Original Article

Availability of Iodized Salt & its Utilization among Household of Urban Area of Taluka Mirpurkhas

Zainul Hassan[1], Suhail Ahmed Bijarani[2], Shazia Rahman Shaikh[2], Khalida Naz Memon[2], Zoheb Rafique Memon[2] and Muhammad Ilyas Siddiqui[2]

ABSTRACT

Objective: To determine the availability of iodized salt and concentration of iodine by using rapid test kit among the households of urban area of District Mirpurkhas.

Study Design: Cross-section study

Place and Duration of Study: This study was conducted at the households situated in urban Taluka of District Mirpurkhas, Sindh from December 2019 to June 2020.

Materials and Methods: A sample size of 260 households was obtained and selected by using a sample random sampling technique, the participants were household members and present at the time of the survey and willing to participate in the present study were included after taking written informed consent. The Ethical approval was taken from the ethical committee of LUMHS, Jamshoro. The data was collected on a pre-tested self–structure questionnaire while iodine concentration in the salt was assess by using the rapid test kit for iodine. The SPSS version 23.0 version was used for data analysis and P-values <0.05 were considered as significant.

Results: The overall response rate (n=260) was 100 percent and the majority of the respondents were female 205(78%) whereas 55(21.5%) were male. The majority 123 (47%) of the respondents were between 26 to 35 years of age group. A substantial number of the respondents 138 (53.1%) were having qualification at degree or above level. Regarding the utilization of the iodized salt the majority of the households 191 (73.5%) were using iodized salt whereas 69 (26.5%) were using non-iodized salt for cooking the food. The salt samples of households using the iodized salt were tested for the iodine concentration which showed that a majority of samples 178 (68%) were having ppm between 10ppm to 20ppm which is consider as an inadequately iodized salt whereas only 43 (16.5%) samples results showed more than 30ppm and utilizing an adequate iodized salt as per the recommended concentration of iodine in salt. While 39 (15%) households who were utilizing non-iodized salt their samples results showed a Zero ppm of iodine in the salt.

Conclusion: This study revealed that a majority of the households consumed the iodized salt for food preparation while there were inadequate iodine concentration in the salt used by them then the recommended iodine concentration of more than 30 ppm.

Key Words: Iodized salt, rapid test kit, Iodine utilization

Citation of article: Hassan Z, Bijarani SA, Shaikh SR, Memon KN, Memon ZR, Siddiqui MI. Availability of Iodized Salt & its Utilization among Household of Urban Area of Taluka Mirpurkhas. Med Forum 2022;33(11):44-46.

INTRODUCTION

Iodine deficiency is a major preventable public health problem and remains a considerable challenge worldwide and It is estimated that more than 1.88 billion people have insufficient iodine intake.[1] In Pakistan accordingly to WHO and UNICEF, iodine deficiency is in alarming situation and considered one of the severely iodine deficient country in the region.[2] Pakistan was classified in 2004 as a severely iodine deficient country despite the implementation NNID1994[3] Iodine is an essential trace element [4] which is needed for the biosynthesis of thyroid hormones which are vital for the normal growth and development of children.[5] Deficiency of iodine can cause many serious health problems such as, intrauterine growth retardation, cretinism, mental retardation, physical sluggishness and also responsible for the reduction in the IQ levels and eventually effects work capacity and contribute for the increased number of childhood mortality and abortion.[6-7] WHO recommend 120 µg per day intake of iodine to prevent

[1.] Department of Health Services, District Mirpurkhas, Sindh.
[2.] Department of Community Medicine & Public Health Science, LUMHS-Jamshoro.

Correspondence: Suhail Ahmed Bijarani, Assistant Professor, Department of Community Medicine & Public Health Science, LUMHS-Jamshoro
Contact No: 0333-2602110
Email: docsuhail@yahoo.com

Received: June, 2022
Accepted: August, 2022
Printed: November, 2022

Iodine Deficiency Disorders.[8] Many studies revealed that lack of consumption of iodine rich food such as sea foods, dairy products or lack in drinking water in diet is one of the main factor of iodine deficiency disorder. [9-10] The most efficient method to prevent iodine deficiency at gross level is regular use of iodize salt.[11] The iodine concentration of salt is assessed by Rapid Test Kit methods which is recommended monitoring indicator by WHO for the "assessment & utilization of iodized salt at household level. [12]

MATERIALS AND METHODS

A sample size of 260 households were obtained and selected by using a sample random sampling technique, the participants were household members and present at the time of the survey and willing to participate in the present study were included after taking written informed consent. The Ethical approval was taken from the ethical committee of LUMHS, Jamshoro. The data was collected on a pre-tested self–structure questionnaire while iodine concentration in the salt used by household were tested by using the rapid test kit for iodine assessment iodine concentration in salt.using rapid test kit for the iodine content in salt. SPSS version 23.0 version was used for data analysis and P-values <0.05 were considered significant.

RESULTS

A sample size of 260 households was obtained and selected by using a sample random sampling technique, the participants were household members and present at the time of the survey and willing to participate in the present study were included after taking written informed consent. The overall response rate was (n=260) 100%. Regarding the socio-demographic status of the respondents, the majority of the participants were female 205 (78%) while 55(21.1%) were male, whereas the majority 123 (47%) of the respondents were between 26 to 35 years of age group. A substantial number of the respondents 138 (53.1%) were having qualifications at a degree level or above. Regarding the utilization of the iodized salt the majority of the households 191 (73.5%) were using iodized salt whereas 69 (26.5%) were using non-iodized salt as shown in figure no:1. The salt samples of households using the iodized salt were tested for the iodine concentration which showed that a majority of samples 178 (68%) were having ppm between 10ppm to 20ppm which is consider as an inadequately iodized salt whereas only 43 (16.5%) samples results showed more than 30ppm and utilizing an adequate iodized salt as per the recommended concentration of iodine in salt. While 39 (15%) households who were utilizing non-iodized salt their samples results showed a Zero ppm of iodine in the salt as shown in table no:1.

Table No.1: Rapid Test Kid results (n=260)

PPM	RTK results	Frequency (%)	Type of Salt
0 PPM		39 (15.0%)	Non-Iodized Salt
10 PPM		71 (27.3%)	Inadequate Iodized Salt
20 PPM		107 (41.2%)	Inadequate Iodized Salt
30 PPM		43 (16.5%)	Adequate Iodized Salt

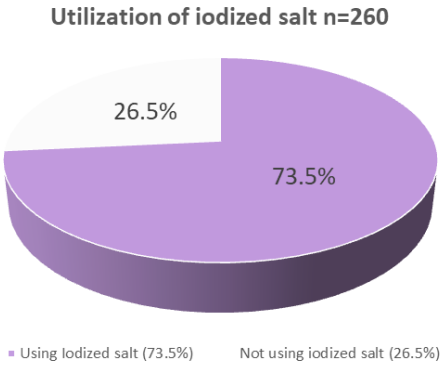

Figure No.1: Utilization of iodized salt n=260

DISCUSSION

The aim of our study is to assess the iodized salt availability and its utilization by using the recommended Rapid Test Kit (RTK) for the assessment of iodine concentration in the table salt at household level among the households situated in urban area of District Mirpurkhas. A total 260 households gave the consent and were interviewed as well as the sample of table salt were collected and tested for the iodine concentration. Regarding the socio-demographic status of the respondents, Majority of the participants were female 205 (78%) while 55(21.1%) were male, near about half of respondents 123 (47%) were between 26 to 35 years of age group and a substantial number of the respondents 138 (53.1%) were having qualification at degree or above level, a similar finding were found by a study conducted at household level in Ethiopia, [13] and inconsistence with the finding of other study. Regarding the utilization of the iodized salt the majority of the households 191 (73.5%) were using iodized salt whereas 69 (26.5%) were using non-iodized, almost similar findings revealed by study conducted by Rupali Roy,[14] while inconsistence to that revealed by a study conducted in the rural population of south India.[15] The salt samples (n=260) of households using the iodized salt were tested for the iodine concentration showed a majority of households 178 (150) (68%) were utilizing an inadequately iodized salt whereas only 43 (16.5%) households were utilizing an adequate iodized salt whose result was more than 30ppm accordingly to the

recommended concentration of iodine in salt. Only 16.5% households were utilizing adequately iodized salt whose ppm was 30ppm (Dark Purple Color) which is showed less number of household were utilizing adequately iodized salt which are similar as revealed by K.et.al.[16] While 39 (15%) households who were utilizing non-iodized salt showed zero ppm of iodine in the salt samples.

CONCLUSION

This study revealed that a majority of the households consumed the iodized salt for food preparation while the Rapid Test Kit results revealed, inadequate iodine concentration in the salt used by them then the recommended iodine concentration of more than 30 ppm.

Author's Contribution:

Concept & Design of Study:	Zainul Hassan
Drafting:	Shazia Rahman Shaikh, Muhammad Ilyas Siddiqui
Data Analysis:	Zoheb Rafique Memon, Muhammad Ilyas Siddiqui
Revisiting Critically:	Suhail Ahmed Bijarani
Final Approval of version:	Khalida Naz Memon

Conflict of Interest: The study has no conflict of interest to declare by any author.

REFERENCES

1. Khattak RM, Khattak MN, Ittermann T, Völzke H. Factors affecting sustainable iodine deficiency elimination in Pakistan: A global perspective. J Epidemiol 2017;27(6):249-57.
2. World Health Organization (WHO). Nutrition landscape Information system; Nutrition and nutrition-related health and development data, Geneva, Switzerland: World health organization; 2013. Available: www.who.int/data/nutrition/nlis/info/iodine (Last access on 10-06-2019)
3. Lopez-Rodriguez MF, Cymbaluk NF, Epp T, Laarveld B, Thrasher M, Card CE. A field study of serum, colostrum, milk iodine, and thyroid hormone concentrations in postpartum draft mares and foals. J Equine Veterinary Science 2020;90: 103018.
4. Hawas S, Lemma S, Mengesha S, Demissie H, Segni M. Proper utilization of adequatly iodized salt at house hold level and associated factores in Asella Town Arsi Zone Ethiopia: a community based cross sectional study. J Food Process Technol 2016;7(4):573.
5. Bazezew MM, Yallew WW. Knowledge and practice of iodized salt utilization among reproductive women in Addis Ababa City. BMC Research Notes 2018;11(1):1-8.
6. Goyal I, Pandey MR, Sharma R. Hypothyroidism and Goiter in a Young Male with Suspected Dietary Iodine Deficiency Followed By Thyrotoxicosis After Iodine Supplementation. AACE Clin Case Reports 2020;6(1):19–22.
7. Asfaw A, Belachew T. Magnitude of iodine deficiency disorder and associated factors in Dawro zone, Southwest Ethiopia; the hidden hunger: A Cross-Sectional Study. BMC Nutr 2020;6(1):1–10.
8. Xie WQ, Yu KX, Gong YX. Determination of iodate in iodized edible salt based on a headspace gas chromatographic technique. J Chromatogr A 2019;1584:187–91.
9. SB H, S L. Proper Utilization of Adequatly Iodized Salt at House Hold Level and Associated Factories in Asella Town Arsi Zone Ethiopia: A Community based Cross Sectional Study. J Food Process Technol 2016;7(4).
10. Regassa D M, H TW. Utilization of Adequately Iodized Salt on Prevention of Iodine Deficiency Disorders at Household Level and Associated Factors in Lalo Assabi District, West Ethiopia. J Nutr Food Sci 2016;6(2).
11. Desta AA, Kulkarni U, Abraha K, Worku S, Sahle BW. Iodine level concentration, coverage of adequately iodized salt consumption and factors affecting proper iodized salt utilization among households in North Ethiopia: a community based cross sectional study. BMC Nutr 2019;5(1):1-0.
12. Houston R, Tsang BL, Gorstein J. The Double-Fortified Salt (Iodized Salt with Iron) Consultation: A Process for Developing Evidence-Based Considerations for Countries. J Nutr 2021; 151(Supplement_1):1S-2S.
13. Tariku WB, Mazengia AL. Knowledge and utilization of iodized salt and its associated factors at household level in Mecha District, Northwest Ethiopia. J Nutr Metabolism 2019;3.
14. Roy R, Chaturvedi M, Agrawal D, Ali H. Household use of iodized salt in rural area. J Family Medicine Primary Care 2016;5(1):77.
15. Vasudevan S, Senthilvel S, Sureshbabu J. Knowledge attitude and practice on iodine deficiency disorder and iodine level in salt in retail and vendors among the rural population in south India: A community based observational and descriptive study. Clinical Epidemiol Global Health 2019;7(3):300-5.
16. Desta AA, Kulkarni U, Abraha K, et al. Iodine level concentration, coverage of adequately iodized salt consumption and factors affecting proper iodized salt utilization among households in North Ethiopia: a community based cross sectional study. BMC **Nutr 2019;5**.