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School Nutrition Programme of BRAC and Banchte Shekha: Midline Report

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ABSTRACT

This study is a process evaluation of School Nutrition Programme (SNP) which assesses the programme implementation process and analyzes the effectiveness of its operations and service delivery. Four issues were considered for exploration: monitor community engagement and their activities, observe health and hygiene practices at home and school, look at the procurement and supply the system and determine the amount of served food and its nutrient compositions. Like the baseline, this study also collected data from two implementing organizations-BRAC and Banchte Shekha. This study aims to assess how effectively the programme is being implemented in the field.

Qualitative techniques like focus group discussion (FGD), in-depth interview and observation were applied for data collection. Three different samples were collected from BRAC rural, urban and Banchte Shekha working area. Community people, school management committee (SMC) and mother's club members, parents, programme and kitchen staff and local vendors were considered as respondents. Besides, observations in kitchen and school provided ample information on health and hygiene practices. Additionally, menu wise amount of raw food materials and its edible portions were estimated from six kitchens. By using conversion factor from raw to cooked food materials, nutrients composition was determined to estimate the food value of served foods.

Findings revealed that, after continuing six months, programme staff were able to build a good rapport with different stakeholders that increased their confidence to run their activities smoothly. School authority and parents seemed to be happy with the quality of served food, while less variation in menu (specially in urban area) created monotony. Health and hygiene practices in schools were not in satisfactory condition. In rural area, less use of sanitary latrine might produce and spread germs. After having some experiences, now the programme can be more structured, regular monitoring and integrate with health/nutrition and WASH programmes can be included to derive more benefit from SNP.

Chapter 1

INTRODUCTION

Access to primary education is a key policy priority of many developing countries to meet the Millennium Development Goals (MDGs). However, hunger and malnutrition is barrier for learning, is mostly found in low-income countries. Hence, providing meal in school setting acts as 'magnet' to attract students into classroom (WFP, 2013). The key motto of school feeding programmes is to increase students' attendance and attention in class. Besides, promoting healthier diet in school helps to ensure health and cognitive development (World Bank, 2006). By continuing this support, students' physical and educational development can be ensured which is considered to be an investment for their future.

SCHOOL FEEDING: IMPACT ON EDUCATION

A number of studies showed that school feeding programmes have direct impact in enhancing students' attendance, cognition and educational attainment (WFP and World Bank, 2009). In 2003, the International Food Policy Research Institute (IFPRI) evaluated school feeding programmes in Bangladesh. Findings from this study revealed that the feeding activities in school were able to raise 14.2% enrollment, reduce dropout rate by 7.5% and boost up attendance rate by 1.3 days in a month (Ahmed, 2004). In fact, biscuits provided by WFP act as source of energy, protein and iron. The mothers of beneficiaries also reported that after getting this intervention their children became more healthy and energetic. In 2007, Kristjansson reviewed 18 research reports and admitted that school meals had several advantages for malnourished children in terms of physical growth and cognitive abilities which had an effect on educational achievement. Other studies also revealed similar findings which presented a positive effect of this programme on energy intake, micronutrient status, school enrollment and attendance of children participants compared to non-participants (Jomma *et al.,* 2007). Vermeesch and Kremer 2005 in the case of programme participants found significant changes on learners' written test performance than non participant groups.

SCHOOL FEEDING: IMPACT ON NUTRITION

Generally school feeding programme is a popular intervention. To improve its effectiveness several interventions are integrated which are deworming, micronutrient fortification, and hygiene education. This kind of programme also includes hand washing activities and dissemination of nutritional knowledge. Studies showed that deworming activities were able to prevent hookworm (Miguel and Kremer 2004). Providing micronutrients (like iron, Vitamin A, and iodine or zinc) helps to strengthen students' health status. Numerous studies showed that micronutrient fortified foods can help to tackle severe deficiencies which are frequently found in children of primary school age (WFP and PCD, 2000). Lack of Vitamin A or iron or both can hamper students' learning ability and school feeding can play an important role in improving their nutritional status. Again this type of programme also may have significant impact on girls who are suffering from iron deficiency and it can help them to minimize the risk of health problem during their childbearing age (WFP and World Bank, 2009). The necessity of supplying micronutrients diversified food also mentioned. Whaley *et al.* 2003 realized that provisioning of diversified foods is tough in low cost setting.

However, school feeding programmes adopted different strategies in terms of design, implementation and evaluation (Lawson, 2012) in a number of counties. Food type and quantity, fortification, beneficiary's age and socio-economic conditions are considered as key issues for designing the programme. At present, two types of food are being provided by donor agencies; one is biscuits or processed food and the other one is hot cooked meal. In Bangladesh, *khichuri* (rice with lentil, green gram, vegetables and oil) is a popular food among the hot cooked meals. With support from Global Alliance for Improved Nutrition (GAIN) and Dubai Care, BRAC and Banchte Shekha have been conducting a school nutrition programme (SNP) which provides hot cooked meal that aims to reduce short term hunger of students. This programme built cluster kitchens and appointed number of cooks and their assistants to cook and serves food to the children of selected schools. Deworming, hand wash facilities and hygiene education are important components of this programme. BRAC provides food to 3,842 students of 23 rural schools and 8,139 students of 57 urban schools. Banchte Shekha provides food to 6,405 students of 22 rural schools. Total 18,386 students of 102 schools are benefited from this programme.

BACKGROUND OF SNP BASELINE STUDY

The aim of SNP is to increase access to primary education by providing mid day meal in school. The specific objectives are to:

a) Enhance access to quality education and improve educational standard of children

b) Reduce dropout rate and increase enrolment in schools

c) Provide supplementary nutritious food to children aged 5 to 11 years

d) Reveal the technical and operational feasibility of providing food through scaled up SNP in Bangladesh

To assess how much this programme actually achieves, a series of studies were planned to be conducted by the BRAC Research and Evaluation Division (RED). An assessment was started with the baseline which described the situation of student's health and educational status in the project areas. To know how the programme was implementing in field level, a process evaluation was conducted at the middle stage of SNP. Finally, to capture the effects of SNP over a period, an endline study will be conduct at the end of the programme. The specific objectives of the baseline study were to:

1. Measure school participation, learning achievement, nutritional knowledge, health and hygiene practices and health status of students

2. Observe school discipline during food distribution and management

3. Observe management procedure from food preparation to distribution

4. Identify stakeholders' view on programme activities

Both qualitative and quantitative approaches were adopted in the baseline study. Three different samples were drawn from BRAC rural, BRAC urban and Banchte Shekha working site. A comparison group also included where no intervention was provided by the implementer organizations. A provision of comparison between intervention vs. control area, BRAC vs. Banchte Shekha and BRAC rural vs. BRAC

urban area was also linked in the sampling strategies. Survey in schools and households and Arithmetic test for grade three students were implemented as quantitative methods in baseline study. Besides, focus group discussion (FGD), in-depth interview, classroom and kitchen observations were applied for collecting detail data.

SUMMARY FINDINGS FROM BASELINE STUDY

This programme gained wide acceptance by students, school authority, parents and community people. To some extents SNP was implemented effectively in maintaining food quality, timely food delivery and in establishing effective communication with community. Basic health services like deworming and hand washing were inbuilt component of SNP. But these did not work efficiently. Inadequate hand washing and sanitation facilities in school increased health risks. Moreover, half of the respondents didn't have sanitary latrine at home. Therefore, the effects of poor personal hygiene practices could spread infectious diseases easily.

The programme staff get 30 minutes for distributing food in school. However, in large classes it was difficult to finish everything within this time. BRAC adopted a relatively effective mechanism compare to Banchte Shekha. The tiffin box-spoon technique was able to save time because students need not to spend time for hand washing. On the other hand, schools have limited facilities for hand washing. So, in Banchte Shekha working area it took a longer time to finish the entire process in schools. School authority had to make some adjustments like squeezed their daily assembly time or distribute food during tiffin time. It was observed that the classes before tiffin period and after tiffin period of food distribution were 5-10 minutes shorter than the regular class time. Teachers had to quit the class a bit early and join the following class a bit late.

Around one third of students from the Banchte Shekha working area came from food defect households. However, mothers of Banchte Shekha intervention area have more knowledge on nutritional aspects. Knowledge on preventing hookworm was quite high in all the areas. Nearly half of the households from rural areas (both BRAC and Banchte Shekha) used unhygienic toilets.

Menu change is a crucial issue specially in urban areas. For retaining student's interest in food, diversified menu should be introduced. A continuous monitoring system might be helpful for implementing organizations to improve health and hygiene practices at student, school and household levels.

Chapter 2

STUDY OBJECTIVES AND METHODS

This study looks at how the SNP activities are being undertaken. To understand implementation procedures of the activities of SNP, we derived the following four objectives:

1. Observe learner's health and hygiene practices at home and school
2. Monitor the functions of mother's club and community members
3. Explore the procurement and supply chain procedure
4. Determine the nutrient composition of served foods

For achieving these objectives, this study adopted qualitative data collection techniques which included observations, focus group discussions (FGDs) and in-depth interviews (Table 1). Data were collected from the same schools and kitchens which were selected from the baseline study. To determine the nutrients of served foods, researchers visited the kitchens and estimated all food ingredients. The amount of served food was also estimated during the food distribution period in schools. It validated the –baseline findings. Moreover, the same technique was applied in three working areas. To know about learner's health and hygiene practices at home and school, observation and interview techniques were used. FGDs with mother's club members and community people gave a picture of their involvement in programme activities. Detailed interviews with field level programme staff were used for understanding procurement and supply chain procedures of SNP. Observation technique was used to know the entire food preparation and management procedure in school and kitchen. For determining nutrient compositions (i.e., Kcal, protein, iron and Vitamin A) of served food, researchers measured the raw food items of two different menus from each kitchen.

Table 1. Sample by intervention site

Methods		BRAC rural	BRAC urban	Banchte Shekha
FDGs	Parents	3	2	2
	Mother's club members	3	2	2
	Community people	3	2	2
In-depth interview with staff		2	2	2
School observation*		3	2	2
Kitchen observation*		2	2	2

*Two consecutive days in each

DATA QUALITY CONTROL

For maintaining data quality several steps were taken such as rigorous techniques and methods for gathering and analyzing qualitative data, including attention to validity, trustworthiness and triangulation. Therefore, rigorous training for data collectors, systematic checking in data collection time and audit trail were also applied.

ETHICAL CONSIDERATIONS

This study did not include anything harmful in terms of respondent's medical and legal ground. Verbal consent was taken before conducting interview or observation. The report also maintained the secrecy of respondent's identification information.

STRENGTH AND SHORTCOMINGS OF THIS STUDY

This study gives a description of the entire programme activities, community engagement and procurement chain system which might be useful for policy planner. However, the researchers determined the nutrients content of raw food ingredients which provided an approximate estimation of energy and micronutrient intakes of the students.

Chapter 3

FINDINGS

HEALTH AND HYGIENE PRACTICES AT HOME

Hygiene is a set of practices which plays an important role in preventing spread of infectious diseases in our everyday life. In this study researchers explored the hand, food, water and sanitation and hygiene along with waste management and practices at home and school. Baseline report of SNP revealed that more than 90% mother's health and hygiene knowledge was much high in project areas compared to those in non-project areas (Afroze *et al*., 2012). To explore basic hygiene practices at home, researchers conducted seven FGDs with parents which gave a different scenario from the baseline findings.

From BRAC working area

Several issues can be considered as hygiene barrier at home like infections carried by raw food materials, impure water, less use of soap or not using carbolic (or anti-bacterial) soap for hand washing, less use of sandal and soap and water after using toilet. Programme had some interventions based on health and hygiene practices at home and schools which mainly included hand washing and sanitation practices. Before the inaugural meeting, programme staff arranged several sessions with parents and community members and discussed about the merits and necessities of keeping good hygiene practices at home. Besides, regular monthly meetings arranged with mother's club members also included hygiene practices along with the food and nutrition sessions. Some of these parents were presented in focus group discussions. In both rural and urban area, parents admitted the importance of hand washing and they told their children to maintain it regularly. Mothers said that they were careful to trim their nails once in a week. They also reported that they used to wash hands before and after consuming food and after use of toilet.

In both areas, several parents stated that they had to share toilet with their neighbours.

> 'We are living in the slum area of Dhaka where several families use one toilet which is also not in a good condition. Users need to bring their soap and water when they need to use it. Bad odour and poor water supply are key problems of this toilet. Besides, in the rainy session water-logging also creates problems'. –A mother's club member from BRAC Urban area

Baseline findings revealed that almost half of the households in rural area didn't have sanitary toilet. Similar findings were also noticed form the midline data, around half of the parents told that they use one pit toilet which cannot be considered as sanitary latrine. However, very few of them used open toilet. Therefore, these families were carrying potential the risk of disease transmission from toilet. In both areas parents also raised one vital issue, their children didn't want to use school toilet because of its unhygienic condition. In one formal school BRAC made several changes such as doors of toilets were repaired, toilets were cleaned and hand washing facilities were improved. However, parents from that school told us that it

should be a regular process to clean toilets every day. School authority should be concerned about supply of water and soap as well.

Another important thing is disposal of waste materials in unhealthy manner, which also contaminates the home environment in the urban areas of Bangladesh. In rural areas this problem was relatively low. Hence, it is crucial to identify the sources of infections at home and conduct training and monitoring sessions at household level. In the planning stage, it was decided that the water and sanitation (WASH) programme of BRAC would work together with this programme which has not happened. Deworming activities were conducted in the initial stage, however at the middle no such activity was observed in school or household level.

From Banchte Shekha working area

Findings in Banchte Shekha working area were similar to the findings of the BRAC working area. In the Banchte Shekha working area, the people also struggled with the hygiene barriers such as less aware in hand washing, less access to hygienic toilet and less use of sandal in toilet. Baseline findings indicated that nearly one fourth of the households used unhygienic toilet which was, perhaps, the main source of spreading germs. Findings from FGDs were also related to this finding several parents admitted that they didn't use sanitary latrine. However, they wanted some support for constructing it. Mothers were found to be concerned about trimming nails, covering foods, and cleaning clothes and utensils. But accumulated stagnant water in toilets supported microbial growth.

Like BRAC, Banchte Shekha also took some initiatives in hand washing, deworming and monthly meeting for improving awareness among mothers. At the initial stage, hand washing and deworming activities were conducted in every school. But at the middle stage of programme implementation, these activities were absent in the school. Monthly meetings with mother's club members were organized regularly. Parents acknowledged benefit of activities conducted by Banchte Shekha.

> 'My son has changed his behaviour after starting this programme. Now he puts on shoes to come to school and before going to toilet. He is also concerned about trimming nails. Additionally, he advises me to wear clean clothes. We are grateful to Banchte Shekha for teaching them the proper way of hand washing'. –A mother's club member from Banchte Shekha area

Disposal of household waste was also found to be a problem in the Banchte Shekha working area. Most of the respondents mentioned that they threw away the household waste beside in the land and when it became huge they burned it. Though there was no facility for collecting garbage regularly in rural areas by the local government these wastes were disposed off. Through cannels and drains, and also spread by dog and other animals. Hence, hygiene education and monitoring should work simultaneously. Health workers or volunteers can monitor hygiene activities at home.

HEALTH AND HYGIENE PRACTICES AT SCHOOL

School hygiene and sanitation is a vital issue from health and social perspective. Children have rights to get basic facilities such as school toilet, safe drinking water, clean surroundings and information on hygiene. Baseline findings showed that both formal and BPSs had limited facilities in accessing hygienic toilet, soap and water. In

rural areas almost every school had access to tubewell for drinking water and in urban areas students drank supply water at school. The table 2 presents a comparative picture between ideal and existing situation on health and hygiene practices at school level.

From BRAC working area

To know the sanitation practices in BRAC intervention schools, researchers used the observation technique. In the baseline study, two schools were observed from urban and three from rural areas. Among these five schools two were BPS and the rest were formal schools. From baseline data it was found that one BPS had no sanitation facility and formal school had very inadequate sanitation facilities. It was found during baseline data collection that there was no supply of water in toilets in two of formal schools. School authority was not much concerned about hygiene practices of their students. In BPS, maximum students lived near the school, so they could use their home toilet when it was required. In formal schools, most of the students didn't like the poor sanitation facilities at school, so they prefer not to use it. Therefore, the need for hygiene education sessions in school was prominent.

After six months, this situation was slightly changed. In one school from the BRAC urban programme area, BRAC officers took some steps- repaired the doors, cleaned and coloured the toilets, improved hand washing facilities. In the other formal school, programme staff conducted several meetings and they thought that they made several changes but no significant change was observed in that school.

BRAC provided tiffin box and spoon, so the students did not have to wash their hands. Their mothers were instructed to clean the box and napkin regularly. However, it was found that a good number of students didn't bring their tiffin box and spoon compared to the baseline findings. So they used lid of other's tiffin box and hand for consuming food. They seemed less aware to wash hands before and after consuming food. Around half of the student's napkins were found dirty and BRAC staff or school authority didn't show any concern for it. BRAC staff used to visit one formal school and one BRAC school daily. They gave advices to teachers and others but did not take any action.

Table 2. Health and hygiene practices in school by organization type

The ideal situation	The existing situation in BRAC working area	The existing situation in Banchte Shekha working area
Schools should have sanitary latrine and adequate supply of soap and water.	One BPS had open latrine and others had no latrine. Most of the formal schools latrines were not in usable condition. Water supply was present in half of them. There was no provision of using soap.	Best toilet of the school was used by the teachers and they used to lock it. Student's toilets were usually very dirty. Students could use water from tubewells but no soap was found.
Schools should provide carbolic soap to kill germs.	No provision of hand washing before and after consuming food.	Glycerine soap found in the second day of observation.
Students have to wash their hands before consuming food.	A significant number of students didn't bring spoon and they consumed food by hand without washing.	It was difficult to wash hand properly in a very short time. The facility was limited and sometimes soap was absent.

Students should have to bring a clean napkin, tiffin box and safe water in BRAC working area.	A good number of students carried dirty napkins and some of them wiped spoon with it. Fewer students didn't bring napkins.	It was not applicable for Banchte Shekha working area.
Plates and glasses should be cleaned in Banchte Shekha working area.	It was not applicable for BRAC working area.	Every student didn't have his/her individual glass and plate. So repeated use of glass and plate might be contaminated.
Clean napkin should be provided for hand wiping in Banchte Shekha working area.	It was not applicable for BRAC working area.	Napkin was absent for hand wiping. Students wiped their hands in their clothes.
Children should have to access safe water for drinking.	Students bought water from home and school also had provision for drinking safe water.	Tubewells were found in school as source of safe water.
School should have basket/bin for keeping waste.	Basket/bin was found only in teacher's room in formal schools.	No bin was found for disposal of waste.

From Banchte Shekha working area

Baseline findings from the Banchte Shekha working area were not much different in the middle stage of the programme. Two formal schools were observed and their sanitation facilities were same as found in the baseline. Limited sanitation facilities might increase infectious diseases among students. Teachers used relatively better toilets and kept it under lock so that students couldn't access it. Both schools had tubewells as safe source of drinking water and Banchte Shekha also provided tank for water preservation. For students, it was still challenging to wash their hands in a proper manner within the limited time. Programme staff regularly visited schools and they had meetings with teachers and SMC members. But no significant change was noticed from the baseline findings.

Unfortunately, health and hygiene activities in schools were not up to the standard. Programme should introduce a relevant package of health and hygiene education for students and teachers. Programme can also conduct regular sessions by engaging Parent-Teacher Associations (PTAs) and School Management Committee (SMC) members. Besides, an integrated approach with health and WASH programme was also required.

ENGAGE COMMUNITY PEOPLE

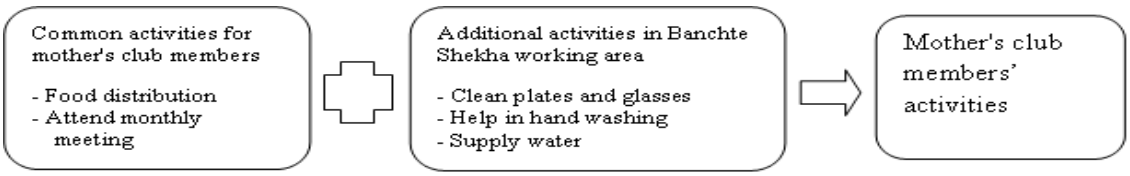
BRAC and Banchte Shekha both took several steps so that the process of active participation could be sustainable. Both organizations applied some techniques like formation of committees with community people, teachers and parents specially mothers. They planned to organize regular meetings with committee members for exchanging their views. These meetings would also be helpful for building relationship and improving their services. From the baseline report, it was revealed that both organizations had several meetings with government officers, teachers and SMC members, local elites and other community people to explain programme activities. They usually conducted quarterly meetings with community people and monthly meeting with head teacher and mother's club members. The meeting with mother's

club members was held at school and it created a scope for programme staff to review its activities, solve their problems and enrich their knowledge.

MOTHER'S CLUB ACTIVITIES

BRAC formed 262 (155 in urban and 67 in rural areas) mother's club including 2640 members in 80 schools. Banchte Shekha formed 22 clubs in 22 schools where each mother's club comprised 20 members. Total 440 mothers were working in Banchte Shekha working area. Mother's club consisted of mothers whose children were studying in the programme implemented schools. Before starting SNP activities, programme staff conducted several meetings with mothers and requested them to engage in food serving activities in school. In BRAC working area, these members only served hot cooked meal in school. In Banchte Shekha working area mother's club members had to perform several additional activities like cleaning plates and glasses, providing drinking water and helping younger students (like pre-primary) in hand washing. Therefore, it would take approximately two hours to finish the entire work. Furthermore, members of this club had to join regular monthly meetings where programme staff and head teacher also joined them.

Chart 1. Activities of mother's club



Usually mother's club consisted of twelve members in a class and each mother had to distribute food at least once a week. Members were willing to join this club and if any of members couldn't able to continue her service she could quit any time. The programme officer had to maintain the list and schedule of mother's club members. Every month programme staff finalized the name of mothers who would serve for the next month and distributed their work and posted the list in the class rooms. Therefore, programme staff constructed mother's club for every class.

> 'We were twenty members who joined mother's club at the initial stage of this programme. No member dropped out in the last six months. Before start of work, we had two days of orientation for preparing ourselves for work. Usually each mother had to come for two days in a week. The programme officer made the schedule after a discussion with us. If we have any problem we can talk with the programme staff and resolve it. Besides, head teacher of this school also observe our work and gave suggestions, if required'. –A club member from Banchte Shekha area

In the Banchte Shekha working area, mother's club members had to come nearly 30 minutes before serving food. They had to bring water, clean plates and glasses, discipline students and set them in to row and serve food. When the students completed eating, the club members were responsible to clean their plates and glasses. After finishing all tasks, they took their food. They consumed the same food that were served to the students.

Still BRAC urban staff dealt with the situation of lower presence of club members during food distribution. As the urban staff reported,

> ‘In the urban area a good number of students have working mothers. That makes mother’s club less active compared to that in rural area. I guess approximately 60 to 65% mothers are present regularly. If we are able to provide them some benefit (like cash or kind) it will help to motivate them to be present regularly’. –A BRAC staff from urban area

To solve this problem, the programme staff talked with the club members and found several non-working mothers who could come for more days and serve food. For each class two mothers were responsible to serve food. If both of them were absent, the class monitor distributed food to his peer.

Banchte Shekha had a separate plan to empower mother’s club members. They paid each member 150/- as monthly remuneration. Generally, they paid this amount in the monthly meeting. The club members decided to spend 20/- from it and save the rest in the bank. The programme staff helped them to open a bank account. Hence, the members could save their earning every month. The club members planned to invest the money when it would become bigger. On the other hand, BRAC didn’t adopt any plan like this. However, both organizations preferred local women to work as kitchen staff. Therefore, some rural women were empowered by involving with this programme.

Monthly meeting with club members

Mother’s club members in the BRAC working areas were only responsible for serving food in the class and attended the monthly meetings. The main activity of monthly meeting was to review member’s activities and disseminate nutritional knowledge. In both of the organizations, the project staff prepared several posters and charts and hanged them in schools, kitchens and project offices. These posters and charts comprised of calories and nutritional facts of common food items. In the monthly meeting, the programme staff and head teacher discussed on nutrition knowledge and deworming, personal health and hygiene practise. As a result, they reported that their understanding about eating of healthy food was enhanced. In the BRAC urban area, a fewer mothers were present in the monthly meeting and most of them seemed to be hurry, so they wanted to make it short. For conducting this session smoothly the programme staff prepared curriculum based on nutrition education. This curriculum included understanding of essential nutrients and micronutrients (like vitamins and minerals), how to reduce micronutrient deficiency, deworming and personal hygiene practices. It was observed that the monthly sessions were not conducted in an organized way. Programme staff should pay more attention on this regards.

Mother’s club activities in school

To observe mother’s club members activities, a total of seven schools were observed in three consecutive days. Among these, two schools from each of SNP implemented areas (BRAC urban and Banchte Shekha) and the rest three from BRAC rural areas were selected randomly. The following table describes the ideal and existing situation of food distribution in schools by organization type.

Table 3. Activities of mother's club members in school by organization type

Ideal activities of mother's club members	Existing activities in BRAC working area	Existing activities in Banchte Shekha working area
Club members should be present on time.	Except urban formal schools members were almost present in time. Almost two-third of members was present in urban area.	Club members were present about 30 minutes before food distribution.
They have to use apron, gloves and cap during food distribution.	Only one school in the rural area mother's club members used it. In one formal school club members reported that the programme staff kept their aprons, gloves and caps.	None of the two schools club members used of apron, gloves and cap. In one school club members reported, they never got apron, gloves and cap.
They have to clean their hands before serving food.	It was absent. They were using spoon for serving so they didn't wash their hands before serving.	Though they washed plates and glasses, they didn't wash their hands.
Use safe water for drinking and cleaning purposes.	Students brought water from home and schools also have arrangement of safe water.	Banchte Shekha provided water tank for preserving water and used it for cleaning, drinking and hand washing purposes.
Wear clean clothes and tie hair to their back.	Members were found in clean clothes and their hair was tightly knotted.	Similar things were found in Banchte Shekha working area.
Maintain personal hygiene.	Their nails were found trimmed but some of them found spat out. Sweating was a common phenomenon. Smoking or use of tobacco was absent.	They were able to maintain their personal hygiene activities quite effectively.
They should not have any infectious diseases.	None was apparently found with skin or infectious diseases.	Similar to BRAC working area.
They should provide support in hand washing.	Though BRAC adopted tiffin box and spoon mechanism, students need not wash their hands before consuming food.	They helped the younger students (pre-primary and grade one) in hand washing.

Mother's club members got apron, gloves and cap for use in food distribution which protected food from contamination. From baseline data, less use of apron, gloves and caps among mother's club members during food distribution was observed. After six months, this situation deteriorated. In formal schools, limited use of apron, gloves and cap were observed. Similar findings were also noticed in BRAC schools. From one formal school in the urban intervention area, club members mentioned the BRAC staff kept their apron, gloves and cap. On the other hand, from Banchte Shekha working area, one formal school members reported that they never got apron, gloves and cap, while they saw other school members had these stuff. In BRAC working area the food distribution took a bit more time (like 5 to 10 minutes) to finish in formal schools. A fewer club members and students bought food to home in their tiffin box. In Banchte Shekha working area it was observed that mother's club members took 10 to 15 minutes more to finish the whole process. The club members usually take 1:30 to 2 hours for distributing food and finish the cleaning process.

In the BRAC urban area less presence of mothers during food distribution time created some problems. Mothers who came regularly told that if they would get any remuneration or any benefit from BRAC, they could work more efficiently. So, BRAC might think and take some initiatives like Banchte Shekha.

COMMUNITY PEOPLE INVOLVEMENT AND THEIR PERCEPTION

In every SNP implemented school, the programme staff constructed a committee by involving SMC chair, head teacher, local elites and parents. They had the responsibility to monitor the food delivery process, presence and activities of mother's club members, observed food distribution in class room and would have interactions with parents and students regarding programme activities. This committee was termed as food monitoring committee. They also have the responsibility to visit kitchen and give their feedback to the respective programme staff. Programme staff was responsible to visit at least one school a day. Therefore, members of the food monitoring committee can easily get a scope for discussion with him. There is no specific day or time for this meeting, but members usually live near the school so they have frequent meeting. Members from urban area told that in the initial stages of SNP they visited kitchen, but in last 3-4 months they didn't have any visit. To explore the reason they said, the urban kitchen was a bit far from school so they couldn't visit frequently. However in rural area (both BRAC and Banchte Shekha) they have the advantage to set up kitchen near the schools. Hence, they would get more visitors from the food monitoring committee. In the BRAC rural area one kitchen was located adjacent to the school. The head teacher of that school visited the kitchen and store and observed the entire cooking process almost every day. A good communication process was noticed between the programme staff and local community people. Moreover programme staff applied several strategies to get feedback from the community.

> 'We put the option to write comments on delivery of food every day. Additionally, head teachers observed the entire food distribution process and made comments on it regularly. Last day one head teacher wrote that rice was not boiled perfectly. Therefore, I have checked it today whether it was properly cooked or not. School authority also had the scope to talk with food distributor and quality controller and share their views so that we can serve more efficiently and effectively'. –A BRAC staff from rural area

By discussing with community members in several settings, it was clearly noticed that SNP was able to create a positive effect in their mind. School authority, parents and community elites welcomed such type of programme and they tried to be present in each meeting and shared their views.

> 'The timing of food distribution in tiffin period is ideal. Students who were not able to bring food from home get food in school. Their hunger is reduce and able to pay more attention in class. I think, it is a useful programme and should be continued more in slum areas'. –A community member from BRAC urban area

Positive response also found from two other areas. Teachers and SMC members opined that the served food was found be adequate in quantity and quality was also satisfactory.

> 'Before starting of this programme, my son used to take money from home and consumed some unhealthy food like *jhalmuri, acher*, chips, etc. Now he consumed *khichuri* regularly. The scope of consuming those unhealthy foods was decline. It saved money and minimizing health risk of my son'. –A mother from BRAC rural area

The community people thought that the variation in food might increase attraction of students. Specially in the BRAC urban area where they served only *khichuri* (with a

variety of vegetable and lentils). Whereas, three different menus were serve in the other two areas on different days at a particular interval. In the BRAC rural area, they served *khichuri*, egg fried rice and chicken *beriyani* (once in a month as an improved diet).

One community member from the BRAC rural area reported,

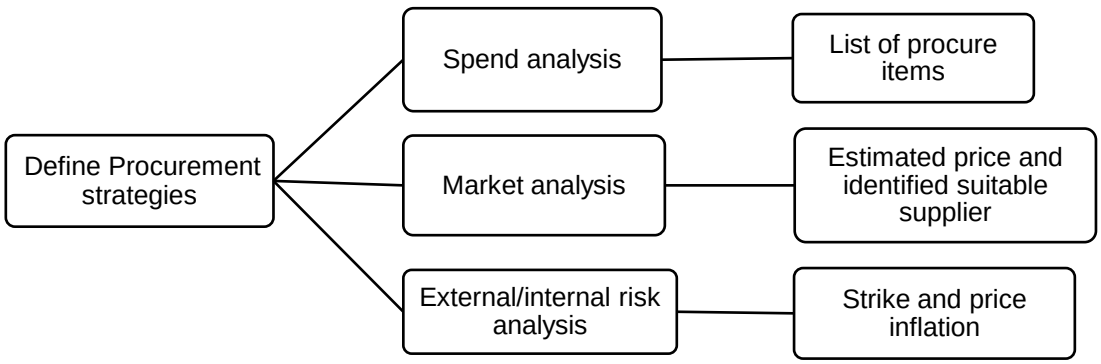
> 'Menu change is essential otherwise students will lose their interest on food and even appitide as well. I think students mostly like chicken *beriyani* rather than other two menus. We requested BRAC staff to serve it more often'. –A community member from BRAC rural area

In the Banchte Shekha working area, they served three types of menus like *khichuri*, curry (mixed vegetables and lentil)-rice and chicken *beriyani*. Here chicken *beriyani* was also popular rather than the other two menus. According to parents and teachers, students also showed much interest to consume curry rice. One mother explained the reason why students did not used to take one item like *khichuri,* they preferred curry with rice. They wanted vegetables as a separate curry with the *khichuri.* Additionally, community members were requested to serve more animal food items like egg, meat, etc. that would be attractive to the students and provide some quality of proteins.

PROCUREMENT AND SUPPLY CHAIN SYSTEM

For implementing programme activities smoothly, both organizations took some initiatives which were specific and useful for achieving the goal. Initially, programme staff made estimation on goods and services required to run this programme. After that, they made a market analysis for estimating the prices of goods and services, and identified suitable suppliers. Finally, programme staff identified some significant risk factors (like strike, price hike, etc.) which might hamper the whole process.

Chart 2. The process of defined procurement strategies



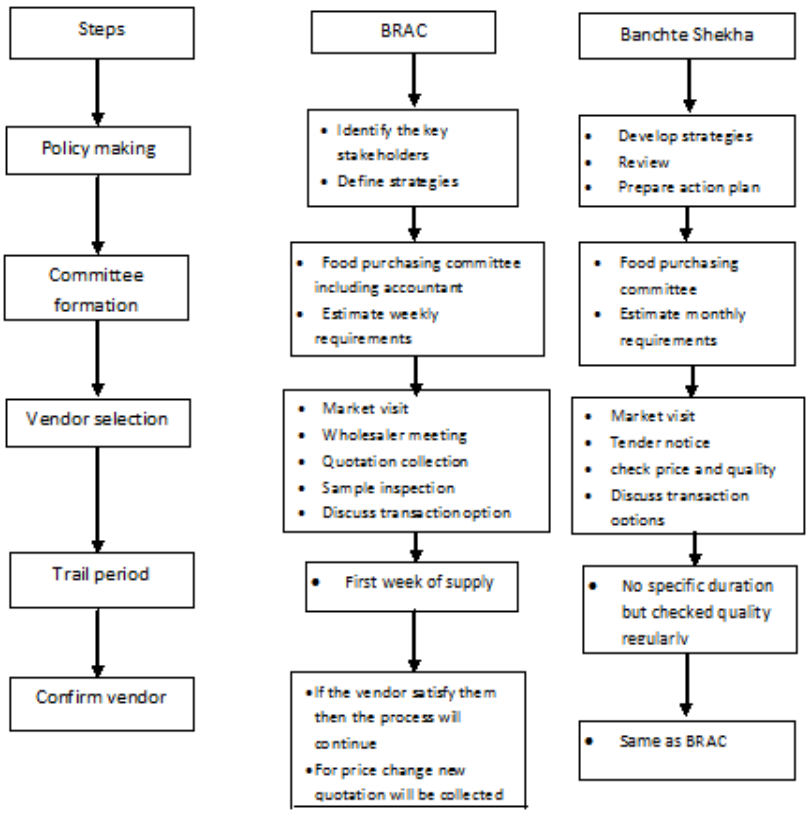
Though the strategies were defined and adopted, programme staff still faced challenges of strike and price hike that affected the budgetary provision. Specially, programme staff in urban area couldn't provide food to school on strike day. Some times strikes were declared in the evening when vegetables were already cut or peeled. In this situation food was served but the cost was increased. During strike regular supply of food materials from outside of the city was also hampered. As a result, the price of raw food materials were a bit expensive and supply was limited. On the other hand, increased fuel price might influence in increased house rent,

transportation and food materials costs. Programme staff in urban area were more likely to deal with this challenge.

For unsertaking proper procurement and supply chain system, BRAC and Banchte Shekha both formed a committee for each to check quality of raw food materials, keep stock register and estimate the quantity of food materials before cooking and maintaning records of their utilization. The committee was also responsible to provide information to higher authority of SNP time to time.

An accountant was included in this committee who played the key role in estimating the cost of food materials and made demand for money to the accounts department of the respective organization. In both organizations, the field progamme coordinators had the responsibility to organize meetings, liaison with head office based staff, keep records and provide information when required. BRAC usually made estimations of required raw food items and fuel on weekly basis, whereas Banchte Shekha made it on month wise.

Chart 3. Procurement and supply chain system



Before vendor selection both organizations had extensive market visits in both near and distant markets. They also talked with a wide range of suppliers of vegetables, grain and fuel regularly (Chart 3). At the same time, they also keep higher authority informed on a regular basis. After took the price information, they collect sample of some food items (like rice, pulse, nuts and so on) and discuss with the head office based staff. Then both parties reach to a decision in this regard. Programme officers also create a cordial environment, so that they could get better quality items at a resonable price. Hence, Banchte Shekha introduced a tender notice system for finding interested suppliers. BRAC collected price quotations. After getting the name of

interested suppliers and their price quotations, the purchase committee analyzed all the possible circumstances and finally selected a vendor for a trial period. In BRAC, the officers scrutinized the first week's supply very carefully. If the supplier provided quality goods, he would be allowed to supply at least for a month.

> 'Checking of price and quality of food items are our daily task. On the other hand, we regularly visit the nearby markets and distant wholesalers. These things help us to update ourselves about the price and supply status of raw food items. These are useful to us for choosing vendors and having food items with the lowest price'. –A BRAC staff from urban area

After completing the of selection process, field staff would have very clear dicussions with the selected vendor about the supply and transaction procedures of SNP. Almost the same transaction policies were adopted by both BRAC and Banchte Shekha in terms of buying food materials. If the staff needed to spend more than Tk. 10,000 would have to make payment by cheque. So, initially they faced problem, the suppliers were not used to get payment in this system. It took time to gain the trust of the suppliers and after few months the programme staff were able to build a faithful relationship with them.

Usually both organizations maintained liaison with two different types of vendors. One, for purchasing grain (like rice and pulse) and the others for non-perishable items (like oil, salt, spices, nuts etc.). The supplier sent their goods once in 7-10 days. For perishable items, other suppliers were chosen who would be able to provide fresh vegetable items regularly. Quotations were taken from both types of vendors. If the selected vendors' performance were satisfactory then their services would continue until any problem occurred. Both organizations checked the price and quality of raw food items on regular basis. If the programme staff found any deterioration in quality of the food items or these would be available with lower price, then new quotation were floated and the vendor was changed.

> 'I purchased the vegetables from *Kawran Bazar*, which is one of the largest wholesale markets in Dhaka city. When vegetables come from rural areas, I have to collect them very early morning and send it to the urban kitchen. I think, I am supplying fresh vegetables at the lowest price. Due to strike, when supply of vegetables becomes irregular, it becomes difficult to provide these with the price fixed by BRAC staff. It happened a few times, but I had option to talk with the officer and re-fix the price. The transaction procedure of BRAC staff is fair and I can sell 300 to 350 kg vegetables at a time. But they checked the quality of vegetables regularly. Still I had no problem with them and they never complained about my service as well'. –A vendor from urban area

Procurement process is important for managing costs and delivering services to the beneficiaries and it is difficult to perform.

> 'At the initial stage it was too challenging for me because we had no experience to conduct such type of programme. But it created a wide scope of learning to us. We have learned how to deal with different types of suppliers, check and maintain the quality of raw food items and run the whole process smoothly. Additionally, I also have learned a lot from our senior colleagues. All of these things helped me to understand the programme's demand and now I am confident enough to deal with it'. –A BRAC staff from rural area

> 'Cooperation and coordination are the key issues to run the procurement chain efficiently. I am happy because the responsibilities were clearly defined and

distributed separately within our team mates and coordination was done very skillfully. Support from team members and suppliers also helped a lot to improve the capacity'. –A BRAC staff from Banchte Shekha area

DETERMINE NUTRIENT COMPOSITION OF SERVED FOOD

For determining the nutrient composition of served food, researchers visited six kitchens (two from each working area) randomly. From each kitchen two menus were observed in consecutive two days. All raw food items were observed and precisely weighed with a kitchen scale for estimating up to 5 kg and for kitchen scale for estimating up to 1 kg, standardized bowl and spoon sets were used. The aim of this measurement was to know the quantity of served food and its nutrient composition. From then kitchen, researchers estimated the edible portion of raw food ingredients by deducting the wasted parts and then converted it into cooked food amount. Before cooking, each food ingredient was estimated. The wasted part of vegetables was also estimated and deducted from the whole amount to calculate the edible portion. Moreover, the conversion factors for converting raw food into cooked food were used for estimating the total amount of food. Average amount of food distributed to students and its composition was computed based on the food composition table.

To measure the amount of served food, researchers collected data from two schools with two different menus from each working area. Here, the standardized bowl and kitchen scale were used to estimate the served amount of food. The younger students had less demand of food. So they got one spoon of *khichuri* in BRAC working area. For serving food, Banchte Shekha used plate and researchers estimated 3 plates of served food and made an average of them. During data collection time in BRAC rural they served *khichuri* and egg fried rice. Though these were relatively concentrated foods, compared to liquid *khichuri,* the quantity of served foods was relatively more than the BRAC urban area. The highest amount of food served in BRAC rural area was 557 gm among older students (table 4). Banchte Shekha served approximately 395 gm food to pre-primary (pp) to grade 2 students and 465 gm to grade 3 to grade 5 students.

Table 4. Average amount of food served to the students (in gm)

Working area	PP to grade 1 = 1 spoon (gm)	Grade 2 to 3 = 1.5 spoon (gm)	Grade 4 to 5 = 2 spoon (gm)
BRAC urban	277	387	512
BRAC rural	287	403	557
Banchte Shekha	PP to grade 2 = 395 gm		Grade 3 to 5 = 465 gm

Several renowned agencies recommended dietary allowance for young people aged one to 18 years. For daily energy intake American Heart Association[1] recommended 1400 to 1800 Kcal 4 to 12 years male and for female 1200 to 1600 Kcal. Therefore on an average energy intake from one meal should be approximately 500 Kcal. From the nutrient composition analysis of served food, it was revealed that the BRAC rural area served more energy rather than other working areas (table 5).

[1] http://www.heart.org/HEARTORG/

Table 5. Nutrient composition of food served to the students

Working area	Average Energy (Kcal)	Average Protein (gm)	Average Iron (gm)	Average vitamin A (mcg)	Average Zinc (mg)
BRAC urban	410	10.5	3.5	80.0	1.8
BRAC rural	477	10.4	2.0	57.6	1.8
Banchte Shekha	442	11.3	2.3	49.0	2.0

During data collection phase, egg fried rice was served in BRAC rural area which provided more energy. Similarly, the amount of protein intake by one meal should be around 7 to 15 gm which could be frequently served by both organizations. According to Food Standards Agency[2] per meal requirement of iron should be 2 to 7.5 gm, that's also served by both organizations. However, in case of vitamin A consumption, it was found lower (49-80 mcg) against the requirement of 133 mcg per meal which was quite less from our kitchens findings. Provision of animal foods was very low, that might be a cause of inadequate vitamin A intake. In BRAC urban kitchens, sweet pumpkin and carrots were mixed in *khichuri* which increased the level of vitamin A intake. The average consumption of Zinc had to be 2 to 3 mg per meal and findings indicated its adequacy. However, the programme staff needed to think more about sources of beta carotene (like deep green, orange and/or red colour fruits and vegetables) which would ultimately be converted to vitamin A after consumption.

[2] www.food.gov.uk

Chapter 4

LESSON LEARNED

In case of reducing short-term hunger in school and enhance nutritional status of children from low income families SNP can contribute significantly in our county context. After continuing for six months, it was well accepted by students, parents and community people. However, to improve students' educational and health circumstances SNP requires some modifications and integrated approaches with other development activities.

The programme already acted effectively with the community and mothers, defined clear and sound procurement policies applying it quite skillfully and regularly served food on time. However, programme is still struggling to deal with hygiene and sanitation issues which certainly affected the benefits of SNP. Here programme can work jointly with health, nutrition and WASH programmes to control and prevent possible risks of health hazards particularly from hook worm infection and other transferable diseases. More sessions based on hygiene education with parents and community people is required. For this session, programme authority can hire resource persons for developing materials and conduct sessions. It will be more useful if the programme staff can identify households which have no toilet or have unhygienic toilet and link them with WASH programme activities. Monitor those household's hygiene activities by using the expertise of field based volunteers or health workers will be useful.

Proper sanitation facilities in school can help students to combat with the main health threats particularly from diarrhoea. School authority seemed less aware in these matters. Both organizations conducted several activities such as hand washing and deworming at the initial stage of this programme. But these activities should be continued on a regular basis because worm is a prime cause of anemia. Anemia and malnourishment damage physical and cognitive development. For preventing hook worm, WHO recommends taking anthelmintic drugs every six months and use sandal in toilet. For this, a regular school based deworming activities should be conducted which not only provides medication but also includes hygiene education, proper hygiene practices and linking home with schools. To implement this, community sensitization, training for teachers, feasible sequence for task implementation and monitor all activities can be considered as key steps. It is obvious that only BRAC or Banchte Shekha can not apply these activities properly; they also need cooperation from school as well as education ministry. Both implementing organization should develop some effective mechanism in this regard.

From baseline findings, it was revealed that BRAC's tiffin box-spoon mechanism worked effectively in terms of saving time and preventing contamination from hands. At the middle stage of this programme, a significant number of students didn't bring spoon and used dirty napkins. Hence, we can

conclude that tiffin box-spoon mechanism would reduce its effectiveness. BRAC staff didn't consider the hand washing time within the food distribution time (i.e, 30 minutes) so those who didn't bring spoon at school couldn't get time for hand washing and wiping. The food distributors, mother's club members and programme staff all of them should monitor it carefully and discussion in monthly meeting with mothers and community members is also required. Like Banchte Shekha, BRAC can provide remuneration for mother's club members in order to ensure their presence at food distribution time. Banchte Shekha still struggles with the challenge of proper hand washing in a limited time. Besides, less use of antibacterial soap and napkin for hand wiping can also spread germs. It was observed that more than 30 minutes are required for finishing the entire procedure. Both organizations should be more concerned about the proper utilization of food distribution time.

After having six months experiences, programme staff became more efficient to do their activities in field and solve their problems. Now it is vital to formulate all activities in a more structured way. A structured monitoring system is required in terms of increasing staffs' accountability.

For improving programmes' efficiency, following suggestions are recommended

- Introduce hygiene education in such a way that parents, teachers and community members can directly be involved with these activities.
- A structured monitoring system should be developed to know programmes' function and increase staff accountability.
- Remuneration for mothers' club members especially in urban area should be introduced for ensuring their presence during food distribution.
- The programme should adopt more integrated approach with health, nutrition and WASH programme.

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