

Assessment of Knowledge on Iodized Salt Utilization and Associated Factors among Households in Arba Minch Town, Southern Ethiopia

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ABSTRACT

Introduction: Iodine is one of the trace element which is needed for thyroid hormone production and synthesis. Inadequate iodine in the body leads to deficiency of these hormones, which affect human vital organs basically muscle, heart, liver, kidney, and the developing brain. There was no study conducted in the study area to assess the level of knowledge in the study area. The objective of this study was to assess the level of knowledge on iodized salt utilization and associated factors among households in Arba Minch town, 2018G.C.

Methods: Community based cross-sectional study design was conducted from 1st Jan to Feb 15, 2018 in Arba Minch town. A total of 475 households were selected using a single population proportion formula and study subjects were selected by Multi Stage and systematic sampling technique. Data was entered into Epi info version 3.5.1 and exported to SPSS version 21 statistical soft ware for cleaning, coding and analysis. Factors that show association in Bivariable analysis were entered in to Multivariable logistic regression models. The strength of statistical association was measured by adjusted odds ratios, 95% confidence intervals, and P-value ≤ 0.05 was considered as significant.

Result: The study was conducted among 475 households with a response rate of 100%. From the respondents 52.8% have good knowledge on iodized salt utilization. Religious status(AOR: 0.4; 95%CI 0.2-0.8), Ethnicity(AOR: 0.4; 95%CI 0.2-0.8), Educational status(AOR: 0.2; 95%CI 0.6-0.4), Occupational status(AOR: 3.9; 95%CI 1.1-14.8), Family size(AOR: 0.24; 95% CI 0.1-0.5) and total monthly income(AOR: 0.47; 95%CI 0.23-0.9) of the households were the independent factors which affect the knowledge towards utilization of Iodized salt.

Conclusion: The Factors which affect the knowledge towards Iodized salt utilization were Religious status, Ethnicity, Educational status, Occupational status, Family size and total monthly income of the households.

Keywords: Iodized salt; Utilization; Households, Knowledgeable, Arba Minch

INTRODUCTION

Iodine is one of the trace element used for the production and synthesis of thyroid hormone and which is gained from consumed diet, while the human body does not make iodine. Iodine is gained in different foods and is found naturally in soil and seawater (1). Iodine Deficiency (ID) is associated with abnormalities which collectively called 'Iodine Deficiency Disorders (IDDs)' reflecting thyroid gland dysfunction (2). Particularly, goiter is an abnormality which presents with an abnormal enlargement of thyroid gland mainly due to the adaptive response to low dietary iodine intake (3).

Iodine can be gained through utilization of foods that naturally contain it such as fish, seafood,

kelp, some drinking water, Cow's milk and vegetables grown in sufficiently Iodine containing soil) or upon it iodine is added (commonly stated as table salt)(4). Inadequate production of hormone highly affects these tissues, resulting a disease state known generally as iodine deficiency disorders, or IDD(5). The World Health Organization (WHO) recommended Iodine intake (population requirement) of adults is 150 $\mu\text{g}/\text{day}$ and individuals with the age of 13 years and older, 200 $\mu\text{g}/\text{day}$ for pregnant and lactating mothers, 120 $\mu\text{g}/\text{day}$ for children with the age of 6–12 years, and 90 $\mu\text{g}/\text{day}$ for infants 0–59 months of age(6,7). Iodine deficiency is a devastating health problem which occur through much of

the countries of the world. Most of the earth's iodine is found in the ocean. In general iodine will be leached away by erosion if the exposed soil surface become older (8).

In Africa, sixty million people are at risk of Iodine deficiency disorders among them thirty million and 0.5 million have suffer from goiter and overt cretinism respectively(9,10). In the study done in South Africa the majority of the patients (86.9%) have no awareness on what iodine was. Similarly, a higher percentage (76.7%) of patients have no awareness on main source of iodine in the food among South Africans. Also 89.1% of the respondents have no knowledge on harmful effect of Iodine deficiency on children (9,11).

The key intervention in the action to reduce IDD should be to continue to assess the progress made toward minimizing iodine deficiency as a significant public health problem and to sustain the best achievements already into the future(12).

Little is known in Ethiopia about the status of knowledge on Iodized salt utilization and associated factors and also no study was conducted in the study area about the prevalence of IDD and Iodized salt utilization. The objective of this study was to assess the level of knowledge on Iodized salt utilization and associated factors among households in Arba Minch town. Hence, this study finding provides a base line for local program implementers at a district level, policy makers and different organization to design an intervention program to improve the iodized salt utilization of the community & to work on information education & communication part, hence a need arise to assess knowledge of iodized salt utilization and associated on iodized salt utilization at household level in Arba Minch town populations.

METHODS

Study Design, Area and Period

A community based cross-sectional study was conducted in Arba Minch town was selected for this study which is situated in South Nations Nationalities People Regional State(SNNPR), Gamo Goffa zone. Arba Minch is the capital town of Gamo Goffa zone. It is located 505kms far to the south of Addis Ababa. The town is one of the low lands in the SNNPR having a hot climate with average temperature of 29⁰c and annual mean rain fall of 900mm. It is surrounded by mountainous high lands from its whole South-West directions and in its opposite South-East direction the surface is filled with

water bodies (Lake Abaya and Chamo) and the rest with jungle of natural forest including the forty springs of Arba Minch River. The town has 2 subdivisions; Secha and Sikela, each 5kms apart and divided in to 11 kebeles which have nearly similar characteristics but the number of population was not the same. According SNNP region population projection 2010 EFY, this district has a total population of 125,411, of which reproductive age women accounted 29,220. The common diet consumed in this population was maize and teff. It was conducted from Jan 01,2018 to Feb 15, 2018 G.C.

Population

Source and Study Populations

The households in Arba Minch town were the source populations and the selected households residing in the selected kebeles were the study populations.

Inclusion and Exclusion Criteria

Adult household residents who involve in the preparation of food at household level were included and those, who were mentally ill and seriously ill to be interviewed were excluded from the study.

Sample size Estimation

The sample size was calculated using single proportion formula through considering the following assumption.

- "p" is assumed to be proportion level for knowledge 83 % has been taken(30).
- 95% confidence level and 5% degree of precision
- d=margin of error (0.05)
- $Z_{\pm\alpha/2}$ the standard normal value at 95% confidence level (1.96)

Fitting in to the formula the final sample size was

$$n = \frac{\left(\frac{Z_{\alpha}}{2}\right)^2 P(1-P)}{d^2}$$
$$= \frac{(1.96)^2 0.83(1-0.83)}{(0.05)^2} = 217$$

Due to the use of multi stage sampling technique the sample size was multiplied by a design effect of 2 and 10% non-response rate was added. Therefore, the final sample size was 475.

Sampling Technique and Procedure

The study populations were selected using multi-stage sampling technique. Three kebeles (Edget Ber, Bere and Doyissa) were selected by lottery method in Arba Minch town. The

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number of households were selected based on the (PPS) population proportion to size of the kebele. Finally the Study households were selected by simple random sampling method though Computer generate random numbers.

Respondents who correctly answer half of the knowledge assessment questions were stated as have good knowledge and below were not knowledgeable.

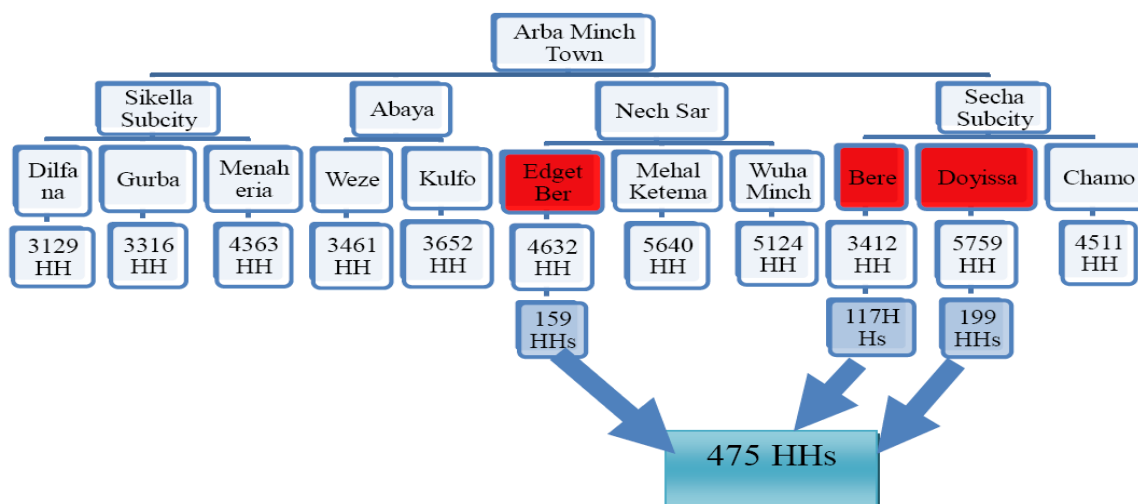


Figure1: Schematic presentation of sampling Method among households in Arba Minch town, 2018

Study Variables

Dependant Variables

Knowledge

Independent Variable

- Sex
- Age
- Marital status
- Educational level
- Occupation
- Perceived family income

Data Collection Tools and Procedures

The questionnaire was extruded from previously conducted similar studies and appropriate modification was made. All data collectors and the supervisor were trained. Information was primarily collected from mothers but if she was not found others whose age is greater than 18 years old were used.

Data Quality Management

Initially the English version questionnaire was developed and translated to a local language and back translated to English to ensure its consistency. The questionnaire was pre-tested in 5% randomly selected Households.

Data Processing and Analysis

Data was entered into Epi info version 3.5.1 and exported to SPSS version 21 statistical soft ware package for cleaning, coding and analysis. Descriptive statistics was done to assess basic

characteristics. Bivariable analysis using logistic regression technique was done to see the crude association between the dependent variables and the independent variable.

Factors that show association in Bivariable analysis and which has P-value less than 0.25 was entered in to Multivariable logistic regression models for controlling confounding factors and to identify significant factors. The strength of statistical association was measured by adjusted odds ratios, 95% confidence intervals, and P-value ≤ 0.05 was considered as significant.

RESULTS

Socio-Demographic Characteristics

A total of 475 households were included in the study with a response rate of 100%. From the total respondents 238(50.1%) mothers, 84(17.7%) sons or daughters, 75(15.8%) fathers and relative, house maid and grandmothers, 36(7.6%), 32(6.7%) and 10(2.1%) were interviewed respectively. The respondents' age was ranged from 17 to 70 years with a mean age of 32.4 ± 9 years. From the total respondents 364(76.6%) were females. Regarding the marital status Married, currently not married, Divorced and widowed accounts 327(68.8%), 124(26.1%), 4(0.8%) and 20(4.25) respectively. Regarding the religious status of the respondent, 242(50.9%) were Orthodox, protestant 175(36.8%) and the remaining 58(12.2%) were Muslims (**Table 1**).

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Table1. Socio-demographic and economic characteristics of the respondent in Arba Minch town, Southern Ethiopia, 2018(n=475)

Variables	Category	Frequency	Percent
Age	15-19	40	8.4
	20-24	50	10.5
	25-29	98	20.6
	30-34	70	14.7
	35-39	119	25.1
	40-44	63	13.3
	45-49	15	3.2
	50-54	15	3.2
Ethnicity	55-59	5	1.1
	Gamo	258	54.3
	Wolayita	78	16.4
	Goffa	68	14.3
	konso	28	5.9
Educational status of respondent	Others	43	9.1
	Cannot read and write	97	20.4
	Only read and write	83	17.5
	Elementary school	114	24
	Junior high school	79	16.6
Occupational status of respondent	Grade 12 and above	102	21.5
	Student	93	19.6
	Government employee	89	18.7
	Private employee	101	21.3
	Daily laborer	29	6.1
	House wife	117	24.6
Family size	House maid	46	9.7
	Less than 3	103	21.7
	3-6	254	53.5
Monthly income	Greater than 6	118	24.6
	Less than 500 ETB	94	9.8
	500-1500ETB	149	31.4
	More than 1500ETB	126	26.5
	Not known	106	22.3

Assessment of Knowledge Status Knowledge

From the total respondents 251(52.8%) have good knowledge. Among the respondents 348(73.3%) have an information on iodized salt utilization. From those informed, public health

volunteers, radios and TV screen, newspaper or documents, neighbor or relative and other sources used as a source of information which accounts 9(26.4%), 189(54.3%), 14(4.1%), 49(14.1%) and 4(1.1%) respectively(**Table 2**).

Table2. Knowledge status of the respondent in Arba Minch town, Southern Ethiopia, 2018(n=475)

Variables	Category	Frequency	Percent
Does goiter disease look with naked eye?	Yes	364	76.6
	No	65	13.7
	I don't know	46	9.7
Do you think Iodine present in most foods of fresh vegetables	Yes	225	47.4
	No	63	13.3
	I don't know	187	39.4
Do you think if the pregnant woman have lack of iodine which makes the fetus birth before EDD?	Yes	177	37.3
	No	82	17.3
	I don't know	216	45.5
Do you think iodine deficiency will make children learn below the normal?	Yes	198	41.7
	No	91	19.2
	I don't know	186	39.2
Do you agree the family cannot by goiter with using cooking Iodized salt for so many years?	Yes	167	35.2
	No	89	18.7
	I don't know	219	46.1
Do you think you can see and differentiate b/n	Yes	96	20.2

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non Iodized salt and Iodized salt by mixed with iodine sensitivity chemicals?	No	88	18.5
	I don't know	291	61.3
Do you agree if the storage of iodized salt kept near heat have no problem?	Yes	111	23.4
	No	177	37.3
	I don't know	187	39.4

DISCUSSION

This study was conducted to determine the knowledge status and factors associated with knowledge of households on Iodized salt utilization in Arba Minch town.

This study revealed that 52.8% of the respondents have good knowledge which is less than the study conducted in Sudan which was 56% and Ghana (90.4%) and Mongolia (96%)(25,27,30). In Ethiopian Context which is greater than the study conducted in Ethiopia in Goba town which was 48.3% and Dabat District(33.2%)(26,28).

Similarly the knowledge status about iodized salt utilization was less than the study done in

Ethiopia Axum town which was 81% (29) and Mekelle which was 90.4%(31). This difference might be due to different access to the information dissemination system, increased accessibility of the television and radio and more accessibility of electronic media. It may also be due to variation on awareness creation and educational activities so that most of the communities become aware of iodized salt and its importance to improve the health status of human beings and their well being.

This study revealed that Religious status, Ethnicity, Educational status, occupational status, family income and monthly income are associated with knowledge on iodized salt utilization (**Table 3**).

Table 3. Factors associated with knowledge on iodized salt utilization in Arba Minch town, Southern Ethiopia, 2018(n=475)

Factors	Category	Knowledge on Iodized salt utilization		COR with 95% CI	AOR with 95% CI
		Good knowledge	Poor knowledge		
Religious status	Orthodox	120	122	1.9(1.0,3.5)*	1.7(0.7,1.9)
	Protestant	93	82	1.65(0.9,3.1)*	0.4(0.2,0.8)**
	Muslim	38	20	1	1
Ethnicity	Gammo	131	127	1.3(0.7,2.6)	0.8(0.4,1.5)
	Goffa	42	26	1.1(0.4,2.2)	0.4(0.2,0.8)**
	Wolayita	45	33	0.8(0.3,1.8)	2.7(0.9,8.0)
	Konso	8	20	0.35(1.3,9.6)*	1.1(0.5,2.5)
	Others	25	18	1	1
Educational status	Unable to read and write	40	57	4.9(2.6,9.1)*	1.1(0.5,2.1)
	Only Read and write	38	45	4.1(2.2,7.7)*	1.1(0.6,2.0)
	Junior school	52	62	4.1(2.3,7.4)*	1.1(0.5,2.5)
	Primary school	42	37	3(1.6,5.7)*	0.2(0.6,0.4)**
	Grade 12 and above	79	23	1	
Occupational status	Student	59	34	1.5(0.6,1.4)	0.5(0.9,1.3)
	Government employee	55	34	0.6(0.3,1.3)*	3.9(1.1,14.8)**
	Private employee	49	52	0.7(0.3,1.4)	1(0.4,2.6)
	Daily laborer	15	14	1.6(0.6,2.3)	0.6(0.2,1.8)
	House wife	49	68	1.1(0.4,2.6)	1.4(0.6,3.3)
	House maid	24	22	1.5(0.7,3.0)*	1.3(0.8,1.6)
	Others	0	0	1	1
Family size	Less than 3	32	71	5.4(3.1,9.8)*	0.63(0.3,1.2)
	3-6	135	119	2.2(1.4,3.5)*	0.24(0.1,0.5)**
	More than 6	84	34	1	1
Monthly income	Less than 500 birr	40	54	2(1.2,3.6)*	0.9(0.4,1.8)
	500-1500 birr/month	60	89	2.3(1.4,3.2)*	0.25(0.12,0.5)**
	More than 1500 birr/month	87	39	0.2(0.4,1.5)*	0.47(0.23,0.9)**
	Unknown income	64	42	1	1

Key Note:- * Factors candidate for Multivariable analysis (P value ≤ 0.25)

** Significant factors on Multivariable analysis (P value ≤ 0.25)

CONCLUSION

Generally the study was conducted at 475 households with a response rate of 100%. From the respondents 52.8% have good knowledge. Religious status, Ethnicity, Educational status, Occupational status, Family size and total monthly income of the households were the associated factors which affect the knowledge towards utilization of Iodized salt.

RECOMMENDATION

- Since the study subject was knowledge on iodized salt utilization, in order to reverse the grave consequence of the problem, an immediate awareness creation of iodated salt and establishing a sustainable and continuous source are the best recommendations. Moreover, health information dissemination and awareness improvement on adverse side effects of Iodized salt deficiency and iodine deficiency disorders and appropriate utilization of iodized salt is recommendation is better.
- Health information should be provided in different religious institutions and school about Iodized salt utilization because which are factors which can affect the knowledge status of the populations.
- Continuous and concerted efforts should also be made to strengthen information communication and education (ICE) activities need to be undertaken in order to create awareness about the adverse effects and prevention of Iodine deficiency disorders, and encourage and promotion of iodated salt utilization.
- Further study should be conducted using larger sample size and use laboratory tests in Arba Minch communities. From the results it is clear that the problem is major public health concern which kills a nation. Therefore, collaborative swift of governmental, non-governmental and concerned bodies is needed.

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