SCHOOL OF PUBLIC HEALTH
COLLEGE OF HEALTH SCIENCES
UNIVERSITY OF GHANA, LEGON

UTILIZATION OF IODIZED SALT AMONG HOUSEHOLDS IN THE DANFA COMMUNITY

BY

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THIS DISSERTATION IS SUBMITTED TO THE UNIVERSITY OF GHANA, LEGON IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF A MASTER OF SCIENCE IN APLLIED HEALTH SOCIAL SCIENCE DEGREE

JULY 2012

DECLARATION

I, Prince Osei Kissi, declare that except for references to other people's investigations which have been duly acknowledged, this dissertation was the result of my own original fieldwork, and that this dissertation, either in part or complete has not been presented elsewhere for any degree.

…… ……..
Prince Osei Kissi Date

(Student)

……. …….
Dr. Philip Baba Adongo Date

(Academic supervisor)

DEDICATION

I dedicate the work to my brother, Kissi Bosompem Seth, for his invaluable support and contribution during my graduate studies.

ACKNOWLEDGEMENT

I wish to express my profound gratitude to almighty God for his care and support during this programme. I will also wish to acknowledge the following people for their diverse contribution to this work. First, I am highly indebted to Dr. Philip Baba Adongo, my academic supervisor for his guidance and support when I was undertaking this project. His contribution transformed and made this document a standard document. Second, I am also grateful to Mr. George Adu of the Danfa health centre for his encouragement and support throughout my field residency in the community. I also want to acknowledge Mr. Joseph Essah of Ministry of Education for his secretarial assistance.

Finally, I duff my hat for my colleagues for their moral support and encouragement throughout the study period.

LIST OF ABBREVIATIONS

ADHS - Albania Demographic and Health Survey

CI - Confidence Interval

CHNs - Community Health Nurses

DHS - Demographic and Health Survey

FDB - Food and Drug Board

FGD - Focus Group Discussion

FGDs - Focus Group Discussions

GHS - Ghana Health Service

GSS - Ghana Statistical Service

HBM - Health Belief Model

ICCIDD- International Council For the Control of Iodine Deficiency Disorders

IDA - Iron Deficiency Anaemia

IDD - Iodine Deficiency Disorder

IDDs - Iodine Deficiency Disorders

IDI - In-depth interview

IDIs - In-depth interviews

IEC - Information, Education and Communication

INF - International Network Forum

IQ - Intelligent Quotient

KDHS - Kenya Demographic and Health Survey

K103 - potassium Iodide

MDGs - Millennium Development Goals

MICS - Multiple Indicator Cluster Survey

NFHS - National Family Health Survey

PPM - Parts Per Million

PR - Prevalence ratio

SqKm - Square Kilometer

TDHS - Tanzania Demographic and Health Survey

Ug/L - Microgram/Litre

UN - United Nation

UNICEF- United Nation International Child and Education Fund

USI - Universal Salt Iodization

WHO - World Health Organization

ABSTRACT

Introduction -A diet low in iodine is the main cause of iodine deficiency disorders (IDDs). Iodine deficiency is recognized as the most common preventable cause of mental defects in the world. There have been several studies across the world which indicates that iodized salt is under consumed in most households resulting in the increase of IDDs. This study therefore explored the knowledge of community members on the awareness and use of iodized salt and the effectiveness of the policies and laws on the use of iodized salt.

Methodology- It was an exploratory study using a qualitative approach. Thirty in-depth interviews and five focus group discussion were carried among community members using a semi-structured guide.

Results - The study revealed that knowledge on the availability of iodized salt was high but that did not translate into it use. The cost of iodized salt was militating against the use of it among community members. There was a perception that iodized salt were contaminated with chemicals, which can cause disease to users. Knowledge on the policies that prohibit the use of non-iodized salt was low and enforcement of the ban on the use of non-iodized salt was non-existent in this community.

Conclusion –Perception and beliefs were key determinants in the use of iodized salts. Therefore, there should be public education on the use of iodized salts to demystify local beliefs that iodized salts can cause disease. Sampling of existing salt in the market every three months by environmental health workers and analysis at the Food Laboratory will ensure that the salt contains the recommended amounts of iodine that is required in the salt. There should be inspection of iodized salt at all sites where food is provided; restaurants, hospitals, day care centers, and canteens with rapid test kits. If tests show lack of iodized in the salt, importance of iodized salt is stressed and source of the defective salt is traced. To encourage people to use iodized salt, the

government should use social marketing technique to provide the salt at cheaper prices. This will make iodized salt financially accessible and encourage people to use.

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CHAPTER ONE

1.1 INTRODUCTION

Salt has played a prominent part in the progress of man's activities, trade, politics and culture from prehistoric times. Diverse cultures have in different ways held salt as symbol of divinity, purity, welcome, hospitality or wisdom (Manner and Dunn, 1995). Generally, iodine, an essential micronutrient is poorly consumed across the world. Sheckar, *et al.* (2007) is of the view that, three key micronutrient deficiency are of public health significance; iron deficiency anaemia (IDA)**,** vitamin A deficiency, and iodine deficiency disorders (IDDs).

It has been held that, insufficiently dietary intake of iodine reinforces the risk of developing IDDs in humans and in animals. In humans, IDD affects foetus development and this creates conditions such as stillbirth, abortion, miscarriage in pregnancy, brain damage, cretinism and congenital abnormalities (Hetzel and Pandav, 1994). In its extreme form IDDs results in cretinism, intellectual impairment of schoolchildren and in among other section of the population (GHS, 2007). Hetzel, (1989). asserts that, IDD affects foetus development in animals resulting in early death, abortion, still birth, birth of weak and hairless young-ones and this significantly affects meat, wool and coat production in herds. Thus, the spectrum of IDD, include goitre, hypothyrodism, impaired mental function, stillbirths, abortions, congenital anormalies and neurological cretinism.

Hence, IDD is a serious public health issue, and its effect on larger sections of the population cannot be over emphasised. Melse-Boonstra *et al*., (1998), thus conclude that IDDs constitute one of the major public health problems in the developing world with more than one billion persons at risk. This view has been supported by renowned international agencies like the WHO, UNICEF, ICCIDD, among others. Interestingly, several research publications have concluded that IDD is preventable. Hetzel and Pandav (1994), identified IDDs as an ancient scourage of mankind but argued that, it constitutes the most preventable cause of brain damage.

Zimmerman (2007) assessed iodine nutritional status in schoolchildren and concluded that one in three children remain iodine deficient despite its role in preventing mental retardation worldwide.

Generally, it has been established that people living in areas affected by severe iodine deficiency are at risk or may have an intelligence quotient (IQ) of up to 13.5 points below that of those from similar communities in areas where there is no iodine deficiency, (WHO/ICCIDD/UNICEF, 2001). Thus, iodine deficiency is evidently associated with deficit in cognitive function (INF, 2010).

In a related study, Asibey- Berko & Orraca- Tetteh (1995) undertook a survey to assess the iodine prevalence of IDD in 1994 with the aim of instituting an appropriate national control programme in Ghana. The target group were schoolchildren and adolescents (10-19 years) and women of childbearing age (15-45 years). The results indicated that prevalence of total goitre (TG) was 20% or more in 15 of the 27 surveyed districts. Two of these districts had prevalence over 50%, situated

respectively in the Upper East and Upper West regions (Bongo and Jirapa-Lambussie, respectively)

In a similar study in 21 districts by analysing urinary iodine levels, one district was classified as having severe iodine deficiency (mean urinary iodine < 20 µg/L). Eight of the districts were classified as having moderate iodine deficiency (mean urinary iodine 20-49 µg/L), ten as having mild iodine deficiency (mean urinary iodine 50-59 µg/L) while two revealed an optimal iodine concentration (Asibey-Berko and Orraca Tetteh, 1995; WHO, ICCIDD and UNICEF, 2001).

In all IDDs, salt fortification with potassium iodide or iodate, iodized oil consumption, and injection of iodized oil are recommended as the most effective way of administering iodine into the human body. However, there are other methods of introducing iodine into the body. These include water, milk, sugar and cereals, but salt is the most preferred and widely accepted choice globally. This is because salt is universally consumed irrespective of social and economic status. All normal adults consume salt nearly the same level throughout the year and that, iodine added to salt as potassium iodide or iodate does not impart colour, taste or odour to the salt (Manner & Dunn, 1995)

Noticing the usefulness of salt, the universal salt iodization (USI) was introduced to help prevent, curb, and eliminate IDDs. To date, the USI remains the key strategy to eliminate IDD worldwide. Over the last decades, global effort to ensure the iodization of salt has resulted in major progress toward the elimination of iodine deficiency. Some formerly severely deficient countries such as China, Nigeria and Iran now have an extremely low prevalence of iodine deficiency due to USI (Wheeler & Van, 2004).

In conclusion, it is therefore important to assess the level of awareness of a community concerning the benefits of iodized salt. This is because the utilisation of iodized salt by a community will depend on the knowledge of its benefits. This study therefore sought to investigate the determinants of salt utilization among households.

1.2. PROBLEM STATEMENT

In nearly all countries where iodine deficiency occurs, it is now well acknowledged that the most effective way to achieve the virtual elimination of IDD is through Universal Salt Iodization (USI). Salt iodization is thus a proven strategy to prevent and alleviate iodine deficiency, yet a significant section of the world's population still does not consume iodized salt despite the efforts of governments and the salt industry (UNICEF, 2008).

However, studies show that nutrition and iodine adequacy is strongly associated with improved cognitive development and physical productivity, both of which enhance an individual's income earning and learning potential. Yet, despite the large private returns associated with improved nutritional status, households often fail to invest sufficient amount of salt in their nutritional budget. This might also be due to lack of knowledge about the crunching effect of IDDs in human population.

The individual choice to use iodized salt is a function of the awareness of the potential benefits and the enforcement of the policies that ensure the use of iodized salt and criminalizes the use of non-iodized salts. This study therefore intends to assess the level of awareness of the benefits of iodized salt and the effectiveness of policies on its usage.

1.3. JUSTIFICATION

Ghana has not achieved the global target of 90% consumption of iodized salt by households despite it being the leading producer of salt in the sub-region (Ahiadeka *et al.*, 2012). There are also many benefits in consuming iodized salt. Despite the many benefits, there are reports of low utilization of iodized salt among community members. This study will therefore provide baseline information on the inability of Ghana to meet these global targets. The study will also provide literature for future researchers on iodized salt.

1.4. OBJECTIVES

GENERAL OBJECTIVE

To assess the factors affecting the utilization of iodized salt in rural communities.

SPECIFIC OBJECTIVES

1. To assess community's level of awareness and knowledge regarding the benefits of using iodized salt.
2. To assess the effectiveness of policies and laws mandating the use of iodized salt.

1.5. RESEARCH QUESTIONS

To achieve the research objectives, some specific questions were to be asked. The study therefore sought to answer the following questions.

1. To what extent do people know about the importance of using iodized salt?
2. What are some of the factors that prevent people from accessing iodized salt?
3. What are the policies and laws that promote the utilization of iodized salts?

4. Are people aware that there are legislation on the production, selling and usage of iodized salts?

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

In this chapter, the literature was reviewed on level of awareness and knowledge regarding the benefit of using iodized salt as well as the policies and laws mandating its use. The literature draws round what is known or works done by others in the research area. It also identifies some existing knowledge in utilization of iodized salt. The researchers conducted a review of the relevant literature through searchers of Medline, PubMed, EMBASE, ATLA, and Sociological Abstracts. The studies were from other countries but majority of them were from Ghana.

2.2 AWARENESS AND KNOWLEDGE REGARDING THE USE OF IODIZED SALT

The Multiple Indicator Cluster Survey (2010-2011) in five high densely populated localities in Accra: Nima, James Town, Accra New Town, Bubuashie and La, found that, there is marked difference between the richer and poorer households in terms of iodized salt consumption. Close to 80% of the richer households, use iodized salt compared to about 53% of the poorer households. The findings further state that, nearly one in four (24%) households used salt that was not iodized and 13% used inadequately iodized salt (>0 and <15 ppm).

In an unpublished thesis, Adjei (2002) assessed the determinants of iodized salt in households in the Kintampo sub-districts. He reported that factors including sex of

household, household size and knowledge on goitre were key determinant on use of iodized salt.

Wheeler and Van der Haar (2004) also discovered household wealth as a significant determinant of the use of iodized salt in their study in Mali, Zambia, Uganda, Rwanda and Turkmenistan with educational status not significantly associated with use of iodized salt.

Contrary to this finding, Ahiadeke, *et al*. (2012) found education level of household heads, access to information (media) and wealth status of the household as significant contributing factors in determining household utilization of adequately iodized salt. Their study revealed that household heads with seemingly higher educational background were more likely to use iodized salt.

Tepas, *et al* (2010) found that respondents who had heard about Iodine deficiency disorders (IDDs) consume a significant higher proportion of adequately iodized salt compared to those who did not (81.3% vs. 68.7%; PR 1.2, 95% C1 1.1-1.3). In a similar dimension, the consumption of iodized salt was higher among those who were aware of any IDD (PR: 1.2, 95% C1 1:1-1:4) and its benefit, (PR 1.2, 95% C1 1.1-1.3).

A survey by Ghana Health Service (2003) in the Tema Municipality found that, only 63% of the 300 sampled salt tested were iodized. The reasons given by those who do not use iodized salt include, unavailability, not important, high cost, used to local salt, never heard about it, and contain chemicals.

Yamada *et al*. (1998) reported in their study that majority of occasional users and non-users of iodized salt consider the price of iodized salt to be slightly higher than that of common salt.

UNICEF (2008) also stated that many households were not using iodized salt because of the cost.

In a survey among 280 households in the Bia District in the Western Region in Ghana, Buxton & Baguune (2012) report that, 8.6% of the respondents who patronized common salt exclusively, did so because of unavailability of iodized salt on the market. About 26.8% of the respondents also indicated that, they used both common and iodized salt partly due to shortage of iodized salt on the market. A section of the respondents also indicated that, iodized salt was expensive compared with common salt and this influence their decision to use non-iodized salt.

2.3 LEGISLATION GOVERNING THE USE OF IODIZED SALT

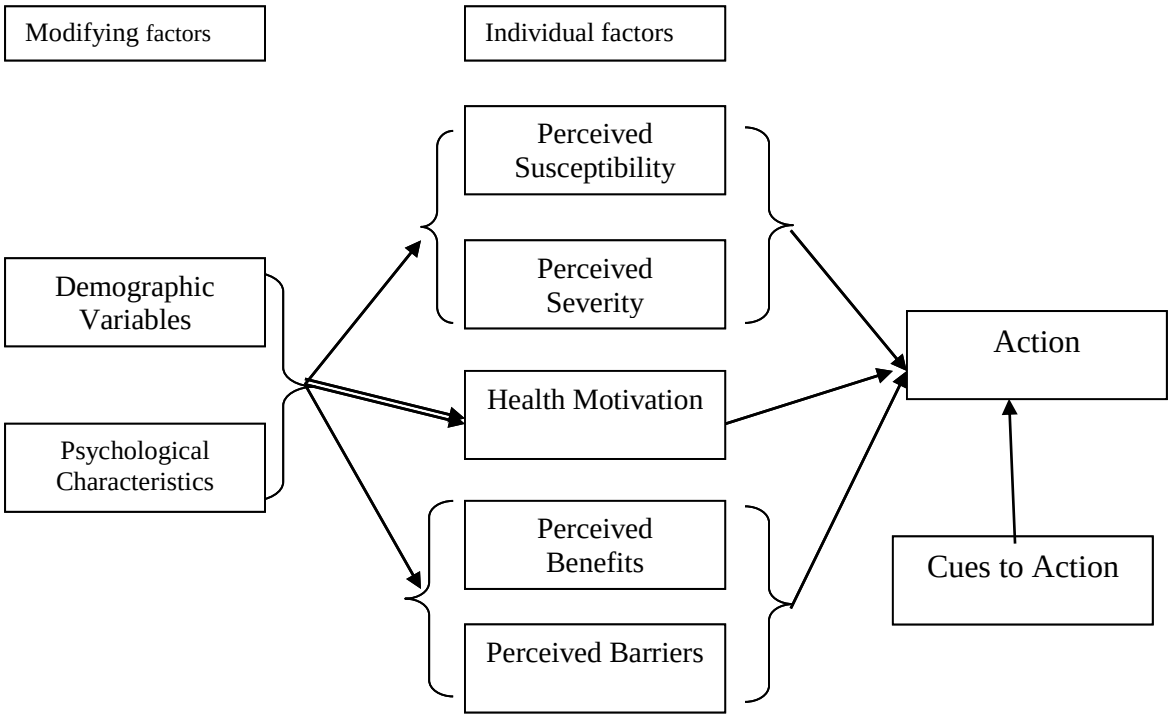
It has often been found that the use of iodized salt is low due to lack of awareness of legislation, control and quality monitoring schemes, and enforcement of existing regulation on the production, distribution, sale and usage of iodized salt. Several African States have passed such legislation requiring the mandatory iodization of salt. This law extends to the usage of salt in households. In a response to increase the use of iodized salt, Wheeler and Van der Haar (2004) stated that in 1994, the Benin Government enacted legislation requiring that all edible salt including that intended for animal consumption be iodized. This legislation mandated all salt to have iodine of 20-40ppm KIO3. Similarly, Egyptian government in 1996 enacted salt legislation requiring the iodization of table salt with 50-80 ppm KIO3.

Ghana initiated the Universal Salt Iodization (USI) in 1995. The Food and Drugs Board (Amended Act in 1996), the Ghana Standard Board, and the Ministry of Health have set quality control schemes to ensure that all salt produced locally or imported are iodized. The basis is to enhance and improve consumption at the household level. An example is, the 90% household consumption target set by MOH, The Ghana Standards Board also mandates that the iodine content in salt should not be less than 50 ppm at the production point and at the retail level, it is expected to be at 25ppm. The Food and Drug Board Amendment Act, 523 of 1996 on universal iodization was established to improve the usage of iodine to prevent IDDs (Buxton and Baguune, 2012).

Prior to Act 523, the Food and Drugs Board Act of 1992, stipulated the mandatory fortification of all salt. The law requires that "No person shall mine salt for human or animal consumption, or import, manufacture, package, label, advertise, store, deliver, distribute, trade, sell, or export any salt that is not fortified with potassium iodide (KI), or potassium iodate (KIO3) in accordance with this Act" (Food and Drugs Board Act, 1992).

2.4. CONCEPTUAL FRAMEWORK

The relationships to be explored indicating how the HBM will influence behaviour is presented diagrammatically below.



Source: Abraham and Sheeran (2005).

2.5. THEORETICAL FRAMEWORK

The study was conducted within the framework of the Health Belief Model which indicates that the key health beliefs underlying the threat and behavioural evaluations

provide a useful framework for understanding individual differences in health behaviour, and for designing interventions to change behaviour.

2.5.1. The Health Belief Model

The Health Belief Model (HBM) is a popular theory applied to health education and health promotion (Glanz, *et al*., 2002). The underlying assumption of the original HBM is that health behaviour is determined by personal beliefs or perceptions about a disease and the strategies available to decrease its occurrence (Hochbaum, 1958). This Model of explaining human behaviour attempts to explain the determinants and factors that influence an individual's decisions related to health behaviour change and maintenance and can therefore acts as a guiding framework for health behaviour interventions. In the nutshell, the HBM suggests that whether or not an individual changes and/or maintains behaviour is influenced by perceptions of the feasibility and benefits of the "new" behaviour weight against the perceived costs (Becker, 1974). This model suggests that individuals determine the feasibility, benefits and costs related to an intervention or behaviour change based on a range of intrapersonal factors involving Perceived Susceptibility, Perceived Severity, Perceived Benefits, Perceived Barriers, Cues to action and self-Efficacy.

2.5.2 Perceived Severity

This reflects the individual's beliefs about the seriousness/consequences of the condition. While the perception of severity is often based on medical information or knowledge, it may also stem from an individual's beliefs about the difficulties a disease would create or the effects it would have on his or her life (McCormick-Brown, 1999). For example, a household may refuse to use iodized salt because they may think that non-consumption of iodized salt may not result in any serious health

problem. Or an individual who do not recognize goitre as a serious medical problem will be less likely to use iodized salt.

2.5.3. Perceived Susceptibility

This also reflects an individual's beliefs about the likelihood of getting a disease/condition. The greater the perceived risk, the greater the likelihood of engaging in behaviours to decrease the risk. When people believe they are at risk for a disease, they will be more likely to do something to prevent it from happening. However, when people believe they are not at risk or have a low risk of susceptibility, unhealthy behaviours result.

2.5.4. Perceived Benefits

This construct is an individual's belief that a certain action will reduce risk / seriousness of impact. This reflects the person's opinion of the value or usefulness of a new a behaviour in decreasing the risk of developing a disease. People tend to adopt healthier behaviours when they believe the new behaviour will decrease their chances of developing a disease.

2.5.5. Perceived Barriers

This is an individual's own evaluation of the obstacles in the way of him or her adopting a new behaviour. In order for a new behaviour to be adopted, a person needs to believe the benefits of the new behaviour outweigh the consequences of continuing the old behaviour. This enables barriers to be overcome and the new behaviour to be adopted.

However, the four major constructs of of perception are modified by other variables, such as culture, educational level, past experiences, skill and motivation among others.

2.5.6. Cues to Action

Cues to action are events, people or things that move people to change their behaviors. Examples include, media reports and campaigns (Graham, 2002), advice from others, postcards from health care providers or health warning and labels on a product (Ali, 2002). These are instigators to readiness.

2.5.7. Self-Efficacy

The HBM was extended to include the self-efficacy construct (Rosenstock, Strecher & Becker, 1988). Self-efficacy is the belief in one's ability to take action to produce desired outcomes. People generally do not try to do something new unless they think they can do it.

CHAPTER THREE

METHODS

3.1 STUDY DESIGN

This was an exploratory qualitative research. The study used in-depth interviews and focus group discussion. Exploratory research allows researcher to investigate a given situation or phenomenon to gain deeper insight into it. Since the purpose of the study was to gain deeper insight on the factors influencing the use of iodized salt and the effectiveness of the policies on iodized salt, it was only appropriate to adopt this design.

3.2 STUDY AREA

The study was carried out in Danfa, in the Ga East Municipal Assembly in the Greater Accra Region**.** The Ga East was established in 2004 by an Act of parliament (Legislative Instrument 1589). Previously it was part of Ga West District. The District capital of this District is Abokobi. It covers a land area of 166sqkm. It is bounded on the West by the Ga West District, on the East by Adenta Municipality, the South by Accra Metropolitan Assembly, and the North by the Akwapim South district. The Ga East Municipality has an estimated population of 256,668(GSS, 2012). Danfa is a community found in the Danfa sub-municipal, one of the four sub-municipals of the Ga East Municipality in the Greater Accra Region. The community is made up of about seven settlements, which includes; Site A, Site B, Site C, Danfa Settlement, Zongo, Ayigbe town and the Clinic Settlement. The community shares borders with Ayimensah to the North, Otinibi to the East, Addoteiman to the South, and Adamrobe to the West. It is a peri-urban community. It is dominantly inhabited by Gas who are the indigenous. Other tribes including the Ewes and the Akans among other tribes have settled in the community. It has an estimated population of 1098

inhabitants, (2012, National Housing Census) with an annual growth rate of 4.4 %. The principal road network in the community is tarred. There is however pockets of untared roads that link one settlement to the other.

The Danfa Health centre is the main facility in the vicinity, which served averagely between 30-40 clients on daily basis. Apart from child welfare clinics on Wednesdays, there is no much pressure on the facility. The health centre also serves as a resource base for medical students and allied health practitioners. There is a community chief in Danfa who was ably supported by his elders, family and clan heads, and other opinion groups. There were also community based volunteers who were very resourceful in executing health initiatives. There is a vocational institution and a Junior High School in the community. There is no police post within the Danfa settlement. The nearest police establishment is found at Ayi- Mensah.

Inhabitants were predominantly farmers and traders. Other working groups such as artisans, building construction workers and civil and public servants are also identified in the community. A sizeable proportion of the people are unemployed reflecting the high level of poverty in the locality, especially among the indigenous.

There were pockets of iodized salt retail shops in the community. The local Ada rock salt was also found selling in the community. A 500 gram of iodized salt was selling between 30 and 50 pesewas. A small sachet of local rock salt was sold between 10 to 20 pesewas.

3.3 DATA COLLECTION METHOD

The study employed in-depth interviews and focus group discussions.

3.3.1 IN-DEPTH INTERVIEW

In-depth interviewing is a qualitative research technique that involves conducting intensive individual interviews with a small number of respondents to explore their perspectives on a particular idea, program, or situation (Boyce & Neale, 2006). In in-depth interview one researcher and one participant discusses a topic with the interviewer asking questions that are answered by an interviewee. This study conducted thirty (30) IDIs in seven settlements.

The seven (7) settlements in the community were given numbers. Thus:

Danfa settlement	1
Ayigbe town	2
Clinic	3
Zongo	4
Site A	5
Site B	6
Site C	7

The numbers were written on pieces of paper with the same sizes and colour. The papers were folded in such a way that they had equal shapes and sizes, and their numbers also hidden.

The Disease control officer randomly picked 3 of them and they represented the study settlement for the IDIs. In each settlement, the last house was included and served as the starting point and the fifth house after each house was chosen for study.

In each house the first door from the entrance was chosen. And the decision maker in terms of purchasing and usage of salt was interviewed. In case that household declined to participate, the next household that was available and willing to participate in the study was chosen. And with permission from participants, the iodine content in salt was checked after the respondent has consented to using salt.

3.3.2 FOCUS GROUP DISCUSSION

Focus groups are group discussions, which are arranged to examine a specific set of topics (Kitzinger 2005). It is method that can provide results quickly with minimum cost. It is often organized to elicit normative information among community members. The primary aim of a focus group is to describe and understand meanings and interpretations of a select group of people to gain an understanding of a specific issue from the perspective of the participants of the group (Hennink, 2007).

Five (5) focus group discussions were held among post-natal women. Each focus group consisted 8-10 mothers. The principal researcher moderated all the focus group discussion. A research assistant tape-recorded and took notes in all the focus group discussions with the permission from discussants. Each discussion lasted for 30-60 minutes. During discussion, all participants were made to speak to topic that was raised before moving to another topic. The discussions were conducted in both Ga and Akan.

With the help of the community health nurses (CHN's), road to health cards of some children were purposely selected in each settlement during child welfare clinics and the mothers of those children were used as participants in the focus group discussion to elicit normative views on the use of iodized salt.

3.4. PRE-TESTING

A pre-test was conducted at Ayimensah a nearby community that does not fall under Danfa township but that had similar characteristics as people in the study area. Through the Disease Control Officer, a susu group was contacted. Contributors were both males and females but when the group was approached and the topic was introduced for discussion the males among them declined to take part in the study "chanting" issues about salt is for women and not men. This gave a clue to reasons why information about iodized salt may not always lead to action; women were responsible for salt purchases and salt use and therefore needed to be directly targeted. Five IDIs were also used as pre-test and the interview guides were modified to better answer research objectives.

3.5 QUALITY CONTROL

The following strategies were employed to ensure data quality. Training of interviewers, preparation and use of instruction manual for the interview, close supervision and monitoring of data collection, spot checking during field interviews and field editing of completed interviews schedules. Interviews and focus group guides were first translated from English to Ga and Twi. Guides were then back translated to check the quality of the translation. Transcripts were written immediately after each day's work.

3.6 ETHICAL CONSIDERATION

The research proposal was submitted to the Ethical Review Board of the Ghana Health Service for clearance before the study began. Community entry was carefully planned and executed. Permission was sought from all relevant authorities, household heads, study participants and communities where the research took place. The rational for the study was thoroughly explained to all parties. Participants had the right to opt out of the study at any point in time. Details of the study were read out to participants in their own local language.

PRIVACY AND CONFIDENTIALITY

Participants were assured of their privacy and confidentiality of the data. They were not obliged to respond to questions they do not want. They were assured that the information collected was to be used for the purpose of interventional policies, enactment and implementation

DATA STORAGE AND USAGE

Participants were assured of the safekeeping of the information and that information will be used only for the intended purpose of interventional policies, enactment and implementation.

CONFLICT OF INTEREST

There was no conflict of interest.

COMPENSATION

Participants were not induced to participate in the study. They were however given non-alcoholic beverages after the study as a sign of appreciation.

FUNDING INFORMATION

The principal investigator funded the entire research work.

3.7. DATA PROCESSING AND ANALYSIS

All interviews were transcribed, sorted, coded, categorized and summarized. Data was analyzed by drawing descriptive associations between respondents' general characteristics such as their socio-demographic characteristics and their knowledge of the benefits/ availability, access, price and legislations involved in the utilization of iodized salt.

CHAPTER FOUR

RESULTS

4.1 INTRODUCTION

This chapter presents and describes in detail the results of the study. The first part of this section describes the demographic profile of the respondents. The second part presents the results of level of awareness and knowledge regarding the benefits of using iodized salt as well as the effectiveness of policies and laws mandating the use of iodized salt within the study area.

4.2 DEMOGRAPHIC CHARACTERISTICS OF THE STUDY PARTICIPANTS

Participants for the FGDs were women aged 18-35 years from the Danfa community and its surrounding villages like Teiman, Adoteiman and Amrahia. The main occupation of the participants in the study area was petty trading and farming. Most of the respondents had low or no education. Majority of them were Gas. Most of the participants were Christians, followed by Muslims.

A total of five (5) FGDs were organized for the study with each group constituting 8 to 10 participants.

In-depth interviews were also conducted with thirty (30) respondents. Participants generally shared similar characteristics with those in the FGDs. They were solely recruited from the Danfa community. The majority of them were traders and farmers and had age range between 18 -56. The inclusion criterion was to be responsible in the preparation of household meals and was using salt at the time of the visit. All the participants but two were men. These men were selected in situations where no

woman was available and a man was willing to participate in the study. The average household size was between 4 to 7. Only three of the respondents had up to senior high education level.

4.3 AWARENESS AND KNOWLEDGE REGARDING THE BENEFITS OF USING IODIZED SALT

Two main types of salt were reported to be used by respondents' namely the local Ada rock salt popularly known as the "Ada ngo" (which contains no iodine) and the iodized salt. From the responses it was clear that all the participants had heard about iodized salt, however, the study identified that few people in the study area were users of iodized salt. A handful of them also reported that they use both the Ada local salt and the iodized salt together. This indicates that majority of the respondents were users of the local salt.

Some of the reasons cited for the use of iodized salt were that, it was white and adds flavor into the soup. It enhances the growth of the mind. Some stated that, it contained nutrients that enable children to grow well.

"I know it prevents us from getting goiter, it prevents us from sickness, it makes children grow well and removes germs" (a 28-woman at Danfa)

Some of them explained that, goiter was a type of sickness that affects parts of the throat of human who do not take iodized salt. The local name for goiter was given as "dɔɔ" in the Ga dialect meaning swelling of the throat. When participants who were users of iodated salt were asked to explain the benefits of eating iodized salt, it was unanimously agreed that it was important for the growth of children.

"…usually a baby is labeled on the sachet of iodized salt and I think this indicates that it is good for children and its opens their minds" (a 22-year old woman in FGD)

Those who do not use iodized salts forms the majority. They cited that the local salt taste better, it does not contain chemical, it is a traditional heritage, which is natural, and not contaminated by chemical which can cause sickness

"*The local salt tastes better, if you add just a little to food it taste good, I always tell my wife to use the local salt*" (a 37-year old man, in IDI at Ayigbe Town)

Data from the focus group discussion revealed that majority of the participants believed in the values of using the local salt. The general agreement among respondents who use the local salt was that the local salt had been with them since time past and had not failed them in terms of value. Here are excerpts that support social values placed on the local salt:

"*I have known to use Ada salt since my infancy. We have been brought up with this. All my parents used it so I am also using it. The new salt (iodized salt) contains chemical and people say it is dangerous to our health. I heard this from my friend and even there was a sick person who was told by a Doctor, not to use iodized salt"*
(IDI, woman, Zongo)

One of the themes in the study that emerged from the non-use of iodized salt was that iodized salt cause diseases. Participant generally believed that the use of iodized salt was associated with disease conditions such as diabetes, hypertension and stroke. Participants stated that many affluent people were suffering from the above condition as a result of the use of what they described as "table salt" which contained high level iodine.

"For me I think Ada salt is natural without any chemical which will bring us diseases. Most of these new foods contain sickness. That is why people these days get diseases like hypertension, diabetes and stroke. Those days these diseases were not in the system". (FGD, woman 35 years)

"…but they are not doing anything about the price. Most of us can buy the local one. It is cheap and "Olonka" is just on cedi" (FGD, woman 26 years)

The majority of the participants who responded that they use both the Ada local salt and the iodized salt gave the reason that both salts are available in the community. They identified that since both iodized salt and the Ada rock salt were found in the community they could use any type which was available. They were not much concerned and particular about the kind of salt they were using to cook.

One IDI, respondent vividly opined that:

"I use both salt to cook, I don't give special attention to the kind of salt I use in cooking. *What I know is that I am using salt to prepare my meal. (A 30 year woman at Zongo)*

To explore if adequate iodized salt was reaching consumers, samples of salt were collected from IDI participants and tested using the iodized salt test kits. The results showed that with the exception of three respondents, almost all the participants in that exercise were using the local salt. It was clear from the respondents that one of the reasons why people used non iodized salt was to maintain the culture heritage of their grandparents.

Another factor that came out as one of the determinants of the use of iodized salt was affordability and accessibility of the salt. In terms of availability respondents indicated that iodized salt was generally available in the community.

"....It is sold all over, at the mini market and in the provision stores, I can just walk to the place and buy some" (a woman in FGD)

Three themes emerged on accessibility of iodized salt; geographical, financial and socio-cultural accessibility. Geographically, many respondents stated that iodized salt was accessible in the community. Those who use it rely on the local market whiles others get their iodized salt from the Madina Market.

"*We get our salt from the community and sometimes from the Madina market*" (FGD participant)

On financial accessibility, majority of the FGD participants indicated that iodized salt was, relatively expensive as compared to non-iodized salt.

"*We were all consuming iodized salt but looking at the price we have all gone back to using the raw salt. Just a little of the local salt can taste better but for iodized salt you need more to make the food taste good*" (a woman in FGD)

Price differences were therefore a major consideration in the use of salt. Many participants proposed a price equalisation to enable them use the iodized salt.

"*Even though the price for selling iodized salt is ok, the government should do something about it so that many people can buy it*" (a female IDI Participant)

Socio-culturally, many participants belief that local salt was passed on from their ancestors and is natural and therefore it is salt that has been accepted by the community and sanctioned by the gods of the land. The use of fortified salt may therefore lead to disobeying the gods of the land who are capable to visiting bad omen on offenders.

"*You may be disobeying the gods of land if you don't consume the Ada salt as it has been provided to us by our ancestors"* (a 46-year-old man)

4.4 POLICY ON THE USE OF IODIZED SALT

Participants generally were unaware that it was illegal in Ghana to sell and use non-iodized salt.

"*I don't know of any law in Ghana that say we should not eat the Ada salt but I know in Cote d'Ivoire the raw salt has been banned but here people are using it*" {28 year woman in FGD)

When participants were informed by the moderators about the existence of the law, many of the respondents argued that such a law should rather be repealed as the local salt is cheaper, approved by the ancestors and taste better.

"*For me if I get to the market, I buy what my money can buy and I don't think such a law should be passed*" (a woman in IDI).

"*We have never heard that they have arrested somebody because of Ada salt"* (FGD Participants)

Concerning the enforcement of policies and legislation on the use of iodized salt, the responses varied. As some respondents believed that the policies and laws should be enforced and offenders punished, others believed that enforcing the laws would throw people out of business. Of the few participants who supported the enforcement of the laws indicated that those who deal with the local salt should be rather trained on how to iodize the local salt or there should be collaboration between those who mine the local salt and companies that deal with iodated salt. They further suggested subsidization of the iodized salt to make it affordable for all households

"*Laws should be enforced, but the iodized salt should be supplied to people free"* (a 24-year old in FGD)

Contrary to the above view, some participants believed that if such legislation existed it should rather be removed. They strongly believed that people in Ghana are following the dictates of Western countries and throwing away the natural heritage and resources of the country.

They indicated that education should rather be made for people to consume the local salt instead of enforcing laws on them.

"*People should be educated on the use of our local salt rather than enforcing the law because this is the work they rely on to feed their family*" (a woman in FGD)

CHAPTER FIVE

DISCUSSION

5.1 INTRODUCTION

This study uses the health belief model as a guide which is use to explain human behaviour. According to this model, households will use iodized salt when they perceive that they are vulnerable to diseases that can result from the non-use of the iodized salt.

5.2 DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS

To determine whether the demographic characteristics of the respondent have any influence on the use of iodized salt, the study found that most of the people in the study area were predominantly farmers and petty traders. This implies their income level was low and could affect the use of iodized salt as many of them complained about the prices of the iodized salt. This finding is similar to the findings of the Multiple Indicator Cluster Survey,(2010-2011) in five high densely populated localities in Accra: Nima, James Town, Accra New Town, Bubuashie and La, that found that, there is marked difference between the richer and poorer households in terms of iodized salt consumption.

Ahiadeke, *et al*. (2012) also found that education level of household heads and wealth status of the households are significant contributing factors in determining household utilization of adequately iodized salt. Thus the study revealed that household heads with seemingly higher educational background were more likely to use iodized salt.

5.3. KNOWLEDGE AND USE OF IODIZED SALT

The study revealed that, knowledge of iodized salt was high in the study area but this does not translate into use. Participants were aware of two main types of salt. One impregnated with iodine and the raw salt that they refer to as the "Ada salt. The study demonstrated that the use of the iodized salt was low. The finding that iodize salt is well known in the community is somewhat at odds with the findings of Ghana Health Service (2003) in the Tema Municipality. One of the reasons given by those who do not use iodized salt is lack of knowledge about iodized salt. The differences in this finding could be as a result of the abundance of local salt in this study area.

In terms of availability, respondents indicated that iodized salt was generally available in the community. Buxton & Baguune (2012) in a survey in the Bia District in the Western Region in Ghana, report unavailability of iodized salt as a principal reason for non-use. In our study, availability did not mean high levels of use.

Price disparities between the local salt and iodized salt were key in determining the use of iodized salt. The majority of the respondents indicated that, iodized salt was relatively expensive than the local salt. The findings of this study are similar to the findings of Yamada *et al*. (1998); Ghana Health Service (2003); Buxton & Baguune (2012); and UNICEF (2008). All the above studies indicated that price was a significant factor to the use of iodized salt.

Among those who reported that they used iodized salt, the study revealed that knowledge of goitre was one of the key reasons given for the use of iodized salt. The

finding is in agreement of the findings of Adjei (2002) who reported that knowledge on goitre was one of the key determinants in the use of iodized salt.

The study also revealed among those who do not use iodized salt, local salt taste better, it is a traditional heritage, it is natural, and it is not contaminated by chemicals which can give sickness. Participants in the study area clearly expressed preference for use of the local salt. This findings is consistent with the findings of Ghana Health Service (2003) in the Tema Municipality that the reasons given for using the local salt includes, used to its taste and that it contains no chemicals.

5.4. POLICIES AND LAWS REGARDING THE USE OF IODIZED SALT

The study revealed that most of the participants were unaware of any legislative instrument barring the use of raw salt in the community. This implies that public education on the law is insufficient and no follow up is being done to enforce the law. This has resulted in defilement of the national goal of ensuring a 90% household's consumption. Again, this finding is contrary to the Food and Drugs Board Act of (1992). The law requires that "No person shall mine salt for human or animal consumption, or import, manufacture, package, label, advertise, store, deliver, distribute, trade, sell, or export any salt that is not fortified with potassium iodide (KI), or potassium iodate (KIO3) in accordance with this Act"

When the participants were informed of the existence of the law, many of them argued that, such a law should rather be repealed as the local salt is cheaper, approved by their ancestors and tastes better. This implies that, the participants are likely not to use the law even if they were aware of its existence. This is contrary to the findings in a study in the North 24 Pargranas District of West Bengal, India, which found that,

people who were aware of the ban on non-iodized salt were more likely to consume adequately iodized salt.

CHAPTER SIX

CONCLUSION AND RECOMMENDATION

6.1 INTRODUCTION

The study attempted to investigate the utilization of iodized salt among households in the Danfa community.

6.2 CONCLUSIONS

The research revealed that:

1. Knowledge on the availability of iodized salt was high but that did not translate into its use. There was also low knowledge on the benefits of eating iodized salt as most respondents prefer the local rock salt.
2. The cost of iodized salt was militating against the use of iodized salt among community members. This is because the local salt was relatively cheaper than the iodized salt.
3. There was a perception that iodized salt were contaminated with chemical which can cause diseases to users.
4. The Ada salt was perceived as a cultural heritage and an access given to them by their ancestors.
5. Knowledge on the policies that prohibit the use of non-iodized salt was low and enforcement of the ban on the use of non-iodized salt was nonexistent in this community.

6.3. RECOMMENDATIONS

After exploring the data and the results, the following recommendations are made:

1. There should be public education on the use of iodized salt to address local knowledge that iodized salt is a disease causing food ingredient.
2. There should also be public education on the existence of laws on the use of iodized salt to help create awareness among local distributors, commercial users and home users and also to ensure that, their salt is adequately iodized.
3. Education on the use of iodized salt should be targeted at persons responsible for making decisions at home as far as meal preparations are concerned.
4. There should be inspection of iodized salt at all food sites: restaurants, hospitals, day care centers, and canteens with rapid salt test kits. And that, if tests show lack of iodine in the salt, then education on the importance of iodized salt is stressed and source of the defective salt, traced.
5. Sampling of existing salt in the markets every three months by Environmental Health Workers and analysis of salts at the Food Laboratory to ensure that all salt contains the recommended amount of iodine should be intensified by the law enforcement agencies.
6. The existing laws on iodized salt should be strictly enforced in all communities.
7. The government should use social marketing techniques to promote iodized salt at cheaper prices. This will make iodized salt financially accessible and also encourage people to use it.

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APPENDICES:

APPENDIX A

IN-DEPTH AND FOCUS GROUP DISCUSSION GUIDE

Interview code: ……..
Date of interview:……..
Time: From……To……

Demographic Information:
Sex……..
Age…….
H/H…….
Occupation…….
Formal/No Formal Education……

Knowledge on Awareness and Health Benefits of using Iodized Salt

1. What type of salt do you use in cooking? (probe further, why choice of salt)
2. What can you say about iodized salt?(probe to find source of information)
3. Can you share with us the benefits of using local and iodized salt?
4. What health conditions can iodized salt help prevent?

Availability, Accessibility and Price of Iodized salt

1. Where can you get iodized salt in this community? (probe further packaging, types in the community)
2. How accessible is iodized salt for use? (probe further for price disparities)

Awareness and Effectiveness of Legislations mandating the Sale and Usage of Iodized Salt

1. What are the policies or legislations that regulate the sale and usage of iodized salt that you are aware of ?(probe further on policies, enforcement)
2. What can you say to encourage people to use iodized salt? (probe further on family level, community and nation).

Thank you

APPENDIX B

A CONSENT FORM FOR THE UTILIZATION OF IODIZED SALT AMONG HOUSE HOLDS IN DANFA COMMUNITY

Project Title:

The Utilization of Iodized Salt among households in the Damfa community
Institutional Affiliation:
School of Public Health,

College of Health Sciences

University of Ghana

Legon

Background
Personal Introduction:

The Lead Investigator is Prince Osei Kissi, currently a master's student of the School of Public Health, Legon and conducting a study on the Utilization of Iodized Salt among households in the Damfa community. This study is for academic purposes and a requirement for the award of Master of Science Degree in Applied Health Social science Degree and supervised by Dr. Philip Adongo of School of Public Health, University of Ghana, Legon.

Procedure
An interview will be conducted using an in-depth interview guide and a focused group discussion guide. The interview will be tape-recorded with your permission. This tape-recorded will be kept until the time the degree has been awarded after which it will be destroyed.

Risks and Benefits

There are no reasonably and foreseeable harm that may arise from participating in this research while benefits that may arise include a greater contribution to the development of interventions and policies. It will also increase the possible utilization of iodized salt.

Right to refuse:

Although there are no known risks associated with the research protocols, if you feel uncomfortable you have the liberty to opt out. You are also at will to withdraw from participating if you desire to do so.

Anonymity and confidentiality:

You are assured that the information collected will be handled with the strictest confidentiality, will not be shared with third parties not directly involved in the research and thus will be used purely for academic purposes.

Before taking consent:

Do you have any questions that you wish to ask? If yes, questions to be noted.

If you have question you wish to ask later, or anything you wish to seek clarification on regarding the research, please do not hesitate to contact the principal investigator (Prince Osei Kissi) on;

Telephone number: 0279618518

Email:stand@rocketmail.com

Or

The Academic Supervisor on

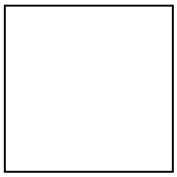
adongophilip@yahoo.com

PARTICIPANT

I …….having been adequately informed about the purpose, procedures, potential risks and benefits of this study. I have had the opportunity to ask questions and any question I have asked have been answered to my satisfaction. I know that I can refuse to participate in this study without any loss or benefit to which I would have otherwise been entitled. Having gone through the consent form thoroughly I agree to enroll in this study.

Name of participant: ……..

Signature or Right thumb print: ……..



Date: …….

Interviewer's Statement:

I have explained the procedure to be followed in this study to the client in the language that he/she understands best and he/she has agreed to participate in the study.

Signature of interviewer…….

Date……

APPENDIX C

INTERVIEWERS TRAINING GUIDE

A two day training session for two (2) data collectors and a field supervisor.

Day, one (1):

Date: 14th May 2012.

Time: 09:00am – 1:30pm

Venue: Danfa Health Centre, Main Hall.

Purpose:

1. Understanding the usage of instructional manual.

2. To brief interviewers on the study type, method, and tools for data collection.

3. To show interviewers techniques for data collection e.g approach, icebreaker, and detecting common errors in data collection.

Day, two (2):

Date: 15th May, 2012.

Time: 09:00am – 1:30pm

Venue: Danfa Health Centre, Main Hall.

Purpose:

1. To ensure specific and vital informations are collected applying spot checking and field editing.
2. To facilitate data analysis.