

# Building Awareness on Consumption of Iodized Salt and Compliance Management of RTK

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## Acronyms

BM	Branch Manager
BSCIC	Bangladesh Small and Cottage Industries Corporation
CIDD	Control of Iodine Deficiency Disorders
ID	Iodine Deficiency
IDD	Iodine Deficiency Disorder
EHC	Essential Health Care
FGD	Focus Group Discussion
GAIN	Global Alliance for Improved Nutrition
GoB	Government of Bangladesh
HNPP	Health, Nutrition and Population Programme
MI	Micronutrient Initiatives in Bangladesh
MOI	Ministry of Industries
NFPCDP	National Food Policy Capacity Development Project
NGO	Non-Governmental Organisation
PO	Programme Organiser
RTK	Rapid Test Kit
RED	Research and Evaluation Division
SS	<i>Shasthya Shebika</i>
UNICEF	United Nations Children's Fund
UM	<i>Upazila Manager</i>
USI	Universal Salt Iodization
UZ	<i>Upazila</i>
UIC	Urinary iodine concentration
WHO	World Health Organisation

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## Abstract

Iodine deficiency persists as a major health problem in Bangladesh. Despite the presence of a government law that prohibits sale of non-iodized salt, a large volume of salt that is available in local market is 'open' or non-iodized salt or falsely labeled as iodized. Addressing this, BRAC-HNPP in partnership with Global Alliance for Improved Nutrition (GAIN), UNICEF, Government of Bangladesh, and Micronutrient Initiatives in Bangladesh (MI) initiated an intervention of delivering Rapid Test Kit (RTK to check iodine level before buying it. The intervention programme also included promotional activities at community level to promote consumption of iodized salt. The main objective of this study was to investigate into the compliance of retailers in using RTK and to understand whether promotional activities of the intervention programme enhanced the availability of iodized salt in local shops and its acceptability by the consumers. A qualitative explorative study was done to collect the necessary information. The study locations were selected purposively from Sirajganj and Chapainawabganj districts of Bangladesh where the programme started intervention on RTK. At beneficiary level retailers, shopkeepers, mothers and school going children (school going children from grade 7-9) who were receiving the services was interviewed. At the facilitator's level service providers (*SS*), *programme organiser (PO)* and *programme managers (BM/UM)* were interviewed. Data collection method included In-Depth interview, focus group discussion (FDG), and informal discussion, shadowing and checking records with the retailers, *PO*, as well as consumers. The findings revealed that the retailers were willing to utilise the RTK while buying salt from the wholesaler; however, in most cases they were not cooperated by the dealers to check the salt. They also talked about the public demand for cheaper salt that is non-iodized. However, they agreed that packet salt with false labeling were gradually decreasing from the local markets due to counseling and implementation of the RTK strategy. The findings also revealed that knowledge on iodized salt was inadequate among the communities. Most of the consumers were not aware about iodized salt. Some of them heard about iodine but failed to understand any importance of it. Consequently, people preferred unpacked salt (open salt) due to its cheaper rate. They opined that if they were well informed about the effectiveness of iodine deficiency they would have preferred iodized salt. Social and community mobilisation could be done for the dealers, distributor, salt manufacturers etc. Rigorous monitoring and messaging through media could be done for ensuring the enforcement of existing salt iodization law. Further, door-to-door counseling with the communities and subsidised rate for iodized salt (other than BRAC salt) could be considered.

## Background

Iodine, as one of the essential micronutrients for human beings, plays a vital role in escalating intellectual potentials and leads to better-educated citizens with improved productivity (Micronutrient Initiatives in Bangladesh 2014). The major sources of iodine are ocean water and the food produced in soil near the sea (Mannar MG and Dunn JT, 1995). Iodine deficiency often results in serious hormonal dysfunction particularly of muscle, heart, liver, kidney and brain (Mannar MG and Dunn JT 1995; World Vision 2014). Prolong iodine deficiency leads to iodine deficiency disorders (IDD) with increased risk of still birth, neonatal and infant mortality, birth defects, defects of nervous system, goiter, physical apathy, mental retardation, etc (Mannar MG and Dunn JT 1995; World Vision 2014, Mahfouz MS *et al.* 2012).

One-third of the global population is still suffering from iodine deficiency disorder (Andersson M *et al.* 2012). In Bangladesh, over forty per cent of school-aged children and nonpregnant/nonlactating women are suffering from iodine deficiency problems in Bangladesh (National Micronutrient Survey 2011, Micronutrient Initiative in Bangladesh 2014). Moreover, the prevalence of iodine deficiency has been found rising from 34% since 2004/05 to 40% in 2011 among school aged children and from 39% (National Micronutrient Survey 2004/05) to 42% among non-pregnant and non-lactating women in 2011. Sensing the severity of the problem, the Government of Bangladesh passed a law that came into effect in 1989 making all edible salt mandatorily iodized.

Consequently, marketing of iodized salt expanded over the decades with substantial progress in iodine deficiency reduction. However, there is still a huge debate regarding the availability of iodized salt and quality of salt labeled as iodized. It has been found that the proportion of inadequately iodized (<20 ppm) salt is still about 34% and is comparatively much higher in rural areas. Most of the non-iodized salt comes from open salt sources, while some also come from packet salt falsely labeled as iodized.

Addressing this problem, BRAC started to sell iodized salt from its own production to communities through the EHC (Essential Health Care) programme. According to the BRAC health programme, the frontline health volunteers [*Shashthya Shebika (SS)*] visit door to door to sell health goods along with BRAC iodized salt. As falsely labeled salt and open salt is available in the market, BRAC health programme provided mainly to the retailers a simple rapid test kit to identify presence of iodine in the salt. However, how this strategy is accepted and followed by retailers or consumers is not clear. The current study intends to investigate the issue of retailers' and consumers' compliance with RTK strategy in BRAC-HNPP areas.



Picture of RTK (first two) and last one showed how the color change by using it.

## **BRAC programme model and intervention**

To address the iodine deficiency problem, BRAC in partnership with GAIN (funding) and with technical support from Bangladesh small and cottage industries corporation (BSCIC), micronutrient initiatives in Bangladesh (MI) and Government project [Control of Iodine Deficiency Disorders (CIDD)] started the Rapid Test Kit (RTK) strategy via BRAC Health, Nutrition and Population Programme (HNPP). The main objective of this programme is to reduce the consumption of non-iodized packet (falsely labeled) and open salt in Chapainawabganj and Sirajganj districts of Bangladesh, using a simple technique. They distributed rapid test kits to retailers and trained them to use the test kits before they purchase salt from wholesale markets. Again at the community level they targeted school going young children to raise their awareness to consume iodine salt. More test kits in retailers' hands helped to rapidly expel falsely labeled packet salt from the market. The retailers were told to test salt from a randomly selected packet all of a sudden without any previous preparation or declaration. If the test results were negative then they would ignore to buy this non-iodized salt from wholesalers or markets. The retailers were counseled not to buy the non-iodized salt. So the programme challenges were to motivate the retailers to sell iodized salt and make it acceptable to community people.

### **RTK strategy initiative by the BRAC Programme**

To implement the RTK strategy the following activities have been undertaken by the BRAC HNPP programme.

#### **Capacity building**

The programme provided training to the *programme organisers* to increase awareness among retailers by frequent social mobilisation and counseling in the catchment areas. The services included:

1. Tag the school aged children about the essential fact on iodized salt thereby enhance community awareness.
2. Build teacher's sensitivity and awareness so that they can discuss with students.
3. Monitor retailer's salt selling pattern to observe impact of the strategy.
4. Material delivery to school going children and store keepers.
5. Deliver and follow-up detailed information from the *POs* on RTK's role for selling iodized salt and status of nutrition to reduce the iodine deficiency disorder.
6. Keep repeating the distribution of test kits through *POs* and set their target for 7-8 sessions/forum to retailers/shopkeepers in a quarterly period of time. Each session has 20 participants.

#### **Awareness raising campaign (for the community)**

1. School children under grade 7-9 are tagged with the programme and have a session (each session contains 40 students) on the importance of iodized salt for human body and the effect of its deficiency.
2. Increase awareness to improve intake of iodized salt. Explain the vital need of iodine for cognitive development of children, prevention of goiter through school visit, counsel and visiting the retailers and forum with retailers/shopkeepers.

### **Monitoring and evaluation of the strategy**

1. Monitoring the implementation of test kits to see their impact.
2. *PO* also monitors the use of RTK at retailers/shopkeepers level.
3. *PO* monitors information about the salt buying process from the whole seller.
4. Availability of quality iodized salt in shops or at the retailer's level.
5. Monitor progress of adequate iodized salt selling among the community through record.
6. All monitoring report will be sent to the team of HNPP.

### **Objectives**

#### ***General objective***

The main objective of this study is to investigate the compliance of the retailers in using RTK and to understand whether promotional activities of the intervention programme enhanced the availability of iodized salt in local shops and its acceptability by the consumers

#### ***Specific objectives***

- To understand knowledge, perception and practices of iodized salt among participants.
- To investigate whether retailers are complying with RTK tools while buying salt from wholesalers.
- To identify and assess whether RTK tools enhanced availability of iodized salts in local shops.
- To understand whether sensitisation done by BRAC has increased the acceptability of iodized salt by consumers.
- To identify the barriers/challenges in the application of RTK tools.

# Method

## Study design

An explorative study was conducted for a period of 4 months in Sirajganj and Chapainawabganj districts of Bangladesh where the Programme started intervention on RTK. Sirajganj is located in the north where as Chapainawabganj is located in the western part of the country. The programme is working in nine *upazilas* of Sirajganj and five *upazilas* of Chapainawabganj. Two representative *upazilas* from Sirajganj and two representative *upazilas* from Chapainawabganj were purposively selected considering the geographical diversity within the *upazilas* (sub districts).

## Study population

The study population was selected purposively from recipients and providers. At beneficiary level retailers, shopkeepers, mothers and school going children (school going children from grade 7-9) who were receiving the services were interviewed. At the facilitator's level, service providers (*SS*), *programme organisers (PO)* and *programme managers (BM/UM)* were interviewed.

## Criteria for selection

Criteria shown below were followed to select the study participants.

- Inclusion Criteria
  - Retailers/shopkeepers, school children, mothers-fathers-teachers of students involved in the programme
  - *PO, SS and other programme staff of the respective programme*
- Exclusion Criteria
  - Visibly ill and/or uncomfortable to participate in the interview
  - Not involved in the programme

## Sample size and sampling procedure

Sample were selected purposively. The sample size is described in details below (Table 1).

**Table 1. Study plan according to respondents' areas and tools.**

	Sirajganj		Nawabganj	
	UZ1	UZ2	UZ3	UZ4
In-depth Interview with POs	1	1	1	1
In-depth Interview with retailers/shopkeepers	2	2	2	2
Informal Discussion with SSs	1	1	1	1
Informal Discussion with fathers	1	1	1	1
Informal Discussion with teachers	1	1	1	1
Informal Discussion with BM/UM	1	0	1	0
Focus Group Discussion with mothers	0	1	0	1
Focus Group Discussion with school going children	1	0	1	0
Focus Group Discussion with retailers/shopkeeper	0	1	0	1
Shadowing of mothers and retailers/shopkeepers	2	2	2	2
Shadowing of SS and PO	2	2	2	2
Shadowing of Forum	0	1	0	1
Record checking of PO and retailer	2	2	2	2

## Data Collection

Information was collected through focus group discussions (FGDs), informal interview, shadowing, In-Depth Interview and record checking. Thus, multiple methods allowed investigators to triangulate sources of information (Creswell and Miller 2000, Denzin and Lincoln 2000). Focus Group Discussions provide information from participant's debate (Krueger 1988). We conducted In-Depth Interviews and Informal Interview with participants in each *upazilas* to ensure reporting topics that did not surfaced in focus group discussions. To accomplish investigator triangulation lead author ensured her presence in each stages. All the data were developed and tied-up after pre-tested to modify the tools by a group of trained anthropologists. The qualitative data was covered with the following concern:

1. In-Depth Interview
  2. Focus Group Discussion
  3. Informal Interview
  4. Shadowing
  5. Record Checking
1. The checklist for In-Depth Interview covered the following issues:
    - Socio-economic status of the respondents,
    - The services delivered by the *POs* in their catchment areas,
    - Retailers/shopkeepers' perception on iodized salt-regarding their compliance, availability of iodized salt due to RTK strategy implementation,
    - Barriers faced in providing services and coping mechanisms.

2. The following topics were covered by FGD –
  - The socio-economic status of the respondents,
  - Retailers/shopkeepers, mothers and school going children’s perception, knowledge and practices on iodized salt and the usefulness of RTK,
  - Barriers and coping mechanism and unmet need (if any).
3. Informal Discussion were conducted with the *BM/UM and SSs, teachers and fathers for;*
  - To know their perception on the functioning and services by the programme,
  - Getting different types of services and this efficacy,
  - Activities and felt needs from the programme.
4. After conducting In-Depth Interview/Informal Discussion with the SS, retailers, shopkeepers, mothers (who were available at that time), shadowing was done with the same person. For shadowing we observed and listened to the selected person closely during his/her activities and noted without any interruption of his/her work. Thus, we found out the knowledge, perception gap with practices.
5. Available record from the programme officer (See Annex-B: record checking register maintained by the programme) and retailers were checked to collect necessary information.

### **Data Management and Analysis**

The research assistants transcribed interviews from the recorder. To ensure information triangulation all the transcription were compared with field notes. For analyses we followed thematic analysis module, where all the information were categorised into main theme then coded and display in spreadsheets according to themes/sub-themes (Table 1).

### **Interview process and ethical issues**

All the participants were informed about study rationale, procedures and their right to withdraw from the study at any time. They were assured that their participation would not harm them from getting any service and benefit. Respondents were assured about the confidentiality that would be maintained in reporting the findings. It was also explained to them that their participation was completely voluntary and they were free to refuse to respond at any stage of the interview process. They were encouraged to ask questions at any time during the research (*please see Annex C for informed consent document*). A written/verbal informed consent was taken from the participants for giving the interviews, recording and also photographing. The interviews were conducted at a flexible set in concurrence with the respondents. A formal ethical clearance was taken from the HNPP Programme.

**Table 1. Thematic analysis plan**

Theme	General knowledge, perceptions, practices and awareness	Compliance management	Acceptability	Programme effectiveness
Sub-theme A	Common local knowledge and perception on iodized salt	Perception on the benefit of iodized salt	General uses of salt category	Perceived benefits from the Programme
Code				
Sub-theme B	Awareness on iodized salt	Perception on ability	Reasons for that	Perceived perception on the Programme
Code				
Sub-theme C	Practices of iodized salt	Perception on education in self-management	Acceptance of iodized salt component	Changes by Programme positive/negative
Code				
Sub-theme D	Practices for infant, pregnant and adolescents	Programme and others intervention	Why attract those component	Current practices in the community
Code				
Sub-theme E	Practice for the family	Management on life style	Further uses and benefit	Requirement from the Programme
Code				

## Results

Findings from the study were described below in details according to the participants. For that we ordered the results part under a main theme and then elaborated the theme into some sub-theme following the objectives of the study.

### **Socio-demographic characteristics of the respondents**

The socio-demographic characteristic of study participants was described below according to the participants' information.

#### ***Programme staff***

Amongst the respondents at provider's level, all the *programme organisers (PO)* were Bachelor degree holder and belonged to 25-35 years age range. Their involvement with the BRAC HNPP programme was around 5 years and in the RTK project they were engaged from the beginning. The *upazila* managers were postgraduate holders (age range 25-38) and engaged with the HNPP programme for more than 7 years. On the other hand the *Shasthya Shebikas (SSs)* were yet to be included in the programme but we selected them due to their involvement with HNPP programme as frontline health workers and the best medium for selling health commodities including BRAC salt. They achieved mostly primary education up to 4 grades and involved with the programme for the last 9-12 years (age range 35-40 years).

#### ***Community/recipients***

The salt retailers mostly (67%, n=16) belonged to the 25-35 years old age, some (21%, n=5) belonged to 35+ age group and a few (12%, n=3) were below 25 years of age. About two thirds of them passed primary education (63%, n=15), some of their schooling was 1-4 years (21%, n=5) and some others (16%, n=4) had 6-10 years of schooling. They were mainly engaged with small business and in some cases with farming. Mothers were mostly 25-35 years old (50%, n=8), some (31%, n=5) belonged to the 35+ age group and rest (n=3) was below 25 years of age. All of them were housewives, some (38%, n=6) passed 5<sup>th</sup> grade, some had no record of schooling (38%, n=6) and rest (n=4) of them had 6-10 years of schooling. Over two thirds of their husbands achieved primary education (69%, n=11) and the rest (n=5) didn't have any formal education. They were mainly engaged with agricultural activities (50%, n=8), some doing small business (24%, n=4) and rest of them were doing works like service, labour, etc. The school age children were from 7-9 grades with age range of 13-15 years. A respondent from Chapainawabganj told that,

*'Amra Apa komsikhito manus, kiarkorbo, khetikori'*

### **Services provided by the Programme to improve acceptance of iodized salt**

We found that *PO* conducted face to face counseling session with the retailers. They also conducted the forum with a group of 20 retailers at least and a session with the school children with a group of 40 students each.

The *PO* delivered their services with the messages about the importance of iodine and iodized salt for their health (like; reduce goiter, child mortality and morbidity, miscarriage

and still birth), child's development, cognitive development, etc. ways for elimination of the deficiency and constitution by the Bangladesh government and its implications. Which was established in 1989 and what government does if someone breaks the regulation regarding the Universal Salt Iodization rules (USI). The retailers were advised to buy salt after testing with RTK and also to inform the wholesaler about the law.

The POs were advised to provide iodized salt not only to family members but also to domestic animals also that may help people to source iodine while consuming egg, milk, meat, etc of those domestic animals. They got the iodine salt naturally. Because we found people who bought iodized salt mostly consuming iodized salt with rice but for cooking and for animal they bought unpacked salt. Especially that who had cattle they fed unpacked salt to the cattle for the high cost of iodized salt.

During the counseling session, they showed the information in a poster and asked someone to read the poster and then discussed with them in details about the matter.

**Participant's knowledge, perception and practices on iodized salt**

In the part we discussed about participants knowledge, perception regarding the use, importance of iodized salt and their practices thereby.

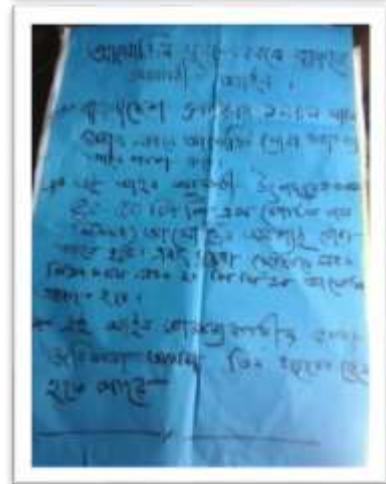
*'Salt is salt- what's new to know about it'*

In both areas majority of the respondents mentioned that they use salt daily for cooking, consumption, and other but they were unaware of whether the salt contained iodine or not. Regarding the importance of iodine and/or iodized salt they mostly mentioned nothing. Because they perceived that salt is salt, there was no difference and importance of it and nothing new to add on it. One respondent mentioned that,

*'Salt is salt-what's the new to know about it. The unmet need for the salt is to cook and make the food tasty.'*

**'We know iodine deficiency may cause "Ghyag (Goiter)" and others'**

Among the respondents, school aged children from grade 7-9 were able to mention the importance (child's cognitive development, need for adolescent and pregnant women) and effect of iodine deficiency disorder. Like; due to insufficiency of iodine, people/children may suffer from disability, goiter "Ghyag in local term", pregnant women may get miscarriage, etc. Most of the respondents mentioned about goiter- which mainly



results due to insufficient consumption of iodized salt. Few also told that due to absence of iodized salt child's cognitive disability may occur. People are not aware of the consequence. A student told that,

*'We know iodine deficiency may cause for "Ghyag (Goiter)" and other diseases. Absence of iodine from salt may cause child's cognitive imbalance, miscarriage of the pregnant women, etc. Some of this we come to know from books and some we heard from the 'BRAC people'. From then onwards we informed our family to consume only iodized salt.'*

School teachers reported that iodine deficiency could cause many diseases specially goiter. The other clinical disorders due to absence of it are- child disability, lower cognitive development, etc. A teacher from Chapainawabganj also mentioned that,

*'Iodized salt protects us from diseases and keeps us healthy. All pregnant women must take iodized salt. It also protects us from goiter.'*

We found that teachers (especially science teachers) in their class gave some information on iodized salt. And in practical demonstration they proved the presence of iodine in salt by using lemon drop on it, and if the colour changed it proved that the salt contained iodine. A teacher from Shirajganj told that,

*'As a science teacher of 8-9 grades I know better of iodine and the effect of its deficiency. I know that, due to iodine insufficiency thyroid gland swells in the neck which is known as goiter. Again for pregnant women suffering from iodine deficiency may suffer from many difficulties also her child could be affected thereby like disability.'*

### **Compliance management of RTK by the retailers**

Here we discussed thoroughly about rapid test kits uses, acceptability, etc by the retailers and their management capacity.

#### ***Does a retailer comply with the RTK tools?***

All the retailers informed us that they used the tools though it was a new technique for them. They tried to utilise the RTK while buying salt from the wholesaler. The retailers also informed that in most cases they were not allowed by the dealers to check the salt while buying. Therefore, they had to keep that salt even if it was devoid of iodine to avoid loss. If they found salt with false labeling they tried not to buy that one next time. However, due to public demand sometimes they kept tiny amount of sample for purchases. Nevertheless, they reported that they informed the consumers about the brands containing required amount of iodine but the consumers mostly didn't listen to them given its higher rate. Again retailers told that some consumers didn't hesitate to blame if they insisted to buy the costly salt and they perceived that they do it for their own profit.

During observation we found that, a retailer tested open salt (unpacked salt) by the RTK in front of a consumer and motivated him to buy the packet salt. The retailers informed us later that consumers who were well-off sometimes followed their suggestions and they were impressed while they see the test and buy the iodized salt but the poor mostly didn't listen to them. The retailer told that,

*'Apa you asked us not to sell non-iodized salt, but while we asked the consumers they told that, this one is another business trick to get more profit. They didn't have confidence with us and want to open salt. Now what can we do. We live based on the small business,*

*and if we think for well-being of consumers then we will face starvation. So please counsel the consumers also, then we will be able to help in the process fruitfully.'*

BRAC SSs informed us that they used to sell BRAC salt in addition to health goods in their catchment areas. But people didn't want to buy BRAC salt due to its cost and also its appearance. They told that it looked reddish and big cube, but the unpacked salt or the packet salt looked polished and much brighter than BRAC salt. SSs also told that they usually use BRAC salt and counsel the consumers that the salt was less refined so, its looks reddish but it contains iodine. A SS told that,

*'Apa few years ago I had to suffer from TB (Tuberculosis) and at that time my doctor asked me to consume iodine salt. From then I used BRAC salt as BRAC SS. I am now quite Ok and do exercise while I visit households to convince them.'*

### **Effects on the availability of iodized salt due to the implementation of RTK strategy**

We found availability of iodized salt due to RTK implementation. RTK helped to reduce the availability of unpacked and falsely labeled salt from the market.

#### ***'We get open salt (unpacked) from nearby shop of our house'***

According to the POs the general scenario of availability of iodized salt has improved to some extent. They informed that the packet salts with false labeling were gradually decreasing from local market due to the counseling and implementation of RTK strategy. They tried to store mostly the iodized salt but they also kept the unpacked salt and falsely labeled salt for public demand. During observation salt was examined by PO's to identify falsely labeled packed salts.

At community level most of the people used open salt (unpacked) for consumption. Mostly the reason they mentioned was low price and availability at the nearby shops. On the other hand, among the family members the elder one always engaged with work at field, so they buy salt from nearby grocery or send their younger school aged children at the nearby local grocery. And most of the local grocery shop kept open salt (unpacked) considering affordability of the local communities. The poor and low income people prefer mostly low priced salts that are unpacked. They also opined that some well-off people also preferred open salt. A mother told that,

*'My husband is too busy in the agriculture field. Mainly he goes to the market for grocery. But he didn't get enough time from livelihood, so he bought things from local shop or send our son. And we mainly consume open salt (unpacked) from nearby shops due to its low price and availability.'*

Packet salts commonly used in the study areas are: Mollah, ACI, Confidence, Bikash, Taz, etc, due to their low price. We found that most of them considered ACI, Mollah, and Confidence as brand salt and for those salt cost 20-25 Tk/Kg. Some also considered Bikash, Taz as local brand salt which cost lower like 14-19 Tk/KG, whereas, the most popular open salt (unpacked) cost 8-12 Tk/Kg. Most of them affirmed that iodized packet salt is primarily found in big grocery and/or department store. But in the local grocery shop, tea stall (sometime) sells open salt (unpacked) and/or packet salt with lower price that often contains no iodine. A retailer mentioned that,

*15 takar nicher loboner itihasher modhe iodine ar bongsho o nai, (Salt below 15 Tk didn't contain any iodine in their salt history).'*

### ***Reasons behind using different types of salt***

Different respondents pointed to different reasons for consuming different types of salts. The findings indicated that the reasons behind using open salt (unpacked) are mostly lack of awareness and a lack of knowledge of iodized salt. They also assumed reasons the following

- First, it is cheaper and need almost half the money required to purchases iodized packet salt.
- Second, they were not familiar with the difference (regarding meaning and importance) between '*loose salt*' (*unpacked*) and packet salt.
- Third, '*loose salt*' (*unpacked*) is easily accessible from a 'hat' (village market which sits weekly in an open, known place).
- Fourth, they generally buy '*loose salt*' (*unpacked*) from the local grocery shop. However, during 'hat' day while they go for purchasing necessary goods they also buy open salt (unpacked) to avoid additional visit to buy salt.
- Fifth, iodized packet salt is mostly found in the department store or big grocery shop and is mostly unavailable in the nearer local grocery shops.
- People are less aware about the false labeling of iodized salt.
- Finally, conscious people use '*loose salt*' (*unpacked*) for their domestic animals and use packet salt for their own consumption.

### **Acceptability of iodized salt due to the sensitisation programme by BRAC**

In the following part we discussed about the acceptability of the iodized salt among the retailers as well the community level and the situation after the sensitisation programme by the BRAC.

#### ***'There is a law regarding the iodized salt-do you know that?'***

The acceptability of iodized salt was found very low across all socioeconomic spectrums of people, and the main reason behind that was lack of awareness about the difference between iodized and non-iodized salt in terms of health benefits. They preferred cheaper open salt compared and available in nearby then the costly packed salt, when they found the taste of food remained the same and they felt no abnormal health consequences.

While they were asked by the PO about the salt iodization law that, "There is a law regarding the iodized salt-do you know that?", they replied NO. However, they also agreed that if they were well informed about the effectiveness of iodine deficiency they would have preferred iodized salt. If they needed to pay some more money and travel distance bit far from their house they would have gone for it prioritizing their family member's good health. A father said that,

*'To me my family members' health, especially my children's health are a priority. Poverty is not a barrier for that.'*

### ***'Did iodized salt acceptability changed after BRAC programme?'***

During the research period the programme just started with covering one third of their target and some were left to receive the follow-up intervention. The present study started at the very starting position of the intervention, meanwhile the targeted session were not covered by the POs. For that the follow-up record didn't covered. The POs mentioned that the situation improved due to their baseline intervention, but they strongly hope that after fulfill the targeted session the scenario will be changed. For that POs mentioned that, ***'I am not yet complete the target; while I reached my goal then the situation will be changed. But whatever I did till now slowly but the awareness raises.'***

Through checking the record books of selected POs and retailers and further observation we found that, every day each PO targeted around 10 retailers for practical demonstration and counseling on RTK. Still the retailers kept the falsely labeled salt in stall considering public demand and mostly sell open salt at Tk. 10/Kg. We found following the salt storage and selling record from the POs and retailers' records...

Name of stored salt (kept usually by retailers)	Which brand sells most	Name of the salt (after one session with the PO)	Now which brand sells most	Price/Kg
ACI	Very few	ACI	Very few	25
Confidence	Very few	Confidence	Very few	25
Supergold	Very few	Supergold	Very few	25
Mollah	Very few	Mollah	Some	18
Fresh	Very few	Fresh	Some	18
BRAC	Very Few	BRAC	Very Few	18
Superstar	Some	Superstar	Some	15
Modhumoti	Some	Modhumoti	Some	15
Taaza	Some	Taaza	Some	15
Fulkoli	Some	Fulkoli	Some	15
Elders	Some	Elders	Some	14
Alam	Majority	Alam	Majority	12
Shamim	Majority	Shamim	Majority	10
Raja	Majority	Raja	Majority	10
Unpacked	Majority	Unpacked	Majority	10

### **Barriers/challenges to application the RTK**

To increase the iodized salt consumption and building awareness through the RTK intervention strategy we found some barriers and challenges. By measuring those and took necessary action we will be able to reached the goal of salt iodization awareness and consumption status.

### ***'There is no awareness among people about iodized salt'***

People were found to be less aware about the importance of salt consumption, its consequences, storage process, etc and they were largely unconscious of the barriers/difficulties regarding the issue. A PO told that....***"In my catchment area there is no awareness among the people about iodized salt"***

So, the POs tried to counsel community people about the matter, they even suggested them to feed iodized salt to their animals as by this way they will get iodine through consumption of egg, meat, milk from those animals. In some place some people used iodized salt for their own consumption and used unpacked salt for cooking and/or feed the domestic animal. So considering the fact the PO also counsel the matter. They also asked them not to buy any salt falsely labeled as iodized and to test the salt for iodine while buying and selling. A retailer told that,

*‘Among the community people, there is no awareness regarding the importance of iodized salt. They didn’t even know about the effect of iodine deficiency. As a consequence they are not paying attention to buy iodized salt with high price compared to open salt (unpacked).’*

Through shadowing we found that majority of them kept the salt in a plastic non air-tied jar considering its longevity rather than glass jar and some of them kept it open in packets in the kitchen. They kept the salt in close contact with air, heat and sun and found the salt melted before they consumed it. However, they perceived that the reason behind salt melting is due to summer (for heat) and naturally salt melts during rainy seasons (due to humidity). Among the retailers we observed that they kept packet salt in a shelf but mostly stored it on the floor. Some of them also packed open salt from the sack into a poly-bag; otherwise they kept it in open sack. After the BRAC RTK session, very few could mentioned about the salt storage process such as keeping salt in an air tight glass jar far from the fire and sun heat, keeping it in a cold and dry place and not letting the jar open for a long time.

#### **Packet salt- the symbol of status**

Another issue revealed by the study was status. They kept both the packet and unpacked salt for their household uses. They used packed salt when eating their meal’s (raw intake with meal) and unpacked salt for cooking, feeding cattle and the other household uses. The reasons they referred were:

- Packet salt looks off-white and very smooth. Considering its high price they use it occasionally and consume it raw during having meal. It is appreciated by guests particularly relatives from in laws house, daughters in laws house, etc. and served as a symbol of status in the family as well as in the society.
- On the other hand unpacked salt looks less white, somewhat reddish and not very smooth. This type of salt is available at low cost so they use it where it is needed in large amount like; cooking, cattle feeding, washing fish before cook, etc.

### ***The ultimate barriers***

The findings indicated that price was the prime barrier for the villagers in addition to availability. If retailers of local shops, nearer village market and even a 'Hat' could be reached under the project umbrella then availability of iodized salt could be ensured to the common people. Further majority of the people did not accept the concept as they didn't perceive iodine deficiency as a health problem. The reason is that iodine deficiency does not show any sudden impact on human body. But if people were informed well about the effects of iodine deficiency they would have some knowledge. Some also raised the issue of falsely labeled iodization. They argued that if packet salt is falsely labeled as iodized it is impossible for them to understand. So, they want more awareness pertaining to the issue.

### ***Work Load***

Almost all the PO pointed out that the burden of work was too much for them. In their work they have to do counseling, discussion, forum meeting and practical demonstration of RTK use to investigate the presence of iodine with retailers mainly. In addition, they also targeted school children for discussion and practical demonstration on RTK. But a single person for an *upazila* with a large target seemed to be heavy work load to them. They did the job very well but felt too much work load, especially while they have to arrange the forum. They opined that if there was another person to share with them for each *upazila* they could visit the retailers more frequently, which would then be more effective.

From the shadowing we found that for forum they have to visit the retailers more than twice time. The retailers had to come for forum to stopping their business. And if they come they had tendency for hurry to back the work. In a forum observation we found, it takes several hours for gathered all together. During forum observation we found that other HNPP POs helped them for distribution the kits and keep the record of distribution, providing snacks, hold the poster for discussion, etc.

### ***...Challenges and expectations from the programme***

Almost all of them agreed that with the help of BRAC's HNPP-RTK project they were getting familiar with the name of iodized salt and also about its importance for health. They praised the inclusion of school children and suggested more coverage around this group. They opined that when students know any new thing they share it with the family and insist them to follow. Furthermore, their involvement with purchase often induces them to choose the best another like; iodized salt. A mother informed that,

*'If I send my son to buy any commodity, he will buy the best one as per his knowledge and based on his learning from the school. He does not think for the price- he is such a child, but we appreciate him.'*

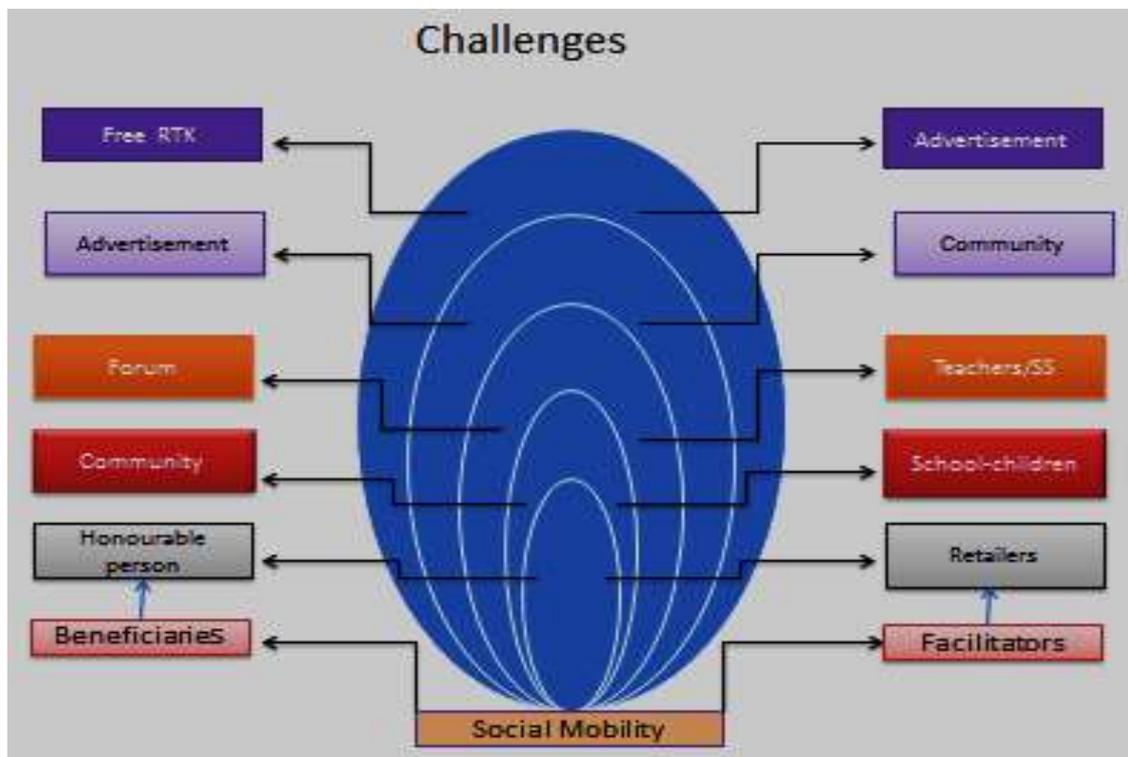
A father also informed that while he took his son to the market to buy goods from the grocery shop, his son insisted him to buy iodized salt premising the knowledge he gained from the school. They expressed their interest to know more about the importance of iodized salt and its effectiveness. But they also agreed that if the iodized salt to be available in local grocery shops then they will buy it. The retailers also agreed that if they kept iodized salt in their shop the community people would buy the salt and thus consumption of iodized salt would increase. And for that they need more counseling, forum meeting and if possible meeting with dealers and shopkeepers.

Respondents also suggested tagging reliable and reputed people next to the programme like the members of *Union council (Union Parishad)*, Chairman, knowledgeable person from the community and also household heads (especially those who are supposed to buy household commodities or take decision to buy). Again religious person from the locality may also be included, who can describe the importance and effectiveness among local people. They also stressed on the importance of more publicity, awareness building activities and programme involvement. They also felt the need for publicity through leaflet, handbill, stickers, posters, etc regarding the importance of iodized salt and effect of iodine deficiency disorder among the human being, especially among children and pregnant women.

**Expecting mobilisation from the programme and by the programme**

Almost all the respondents wanted more social and community mobilisation to raise awareness on iodized salt consumption. The programme and respondent’s prescribed mobilisation flow are described below (Here programme started some mobilisation in their plan and are planning to expand in near future).

In the diagram shown below (in the right side) social mobilisation activities are conducted by the programme. Where the RTK programme already started with the retailers at considered the center point, from where the iodized salt supplied to the consumer level. Then the next stem they targeted the school aged children who are the future hope of the nation and who are the most vulnerable group for iodine deficiency disorder. For the next stem belonged the teachers (honorable person in a society who build the next generation) and SS (SS are the frontline health workers of BRAC and did their job as volunteer to sold the health commodities at the doorstep). By those indirectly the community people were engaged with the programme who would be engaged directly afterword. And finally the programme planned for develop awareness by advertisement through leaflet, poster, etc.



On the other side the respondents recommended that honorable people from the society like; chairman, religious leader, educated person should be engaged. Then they preferred involvement of community people with forum and discussion. They also agreed for advertisement through print and mass media for awareness buildup on the matter and recommended for free sample of RTK tool for each household, so that they can check by themselves and reject the non-iodized one.

## Discussion

The study aimed to see the effectiveness of applying RTK tools in achieving programme goals. The use of iodized salt by communities largely depended on the level of knowledge, awareness and perception of community people about its importance, availability, preferences, price hike, etc. The study findings revealed that around two thirds of the retailers sold unpacked salt or falsely labeled iodized salt.

The findings implied that majority of the consumer, didn't know about iodine, iodized salt and iodine deficiency disorder. But after receiving BRAC intervention people are gradually improving their knowledge. Expansion of intervention may spread awareness on iodized salt. Governmental initiatives, public health sectors activities, mass media and print media publicity and awareness in all sectors are essential. In Ghana, initially about 98% of the respondents had no knowledge about iodized salt, but the situation improved to 95% through knowledge based intervention. Ghana's Ministry of health, Ghana health service centre, Food and Drug board amendment, educational programme broadcast and mass media jointly worked to implement this sensitisation programme (Asibey B 1995, The Ghanaian Times report 2006). Similarly, in India about 72% of the respondents were aware about iodized salt and they mostly heard about it from television. But in practice they preferred for the cheaper one (Kumar P *et al.* 2013). On the contrary, school aged children in Kazakhstan (70%) had no awareness in the matter due to their non-publicity in the media (Haar FVD 2005).

In Bangladesh, collaboration and similar approach can be made jointly with different stakeholders and institutions such as the educational board, mass media etc. to upscale the initiative for larger coverage. Further inclusion of school aged children along with teachers may add value to ensure effectiveness. The study findings also indicated that people used non-iodized salt because they didn't find any difference between these two types of salts as found in other studies (Yamada C *et al.* 1998). They perceived that it is only needed to make the food tasty, nothing else and thus iodized salt got no priority among them. To retain iodine inside salt, the programme advised communities to store iodized salt inside air tight jars. However, the study finding suggested that majority of the respondents kept salt in a plastic jar in open place which was not air tight. Again they kept salt near fire, heat and air. Consequently, most of the time they found salt melted before consumption. Similar findings were also reported in other studies (Sebotse K 2009, Chritiana B and Benjamin B 2012).

Reasons behind uses of non-iodized salt were found mostly due to unavailability of iodized salt in local shops. A study in India (81%) and Kazakhstan (50%) found that people purchased unpacked salt from nearby shops (Haar FVD 2005, Kumar P *et al.* 2013). The present study revealed that use of unpacked salt increased due to its availability in nearby shops. A vast majority of respondents also agreed that this was the major reason for use of unpacked salt. People tend to choose products at cheaper rates thereby buying unpacked and/or falsely labeled salt. Other studies showed that in spite of high awareness about iodized salt people might prefer low cost products and thus they go to choose unpacked and/or falsely labeled salt (Kumar P *et al.* 2013, NFHS-III 2006, Haar FVD 2005).

Rapid Test Kits (RTK) are simple in testing, can be easily used in the field and easy to carry and detect presence of iodine in salt. Though RTK cannot measure the sensitivity for determination of iodine concentration on ppm of iodine in iodized salt, but it is a most effective way to know the presence of iodine. For that BRAC programme took the

initiative to raise awareness on iodized salt by a spot test kit (rapid test kit). Several countries have started the intervention on iodized salt to reduce iodine deficiency. Iodine deficiency disorder can be resolved through practicing a simple cost effective way of adding iodine to salt (Chandrakant S *et al.* 2000).

In Bangladesh, in spite of IDD elimination law, salt producer, distributor, seller, etc. do not follow the regulation to add iodine to edible salt considering the cost of iodization which is US\$.05 per child/year (WHO 2007). These exist due to lack of strict regulation for implementing the law, no constant publicity and monitoring and follow-up system. A case from Morocco showed that before salt iodization, 88% of children aged 6-16 years, suffered from goiter. By introducing iodized salt among the population the rate reduced to 34% within a year. But due to five months of discontinuation, goiter rapidly relapsed (Zimmermann MB *et al.* 2004, Zimmermann MB 2004). Literature review shows that regular monitoring for intake of iodized salt will show the level of awareness and actual intake of iodized salt (Nepal AK *et al.* 2013).

## Conclusion and recommendations

The findings of the study highlighted the importance of combining frequent counseling to organising retailers and organising community mobilisation in achieving the programme goal. Integrated and continued efforts by the Governmental and media in addition to the door to door service may be effective in raising the level of awareness.

Based on the findings and discussions, the following recommendations have been made:

- A low rate for iodized salt (other than BRAC salt) if possible to make it affordable to poorer communities. This could be done in partnership with the government or other donors or development partners who would be interested to cooperate.
- RTK samples can be supplied to the community and school children for their better understanding and examination to test the salt from the market.
- BRAC iodized salt needs to be made available with more refined texture and colour according to the preferences of the communities.
- Different methods such as circulating leaflets, stickers and handbills covering all the households and shops and use of folk songs, popular theatres etc. to build up awareness about iodized salt would increase the level of awareness.
- More intensive discussions and frequent counseling need to be arranged with retailers as well as with other respondents to make them more aware and motivated in implementing the RTK strategy. Additional human resources could be recruited to conduct frequent counseling or discussion. Social and community mobilisation could be done for dealers, salt distributors, owners of big grocery shops and salt manufacturers to improve availability and acceptability of iodized salt in local markets.
- Need In-Depth research to assess the status of iodized salt consumption and knowledge and awareness level after the intervention is completed.

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## Annex

### Annex A. Relevant literature review

Organisation	Country/ year	Study objectives	Study methods	Study results	Sample size	References
Nutrition Branch, Centres for Disease Control and Prevention, Buford Hwy NE, Atlanta, GA. Republic of Georgia government and UNICEF conducted a national survey.	Georgia. 2009	To identify the importance and sale strategy of non-iodized salt by measuring the contact of legislation banning.	A cross-sectional cluster survey	Among 900 urinary samples the median UIE was 320.7 µg/L, 4.4% were below 100 µg/L, where a total goiter rate 32 %. Salt test with kits among 957 found 867 (91%) were adequately iodized (≥15 ppm), and only 4% had no iodine.	970 school-aged children.	Suchdev PS, Jashi M, Sekhniashvili Z, Woodruff BA (2009). Progress toward Eliminating Iodine Deficiency in the Republic of Georgia. <i>International Journal of Endocrinology and Metabolism</i> , 3: 200-207.
Family and Community Medicine Department, Faculty of Medicine, Jazan University, Saudi Arabia.	Saudi Arabia, 2012.	The objectives of this study were to: (i) identify the coverage and variation in different geographic location regarding access to use of iodized salt, (ii) identify the influencing factors (iii)develop recommendations to smooth way to Universal Salt Iodization(USI) strategy in Sudan.	Household Health Survey (SHHS) dataset. conducted in 2006.	Nationally, the percentage using adequate iodized salt increased from less than 1% to 14.4%, with wide variations between states. Availability to iodized salt found 96.9% in Central Equatorial, 0.4% in Gezira state. Coverage with iodized salt in Sudan leftovers very short. Also found very fragile consciousness and political support for USI Programme. The National legislation banning on the sale of non-iodized salt was absent. But by the utilisation of the existing laws, like the National Standardisation and Metrology Law (2008), will speed up the USI in Sudan.	Of the 24,527 households initially selected a total of 24,507, and 18,786 cooking salt samples for tested of iodine levels with rapid salt-testing kits.	Mahfouz MS, Gaffar AM, Bani IA (2012), <i>Journal of Health Population and Nutrition</i> , 30(4):431-438.

(Annex A continued...)

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Nutritional Intervention Research Unit, Medical Research Council, Tygerberg, Cape Town, South Africa	South Africa, 2003	Establishments of iodine content of iodized salt for production stage, to evaluate the salt producers perceptions and knowledge about the prevention and control of iodine deficiency, scrutinize the internal quality control procedures. The aim of the study was to test a large number of kits from some countries to evaluate their performance, and enhancements their choice and accurateness.	Cross-sectional study.	It found that among 31% salt sample fulfill the legal requirement of 40–60 ppm iodine; where only 58% contained more than 30 ppm iodine and 35% had less than 20 ppm. Lack of perceptions and knowledge about iodine deficiency disorders and the internal quality control among salt producers is not in satisfactory level.	Salt samples were collected for iodine analysis by titration from the 12 producers iodizing salt in South Africa	Pieter L. Jooste. Assessment of the iodine concentration in table salt at the production stage in South Africa. <i>Bulletin of the World Health Organisation</i> 2003, 81 (7)
University of Toronto, Canada, PATH Canada and the Micronutrient Initiative	Canada, 2000.	The aim of the study was to test a large number of kits from some countries to evaluate their performance, and enhancements their choice and accurateness.	Randomise control trial.	About 80 test kits were tested in Toronto after collecting from India, Pakistan, Nepal, Thailand, Bangladesh, China and Indonesia. After that another four were tested at the manufacturers' site. All but one of these kits used the reaction with KI and starch for color development. Having a low pH (typically pH=2.6) salt with 15 ppm or more of iodine produce a dark blue color when the kit reagents dropped on the salt surface. Unlikely all kits tested concentrations of 15 ppm and higher gave the same dark color. The color infiltration due to one molecule of iodide reacts with 5 molecules of potassium iodide, liberating 3 molecules of elemental iodine. Thus, in case of colour estimation, elemental iodine is present in six times the original attention.	Samples were spread out in a 5-8 mm thick layer in a dish and measured using the available rapid field test kits, by dropping 2-10 drops onto the salt surface, producing wet spots of ~ 10 mm in diameter. The colour of the spots compared with the chart provided with the kit.	Diosady LL and VenkateshMannar MG (2000). Use of Rapid test Kits for Monitoring Salt Iodization. Internet.

(Annex A continued...)

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Nepal, 2013	The study aimed to design the household salt type and iodine content among the school aged children in the hilly and the plain areas of Nepal.	Cross-sectional study	The study found that the four district of Nepal the salt iodine content value was (mean+SD) 34.2±17.9, 33.2±14.5, 27.4±15.1 and 48.4±15.6 parts per million (ppm). Where 38.2% household consumed crystal salt and 61.8% consumed packet salt. Which indicate the monitoring may ensure the awareness of intake iodine salt.	School going children.	Nepal AK <i>et al.</i> (2013). Household salt iodine content estimation with the use of rapid test kits and iodometric titration method. Published online,Mar 25,2013.doi-10.7860/JCDR/2013/5477.2969
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## Annex C. Informed consent

### Building awareness on consumption of iodized salt and compliance management of RTK Consent for PS, 2014.

উত্তরদাতার জ্ঞাতসারে অনুমতি গ্রহণ

আসসালামু আলাইকুম/আদাব,

আমি.....ব্র্যাকের একজন কর্মী। বর্তমানে ব্র্যাক আপনার এলাকাতে একটি গবেষণা কাজ হাতে নিয়েছে যেখানে মানবদেহে আয়োডিনের গুরুত্বের বিষয়টি দেখা হবে ও সে লক্ষ্যে সচেতনতা বৃদ্ধিমূলক প্রকল্প হাতে নিয়েছে। আয়োডিনের অভাবে গলগন্ড সহ শিশুর মানসিক বিকাশের পরিপূরক বহুবিধ রোগ হয়। এটা সবাই জানেন যে পৃথিবীর অন্যান্য দেশের তুলনায় বাংলাদেশে আয়োডিনের ঘাটতিজনিত সমস্যা অনেক বেশি। ফলে শিশুর মানসিক বৃদ্ধি ও অন্যান্য অভাবজনিত সমস্যার প্রকোপ বেশি, এছাড়াও আয়োডিনের অভাব গর্ভপাতেরও ঝুঁকি বাড়ায়। এ সমস্যা সমাধানের একটা উপায় হল খাবার লবনে আয়োডিনের পর্যাপ্ত পরিমাণ নিশ্চিত করা। এ বিষয়টি সম্পর্কে আপনাদের ধারণা জানার চেষ্টা করব। এ গবেষণায় অংশ নিলে আপনি ব্যক্তিগতভাবে উপকৃত হবেননা। কিন্তু আপনার তথ্যসমৃদ্ধ উত্তর এ প্রোগ্রামকে উন্নত করতে সাহায্য করবে যার দ্বারা ভবিষ্যতে শিশুসহ সার্বিক মানব স্বাস্থ্যের উন্নতি সম্ভবপর হবে। আপনার সাথে দলগত বা একক আলোচনা করা হবে। এই দলগত বা একক আলোচনায় একজন গবেষক আপনার সাথে কথা বলবেন। আপনি সেসব প্রশ্নের উত্তর দিতে পারেন অথবা নাও দিতে পারেন। আলোচনায় এক/দুই ঘন্টার বেশি সময় লাগবে না। আপনি যেকোন সময়ে আলোচনা বন্ধ করতে পারেন। এই গবেষণায় অংশগ্রহণ সম্পূর্ণ আপনার উপর নির্ভরশীল। তবে আপনার অংশগ্রহণের ফলে ব্র্যাকের কোন প্রোগ্রাম/সেবা থেকে বর্তমানে বা ভবিষ্যতে বঞ্চিত হবার কোন সম্ভাবনা নেই। গবেষণার যাবতীয় তথ্য গোপন রাখা হবে। আপনার অংশগ্রহণ নিশ্চিত করছে যে আপনার দেয়া তথ্য গবেষণায় ব্যবহৃত হতে পারবে। কিন্তু আপনার নাম কোন রিপোর্ট বা প্রকাশনায় উল্লেখ করা হবেনা। এমনকি কোন প্রকাশনার উপাও ও তথ্য থেকেও আপনাকে সনাক্ত করা যাবেনা।

আমাদের গবেষণা নিয়ে আপনার কোন প্রশ্ন বা জিজ্ঞাসা থাকলে যোগাযোগ করুন এই নম্বরে: উম্মে সালমা ০১৭৩০৩৪৯৭৯৫

আমরা কি তথ্য রেকর্ড করতে পারি? তথ্যসংগ্রহকারীর জন্য (বৃত্ত করুন): হ্যাঁ/না

আপনার কি আমাদের গবেষণা নিয়ে কোন প্রশ্ন/কৌতুহল আছে? আমি কি শুরু করতে পারি?

উত্তরদাতার নাম ----- সনাক্তকারী নম্বর: -----

রাজি আছেন  রাজি নেই  স্বাক্ষর/হাতের আঙ্গুলের ছাপ:-----