Editorial

Scaling up breastfeeding programmes in a complex adaptive world

Abstract

The 2016 Breastfeeding Lancet Series continues to provide unequivocal evidence regarding the numerous benefits that optimal breastfeeding practices offer to children and women worldwide and the major savings that improving these practices can have as a result of their major public health benefits. Unfortunately, this knowledge remains underutilized as there has been little progress scaling up effective breastfeeding programmes globally. Improving the uptake and scaling up of effective national breastfeeding programmes that are potent enough to improve exclusive breastfeeding duration should be a top priority for all countries. Complex analysis systems longitudinal research is needed to understand how best to empower decision makers to achieve this goal through well-validated participatory decision-making tools to help their countries assess baseline needs, including costs, as well as progress with their scaling-up efforts. Sound systems thinking frameworks and scaling-up models are now available to guide and research prospectively future scaling-up efforts that can be replicated, with proper adaptations, across countries.

The recent breastfeeding *Lancet* series continues to provide unequivocal evidence regarding (a) the numerous benefits that optimal breastfeeding practices offer to children and women worldwide (Victora *et al.* 2016) and (b) the major savings that improving these practices can have as a result of the major public health benefits directly derived from optimal breastfeeding practices (Rollins *et al.* 2016). Unfortunately, the series also demonstrates that this knowledge remains underutilized as there has been little progress scaling up effective breastfeeding programmes globally. The objectives of this editorial are to analyse why this is and to offer some insights so that, together with a proposed research agenda, it may help the breastfeeding community usher its efforts to scale up effective breastfeeding promotion, protection and support programmes into a new era.

Over the past two decades, we have made major headways into understanding the efficacy of diverse facility and community-based interventions to support optimal breastfeeding practices at the facility and community level (Beake *et al.* 2012; Chapman *et al.* 2010; Pérez-Escamilla *et al.* 2016; Sinha *et al.* 2015). During the past decade, we have also made major progress in identifying the key ingredients necessary for breastfeeding programmes to be effectively scaled up (Baker *et al.* 2013; Pérez-Escamilla *et al.* 2012). So then

why are there still less than 40% of infants under 6 months of age who are being exclusively breastfed (UNICEF 2015)? What are we missing? We believe the answer lies in our limited knowledge about the science of scaling up breastfeeding programmes, and thus the lack of conceptual clarity and evidence-based frameworks that are relevant to policy makers.

In this editorial, we define scaling up as ‘a process aimed at maximizing the reach and effectiveness of a range of actions, leading to sustained impact on outcomes’, as recently proposed by Gillespie *et al.* in the field of nutrition (Gillespie *et al.* 2015, p. 441). A recent major development in nutrition policy and programming is the increasing recognition that implementation science research can benefit greatly from the Complex Adaptive Health Systems (CAS) framework developed by health care systems researchers over the years and defined as a ‘multi-disciplinary approach to understanding the behaviour of diverse, interconnected agents and processes from a system-wide perspective’ (Paina & Peters 2012, p. 367). The CAS framework is well suited for guiding scaling up of breastfeeding programmes as it fully acknowledges the complex web of influences and need for local adaptation of effective large scale programmes targeting infant feeding behaviors (McDaniel *et al.* 2009; Paina & Peters 2012; Pérez-Escamilla *et al.* 2012). The CAS framework

acknowledges that programmes are formed by many moving parts that have the capacity to self-organize and adapt as required by specific circumstances and learning by experience (McDaniel *et al.* 2009; Paina & Peters 2012). Breastfeeding programmes are particularly well suited to being studied through a CAS lens, given the strong intersectorality and the complex web of multi-level efforts required for them to function (Pérez-Escamilla *et al.* 2012). Effective national breastfeeding programmes are indeed the result of complex non-linear interactions, linking diverse sectors or subsystems that evolve over time. CAS constructs include feedback loops, scale-free networks, phase transitions, path dependence and emergent behaviour. Feedback loops occur when an output of a process within the system is fed back as an input into the same system. For example, a central feature of successful national breastfeeding programmes is their ability to coordinate hospital based with community-based efforts including those at primary health care centres, with both serving as referral and counter-referral systems (Pérez-Escamilla *et al.* 2016). Indeed, randomized controlled trials conducted in Brazil and Belarus have shown that strong implementation of step 10 of the Baby-Friendly Hospital Initiative (BFHI), which represents the link between facility and community efforts, is crucial for sustaining positive breastfeeding impacts in the long term (Pérez-Escamilla *et al.* 2016). The concept of scale-free networks refers to structures that are dominated by a few focal points or hubs with an unlimited number of links, following a power-law distribution. Social network analysis is a powerful tool that can be used to model the 'contagion' of health-related behaviours (Christakis & Fowler 2013). Breastfeeding 'contagion' may be strongly facilitated through the endorsement of highly visible individuals or role models that others seek to emulate. For example, successful breastfeeding mass media campaigns have often featured famous actresses, sports stars or other celebrities. Obstetricians and paediatricians have also been very influential forces behind successful national breastfeeding programmes. Phase transitions occur when radical changes take place in the features of system parameters as they reach certain critical or tipping points. For example, it took several years after it started for the Brazilian National Breastfeeding Programme to start detecting substantive

impacts in breastfeeding behaviours. In this instance, the initial foundational years involved strong evidence-based advocacy efforts to create the right conditions for the programme to emerge. The construct of path dependence indicates that processes that have similar starting points may end up leading to different outcomes because of bifurcations and choices made along the way. Path dependence explains why national breastfeeding programmes need to be adapted to the local contexts. Emergent behaviour refers to the spontaneous creation of order, which appears when smaller entities on their own jointly contribute to organized behaviours as a collective. The global experience indicates that successful scaling up emerges from the coming together of key actors and processes at the right time and place following a 'perfect storm'-like scenario (Pérez-Escamilla *et al.* 2012).

The social marketing framework is also key for understanding how to scale up breastfeeding programmes using behaviour change communications techniques (Nguyen *et al.* 2014). An in-depth analysis of the United States *Loving Support* breastfeeding campaign provides important insights into how this framework can be applied to protect, promote and support breastfeeding (Pérez-Escamilla 2012). Social marketing involves the application of commercial marketing principles to advance the public good (Lefebvre & Flora 1988). A social marketing campaign starts with the identification of a benefit (e.g. breastfeeding) and how the target audience perceives this benefit. Effective social marketing campaigns are built upon an in-depth understanding of the determinants of the behaviour in the different contexts where it will take place and the consequences of performing the behaviour or not. This understanding allows for the initial development of the campaign's brand, relevance and positioning through an evidence-based marketing mix following the '4Ps' (product, price, place, promotion). The marketing mix is designed to maximize use of the product (e.g. breast pump), services (e.g. peer counsellors) or activities (e.g. breastfeeding support group), taking into account consumers' perceptions about the price or sacrifices they will need to make in order to follow the target behaviour. For example, employed women may not consider exclusive breastfeeding (EBF) if sacrificing their jobs is what it would take for them to practice this

recommended behaviour. Also, spouses or partners may not be supportive of EBF if they are concerned that their wives will be harassed when they breastfeed in public places (Avery & Magnus 2011). The third component of the social marketing strategy involves providing access to a product or service via strategic placement through opportunity points (e.g. Baby-Friendly Hospitals, peer counselling). Lastly, the product or service needs to be promoted through innovative communication campaigns and experienced by the target population (Pérez-Escamilla & Chapman 2012). Effective social marketing campaigns are rooted in mixed methods formative research and need to embed within them effective process and outcome evaluation systems (Lefebvre & Flora 1988).

The Breastfeeding Gear Model (BFGM) was recently developed based on an extensive review of empirical evidence to identify the key interlocked elements or gears needed by the 'engine' moving effective large-scale breastfeeding programmes to function. Analogous to an engine, the BFGM specifically indicates the need for several key 'gears' to be working in synchrony and coordination for delivery of effective breastfeeding protection, promotion and support at scale. Evidence-based advocacy is needed to generate the necessary political will to enact legislation and policies to protect, promote and support breastfeeding at the hospital and community level. This political-policy axis in turn drives the resources needed to support workforce development, programme delivery and promotion through direct services and behaviour change communication campaigns. Research and evaluation are needed to sustain the decentralized programme coordination 'gear' required for goal setting and system feedback. The BFGM has been applied to help explain the different levels of performance in national breastfeeding outcomes in Mexico and Brazil (Pérez-Escamilla *et al.* 2012).

The non-linear BFGM provides a good illustration of the CAS 'perfect storm' that is needed to happen for national breastfeeding programmes to successfully emerge. The intersectoral BFGM fully recognizes the need to include influential champions and leaders to create strong demand and acceptance of the programme services (scale-free networks). It also includes an evidence-based advocacy gear, which is often the

first one that is organized to create the conditions for the whole machinery to be assembled and before substantial impacts in breastfeeding behaviours are actually observed (phase transitions). Finally, while the BFGM posits that the gears are likely to be the same across countries, it fully recognizes that the nuts and bolts needed to make each gear function are context specific (path dependence) (Pérez-Escamilla 2014). The BFGM was conceptualized taking heavily into account the presence of negative and positive feedback loops that can hinder or foster the enabling environment for scaling up, respectively, and how the balance between the two is what ultimately determines whether a large-scale programme successfully emerges and becomes sustainable or not (Pérez-Escamilla *et al.* 2012).

Although currently there are no policy tool boxes that have been developed to assist policy makers with the scaling-up process of breastfeeding programmes following action-oriented CAS-based models such as the BFGM, there are two important pioneer initiatives that have sought to develop indicators that can help inform policy makers with the scaling-up process of their countries' breastfeeding programmes. These initiatives are the World Health Organization's (WHO) Infant and Young Child Feeding: A Tool for Assessing National Practices, Policies and Programmes (WHO 2003) and International Baby Food Action Network's (IBFAN) the World Breastfeeding Trends Initiative (Gupta *et al.* 2013), launched in 2003 and 2004, respectively. Both seek to involve stakeholders at assessing infant and young child feeding (IYCF) outcomes, activities and processes with the goal of empowering countries to identify IYCF gaps that need to be addressed. These initiatives represent an important first step, but they need to be strongly supplemented with CAS-based mixed methods research to understand if and how they lead to improved data-driven decision making when it comes to scaling up and sustaining large-scale breastfeeding programmes. Simply repeating enabling environment assessments without linking the process to data-based decision making is unlikely to help improve optimal EBF outcomes as recently shown in India (World Breastfeeding Trends Initiative 2015).

The individual and societal benefits that can be derived from improved protection, promotion and support of optimal breastfeeding practices have been very well

established (Victora *et al.* 2016). Likewise, the key ingredients for effectively scaling up national breastfeeding programmes have been identified to a large extent (Pérez-Escamilla *et al.* 2012; Rollins *et al.* 2016), and we are making progress on understanding how to assess the enabling environment for scaling up breastfeeding programmes. Despite this vast amount of knowledge, relatively little progress has been made over the past decade in improving key breastfeeding outcomes such as early initiation of breastfeeding and EBF for 6 months. The cost of this inaction, or of a lack of adequate translation of this knowledge into practice, is in the order of billions of dollars annually and must be addressed.

An important step in changing the status quo has been the development of indicators to capture the enabling environment and progress with key elements needed for scaling up breastfeeding programmes to the national level. However, these efforts need to be improved by basing this approach in conceptual frameworks and models that capture the complex non-linear relationships among all the key elements that need to be in place for effective breastfeeding protection, promotion and support programmes to be scaled up.

Regarding decision making, one of the key pieces of evidence missing is the costing out of the launching or strengthening of the key elements needed for the scaling up of breastfeeding programmes to be successful. For example, it is important to empower countries to identify the cost to a specific country to have all the gears of the BFGM solidly in place and working as a harmonious system. Without this information, it becomes practically impossible for the Ministry of Finances to be able to allocate an itemized budget for the Ministry of Health to run an effective national breastfeeding programme. Although there are ongoing efforts to cost out the activities needed to protect, support and promote breastfeeding at scale (Holla *et al.* 2015; World Bank 2015), there is much work still needed to be able to empower decision makers to make sound evidence-based investment decisions for their programmes. Understanding how decisions are made as part of a successful scaling-up process of national breastfeeding programmes should indeed be a very high priority area of implementation science research that can benefit many other maternal-child health and nutrition domains (Gillespie *et al.* 2015; Pelletier *et al.* 2013).

In conclusion, improving the uptake and scaling up effective national breastfeeding programmes that are potent enough to improve EBF duration should be a top priority for all countries. CAS longitudinal research is needed to understand how best to empower decision makers to achieve this goal through well-validated participatory decision-making tools to help their countries assess baseline needs (including costs) as well as progress with their scaling-up efforts. Sound systems thinking frameworks and scaling-up models are now available to guide and research prospectively future scaling-up efforts that can be replicated, with proper adaptations, across countries. It is expected that this process can indeed help reverse the decline in investments in breastfeeding protection, promotion and support in diverse world regions (Lutter *et al.* 2011a; Lutter *et al.* 2013).

Moving forward, we specifically propose for the following research questions to be addressed: (1) What are the key features driving effective evidence-based advocacy? (2) How does evidence-based advocacy lead to a strengthened political will and commitment? (3) What are the costs of enforcing effective legislation designed to implement the WHO Code and offer maternity leave and job security protection to nursing women? (4) How can countries assess and develop the critical mass of human resources needed for effective breastfeeding protection, promotion and support? (5) How does effective scaling-up and sustainability actually happen based on CAS constructs? (6) Which are the main feedback loops that prevent effective scaling-up from happening and how are they overcome? (7) How does uptake of optimal breastfeeding behaviours happens as a result of investments in scaling-up (i.e. social network analysis)? (8) How do countries most effectively adapt the scaling-up process to their contexts based on lessons learned from other countries (path dependence)? (9) How long does it take for countries to start seeing improvements in optimal breastfeeding behaviours in response to scaling-up investments (phase transition)? (10) How can cost-effective management information systems be developed to strengthen the capacity of countries to coordinate and manage their scale-up programmes, emphasizing the integration of facility and community-based breastfeeding support from the national to the municipal level? (11) How

can step 10 (community support) of BFHI be improved on a large scale? Ultimately, our proposed research agenda is likely to increase maternal–child health equity (Lutter *et al.* 2011b), which is a key principle behind the post-2015 Sustainable Development Goals.

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