

Training on Identification of Ioded Salt for Members of Nasyyiatul 'Aisyiyah Moyudan and Seyegan Sleman Yogyakarta

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ABSTRACT

The use of iodized salt in the community is still not optimal. This causes disorders Due to Iodine Deficiency (IDD) in Indonesia is still a major nutritional problem. The impact of iodine deficiency will cause disturbances in the nerves, growth hormone does not work perfectly, and goiter will arise. This is the background for community service activities to provide education related to the use of iodized salt in the household for members of Nasyyiatul 'Aisyiyah Moyudan and Seyegan Branches. The method of carrying out activities is carried out online using a whatsapp group due to the COVID-19 pandemic. Service participants were given education about iodized salt, training on identification of iodized salt in the household, monitoring and evaluation of community service activities. The service participants are 20 people. This activity received a positive response from PCNA Seyegan and PCNA Moyudan. The results of the evaluation of this community service activity have increased from the pre test and post test. The average pre-test result is 74.29 and the post-test result is 92.86. The conclusion from the community service activities carried out was that there was an increase in the knowledge and skills of the average participant by 25% on the importance of iodized salt and its simple identification.

KEYWORDS

Iodized Salt;
PCNA Moyudan;
PCNA Seyegan



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1. Introduction

Moyudan and Seyegan are sub-districts located southwest of the district capital of Sleman, Yogyakarta. Most of the area is used as rice fields and yards. Rice fields are used by farmers as a source of livelihood. As many as 66.7% of the total population are of productive age. The livelihoods of the population are dominated by private employees and laborers with an education level of SMA/SMK/MA as much as 34.95%. Based on the results of population projections, about 51% of the population of Moyudan and Seyegan sub-districts are women. Women have a major role in the family. Nasyyiatul 'Aisyiyah (NA) is an autonomous Muhammadiyah organization that is active in the fields of religion, education and society, especially women. In the second congress in 1968, it was emphasized that NA as a member of the community always actively participates in devoting themselves to building a community in the environment with Islamic teachings. NA as the successor of 'Aisyiyah's cadre, contributed to realizing Muhammadiyah's goals in the women's movement segment. The age of NA membership has experienced dynamics to categorize the age of active members, namely 12-40 years. A family that is able to recognize, prevent, and overcome nutritional problems for each member is called a Nutrition Awareness Family (KADARZI). A Nutrition Aware Family if it has good nutritional behavior, one of which uses iodized salt [1], [2].

Iodized salt is consumption salt whose main component is sodium chloride (NaCl) and contains iodine compounds (KIO₃) through the iodization process and meets the Indonesian National Standard (SNI) [3], [4]. Iodized salt is consumption salt that contains 30-90 ppm iodine and it is recommended to consume 6-10 grams of iodized salt / day [5], [6]. The quality of iodized salt that meets SNI standards is salt that contains a minimum sodium chloride content of 94.7%, a maximum water content of 7%, a minimum iodine content of 30 mg/kg, a maximum metallic lead (Pb) content of 10 mg/kg, a copper

metal content (Cu) a maximum of 10 mg/kg, a metal content of mercury (Hg) a maximum of 0.1 mg/kg, a metal content of arsenic (As) a maximum of 0.1 mg/kg, a metal content of Calcium (Ca) a maximum of 0.1%, a potassium level maximum ferrocyanide 5 mg/kg, maximum content of food additives (anti-caking) 1.0% [7], [8].

Quality salt is iodized salt which when tested using a rapid test (iodine test) change to a purple color [9], [10]. Iodine salt has been studied by previous researchers. Thiocyanate excess develops goiter followed by auto immune thyroid disease even after effective salt iodization in a rural community in northeast India studied by Singh [11]. Stopping the supply of iodized salt alone is not sufficient to make iodized nutrition suitable for children in higher-water iodine areas: A cross-sectional study in northern China was investigated by Huang [12]. The impact of knowledge, attitudes, and practices on the consumption of iodized salt at the household level in several coastal areas of Bangladesh was investigated by Habib [13]. Iron compounds and their organoleptic properties in salt fortification with iron and iodine: an overview investigated by Vatandoust [14]. Collecting millimeter-level particles automatically and efficiently with an electrostatic sampler was investigated by Xu [15].

The high prevalence of TPO-Abs and subclinical hypothyroidism in iodine-sufficient pregnant women in Northern Algeria was studied by Akdader-Oudahmane [16]. Salt reduction strategies can harm salt iodization programs: Lessons from South Africa and Ghana researched by Menyanu [17]. Smartphone-based optical transduction for rapid microscale assessment of iodate in table salt was investigated by Galiga [18]. Changes over time in the iodine nutritional status of pregnant women from the Pamplona health care area were studied by Ollero [19]. Iodine status in pregnant women living in the Free State Province of South Africa is borderline adequate: The NuEMI study was investigated by Ngounda [20]. High levels of microplastics in commercial salt and industrial salt in Sri Lanka were investigated by Kapukotuwa [21]. Urinary iodine and sodium concentrations and thyroid status in the Brazilian Longitudinal Study of Adult Health (ELSA-Brazil) were studied by Benseñor [22]. The household is declared to have consumed salt containing sufficient iodine (30 ppm KIO₃), if the test results show a blue/dark purple color; salt that contains less iodine if the test results show a blue/light purple color; and salt is declared to contain no iodine if the test results do not show a color change [23], [24]. One of the long-term efforts to overcome Iodine Deficiency Disorders (IDD) is the use of iodized salt. Disorders Due to Iodine Deficiency [25], [26].

(IDD) in Indonesia is still a major nutritional problem [27], [28]. The impact of iodine deficiency will cause neurological disorders, growth hormone does not work perfectly (cretinism) and goiter [26], [29]. When iodine intake is reduced, the thyroid gland lacks supply to form thyroid hormone so that the pituitary is stimulated to form Thyroid Stimulating Hormone (TSH) which causes the thyroid gland to work hard to produce thyroid hormone, causing enlargement of the thyroid gland [28], [30]. Iodine levels in salt will decrease if there is damage, so it cannot maintain quality up to the consumer level [31], [32]. This damage can occur during storage in warehouses or in stalls [32], [33]. Inadequate storage and storage techniques will affect the quality of iodized salt. If the level of iodine decreases, it will affect the consumption of iodine and the status of iodine in a person [34], [35].

The percentage of iodized salt consumption in the household has not reached the expected percentage. One of the indicators of IDD recommended by WHO is the consumption of iodized salt by households with the expected indicator is 90% of households using salt containing sufficient iodine. One of the implementations of reducing IDD based on the Regulation of the Minister of Home Affairs of the Republic of Indonesia Number 63 of 2010 is through counseling and education to the public to consume iodized salt. This condition is the background for education and training for members of Nasyyiatul 'Aisyiyah Moyudan and Seyegan branches regarding iodized salt. It is hoped that this community service contribution will make members of Nasyyiatul 'Aisyiyah Moyudan and Seyegan branches able to know iodized and non-iodized salt.

2. Method

The steps for the activities carried out are set out as follows: Preparation stage, namely tools and materials for activities, counseling and practical simulation of iodine level testing, extension materials and instruments to measure participants' knowledge. The material presented in the counseling activity was delivered by two lecturers.

The implementation phase is carried out online. Education about the importance of iodized salt, the impact of lack of iodized salt and how to use iodized salt. In addition, a simulation of the identification of simple iodized salt based on color changes was also presented. Participants' knowledge was measured through tests before counseling activities and tests after counseling. The program evaluation stage is carried out throughout the implementation of activities. Aspects used for the evaluation of activities include: implementation of activities according to schedule, coordination within the team, coordination of the implementing team with partners, number of participant attendance, questionnaires, interaction of the implementing team with participants, responses and the impact felt by participants during and after the activity.

3. Results and Discussion

This community service activity is carried out in several stages, namely:

3.1. Education on the Importance of Consumption of Iodized Salt for the Body

This activity was held on Sunday, March 28, 2021 through the WhatsApp group. Education begins with a test before the activity. A total of 21 participants took the test. Furthermore, an explanation of the material regarding iodized salt, the impact on health, the use and proper storage of iodized salt was presented. Participants are given material in the form of papers (soft files) and explanatory video links that have been uploaded on the YouTube channel of the chief executive. Explanation and video links are presented in Fig. 1:



Fig. 1. Education and Training on Identification of Iodized Salt through YouTube channel (<https://youtu.be/FF-HPGI0qcg>)

After the participants watched the 16-minute video, a discussion session was held. This activity received a positive response from the participants seen from several questions asked. After receiving an explanation

in the form of a video, participants became more confident to always use iodized salt. Participants already know the benefits, use and proper storage of iodized salt.

3.2. Iodized Salt Identification Practice Tutorial

The iodized salt identification training was carried out through the WhatsApp group. All participants were given a video link to a simple iodized salt identification tutorial that could be done at home. The participants were very enthusiastic about watching the video and received a positive response from the participants.

The training video materials are:

- A brief explanation of the easy and inexpensive identification of iodized salt.
- Preparation of tools and materials
- The starch solution is prepared with tapioca flour or cornstarch or you can grate the cassava and squeeze it without adding water.
- The flour is dissolved in 20 mL of water.
- Added vinegar or vinegar as a source of acid.
- and salt samples.

The principle of this test is that salt (NaCl) does not contain iodine, but iodine fortification is intentionally carried out. So not all salt contains iodine. SNI recommends salt containing iodine as much as 30 - 80 mg/L. The detection method used is to prepare a container for the sample. Then take 4-6 teaspoons of salt samples. Next, add 4-6 teaspoons of vinegar. Iodine will react to liberate iodine, marked by a yellowish salt after 10-20 minutes. Then add 2 drops of starch solution. This reaction will produce a purplish-blue color. This indicates that the salt sample contains iodine.

The evaluation results obtained by comparing the average test scores before training (pre-test) and test scores after training (post-test) are shown in Table 1. Table 1 shows that the post-test results indicate an increase in participants' knowledge. The average pre-test score of 21 people was 74.29 and the post-test mean was 92.86. The average increase in participants' knowledge scores was 25%.

Table 1. Results of Pre Test and Post Test of Iodized Salt Identification Training

No.	Initial	Pre test	Post test	% Change
1	US	60	100	67
2	LF	50	70	40
3	UK	100	100	0
4	EN	70	80	14,3
5	RI	60	90	50
6	AA	80	90	12,5
7	MN	80	100	25
8	LA	60	80	33,3
9	KI	90	100	11
10	RW	70	90	28,6
11	AK	80	90	12,5
12	PA	70	100	42,86
13	NZ	60	100	67
14	CL	80	100	25

No.	Initial	Pre test	Post test	% Change
15	MR	80	90	12,5
16	NR	80	100	25
17	WP	90	100	11
18	RN	70	80	14,2
19	LK	80	100	25
20	SA	70	90	28,6
21	AS	80	100	25
Average value		74,29	92,86	25

The average age of the trainees was 24 years. The majority of participants used fine/table salt. Only 29% of participants used salt briquettes/bricks. After being given education, participants became more understanding and concerned about the benefits and impacts of using iodized salt, storing and using proper salt and being able to practice simple identification of iodine.

4. Conclusion

Based on the results of the activity, it can be concluded that the members of Nasyyatul 'Aisyiyah Moyudan and Seyegan Sleman were quite enthusiastic and actively participated in a series of activities. There was an increase in participants' knowledge by 25%. It is hoped that this activity can continue with the formation of nutrition-aware cadres in the Sleman area.

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Author Contribution

All authors contributed equally to the main contributor to this paper. All authors have read and agreed to the published version of the manuscript.

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Conflict of Interest

The authors declare no conflict of interest.

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