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Prevention and Control of Iodine Deficiency Disorders among the People of Shinkafi Local Government of Zamfara State

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ABSTRACT

Iodine deficiency and its impact on health, cognitive abilities, and productivity present a significant global public health challenge, with its prominence on the rise in Nigeria. The Federal Ministry of Health's development of guidelines to control iodine deficiency, although long awaited, is a positive step towards improving the nutritional health of Nigerians. This effort aims to address iodine deficiency through strategies such as supplementation, fortification, dietary promotion, and nutritional education. According to data from the National Food Consumption and Nutrition Survey (NFCNS, 2021-2023), the prevalence of iodine deficiency is as follows: 13.0% in children under 5 years, 10.5% in pregnant women, and 13.0% in nursing mothers. However, it is important to note that an individual only needs a teaspoon of iodine throughout their entire lifetime to meet their nutritional needs

Keywords: Iodine, deficiency, control, disorder

INTRODUCTION

Iodine is a trace mineral essential for the body in very small amounts. An individual requires only about a teaspoon of iodine throughout their entire lifetime, which translates to a minimum daily requirement of around 50mg. Iodine is crucial for the thyroid gland, as it helps produce thyroid hormones, which are necessary for regulating important body functions, as highlighted by Aboyade (2016). These hormones act as chemical messengers that enable the brain to control bodily processes (Abbey, 2010).

According to U-reporter and UNICEF (2016), deficiencies in micronutrients like iodine are often referred to as "hidden hunger." Thyroid hormones play a key role in stimulating tissue growth, development, and proper brain development. When the diet lacks iodine, these functions are impaired. Chronic iodine deficiency over time can lead to Iodine Deficiency Disorders (IDD), as explained by Abiodun (2011). IDD can manifest in various forms, ranging from mild conditions like simple goiter in cases of mild deficiency, to severe forms such as mental and growth retardation, or even cretinism in extreme deficiency (Bogunde, 2010). IDD is regarded as a significant public health issue due to its social and economic impacts (Abbey, 2010). The consequences of iodine deficiency are most noticeable during critical developmental stages, such as the fetal and infant periods (Eshinlokun, 2010). Iodine deficiency has been identified as the leading cause of preventable mental retardation globally.

As a result, the World Health Organization (WHO) passed a resolution in 1990 aimed at the global eradication of IDD. This resolution was later endorsed by the World Health Assembly and the World Summit on Children. The goal was to nearly eliminate IDD by 2030, a resolution Nigeria, as reported by Abubakar (2012), signed on to.

Problem/Purpose Of The Study

The National Food Consumption and Nutrition Survey (NFCNS, 2021-2023) revealed that, even before the World Health Organization's resolution on the virtual elimination of iodine deficiency disorders (IDD), there was substantial evidence showing that many people in Shinkafi Local Government Area of Zamfara State were at risk of IDD. Regional surveys conducted in different parts of the local government had already identified endemic areas for IDD. A state benchmark survey in 2023 showed a prevalence rate of 20.9% for IDD, including grades 1 and 2 goiter, affecting an estimated 200,000 to 500,000 people in Shinkafi. The results of this survey helped refine the approach for local, state-wide, and national IDD eradication programs. Subsequent surveys have confirmed that IDD remains a significant public health issue in the local government area of Zamfara State.

Aims And Objectives

According to the National Guidelines on Micronutrient Deficiency Control in Nigeria, the purpose of the study is to achieve the virtual elimination of Iodine Deficiency Disorders (IDD) in Shinkafi Local Government Area by the year 2027. The study has the following objectives:

To consistently achieve Universal Salt Iodization (USI) certification** in the affected local government area.

To sustain Universal Salt Iodization (USI)** in the affected local government area over time.

These objectives aim to ensure long-term, effective control of iodine deficiency through the widespread use of iodized salt

BASE LINE DATA COLLECTION AND DATA ANALYSIS

Available data from the National Food Consumption and Nutrition Survey (NFCNS 2021-2023) indicated the following prevalence in the LGA as follows

Under 5 children – 13.0%

Pregnant women – 10.0%

Nursing mother – 13.0%

Table 1 **Iodization status of Shinkafi by zones 2023**

Zones	**Iodized oil supplementation**	**universal salt iodization**
Shinkafi east	15%	30%
Shinkafi west	8%	35%
Shinkafi central	10%	15%
Shinkafi south	5%	25%

Source: National Food Consumption and Nutrition Survey (NFCNS 2021-2023)

Table 2: Iodization of under 5 years old Shinkafi children by agro ecological zones

Zones	**Normal (%)**	**Marginal (%)**	**Clinical (%)**
Dry Savanna	68.7	28.2	3.1
Moist savanna	76.0	21.6	2.4
Humid forest	70.1	22.8	7.1

Source: National Food Consumption and Nutrition Survey (NFCNS 2021-2023)

Table 3: iodization status of under 5 years old Shinkafi children by fertilization

Zones	**iodine rich food**	**iodization of food grade salt**
Shinkafi East	34.0%	30.2
Shinkafi west	24.0%	22.2%
Shinkafi central	48.0%	40.1%
Shinkafi South	40.2%	38.0%

Source: National Food Consumption and Nutrition Survey (NFCNS 2021-2023)

Table 4: iodization status of under 5 years old Shinkafi by urbanization

Zones	Normal (%)	Marginal (%)	Clinical (%)
Rural	74.4	23.4	2.2
Medium	66.4	25.1	7.5
Urban	74.1	22.1	3.4

Source: National Food Consumption and Nutrition Survey (NFCNS 20011-2013)

In summary the populating inhabitants of Shinkafi local government is considered at risk of IDD if the total goiter rate (TGR) of the school-age population is greater than 5% and/or the (man) daily excretion of iodine in the given population is less than50ug a value less than 25ug indicates severe deficiency according to Adeyemi at al (2013).

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INTERVENTION STRATEGIES

Bogunde (2010) highlighted three strategies commonly adopted in micronutrient deficiency control as generally applicable to IDD to include:

Supplementation (short term); food fortification (medium term); dietary diversification (long term) and modification strategies.

SUPPLEMENTATION (SHORT TERM) INTERVENTION.

According to Bowale (2012), iodine oil supplementation is administered in highly endemic areas, either prior to or during the early stages of a statewide coordinated IDD eradication program. This supplementation is typically provided periodically, at least bi-annually, in areas where traditional or small-scale salt producers are prevalent (Bornat, 2013).

While iodine oil supplementation can serve as a complementary measure to medium-term strategies like universal salt iodization or water iodization, it faces challenges. Notably, iodized oil supplementation has limited coverage and is costly, making it a less sustainable solution on its own (Douglas, 2009).

POTENTIAL TOXICITY AND SIDE EFFECTS

Eshinlokun (2010) noted that in some countries where iodized oil has been used for supplementation, cases of hyperthyroidism and related side effects have been reported, particularly among individuals in Nasarawa Local Government Area of Kano State. As a result, it is crucial that health personnel be adequately trained in accordance with the National Guidelines on Micronutrient Deficiency Control in Nigeria (2013) to ensure proper administration and monitoring of iodine supplementation.

FOOD FORTIFICATION (MEDIUM TERM)

According to Bolanle and Camler (2009), food fortification involves adding specific micronutrients to processed staple foods, such as adding vitamin A to sugar and margarine, iron and B vitamins to wheat and corn flour, and iodine to salt. However, iodization of edible salt has proven to be the most efficient method for controlling Iodine Deficiency Disorders (IDD), with two main strategies employed:

- Universal Salt Iodization (USI), supported by legislation.
- Iodization of centrally controlled municipal water supplies.

Douglas (2010) corroborated that since the WHO resolution, the primary focus has been on achieving USI. This strategy is the main approach being adopted and pursued by the government of Kano State, as part of the National Guidelines on Micronutrient Deficiency Control. Bowale (2012) emphasized that food fortification requires a long-term commitment from the government, which can be achieved through the following activities:

- Enacting the necessary legislation.
- Establishing and empowering a regulatory and enforcement agency.

- Building effective partnerships with the salt manufacturing industry, major salt importers, and distributors.
- Collaborating with international donor agencies.
- Creating a functional quality assurance and monitoring system.
- Developing a sustainable technical assistance system for traditional and small-scale salt producers.

These steps are crucial to ensuring the successful and sustainable implementation of iodization and other micronutrient fortification programs.

DIETARY DIVERSIFICATION (LONG TERM)

Adeyemi et al (2013) pointed out that dietary diversification means the consumption of as many varieties of food as possible especially locally availability of foods. This aimed at increasing food production and encouraging a diet diversified to include natural and fortified iodine rich foods.

Abubakar (2012) emphatically stated that key to this strategy in the constant changing in people dietary choices and practices. Program planners used to choose the most feasible and acceptable behavior to promote, overcome identified barriers to view ideas and to support promote practices.

Carringher ()2012) further added that these new practices can be disseminated and popularized through national campaigns, the media, and community workers, mother, extension agents, religious leaders and teachers.

CONCLUSION

In conclusion, effective monitoring and evaluation are essential components for the success and sustainability of the IDD eradication program in Shinkafi Local Government Area of Zamfara State. The efforts should focus on addressing challenges such as pockets of resistance to Universal Salt Iodization (USI) interventions, potential adverse side effects of USI (e.g., hyperthyroidism), and the iodization of feed-grade salt. By continuously monitoring the program's progress and evaluating its impact, health authorities can make informed adjustments to ensure the long-term success of the IDD control efforts in the region.

RECOMMENDATION

In any effort towards an effective integration/management of various intervention strategies for the control of iodine deficiency disorder (IDD) among the entire people of Shinkafi Local Government Area of Zamfara State.

i. **Awareness Campaigns and Education**:

Community Awareness: Educating the people of Shinkafi about the importance of iodine for thyroid health and general well-being is essential. This could be achieved through local radio broadcasts, community meetings, health workshops, and collaboration with religious leaders and other influential figures in the community.

School Programs: Integrating iodine deficiency education into school curriculums can reach young people, fostering long-term awareness and behavior change in households.

ii. **Iodization of Salt:**

Ensure Access to Iodized Salt: The government and local health authorities should work with local markets to ensure that iodized salt is available at affordable prices. This can include promoting partnerships with salt producers and distributors to ensure widespread availability of iodized salt in rural areas.

Monitoring and Enforcement: Local health authorities can monitor the sale of salt to ensure that iodized salt is being sold and properly labeled. Regulatory measures could be enforced to reduce the prevalence of non-iodized salt.

iii. Nutrition Programs:

Supplementation: In areas where iodized salt may not reach all households, iodine supplementation (e.g., through oral iodine tablets or drops) could be an interim solution, especially for vulnerable groups like pregnant women, infants, and children.

Incorporating Iodine-Rich Foods: Promoting the consumption of iodine-rich foods like seafood, dairy, eggs, and certain vegetables could be another strategy. In rural areas, encouraging backyard farming with iodine-rich crops can also help.

iv. Health Surveillance and Data Collection:

Monitoring IDD Prevalence: Continuous monitoring of iodine deficiency levels through regular health surveys and surveillance is key. This helps in tracking progress and identifying areas with high iodine deficiency rates that require immediate intervention.

Thyroid Function Tests: In rural areas, conducting basic screening for thyroid function, particularly in pregnant women and children, can identify deficiencies early.

v. Community-Based Interventions:

Collaboration with NGOs: Partnering with NGOs focused on nutrition and public health could bring additional resources, technical expertise, and advocacy to tackle iodine deficiency.

Involvement of Traditional Leaders and Community Health Workers: Local leaders, including religious and traditional authorities, can help promote the use of iodized salt and educate the public about the importance of iodine. Training community health workers (CHWs) can provide ongoing education and support.

vi. Addressing Socioeconomic Barriers:

Affordability: Iodized salt may be more expensive than non-iodized salt for low-income households. Government subsidies or aid programs can be considered to make iodized salt more affordable for the population.

Transport and Distribution Networks: Improving transportation infrastructure and distribution networks can help ensure that iodized salt reaches even the most remote areas of Shinkafi.

vii. Collaboration with National and International Partners:

Policy Advocacy: Working with the Nigerian government to enforce national salt iodization policies and programs can help ensure a nationwide effort to eliminate iodine deficiency.

Global Health Organizations: Collaborating with organizations like the World Health Organization (WHO) or UNICEF, who have vast experience in addressing iodine deficiency globally, can provide both technical and financial support.

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