Report for 2018/19 Financial Year Vote 7.
- Limpopo Provincial Treasury. 2019. The 2019 Socio-Economic Review and Outlook. Limpopo: Polokwane.
- Modjadji, P. & Madiba, S. 2019. The double burden of malnutrition in a rural health and demographic surveillance system site in South Africa: A study of primary schoolchildren and their mothers. *BMC Public Health*, 19. 10.1186/s12889-019-7412-y.
- Mgolozeli, S.E., Shilubane, H.N. & Khoza, L.B. 2019. 'Nurses' attitudes towards the implementation of the Mother-Baby Friendly Initiative in selected primary healthcare facilities at Makhuduthamaga Municipality, Limpopo province', *Curationis*, 42(1):a1929. Available at: <https://doi.org/10.4102/curationis.v42i1.1929>.
- Motadi, S., Malise, A.T. & Mushaphi, L.F. 2019. Breastfeeding knowledge and practices among mothers of children younger than 2 years from a rural area in the Limpopo province, South Africa. *S Afr J Child Health*, 13(3):115-119. Available at: <https://doi.org/10.7196/SAJCH.2019.v13i3.1570>.
- Mosimah, C.I. 2015. Impact of the global strategy for infant and young child feeding on nutrition and child survival indicators as illustrated by the world breastfeeding trends initiative tool. Wright State University: Dayton, Ohio.
- Mphasha, M.H. & Skaal, L. 2019. Infant and Young Child Feeding Policy: do primary health care nurses adhere to the HIV breastfeeding recommendations in Limpopo province? *South African Journal of Clinical Nutrition*, 32(3):70-75. DOI:10.1080/16070658.2018.1457863.
- Mudau, T.S. & Human, S.P. 2017. Administrative and managerial patterns on the Road to Health Chart (RtHC) in the Makhado municipality clinics, Vhembe District, Limpopo Province of South Africa. *International Journal of Research in Business and Social Science*, (2147-4478), 6:35-50.
- Nicol, E., Bradshaw, D., Uwimana-Nicol, J. & Dudley, L. 2017. Perceptions about data-informed decisions: an assessment of information-use in high HIV-prevalence settings in South Africa. *BMC Health Serv Res*, 17:765. Available at: <https://doi.org/10.1186/s12913-017-2641-1>.
- Nsiah-Asamoah, C., Pereko, K.K.A. & Intiful, F.D. 2019. Nutritional counselling interactions between health workers and caregivers of children under two years: observations at selected child welfare clinics in Ghana. *BMC Health Services Research*. 19. 10.1186/s12913-019-4692-y.
- Ntla, S., Siwela, M., Kolanisi, U., Abdelgadir, H. & Ndhlala, A. 2017. An Assessment of the Food and Nutrition Security Status of Weaned 7-12 Months Old Children in Rural and Peri-Urban Communities of Gauteng and Limpopo Provinces, South Africa. *International Journal of Environmental Research and Public Health*, 14(9):1004. MDPI AG.
- Phooko-Rabodiba, D.A., Tambe, B.A., Nesamvuni, C.N. & Mbhenyane, X.G. 2019. Socioeconomic Determinants Influencing Nutritional Status of Children in Sekhukhune District of Limpopo Province in South Africa. *J Nutri Health*, 5(1):1-7.
- Republic of South Africa. National Department of Health. 2011. *DHIS standard operating procedures and guidelines*. Pretoria: Department of Health.
- Republic of South Africa. National Department of Health. 2015. The Expanded Programme on Immunisation (EPI). 4th edition. The vaccinator's manual. Pretoria: Government Printers.
- Republic of South Africa. Department of Health. 2013. *Infant and young child feeding policy*. Pretoria: Government Printers.
- Republic of South Africa. Department of Statistics South Africa. 2016. Community survey. Pretoria. Statistics South Africa.
- Republic of South Africa. Department of Statistics South Africa. 2019. Mid-year population estimates 2019. Pretoria. Statistics South Africa.

- South African Early Childhood Review*. 2017. Ilifa Labantwana. Cape Town.
- United Nations. 2017. *Sustainable Development Goals Report*. New York.
- UNICEF & WHO. 2017. *Compendium of case studies of the Baby-friendly Hospital Initiative*. UNICEF. USA.
- UNICEF. 2019a. Infant and Young Child Feeding. In: *UNICEF Data: Monitoring the Situation of Children and Women* New York, USA. Available at: <https://data.unicef.org/topic/nutrition/infant-and-young-child-feeding>.
- UNICEF. 2019b. *The State of the World's Children 2019*. Children, Food and Nutrition: Growing well in a changing world. UNICEF, New York.
- UNICEF. 2020b. South Africa COVID19 Situation Report No 5 - 30 June 2020.
- WHO & UNICEF. 2003. *Global strategy for infant and young child feeding*. Geneva: Switzerland.
- WHO. 2011. *Guideline: Vitamin A supplementation in infants and children 6-59 months of age*. Geneva, World Health Organization.
- WHO. 2017. *Double burden of malnutrition policy brief*. Geneva: World Health Organization.