



Review Article

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# Knowledge and Practice of Antenatal Care Attendant Mothers Towards Iodized Salt Utilization and Associated Factors in Ambo Town Public Health Facilities, Oromia, Ethiopia



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## Abstract

**Background:** Globally iodized salt deficiency affects more than 2.2 billion peoples and the effect is severe when occurs in pregnant women. Different reasons contribute for insufficient iodized salt utilization in population. Even though knowledge and practice of iodized salt utilization has paramount contribution in improving iodized salt utilization among pregnant mothers. To assess the knowledge and practice of iodized salt utilization and associated factors among ANC follower pregnant women at Public Health Facilities, Ambo Town.

**Results:** The complete response rate of the study was 240(93.02%). Almost all of 97.1% are Oromo in Ethnicity and 53.8% were housewives and only 29.6% were attending college and university in Educational status. This study determined knowledge and practice of pregnant women towards iodized salt utilization which revealed that 65.6% have had good knowledge towards iodized salt utilization with factors educational level, ever heard iodized salt and occupation were significantly associated with knowledge of mothers about iodized salt utilization. Out of total study respondents 3/4th of pregnant women had good practice of Iodized salt utilization with independent predictor of family income, being educated and occupation status respectively.

**Methods:** Institution based cross sectional study design was employed on total of 240 pregnant women was enrolled in the study. Data were collected using interviewer administered questionnaire and was entered and analysed using statistical package for social science version 20. Binary and multiple logistic regression analysis were carried utilized to identify significant association at p-value of less than 0.05 that was considered as significant association.

**Conclusion:** This study determined knowledge and practice of pregnant women towards iodized salt utilization which revealed low and high compared to previous studies respectively. This study identified that factors contributed to knowledge and practice of pregnant women towards iodized salt utilization. Therefore, police makers and health planner would be better to reconsider these factors affecting iodized salt utilization practice and knowledge pregnant mothers while developing guidelines and Health education programs for this population.

**Keywords:** Antenatal care; Iodized salt utilization; Associated factors; Public health facilities; Multiple logistic regression

## Introduction

Maternal iodine deficiency results in a range of intellectual, motor and hearing defects in their off springs but it is very damaging. When the deficiency of iodine happens during pregnancy because it retards all fetal development especially the development of brain. This loss of intellectual capacity limits educational achievement of population and economic power of nation [1,2].

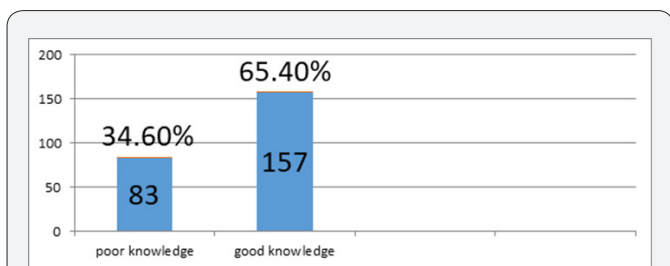
More importantly this iodine deficiency during pregnancy is intergenerational and its effect can continue throughout the generation since its deficiency greatly affect the level of IQ and on the hand during pregnancy the need for iodized salt is raised due to three main reasons those are an increase in the production of thyroxin (T4) by the mother to maintain her euthyroid state and

transfer thyroid hormone to the fetus and the transfer of iodine to the fetus, particularly in the late gestation and 3, an increase in renal iodine clearance (RIC) by the mother and greatly plays role on the future intellectuality of the baby [3].

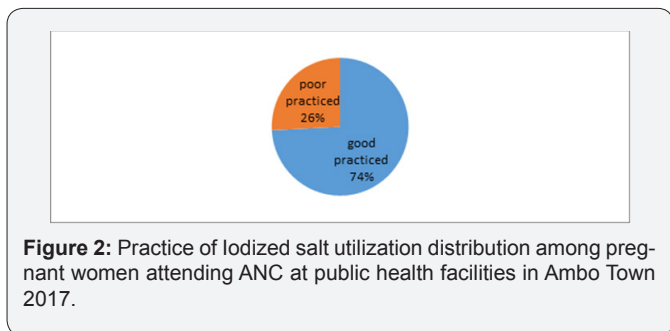
In order to reduce and eliminate multi aspect of the problem associated with the insufficient iodized salt consumption; WHO and UNICEF jointly prepare Universal Salt Iodization (USI) strangely in 1994 and WHO proposed the national iodized salt consumption guidelines including that of pregnant mothers and lactating mothers.

All those threats is aimed to improve attitude knowledge and practice of global nations towards iodized salt consumption and to abolish those evil problems which occurs due to lack of

insufficiency of iodized salt consumption [4]. During pregnancy, iodine deficiency is extremely damaging because it retards fetal physical and mental development. Reports show that there is enormous loss of humor intellectual physical and social potentials due to iodine deficiency worldwide. This indicates that; the iodine deficiency during pregnancy is intergenerational problems [5,6]. Universal salt iodization (USI) strategy is considered as the main strategy in reduction and elimination of iodine deficiency associated problems and Ethiopian government also adopt this strategy and trying to access iodized salt for communities with cost effective price but the problem still continued to be public health issue in the country [7,8]. Despite few local studies conducted in certain part of the country, no significant studies performed in the selected area and even in the country. So, this study would identify and believe on the need of research to know and coped up with problems related to the knowledge & practice and associated factors on iodized salt utilization of pregnant mothers in the study area (Figure 1 & 2).



**Figure 1:** knowledge of iodized salt utilization distribution by percent among pregnant women attending ANC at public health facilities in Ambo Town 2017.



**Figure 2:** Practice of iodized salt utilization distribution among pregnant women attending ANC at public health facilities in Ambo Town 2017.

**Results**

**Socio demographic characteristic of the respondent**

**Table 1:** Socio demographic characteristics of pregnant women attending ANC at Ambo Town Public Health Facilities, Oromia, Ethiopia, 2017.

S. no	Age of Respondent	Frequency	Percent
1	18-20	47	19.6
	21-30	173	2.1
	>30	20	8.3
2	<b>Ethnicity</b>		
	Oromo	233	97.1
	Amhara	5	2.1
	Tigre	2	0.8

3	<b>Place of Residence</b>		
	Urban	211	87.9
	Rural	29	12.1
4	<b>Educational Status</b>		
	Illiterate	31	12.9
	Read and write	31	12.9
	Elementary school	58	24.2
	secondary school	49	20.4
5	<b>Occupation of Husband</b>		
	Government employee	86	35.8
	Farmer	30	12.5
6	<b>Family Size</b>		
	<2	83	34.6
	5-Mar	133	55.4
7	<b>Monthly Income</b>		
	<1000	73	30.4
	1001-2000	51	21.3
	>2001	116	48.3

Out of the total of 240 pregnant women ANC attendants the majority 91.9% of the respondents were in age group of 18-30 years with mean value of 24.89 years, which ranges from 18 and 38 years. The respondents were married and almost all of 97.1% were Oromo in Ethnicity and 53.8% were housewives. From the total of 240 pregnant women who had college and university level were 29.6 % (Table 1).

**Table 2:** Knowledge of ANC attending pregnant women about iodized salt utilization at Ambo town public health facilities, Ambo town, Oromia, Ethiopia 2017

Variable	Frequency	Percentage
Ever heard about iodized salt		
Respondents who was heard about iodized salt	196	81.70%
Lists of heard place		
Media	112	46.70%
Friends	73	30.40%
Health worker	11	4.60%
Respondents who said every salt contain iodine	39	16.30%
Respondents who ever heard the importance of iodized salt consumption during pregnancy	136	56.70%
To prevent maternal goiter	76	31.70%
To maintain healthy physical and mental growth	60	25.40%
Storage of iodized salt at home		
Respondents who known storage of iodine at home	172	71.70%
Place of storage		

In closed container away from sunlight	168	70%
In open container	4	1.70%
known the right time to add iodized salt to meal	178	74.20%
The right time to add iodized salt to meal		
At beginning	52	29.20%
At end	126	70.80%

From the total of 240 respondents, most of them have family size of 3-5 were 133 (55.4%) with mean value of their family size were 3.4, which ranges from 1 and 11 family size. From the total of 240 pregnant women, 116(48.3 %) were had family monthly income of greater than 2001, Ethiopian birr with Average income was 3573.125 which ranges from 300 and 25000 Ethiopian birr (Table 2-4).

**Table 3:** Factors association with knowledge between of iodized salt utilization at multivariable logistic regression at Ambo town public health facilities of ANC follower's pregnant mothers, Ethiopia 2017.

S.no	Variable		Knowledge n (%)		AOR	95 % CI		
			Good	Poor				
1	Ever heard iodized salt	Yes	172(71.7%)	24(10%)	0	33.433	10.214	109.4
		No	6(2.5%)	62(25.8%)	1			
2	Occupation	Housewife	90(37.5%)	-16.20%	0.067	6.941	0.876	54.972
		Gov't employ	39(16.2%)	5(2.1%)	0.026	11.1	1.33	92.915
		Farmer	46(19.2%)	17(7.1%)	0.016	13.857	1.638	117.24
		Daily/merchant	3(1.2%)	34(14.2%)	1			
3	Educational status	Illiterate	14(5.8%)	17(7.1%)	0.018	0.182	0.045	0.742
		Read and write	23(9.6%)	8(3.3%)	0.027	0.236	0.066	0.848
		Primary school	43(17.9%)	15(6.2%)	0.012	0.213	0.064	0.71
		Secondary school	35(14.6%)	145.8(%)	0.003	0.168	0.015	0.551
		College and Above	63(26.2%)	8(3.3%)	1			

**Table 4:** Factors association between practiced iodized salt utilization in Ambo town public health facilities of ANC follower's pregnant mothers, Ethiopia 2017.

S.no	Variable	Category	Practice n (%)		p-value	AOR	95 % CI	
			Good	Poor				
1	Family income	<1000	60(25%)	23(9.6%)	01:00			
		1001-2000	107(44.6%)	26(10.8%)	0.058	2.334	0.973	5.6
		>2001	11(4.6%)	13(5.4%)	0.011	2.837	1.26	6.36
2	Occupation	Housewife	90(37.5%)	-16.20%	0.023	8.28	1.34	51.01
		Gov't employee	39(16.2%)	5(2.1%)	0.02	9.825	1.43	67.59
		Farmer	46(19.2%)	17(7.1%)	0.011	11.25	1.73	73.15
		Daily/merchant	3(1.2%)	34(14.2%)	1			
3	Educational status	Illiterate	4(5.8%)	17(7.1%)	01:00			
		Read and write	23(9.6%)	8(3.3%)	0.111	2.55	0.805	8.071
		Primary school	43(17.9%)	15(6.2%)	0.033	2.8	1.08	7.41
		Secondary school	35(14.6%)	145.8(%)	0.018	1.9	1.72	5.43
		College and Above	63(26.2%)	8(3.3%)	0.01	6.4	1.86	22.2

Out of 240 ANC attendants, the majority of them were in third trimester 92 (38.3%) within mean value of 2.53 which ranges from 1 and 3 trimester. From the total respondents 177 (73.8%) had 1-2, pregnancies and from the number of pregnancy of respondents the mean value was 2.125 of 1 and 7 were minimum and maximum respectively.

Majority of respondents had 0-1 deliveries which was 179 (74.6%) and from the number of deliveries of respondents the mean value was 1.07 which ranges from 0 and 6 deliveries. From 240 respondents, 8 had history of still birth from those 6 of them had 1 still birth and 23 of them had at least one history of abortion.

The majority of the respondents, 68 (28.3%), were on their third visits, most of them began ANC visit 178(74.2.1%) at 13-25 weeks.

### Results on knowledge of iodized salt utilization

Regarding to the importance of iodized salt consumption during pregnancy; about 43.3% of the respondents were didn't know. From total the respondents about 81.7% were ever heard about iodized salt of which mentioned that they heard about iodized salt 46.7% of them heard by media which is followed it from health worker 4.6% and friends 30.4%. Regarding to this study of every salt contain iodine most of the respondents, 83.8% of them said no and 16.3% of them said yes. From those respondents who mentioned they know about iodized salt; most of them choose (42.9%) didn't know followed by maternal goiter (31.7%) and healthy fetal physical and mental growth (25.4%). Majority of our respondents 28.3% didn't know how to store iodized salt and from those who said that they know 70% store it in closed container away from sunlight and don't know 28.8%.

From the problem caused by iodine deficiency of the respondents 42.1% didn't know any health problem caused by iodine deficiency. Even from those who mentioned that they knew about it most of them knew only about goiter (45.8%). Therefore, the majority of respondents were responded problem caused by iodine deficiency was 45.8% goiter caused by iodine deficiency. Knowledge on the main source of iodine in food consumed by pregnant women in Ambo Town a higher percentage of the respondents 48% said that drink water the major source. This study determined knowledge of pregnant women towards iodized salt utilization which revealed that 157(65.6% with 95%CI (60-71.3%)) were had good knowledge/knowledgeable towards iodized salt utilization.

Factors associated with knowledge of pregnant women towards Iodized salt Utilization at Multivariable logistic regression. Pregnant women who ever heard about Iodized salt utilization were 33.43 times 95%CI (10.21-109.42). More likely to have been knowledgeable as compared to had not ever heard women. Pregnant women whose occupational status of government and farmers were 11.1 times 95%CI [(1.33-92.91) and 13.86 times (1.64-117.24)] more likely to have been knowledgeable as compared to daily labor/march respectively.

Pregnant mothers who have no formal education were 0.182 times (0.045- 0.742), able to read and write 0.24 times (0.066-0.85), being attend primary school 0.21 times (0.064-0.71) and secondary school 0.17 times (0.051- .055) less likely to have been knowledgeable as compared to attended College and above study participants.

### Practiced of utilization of iodized salt

Regarding to the question about the right timing to add iodized salt to meal 25.8% of the respondents 74.2% knew about it. From those who mentioned that they know 70.8% said that at the end of cooking and 29.2% at the beginning of cooking.

This study identified that out of total study respondents 3/4th pregnant women had good practice of Iodized salt utilization with 95%CI 178(74.2% (68.8 - 79.6%).

Factors associated with practiced of pregnant women towards Iodized salt Utilization at Multivariable logistic regression. Pregnant women's family monthly income of 1001-2000 Ethiopian birr was 2.33 times 95%CI (0.975-5.6) and their monthly income greater than 2001 was 2.83times 95%CI (1.265-6.36) more likely to have been practiced as compared to whose family monthly had less than 1000 Ethiopian birr .Pregnant women whose occupational status of being house wife, government and farmers were 8.285 times 95%CI [(1.345-51.01) , 9.825 times (1.428-67.59)]and11.25 times 95%CI (1.73-73.15) more likely to have been practiced as compared to daily labor/march respectively. Pregnant mothers whose educational status of attend primary school 2.83 times 95%CI (1.08 -7.4), secondary school were 1.97 times 95%CI (.717-5.43) and attended College and above were 6.42 times95%CI (1.86- .22.15) more likely to have been practiced as compared to Illiterates.

### Discussion

Ethiopia is among those countries greatly affected with iodine deficiency disorders and the problem is persists as public health problem until now. The study which is conducted among hyperthyroidism patients in South Africa indicates that majority of the patients didn't know what iodine is (86.9%) [8]. Even those who mentioned that they know what it is (14.1%) were not clear because 4.9% indicated that its vitamin while 4.9% indicated that it is mineral. On this study of participant; 18.3% indicated that they didn't know what iodized salt is, and on importance of iodized salt consumption during pregnancy, about 43.3% of the respondent didn't know. This discrepancy may be due to that study population of the research done in South Africa were less than this study, because it was done on hyperthyroidism patients whose may be less than the study population of this study, and the sociodemographic characteristics of the people in the two area may have also its own contribution for the difference of the value.

The current study reveals that 20% of house hold were used iodized salt, which is higher than that of Sudan 14.4%. This difference may be due to the effort of Ethiopian government to access the iodized salt for the people of the country [9]. Currently this finding74% higher house hold used iodized salt utilization and this may be due to the effort of health worker to given health education about iodized salt utilization for the ambo town households.

In this study proper period for addition of iodized salt to meal, 29% didn't know proper (preferable) time of adding iodize salt to their meal. 48.8% of the respondent mention that they didn't know single source of iodine. Even though, this study shows slightly greater person used iodized salt in their home than that of research done on Sudanese still there is a gap on using iodized salts. The discrepancy may be due that this research was based on ANC followers' pregnant women.

The respondents who were illiterate and can only read and write were less likely know about iodized salt utilization compared to that complete elementary school. Regarding the proper period for addition of iodized salt to meal, from of them 25.8% didn't know proper (preferable) time of adding iodize salt to their meal.

Monthly income of the respondent was highly associated with knowledge of pregnant mothers on iodized salt utilization. Respondents who Ethiopian birr got 1000-2000 per month were more likely knows about iodized salt utilization as compared to those who earn less than 1000 birr per month.

### Conclusion

This study determined knowledge and practice of pregnant women towards iodized salt utilization which revealed low and high compared to previous studies respectively. This study identified that factors contributed to knowledge and practice of pregnant women towards iodized salt utilization. Out of 240 of the pregnant mothers enrolled in the study responds 18.3% didn't know about iodized salt utilization and 43.3% of the participant report they didn't know the importance of iodized salt utilization during pregnancies.

Therefore, police makers and health planner would be better to reconsider these factors affecting iodized salt utilization practice and knowledge pregnant mothers while developing guidelines and Health education programs for this population.

Finding of this study indicates that factors such as ever heard iodine salt, occupation of respondents, Academic achievement and monthly income, occupation of respondents, Academic achievement highly associated with knowledge level and the practiced of pregnant mothers enrolled in the study respectively. The study participant from the urban, able to read and right and those who have >2001 Ethiopian birr were more likely to know about importance of iodized salt utilization during pregnancy. In addition to factors mentioned above, there is no enough information available to develop community knowledge on the importance of iodized salt utilization.

Therefore, police makers and health planner would be better to reconsider these factors affecting iodized salt utilization practice and knowledge pregnant mothers while developing guidelines and Health education programs for this population. The Ambo town administration and health office collaborate to create awareness in the community on iodized salt consumption and effect of iodine deficiency.

The Ambo town public health facilities staffs would be better to strengthen health education for ANC attendants about the importance of using iodized salt during pregnancy, how to store and right timing to add while cooking.

### Authors' Contributions

Dereje Bayissa, Chala Beka, Kebede Chala, Fenet Biru, Gadise Lelisa & Bizu Beyu conceptualized the study, designed the study instrument and conducted the data analysis and wrote the first draft and final draft of the manuscript.

Dereje Bayissa Demissie: Approved the research proposal with some revisions, participated in data analysis, revised subsequent drafts of the paper and involve in critical review of the manuscript. All authors read and approved the final manuscript.

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