

“Role of Formative Research in Implementing Multiple Micronutrient Sprinkle Interventions in India”

Review Article

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Abstract

Formative research is necessary to effectively develop and implement a Sprinkles intervention in a new setting. There is a lack of journal articles which emphasise on describing in detail the formative research to develop Sprinkles interventions, especially in India. Formative research involves a variety of qualitative and quantitative methods to help inform recruitment and retention of study participants, determine measurement procedures and acceptability, and aid in intervention design and implementation. It is the process by which researchers define and assess attributes of the community or target audiences that are relevant to the specific public health issue of interest. It has been estimated that around 2 billion people worldwide suffer from micronutrient malnutrition. Micronutrient Powders (MNP) are an innovation developed for Home Fortification (HF) to address anaemia and vitamin and mineral deficiencies in vulnerable populations. While originally designed for consumption by older infants and young children, MNPs can provide micronutrients to other vulnerable populations by enabling families to fortify many different foods in the home, without changing the diet that is the concept of home fortification. Recently, the World Health Organization (WHO) issued global, evidence informed recommendations on home fortification with MNP. In order to implement multiple micronutrient sprinkles interventions in a country like India, which has several states with different cultures and diversities, implementing interventions in each state can be a hard task, but carrying out formative research in each of these states with focus on local language, traditions, beliefs and cultures for example packaging & design of sprinkles sachets can be in the local languages which have the potential for paving the way for better implementation of multiple micronutrient sprinkles interventions.

Keywords: Formative research, Multiple micronutrient sprinkles, Complementary feeding, Interventions, Vitamins

Introduction

Formative research involves a variety of qualitative and quantitative methods to help inform recruitment and retention of study participants, determine measurement procedures and acceptability, and aid in intervention design and implementation. It is the process by which researchers define and assess attributes of the community or target audiences that are relevant to the specific public health issue of interest [1]. Quantitative methods generate numeric data and are often designed to produce information that is statistically representative of the intended audience. Qualitative research is used to gain insight into the health issue or behavior the project intends to address; relevant characteristics of primary and secondary audiences; communication access, habits and preferences; and the main factors that hinder and drive behavior. Qualitative methods may be

used when program planners need to get an understanding of the attitudes, habits and behaviors of their audience but do not need to estimate the proportion of the attitudes, beliefs or knowledge levels in the population (www.compassforsbc.org) [2]. Qualitative methods collect verbal, descriptive information that is often rich in detail but cannot be generalized to an entire population or intended audience. Formative research is critical to developing program materials, tools and approaches that are culturally, geographically appropriate and the information gathered during formative research will enable project sites to tailor field operations to their local settings and to identify and address any barriers to operations [3]. This process is conducted before an intervention is developed or implemented to obtain detailed information about the people for whom, and the context in which, interventions will be designed [4]. Formative research can also help

facilitate relationships between researchers and target populations [4-6]. Developing effective behaviour change interventions as a core component of nutrition activities is becoming increasingly important [7]. Research conducted during the development of a program to help decide on and describe the target audience, understand the factors which influence their behaviour, and determine the best ways to reach them. It looks at behaviors, attitudes and practices of target groups, involves exploring behavioural determinants, and uses a myriad of methods to collect data. Formative research may be used to complement existing epidemiological and behavioural data to assist in program planning and design [8]. It is also necessary to effectively develop and implement any intervention involving children in a new setting and especially in a country like India where, literacy rate is low among the caregivers. Several domains of inquiry are needed to develop effective, integrated interventions aimed at improving child growth, health and development outcomes. At a minimum, these include individual attitudes, beliefs and behaviours about Infant and Young Child Feeding (IYCF) and child development, as well as facilitators and barriers to optimal care, feeding, and early child development practices within the local context [9]. Formative research can improve and increase the likelihood of desired effects and also increase the likelihood of adequate exposure. Comprehensive formative researches is a critical component in the design of successful health mass media campaigns [10]. It provides a mechanism to understand behaviour, identify potential approaches and test messages [11].

When to conduct formative research? Formative research is conducted during the development of a program to help decide on and describe target audience(s), understand the factors which influence their behaviour, and determine the best ways to reach them. It looks at behaviours, attitudes and practices of target groups, involves exploring behavioural determinants, and uses a myriad of methods to collect data. Formative research may be used to complement existing epidemiological and behavioural data to assist in program planning and design (CD Cynergy Social Marketing Edition, Centres for Disease Control and Prevention).

What should be included in formative research? Formative research should combine several methods and use different sources of information so as to take into account different perspectives and cross-check the data obtained. Where resources are insufficient for large-scale surveys, participatory research methods, e.g. focus group discussions, can be used to obtain basic information. It may also include a baseline study, i.e. an initial assessment of the situation the campaign aims to change. Ideally, this assessment should be conducted in the early campaign planning stages, well before any campaign activities take place. The baseline study provides a critical reference point for assessing changes and impact, as it establishes a basis for comparing the situation before and after an intervention, and for making inferences as to the effectiveness of the campaign (UN WOMEN, 2012).

Some of the common formative research methods include Focus group discussions, Key informant interviews, Observational/ environmental scans & Surveys.

Focus group discussion: It is a qualitative approach to gain an

in-depth understanding of social issues. The method aims to obtain data from a purposely selected group of individuals rather than from a statistically representative sample of a broader population [12].

Observations: Unlike information collected from interviews, observations rely solely on what is seen by the researcher. Observations can be used to both validate and build on information gathered through other data sources, and they are essential for properly assessing potential MSM venues for eligibility and accessibility. By observing a venue's attendees and layout, project sites can determine the level of attendance at the venue, the demographic characteristics of the venue attendees, and the logistics and safety of conducting field operations at the venue. Being there and observing what is happening "on-the-ground" can also provide greater insight into the behaviors and social networks of the local MSM population [3].

Key informant interviews: are qualitative in-depth interviews with people who know what is going on in the community. The purpose of key informant interviews is to collect information from a wide range of people-including community leaders, professionals, or residents-who have first-hand knowledge about the community. These community experts, with their particular knowledge and understanding, can provide insight on the nature of problems and give recommendations for solutions (healthpolicy.ucla.edu.in).

Micronutrient deficiencies in India: It has been estimated that around 2 billion people worldwide suffer from micronutrient malnutrition (International Food Policy Research Institute 2016) meaning that they are not getting enough vitamins and minerals, which are essential for normal physiological functioning and therefore health, either due to an inadequate diet or poor absorption as a result of infection, disease or inflammation. Whilst most micronutrient deficiency disorders can be reversed with provision of the missing micronutrients, some can result in irreversible, lifelong consequences (e.g. intellectual disability in children due to maternal iodine deficiency, particularly during early pregnancy) [13]. Of most concern from a public health perspective are vitamin A, zinc, iodine and iron deficiencies, with iron deficiency being the most prevalent and widespread [14]. Due to the lack of sustainable solutions, as of 2016, 2 billion people, about one-third of the world's population, are iron deficient, and 250 million school aged children are vitamin A deficient (WHO.in) [15]. Other micronutrient deficiencies of public health concern include zinc, folate and the B vitamins. In many settings, more than one micronutrient deficiency coexists, suggesting the need for simple approaches that evaluate and address Multiple Micronutrient (MMN) malnutrition [16]. Cereal-pulse based Indian diets are qualitatively deficient in micronutrients particularly iron, calcium, vitamin A, riboflavin and folic acid (hidden hunger), due to low intake of income-elastic protective foods such as pulses, vegetables particularly Green Leafy Vegetables (GLV), fruits, and foods of animal origin. In recent years, there has been substantial erosion of area under cultivation of coarse grains and millets and share of these nutritious grains in total cereals produced and consumed (Directorate of sorghum research 2010) [17].

Multiple micronutrient sprinkles as an innovative strategy for alleviating micronutrient deficiencies: Micronutrient Powders (MNP) are an innovation developed for Home Fortification (HF) to

address anaemia and vitamin and mineral deficiencies in vulnerable populations. While originally designed for consumption by older infants and young children, MNPs can provide micronutrients to other vulnerable populations by enabling families to fortify many different foods in the home, without changing the diet that is the concept of home fortification. Recently, the World Health Organization (WHO) issued global, evidence informed recommendations on home fortification with MNP [18]. Following these guidelines, several countries in Asia have become more active in designing and implementing home fortification programs. As in other public health programs, using formative research to gain a clear understanding of local context to guide the planning and implementation of these programs is critical if they are to achieve the desired level of acceptance, coverage, and utilization of MNP by the target beneficiaries [19]. A large body of evidence exists indicating that home fortification of complementary foods with Micronutrient Powders (MNP), coupled with a comprehensive behaviour change communication strategy that ensure acceptance, adequate intake, and utilization of micronutrients, is effective in reducing anaemia and deficiencies of several micronutrients among children 6 to 23 months of age [20,21].

Formative research carried out in developing multiple micronutrient sprinkle interventions: A formative research was carried out in order to explore people willingness to pay for multiple micronutrient powders in a resource poor context like Niger formative research was carried out in four sites, 84 focus group discussions among mothers [22], fathers and grandmothers of children 6-23 months were conducted, as well as 80 key informant interviews of mothers who participated in a home study where their children 6-23 months were given either Sprinkles for a period of four weeks. The mothers who used product were pleased with the improvements they saw in their children's health, including increased appetite, weight gain and increased energy and activity. A few mothers were concerned with how they would be able to provide for their child's increased appetite. Most participants across all four sites reported that they would be willing and able to afford to buy a single sachet of either Sprinkles at a cost of US\$0.03 several times a week.

A similar study was conducted to describe community members' reactions to and experiences using Sprinkles [23], with an emphasis on acceptability, utilization, and promotion, among Lou families in western Kenya which included fourteen initial focus groups involving mothers, grandmothers, vendors, women who purchased multiple micronutrient sprinkles from vendors, and adults in the general population and in 25-family home study, each child 6 to 59 months of age in the household received 30 sachets (1 per day). Results revealed that Sprinkles were highly acceptable to adults and most children; some children thought Sprinkles were sugar. Most home study families prepared and used Sprinkles correctly and expressed positive reactions to colors that they perceived as attractive and to a picture of a healthy child on the MNP package. All families reported positive effects, particularly increased appetite, and recommended Sprinkles; none experienced major problems.

One study conducted in Aileu district of Timor-Leste has proved that using formative to guide the planning and implementation

of home fortification programs is critical if they are to achieve the desired level of acceptance and coverage by the target beneficiaries. Formative research was essential to explore contextual factors that could influence acceptance, delivery, and use of Micronutrient Powders (MNP). A 14 day usability trial was carried out in which a total of 45 mothers fed their children MNP daily and were interviewed about their experience. The findings revealed limited exclusive breastfeeding and early introduction of complementary food due to traditional beliefs and poor knowledge, was predominant. MNP was generally liked by the respondents. Thirty of the 45 children in the trial consumed all of the 14 MNP sachets provided to them. The majority of mothers ($n \geq 30$) split and fed the daily dose of MNP at different times of the day. They gave several reasons for this practice, including changes in the colour of food when a whole sachet of MNP was added. Only six mothers shared MNP-fortified food among siblings. The participants suggested contextual attributes that could influence their adoption of MNP, including preferred name, packaging design, and delivery channel. They preferred orange-colour sachets with a picture of a "healthy" Timorese baby along with instructions of use [24-28].

Conclusion

Interventions to prevent and/or treat micronutrient deficiencies exist, including promotion of breastfeeding, fortification of staple and complementary foods, and provision of supplements. However, implementation bottlenecks and barriers (including lack of adherence to dosing regimens, low acceptability, poor distribution channels, and lack of availability of skilled health workers) may reduce the effectiveness and impact of these and other interventions to address micronutrient deficiencies. Multiple micronutrient powders have been developed as alternative way of providing micronutrients to populations where other interventions are difficult to implement. Multiple micronutrient powders are single-dose packets of vitamins and minerals in powder form that can be sprinkled onto any ready to eat semi-solid food consumed at home, school or any other point of use. The powders are used to increase the micronutrient content of a child's diet without changing their usual dietary habits. In order to implement multiple micronutrient sprinkles interventions in a country like India, which has several states with different cultures and diversities, implementing interventions in each state can be a hard task, but carrying out formative research in each of these states with focus on local language, traditions, beliefs and cultures for example packaging & design of sprinkles sachets can be in the local languages which have the potential for paving the way for better implementation of multiple micronutrient sprinkles interventions.

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