

Situation Report

Iodine deficiency in Pakistan, 1993- present: progress made but challenges remain

EXECUTIVE SUMMARY:

Due to its widespread consumption, salt is a great fortification medium. The most severe effects of iodine deficiency, including cretinism, are still being felt in some of the most distant areas of the world due to the fact that iodized salt doesn't reach everyone; this could be because of cost, availability, or associated myths.

Salt iodization was started in Pakistan in 1993. Since then the country has coped up with major threats of iodine deficiency, especially in northern areas. The National Nutrition survey, 2018 showed that 15.7% of children aged 6–12 years had low urinary iodine excretion, with a slightly higher rate amongst girls (16.2%) than boys (15.2%). Prevalence of low urinary iodine excretion was slightly higher among rural children (16.9%) than urban children (14.0%). Still some remote areas have no research findings for iodine deficiency disorders and availability of iodized salt. Policy makers need to address this major issue to confirm that all the areas of Pakistan are equally protected from iodine deficiency disorders and supplied with iodine fortificants; majorly iodized salt.



INTRODUCTION:

Micronutrients are required in small amounts by our body and their deficiency can cause growth and developmental issues. Iodine is a micronutrient required by humans, animals and plants for their proper functioning. Primary sources of iodine for humans are seafood, dairy products and iodized salt. People that are living far away from coastal areas and cannot eat aquatic foods have to only rely on plant sources that can also get diminished, unfortunately, due to heavy rains and flood waters. Goitrogenic foods, selenium deficiency, oral contraceptives, and tobacco/alcohol usage can interact with iodine absorptive capacity. As a result, iodine deficiency (ID) impairs thyroid function resulting in hypothyroidism, hyperthyroidism, growth retardation, reproductive problems, and brain damage.

Millions of people around the world face the “hidden hunger” of micronutrient deficiency. Food fortification has been a proven solution to this problem for over 30 years. Many countries have implemented successful programs to add essential vitamins and minerals to widely consumed food items like wheat, maize flour, and salt. Iodine deficiency is among the most widespread nutrient deficits, affecting 35–45% of the global



population, according to estimates. There are 2.2 billion people worldwide who are thought to be affected by iodine deficit, which is the most prevalent cause of goiter. The widespread adoption of salt iodization programs has protected the brains of tens of millions of children over the past 3-4 decades. However, despite this progress, awareness and compliance with these programs are declining in many countries, leading to a rise in deficiencies.

Recently, WHO noted that by 2020, twenty-one countries were iodine deficient, and expressed concern about the status of vulnerable groups such as women of reproductive age. Iodine deficiency cannot be cured, unlike polio and smallpox, and must instead be managed with ongoing salt iodization.

PROBLEM:

About 30% of the population is at risk of iodine deficiency in the whole world. Unlike other regions, deficiency is higher in south Asia with special reference to reproductive females. Even in countries where national status is adequate on average, significant population segments may face deficiency. In many nations, monitoring systems are deteriorating, and funding for programs has decreased due to other problems like the rise in non-communicable diseases as well as bigger societal issues like instability, climate change, economic hardship, COVID-19, and conflict, as we can see in the Sudan, Ukraine, Pakistan, and many other places.

Apart from other regions of Pakistan, south punjabians are exposed to gender discrimination (gender equality index= 0.013-0.08) and rural/urban disparity. While residents of other parts of Punjab have more access to amenities for sustaining their livelihoods. Those in south Punjab, particularly women, are disproportionately subjected to social neglect in terms of exposure, equality, and socioeconomic prospects. The major problem of this region is poverty; people tend to have larger families but shorter incomes, about 33% of families consist of >7 members while 44% have 6-7, and only a smaller percentage (5%) have 2-3 members that can fulfill their needs according to their income. The illiteracy rate is higher in this area; only 5% graduated and 33% never went to school. About 40% don't know the advantages that fruits and vegetables can provide them. Due to poverty, lack of knowledge, less awareness regarding iodized salt, and lack of resources for iodine supplementation, the consumption of iodine sources is very less in this area and the chances of ID prevalence are higher, respectively.

PROBLEM SOLUTION:

When nations around the world decided to iodize salt to protect their populations from cognitive impairment, they eagerly tracked progress through national surveys, which gave them the good news that the global strategy to add iodine to salt has virtually eliminated iodine deficiency and has been a huge public health success. But there are some issues right now.

Firstly, we are aware that there is still potential for improvement, particularly in nations with good iodine status but unequal distribution of the population. Second, the data is becoming outdated, and nations are



frequently no longer willing to conduct expensive and difficult national polls. A goal for us at PKNC is to innovate, to find new ways of making programs sustainable.

Rather than undertaking a costly and complex national survey, we conducted a small survey in district Lodhran, the district of south Punjab where facilities are lacking. We believe this type of information collection could be cheaper, easier and quicker. Given the current lack of up-to-date information, and the continuing need to understand whether populations remain protected against deficiency disorders, we believe it's time to conduct mini surveys in remote areas.

METHODOLOGY:

Regardless of race and ethnicity, we preferred 248 female individuals aged 19-50 years for this survey. Female patients visiting outpatient departments of both government and private health sectors were selected as target population while there was no discrimination among goiter affected and non-affected females. Subjects with age less than 18 years or above 50 years, pregnant as well as lactating mothers, and males were considered ineligible. Women having any kind of genetic disability were excluded. Respondents who were not willing to participate due to any reason or consuming thyroid-related medications were also excluded.

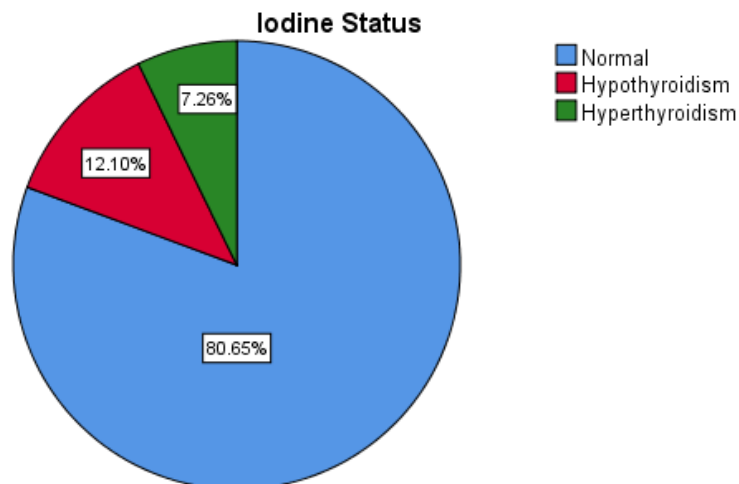
A predesigned questionnaire was used for general assessment that was comprised of important parameters like socioeconomic status, education, family history of thyroid disease, usage of iodized salt, and knowledge about micronutrient benefits. A food frequency questionnaire (FFQ) was used consisting of questions about goitrogenic foods consumption for dietary assessment. As the people of this region consume tea and coffee more often, the effect of tea and coffee consumption on the iodine status of females was also examined. Participants were also analyzed for thyroid hormone status as internationally accepted to assess iodine status. Blood samples were taken from all subjects. Anthropometric measurements and questionnaire data collection were conducted at the same day as the blood samples taken.

ANALYSIS:

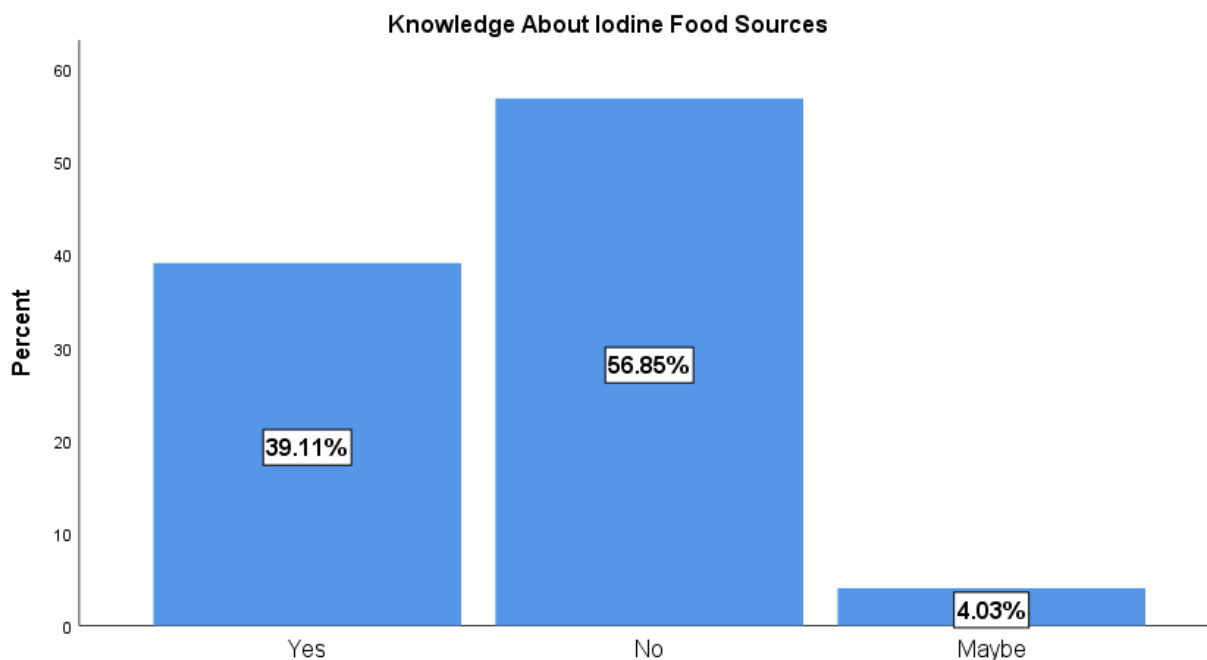
71% respondents are rural residents. Most of them are intermediate or illiterate. Very less (19%) are graduates. Most of the population (81%) of district Lodhran is earning 20-60k. Moderate income may lower health facilities.

Hence BMI status of the population is shown below:

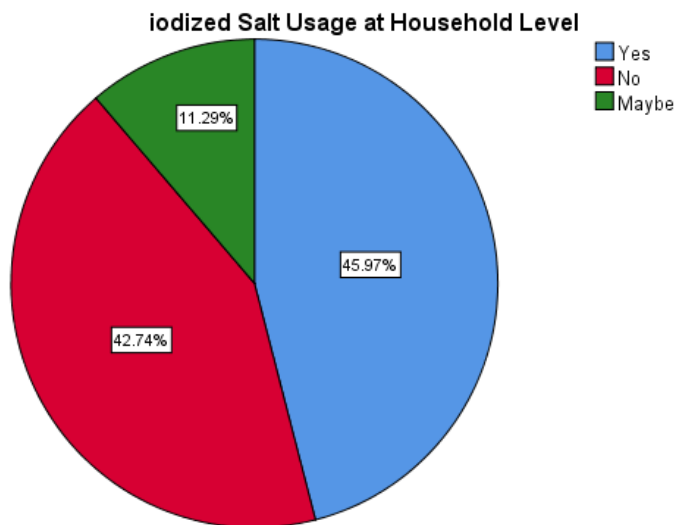
8.1% population has family history for iodine deficiency disorders and visible goiter. Iodine deficiency was prevalent among 12.10% among female having age 19-50 years for that a great contract of exertion is still needed to reach the target that at least 90% of the population should use sufficiently iodized salt; Iodine status of the population is given in pie chart:



Half of the population do not consume iodized salt in cooking; 56.9% have no idea about food sources of iodine. Most of the female with elevated TSH and iodine deficiency were having age 36-50; among them most of the women were uneducated or matriculate, it means that lack of education is also associated with the risk for iodine deficiency in form of elevated TSH or in goiter.



More than 40% of the population is against to use iodized salt in cooking due to myths associated with usage, availability and higher cost. Lack of awareness and lower education is probably the major factor to reduce iodized salt usage. social media campaigns may encourage healthy behaviors but most of the residents of south Punjab do not have this facility. Usage of iodized salt is given in the following chart:



DISCUSSIONS:

Iodized salt's significance is no longer well known. The lack of public and policymaker understanding has an effect on demand, program execution, and performance. Diets are changing, and people are relying increasingly on processed meals that might not be made with iodized salt. The topic of limiting salt intake for various health reasons causes needless confusion.

Addressing all of these issues is challenging, but in the midst of that, we must recognize the necessity of continuing this technically straightforward and inexpensive intervention of iodizing salt. It's important to keep in mind that this previously prevalent global issue could reappear at any moment. The salt industry must keep working to add iodine to salt, and we must look for new ways to provide everyone with adequate iodine nutrition. Governments must also include sustained adequate iodine nutrition in their national nutrition policies and broader fortification efforts. If not, there is a chance that this incredible accomplishment will slowly disappear.

RECOMMENDATIONS:

Iodine Deficiency is not just an individual problem; it is a community problem that needs to be tackled as soon as possible with. To implement successful strategies and proper intervention there must be proper identification of causative factor to Iodine Deficiency so that best effort can be helpful. The most important is improvement in the socio-economic status because 30% of the Pakistan population is living below the poverty line so optimal interventions are made. While there also must be focus on the education, awareness about the iodine salt acknowledged by this study to improve the iodine status. In this best regard there is direct need of government, social stakes holder, mass media, nonprofit organizations, and public sector school and joint effort to extend nutrition awareness for public or in the communities to mitigate the malnutrition. Currently, awareness campaigns are one of the most important steps for integrated salt



iodization program using large-scale mass media sources, NGOs and government institute and educational materials, and academic curriculum.

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ATA, American Thyroid Association. 2021. Iodine deficiency. Available at: [https://www.thyroid.org/iodine-deficiency/#:~:text=GOITER%20%E2%80%93%20Without%20adequate%20iodine%2C%20the,goiter%20\(see%20goiter%20brochure\)](https://www.thyroid.org/iodine-deficiency/#:~:text=GOITER%20%E2%80%93%20Without%20adequate%20iodine%2C%20the,goiter%20(see%20goiter%20brochure)). Accessed on: 10-05-2023.

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