Community Service Article

Boraks Counseling for Food Education for Students at SMK Darussalam, Tanjung Rema, Martapura City

Laily Khairiyati[1], Agung Waskito[1*], Lenie Marlinae[1], Anugerah Nur Rahmat[1], Ammara Ulfa Azizah[1], Dhea Vaneza Prilia[2], Ni'ma Farida Pasha[2], Laura Oksin Kawalo[2], Salsabila[2], Tri Ahdiat Akbar[2]

[1]Department of Environmental Health, Department of Public Health, Faculty of Medicine, Lambung Mangkurat University, South Kalimantan, Indonesia

[2]Public Health Study Program, Faculty of Medicine, Lambung Mangkurat University, South Kalimantan, Indonesia

Correspondence Email: Agungwaskitost@gmail.com

ABSTRACT

Borax is a hazardous Food Additive (BTP) and its use in food is prohibited, as it has the potential to cause disease and even increase the risk of cancer. Many producers misuse it to preserve and improve the structure of food, so it is necessary to intervene in the form of activities to introduce borax detection test skills using simple turmeric principles. This service activity aims to prevent and provide awareness of food safety issues to school students. The methods used in delivering the material are lectures, questions and answers, providing borax detection test skills using simple methods, measuring knowledge after intervention and distributing pocket books. The results of knowledge improvement after education were 69.04% for class X and 57.89% for class XI. The results of measuring the category of knowledge of respondents through filling out questionnaires about BTP borax as much as 70% have a good category but, after getting education about borax has increased to 95%. The results of the paired T test that the sig value is 0.000 <0.05, it can be concluded that there is a significant difference in the knowledge of respondents Pre-Test and Post-Test or before and after the provision of education about borax.

Keywords: Borax, simple turmeric, food additives, food safety

INTRODUCTION

Food safety is an issue that must receive further attention, because advances in food technology in the world have made more and more types of foodstuffs produced, sold and consumed in a form that is more durable and more practical than the fresh form. This is in accordance with the needs of urban communities for various types of food that are practical and durable, especially in developing countries such as Indonesia.

Food safety in developing countries such as Indonesia should be a major concern because it relates to the health of the next generation that needs to be maintained to create a healthy environment. Many small and large industries produce various kinds of food and to get the food as desired, often in the manufacturing process additional ingredients are added which are better known as food additives (BTP) or food additives.[1]

BTP is added to improve the character of food so that it has an increased quality. BTP is becoming increasingly important and many traders use addictive ingredients that are relatively cheap. And the affordable price will encourage an increase in the use of cheap food additives.[2]

The addition of BTP is actually allowed, while it is still permitted and the levels are still within safe limits and do not endanger consumer health. However, many producers or sellers do not understand and do not pay attention to this, and deliberately add hazardous chemicals that are actually used as food additives even though they are not intended for food, for example, borax, formalin, rhodamin B, methanil yellow and so on.[3]

Today borax is widely used in the food industry, such as: in the manufacture of wet noodles, rice cake, ketupat, tofu, meatballs, sausages, and even in the manufacture of soy sauce. In fact, this chemical substance is a toxic and hazardous material for humans so it is strictly prohibited from being used as a food raw material.[4] Borax is often used by traders who

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want more profit in producing food because the price is cheap and preservation using borax can make food can be stored for days, even up to months, so that traders can get greater profits.[5]

Borax or borax acid is usually used to make detergents and antiseptics. Consuming food containing borax does not have a direct adverse effect, but borax will accumulate little by little as it is absorbed in the consumer's body cumulatively. The ban on the use of borax is also reinforced by the Regulation of the Minister of Health of the Republic of Indonesia Number 33 of 2012, concerning food additives, that Sodium Tetraborate, better known as Borax, is classified as an additive that is prohibited from being used in food. Of course, these chemicals when added will endanger the health of consumers who consume them continuously.[6]

Borax that is often consumed will accumulate in body tissues that will trigger cancer.[7] Borax can also cause damage to the liver, cardiovascular system, central nervous system, peripheral nervous system, hematological system, urinary system (kidney, ureter, bladder), and endocrine.[8] Because the use of borax in food can be harmful to the body if consumed continuously.

This often happens because of the low knowledge, skills, and responsibility of food producers towards food quality and safety, especially small industries or home industries.[9] According to Monijung et al., (2016) safe and high quality and nutritious food is very important for the growth, maintenance and improvement of health status and improvement of people's intelligence.[10]

Of course, no one will consume if they know the item contains harmful substances in it. So it is necessary to carry out community service as an effort to educate the public to choose safe food products and provide simple identification methods to prevent consumption of products containing borax, because obtaining safe food is a human right that has been included in the World Health Organization (WHO) session on food safety.[11]

METHOD

In its overall implementation, before providing education to the community, a survey of target partners was conducted and continued with the determination of target locations. Furthermore, field observations and licensing were carried out with secondary data collection through the local health center and direct observation in the field. Then the preparation of the extension program unit is carried out and continued with the implementation of the program followed by the preparation of the final report after the activity is carried out The implementation method carried out is a systematically arranged stage design, the following is a description of the flow map that will run:

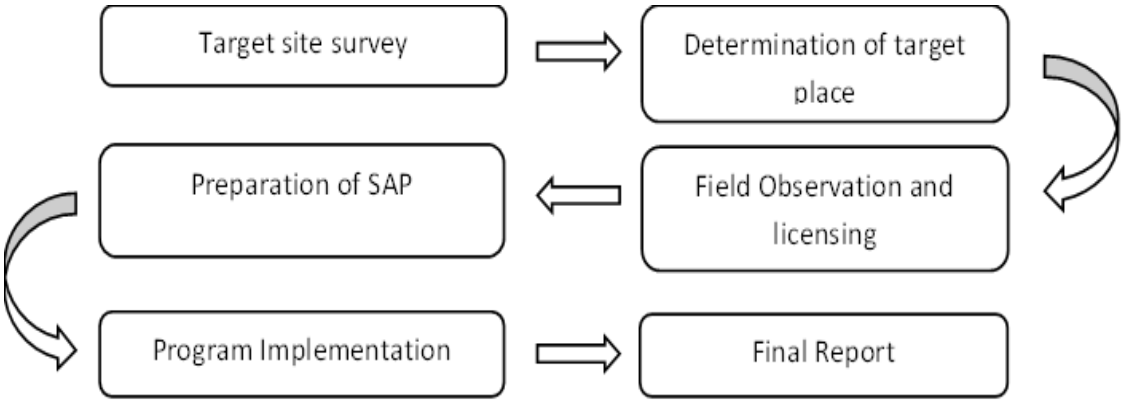

Figure 1. Flow map of the program

Socialization activities were carried out at SMK Darussalam, Tanjung Rema Martapura and divided into 2 stages, namely 15 May 2023 and 24 May 2023. The first stage was attended by grade X students and on May 24, 2023 was attended by grade XI students. While class XII students were not included by the school after the national final exam. The steps for implementing activities consisting of preparation, implementation and monitoring and evaluation of service activities and partner participation are outlined in the following table:

Table 1. Stages of community service activities

No.	Activity approach method	Person in charge	Description
	Preparation		
1	Student data collection	Partner	Accompanied by student willingness
	Implementation		
2	Distribution of pre-test questionnaires	Implementation team	Supervised by the team, with partners actively participating.
3	Providing information and education on BTM, borax, the characteristics of foods containing borax, and the health effects.	Implementation team	Include resource persons as presenters of counseling activities
4	Discussion and question and answer about the counseling material	Implementation team and Partners	Supervised by the team, with partners actively participating.
5	Training on simple borax detection test through the principle of color change on turmeric paper or toothpicks	Implementation team	Including resource persons as training presenters. The food samples tested were pentol obtained from several traveling pentol vendors who sell around the school.
6	Distribution of pocket book on the steps of qualitative borax test with simple method	Implementation team	For inspection procedure guidelines
7	Borax detection testing practice	Implementation team	Supervised by the team, with partners actively participating.
8	Discussion and Q&A on simple tests to detect borax	Implementation team and Partners	Supervised by the team, with partners actively participating.
9	Distribution of post test questionnaires	Implementation team	Supervised by the team, with partners actively participating.
	Monitoring and Evaluation		
10	Short-term program evaluation through knowledge assessment as measured by pre and post test results.	Implementation team	Efforts to ensure the success of the program
11	Medium and long-term evaluation in the form of dissemination of information and knowledge as well as independent borax detection can be done by students and schools.	Implementation team and Partners	Efforts to ensure the sustainability of the program

RESULT AND DISCUSSION

The counseling participants on May 15, 2023 were class X with 42 students and on May 24, 2023 there were 38 students. In general, the students who participated in the counseling activities totaled 80 people, with details of the TKRO (Automotive Light Vehicle Engineering) department as many as 22 people, KPR (Nursing Assistant) as many as 47 people and TBSM (Motorcycle Engineering and Business) as many as 11 people. Table 2 below presents a description of knowledge before and after education for each class X and XI of SMK Darussalam.

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Table 2: Pre and Post Test Results of Class X

No.	Respondents	Class	Major	Pre-Test	Post-Test	Description
1	AFA	X	TKRO	100	100	Stay
2	AM	X	TKRO	100	100	Stay
3	A	X	TKRO	80	90	Increased
4	HNR	X	TKRO	100	100	Increased
5	MDA	X	TKRO	90	100	Increased
6	MH	X	TKRO	90	100	Increased
7	MNAP	X	TKRO	70	100	Increased
8	MR	X	TKRO	90	90	Stay
9	MR	X	TKRO	90	90	Stay
10	MRS	X	TKRO	90	100	Increased
11	MS	X	TKRO	80	100	Increased
12	NRD	X	TKRO	90	100	Increased
13	P	X	TKRO	70	70	Stay
14	SS	X	TKRO	40	80	Increased
15	W	X	TKRO	90	80	Declining
16	AA	X	MORT GAGE	70	8	Increased
17	AR	X	MORT GAGE	70	70	Stay
18	HD	X	MORT GAGE	60	80	Increased
19	K	X	MORT GAGE	80	100	Increased
20	K	X	MORT GAGE	20	70	Increased
21	KN	X	MORT GAGE	80	70	Declining
22	LM	X	MORT GAGE	60	100	Increased
23	M	X	MORT GAGE	80	70	Declining
24	MYH	X	MORT GAGE	20	60	Increased
25	NY	X	MORT GAGE	90	80	Declining
26	NA	X	MORT GAGE	60	100	Increased
27	N	X	MORT GAGE	60	100	Increased
28	NA	X	MORT GAGE	70	90	Increased
29	NL	X	MORT GAGE	80	80	Stay
30	PN	X	MORT GAGE	30	50	Increased
31	RCR	X	MORT GAGE	60	70	Increased
32	S	X	MORT GAGE	80	70	Declining
3	S	X	MORT GAGE	70	100	Increased
34	SPF	X	MORT GAGE	50	100	Increased
35	SZ	X	MORT GAGE	80	100	Increased
36	VAV	X	MORT GAGE	60	100	Increased
37	ZNA	X	MORT GAGE	60	100	Increased
38	M	X	TBSM	40	100	Increased
39	MAR	X	TBSM	60	60	Stay
40	MY	X	TBSM	50	80	Increased
41	NI	X	TBSM	70	80	Increased
42	S	X	TBSM	30	50	Increased

Based on table 2 above, it is known that most of the increase in knowledge after education is 29 people (69.04%), knowledge remains as many as 8 people (19.04%) and there are also 5 people (11.9%) in class X SMK Darussallam.

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Table 3. Class XI Pre and Post Test Results

No.	Respondents	Class	Major	Pre-Test	Post-Test	Description
1	AFM	XI	TKRO	80	90	Increased
2	AA	XI	TKRO	90	100	Increased
3	AH	XI	TKRO	70	100	Increased
4	AZA	XI	TKRO	40	100	Increased
5	MR	XI	TKRO	60	80	Increased
6	MM	XI	TKRO	70	80	Increased
7	N	XI	TKRO	60	70	Increased
8	AA	XI	MORTGAGE	80	90	Increased
9	US	XI	MORTG AGE	100	100	Stay
10	BAP	XI	MORTG AGE	80	80	Stay
11	H	XI	MORTG AGE	80	90	Increased
12	IN	XI	MORTGAGE	70	100	Increased
13	MA	XI	MORTG AGE	60	80	Increased
14	MAN	XI	MORTG AGE	90	90	Stay
15	MH	XI	MORTG AGE	90	90	Stay
16	MN	XI	MORTGAGE	40	100	Increased
17	MR	XI	MORT GAGE	90	100	Increased
18	MRF	XI	MORT GAGE	90	90	Stay
19	MYA	XI	MORT GAGE	90	90	Stay
20	NZ	XI	MORT GAGE	50	90	Increased
21	NLA	XI	MORT GAGE	90	100	Increased
22	RA	XI	MORT GAGE	100	100	Stay
23	R	XI	MORTGAGE	70	90	Increased
24	RS	XI	MORT GAGE	90	80	Declining
25	SA	XI	MORT GAGE	80	70	Declining
26	SN	XI	MORT GAGE	70	70	Stay
27	SW	XI	MORTGAGE	70	70	Stay
28	SWR	XI	MORT GAGE	80	80	Stay
29	S	XI	MORT GAGE	90	100	Increased
30	UH	XI	MORT GAGE	70	90	Increased
31	JAP	XI	MORTGAGE	80	70	Declining
32	Z	XI	MORT GAGE	50	90	Increased
33	AZ	XI	TBSM	100	100	Stay
34	A	XI	TBSM	90	100	Increased
35	MF	XI	TBSM	100	100	Stay
36	MHF	XI	TBSM	80	100	Increased
37	MI	XI	TBSM	60	80	Increased
38	MR	XI	TBSM	100	100	Stay

Based on table 3 above, it is known that most of the increase in knowledge after education is 22 people (57.89%%), knowledge remains as many as 13 people (34.21%) and there are also those who decrease as many as 3 people (7.89%) in class XI SMK Darussalam. The existence of students' knowledge that does not change and decreases is caused by lack of focus and lack of concentration of students on the material presented. One factor that is thought to be the cause is environmental factors where the counseling place is quite hot due to lack of ventilation. The counseling place used is a kind of workshop room for student practice, This is what affects the problem, this is also an external factor that affects.[12]

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Another thing that also has an influence on the achievement of learning outcomes is the use of learning media, of course, the use of learning media adjusts to environmental conditions, because the environment and learning media influence each other, the selection of media used during online learning must be appropriate. In the educational activities carried out using PPT media and leaflets as well as practice, making it easier for participants to understand well. This combination has a positive or negative effect on student independence in learning, because through mutual interaction between behavior, cognition, and the individual's environment, the material or content to be conveyed can be understood well.[13]

Figure 2. Providing educational materials

The questionnaire knowledge indicators have the following indicators; Good if the value is 70-100, Fair if the value is 50-60, and Lack if the value is <50. Measurement of respondents' knowledge category through filling out a questionnaire about borax food additives as many as 10 questions with correct and incorrect answer options. Table 4 below presents the knowledge category of respondents before the counseling intervention.

Table 4. Respondents' knowledge category before borax education (pre-post test)

		Pre-Test		Pre-Test	
No.	**Category**	**Total**	**Percentage**	**Total**	**Percentage**
1	Good	56	70%	76	95%
2	Simply	16	20%	4	5%
3	Less	8	10%	0	0%
	Total	80	100%	80	100%

In measuring the results of the questionnaire categorized into 3 namely good, sufficient and less. Based on table 3 above, it is known that the knowledge of respondents before getting education about borax was 70% then increased to 95% after education had a good category. The increase in knowledge may be influenced by the delivery technique and the media delivered. This fact is also obtained from research conducted by Irnani H and Sinaga T (2017), it is stated that using a combination of lecture techniques with power point media can improve knowledge significantly. This shows the suitability of what the team has done in carrying out educational activities, because the team uses lectures and power points in delivering educational material to the target.[14]

In addition to the method of delivery, one of the other supporting factors is the visualization of tools in education, because this is a decisive factor in increasing target knowledge. Education will be more interesting in the packaging of the material delivered in the lecture, because the use of visual aids is

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effective in increasing knowledge because with visual aids it is easier to convey and receive information. The value of student knowledge is less because it is influenced by internal, external factors, and different learning techniques or methods owned by each child.[14]

Internal influencing factors consist of the physical and psychological aspects of the subject. Physical aspects include the state of the sensory organs, physical health, and the condition of the limbs. Psychic aspects include the level of intelligence, innate, emotional state, willpower, fantasy power, and logic. Notoadmodjo (2007) in his research explained that teaching aids or counseling media are arranged based on the principle of knowledge in humans received with the five senses. The more that is used to receive something, the more and the clearer the understanding or knowledge obtained so as to facilitate understanding, this is because a method will make the target bored if the delivery of education only focuses on lectures, thus affecting respondents who still have knowledge that is not optimal.[15,16]

This is illustrated by the results obtained that without the provision of material the target students only have a knowledge score of 75%, then drastically increased to 95% after being given material with a fairly complex method. The maximum achievement of the knowledge value indicates that the method of delivering education with the lecture method, power point, and the use of other tools can be easily accepted by the target, because it utilizes the elements of the five senses that make the information conveyed clearly illustrated.

Figure 3. Counseling at SMK Darussalam

Table 5. Paired T Test

	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
				Lower	Upper			
Pair 1 Pre-Test-Post-Test	-13.888	18.236	2.039	-17.946	-9.829	-6.811	79	.000

Bivariate analysis was carried out to compare the average before and after being done. the results obtained Based on table 5, it is known that the sig value is 0.000 <0.05, it can be concluded that there is a significant difference in the knowledge of respondents between the Pre-Test and Post-Test or before and after the provision of education on borax.

The significant effect of the pre-post results occurs because education through counseling can increase knowledge, [17] and also in the application in the field of counseling using teaching aids both practical test aids in testing and using PPT media and leaflets in the counseling process because this is also in line with the opinion of Notoatmodjo 2014 that a person's knowledge is mostly obtained through the sense of hearing and the sense of sight. [18]

CONCLUSION

After the education activity, students had a good knowledge of about 95% of the knowledge related to food safety, including

BTM, borax, characteristics of foods containing borax, and the effects on health. This is attributed to the complex delivery techniques that make it easier for students to understand the information presented. Also, students have the skills to test borax detection in a simple way using the simple turmeric principle. It is hoped that in the future similar programs can be expanded to other schools given the importance of these issues.

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