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REVIEW

Aligning theory with practice: Child health programmes in Malaysia, a Narrative Review

Norain Ahmad, Rosnah Sutan

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Authors:

Rosnah Sutan
(Corresponding author)
MD (USM), MPH (UM), PhD (University of Aberdeen)
Public Health Physician (Family Health), Community Health Department, Universiti Kebangsaan Malaysia Medical Centre, Bandar Tun Razak, Cheras, Kuala Lumpur Malaysia.
Email: rosnah_sutan@yahoo.com or rosnah.sutan@ppukm.ukm.edu.my or rosnah.sutan@ukm.edu.my

Norain Ahmad
MD (CSMU), MPH, DrPH (UKM)
Bachok Health District Office, Bachok, Kelantan, Malaysia.

Abstract

Introduction: The Malaysian healthcare system, particularly for maternal and child health, has been well recognised to provide high-quality services and be at par with systems in other developed countries. Current health programmes and technological advancements effectively detect vulnerable groups of children, such as small-for-gestational-age (SGA) infants, antenatally. However, the postnatal care for SGA infants is not clearly evaluated, as this group of children is mostly classified as healthy in many medical contexts, especially in primary care settings. Available health programmes and healthcare service delivery must be continuously evaluated by implementing beneficial and relevant evidence-based theories.

Methods: Articles, reports and guidelines used in providing mother and child health services in Malaysia published since 2000 were reviewed.

Results: There was no specific monitoring strategy used for SGA infants without critical health issues in early childhood, as they were commonly treated as healthy infants. Several challenges in aligning theory with the current practice of healthcare service delivery and recommendations for dealing with such challenges were identified.

Conclusion: The alignment of theory with the current practice of service delivery should be tailored to the needs and demands parallel to the dynamic change in populations in the urbanisation era.

Introduction

Child health, commonly assessed using mortality rates or nutritional statistics, is one of the most crucial indicators in gauging a country's progress. To improve the nutritional status of mothers, infants and young children, the World Health Organization (WHO) has identified several targets to be achieved, as listed in the Global Targets 2025. The endorsed targets requiring crucial areas of action include 50% reduction in the rate of anaemia among women of reproductive age, 30% reduction in the number of low birth weight cases, 40% reduction in the number of children aged under 5 years who are stunted, 5% reduction in the rate of wasting, 0% increment in the rate of childhood overweight and at least 50% increase in the rate of exclusive breastfeeding until the age of 6 months.[1] In the local scenario, Malaysia, as one of the developing countries with recognised high-quality health services, is currently at par with other developed countries in the achievement of infant and under-five mortality rates. However, the country is still struggling towards achieving the global nutrition target via comprehensive health programmes.[2,3]

In the obstetrics and gynaecology setting, clinically small-for-gestational-age (SGA) infants are well known to be at a higher risk and present with numerous adverse health outcomes. These infants commonly experience a variety of health issues, including hypothermia or hypoglycaemia after birth.[4] During childhood, these infants face a higher risk of stunting or underweight. Past studies have reported that between 10% and 15% of SGA infants failed to achieve their optimum adult height, which may lead to future metabolic diseases.[5] Therefore, prevention of SGA birth and careful monitoring of SGA infants' growth are identified as an important strategy in child and public health. Currently, there is an improvement in perinatal surveillance of SGA through the introduction of the INTERGROWTH-21 project and a customised growth chart, which promote early detection of SGA and subsequent improvement in postnatal health outcomes.[6] In addition, the global introduction of the First 1000 Days of Nutrition programme aims to tackle childhood malnutrition while promoting adult health.[7] However, despite all efforts and programmes introduced, health literacy and socioeconomic status are pivotal factors that influence the effectiveness of these programmes.[6,8] Further, healthcare monitoring of SGA infants during the postnatal period is not clearly evaluated, as this group of children is mostly classified as

healthy in many medical contexts, especially in primary care settings in Malaysia. It is questionable whether these children receive accurate health services based on their needs and medical importance, as they are at risk of being malnourished in childhood and of developing metabolic diseases in adulthood.

In the current era, it is common for most mothers to be working, which exerts an additional burden to them since more health appointments will be needed for SGA infants owing to their health condition. Past literature has revealed that mothers of extremely small infants placed under neonatal intensive care were noted to face more stress than mothers of normal-birth-weight infants.[9] The working commitment of mothers was identified as an additional stressor especially for first-time mothers. Considering these facts and circumstances, delivering health services has become more challenging because of the increasing population that must be catered to, particularly in promoting cooperation with patients, especially in terms of adherence to appointments.

Understanding the significance of theories necessitates new standards for research of health services.[10] Revisiting current child health programmes and ensuring that such programmes are tailored to evidence-based theories are important. Therefore, this study aims to provide an overview of child development theories and describe the manner by which current child health services and programmes are tailored to theories and the challenges that may arise in aligning the discussed theories with the practice of monitoring the growth and development of SGA infants.

Methods

We searched for relevant articles in accordance with the following criteria: 1) theories in human development and child growth and 2) Malaysian reports and guidelines related to maternal and child health programmes via Google Scholar and PubMed. The following keywords were used in the search: 1) human development theory, 2) infant growth theory, 3) bioecological theory, 4) child health programme and 5) small for gestational age monitoring. Malaysian reports and guidelines were retrieved from the Family Health Development Division website as the main online source for child health references. Two authors who were experts in child health programmes, one of whom was a maternal and child health officer, and another was a maternal and child health lecturer, discussed prominent theories in human growth and development and their implementation in current health programmes, especially in monitoring SGA infants. Both authors agreed in the selection of the articles, discussed the theories underpinning child development and summarised the main flow of child health programmes under the Malaysian Ministry of Health based on the literature searched. Insights into aligning theory with current practice are important; herein, challenges in and recommendations for health service delivery based on the theories discussed were described.

Results and discussion

Theories on child growth and development

Ideally, theories provide substantial information in understanding a process or a phenomenon. Thus, having adequate knowledge of relevant theories and implementing them into the current system of practice may help health authorities in planning, monitoring and evaluating health programmes. The most well-known and widely used theory in family and human development is the Bronfenbrenner theory. Subsequently, in 2000, the calming theory had been introduced and implemented in ensuring premature infant survival. A detailed discussion of these two theories is provided hereafter.

Bronfenbrenner theory

The founder of the Bronfenbrenner theory, Urie Bronfenbrenner, first introduced the theory of ecology in 1979, which explains how the environment can influence the growth and developmental process of children.[11] Later, in 2005, Bronfenbrenner further elaborated on this theory and revised it as the bioecological theory by focusing on the levels closest to infants or children.[12] Moreover, the revised version emphasises that the biological factors that play a pivotal role in the growth and development of children are age, sex and physical factors at birth. **Figure 1** illustrates the components and different layers of the bioecological theory, which will be discussed hereafter.

The bioecological theory explains how the environment interacts and influences individual growth and development. As shown in **Figure 1**, in addition to the innermost layer, which represents the biological factors among humans, five other layers are identified to make up children's environments. These system layers include the following: 1)

microsystem: the innermost layer representing the immediate environment (e.g. family, peer and neighbourhood play area including health services); 2) mesosystem: the second layer consisting of a group of people or institution, such as school, home environment and community; 3) exosystem consisting of national policy, social welfare services and mass media, which indirectly affect the development of children; 4) macrosystem: the outer layer shaped by societal and national values and 5) chronosystem: the outermost layer, which relates to era and time event differences.[11]

Since the microsystem involves direct interactions among humans, such as parents, siblings and other family members, a close relationship and harmonious family will promote healthy growth and development. Health services and programmes are also important components of the microsystem that affect child development. Meanwhile, the mesosystem involves factors that interact with the inner system and translate an effect on children. However, the outer system indirectly affects child development; for example, some cultures place importance on baby boys instead of baby girls, or some educational systems focus only on academics without considering children's abilities. Lastly, the chronosystem, which is related to differences in the era, can be seen in scenarios such as babies being exposed to gadgets as early as 6 months of age and the availability of fast food to children in the recent era. Therefore, an in-depth understanding of the elements of each layer, how they interact, and which elements can be controlled is important in gauging children's growth and development.

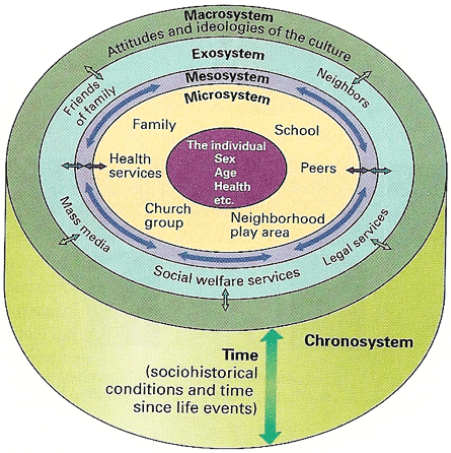

Figure 1. Bronfenbrenner theory: ecological theory of child development.[11]

Calming theory

As shown in **Figure 2**, the calming theory explains the relationship between the biological nature of infants with the closest person, their mother, at the beginning of birth, which affects the growth and development of the baby. According to this theory, good growth and development are influenced not only by the self-regulation of infants but also by their interaction with the nearest ecosystem, which is their mother by co-regulation.[12]

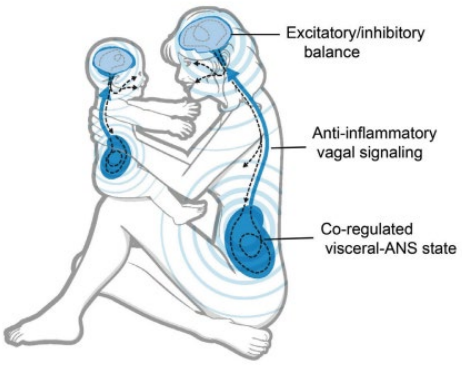

Figure 2. Co-regulated release of oxytocin as the main principle in the calming theory.[12]

The after-birth process is a challenging phase for both infants and mothers. As discussed earlier, the calming theory mainly suggests that a calming session or an interaction of a mother and an infant under any circumstances will promote calmness to both.[12] Since infants are well known to be biologically and emotionally connected to their mother, a chronic disconnection of this co-regulation will further cause stress to mothers and infants, leading to suffering and illness. Therefore, mother–infant co-regulation is important and can be achieved via regular physical or social contact. This process is beneficial not only for the growth and development of infants but also for the emotional health and well-being of mothers.

The overlapping of the bioecological and calming theories is demonstrated in **Figure 3(a)** and **(b)**. The bioecological theory emphasises the main factors, including the biological factors that influence the growth and development of children, while the calming theory emphasises self-regulation in infants and co-regulation of the infant–mother relationship, which can influence the health and growth of infants. Based on the above discussions, focusing on the proximal and nearest layers (mother–infant–mother) is crucial especially in delivering health services.

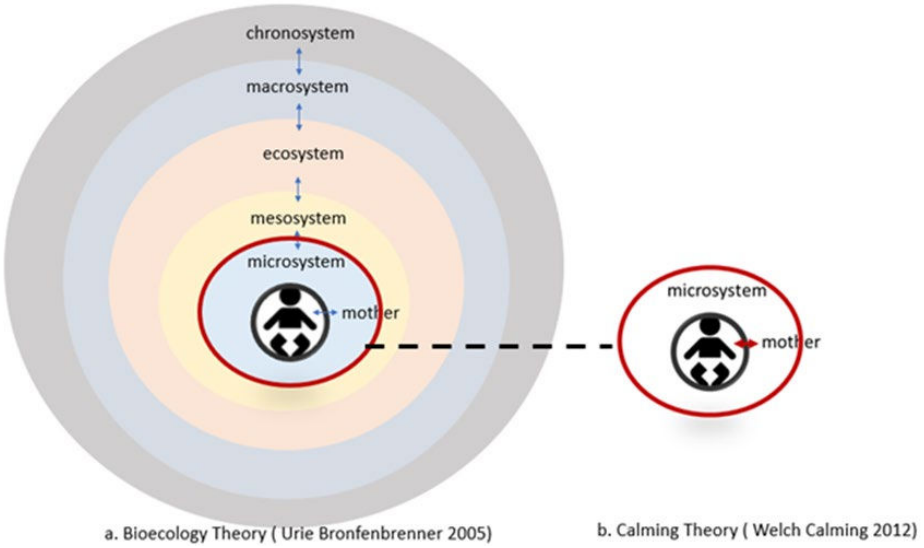

Figure 3. Combination of the bioecological theory (a[11]) and calming theory (b[12]).

Aligning theories in Malaysian maternal and child healthcare

The Malaysian maternal and child healthcare system is one of the most prominent achievements in the country's health status. The implementation of maternal and child healthcare was established in the post-independent era and has been improvised over the years.[13,14] The implementation of the programme is not new and is aimed at improvising the health services provided to the population, for example, via the introduction of the First 1000 Days programme.

The First 1000 Days programme is an initiative to cater to maternal and child nutrition as early as the intrauterine life to reduce the risk of developing metabolic diseases in adulthood.[15] It is a global maternal and child health initiative that provides established benefits to the country by reducing the disease burden of non-communicable diseases in the future. Figure 4 shows the mapping of the programme and health service delivery based on infants' phases of life in the Malaysian healthcare setting.

The implementation of the First 1000 Days programme also demands multidisciplinary efforts from maternal, child, nutritional, dental and outpatient health departments or pharmacy services.The programme caters to all phases of an infant's life, beginning from the intrauterine phase up to the first 2 years of life. The current practice in Malaysia requires all pregnant women to have routine antenatal follow-ups in primary care settings either at government or private facilities. Routine monitoring of maternal and foetal health comprises blood pressure measurement, urine test, body weight measurement, haemoglobin level check and physical examination (e.g. suprapubic fundal height measurement) for mothers and ultrasound for foetuses.[16] Women with morbidity factors will need further care during their pregnancy, and thus, delivery will be referred to obstetric clinics at tertiary centres for further follow-ups. The foetal growth chart used in government facilities in Malaysia is based on population and ethnicity.[17]

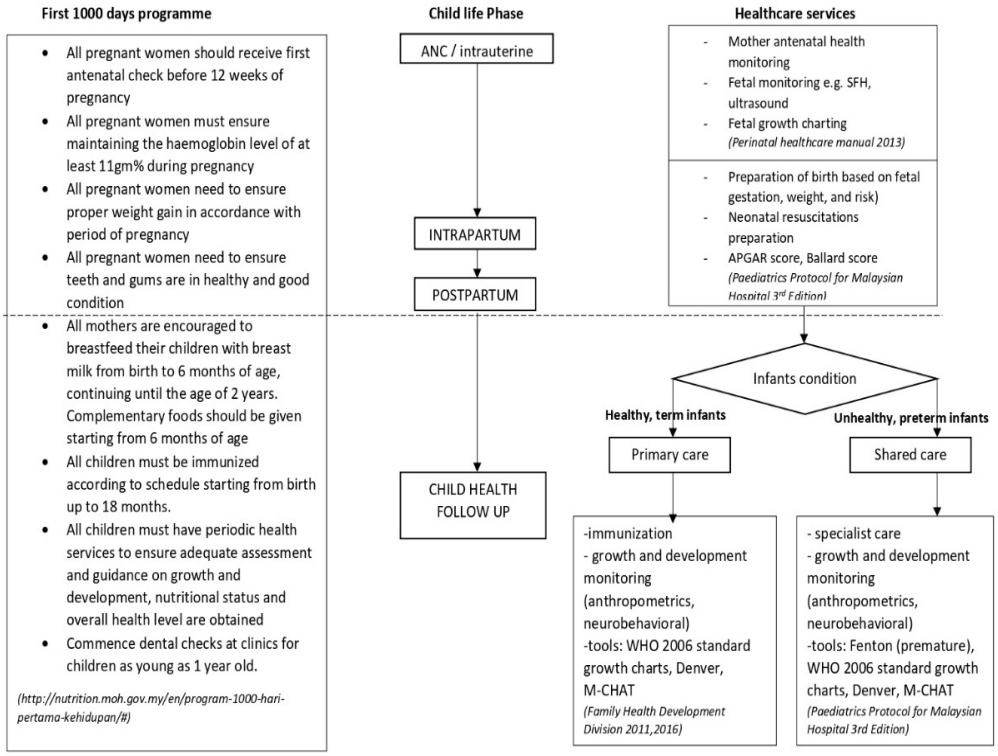

Figure 4. First 1000 Days of Life programme mapping in relation to Malaysian maternal and child healthcare services.[15,16,18,21]

Delivery is prepared after conducting a thorough assessment, including weighing of both foetal and maternal risks. Several factors determine the need for proper neonatal resuscitation equipment, such as gestational age, estimated foetal weight and development of foetal distress. Upon delivery, postnatal examinations such as APGAR and Ballard scoring are routinely used to evaluate infant maturity. In this stage, infants presenting with poor condition, low APGAR score, very low birth weight, prematurity or SGA in distress will be admitted to the neonatal intensive care unit (NICU) for further management.[18] Such a situation affects mothers significantly owing to separation anxiety from their newborn.[19] In some emergency cases, mothers are unable to see their newborn after delivery, as the newborn is immediately sent to the NICU for health support. The longer the separation duration, the greater the effect on the mother.[20] Therefore, it is crucial to ensure that mothers are well informed regarding their infants' well-being and to provide an opportunity for them to be able to see their infants as soon as possible. Once discharged from the healthcare facility, infants will be monitored by primary care health staff identified as midwives, who will cover the care for immunisation, growth and development.[21] Infants with complex health issues or born prematurely will have special monitoring appointments with a paediatrician at a tertiary care facility, specifically in specialist clinics. Meanwhile, most SGA infants who are healthy will be seen only at primary care clinics through a common flow of health monitoring. Questions regarding the standard of care and whether SGA infants will have special nutritional and growth assessments or will be referred to specialists only once their development does not progress as expected will be asked.

With regard to infant growth, the WHO standard growth chart 2006 is the infamous chart used in monitoring children's growth at the primary care level.[22] If infants have moderate-to-severe prematurity, their growth will be monitored by a paediatrician using the WHO preterm growth chart/Fenton growth chart up to 2 years of corrected age.[23] However, nurses are trained only on using the WHO standard growth chart 2006 during primary care follow-up visits. They also lack the understanding and knowledge in using and interpreting the growth status of infants at this age, which can lead to misleading information given to mothers. This scenario will not only affect mothers' concern and perception but also lead to the lack of confidence and overfeeding of their infants.[24]

Past literature has highlighted that poor physical growth of children is related to poor development of cognitive or neurological function.[25,26] Throughout children's health follow-ups, these factors are monitored for motor development evaluation, and the Modified Checklist for Autism in Toddlers is used for autism screening.[27] Any abnormal finding from the evaluations performed is referred to a family medicine specialist, paediatrician or therapist. Thus, health appointments of these infants are conducted for immunisation or growth monitoring, which may require additional time and cost once they need tertiary care services.

Regarding the current roles of women, it is evident that most women are working; for instance, almost 56% of women in Malaysia are working,[28] and many of them are also mothers. As mentioned in several other studies, a mother is the main person who manages the family, especially the children.[29] This includes managing all needs, such as feeding and providing clothes and day-care. Taking care of an SGA infant, who needs further care and requires multiple appointments in healthcare facilities, may impose an additional burden on the mother. For example, most healthy infants need only a monthly health follow-up, while SGA infants with developmental problems might need a twofold higher frequency of appointments. Therefore, it is important to evaluate the needs of working mothers with SGA infants, especially if they are working. In recent years, Malaysia has implemented the 90-day maternity leave policy in all government sectors, which has helped lighten the burden of mothers. However, this policy is limited only to the first 90 days of infants' life and not during the childhood period.[30]

Challenges and recommendations in aligning theory with practice

Based on the previous discussion on the theories and local practices, the main factors influencing child health and development are vital. Several challenges have been identified in aligning both of these aspects in delivering health services to SGA infants. The elements of practice that will be discussed in-depth include healthcare resources, health literacy and self-accountability of patients, health education and promotion and healthcare collaboration with other agencies.

Healthcare resources

The availability of healthcare resources imposes a great hurdle to mothers, as the process flow of each clinic visit for health monitoring of their infants is quite tedious. As mentioned earlier, infants with growth or developmental problems may need to be examined by multidisciplinary medical personnel, especially SGA infants. The 2019 Health Indicator Report showed that a doctor caters to 530 residents, a nurse to 379 residents and an occupational therapist to 27,562 residents.[31] The ideal WHO-recommended doctor–population ratio is one doctor to every 500 people, and this target is gradually being met in Malaysia. However, in managing SGA infants, nutritionists and therapists are much needed, and the ratio remains low. The limited or the lack of resources greatly disrupts a good and efficient flow of health monitoring of infants who should be seen by these personnel.

Unfortunate outcomes may also occur in emergencies, whereby the lack of staff will result in insufficient time in attending to a patient who might need further attention, especially patients with a history of NICU admission, particularly SGA infants. This circumstance will consequently reduce the quality of care provided and simultaneously affect mothers' emotions.

Health literacy and self-accountability of patients

Another facet of the Malaysian healthcare system that must be emphasised is health literacy and awareness. Managing this is rather complex and has been identified as a challenging aspect of public health. A scoping review on health literacy studies conducted in Malaysia concluded that health literacy among Malaysians ranged from a low to a moderate level either in general health, non-communicable disease or maternal and child health aspects.[32] Furthermore, the existence of various types of fast foods and unregistered supplements has influenced the dietary intake of women and how they feed their children.[33] These add further burden to the healthcare staff, whereby they are required to take care of patients who do not care for their health and present with illness.

The self-accountability on the health status also remains poor. For instance, some women remain oblivious regarding their antenatal health records. Although the records are brought along during follow-ups, women are not aware of the gestational weeks of their pregnancy and the growth of their foetus. Efforts to increase the awareness of self-accountability have been emphasised decades ago. However, awareness is noted to be closely related to the

educational level and socioeconomic status of the population.[34,35] Ultimately, good health literacy and health awareness will lead to better preparation and decision-making by patients, especially for pregnancy and infant care. Therefore, the First 1000 Days programme remains as an important healthcare programme without full attention and acknowledgement from parents, especially the mother.

Health education and promotion

Health education is equally important in ensuring that health information is well disseminated and adapted to practice within the society. With global advancements in technology and social media, health education delivery is not only confined to pamphlets, books and talks in the clinic but also utilise different online platforms of social media, such as YouTube, Facebook and Instagram. However, the achievement or coverage of health-based platforms is not as high as that of other channels, such as entertainment and business, which may be attributed to the unattractive method or content provided.

Therefore, health educators must be equipped with the latest trend of advertising, especially in delivering health messages. Using public figures, such as health ambassadors, might help in spreading health messages across the mass population. Additionally, the empowerment of the community strongly advocates for seeking and obtaining health information from a valid platform. Since the internet provides a vast amount of health information, the community must be fully equipped with the knowledge to selectively differentiate real from fake information.

Owing to the limited number of nutritionists in primary care clinics, providing a specific nutritional advice to mothers of SGA infants may be difficult. Most of the time, only midwives who attend the cases can provide some advice to mothers regarding good food for their infants, but which is not specific to the infants' needs.

Healthcare collaboration with other agencies

In terms of collaboration for healthcare services, the 2020 Sustainable Development Goal Report for Malaysia showed that there were low or reduced levels of partnerships for the goals. A collaborative relationship of multiagency must exist to ensure maternal and child health. For instance, the Ministry of Health itself must establish a strong partnership in the maternal and child healthcare system between primary and tertiary care facilities. As aforementioned, there are some practices in tertiary care wherein midwives in primary care settings face difficulties, such as with the use and interpretation of the premature growth chart for SGA infants. There must be different scopes or managements in these two levels of care; however, to ensure an excellent continuity of care and dissemination of health information, primary care nurses should be further educated and given basic training in specialist paediatric care.

In terms of supporting working women, participation with the Ministry of Women and Labour is crucial. A few policies have been newly implemented in the government sector, such as provision of breastfeeding rooms in the workplace, implementation of the maternity leave policy and 1 hour reduction of the working duration aimed to provide additional support to working mothers.[36] However, there is still a need to address flexible working hours or job scopes to cater to mothers with a sick child, child with special needs or child requiring multiple health appointments.

Strong regulations and policies in the food industry are also important to ensure that good-quality food is available at affordable prices. Extensive marketing and advertisement of fast food increases its intake among children, leading to adult obesity. Meanwhile, the construction of breastfeeding-friendly hospitals or premises has led to the restriction of formula milk advertisement to encourage breastfeeding. Furthermore, strict enforcement towards unregistered supplements, which can pose a threat to consumers, is needed to combat the predominance of these products in the market.

Conclusion

The Malaysian maternal and child health system provides excellent care by adhering to global standards, which is proven by the improvements and achievements in maternal and child health. However, with changes in the era and lifestyle, monitoring of vulnerable groups, such as SGA infants, might be compromised owing to the limitations and challenges discussed in this study. Thus, it is vital to have a thorough understanding of human development theories and focus on the main elements of the developmental process to sustain the quality of health and achieve the pre-determined health targets. In the meantime, the initial step is to monitor whether SGA infants receive the

appropriate care they need by establishing a registry after their birth. Midwives can identify this group of infants; although some of these patients may progressively achieve normal development and growth, they are also at risk of having poor nutrition and growth in later life. Thus, not all SGA infants must be treated as healthy infants in primary care settings.

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Author contributions

Norain Ahmad: Idea conceptualisation, literature review, final manuscript drafting and journal submission

Rosnah Sutan: Advice provision and guidance during manuscript preparation

Conflicts of interest

Both authors declare no conflicts of interest and that the work original and has not been published in any other journals.

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How does this paper make a difference in general practice?
This study highlights:

- The importance of aligning evidence-based theories to practice in developing or planning child health programmes. Family health practitioners can use this information to advocate for policies and programmes that are evidence-based and aligned with national policies on child health.
- The beneficial effect of life course approach as a strategy of community wellness program.
- The importance of emphasising the early detection and preventive treatment in preserving and enhancing children's health.
- The significance of addressing the maternal needs in providing child health services to ensure the effectivity.
- The importance of collaboration interagency in dealing with maternal and child health.

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