



'BHAVISHYA SHAKTI': THE MOBILE TEACHING KITCHEN (MTK) INITIATIVE

EXECUTIVE SUMMARY AND OVERVIEW

Approach to Problem Solving

Malnutrition, which includes undernutrition, obesity and micronutrient deficiencies, is a leading risk factor for ill health that affects ~30% of the world's population. The COVID-19 pandemic disrupted fragile food supply chains and many households worldwide now face worsening food insecurity and a resultant increased risk of malnutrition, with women and children disproportionately affected. The 2020 Global Nutrition Report highlighted an urgent need for innovative and cost-effective actions to address inequalities in food and health. The '[Mobile Teaching Kitchen](#)' (MTK) is an award-winning scalable micro-model that was launched in February 2018 in two urban slums in Kolkata, India. With grassroots action-research, the MTK trains marginalised women to become microentrepreneurs and culinary health educators, with the potential to improve Nutrition-related Knowledge, Attitudes and Practices (KAP) across multiple sectors of society.

Project Goals

Using a bottom-up approach, the goal of the MTK is to foster education, empowerment, and entrepreneurship and create competent and confident changemakers who multiplicatively impact populations across all socioeconomic levels.

Methods

The MTK model uses a 'See One, Do One, Teach One' (SODOTO) train the trainers approach to create MTK culinary health champions. Qualified dietitians and nutritionists, along with public health professionals, train volunteers to deliver culinary nutrition training to marginalised women, who then prepare meals from several carefully formulated dietary templates that incorporate culturally relevant, safe, fresh, tasty, nutritious, and locally sourced, low-cost foods. These formerly marginalised women therefore become MTK champions who are trained to spread key health messages within their own community and to the wider public through cooking and serving meals. MTK champions also receive the necessary resources, training, and support to start a microenterprise, where their mobile kitchen sells healthy meals further afield, to generate income for themselves whilst promoting healthy foods and behaviours to the broader public.

Planned Activities

Our plan is firstly, to strength and sustain the core MTK model in Kolkata, India, secondly, to adapt and scale in agro-ecologically diverse parts of India and South Asia, and thirdly, to further adapt and pilot the MTK across [twelve regional networks](#) spanning six continents. By sustaining and strengthening the core MTK model in Kolkata, the microenterprise phase can enable provision of template meals and nutrition/health education with data evaluation for ~75,000 people per mobile unit, per year. Sustained funding would help us demonstrate scalability across a region and to finalise the protocols we propose to pilot and implement in other continents.

Foreseen Impacts

Through this model, we would develop a powerful scalable behaviour change tool for improved Nutrition Knowledge, Attitudes and Practices (KAP), that will empower marginalised communities to gain livelihoods whilst improving nutrition and health outcomes for society. In rural and farming communities the model can also create micro-supply chains for sustainable food production through to consumption pivoted around the focal point of the MTK.



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FURTHER PROJECT DETAILS

Why a mobile teaching kitchen?

We believe that nutritional and culinary education delivered by a Mobile Teaching Kitchen (MTK) can improve the diets of marginalised communities and simultaneously empower women living in these areas to work as nutrition educators. Play this 3-min video (below) to find out more about the MTK concept and how it works in practice.



Overall Purpose

The double burden of under- and over-nutrition alongside micro-nutrient deficiencies affects 2.6 billion people worldwide. Nutrition education is a key tool to tackle this global crisis and supports a range of complementary interventions.

The NNEdPro Global Centre for Nutrition and Health, is a global think-tank working to develop nutrition capacity in food and health systems. With local support from Remedy Clinic Study Group and the Inner Wheel Club for Greater Calcutta in Kolkata, India, the '[Mobile Teaching Kitchen](#)' (MTK), an award-winning scalable micro-model, was launched in February 2018 in two urban slums in Kolkata, India. the MTK trains marginalised women to become microentrepreneurs and culinary health educators, using locally sourced foods and through training in culinary skills, with the potential to improve Nutrition-related Knowledge, Attitudes and Practices (KAP) across multiple sectors of society.



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Background and Justification

'Bhavishya Shakti' or *Empowering the Future* when translated from Sanskrit to English, is both the name and description of life-changing work underway in deprived Kolkata communities. In these communities NNEdPro performed landscape surveys and found significant micronutrient deficiencies in undernourished, slum dwelling populations and co-existing metabolic syndrome. This work found that inner-city workers often displayed signs of metabolic syndrome because their diet consisted of fast foods that often contained large amounts of pesticides. Much like the rest of the world, Kolkata struggled with the three overlapping and intertwined forms of under- and overnutrition and micronutrient deficiencies.

The core scientific principles tackling malnutrition are well studied. However, such knowledge is difficult to translate into practical advice that can then be actioned by the broader population. This may be due to "mixed messages" broadcast by the media, or due to the complex way the science community report their findings.

We believe nutrition education can be delivered through training using practical demonstrations and verbal communication thereby also ensuring that areas with high levels of illiteracy can benefit. We turn marginalised community members into culinary nutrition and health educators who can run a micro-enterprise that distributes healthy food, knowledge and practical skills to city workers and brings revenue back to their communities. Further to this, our work is crucial in empowering marginalised women who are excluded from the job market: we found significant improvements in important transferable skills that increase employability such as teamwork, leadership, and confidence.

The MTK model is a mobile platform that provides an innovative solution through nutrition education and skill building that also serves as a community hub for malnutrition screening and prevention, health promotion and disease prevention.

Methods

The MTK model uses a 'See One, Do One, Teach One' (SODOTO) train the trainers approach to create MTK culinary health champions. Qualified dietitians and nutritionists, along with public health professionals, train volunteers to deliver culinary nutrition training to marginalised women, who then prepare meals from several carefully formulated dietary templates that incorporate culturally relevant, safe, fresh, tasty, nutritious, and locally sourced, low-cost foods (Figure 1).

These formerly marginalised women therefore become MTK champions who are trained to spread key health messages within their own community and to the wider public through cooking and serving meals. MTK champions also receive the necessary resources, training, and support to start a microenterprise, where their mobile kitchen sells healthy meals further afield, to generate income for themselves whilst promoting healthy foods and behaviours to the broader public.

The MTK directly targets women and children, aiming to: a) improve knowledge, attitudes and practices of diet diversity and disease prevention; b) measure indicators of nutritional health; c) use cooking skills as a medium for education; d) provide resources and signposting for food security; e) promote social empowerment and f) impact preventative health.



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The MTK approach is based on the premise that educating and empowering women is key to improving the nutritional status of children as well as the family unit. Tackling malnutrition in gestational and early years is a strong determinant of nutritional resilience in future generations. The MTK model not only directly impact the lives and livelihoods of participating communities, but also strengthens community resilience by facilitating knowledge around access to lower cost healthy diets and associated information on adopting healthier dietary patterns, thereby improving food and nutrition security.

NNEdPro is an interdisciplinary team bringing together the disciplines of Nutrition, Public Health, Medicine, Social Work, Education Psychology, Linguistic Science, Economics, Agriculture, Public Administration and Gender Studies that worked together to develop and implement the MTK. The project has been adapted for rural and agricultural settings in Punjab and will be piloted in other areas of India South Asia. Further research is exploring the role of storytelling and culinary methods in imparting health related education in general.

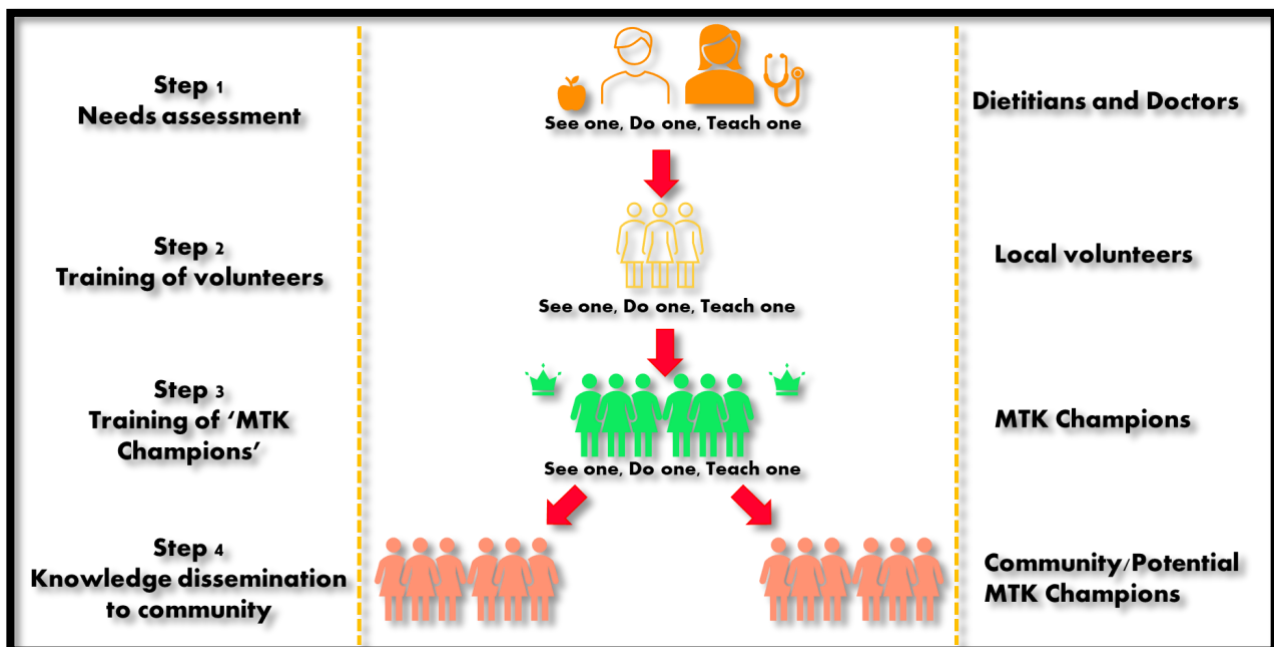
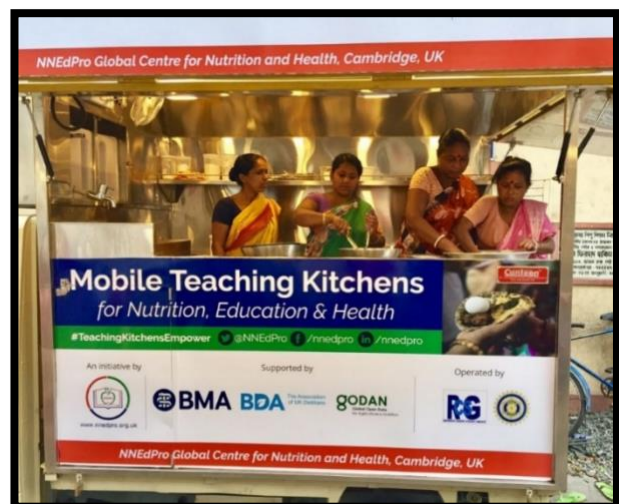


Figure 1: Overview of SODOTO Training Process and Multiplicative Impact





Awards Received

- 2017: Economic and Social Research Council (ESRC) Impact Acceleration Award
- 2017: British Medical Association (BMA) Research Charities Award
- 2018: Global Challenges Research Fund (GCRF) Joint Award
- 2018: University of Cambridge Interdisciplinary Research Centre Project Incubation Award
- 2019: University of Cambridge Interdisciplinary Research Symposium 1st Prize
- 2019: Highly Commended - Emerald Interdisciplinary Research Awards

Notes:

Over 2017-2019, the MTK initiative was also supported by a GODAN seed support award

Over 2020-2023, the MTK initiative will also be supported further by an ESRC Grand Challenges doctoral training award

Findings

Over a six-month period, NNEdPro collected baseline and post-intervention data to assess the project. Early analyses demonstrated that clinical signs of micronutrient deficiency fell in both slum populations (Figure 2). Self-reported knowledge of diet, for example, confidence in identification of sources of protein, significantly increased.

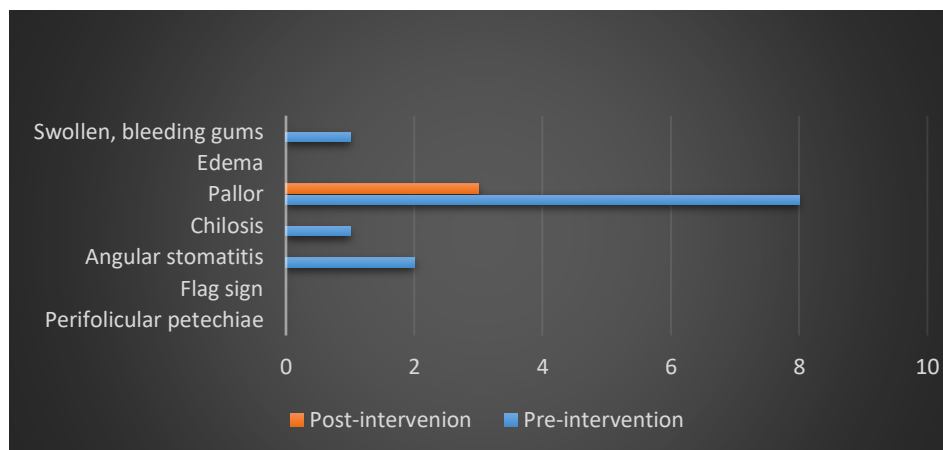


Figure 2: Graph depicting the prevalence of clinical signs of micronutrient deficiency in slum-dwelling mothers pre and post intervention from Mobile Teaching Kitchen (n=12)

Our success in demonstrating that practical learning transfers knowledge from trained volunteers to slum-dwelling women, bolstered confidence that this model could be utilised to assist other communities in Kolkata. Following further training, women who had participated were able to learn a further set of template menus which were nutritionally balanced, tasty, and targeted towards addressing metabolic syndrome.



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After this training, a microenterprise model was established which allowed the mothers, with support of local volunteers, to sell lunches to inner-city workers. Crucially, they were trained to provide nutrition and health education during each customer interaction. Initial customer satisfaction data suggests very high levels of customer satisfaction regarding food quality, hygiene, and customer interaction. These results also highlighted that the MTK project had grown from solely targeting nutrition education to an initiative that developed and nurtured transferable skills such as teamwork, leadership, communication, customer interaction, and sales.

The project is continuously evaluated for effectiveness with both qualitative data (focus groups, feedback questionnaires) as well as quantitative data (anthropometric, clinical assessments, questionnaires of knowledge and practices, and financial sustainability data such as sales figures. Detailed data are collected at all stages and the success is evaluated through the assessment of the original participants from a nutrition Knowledge, Attitudes and Practices (KAP) and micro-entrepreneurship perspective.

Planned Activities, Foreseen Impacts and Financial Support

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Through this model, we would develop a powerful scalable behaviour change tool for improved Nutrition Knowledge, Attitudes and Practices (KAP), that will empower marginalised communities to gain livelihoods whilst improving nutrition and health outcomes for society. In rural and farming communities the model can also create micro-supply chains for sustainable food production through to consumption pivoted around the focal point of the MTK.

This initiative, despite its success over the last three years, still requires stabilisation and support to become self-sustaining. Further financial support can:

- a) **Sustain and expand community trainings for champions** – This will include providing the time for further training of the nutrition champions (women/mothers) in Kolkata and /or Punjab, as well as time to continue educating the local communities;
- b) **Improve and sustain the micro-enterprise model** – Funding will improve the microenterprise sustainability through increased focus on improving food sales and reach;
- c) **Support the core project team in India and/or UK** – Financial support will enable the core project team to continue with the ongoing advice to the beneficiaries, as well as academic write up of the protocols and applications (that will include documenting and forming a model to be replicated for further project locations); and
- d) **Support establishing this project in a new regional set-up** – Scalable funding will allow us to set up the teaching kitchen model to other regions with special focus on either a low- and middle-income country and/or a high-income country within marginalised groups.



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Forward Looking Collaborative Partnerships

The unprecedented success of the first 3 years of the MTK initiative sparked interest among local organisations in Kolkata that also work towards alleviating malnutrition in slum-dwelling communities. Calcutta Rescue is a Kolkata-based NGO founded in 1979 whose mission is to create opportunities for the most disadvantaged residents of Kolkata by alleviating poverty-related disease burden and improving educational opportunities across the city's slums. It provides cost-free medical care to approximately 30,000 residents across Kolkata through three fixed clinics and two mobile street medicine clinics. In addition to medical services, it runs two schools and a vocational training programme for physically disabled adults. Recently, Calcutta Rescue completed a one-year longitudinal study assessing the impact of a pilot nutritional intervention programme in reversing stunting in a cohort of children aged five and under in Liluah Bhagar, a large slum in Northwest Kolkata. Results showed a positive trend towards reduction in stunting at one year. The study also found that household income was negatively predictive of stunting.

To build on its initial successes, Calcutta Rescue approached NNEdPro to work collaboratively on implementing lessons learned from the MTK initiative as well as harnessing the domain expertise of the NNEdPro Global Centre. This collaboration hopes to utilise Calcutta Rescue's established street medicine presence across Kolkata to work towards sustainably reversing stunting and other forms of malnutrition. Calcutta Rescue's recently completed Nutritional Intervention Programme and subsequent study benefited from oversight and support from Global Health Unit (GU), University of Groningen in the Netherlands. The GU of the UMCG specialises in interdisciplinary research on the double burden of malnutrition in children living in low- and middle-income countries.

The NNEdPro Global Centre will work in collaborative partnership with both Calcutta Rescue and Groningen to further strengthen and scale the prototype MTK model in Kolkata as well as adapt and scale this uniquely innovative as well as impactful model, regionally and internationally.

Please contact us at info@nnedpro.org.uk to support this project.