

ECONOMIC AND SOCIAL RESEARCH COUNCIL
END OF AWARD REPORT

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Grant Title	Healthy Urbanisation: Tackling child malnutrition through intervening to change the social determinants of health in informal settlements and slums. The research team renamed this study the NICK Project :Nutritional Improvement for children in urban Chile and Kenya		
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1. NON-TECHNICAL SUMMARY

PROJECT OVERVIEW

Since 2010, the NICK¹ study has sought to help two project countries, Chile and Kenya, reduce urban malnutrition in young children by facilitating intersectoral actions to change the social determinants. In urban Kenya chronic stunting is an endemic problem jeopardizing children's physical and mental development. In urban Chile child overweight and obesity is a serious public health problem associated with increased risk of morbidity and mortality from chronic diseases such as diabetes mellitus and coronary heart disease.

The 2010 and 2013 Lancet Series on Maternal and Child Nutrition identified the need for increased inter-sectoral action to address the complex causation of child malnutrition. The 2013 Series called for more studies to strengthen the evidence base for 'nutrition sensitive' programming to address the social determinants and find out what works and how programmes should be designed in specific country contexts. Now that more people worldwide are living in cities than rural areas, there have also been calls for more attention to be paid to the poorest and most vulnerable families living in urban informal settlements. The NICK study responds to these calls by addressing the question: *Can child malnutrition amongst families living in poverty in informal settlements in the cities of Mombasa in Kenya, and Valparaíso in Chile, be reduced through broadening community and stakeholder participation to change the social determinants of nutritional status?*

Findings from the situational analysis confirmed that the social determinants of child malnutrition in the study areas were a broad range of social, economic and environmental factors operating at local, municipal, provincial and central levels. They included education, income, working conditions, housing, neighbourhood and community conditions, the status of women and level of social inclusion. These determinants impacted child nutrition through influencing access to nutritious foods, child care practices and access to basic services.

The researchers on the NICK study intervened by establishing a multisectoral nutrition working group in each study city and facilitating the work of this group through three, bi-annual cycles of participatory action research. This interactive process built the capacity of group members to work together to plan, act and evaluate small-scale inter-sectoral, co-ordinated interventions.

In Kenya the impact of this intervention on the nutritional status of children aged 24 to 59 months was evaluated quantitatively using baseline (in Summer 2011) and follow up (in summer 2013) anthropometric and household surveys within a controlled experimental design.² The findings showed that child stunting had been reduced in the intervention area but there was a larger reduction in the control area. An exploration of the reasons for this unexpected result revealed negative changes in employment, food security, income and in- and out-migration between 2011 and 2013

¹ Nutritional Improvement for children in urban Chile and Kenya (NICK)

² In Chile it was not possible to collect the follow up survey data due to withdrawal of the partner institution following the resignation, on health grounds, of the in-country researcher who had collected the baseline data.

in both study areas, with the intervention area suffering more than the control area in each respect. In particular, many of the small industries in the intervention area closed down during this period, partly because there was an economic recession and partly because of political uncertainties in the run-up to the 2013 election.

Changes in learning as a result of the action research process were evaluated qualitatively using learning histories, interviews and group discussions. The findings showed that the process had enabled members of the multisectoral, nutrition working groups to overcome the 'silo mentality' and develop the capacity to work together with other sectors; to build their leadership and advocacy skills; and to implement and evaluate small-scale, co-ordinated inter-sectoral actions. In Kenya the study findings have already been taken up and used to inform policy development and the life of the working group has been extended beyond the end of the study with every expectation that it will continue to be supported by the newly formed County government.

2. AIM and OBJECTIVES

Aim: To help two project countries, Chile and Kenya, reach the Millennium Development Goals (MDGs) to reduce poverty by reducing malnutrition in young children living in informal settlements in Valparaíso and Mombasa, through facilitating co-ordinated, inter-sectoral actions to change the social determinants.

Objectives:

- i. To describe the social determinants of child malnutrition in the two study sites.
- ii. To find out how effective any existing policies, initiatives and networks are in influencing these determinants in the study sites.
- iii. To describe the constraints on the effectiveness of these policies, initiatives, networks in the study sites.
- iv. To identify the actions, pathways and mechanisms (including those in existing structures) through which these determinants can be made most effective in reducing child undernutrition in a sustainable way.
- v. To identify the main implications for policy development and implementation using an intersectoral approach.

3. METHODOLOGY

Phase 1

i. Situational analysis

Three structured literature reviews were carried out to identify the social determinants of child malnutrition and any existing policies, initiatives and networks to address them. Pridmore (2011)³ reviewed the international literature, Lang'o and Amuyunzu-Nyamongo (2011) and Salgado Diez (2011) focused on the social determinants in Kenya and Chile respectively. The findings from these literature reviews were supplemented with data from interviews with key informants to further identify key

³ All the references in the text refer to the study outputs listed at the end of this report are available on the ESRC ROS website and the IOE NICK website (www.ioe.ac.uk/nick).

social determinants in each study city, to illuminate the policy environment and to identify what actions were already being taken to address the problem. In Mombasa two focus group discussions (FGDs) with mothers of children aged 0-5 years and five semi-structured interviews (SSIs) with health officials, administrators and local authority representatives were conducted. In Valparaíso, semi-structured interviews were carried out with thirteen local health workers and nutritionists working with the selected nursery schools and three focus group discussion with parents and guardians of the nursery school children.

During this phase the advisory group for the NICK study was also established⁴.

ii. Selection of study-sites, sampling and randomisation

Mombasa was chosen because it was experiencing high levels of child undernutrition and social problems amongst the urban poor; the informal settlements were relatively less researched compared to Nairobi and little was known about the dynamics of child under-nutrition. Within Mombasa, the informal settlement known as Chaani was selected to be the intervention site and the informal settlement known as Kongowea was selected to be the control site. With hindsight, the two areas, although both were informal settlements/slums, were not well matched, they were quite different, with Chaani having small industry on the outskirts of Mombasa and Kongowea hosting the central market with implications for how each would fare during an economic recession. Households were selected using a systematic sampling process – every n^{th} household depending on the number of households in the village⁵ – and selecting only those with a child between the ages of 24 and 59 months. (In Chaani $n=849$ and in Kongowea $n=960$.)

Valparaíso was chosen because the city was experiencing similar problems of poverty and exclusion but these had been overlooked in part because of the city's strong economic performance and impressive aggregate social indicators. Valparaíso was of comparative interest because there is spiralling child malnutrition, in the form of overweight and obesity especially in low income families, and the Ministry of Health has recognised the need to control the social determinants of this problem.

Within Valparaíso, the informal settlement known as Playa Ancha y Cordillera was selected to be the intervention site and the informal settlement known as Rodelillo y Placeres was selected to be the matched control site. These two sites were on different hills accessed by a steep climb up from the sea. Both study areas comprised of tightly packed low-cost housing with no safe outdoor play areas for children. Families living in some houses on steep hillsides did not have land rights or access to water and sanitation. Drug cartels were operating in both study areas.

⁴ The advisory group members were Dr Kirsten Haveman, Counsellor (Health), DANIDA, Mozambique; Anna Taylor, Senior Nutrition Adviser, DFID, UK; Dr Shahnaz Kassam Sharif, Director of Public Health, Ministry of Public Health and Sanitation, Kenya; Professor Marleen Temmerman, Head, Department of Reproductive Health, WHO, Geneva and Chair of the Board, ICRH, Kenya; Dr. Anisa Omar, Ag. County Health Coordinator, Kilifi County, Ministry of Public Health and Sanitation; Dr Aryn Lakhani, Aga Khan Health Service, Kenya Professor Oscar Arteaga, Dean of the School of Public Health of the University of Chile Dr Jaime Jamett Rojas, Director, Regional Secretariat of Health of Valparaíso, Chile.

⁵ The study worked with a block of five of the villages in Chaani informal settlement and with a block of six villages in the Kongowea informal settlement.

Within the intervention area the research team decided to work with five public nurseries because findings from the literature showed that school-based interventions can be a good starting point for reaching out to the wider community in informal settlements where most children attending these nurseries belong to the poorest families. In the intervention nursery schools the baseline anthropometric survey (weight/height/age) was carried out on all children between the ages of 24 and 59 months attending the four nursery schools and their households were also surveyed (n=297). In the control area children and households were similarly surveyed (n=226).

Phase 2: Three cycles of Action Research

In each city, the two in-country researchers established⁶ and supported a multisectoral, urban nutrition working group⁷ at the municipal level. They then facilitated this group through three, bi-annual cycles of review, planning, action and reflection workshops, with monthly follow-ups supported by the junior researchers in each country who monitored group activities and learning⁸. The initial aim was to stimulate new ways of thinking about the complex causation of child malnutrition and enable each group to make the strategic shift from individual to structural/social determinants. This shift then allowed broad coalition-building within the group and between group members and other colleagues and a broad focus on the political, social and environmental determinants of health.

Each cycle of action research started with a workshop, facilitated by the in-country researchers for members of each working group (i) to critically reflect on actions taken, and challenges encountered and to evaluate progress; (ii) to agree on new ways of working together and to plan and trial small-scale co-ordinated intersectoral actions and (iii) to re-plan, identify new opportunities for improving the subsequent cycle of action and reflection and refine the action plan for the next six months. In the first workshop group members used data to inform their inter-sectoral action planning that had been generated by the research team in Phase 1 of the research (literature reviews, SSIs and FGDs, baseline anthropometric and household surveys). In subsequent workshops data from monitoring of the groups' activities were used to stimulate reflection and inform re-planning.

A social learning process tailored to the specific objectives of the study was used to facilitate, build capacity and support these groups during the action research cycles. These two approaches are further elaborated by Charnes (2014), Charnes et al (forthcoming) and Pridmore et al (forthcoming) This approach had previously been

⁶ In Valparaíso, the approach known as open-space technology was used to establish the working group (see Charnes 2014)

⁷ In Mombasa this group was called the Urban Nutrition Working Group (UNWG) and its members were from the Government Ministries of Health (Public Health & Sanitation and Medical Services), Education; Water; Agriculture and Social Development; the Mombasa Water and Sewerage Company; Mombasa-based NGOs (ICRH; Aphiplus and Coast Development Authority); Mombasa Municipal Council nutrition officers under the health sector; and the chief of the study area. The elected convener was the District Nutrition Officer. In Valparaíso this group was called the Participatory Action Research Learning Group (PARL) and its members came from the Regional Secretariat of health; teachers from the selected nursery schools in the study area; the Municipal council; Primary health centres; Regional JUNJI (National Board of Nurseries); the University of Valparaíso; and the Association of street markets of Valparaíso.

⁸ The project had a six-month extension which enabled the Mombasa urban nutrition working group to complete a fourth cycle of action and reflection with a final evaluation meeting.

tried and tested on the WHO Healthy Urbanisation project in Chile and on the Chile Healthy Urbanisation Project (see Charnes, 2014); it was adapted to meet the needs of the Mombasa and Valparaíso nutrition working groups and to meet the specific local cultural contexts.

Monitoring and evaluation of the actions undertaken by the working groups and of individual and group learning

Monitoring of the activities in the inter-sectoral action plans was carried out at two levels: the community and the nutrition working group.

At the community level monitoring was done by the members of the nutrition working group tasked with the responsibility for a specific action point. In Mombasa, for example, food security was the responsibility of the Agricultural Officer; domestic violence⁹ was monitored by the member from the Ministry of Gender, Children and Social Development; nutrition by nutrition officers of the Ministries of Health; the overall security of the community by the area chief; water and sanitation by the water representative; and so forth. In Valparaíso, monitoring of activities in the nursery schools was carried out by the members of the nutrition working group who were nursery school teachers, the JUNJI members and the researchers. Efforts to improve governance were tasked to members from the Regional Secretariat of health, the Primary Health Centres and the University of Valparaíso.

At the level of the nutrition working group monitoring was carried out through monthly meetings of group members. The aim was to maintain motivation, review the implementation process, and plan for any remedial intervention needed.

During the workshops at the start of each action research cycle, group members also reflected on individual and group growth, on changes in mindset amongst the membership and their line managers about what caused the conditions they regularly encountered, and on the benefits or otherwise of intersectoral collaboration to tackle these determinants. The Mombasa working group used a 'Learning Histories' tool to support their reflection which had been adapted from one used by Charnes in Chile to illuminate individual and group learning and highlight important learning experiences during the action research process. (see Charnes 2014). Workshop reports were then generated and shared among the working group members and their organizations.

Impact evaluation

Mombasa

The impact of the intervention on child nutritional status was evaluated using a before-after, case-control study design. To recap: the intervention areas was Chaani, the control area was Kongowea. The first wave of nutritional and socio-economic status data from the child anthropometric survey¹⁰ and linked household survey was in July 2011, the second in June 2013. Stunting rates were calculated using software for the 2006 WHO standards.

⁹ Daniel Lang'o was awarded a linked doctoral scholarship to extend the work of the NICK study to explore child under-nutrition in families affected by domestic violence in Chaani.

¹⁰ In Mombasa and in Valparaíso child height and weight was measured using a Leicester height measure attached to an electronic Marsden weight machine (model MS4202L Height of children was taken when barefoot, standing upright with back straight, with heels touching and looking straight forward.

The classic – although relatively new! - way to assess impact of the intervention is to say:

- If the areas are well-matched then any changes – independent of the intervention - should be similar in the control and intervention areas;
- If there is a positive impact of the intervention, then the situation should have improved more in the intervention area, and vice versa if there is a negative impact.

Difference-in difference

We compared the change in child nutritional status in the intervention area against the change in the control area (the procedure is known as difference-in-difference). This procedure was applied to the rates of moderate and severe stunting in Chaani and in Kongowea and also to the reported rates of domestic violence in the two years between the first and second waves of data collection.

Whilst this procedure is now recognised as one of the most robust, it is always crucial to check that there have been no significant changes in intermediate factors that are known to affect child health and specifically nutrition that have *differentially* affected control and intervention areas. In particular, we were concerned with any possible changes in any known social/structural determinants of health and nutrition in the two areas.

Possible intermediate factors are: Civil conflict; Education; Employment; Food distribution and consumption; Food security/ coping strategies; Housing; Income ; Political Situation; Population change /immigration; Social security; Transport.

Of these, the only ones which might change quickly (i.e. between Summer 2011 and Summer 2013) and, crucially, differentially between the two intervention and control study areas are employment, food distribution and consumption, food security, income and population change. There have indeed been changes in the levels of civil conflict and the political situation in Kenya between 2011 and 2013 but those changes, whilst different across the country, would not have been different between Chaani and Kongowea. Education levels, housing and transport would only change slowly and not differentially between the two slums. There have been some changes in social security but they would have been the same for both slum areas. Moreover the relevant impact of changes in food availability is better measured through changes in coping strategies so that the changes to examine are employment, food security.

Valparaiso

As explained in footnote 2 it was not possible to collect follow-up data in Valparaiso, so there was no impact evaluation there.

4. PROJECT FINDINGS

(Please summarise the findings of the project, referring where appropriate to outputs recorded on ESRC Society Today. Any future research plans should also be identified.)

The findings are presented in relation to each study objective.

i. *The social determinants of child malnutrition in the two study sites*

Drawing on data from the literature reviews, semi-structured interviews and focus group discussions with a range of stakeholders the social determinants of child malnutrition were found to be a broad range of social, economic and environmental factors operating at multiple levels of the local social organizations. They included education, income, working conditions, housing, neighbourhood and community conditions, and the level of social inclusion. These social determinants operated through public policies that controlled the level of resources available to communities and households.

In Mombasa, the data suggest that poverty is one of the key determinants in the informal settlements. Other key social determinants identified include lack of access to adequate nutritious food; mothers ages and educational status; poor child care practices especially for mothers engaged in casual day work; lack of access to health care services including antenatal care and contraception that affects child spacing; low level conflicts that lead to displacements (example the post 2007/8 election violence); up to 2010, the lack of integrated policies, strategies and frameworks aimed at tackling the root causes of child under-nutrition; limited and/or lack of access to social capital; cultural aspects including beliefs food preparation and consumption practices; and domestic violence.

In Chile, the key determinant was found to be the obesogenic environment characterised by low availability of healthy foods and beverages, unsafe streets, and little access to recreation opportunities. The unhealthy eating and sedentary lifestyle that cause overweight and obesity had been influenced by a range of social determinants. Rapid urbanisation (involving movement of many families from rural areas to urban informal settlements and slums), increased availability of fast food and of advertising, development of new forms of sedentary entertainment such as video games, and the changing nature of the family, have been influential in this regard. Overweight and obesity are particularly prevalent in lower income families, for whom access to vegetables and fruits and other healthy food is limited, as is incorporating physical activity in their everyday lives.

In Valparaiso, the findings showed that, all parties (both professionals and parents/guardians of nursery school children) considered overweight to be an issue. However, there were some differences of view between the two groups, with some parents and guardians considering the problems somewhat exaggerated. Cultural views of 'plump' children being viewed as healthy were seen to exacerbate the problem. Stakeholder perspectives provided strong confirmation of the importance of social determinants, for example the influence of fast food advertising, geographical difficulties in accessing healthy foods, and financial barriers to physical exercise. Barriers to effective policy and intervention formation in this area were seen to be cross-sectoral coordination between different agencies, continuity of initiatives over time, budgetary priorities and involvement of the private sector. (See McCowan et al, 2014)

The study findings on the social determinants of child malnutrition in the two study areas are further elaborated by Lang'o (2011), Pridmore (2011) and Salgado Diez (2011).

- ii. *The effectiveness of the policies, initiatives and networks that are already in place in influencing the social determinants in those sites and the constraints on their effectiveness.*

Lack of effectiveness of current policies, initiatives' and networks is evidenced by increasing rates of urban child malnutrition in both study areas (See Lang'o, 2011, Salgado, 2011, Charnes 2011).

In Kenya, however, there has been rapid development of strategies, policies and action plans in the last three years related to child health and nutrition. These include the National food and Nutrition security Policy (2011), the Kenya Health Policy 2012-2030, the National Nutrition Action Plan 2012-2017, draft Urban and Peri-urban Policy (2010) and Urban Nutrition Strategy (2012-2017). However, the challenge remains to increase the focus on social determinants and to translate this policy into tangible and effective actions especially in relation to the urban poor, who tend not to be considered in development initiatives. This requires changing the mental map to begin thinking inter-sectorally, and implementing co-ordinated interventions in a manner that would lead to improved health for all. (See Amuyunz-Nyamongo, 2011, 2014).

In Chile, there has also been a range of interventions in recent years relating to nutrition education, improving physical activity in schools, reducing the consumption of unhealthy food during school hours and community-based promotional activities. Childhood obesity rates, however, have continued to increase. Most of these interventions are at a national level and have not been evaluated. The few studies that have been carried out have concluded that the more long term interventions had better results in reducing overweight. However, previous studies have not fully explored the influence of social determinants and environmental conditions inside the communities where those children and their families are living (see Charnes, 2014)

In Chile, the Ministry of Health set health objectives for the first decade of the Millennium (2000–2010) which included the reduction of sedentary lifestyle. In 1998 a National Board for Health Promotion was created and introduced a robust health promotion policy to cope with the increasing obesity in the country and yet these efforts have been insufficient to decrease the prevalence of obesity in the country. Children in Chile now have the highest levels of overweight and obesity in Latin America. The problem is more acute in children from lower income households and in Valparaiso local municipal policies have not encouraged or provided opportunities for healthy eating and adequate physical activity. The main reason for this failure appears to be a lack of political commitment to making obesity prevention a high priority for funding and regulation (See Charnes 2014).

- iii. *The actions, pathways and mechanisms (including those in existing structures) through which these determinants can be made most effective in reducing child undernutrition in a sustainable way.*

At an early stage of the action research process each nutrition working group identified the pathways to improved child nutrition broadening out their initial perceptions to include social determinants. They then moved on to jointly planning co-ordinating implementation and monitoring the following intersectoral actions in the intervention areas.

Mombasa

During the second action research workshop the Mombasa working group identified three community-based groups (one of which was composed of young and mostly single mothers) as a focus for their co-ordinated inter-sectoral actions. Nutrition working group members then conducted capacity building training sessions to empower members of the self-help groups to contribute to reducing inequalities and vulnerabilities and facilitated their access to the government extension services that they needed to improve their living conditions. The nutrition working group members also asked each of these community groups to mentor other groups and by the end of 2013 each group had supported at least one other group.

The actions carried out by the working group aimed to build the capacities of the three community groups to improve nutrition and food security; to improve their living conditions; to expand their income generating activities; to strengthen psychosocial support; and help prevent domestic violence and mitigate its impact. These activities are further elaborated in Annex 1 and in the briefing papers by Amuyunzu-Nyamongo (2012) and Lang'o, D. (2012).

The findings show that by the end of the action research process the intervention communities, through the efforts of the three self-help groups targeted by the nutrition working group, were now better organised within themselves and in relation to the government and NGO services available to them. They had an increased supply of fresh vegetables from their balcony farming and had generated income from the production and sale of their produce. Their produce was displayed at the Mombasa Agricultural trade fair in August 2012. In comparison to other areas of the informal settlements, an improved level of sanitation and waste disposal has been observed where the nutrition working group has been active in the intervention area. These observations have been reported during the review meetings by members of the community groups and leaders, and by the nutrition working group members who work in the settlement in the regular discharge of duties.

During review meetings the members of the nutrition working group attested to the mutual friendship and support that had been forged between them through their regular interaction within the group. The increased ability to call on someone from another sector for support was seen as one of the key outcomes at a personal level.

Valparaiso

The nutrition working group started by reviewing the findings from the situational analyses and carried out a detailed stakeholder analysis. After this they systematically developed and started to implement a local inter-sectoral Plan of Action which sought to address both policies and programmes. Four of the working group members were nursery school teachers and the main thrust of the action plan was to work with the teachers, children and parents in their schools.

The stated aim of this Action Plan was to contribute to modifying the obesogenic environment for two to four year old children in the research intervention site (Playa Ancha y Cordillera) through:

- Improving governance to develop effective policies and strategies addressing the problems identified in the research site - by strengthening the commitment of regional and local municipal government and local food

providers to improve the availability and identification of healthy foods and by strengthening intersectoral networking.

- Assisting the JUNJI Nursery Schools (National Board for Day Care Centre's- Bambi, Capullito, Swallow Flipper and Tinkerbelle) to implement small scale initiatives that tackle the social determinants of child overweight and obesity thereby facilitating the development of healthier neighbourhoods.

The four key actions in the plan were to strengthen intersectoral work; to work with the teachers in the selected nursery schools; to generate new learning and reflection on overweight and obesity; and to monitor the food consumed by 2-4 year old children in the selected nursery schools. These actions and the implementation process are elaborated further in Annex 2 and in the briefing papers by Salgado Diez, B. (2012a); Charnes (2014); and Charnes et al (2014).

iv. Key challenges and constraints

- 1) *Influencing 'upstream' determinants:* A key challenge for each working group was that of visualizing the nutritional effects of social factors and social interventions, particularly those that sought to influence "upstream" determinants. In developing the knowledge and pathways of the working group there was an initial tendency to take decisions based on intuition and knowledge of actions and mechanisms already being used that were difficult to translate into efficient interventions rather than addressing the lack of systematic knowledge and political will. The sustainable change processes proposed by the working groups consider the reality of different sectors and the real needs of communities. These processes require municipalities, local and regional government teams with authority and commitment to implement public policies in local spaces.

Initially, the nutrition working groups privileged micro level policy environment interventions, 'settings of daily life'. In Mombasa this involved working with the self-help groups, their families and communities; in Valparaiso it involved the nursery school families and communities, local primary health centres, homes and streets.

The groups did not focus to the same extent on intervening in the macro level policy environment although as the action research progressed in Mombasa members actively sought to influence their line managers to improve governance and thereby increase access to basic services in the informal settlements. In Valparaiso, the working group did not seek to influence issues such as permitting junk food advertising during children's television-viewing times or issues related to integrated urban planning and transport systems.

- 2) *Building community partnership:* Meaningful community involvement is the basis for valuing local knowledge and acknowledging the needs and tensions around promoting citizen participation and empowerment. However, an intimate knowledge of the community is needed to inform critical reflection on the actions, pathways and mechanisms through which broadening community and stakeholder participation can change the social determinants and reduce child malnutrition in a sustainable way. The Mombasa working group were greatly assisted in this task by having the

local Chief from the intervention area on the working group who had the knowledge needed and could organise community meetings.

The Valparaiso working group included members who were teachers living and working in the intervention community. The group also carried out a general stakeholder analysis and yet they were still challenged to find ways of broadening participation. A more in-depth analysis was needed to find ways to strengthen partnerships between the diverse groups of community leaders (e.g. clergy, local police authorities, health care providers, school teachers, fishing and small trade groups) and community members (caretakers, families) in tackling the problems of over-nutrition; and in finding ways for local food providers to gain some benefit from improving the availability of healthy foods and not advertising unhealthy foods such as soft drinks outside nursery schools.

It would have been more effective to establish an on-going formal strategy to establish guiding principles for partnership interaction. These principles should consider how partners agree to interact within the partnership and how information is shared within the partnership and with those outside the group. To sustain the partnership, it would have been useful to revisit and modify the principles as new partners joined the group and as part of the social marketing and social mobilization programme.

- 3) *Developing sustainable interventions:* Developing “sustainable” pathways, actions and mechanisms to reduce child malnutrition implies a long term paradigm shift from a model of development based on inequity and exploitation of resources to one that requires *new forms of responsibility*, solidarity and accountability not only at the national but also at the regional/county and local level.

Sustainable results demand longer-term perspectives that require commitment of the full spectrum of people involved in the outcome, that the underlying problems be tackled, and that this be done in a way that gives people the motivation and skills to continue working on the deeper issues.

Effective governance to develop sustainable approaches to societal challenges demands processes that engage and empower people to tackle their own problems. At the same time, the need to build the culture of democratic governance requires strengthening the very capacities that such processes demand.

This requires long-term, constant, persistent and rigorous action and continuous learning programmes that ensure the application of new skills. It also requires a high level of systems thinking and approaches which consider the system as a whole, interactions between different elements and possibilities for intervention. There needs to be regular platforms for discussion, dialogue and problem-solving with other sectors so as to engage and become acquainted with a wide variety of viewpoints in multi-stakeholder deliberations. Despite these challenges, as noted below, the Mombasa working group has demonstrated sustainability beyond the life of the study and is moving towards becoming institutionalised within the new County structures.

4) *Establishing and sustaining the nutrition working groups*

The findings show that the social educational process used by the researchers to facilitate and sustain the two working groups enabled inter-sectoral planning and co-ordinated action to help reduce child malnutrition.

The urban nutrition working group in Mombasa was established by the in-country researchers in April 2011 and held its first meeting in July 2011. It held its last meeting facilitated by the researchers in May 2013 with a further meeting in September to present their work to the entire research team and at a national dissemination seminar. This working group has continued to function beyond the life of the research study (it is still meeting regularly and continuing its activity at the time of this reporting in March 2014). Its achievements were presented as an exemplar of inter-sectoral collaboration in Coast Province Kenya during the National Scaling up Nutrition (SUN) Conference in November 2012 in Nairobi.¹¹ In July 2011, the in-country researchers in Valparaíso organised an 'Open Space' meeting to identify the participants and anticipate the needs and visions of those working with children between 2 and 3 years and 11 months. The Valparaíso urban nutrition working group was subsequently established and held its first meeting in November 2011 and continued to function until March 2013. (See Salgado Diez 2012b)

- 5) *Capacity building using the Participatory Action Learning (PARL) model of change:* The action research process was viewed as incipient double-loop learning cycles (See Charnes 2014). The facilitators sought to enable the multisectoral, nutrition working groups to overcome the 'silo mentality' and develop the capacity to work together with other sectors; to build their leadership and advocacy skills; and to implement and evaluate small-scale, co-ordinated inter-sectoral actions. This involved appraisal of methodological diversity -involving others and establishing partnerships in meaningful relations and understanding inter-sectoral work as joint ownership. Double loop learning is implicit in the actions or initiatives that recognize malnutrition as a responsibility of all sectors and consider how to influence other public policies that have an impact on malnutrition in collaborative learning initiatives with other stakeholders.

Each group has developed through different capacity building activities the strengthening of essential collaborative skills, the building of trust among the different sectors, the appropriate framing of interdependent policy goals and inter-sectoral Action Plans that consider different scenarios.

The PARL model was intended to question and transform existing knowledge into new ways of understanding and doing things and in specific changes in behaviour and attitudes toward child malnutrition. All the information produced by the working groups was a source of learning and action. It is important to note that this type of social educational process has an impact on organizational change processes. It is pointless for

¹¹ The Global Movement for Scaling Up Nutrition (SUN) seeks to enable countries to improve nutrition by bringing together the people and resources needed to scale up nutrition-specific interventions and implement cross-sector strategies that are nutrition-sensitive. It recognises that malnutrition requires people to work together across sectors. (Source: http://scalingupnutrition.org/about#countries_reveal).

municipalities and local and regional teams to spend resources on action-oriented programmes without being able to introduce changes in the ways they are working in their institutions.

Evaluating and monitoring the learning and change process.

The action research process was evaluated qualitatively using learning histories, interviews and discussion. The findings showed that the process had enabled members of the multisectoral, nutrition working groups to overcome the ‘silo mentality’ and develop the capacity to work together with other sectors; to build their leadership and advocacy skills; and to implement and evaluate small-scale, co-ordinated inter-sectoral actions. The learning histories showed that the participatory educational process used to facilitate the work of the group had increased members appreciation of the roles that different sectors need play to tackle child malnutrition. It had also built the capacity of individual members including their capacity to address diverse audiences. For example, the public health officer said that through being a member of the working group she had been able to address a wider range of people and make presentations. There was also evidence of acquisition and transfer of skills beyond the work of the group. For example, members said they had taught family and friends urban farming skills and some of them were now making soap for their own domestic use. The use of learning histories to document and support learning within the group is further elaborated in the paper by Lang’o and Amuyunzu-Nyamongo (2014).

Impact Evaluation

Mombasa

In 2011, stunting rates among 24-59 month old children measured in the intervention area (Chaani) and matched control area (Kongowea) were found to be higher than the 2009 national rates. Severe stunting ($< -3SD$) was found to be about 18% for boys and 13% for girls with both rates higher – but not by much – in Chaani.

Two years later in 2013, severe stunting rates among 24-59 month old children were found to be about 12% for boys and 10% for girls with both rates higher in Chaani. Moderate stunting was found to be about 40% for boys and 35% for girls with the rates for boys higher and the rates for girls lower in Chaani. (See Table 1)

Table 1 Severe and Moderate Stunting in Chaani and Kongowea in 2011 and 2013: children between 24 and 59 months inclusive only.

	N	< -3	< -2	Mean	SD
Intervention area - Chaani					
2013 Male	220	13.2%	34.5%	-1.33	1.42
2011 Male	197	18.3%	40.6%	-1.69	1.45
2013 Female	256	11.7%	32.8%	-1.41	1.29
2011 Female	176	13.6%	31.3%	-1.46	1.37
Control area - Kongowea					
2013 Male	268	10.8%	31.3%	-1.27	1.47
2011 Male	208	17.8%	38.5%	-1.65	1.40
2013 Female	255	9.0%	27.5%	-1.28	1.31
2011 Female	229	11.8%	38.9%	-1.49	1.39

For severe stunting, the difference-in-difference is a 1.9% drop in Kongowea for males and a 0.9% drop for females relative to Chaani; the changes are similar and certainly not statistically significant. For moderate stunting, the difference-in-difference is a 1.1% larger drop in Kongowea for males and a 12.9% larger drop for females; the latter is much larger than the comparative drops in severe stunting, and is statistically significant at the 0.1 level.

Overall therefore, the changes in severe stunting are the same, but there have been larger drops in moderate stunting in the control area, Kongowea, although the difference is only statistically significant for females. Nevertheless it is clearly important to explore the reasons for these results which are not favourable to the intervention area.

An exploration, through further interviews and discussions, of the reasons for this unexpected result revealed negative changes in employment, food security, income and population change, with Chaani suffering more than Kongowea. Economic collapse followed closure of the Export Processing Zones in Chaani which had provided vital employment. Residents became petty traders and had increased access to fresh vegetables from the urban farming (and income from selling surplus produce) but could not afford full meals and resorted to coping mechanisms including skipping meals and consuming less preferred diets. Kongowea was closer to the city centre and tourist hotels provided ongoing employment.

The impact evaluation in Mombasa is further elaborated in the briefing paper by Carr-Hill and Lang'o (2014).

Valparaiso

As stated in footnote 2 it was not possible to collect follow-up anthropometric and household data from the study areas in Valparaiso and the impact of the intervention cannot, therefore, be assessed quantitatively. However, the findings from the baseline anthropometric and household survey have been used to inform the two journal articles by Carr-Hill et al shown in the list of outputs below. These findings show that it in Valparaiso it was possible to choose a control group which was comparable to the intervention group in nearly all respects both anthropometrically and in their socio-economic situation. More importantly, the findings show that the factors associated with obesity in Valparaiso and with undernutrition in Mombasa are different, suggesting that the Lancet proposal to include them in the same model is not fruitful.

Although it was not possible to collect the second wave of follow up survey data in the Valparaiso study sites, significant achievements were nevertheless made. The urban nutrition working group brought together professionals from the nutrition-related sectors, enabled a new form of working together, challenging silo-based mentalities, and bonding the members so that they have continued to work together after the end of the project.

4. IMPLICATIONS FOR POLICY DEVELOPMENT AND IMPLEMENTATION AT SCALE (USING A MULTISECTORAL APPROACH)

The study has demonstrated that a sensitively facilitated and supported action research process can enable multisectoral teams at the municipal level to plan and implement co-ordinated inter-sectoral actions. Evidence for the apparent success of the urban nutrition working groups has also demonstrated that, in turn, these actions can build the capacities of communities to help tackle social determinants of urban child nutrition. The unexpected findings from the quantitative evaluation do not link reduction in child stunting to the intervention but given the economic collapse experienced in Chaani during the study period the intervention might have helped to mitigate the effect of the economic collapse on stunting.

These findings have implications for both policy development and implementation. In Kenya the early findings have already been taken up and used by policy makers at the central level. Two nutrition working group members participated in the formulation and completion of the draft National Nutrition Action Plan/Policy in September 2012. In the drafting of the policy evidence from the NICK study was included in the justification for the need for such a policy; and in the formation of county level urban nutrition working groups.

Key to the uptake of study findings by policy makers in Kenya was that they were available at a time when the policy makers were actively seeking ways to strengthen urban inter-sectoral planning and action to reduce child stunting. Shortly after the start of the study the Kenyan government specifically called for the establishment of urban nutrition working groups. This call increased support for establishing the NICK urban nutrition working group in Mombasa and helped to sustain the interest and commitment of the members and their line managers throughout the 18 month action research phase of the study. It is the government's ongoing commitment to urban, inter-sectoral action on nutrition that has enabled the group to continue working together beyond the life of the study with the strong expectation that the work of the group will continue to be supported within the new County structure.

The policy environment in Kenya is explored further in the workshop paper: *Nyamongo, M. "Policy environment in Kenya before 2010 and now- implications for child nutrition.* This paper highlights the nutrition-specific policies, strategies and action plans that have been developed and positions them within the global health, equity and urbanisation contexts. The paper concludes that favourable policy environments increase the potential of successfully tackling the social determinants of child health and malnutrition. A further key to the ability of the study in Kenya to bridge the gap between research and policy was that the study advisory group members were actively involved in relevant policy development and the researchers had established track records of high quality nutrition research.

Given the high level of interest in nutrition in the run up to the post 2015 development goal setting, the study findings also have implications for how to effectively implement policies to support inter-sectoral action. In the 2013 Lancet Series on Maternal and Child Nutrition, Ruel et al confirm that nutrition-sensitive programmes that seek to change the social determinants hold great promise but acknowledge the challenges to implementing inter-sectoral planning. They call for more rigorous evaluations of these programmes that assess impacts on a range of nutrition and child development outcomes and several household and gender outcomes along the impact pathway. The experience of the NICK study shows that, when relying on local researchers considerably more resources are required for the quantitative analysis. The findings from the NICK study in Mombasa can inform the process needed to

facilitate implementation and provide evidence on impact; but it also provides a warning of the need for care in interpretation in the context of large-scale and often quite violent economic changes.

The study clearly demonstrates the effects of challenges in different sectors to child nutrition. In Mombasa, for example, the loss of employment in the intervention area, Chaani, and the tense political climate negatively impacted on the ability of households to meet their dietary needs. This implies that a holistic approach is paramount to comprehensively address undernutrition. Poor urban settlements, such as those in Mombasa, require specific attention because of their susceptibility to economic and other shocks.

Key lessons learnt: What works? What does not work?

- 1) *Creating supportive environments for intersectoral actions:* Given that implementing co-ordinated inter-sectoral interventions through collaboration has been relatively new to the members of the nutrition working group, it has been crucial to ensure that the group received the necessary technical support. Support is needed to enable group members to begin to think differently about the causes of child undernutrition and how to tackle them, to decide and implement mutually agreed co-ordinated action plans and to negotiate with line managers on the need for ensuring that group membership remains relatively stable. Support is also needed for group members to reflect on their individual and collective actions and personal growth, to manage competing demands and expectations and to ensure that an evidence base is always used to support decisions. The in-country researchers in Kenya are continuing to be supportive of the urban nutrition working group as it now prepares to transform and transition into a county level nutrition working group.
- 2) *Strengthening community action:* In Mombasa, three community self-help groups were identified, trained and supported to implement the action plans made by the working group. They too became part of the planning meetings to engender ownership. The leadership of these three groups participated in the circles of review, reflection and action planning and were thereby informed of the thinking behind the decisions made by the nutrition working group. The community members, through the three self-help groups, began to appreciate the benefits of the interventions in their lives, and some decided to take further the actions to improve the material and nutritional status of their families. Some of the actions proposed and implemented to tackle domestic violence emerged from the community itself.
- 3) *Developing personal skills and growth:* The NICK study has documented the development of personal skills and growth from both the nutrition working group and from the community groups. There has been a transition from initial awareness raising within the nutrition working group and the three community groups on the link between seemingly unrelated social determinants of poor nutrition to actively seeking new ways of co-ordinating actions to tackle them. Linkages related to tackling poor child nutrition have been created, relationships at household level have been impacted and new possibilities have opened. Some of the growth witnessed within the community was unexpected - since the NICK study's main intervention was to facilitated inter-sectoral collaboration.

- 4) *Policy environment*: it is clear that there is a need to review and/or formulate and implement policies that support multi-sectoral engagement in child nutrition. ‘Silo’ policies are limited because of the diversity of the social determinants of child malnutrition. The key sectors, including agriculture, urban planning, water and sanitation, health and education are critical to tackling this problem in a sustainable manner. It is also important to address policies on the sale and advertisement of unhealthy foods to children.
- 5) *Access to healthy choices*: In both intervention areas, the availability of fresh fruits and vegetables was limited due to the cost (especially for poor people) and availability near to homes. Increasing access to healthy choices would require making it easier to access them and ensuring that the unhealthy choices are more difficult to access (affecting supply side factors).
- 6) *Developing small-scale initiatives*: The Nick study build partnerships focused on taking action to implement small-scale initiatives to tackle the social determinants of child malnutrition. These actions were designed through multisectoral planning activities, stakeholder’s analysis and local Action Plans. In Valparaiso, the urban nutrition working groups developed a comprehensive approach to malnutrition oriented to eventually addressing both dietary habits and physical activity patterns of the population of the research intervention site. The small-scale initiatives addressed both societal and individual level factors as well as immediate and distant causes; and had multiple focal points and levels of intervention (at regional, local community and individual levels).
- 7) *Developing and implementing a capacity building programme*: This programme was based on proven transformational processes, systems tools, and collaboration and relationship building as core strategies. The impact of this programme ranged from a strategic shift from broad coalition-building and broad focus on the political, social and environmental determinants of malnutrition, to introducing a governance lens and strengthening low income communities by empowering stakeholders, families and communities in relation to food and nutrition. The new knowledge that has been developed is part of an “integral” learning and change processes that considers “inner” and “outer” change, and are both deeply personal and inherently collective.

Concluding comment

This study has helped to strengthen the evidence base on what works to enable inter-sectoral urban planning and identified some of the key challenges and constraints. It has demonstrated that well-facilitated participatory action research using a tried and tested social educational process can be used to successfully broaden stakeholder and community participation and build capacity for intersectoral planning. However, this requires a supportive policy environment and the availability of the information needed for planning. This study has also demonstrated the difficulty of showing impact in such a complex environment and the importance of monitoring changes in employment, food security, income and in- and out-migration in the study areas to help explain unexpected results.

LIST OF STUDY OUTPUTS AVAILABLE ON ROS AND ON IOE WEBSITE
www.ioe.ac.uk/nick

Pathways to better nutrition Series 1: Literature reviews

Lang'o D. (2011) Social determinants of child under-nutrition in urban informal settlements in Kenya.

Pridmore, P. (2011) Identifying and tackling the social determinants of child malnutrition in urban informal settlements and slums: a cross national review of the evidence for action.

Salgado, B. (2011) Identifying and tackling the social determinants of child malnutrition in urban informal settlements and slums in Chile.

Pathways to better nutrition Series 11: Discussion papers

Amuyunzu-Nyamongo, M. (2011) Experiences and lessons learned from influencing the social determinants to reduce child under-nutrition in Kenya.

Carr-Hill, R. (2011) Approaches to analysis of outcome and cost effectiveness for impact evaluation and possibilities for monitoring

Charnes, G (2011) Optimizing the impact of social determinants of health on exposed populations in urban settings in Chile.

McCowan, T. (2011) Nutritional improvement for children in poor urban areas of developing countries: Transforming community participation: lessons from Latin America.

Pathways to better nutrition Series 111: Briefing papers

Amuyunzu-Nyamongo, M. (2012) The implementation process in Kenya: achievements and challenges.

Carr-Hill, R. (2012) Approaches to analysis of outcome for impact evaluation and possibilities for monitoring: further considerations.

Lang'o, D. (2012) The link between domestic violence and maternal and child health in informal Kenya.

Pridmore, P. (2012) A social determinants approach to tackling chronic child malnutrition in urban informal settlements in Chile and Kenya.

Salgado Diez, B. (2012a) The social determinants of child overnutrition in Chile and the effectiveness of interventions to tackle the problem.

Salgado Diez, B. (2012b) The first steps in the implementation process in Chile (The process -the achievements- the challenges).

McCowan, T. (2012) Transforming community participation.

Charnes, G (2012) A social determinants approach to tackling chronic child malnutrition in urban informal settlements in Chile and Kenya.

Pathways to better nutrition Series IV: Briefing papers

Amuyunzu-Nyamongo, M. (2014) The health of women and children: An exploration of the policy environment post-2010.

Amuyunzu-Nyamongo, M. and Lang'o, D. (2014) Establishing and supporting the Mombasa Urban Nutrition Working Group.

Carr-Hill, R. and Lang'o, D. (2014) Impact Evaluation in Mombasa.

Charnes, G. (2014) Setting up of a Participatory Action Reflexion Learning (PARL) Group: The Chilean Experience.

McCowan, T. (2014) Perceptions of Stakeholders and carers about the situation of child overnutrition in Valparaíso.

Pridmore, P. (2014) Where are we now with nutrition sensitive programming to reduce stunting and obesity in young children?

Gougoulis B. (2014) Administering the NICK Project: an international multicultural project to improve child nutrition.

Lang'o, D. (2014) A case study of child under nutrition in families affected by domestic violence living in an informal settlement in Mombasa, Kenya.

Journal articles to be submitted for publication

Carr-Hill, R. et al (forthcoming) Can the Determinants of Undernutrition and of Obesity be Captured in the Same Model: Evidence from Mombasa, Kenya and Valparaíso, Chile? Article being submitted to the Lancet

Carr-Hill et al (2014) Los factores determinantes de la obesidad: evidencia de Valparaíso, Chile. Article to be submitted to Revista Chilena de Nutrición

Charnes, G. et al (forthcoming) Setting up of a Participatory Action Reflexion Learning (PARL) Group: The Chilean Experience. Article being submitted to the Journal of Obesity.

Pridmore, P. et al (forthcoming) Nutritional Improvement for children in urban Chile and Kenya (NICK). Article being submitted to the Journal of Urban Health

Annex 1: Intersectoral actions carried out by members of the urban nutrition working group in Mombasa

- i. *Building the capacities of the three community groups:* The three community groups were taken through a series of orientations and training aimed at tackling the determinants of poor child health and nutrition including strategies for reducing vulnerabilities and inequalities.
- ii. *Improving nutrition and food security:* Poverty, a key driver of poor nutrition, is common in slum communities and therefore accessing food itself, let alone fresh food, is a challenge for most of the residents. The three community groups were trained in all aspects of balcony farming by the member of the urban nutrition working group from the Department of Agriculture who also provided them with seeds as a start-up to improving food security. These community groups were then asked to encourage their communities to develop their own balcony farms. Additionally, a demonstration plot was nurtured at a local health facility, where other community members were able to see the balcony farms.
- iii. *Improving living conditions:* A key contributing factor to poor child and family health and nutrition is the use of inefficient and smoky cooking devices in poorly ventilated and closed spaces. Members of the nutrition working group trained the three community groups in the production, use and marketing of energy saving devices. Each of these groups was then provided with 15 energy efficient cooking stoves, that they would sell to generate income and use the investment and profit to continue selling affordable cooking devices to the community, while at the same time advising on their usage. The groups as well as individuals have taken this up and the use of these devices is increasing in the study population.
- iv. *Other income generating activities:* The nutrition working group organized training for the three community group members in August, 2012 where the groups were trained in separation of plastic waste for sale and separation of waste at source to ensure that different types of waste could be further processed soon after leaving the household. They were also trained on the preparation of the waste into manure for use in their farms and for sale. This training was among the most-well received, perhaps because its immediate benefits. The three groups were also trained in bead making using locally available recyclable materials (such as old newspapers, magazines and calendars) as an additional strategy for waste management and income generation.
- v. *Psychosocial support training:* The nutrition working group realized that the young mothers group had serious personal and group issues that required intervention to enable them effectively interact with one another within the group as well as develop their skills in self and group management. A three-day training was therefore organized for one community group to receive training in psychosocial support. Following this training, there was more synergy among the group members and the effect could be seen in their increased productivity.
- vi. *Training on domestic violence prevention and mitigation:* Domestic violence against women is prevalent in Kenya. The national Demographic and Health

Survey (DHS) data of 2008/9 indicates that one third (31.8%) of women aged between 15-49 years in Coast Province had experienced violence in the 12 months preceding the survey (KNBS & Macro, 2010). Interventions aimed at reducing urban violence have often focused on policies, retributive justice, and force – yet *“urban communities themselves are an integral part of understanding the causes and impacts of urban violence and for generating sustainable violence prevention initiatives”* (World Bank 2010). It is for the above reasons that the three community groups were oriented on domestic violence, its impact on child health and nutrition as well as the possible strategies for prevention and mitigation. It was also felt that this training would be particularly useful for the groups since a large proportion of their members are community health workers and are in the best position to tackle domestic violence - one of the social determinants of poor child health and nutrition. This training was facilitated by a member of the nutrition working group.

Annex 2 Intersectoral actions carried out by members of the urban nutrition working group in Valparaiso

- i. *Strengthening intersectoral work*: promoting commitment of stakeholders in the regional government, local authorities and local food industry to tackling child obesity; installing in the political agenda public policies that incorporate effective strategies to address the child obesity in the intervention area.
- ii. *Working with the teachers in the selected nursery schools*: improving children's dietary habits and implementing existing physical activities programmes in order to improve the obesogenic environment of the schools.
- iii. *Generating new learning and reflection on overweight and obesity*: working with family members and caregivers of children in the selected nursery schools in study area to develop new knowledge and practices for healthy eating, and knowledge on the production, storage and preparation of healthy food.
- iv. *Monitoring the food consumed by 2-4 year old children in the selected nursery schools*: Assessing the quantity and quality of the food provided in the three meals each day and also its presentation.

To implement these actions the group developed detailed strategies (See Charnes, 2014) and committed themselves agreed to carrying out the following monthly activities: to focus on social determinants of malnutrition;

- to enhance partnership: recruit participants from diverse backgrounds and with diverse experiences;
- to document and share information;
- to follow-up commitments in their Plan of Action;
- to build community capacity to increase understanding of community's needs and assets; to interchange experience and the use of multiple approaches proposed by representatives from different sectors;
- to revise personal and collective beliefs and assumptions in relation to overweight and obesity;
- to revise public policies and health systems;
- to move to action by engaging new issues and sharing responsibility for managing or developing them to share or develop the necessary resources for action and problem solving;
- to monitor and evaluate their activities; to maintain momentum;
- to minimize duplication of effort and services.