Locally Adaptable Parenting Programs

for Cost-effective Design and Community Ownership

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Abstract

The cost-effectiveness of parenting programs can be enhanced significantly by (i) applying a well-determined mix of modalities for delivery and (ii) differentiating between firstborns and younger siblings. Jointly, these two measures can reduce the required human and financial resources by a factor four, without affecting quality. This program design is locally adaptable, allowing communities to determine the concrete delivery scheme according to local circumstances and preferences. In most developing countries, the total costs are in the order of 0.02% of GDP, which is a fraction of most countries' health budgets. More precise outcomes are available for 76 individual countries at www.janvanravens.com under Global Reports.

Glossary

CBC	Center-Based Counselling
CBR	Crude Birth Rate
ECD	Early Childhood Development
GDP	Gross Domestic Product
HBC	Home-Based Counselling
HD	High density
HIC	High Income Country
LD	Low density
LG	Large Group
LIC	Low Income Country
LMIC	Lower-Middle-Income Country
MD	Mass Dissemination
MDGs	Millennium Development Goals
MIC	Middle Income Country
pcGDP	per capita GDP
PPP	Purchasing Power Parity
REFLECT	Regenerated Freirian Literacy Through Empowerment and Community Techniques
SG	Small Group
TFR	Total Fertility Rate
UMIC	Upper-Middle-Income Country
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children's Fund
WHO	World Health Organization

Introduction

"Education concerning prevailing health problems and the methods or preventing and controlling them" was mentioned as the first element of primary health care in the Declaration of the Conference on Primary Health Care in Alma-Ata in 1978 (WHO, 1978). The rationale for organizing the conference was the persistent disparity in terms of access to health care, both between and within nation states. The conference's key response to this disparity was bringing primary health care closer to the people, e.g. by engaging communities more and by strengthening the role of community health workers. Even if the concept of improving health by means of educating parents was not entirely new at the time, it certainly gained traction through this watershed conference.

More recently, parenting programs are embraced by the global ECD community as a strategy to enhance child development in the early years. Indeed, the critical role of the home learning environment has been firmly substantiated (Melhuish et al, 2008). In its key strategic statement The four Cornerstones, the Consultative Group on Early Childhood Care and Development (2008) advised to ensure that parents have access to parenting programmes that address holistic child development during the first four years of life, to be followed by usually two years of enrolment in preschool education[1]. This 4 + 2 model was the basis for a pioneer costing study (van Ravens and Aggio, 2008), though a 3+3 model was applied to countries where preschool starts at 3.

Meanwhile, however, one of the first Lancet publications on ECD recommended to "Implement ECD intervention in infancy through families and caregivers, and *add* (Italics JvR) group learning experiences from 3 to 6 years" (Engle et al, 2007). This suggests not only that playgroups or preschool would have to start in all countries at age 3 regardless of countries' own choices, but also that parental education continue alongside preschool education. The article did not provide an indication of the age at which parental education should end.

This programmatic duplication – providing preschool and a parenting program partly at the same time - is rather costly and it was soon challenged by, on the one hand, the Nurturing Care framework (WHO, 2018a) which zooms in on the period from conception to age 3, and on the other hand the idea of UNICEF (2013) to focus on the first 1000 days after the moment of conception (which implies that the programme end at age 2).

With such degree of confusion about the ideal age bracket for parental education, it is difficult to develop concrete policy instruments. Therefore, this analysis in this paper is not age-based but content-based: it develops delivery schemes based on content, i.e. messages to be conveyed and skills to be enhanced. This approach respects countries' own democratic choices regarding the age brackets for ECD programs, and leaves it up to countries themselves how to spread the programme' elements over time (though it is obvious that much of the content remains related to the phases that children go through).

[1] Based on the Annex Tables of the Global Education Monitoring reports (Global Education Monitoring Report Team, 2021), one can say (i) that about half of the world's countries have chosen age 6 as the entry age of primary education, and (ii) that this includes the world's most populous countries. In other words, most of the world's children by far live in countries where the entry age for primary school is age 6, hence the 4+2 model for the first six years of children's lifetimes.

This paper also introduces two program characteristics that have been absent from the debate thus far and can significantly reduce human and financial resource requirements without affecting quality. The first concerns the fact that different modalities of service delivery are available, and that finding an *optimal mix* of these modalities promotes quality and cost-effectiveness at the same time. The second concerns the mundane fact that many families have more than one child. Differentiation between the protocols for firstborns and those for consecutive children reduces costs as well as parents' time investment.

The "mix of modalities" is determined at local level, meaning that this paper remains faithful to the original spirit of the Alma-Ata conference: communities are leading and community-based health workers play a central role. Communities also decide for themselves whether or not the parenting program is integrated in other ECD programs, in accordance with a governance concept called LAMP: Locally Adaptable Mono-sectoral Policies (van Ravens, 2023).

This paper starts with a presentation of the sources on which it is based (section 1), with an emphasis on the document that provides the content for the parenting programs. This is followed by a section on the importance of the social geography to the way in which parenting programs are delivered (2). This results in the presentation of five different modalities for delivery of the programs (3). These are combined in such a way that they best fit densely populated areas (4).

This results in a concrete service provision scheme, which is the basis for an estimation of staff-time investment per parent (5); staff-time per child (introducing the distinction between firstborns and consecutive children) (6); costs per child (7); and costs at national level (8).

The entire exercise is then repeated for sparsely populated areas (9).

The last three sections present the overall outcomes (10); address resource mobilization (11); and discuss governance issues (12).

1. Sources

This article is based on three sources. The first is observation and analysis of parenting programs in the following countries:

- Pakistan: Lady Health Workers (WHO, 2007)
- Ethiopia: Health Extension Workers and Community Health Workers & Promotors (Bilal et al, 2016)
- Tanzania: Community Owned Resource Persons (van Ravens, 2010)
- Indonesia: parenting component of Taman Posyandu (Frontiers for Health, 2015)
- Several countries in the former Eastern Bloc: patronage nurse systems
- The Netherlands: various mother child programs in Rotterdam (de Graaf et al, 2017)

The second source is the literature on adult learning and lifelong learning, as well as the author's experience in these fields as a policy maker and practitioner.

The third source – in fact, it is this paper's key resource - is a set of publications from March 2014 by the United Nations Regional Office for Europe, Caucasus and Central Asia, further referred to as "the Regional Office"[2],. The title is "Promoting Young Child Development, Health and Wellbeing – the Role of Home Visiting". The Regional Office published several documents under this title; we focus on the one titled "Standards, Structure and Content for Home Visiting", and more in particular on the schedule (table 1) on page 6, and the elaborate description of the 16 sessions in annex 1 of that document [3].

To assess the relevance of this material, it was compared with more recent documents about Nurturing Care as well as table 1 on page 5 of "Investing in ECD, What is Being Spent and What Does it Cost" by Putcha and van der Gaag (2014), on their turn referring to Debissa, Sayre and Wodon. While Putcha and van der Gaag take a broader view - covering all of the ECD age range - their findings are consistent with the Regional Office's publication when it comes to parental support.

Predating the Nurturing Care movement, the work by the Regional Office is still unparalleled in terms of concreteness. It is the perfect starting point for a content-based approach to a cost-effective program design. Only four elements are missing in the content of the 16 sessions of the Regional Office: family planning; tropical diseases; child labor and child trafficking. Possibly, these themes were considered to be less relevant in East Europe, Caucasus and Central Asia, but they need to be added when adjusting the program for countries in the global south.

Finally, it should not remain unmentioned that the WHO (2018b) issued a Meeting Report on "Operationalizing Nurturing Care". This report proposes weekly home-visits of at least an hour during 13 to 16 months, meaning that total contact time is four times more than that of the protocol of the Regional Office. The Meeting Report offers no indication of the additional content that would justify this fourfold increase. The proposed amount of contact time would make it practically impossible in deprived areas to recruit a sufficient number of counsellors, nurses and facilitators. It increases labor intensity – and costs, by the way - by a factor 16

[2] At the time, this office's name was the UN Regional Office for Central and East Europe and the Commonwealth of Independent States (CEECIS).

[3] It seems these original documents can no longer be found online, but some related documents can be found when searching with "universal progressive home-visiting model".

compared to what this paper proposes[4]. Apart from the daunting challenge of finding the human and financial resources, it would also cause a serious degree of service rejection. The experience in adult learning is that parents in disadvantaged groups and areas are usually unable to spare the time to attend that many sessions. Furthermore, the Meeting Report suggests the appointment of non-professionals as counsellors with less than two weeks (sic) of training. It also states that amateurs are to be preferred above professionals.

This paper chooses a slightly more serious approach. Based on the experience with the volunteer Community Owned Resource Persons in Tanzania - where attrition was a major problem – it is assumed that counsellors are well-trained and well-paid, so that they will deliver quality services and are likely to continue their work for a good number of years. The total amount of contact time is long enough to convey all messages and to train the skills, but short enough to make sure that parents are willing and able to spare the time to complete the program.

[4] The labor intensity of the scheme that the Meeting Report proposes is four times higher than that of the Regional Office's scheme, which on its turn has a four times higher labor intensity than what this paper proposes.

2. Social geography

The delivery of parenting programs depends strongly on social geography. E.g. in densely populated areas (such as towns and cities; peri-urban settlements; refugee camps) distances are small. Travel time is generally short in these environments and it will also be relatively easy to gather 20 parents for group sessions, or larger numbers of people for community gatherings. On the other side of the spectrum we find sparsely populated areas such as rural areas, mountain hamlets, river deltas, et cetera. Nomadic groups, too, can be challenging to reach out for. In such cases, travel time is long and it cannot always be expected that a mother with child or a pregnant mother come to a center.

In this paper, we cope with this diversity by estimating the required human and financial resources for the two extremes (highly densely versus highly sparsely populated areas) in order to show the impact of social geography on human resource requirements and costs. These two extremes provide the range within which the actual average values for countries will sit. For the practical application of the model that this paper presents, it needs to be contextualized for concrete social geographies. The author of this paper is happy to assist in concrete projects to this end, on a pro bono basis if necessary.

Thus, it should be noted that this paper only presents the *logic* of the approach and some *indicative* outcomes. It does this for the four World Bank income categories: low-, lower-middle, upper-middle, and high-income countries (LICs, LMICs, UMICs and HICs). There are also outcomes for 76 individual countries across the four income categories. These can be found in an excel-file available at www.janvanravens.com under Global Reports.

3. Five modalities

The document of the Regional Office assumes 100% home visiting and does not consider the option to combine this with other modalities. This is understandable given the focus on East Europe, Caucasus and Central Asia, where parenting programs tend to build on the pre-existing patronage nurse system, which relied exclusively on home-based counselling.

However, home-visiting is a very labor intensive modality, first because it takes place in a one-to-one setting exclusively and second because it requires travel by the counsellor. In many social geographies it will be challenging to find a sufficient number of qualified people for such a labor intensive modality. And even if funds are available for professional training at scale, it may be difficult in soem places to find enough young people with sufficient qualifications to even enter the training. This warrants an open eye or alternative modalities. The subject of hygiene is used as an example to clarify possibilities and limitations in this regard.

The knowledge and information about hygiene that a parenting program aims to convey can *partly* be transferred in very large groups of people or even via mass media. It will be a one-way affair, but some knowledge and information is of such general nature that it can cost-effectively be conveyed in well-designed presentations or broadcasts.

However, it is imperative that such communications be flanked by group sessions, where interaction is possible between participants and facilitator, and among participants themselves. There is a fairly broad consensus in the field of adult learning that group size should not exceed 20 in order to safeguard learner-centered, dynamic interaction. In larger groups the learning process tends to become teacher-centered, with predominantly one-directional activity.

Yet, to ask participants to speak in a group about their personal habits regarding hygiene is inappropriate in many cultures, while it is impossible in the case of mass dissemination. This is why individual counselling remains indispensable for an important part of the program's content. But it does not always need to take place in the home. Often, the social geography allows mothers to come to a center for individual counselling, e.g. if the center is located near a local market, village square or school. The choice between home-based versus center-based counselling also depends on the theme or content of the session. For example, certain medical checks are better done in an equipped center than in the home environment, while an assessment of hygiene in the home environment obviously requires a home-visit.

With regards to group sessions, there is a choice to be made between larger groups (maximum 20) and smaller groups of about 5 participants. The former are very efficient as they reduce costs by a factor 20 compared to one on one settings, but the latter allow closer interaction. The choice depends not only on content. For example, smaller groups may be a good option in contexts where it is considered inappropriate for women to leave home independently but where a small group can be gathered within a compound, as in the case of the Lady Health Workers in Pakistan (WHO, 2007). The social geography can be important too, with smaller groups being more feasible in sparsely populated areas.

Both small and large groups can have tremendous "hidden" advantages that are likely to remain unmeasured in program evaluations. Groups can help mothers move out of isolation; support local network development; empower women to resist domestic violence; et cetera. The experience in the field of adult learning is that organizing women around a certain theme can

have a strong impact on social capital, almost regardless whether that theme is health; safety; rights; livelihoods; micro-credit; and indeed child rearing[5].

Mass dissemination, finally, can vary from pre-existing traditions of village and ward gatherings as in Ethiopia (Bilal et al, 2016); via pre-ICT mass media such as radio and TV; to more advanced media, all depending on context and culture, and on connectivity and availability of devices[6]. These modalities for mass dissemination have in common that the HR-needs and costs on a per child basis are negligible, since they reach large numbers of parents – and through them even larger numbers of children – by just one single effort. To summarize the five modalities:

- HBC: home-based counselling
- CBC: center-based counselling
- SG: smaller groups of about 5 parents
- LG: larger groups of maximum 20 parents
- MD: mass dissemination

Please note that the term "home-visiting" is ignored. Equating parental support with home-visiting has the disadvantage that it closes our eyes to alternative modalities. Moreover, the term is inaccurate as homes are also visited by family, friends, neighbours and plumbers. We prefer terminology that describes what actually happens during the sessions, which is counselling.

The question is: how do we distribute the content of the 16 sessions from the Regional Office's document over these five modalities? We begin developing this logic by assuming a context of high population density. Once done, we replicate the exercise for low density.

[5] This stems from the so-called Freirean tradition in adult learning, named after Paolo Freire. His ideas are kept alive by an NGO called Actionaid that developed the REFLECT approach: Regenerated Freirean Literacy Through Empowering Community Techniques. This body of knowledge could well assist in the further development of this element of Nurturing Care. Another partner might be the UN Institute of Lifelong Learning in Hamburg.

[6] Devices can be scarce and costly, but sometimes they are made available as part of development projects in other sectors such as agriculture, forest management groups, micro-credit, meteorological warning systems.

4. Adapting the Regional Office's scheme to densely populated areas

The scheme in the Regional Office 's document shows clearly a distinction between observation and assessment activities versus education and provision of information. Obviously, observation and assessment – whether it concerns mother, child or both - require one on one settings. So although we can "move" some of the more educational/instructional activities to the LG or SG modalities - and some of it even to MD - we need to retain a fair number of sessions for individual counselling. To ensure that observation and assessment remains sufficiently frequent over the span of the programme, we retain 8 individual sessions.

In high density contexts, most mothers can come to a center with their child(ren) if it is located close to a market or a central square. But HBC remains crucial for an assessment of the home situation (poverty, hygiene, safety, et cetera). Thus we assume three sessions in the home:

- the very first session of the program (during pregnancy) must take place in the home for a proper introduction and a first general assessment of the home situation;
- the first session after birth must also be in the home for a good extra check of the newborn's living conditions;
- and a third session is needed to fill the void in the remaining period, since living conditions may deteriorate in the course of the years (if the family moves, this is an argument for an extra HBC session).

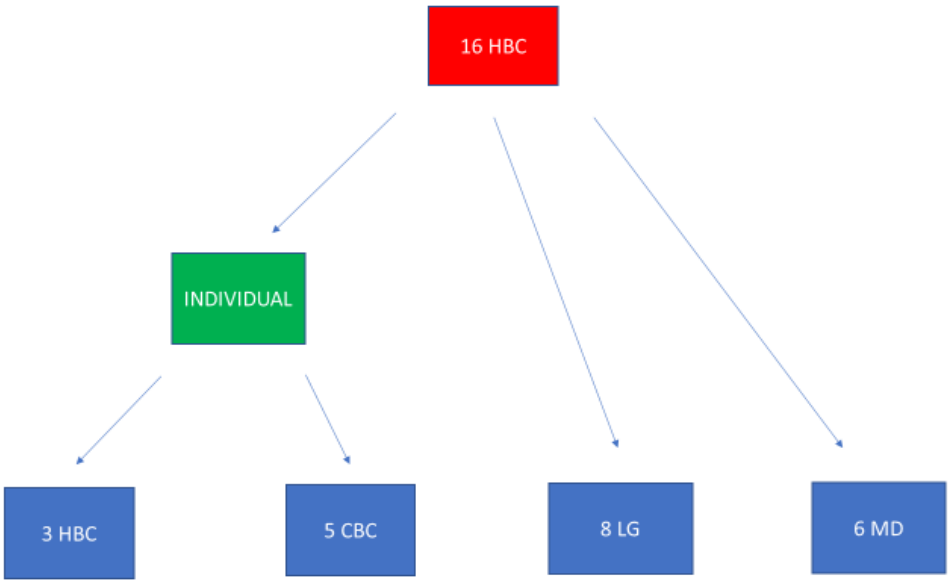
Sadly, in refugee camps there is hardly a home-situation in many cases; here we would need close monitoring of the situation in the tents and barracks instead.

When moving the remaining content to the LG-[7] and MD-modalities, we need to keep in mind that these are less intensive than individual counselling. This must be compensated by a higher frequency, which may not be a big problem since LG and MD are labor extensive and low-cost, though we need to remain mindful of the risk of service-rejection. Time-constraints on the part of parents may prevent them from attending group sessions if these become too frequent.

Considering all of the above, we could adopt the following scheme for high density contexts.

[7] Given the high density context we assume large rather than small groups.

Figure 1. Delivery scheme for high density contexts



To estimate the HR requirements of a NC program according to this scheme, we first estimate the amount of staff-time that is invested per parent.

5. Calculating staff-time investment per parent in high density contexts

The Regional Office's document suggests a duration of 45 – 60 minutes for HBC. We will work with the higher end of this range (60 minutes) considering that counsellors need time for preparation before each visit and for reporting afterwards. For CBC this is it, while for HBC we add 15 minutes travel time (given high density, travel time will be short). For the LG modality we often see that the facilitator needs 2 hours per session in total, considering that time is needed for preparation and perhaps a tea-break half way.

Contact time should not be much longer than one hour, partly because of the experience with the span of attention in adult learning, partly because time is precious for most parents in developing countries (risk of service rejection). We assume a maximum of 20 participants (the standard in the field of adult learning) so we divide by 20 to beget the facilitator's time investment per participant. Finally, MD can be omitted entirely since staff-time and costs become negligible on a per beneficiary basis when the number of beneficiaries is very large. All this leads to the following formula:

3*HBC + 5*CBC + 8*LG/20 = 3*1.25 + 5*1 + 8*2/20 = 9.55 hours of staff-time per parent

Please note that if one disagrees with some of the parameters in this formula, one can repeat the exercise with any other set of parameters that is considered more appropriate. This also applies to everything that follows in this note. All that matters is the *logic* of the calculation. Modifications of this paper's approach can easily be done using the excel-file that is available at www.janvanravens.com under Global Reports.

Please note also that by diversifying modalities we have already halved the need for human resources: had we kept HBC as the only modality, the staff-time per parent (including travel time) would have been 16 * 1.25 = 20 hours instead of 9.55 hours.

6. Consecutive children: from staff-time per parent to staff-time per child

If all families would have just one child, the staff-time investment per child would be the same as the staff-time investment per parent. In some countries and regions – especially those covered by the Regional Office – fertility rates are very low indeed. But elsewhere, we still find higher fertility rates – despite continuous reductions everywhere – while in some of the world's poorest countries it is not uncommon to see between 5 and 10 children per family. While this is problematic for many reasons, it is a blessing for the design of parenting programs. If we make smart use of this circumstance, we can reduce staff-time investment per child significantly and reach large numbers of children even with limited budgets.

In families with more than one child, average staff-time per child is much lower than staff-time per parent for the simple reason that there is no point in having the mother go through the entire program for all consecutive children[8]. Duplicating the more cognitive components of the program (information provision; education; general advice) would not be useful; one cannot learn the same thing twice or thrice. Repetition of cognitive components only makes sense in the case of a big age difference between a consecutive child and its oldest sibling. In that case there is a risk that the mother's knowledge and skills have deteriorated over the years. There is also a chance that new knowledge and new insights have emerged from science and practice from which the mother has a right to benefit. In other words: a limited degree of repetitiveness can be meaningful for the cognitive elements of the programme.

The more diagnostic program components (such as observation, assessment, monitoring, health checks, and individualized advice) are obviously needed for every consecutive child. But even here is scope for efficiency gains: given the duration of the program of 45 months, it is possible for a family to have up to four or even five children in the program at the same time, depending on the spacing of the children. It would be odd to assess the mother's condition from the perspective of one child's development, and to repeat the assessment of that same mother a few weeks later in light of another child's development. The same goes for observation of the home environment. Even child-specific health checks can be combined; it is possible to assess two or more children during one home-visit or center-based session by simply extending the duration of that session somewhat. Yet, some additional sessions of HBC and CBC are needed for assessment of mother and child in the period in which the participation of a younger child does not overlap with that of one of its older siblings.

A few simulations have been carried out to understand how these considerations play out in practice. This suggests that the additional services necessary for every consecutive child are three individual sessions: one HBC session plus two CBC sessions.

We can insert this in our formula by means of the total fertility rate (TFR), which is a country's average number of children per woman. The logic is as follows:

- To the first child, we assign all of the 9.55 hours of staff-time investment to the parent
- For each of the consecutive children (their number is TFR minus 1) we allocate 1*HBC + 2*CBC
- We add this up and divide by the total number of children, i.e. TFR

[8] Nevertheless, there are rumors that in some countries this actually happens.

{ 9.55 + (TFR – 1) * (1*HBC + 2 * CBC) } / TFR

Simplified:

{ 9.55 + (TFR – 1) * 3.25 } / TFR

Table 1 presents the TFRs for each of the four World Bank income categories, as well as the outcomes of this part of the exercise: the average staff-time investment per child for the whole duration of the program, expressed in hours.

Table 1. TFRs (2019) and staff-time investment per child, per income category

	Total Fertility Rate	Staff-time investment per child in hours
LICs	4.6	4.62
LMICs	2.7	5.58
UMICs	1.8	6.75
HICs	1.6	7.19

Source for TFRs: World Bank Data: https://data.worldbank.org/indicator/SP.DYN.TFRT.IN

The table clearly shows the variation in fertility levels between the income categories. It also shows that higher fertility rates lead to lower staff-time investment per child.

The 4.62 hours needed per child in LICs is less than a quarter of the number of hours (20) that is needed if every child (firstborn as well as consecutive) would participate fully in a version of the program that exists exclusively of home visiting. This shows how combining the two innovations (mixed modalities and adjusted program for consecutive children) can reduce costs by a factor four in LICs. In HICs, costs are reduced by a factor three.

7. From staff-time investment per child to costs per child

Knowing the number of hours per child, we now ask: what is the labor cost of one hour? We assume, to begin with, that the frontline service providers earn a decent salary. Parenting programs that are delivered by volunteers or underpaid staff are usually not sustainable, as we see time and again (Chatio and Akweongo, 2017; van Ravens, 2010).

A more technical assumption that we need to make concerns regulations regarding working hours. For detailed estimations one needs the concrete, actual regulations of the country in which one is operating. In this global exercise, we simply make some working assumptions: one year has 45 working weeks with 40 working hours each, making 1800 hours per year.

To continue this exercise we would also need to have annual salaries of service providers, ideally distinguishing counsellors and nurses (for the individual sessions) and facilitators (for group sessions). And ideally these salaries would be expressed as a multiple of per capita GDP. Such data could not be found online. What could be found is a dataset of primary school teacher salaries in 76 countries across the four World Bank income categories (Center for Global Development, 2018). This dataset can be used for this analysis since salaries of nurses are broadly the same as those of teachers (Chai et al, 2010).

Based on the data from the 76 countries, averages were calculated for the four World Bank income categories. Table 2 presents these, but not without words of caution since the 76 countries are not guaranteed to be representative to the four income categories. Obviously, if better and/or more recent data can be found, they can always be used to replace these, while country specific work always needs to be based on countries' own data. Table 2 also presents the costs per child based on this formula:

Costs per child expressed in per capita GDP = H * S / 1800

H = staff-time per child, taken from table 1

S = annual salary as multiple of pcGDP, calculated from the dataset of the 76 countries

Table 2. Costs per child expressed in per capita GDP

	Salary as multiple of pcGDP	Costs per child in pcGDP
LICs	3.94	0.010
LMICs	3.26	0.010
UMICs	2.00	0.008
HICs	1.18	0.005

Source salaries: Center for Global Development, 2018

It may seem remarkable that salaries are higher in countries with lower income levels. This is a result of expressing salaries in terms of per capita GDP. Expressed in concrete currency, salaries of nurses and teachers are typically in order of US$100 in sub-Saharan Africa. However, the GDP (the total annual output of a nation) in these countries can be so low, that a nurse needs to earn four times GDP per capita for perhaps a marginal income level, while his or her colleague in a HIC might be better off with just 1.2 times the GDP per capita of his or her country. This discrepancy between salary expressed in pcGDP versus salary expressed in currency, is an important issue to which section 11 will return.

The result is that costs per child – expressed in pcGDP - are twice as high in LICs and LMICs than they are in HICs. In the following section we multiply these outcomes with the total number of children in the country to get the overall annual labor costs of the program once universalized.

8. From cost per child to cost per nation

For this step we make use of the crude birth rate (CBR). This is the number of newborns per year for every 1000 inhabitants. Focusing on the newborns may seem to be an error, as the newborns of a given calendar year make up just a minority of all the children who are in the program in that calendar year. Other participating children are in the second or third year of the program, and some are in the pregnancy phase. But by focusing on content instead of age, the costs of a program are independent of how the elements of that program are spread in time. So, just for this calculation, we "pretend" that only the newborns of a given year are participating, and that they "consume" all of the program elements within that same calendar year.

A crude birth rate of 34 on 1000 inhabitants (as in LICs) means that the total number of newborns in a country is 34 / 1000 * POP, whereby POP stands for total population, all ages. This can be multiplied with the costs per child from table 2, using this formula:

Total annual costs at national level = CBR * POP * Cost-per-child (expressed in pcGDP)

Since pcGDP equals GDP/POP, the factor POP occurs both in the numerator and in the denominator, so it can be deleted. The results are overall costs per nation, expressed directly in GDP. Table 3 presents the outcomes.

Table 3. Total annual costs expressed in GDP

	Crude Birth Rate	Total annual costs in GDP
LICs	34	0.034
LMICs	22	0.022
UMICs	13	0.010
HICs	10	0.005

Source for crude birth rates: World Bank Data: https://data.worldbank.org/indicator/SP.DYN.CBRT.IN

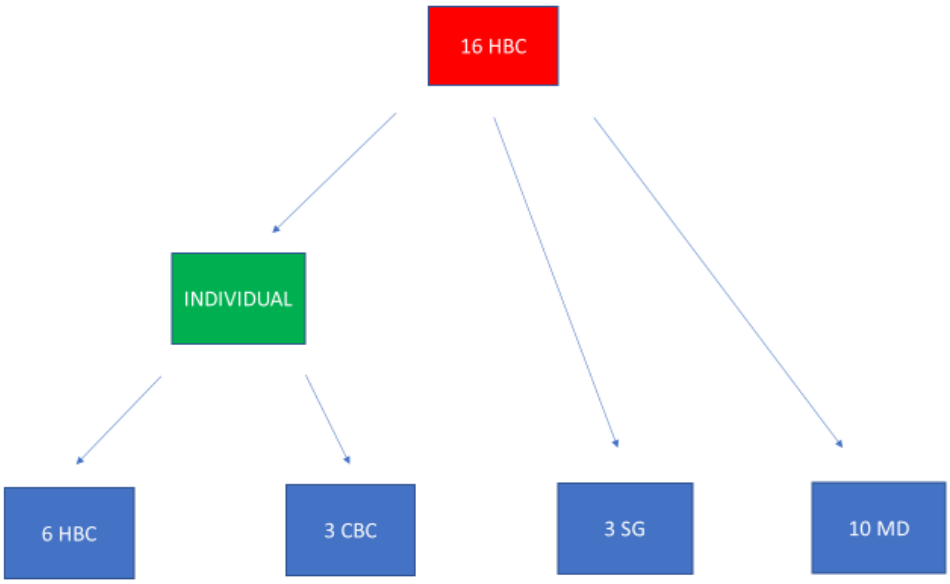
As one would expect, crude birth rates are by far the highest in low-income countries, creating even bigger differences in terms of the overall costs of the program. But again it must be noted that a different picture comes forward when costs are expressed in concrete currency, as section 11 will discuss.

9. Repeating the exercise for low density contexts

As we shift our attention from high to low density contexts, we not only need to adjust the delivery scheme, we must also accept that the analysis become even more indicative. The reason is that variation among sparsely populated contexts is bigger than variation among densely populated areas. With regards to the latter, we can say that whether we think of peri-urban settlements or of refugee camps, the point is that distances are small so that travel time is short and groups of 20 parents can easily be gathered. In sparsely populated areas, in contrast, the logistical challenges are not only more serious but can also play out very differently. Deserts, mountains, river-delta's, semi-nomadic groups: they all imply very different obstacles to service provision. In our analysis here we assume, just to elaborate one example, a mountainous area with small hamlets scattered on the mountain slopes around a somewhat larger village in a valley, and roads of which some are accessible only on foot and others by means of an off-road vehicle.

Apart from those living in the village in the valley, mothers cannot be expected to come down to the village to visit a center with young children or during pregnancy, so a higher number of HBC sessions is unavoidable, even if HBC may require a full hour of travel time from the counsellor (against only 15 minutes in high density areas). Group sessions can only have five participants on average and require transportation of mothers. This is costly and time consuming so we assume only three of such sessions, hoping that some of the mothers can combine this with CBC in order to economize on travel time and travel costs. Given the difficult circumstances, reliance on MD could be more prominent but depends strongly on the devices that people can afford and on connectivity. It may be necessary to support people in this regard, and if this is too costly it might be combined with other development projects. The provision scheme could be as in figure 2.

Figure 2. Delivery scheme for low density contexts.



The calculation for the high density contexts is the same in essence as for low density; only the data entered in the formulae are different. The steps are as follows:

Hours of staff-time investment per parent:

6*HBC + 3*CBC + 3*SG/5 = 6*2 + 3*1 + 3*2/5 = 16.2

From staff-time per parent to staff-time per child (taking into account consecutive children):

{ 16.2 + (TFR – 1) * (1*HBC + 2 * CBC) } / TFR

Simplified:

{ 16.2 + (TFR – 1) * 4 } / TFR

From here onwards, the inputs for low density contexts are the same as those for high density contexts, so table 4 omits the Total Fertility Rates, the salaries, and the Crude Birth Rates. The table takes the steps of tables 1, 2 and 3 in one step.

Table 4. Outcomes for low density contexts

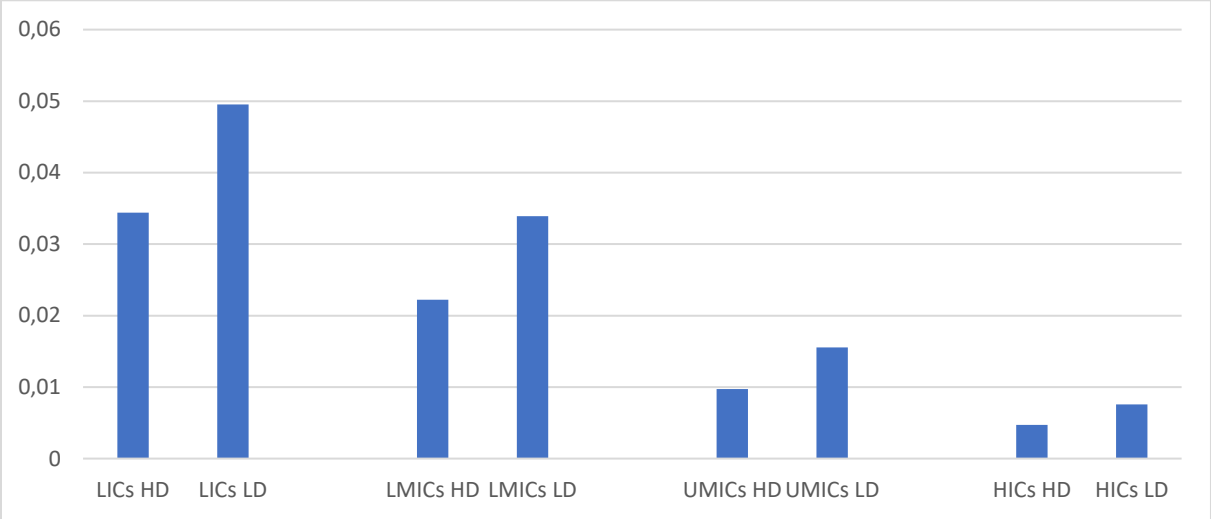
	Staff-time per child	Costs per child in pcGDP	Total costs as % of GDP
LICs	6.65	0.015	0.050
LMICs	8.52	0.015	0.034
UMICs	10.78	0.012	0.016
HICs	11.63	0.008	0.008

Source: calculations by the author

10. Overall outcomes

The outcomes of the calculations for both high density (HD) and low density (LD) contexts are summarized in figure 3. As expected, the figure shows clear differences, both in terms of social geography and in terms of income category.

Figure 3. Costs as % of GDP in high and low density contexts, per income category



Source: calculations by the author

Figure 3 confirms that costs in high density areas are clearly lower than they are in low density areas. In this light, it is relevant that the world attained a demographic milestone in 2008, when the percentage of people living in urban areas reached and exceeded the level of 50%. Since 2008, urbanization has continued at full speed, reaching 56% in 2020. Moreover, many people living areas that are officially qualified as "rural" may live in villages, small towns or densely scattered homes. This suggests that the true costs of universal parenting programs are closer to the values found for high density areas than to the values for low density areas, even though there is also a countervailing factor: urban families tend to have less children than rural families.

In addition to these considerations, there are tendencies towards over-estimation as well as under-estimation:

- Over-estimation. Salary estimations are based on data concerning empirical teacher salaries. First, the salaries of counsellors, nurses and facilitators might in practice be somewhat lower than those of primary school teachers. Second, the latter salaries are bound to include those of teachers with many years of service, while most staff of a new parenting program are likely to be young nurses, new to the profession. So in practice, actual salary costs might be 25% lower.
- Over-estimation. In this paper's analysis it was implicitly assumed that all families in a country participate in parenting programs. In practice there will be opting out, e.g. on the part of elite families who think they do not need the service. In addition there might occur service rejection, e.g. on the part of parents who are adverse to public interference in how they raise their children, as well as parents who simply cannot afford to be away from their job or livelihood. These effects can easily amount to a difference of another 25%. The following section will return to the issue of service rejection.

- Under-estimation. It is necessary to expand content to include tropical diseases, family planning, child labor and child trafficking. Including this may boost costs by 10%.
- Under-estimation. The estimations concern just the salary costs of frontline service delivery. Hence they exclude:
    - Material costs of service delivery. These are not as high as for example in education and institutional health care. Parenting programs do not require large buildings. While one preschool classroom can only receive 40 unique children at the most in a given year (two shifts of 20), a similar space where counsellors can have meetings and receive groups can be sufficient for catchment areas with very large numbers of parents and even larger numbers of children. Expensive equipment is not needed either for parenting programs. What may boost costs, however, are vehicles or boats needed to reach people in sparsely populated areas.
    - The support system. This concerns: in- and pre-service training; supervision and mentoring; research; monitoring; development of materials, methods and content, et cetera. The human and financial resource requirements of such a support system for parenting programs will not be very different from support systems in other sectors. Pre-existing infrastructure may well be available from the Ministry of Health and District Health Offices.
    - Overhead and governance system. These costs, too, are similar to those in other sectors and they may be limited given pre-existing structures.

Considering (i) that overestimations probably outweigh underestimations and (ii) that people in densely populated areas outnumber people in sparsely populated areas, one could say that the overall costs of parenting programs are in the order of:

LICs	LMICs	UMICs	HICs
0.04% of GDP	0.025% of GDP	0.01% of GDP	0.01% of GDP

If a single outcome for all developing countries (LICs, LMICs and UMICs) would be preferred, it would be in the order of **0.02% of GDP** (considering that the joint population of MICs strongly outnumbers the joint population of LICs).

Outcomes for 76 individual countries are available at www.janvanravens.com under Global Reports. For more precise and country-specific cost-estimations, one can take two steps: the first is an easy one, while the second is much more laborious.

- The easy step is simply to use the formulae in this paper and to replace the general data that have been used by country-specific data. This is 10 minutes of work, but it will continue to suffer from the over- and under-estimations that were mentioned above.
- The harder step is to build it up inductively. First one needs to develop the concrete provision schemes (such as figures 1 and 2) in order to estimate labor time and labor costs of frontline service providers. Second, one must go item by item for materials, transportation and the support structure. Empirical data are need, meaning that this task includes field observations and interviews, requiring two or three weeks of work.

11. Resource mobilization

To UMICs and LMICs, the resource requirements of 0.01 to 0.025% of GDP should not represent unsurmountable budgetary challenges considering that the health budgets of these countries are typically in the order of 5% of GDP. Ministries of Health can autonomously (without cabinet permission) introduce and incrementally scale up parenting programs, using their own budgets. The program budget can be allocated by means of a funding formula in which the unit cost is mutliplied with (i) the number of children in each catchment area and (ii) with a coëfficient based on, for instance, population density. This coëfficient is higher than 1 in sparsely populated areas and sits between 0 and 1 in densely populated areas.

The societal and economic returns on this investment in parenting skills are most probably significant. It is not possible in this paper to estimate the return on investment of parenting programs that are designed in the way that this paper proposes. This would require more space and more expertise. However, there is convincing evidence from the literature that the economic benefits of early learning – the numerator of the fraction – are generally significant (The Century Foundation, 2021) while this paper shows that the per child investments – the denominator – can be very modest as a result of the proposed cost-saving measures. If parenting programs would be delivered as suggested, it may well be that a benefit to cost analysis yields exceptionally positive outcomes, especially if secondary effects would be included such as social capital emanating from women's groups and the long term impact of the accelerated reduction of birth rates (assuming that the program include family planning).

Such externalities would certainly be observed in LICs as well, but here we run into a problem that is perhaps fundamental to human development more in general. Expressed as a percentage of GDP, the costs of the proposed program are 0.04% of GDP which is clearly higher than they are in LMICs and UMICs. More importantly, tax revenue in LICs is generally significantly *lower* than elsewhere. Tax evasion on the part of rich elites happens everywhere, but in LICs it is particularly harmful because other groups are too small (middle class) or too poor (lower class) to generate substantial revenue. This means that an amount of 0.04% of GDP can be difficult to mobilize, posing a dilemma for donors: do they step in, legitimizing and consolidating the irresponsible behavior of those in power? Or do they play poker and step back, calling for a tax reform that may never take place?

If donors decide to step in, there is also some good news. While the per child costs expressed in per capita GDP are higher in LICs than anywhere else, the per child costs expressed in dollars are much lower. Providing the program to one child in the average LIC costs, roughly, between US$ 8 (current) and US$ 20 (PPP). The latter is about 30% of the unit cost in LMICs, 15% of the unit cost in UMICs, and less than 10% of the unit cost in HICs. Those HICs that are prepared to spend about 0.5% of their GDP in Official Development Assistance, might pledge the resources needed to give millions of children in LICs a better life. But the question remains: is this really an appropriate way of funding a key service which should be safeguarded at the heart of local communities, as the Alma-Ata conference in 1978 advised so urgently? This brings us the subject of governance.

12. Governance

So far, this paper has implicitly assumed that all parents in a country participate. In practice this is unlikely: some parents will opt out, partly for considering themselves to be good enough parents; partly for resisting government interference in child rearing on religious or cultural grounds; partly for being too poor to be able to spare the time. If we would exclude the possibility of opting out, this would mean that participation would be obligatory. This can be politically difficult in some countries, and perhaps even unconstitutional in that it may violate parents' rights to self-determination.

So how can we make sure that the programs engage most of the parents who need it, without making it compulsory? A way forward could be to implement and expand parenting programs incrementally. Implementation could start in groups and areas where the needs are highest. Incentives may be provided to compensate for time-loss on the part of parents, though this will increase costs. More in particular, refugee camps and peri-urban settlements in LICs are places where high needs and low costs go hand in hand (because of high population density) so that rates of reutrn are likely to be very high.

A good analysis of targeting issues is provided in one of the documents of the UN Regional Office (see section 1 on sources)[9]. The suggestion is to go for the universal progressive model, which means that there is a basic package for all, plus additional services for those who need it. E.g. if post-natal depression is diagnosed, the mother receives focused additional attention. Domestic violence can be met by providing shelter. Observation of poor living conditions can make the counsellor decide to use her network for obtaining a new home for the family.

By tayloring parenting programs to local and even individual needs we remain faithful to the spirit of the Alma-Ata conference of 1978. The primacy of the local community is also the basis of a governance concept called LAMP: locally adaptable mono-sectoral policies (van Ravens, 2023). The essence of LAMP is that local communities decide how to shape and combine ECD programs in order to create the service constellation that best fits their local needs and preferences. Communities may or may not decide to integrate a parenting program in another ECD program such as preschool education, as in the case of Taman Posyandu in Indonesia (Febrianti, 2018). However, communities will only have the freedom make their own decisions in this regard if the program is flexible (locally adaptable) and if it does not land at the local level as part of a pre-fabricated "multi-sectoral intervention package"[10].

The kind of parenting program that this paper proposes can make a significant difference in the lives of families against low costs, as long as it remains in the hands of local communities.

[9] Part 1: policy framework, pages 18-19

[10] Task Force 1 of the ECD Action Network ECDAN is exclusively focused on "packages" of interventions that span multiple sectors. Trend analysis and governance analysis strongly suggest that this governance concept of pre-fabricated integration at national level is very detrimental. See www.janvanravens.com

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