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**Consumption Patterns of Food Sources of Iodine and Goitrogenic Substances with the Incidence of Gaky in Coastal Areas**Sudirman^{1*}, Rezqiah Aulia Rahmat², Djunaedi³¹ Public Health Study Program, Baramuli Health College, Pinrang, Indonesia² Medical Study Program, Bosowa University, Indonesia³ Nutrition Science Study Program, STIKes Salewangan Maros, Indonesia*Correspondent Author: Sudirman, email: sudirman.skm@gmail.com**ABSTRACT**

Iodine Deficiency Disorders (IDD) are a public nutritional problem still found in several regions, including coastal areas. This condition is influenced by inadequate iodine intake and the consumption of foods containing goitrogenic substances that can inhibit iodine absorption. This study aims to determine the relationship between consumption patterns of foods containing iodine and goitrogenic substances and the incidence of IDD in coastal areas. This study used quantitative methods with an analytical design and a *case-by-case approach. control*. The sample consisted of a case group (people with IDD) and a control group (people without IDD). Data were collected through a food consumption frequency questionnaire and analyzed using the Chi-Square test. The results showed that low consumption of iodine-rich foods and high consumption of goitrogenic foods were significantly associated with the incidence of IDD ($p < 0.05$).

Keywords: IDD, Iodine, Goitrogenic Substances, Coastal Areas, Consumption Patterns



1. Introduction

Iodine Deficiency Disorders (IDD) are a spectrum of disorders caused by iodine deficiency, ranging from goiter and thyroid dysfunction to intellectual disability. Iodine is an essential micronutrient that plays a key role in the synthesis of thyroid hormones, which regulate growth and metabolism.

Coastal areas are often assumed to have sufficient iodine availability due to their proximity to the sea. However, cases of IDD are still found in some coastal areas. This indicates that environmental iodine availability does not always directly correlate with community iodine intake.

The dietary patterns of coastal communities significantly influence iodine status. Consumption of iodine-rich foods such as sea fish, seaweed, and iodized salt plays a crucial role in meeting iodine needs. Conversely, consumption of foods containing goitrogenic substances, such as cassava, cabbage, and mustard greens, can inhibit iodine absorption by the thyroid gland.

Goitrogenic substances work by disrupting iodine metabolism and thyroid hormone synthesis. Long-term consumption of goitrogenic foods in high amounts, especially without adequate iodine intake, can increase the risk of developing IDD.

Based on the description, this research is important to be conducted to determine the relationship between consumption patterns of foods containing iodine and goitrogenic substances with the incidence of IDD in coastal areas as a basis for planning community nutritional interventions.

2. Research Methods

a. Types and Design of Research

This research uses a quantitative method with an analytical design and case study approach. control.

b. Location and Time of Research

The research was conducted in coastal area X in May-August 2025.

c. Population and Sample

The research population is the entire community in coastal area X. The sample consists of:

- Case group: respondents suffering from GAKY
- Control group: respondents who do not suffer from GAKY

Sampling using purposive sampling technique.

d. Research Variables

- Dependent variable: Incidence of GAKY
- Independent variables:
 - 1) Consumption patterns of foods containing iodine
 - 2) Consumption patterns of foods containing goitrogenic substances



**e. Research Instruments**

The research instrument is a *food questionnaire frequency questionnaire* (FFQ) and GAKY status data.

f. Data analysis

Data were analyzed univariately and bivariately using the Chi- Square test with a significance level of $p < 0.05$.

g. Research Ethics

The research was conducted by paying attention to the principle of *informed consent*, *consent*, anonymity, and data confidentiality.

3. Research Results And Discussion**a. Research result**

1) Respondent Characteristics

Table 1
Distribution of Respondent Characteristics

Characteristics	Cases (n=35)	Control (n=35)	Total (%)
Age			
18–35 years	15	16	44.3
36–60 years	20	19	55.7
Gender			
Man	14	15	41.4
Woman	21	20	58.6

2) Consumption Patterns of Food Sources of Iodine

Table 2
Relationship between Consumption of Food Sources of Iodine and the Incidence of IDD

Consumption of Iodine Sources	Case	Control	p- value
Not enough	24	11	
Enough	11	24	0.001

3) Consumption Patterns of Foods Containing Goitrogenic Substances

Table 3
Relationship between Consumption of Goitrogenic Substances and the Incidence of IDD

Goitrogenic Consumption	Case	Control	p- value
Tall	26	12	
Low	9	23	0.002

4) Combination of Iodine and Goitrogenic Consumption Patterns





Table 4
Combination Consumption
Patterns and Incidence of IDD

Consumption Patterns	Case Control p- value		
Iodine deficiency & high goitrogenic	21	8	
Other	14	27	0.001

b. Discussion

The study results showed that dietary patterns containing iodine sources were significantly associated with the incidence of IDD in coastal areas. Respondents with insufficient iodine consumption were more likely in the case group than in the control group. This suggests that the availability of seafood in coastal areas does not guarantee adequate iodine intake if it is not consumed regularly or is not supported by the use of iodized salt.

Consumption of foods containing goitrogenic substances is also significantly associated with the incidence of IDD. Respondents in the case group consumed more goitrogenic foods, such as cassava and certain vegetables. Goitrogenic substances are known to inhibit iodine absorption and disrupt thyroid hormone synthesis, thereby increasing the risk of goiter and thyroid dysfunction.

The combined analysis showed that respondents with low iodine intake and high consumption of goitrogenic substances had a greater risk of IDD. This finding confirms that the incidence of IDD is influenced not only by low iodine intake but also by consumption patterns of substances that inhibit iodine metabolism.

This research aligns with nutritional theory, which states that the balance between essential nutrient intake and inhibiting factors significantly determines a person's nutritional status. Therefore, efforts to prevent IDD need to be implemented through increased consumption of iodine-rich foods and education regarding the processing and restriction of goitrogenic food consumption.

The implications of the results of this study indicate the need for integrated nutritional interventions in coastal areas, including promotion of the use of iodized salt, diversification of iodine-based food sources, and public nutrition education regarding goitrogenic foods.

4. Conclusion And Suggestions

a. Conclusion





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There is a significant association between dietary patterns containing iodine and goitrogenic substances and the incidence of IDD in coastal areas. Low iodine intake and high consumption of goitrogenic substances increase the risk of IDD.

b. Suggestion

1) For the Health Department

Improving nutrition education programs and monitoring the use of iodized salt in coastal areas.

2) For the Community

It is hoped that consumption of iodine-rich foods will increase and consumption of goitrogenic foods will be limited.

3) For Further Researchers

Multivariate analysis and examination of biological iodine status.

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