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## EFFECT OF PERSONALIZED COUNSELLING AS A TOOL FOR BEHAVIOUR CHANGE COMMUNICATION FOR IMPROVING THE NUTRITIONAL STATUS AND IYCF PRACTICES OF CHILDREN(0-5YEARS) IN UNDER 5 CLINIC AND DAY CARE CENTRE, SOUTH 24 PARGANAS, WEST BENGAL

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### ABSTRACT

The present study aimed to determine the IYCF practices and effect of counselling on mothers attending under 5 clinic programme of Child in Need Institute (CINI) in part of South 24 Parganas district of West Bengal. All mothers (n=100), attending the CINI day care centre were enrolled and studied for their IYCF practices. Data on the nutritional status (weight, MUAC, presence of oedema), food frequency, IYCF practices and sanitation and hygiene were collected using pretested questionnaire. Results revealed that 22% children were severely underweight and 33% were moderately underweight and mothers had poor IYCF practices. Personalized counselling at CINI day care centre had a positive impact on early initiation of breast milk (51%), discontinuation of formula feeding (88%), timely initiation of complimentary foods (58%), increased consumption of fruits and vegetables (78%) with 2-4 counselling sessions. However no impact was recorded for milk consumption, changes in healthy cooking practices, hygiene and sanitation. Personalized counselling as a tool for behaviour change communication is beneficial for improving IYCF practices; however, vigorous multisectoral efforts need to be made to alter their traditional cooking and cultural community living practices.

**Keywords:** personalized counselling, behaviour change communication, breastfeeding, complementary feeding, IYCF practices, under 5 clinics

### INTRODUCTION

The most recent estimates of the global burden of malnutrition in under 5 children are that 178 million (one-third of all children) are stunted, 112 million are underweight, 55 million are wasted (19 million having severe acute malnutrition) and 13 million children are born each year with intrauterine growth retardation. Together they account for 21% of all under-5 deaths (Ramji 2009). The most recent census figures indicate that 10% of India's population has children below 5 years of age (Census of India, 2011). Under 5 malnutrition continues to be one of the world's most serious development problems (Levinson & Bassett 2007). Causes responsible for under 5 morbidity reported by NFHS 2 had shown in Fig 1. Among the under 5 children, 43% morbidity is due to under-nutrition whereas other factors are also related to nutrition to some extent. Malnutrition is common among children aged 6–24 months in developing countries. It increases the risk of mortality. As per the report by Ramji (2009), the exclusive breast feeding rates in India at 6 months is about 46 %, at 6-8 months only 54 % are breast fed and 75 % of non breast fed infants are initiated into complimentary feeds; by 2<sup>nd</sup> year of life only about 42 % infants receive the

recommended appropriate foods at appropriate frequency. A reason of persistent under-nutrition in the country is associated with these inadequate feeding practices. Understanding the vulnerability of first five years of life, the Department of Health and Family Welfare, Government of India have established the Under Five Clinic Program with a primary objective to monitor growth and development of the child until 5 years of age and identify factors that may hinder the growth and development of the child (<http://www.rnpedia.com/home/notes/community-health-nursing-notes/under-five-clinic-program/> accessed on 30-3-15).

Interventions to improve infant-feeding hold the promise of reducing malnutrition among these children. Success of training in communication and counselling skills among health workers in improving the nutritional status of young children have been reported by various investigators. Social factors including caregivers' poor knowledge on nutrition and lack of knowledge on food diversity in their environment may correlate with poor feeding practices. Such factors may result in low dietary diversity, low feeding frequency, and low food and energy

intake for children (Saloojee *et al.* 2007). Caregivers' nutrition education can help to clear cultural and tradition-based misconceptions and improve their general nutrition knowledge (Shi & Zhang 2011). Nutrition knowledge among caregivers improved in turn when they were frequently counselled by health workers who received nutrition training (Pelto *et al.* 2004). Nutrition counselling also improved caregivers' knowledge in food preparation and healthy feeding behaviours (Zaman *et al.* 2008). As a result, caregivers were more likely to improve their children's feeding frequency, dietary diversity, protein, and energy intake. Such elements of feeding practice are essential in improving children's nutrition status (Roy *et al.* 2005).

South 24 Parganas district is an important district of West Bengal State with its district headquarters in Alipore. On one side it has the urban fringe of Kolkata and on the other, the remote riverine villages in the Sundarbans. It is the sixth most populous district in India (out of 640). The district comprises five subdivisions: Alipore Sadar, Baruipur, Canning, Diamond Harbour, and Kakdwip. In 2006 the Ministry of Panchayati Raj named South 24 Parganas one of the country's 250 most backward districts ([http://en.wikipedia.org/wiki/South\\_24\\_Parganas\\_district/ accessed on 30/03/15](http://en.wikipedia.org/wiki/South_24_Parganas_district/ accessed on 30/03/15)).

In the district, there is scope for considerable improvement in almost all areas regarding health status. The existing health infrastructure in most blocks does not satisfy existing national norms. This creates a tremendous pressure on blocks where the local population relies on public health facilities. The proportion of safe deliveries is about 57%. This is quite low and hides the fact that institutional deliveries constitute less than a third of recorded deliveries. Only one out of every five registered women completes the three mandatory ANC check-ups. The incidence of anemia among pregnant women is as about 20%. This affects infant mortality and leads to underweight babies. There is sufficient scope for improvement in performance in respect of immunization. The fact that ICDS is making headway in the district is a welcome sign and can be hoped to reduce the severity of child and maternal malnutrition. The extension of sanitation facilities has been uneven. The record is particularly poor in schools.

CINI, or the Child in Need Institute, is an international humanitarian organisation aimed at promoting "sustainable development in health, nutrition and education of child, adolescent and woman in need" in India. Starting with two child health clinics for children in Kolkata, in west Bengal, India, CINI has grown into a national non-governmental organization (NGO) reaching approximately five million marginalized poor across West Bengal, Jharkhand and Chhattisgarh. The organisation is increasingly also involved in projects in other countries in Asia and Africa. CINI's institutional framework of Child and Woman Friendly Community (CWFC), evolved from the learning that the key to ending poverty and inequality is to address the major issues of education, protection, health and nutrition in an integrated right based manner. The only sustainable way to achieve this would be the

form of strengthen community based partnerships that include government, service providers and the community with all members accountable to each other in ensuring good governance and provision of basic services. There are certain institution based services available in CINI including under 5 clinic and day care centre. The services which are provided in the clinic are growth monitoring, nutritional counselling, immunization and treatment of common illness. Day care centre is used for the care of undernourished children through capacity building of the care givers especially mothers who are provided with meals and behaviour change communication and then released with suggestion of follow up visits.

The aim of the present study was to explore the knowledge, attitudes and IYCF practices of women attending the under 5 clinic programme and impact of personalized counseling on mothers in Child in Need Institute (CINI) in South 24 Parganas district of West Bengal.

Providing this contextually detailed description of infant and young child feeding will provide insights into the ways health care providers from under 5 institutes may support the culturally different population of south 24 parganas district of West Bengal.

## MATERIALS AND METHODS

### STUDY SETTING AND PARTICIPANTS

It was a cross sectional study conducted for 2 months in South 24 Parganas district of West Bengal. Under 5 clinic and day care centre of Child in Need Institute situated in the district were selected for the study location, where community mothers mainly from Bishnupur 1 and 2 blocks and diamond harbour block in South 24 Parganas district enrol their children for treatment and nutrition intervention programmes. Hundred mothers and care givers of under 5 children were selected as target group by purposive sampling, as they are likely to generate useful data for the project. Hundred mothers were selected as 100 is a number which is convenient and proper to carry out any kind of data analysis and to reach certain conclusion. The time span for the study was short, so the goal was set to 100 and achieved.

### DATA COLLECTION AND PROCESSING

Data collection occurred in the month of August and September in the year 2013 by a pretested semi-structured questionnaire which was prepared for open interview with community, allowing new ideas to be brought up during the interview as a result. The interviewer in a semi structured interview generally has a framework of themes to be explored. However the specific topic or topics that the interviewer wants to explore during the interview should usually be thought about well in advance. Here in this study a semi structured questionnaire was made and questions were asked to community mothers of 0-5yrs old child regarding the IYCF practices and other related details. Nutritional status of the children was determined by measuring the weight for age and MUAC. Weighing balance was used for the measurement.

Electronic baby scale was used for weighing of the infants who can't stand straight. MUAC (Mid Upper Arm Circumference) of children over 6months and below 5years in age was measured by tri coloured tape. Presence of oedema was also checked to determine the nutritional status.

Details of IYCF practices were noted down as they align with current, age-specific feeding recommendations for young children (World Health Organization 2010). Following the recommendations is not only important for child growth and development, but evidence from observational studies suggests that sub-optimal infant and young children feeding practices can increase the risk of morbidity and mortality in young children (Black *et al.* 2008).

Currently breastfeeding was determined by an affirmative response to the question 'Are you still breastfeeding?' Breastfeeding was considered to be exclusive breastfeeding if the primary caretaker indicated that she did not begin giving any liquids or foods other than breast milk to the child before 6 months. Early introduction of water and formula milk was estimated by the response to a question regarding the age the child was first given water or formula milk. If the response was prior to 6 months, it was noted that exclusive breastfeeding was not practiced. Timely initiation of complementary feeding was estimated by the response to a question regarding the age the child was first given rice as in Bengal there is a ritual of giving rice in the mouth of child as the first complementary food. Age-appropriate dietary diversity was estimated by a 24-hour recall of foods along with special emphasis was made on the consumption of milk products and fruits and vegetables and questions were asked accordingly.

Nutrition intervention was also delivered by the nutritionists in the institutes along with the interview with semi structured questionnaire. Observation was made while personal counselling, to understand fully the complexities of many situations. Observational data is very useful in overcoming discrepancies between what people say and what they actually do and might help to uncover behaviour of which the participants themselves may not be aware (Monterrosa *et al.* 2012).

#### **DATA MANAGEMENT AND ANALYSIS**

1. Collected data was entered in excel 2007 datasheet.
2. Data was analysed to determine the survey results as per the objectives. Means and percentages were calculated wherever applicable.
3. Graphs and tables were made to show the results clearly for better understanding.

#### **ETHICAL REVIEW**

Ethical approval was obtained from the Institutional Review Board of Child in Need Institute. Local community leaders were informed about the aim and procedures of the study. All study participants gave their verbal consent to participate after the study objectives were explained to them.

## **RESULT**

### **SAMPLE CHARACTERISTICS**

A total of 100 participants responded to the survey, hundred percent of the respondents were the child's mother. The majority of respondents were muslim (57%), and the rest were hindu(43%). Of the 100 community mothers surveyed, 20 had a child 0-6months, 33 had a child 7-12 months, 30 had a child 13-24 months and 17 had a child 25-60months (Fig 2). In under 5 clinic of CINI, community mothers and care givers come with their children from various parts of the district, which can be divided in different subdivisions. In this study it's been observed that majority(59%) of people came from alipore subdivision and 31% came from diamond harbour subdivision(Fig 3). Among the community mothers, 54% came from the distance which takes time to cover around 30minutes to 1hour, whereas 34% spent more than 1hr to come(Fig4). A comparison was done between mother's education and child's body weight which reveals 56% of children whose mothers studied more than secondary education were normal in weight and among the children whose mothers were illiterate only 31% of them were normal in weight (Fig5).

### **HEALTH AND NUTRITIONAL STATUS**

Weight for age of the children has been taken for determination of their health status, where among 100 children 22% were severely underweight and 33% were moderately underweight (fig6) which reflects poor growth of a major no of children. To prevent a recurrence and to overcome the effects of chronic malnutrition, these children need extra attention both during the early rehabilitation phase and over the longer term. Continued frequent breastfeeding and when necessary relactation are important preventive steps since malnutrition often has its origin in inadequate or disrupted breastfeeding. Nutritionally adequate and safe complementary food if difficult to obtain, dietary supplements may be required for these children(IYCF practices guidelines). MUAC(Mid Upper Arm Circumference) of the children were measured to detect the level of malnutrition, where 2% of the children were severely acute malnourished and 10% were moderately acute malnourished who needed special care and proper guidance for their improvement. Oedema was also checked by standard process but among the 100 subjects, no one was suffering from oedema.

### **BREASTFEEDING STATUS**

As seen in Figure 7, only 51% of mothers reported initiating breastfeeding within the first hour after birth. About 9% of the neonates had to wait for at least 24 hours for first sips of breast milk and 13% of new born were initiated breastfeeding after 3days. So these children were provided various pre lacteals just after birth, promoted by cultural practices in West Bengal. In this study 25% of children aged below 6months were given prelacteals in the form of honey, misry, talmisry, arrowroot, so exclusive breastfeeding was not practiced in their cases. Among the study children aged more than

6months, 29% were provided pre lacteals within very first month of their life and 20% were given within 2-6months(Fig 8). When asked for the reason of this practice, a mother explained... *"It is our tradition of giving honey in the mouth of new born. My mother in law and other elderly people in home suggested this as it is a ritual being practiced for long."* The reason behind giving misry, when asked one mother said... *"when the child cries, we think his mouth has become bitter, so we give misry, as it is sweet"*. Community mothers also provide honey to their children, when they suffer from cold and cough for its medicinal qualities. They don't think breastmilk is enough for this. A mother expressed... *"I provide breastfeeding to my child, but when she suffers from cold and cough, I give her honey as it's a good medicine"*. Formula milk was initiated for 25% of study children aged below 6months. As seen in Figure 9, among the study children aged more than 6months, 11.25% were initiated formula milk within first month, another 36.25% were initiated within first 6months, which means exclusive breastfeeding for first 6months was not practiced for them. Reason behind giving formula milk to the child is mainly that mothers could not produce enough breast milk or the child could not eat that properly, child was crying, child's hunger was not fulfilled, or mother was sick. But mainly it is because of the mentality of the mothers and care givers that there are other options to feed child, and so it is not necessary to give breast milk. One mother expressed... *"I initially breastfed but It was painful and the milk was not coming easily so I started to formula feed to make it easier."* Some mothers believed that breastmilk alone can't fulfill the baby's demands. *"I felt that my baby was not happy with me as the small amount of milk from breast cannot meet his need, so I started giving him formula milk along with breastmilk"*. The community mothers were also daughter in law of their family and had lots of work to do in the households. Most of them had more than one baby. So they had to look after the other children also. Formula feeding allows them to do the other works, as the other members of the family can bottle feed child in that case. One mother said... *"I need to cook for my entire family, look after my in laws and other children at home, so I consider formula feeding more convenient for me."* Influence of media and other people in the surroundings is another reason for this practice, as one mother said... *"In the television, the children looks very healthy, who are provided formula milk. Also many of my sisters and friends bottle feed their children, and they are healthy. So I thought I should also provide my child formula milk as it is better as well as convenient."* Formula milk cannot be provided without water, so along with formula milk, the rate of water initiation was also high among the study children. Among the children below 6months of age, 35% were initiated water already before completion of 6months. Among the children above 6months of age, 32.5% were initiated water within 1<sup>st</sup> month, 40% within 6months and only 27.5% initiated after completion of first 6months(Fig 10), which is the appropriate time. The main reason behind the early initiation of water was as expressed by a mother... *"When his tongue gets dried, I give him water"*.

For all these reasons naturally the incidence of exclusive breastfeeding among study children was low. As seen in figure 11, among the children below 6months, 25% never started the exclusive breastfeeding, and 10% could not continue. Among the study children above 6months of age, 40% never started the exclusive breastfeeding, 32.5% could not continue till 6<sup>th</sup> month and only 27.5% had successfully done the exclusive breastfeeding for first 6months of their life (Fig 12). Frequency of breastfeeding at different ages were studied, and the result shows 9-15times feeding are mainly done before 6months of age, and then the frequency gradually decreased afterwards. 5-7times feeding is more or less constant in all age groups. 2-4times feeding is very uncommon before 6months, common in 6m-2yrs and then decreased afterwards. After 2yrs 41% children are not at all breastfed (Fig 13). But there are few children who were breastfed 9-15times after 2yrs, which has to be changed as in this age other foods should be eaten more than breast milk and if a child is breastfed for 9-15times, then the hunger will be reduced and consumption of other food will be minimal which is a problem for proper growth and development. 10-15min duration of breastfeeding for below 6m children is more common (63%) but there were 5% children who were breastfed for 2-5min only, which has to be changed as at the beginning only diluted milk are excreted, so the proper nutrition were not achieved in that case.

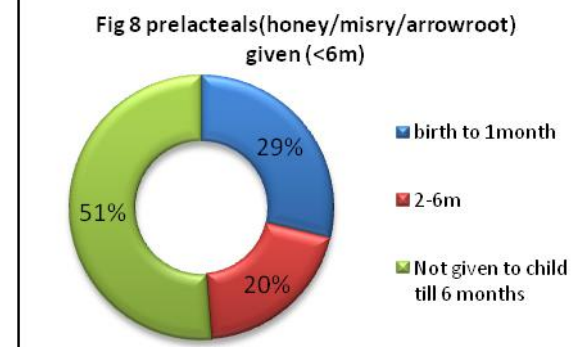
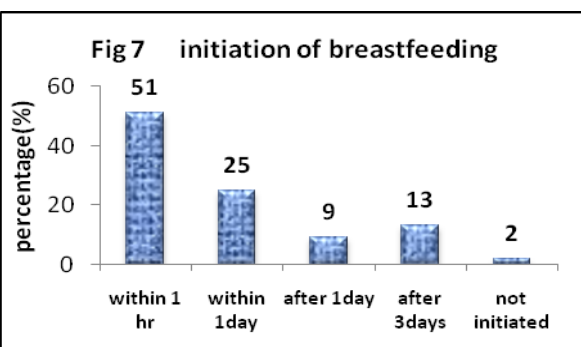
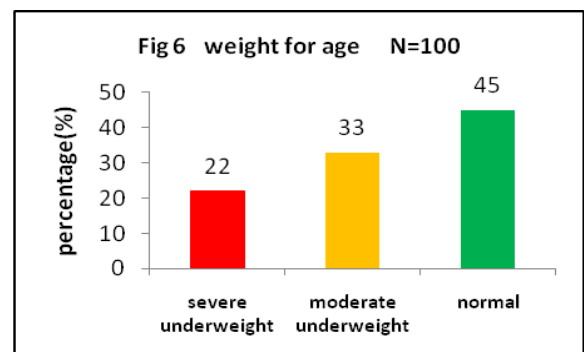
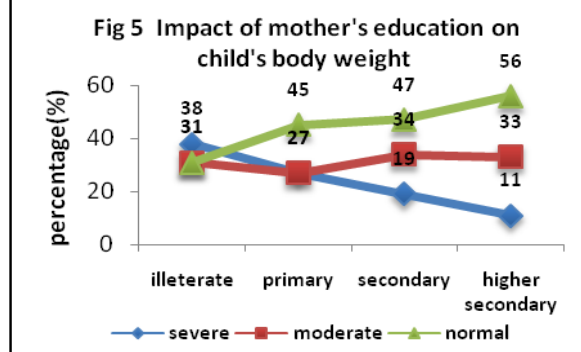
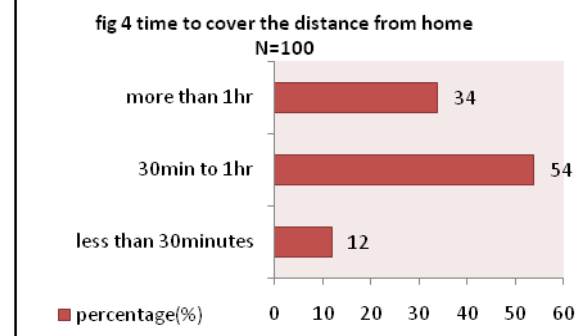
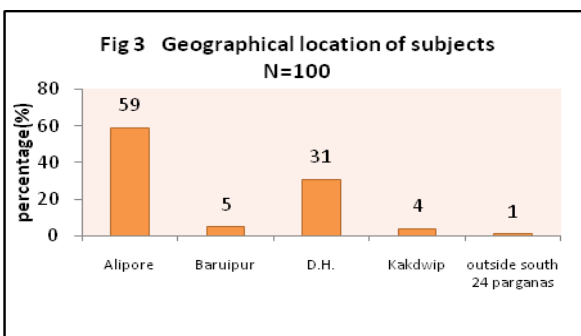
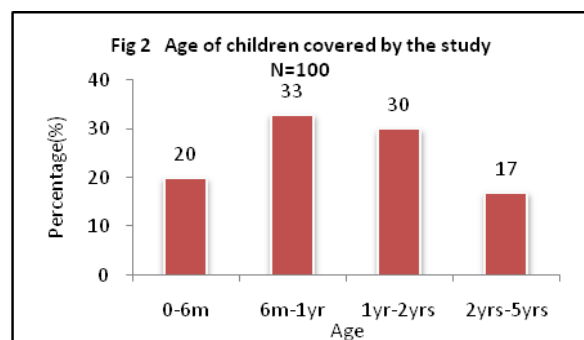
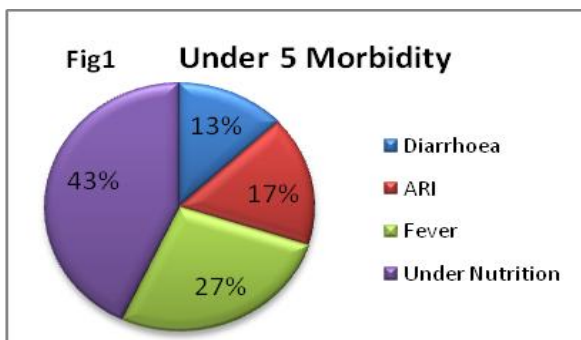
#### COMPLEMENTARY FEEDING PRACTICES

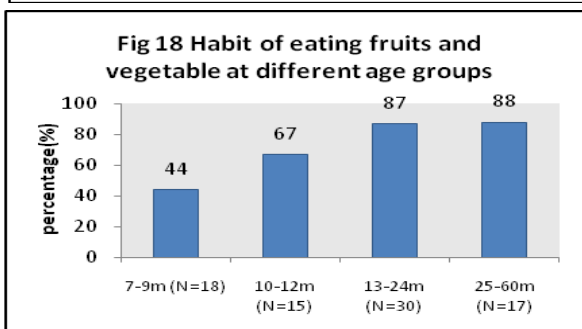
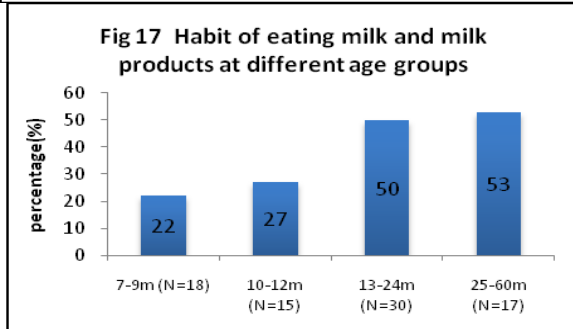
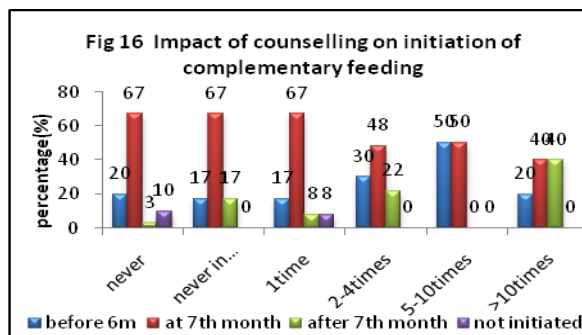
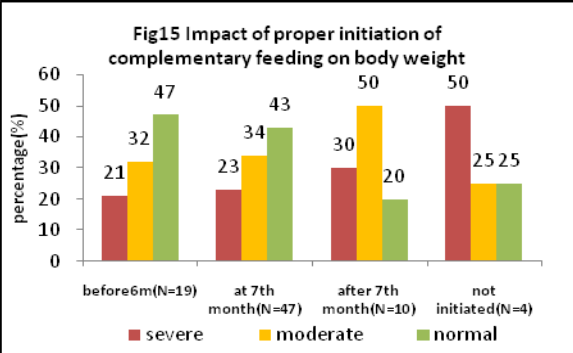
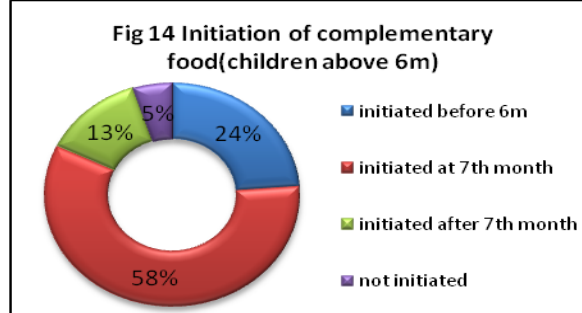
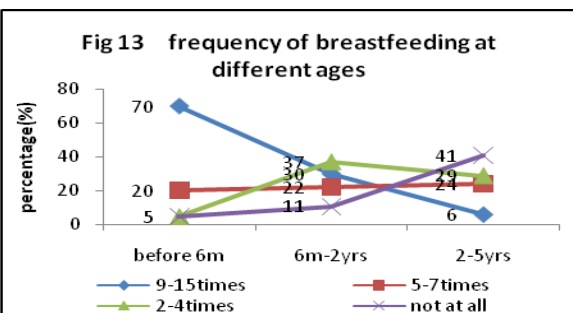
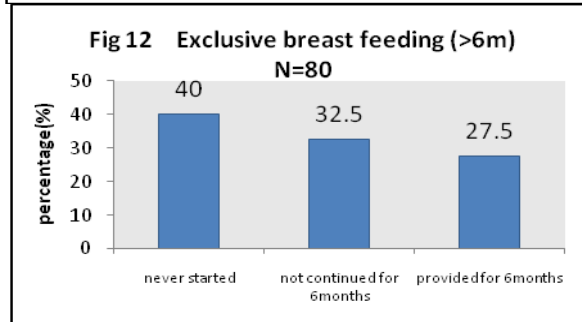
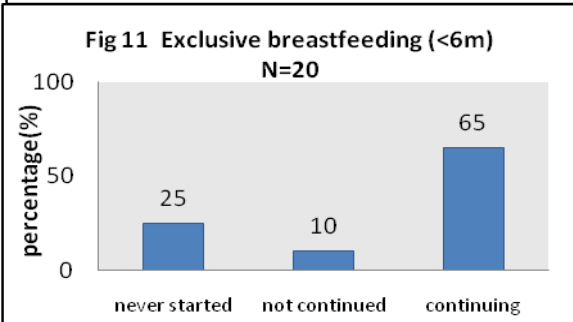
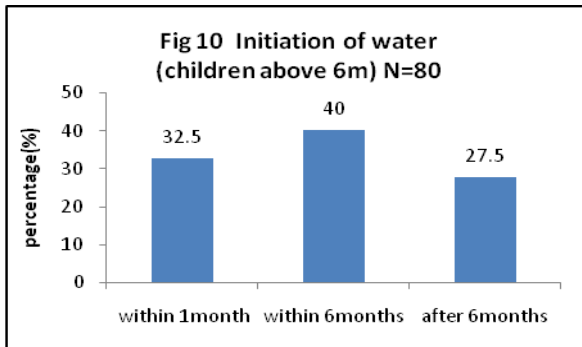
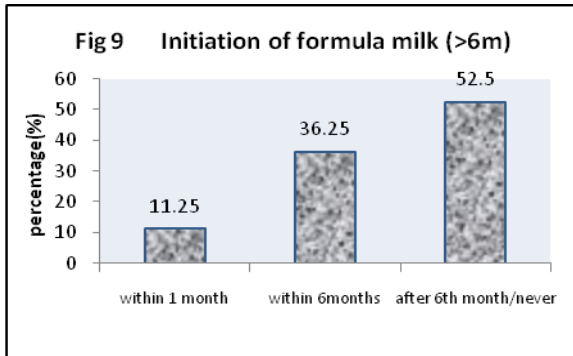
In this study result shows 24% of children were initiated with complementary food before 6<sup>th</sup> month and 13% were initiated after 7<sup>th</sup> month (Fig14). Figure 15 shows the impact of proper initiation of complementary feeding on child's body weight which reveals the importance of timely initiation of complementary feeding. Figure 16 shows the impact of counselling on the initiation of complementary feeding. It shows that mothers who were gone through 5-10times counselling had no incidence of delay initiation but 50% of them initiated before 6months. The reason behind this is some of them had come to the institute after 6months with various problems due to early initiation of complementary feeding. Mothers who were gone through more than 10times, they mainly came to clinic after the problem regarding late initiation of complementary feeding started. The mothers of the children gone through 1 time and 2-4times counselling had higher rate of timely initiation. From the graph the fact which can be determined is that impact of counselling on initiation of complementary feeding is positive only when they come in the proper time

Milk and milk products consumption is less throughout 5 yrs of life among all children studied(Fig17) . In this age children are breastfed so the consumption of other milk is low at the same time many care givers prefer formula milk as they think its better tolerated by the child. But the unawareness of mothers regarding the consistency of formula milk leads to undernourishment of children. Even after 2yrs the milk consumption is 53% which indicates low availability of milk as well as formation of gas and other problems. A mother expressed... *"we don't have*

cows in our home, if we have to buy from outside, then we think its better to buy formula milk, as its more durable and I can prepare the milk according to the consistency my child can tolerate.” But in most of the cases, they dilute the milk much more than required so the nutritional demand of the child does not get fulfilled as well as due to more consumption of water in each meal child feels full, so he does not become hungry also frequently. This way undernutrition makes its way. But impact of counselling on intake of milk and milk products were not that significant. So more detailed counselling is needed in this area. Fruits and vegetable consumption of children gradually increased with age(Fig18). Result shows that impact of

counselling on intake of fruits and vegetables was positive(Fig19). Impact of counselling on consumption of formula feeding was very much positive. The mothers who got more than 10times nutritional counselling stopped feeding their children formula(Fig20) and consumption of formula feeding was more common in children whose mothers never gone through nutritional counselling. Habit of regular consumption of outside commercial food is common among all age groups. Impact of counselling on intake of outside food was positive(Fig21). Regular consumption of outside food is more common among children whose mothers never got nutritional counselling.





**HYGIENE AND SANITATION PRACTICES**

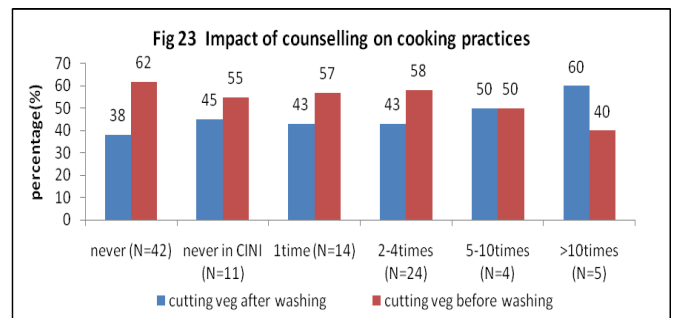
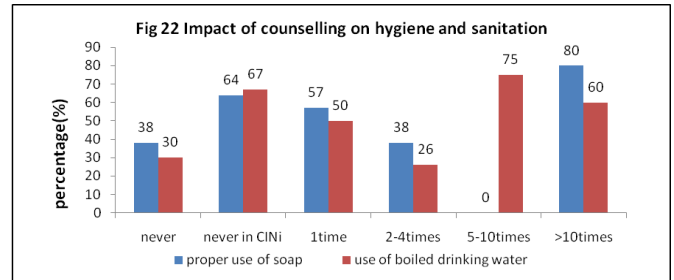
Hygiene and sanitation practices was not very impressive but we can't blame them too. As the target group of this study was from very poor socio economic

background as well as the facilities offered to them were also very minimal. Availability of drinking water was very poor, so in a hot summer day they have to feed their child any kind of water which is available. They can't afford

enough fuel even for minimum cooking for the whole family, then how we can expect that they will boil the water which can be consumed without boiling also. They don't have direct water channels to their home, and they have to collect water for everything far from their houses and have to carry water in buckets through a long narrow dusty road. So even after lots of counselling its not easy to convince them to wash hands everytime they feed their child or to use soap. To change these practices first we have to improve the services provided to them and a large scale development has to be done regarding the improvement of the socio-economic status of the people of south 24 parganas district in rural and sub urban area. Still the impact of behaviour change communication on hygiene and sanitation practices was positive specially among mothers got 5-10times and more than 10times counselling at CINI(Fig22).

**COOKING PRACTICES**

Impact of counselling on cooking practices was observed. The result shows positive impact. Fig 23 shows among mothers who got more than 10times counselling 60% of them cut vegetables after washing whereas among mohers gone through 5-10times counselling the ratio is 50:50. But still to change this kind of household level practice more detailed counselling has to be done, as there are other factors also included. There is immense influence of elderly members including mother in law in the family, so the practices they are used to do for long are difficult to change. If possible other family members who also involved in cooking practices in a particular household can also be counselled. Then only a proper change in this area can take place.



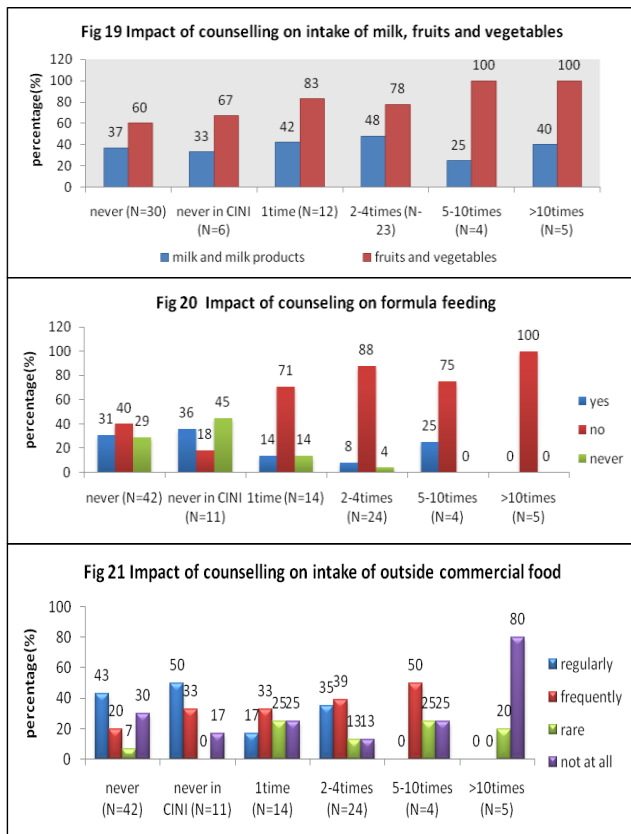
**DISCUSSION**

An educational intervention was implemented based on locally accessible, affordable and acceptable resources in the rural area in South 24 parganas district in West Bengal. The results showed that the intervention improved caregivers' knowledge, food selection, responsive feeding, IYCF practices and hygiene behaviours as well as children's physical growth.

Breastfeeding and appropriate complementary feeding are essential to ensure healthy growth of infants and young children (LéonCarva *et al.* 2002). Appropriate practices and key nutrient-dense local foods need to be highlighted and promoted in this district to maximize the potential growth and development of all children. Although the sample sizes for this study were small, analysis of the nutritional status of children would suggest that they are suffering from malnutrition. The nutritional status continually declines starting from the first few months of life. This pattern of progression of malnutrition is very similar to a study done in Latin America (Shrimpton *et al.* 2001). Previous study proved that mothers with higher educational qualification and information gained through dentist had a better knowledge about child's oral health(Suresh *et al.* 2010). So we can assume that health education for care givers can also have a positive impact on the nutritional status of children.

Breastfeeding is a complex behaviour, constructed and practiced within the social living environment of a woman, and therefore, variations exist in breastfeeding rates among different socioeconomic and cultural groups (Celi *et al.* 2005). An investigation was done regarding the association between breastfeeding duration and teacher-assessed educational achievement in 5-year-old children in England. Their findings suggest that longer duration of breastfeeding, at all or exclusively, is associated with better educational achievement during the first year at school (Heikkilä *et al.* 2014).

Promotion of early initiation of breastfeeding has the potential to make a major contribution to the achievement





of the child survival millennium development goal (Edmond *et al.* 2006). A study in Bolivia shows a significant increase in timely initiation of breastfeeding from 56% to 74% in three years which suggests that this is a relatively easy behaviour to change. Large scale programmes with a strong community behaviour change focus can improve immediate breastfeeding within the first hour, with significant potential to improve the health and survival of newborns (Baker *et al.* 2006).

Overall, a low proportion of children in this study were exclusively breastfed through their first 6 months of life. In spite of the knowledge that exclusive breastfeeding was important, mothers expressed a preference for mixed feeding with formula milk and other foods. As cultural practices promoted pre-lacteal feeding, despite high rates of breastfeeding, there is a concern of lack of breastfeeding exclusively (Jessri *et al.* 2013). Recent studies in Kenya showing that exclusive breastfeeding practices are not in line with WHO recommendations, and like the mothers in our study, there appears to be a preference for mixed feeding (Gewa *et al.* 2011; Kimani-Murage *et al.* 2011). The preference for mixed feeding young infants is concerning, as physiologically, an infant's gastrointestinal, renal, and neurophysiological systems are not mature enough to process foods or liquids other than breast milk before 6 months. Further starchy foods can cause diarrhoea and contribute to iron deficiency (Akre 1989; Dewey 2003). Our qualitative findings suggest that to some extent, intensifying work loads of mothers and food insecurity may lead mothers to perceive that their milk is insufficient to meet the needs of their infants. Previous studies in this region have also observed an association between food insecurity and mother's perceived capacity to produce sufficient breast milk (Gewa *et al.* 2011; Kimani-Murage *et al.* 2011; Nor *et al.* 2011; Webb Girard *et al.* 2012a). Exclusive breastfeeding for the first 6 months of life would offer a child both nutritional adequacy and protection against infections (Léon-Carva *et al.* 2002). As only 27.5% of the mothers exclusively breastfed, the promotion of exclusive breastfeeding may be an opportunity to improve the health and growth of these children.

To our knowledge, this study is one of the first to test the relationship between the behaviour change communication and IYCF practices in the particularly backward district of West Bengal. Recent reviews suggest that agricultural interventions that include a nutritional education component can strengthen the intervention's ability to improve child nutrition (Berti *et al.* 2004; Leroy & Frongillo 2007; Randolph *et al.* 2007; Webb Girard *et al.* 2012b). Education in this context should focus on striking a balance between promoting milk as a good source of nutrition for young children and emphasising the potential adverse health consequences of introducing milk and other foods and liquids to infants before 6 months of age (Wyatt *et al.* 2015). A study in Ghana recommends appropriate health education programmes by the ministry of health targeting mothers who are less likely to practice exclusive breastfeeding (Tampah-naah & Kumi-Kyereme 2013). Previous study suggested that Infant Feeding Strategy needs to address the gaps in key health messages and develop community-orientated programmes with a focus on teenage mothers. These should encourage the

involvement of grandmothers and fathers in decision-making about infant feeding so that they can support breastfeeding for optimal child survival (Ijumba *et al.* 2014)

Exclusive breastfeeding until 6 months and continued breastfeeding until 2 years need to be addressed. The late introduction of foods to complement breast milk for infants from 6 months is of concern. In the age group 6–11 months, some infants were given complementary foods only on some days. The infant food history provided useful information into the age range at which complementary foods were introduced. Nutrient dense foods including eggs, suji, chicken and leafy greens should be promoted for children 6–12 months of age as these were generally introduced very late. Young children 12–23 months of age seemed to be meeting the recommended needs and nutrient densities for complementary foods better than the younger age groups (6–11 months) as they are given more and a wider variety of foods (Roche *et al.* 2011).

Appropriate complementary feeding (CF) is an important determinant for the achievement of healthy growth and survival of young children in their early years of life. It has been established that appropriate CF has the potential to prevent 6% of all under-five deaths, particularly in the developing world (Lutter 2003). Despite this significance, inappropriate CF is commonly practised in many low and middle income countries and contributes to child growth retardation and undernutrition, morbidity and mortality in developing countries (WHO 2000). Previous study stated that lower paternal education, lack of post-natal check-ups and lower household wealth or poor economic status are the risk factors for not meeting minimum acceptable diet (Victor *et al.* 2014). The results of this study highlight the need for nutrition interventions to improve dietary quality and feeding practices.

In a recently published literature review, Shi and Zhang revealed that nutrition education combined with other strategies can improve growth and reduce malnutrition in developing countries (Shi & Zhang 2011). Santos *et al.* (2001) also delivered similar intervention through health care providers. Many nutrition educational intervention studies on complementary feeding have emphasised the consumption of animal-source foods such as eggs, fish, chickens, meat, and of vegetables and fruits (Santos *et al.* 2001; Pachon *et al.* 2002; Bhandari *et al.* 2004). Because there were substantial variations on food resources and culture in different geographical regions, it is hard to compare the consumption of specific foods among different intervention studies (Zhang *et al.* 2013).

Given that infant feeding choices are embedded in the context of ethnic and cultural beliefs (Kannan *et al.* 1999), it is important to understand the influence of such beliefs on women's infant feeding decisions (Choudhry & Wallace 2012). Complementary feeding can be viewed as a cultural practice because it is a manifestation of cultural knowledge. Cultural knowledge encompasses all the necessary information such as beliefs, rules, ideas and concepts needed to interpret experience and generate behaviour (Spradley 1972). For the women in our study who mostly stayed at home, the household factors like family food preferences, financial constraint, and multiple

children influence variety and adequacy of complementary foods (Monterrosa *et al.* 2012). A study in Bangladesh suggests intervention programmes to Improve conditions for enhancing current infant feeding recommendations particularly in low-income countries(Saha *et al.* 2008). In this study consumption of milk and milk products was not satisfactory. A previous study revealed that significant decrease in milk consumption was inversely correlated with sugar sweetened beverage consumption(Blum *et al.* 2005). The consumption of fruits and vegetables was comparatively better, though when financial resources are limited it is less likely that young children will receive a variety of fruits and vegetables (Monterrosa *et al.* 2012).

## CONCLUSION

Overall There was positive impact of personalized counselling on IYCF practices. There was positive impact on removal of formula feeding, consumption of fruits and vegetables, reduction in the consumption of outside commercial feeding. These factors are easily be counselled, and after 2-4 times counselling positive changes can take place. In case of consumption of milk and milk products, there were strong explanations from the side of care givers which has to be overcome by more and more detailed counselling. Detailed counselling is also required in changing household cooking practices as well as hygiene and sanitation practices. It is necessary to make the community mothers and other family members of a child to understand the direct correlation of wrong IYCF practices with occurrence of infectious diseases and rapid growth faltering of their children.

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