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Extension of Dairy Products for School Age Students in Nagari Saniangbaka, X Koto Singkarak, Regency of Solok, West Sumatra

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ABSTRACT

The extension of dairy products as a community service in Nagari Saniangbaka, X Koto Singkarak, Solok Regency was carried out. This project aimed to increase the knowledge and concern of school-age students about consuming dairy products. This project used UHT milk, fermented milk, and cheese to target students from SD 19 Saniangbaka, MDA Surau Gadang, and SD 34 Saniangbaka, respectively. The extension was divided into short lectures, discussions, quizzes, and product distributions. The activities of the three group participants increased the students' knowledge and interest in dairy products. The positive response from the participants was noticed, with MDA Surau Gadang students showing the highest enthusiasm for the activity conducted. This community service indirectly instills awareness of the importance of dairy food as a nutritious food source, especially for students in their growing years.

INTRODUCTION

Saniangbaka is one of the nagari in Regency of Solok located on the shores of Lake Singkarak. Most of the residents in this Nagari is engaged with agricultural areas, mainly paddy field. However, several traditional food-based micro enterprises being representative of local food trade sectors were also developing, particularly in producing fried *bilih* fish (*Mystacoleucus padangensis*), fried mungbean, and various traditional crackers smeared with fried sun dried chilli called *karupuak lado masiak*. The latter particularly in form of cattle hide crackers and cassava crackers. On the other hand, the livestock sector could be less prominent, which can be seen from the limited type and number of livestock raised in this area.

Animal husbandry is an industry segment with an enormous scope, mainly found in the form of ruminant livestock and poultry. Ruminant livestock can be further divided into meat-producing livestock and milk-producing livestock. In West Sumatra, there are only a few places where dairy farming is a prominent, especially in areas with cold temperatures, such as Padang Panjang and Alahan Panjang, Solok. However, various national dairy

industries have marketed commercial dairy products to various regions, including Saniangbaka.

School-age is an age level that needs nutrients for body growth. At this age, various sources of protein, fat, carbohydrate, and minerals are essential. Food rich in protein might be obtained from plant and animal-based food. However, a reference noted that dietary diversity is significant to ensure protein adequacy, including food from animal derivatives (Khusun et al., 2022). Milk is an animal-based source of rich nutrient food for children as they grow. As some of their lifetime is spent in school, the nutrient intake particularly from milk is important not only from the quantity and quality, but also the diversity of dairy products. Some dairy products on the market include UHT, fermented, and cheese spread with various brands and sizes.

UHT milk is a form of processed liquid milk produced using the ultra-high temperature method, a method of heating at a high temperature for a very short time, immediately followed by cooling and hermetic packaging. Fermented milk is processed milk produced by utilizing certain microbes in the fermentation process, particularly to break down lactose into lactic acid, producing a final product with sour characteristics and a generally thick consistency, some of which are even found in semi-solid form. Meanwhile, cheese is a solidified curd formed from the coagulation product of milk casein using a coagulating agent, generally from the enzyme rennet.

In low- and middle-income countries, consumption of milk and dairy products spurs children's linear growth and enhances adult height (Grenov et al., 2020). Besides being known as a source of high levels of energy, proteins, and micro- and macronutrients, milk is significant in the development and growth of children, particularly associated with its calcium and insulin-like growth factor-1 (Herber et al., 2020). A proven more significant increase in lean mass and body weight after milk consumption in children and adolescents was reported (Kang et al., 2019). Milk intake is also significant for the cognitive skills of school-age students (Rana et al., 2022).

Differences in wealth are the main factor determining dairy intake in low- and middle-income countries (Headey, 2023). On the other hand, a shifting of consumption pattern of dairy products in children and adolescents from liquid milk products to solid milk products in a developed country from three decades consumption record was noticed, as the increase in fermented milk products was also reported (Hohof et al., 2021). It is a challenge in developing countries, including Indonesia, to increase regular dairy milk from liquid or powdered form and its derivative products, such as fermented milk and cheese, as regularly consumed in the West and developed countries.

Various methods are required to increase low dairy consumption, including an educational approach (Nikniaz et al., 2020). Encouragement and motivation are essential methods to enhance the dairy intake of school-age students. Besides, student milk consumption could be promoted through education and information, modeling, and appropriate culture (Amini et al., 2022). Extension is an appropriate approach for short community service activities in the school.

Urban society preferred liquid milk consumption more than rural society (Prastiwi & Setiyawan, 2016). As Saniangbaka was a rural area located 77 km from the administrated city of the Province of West Sumatra, as the extension related to dairy products must be conducted to improve dairy consumption in such area. The changes in dairy consumption might take time to be seen. However, the effort to instill awareness from a young age significantly enhances student knowledge, ultimately providing positive value to nutrition and public health. Based on this, an extension of dairy products is essential for school-aged children in Saniangbaka. The method is significant to send direct message to the students and to get quick response from them about the topic discussed. This extension activity will

likely increase their awareness of the need to consume milk as a source of their food choice.

METHOD

The extension was conducted in SD 19 Saniangbaka, MDA Surau Gadang, and SD 34 Saniangbaka. School age students in those three locations were being the target of this activity. The primary material used in this activity consists of UHT milk, yogurt, Yakult, dadiah, and cheese. Additional materials including bread, white bread, butter, and sprinkles were also prepared. The activity is conveyed using the extension method consisting of short lectures, discussions, quizzes, and food products distribution to each participant as adapted from Putra et al. (2023).

RESULT AND DISCUSSION

Extension of UHT milk consumption

UHT milk extension activity was carried out among SD 19 Saniangbaka students on the sidelines of August 17 competitions, an Indonesian freedom celebration day. This activity was carried out in one of the classrooms in a semi-formal atmosphere, where students sit cross-legged on a mat. With 23 students participating, the activity started at 9 a.m.

This extension begins with a lecture in front of the class, where the substance of the lecture includes an explanation of various types of livestock, dairy livestock, the role of milk for health, and also various types of dairy products, including UHT milk. After that, each student was allowed to ask questions, which were then would be answered by the community service team. Next, a quiz session was held with several attractive prizes for various types of food, especially dairy products.

The enthusiasm of the participants for participating in this extension was quite good. The quiz session is the one that seems most interesting to students. UHT milk was carried out to all students at the final session of this activity. This activity is certainly very useful for increasing students' knowledge and awareness, especially of the relationship between milk and nutritional intake.

In general, after no longer consuming breast milk, children consume milk as dissolving milk powder. As their age increased, access to milk can be found in the form of UHT milk. This product can be found in the minimarket closest to the school or home. It is usually sold in original or various flavors, including chocolate, strawberry, etc. Learning about liquid milk certainly instills in them an awareness of the importance of consuming milk during their growing years.

Encouraging milk consumption in schools is a part of health promotion through nutritional education. This action aims to change and improve the long-term nutritional behavior of the students in milk consumption. Besides its physical effects, sufficient food intake, including milk intake entirely, would benefit the student's academic performance. As pointed out by Burrows et al. (2017), good dietary intake results in a positive effect on the academic score of the student. In line with that, Lien et al. (2009) proved better short-term memory in elementary school students with daily milk intake.



Picture 1. Extension activities of UHT milk consumption in SD 19 Saniangbaka

However, as highlighted by a previous study, it cannot be denied that income and family size influence consumer preferences for UHT milk. The higher their income, the higher their consumer preference. The higher the family number, the lower the consumer preference (Prastiwi & Setiyawan, 2016). Moreover, school milk programs from external funding for future action might facilitate milk consumption amidst internal limitations of school-age students, particularly in rural areas. Such programs are generally conducted for a longer period of time and thus could have a more positive effect on the nutrient intake of the student. Previous references proved a successful school milk program in enhancing daily calcium intake up to 279.8 mg as compared between the participating student (1052.3 mg) and the unparticipating student (772.5 mg) (Kim & Kim, 2009).

Extension of fermented milk consumption

The extension of fermented milk was carried out among MDA Surau Gadang students in Jorong Balai Lalang, Saniangbaka. The activity was carried out after the Asr prayer, the routine schedule for carrying out Quran learning activities for MDA students. Carried out in one of the partitioned rooms on the 2nd floor of the Surau Gadang, as many as 26 MDA students participated in this activity.

On this occasion, the extension began with a lecture in front of the class, with the substance of the lecture in the form of an explanation of the types of dairy livestock, types of milk products, various modern and traditional fermented milk products, and their health benefits. Most of them have consumed commercial fermented milk but not dadiah, a traditional fermented milk product. Therefore, on this occasion, an emphasis on dadiah as a fermented milk product was conducted. So, the students know and have pride in the type of their own traditional Minangkabau fermented milk amidst the various types of fermented milk found on the market. Then, this short lecture session followed by discussion and quiz sessions.

Students' enthusiasm for answering questions is very high. Several rewards in the form of dairy products are, of course, also a motivation for students to play an active role in answering questions given by the community service team. Several fermented products such as yogurt and Yakult were distributed to each participant at the end of the activity.

Fermented milk is generally another type of commercial milk product consumed by children, apart from reconstituted powdered milk and UHT milk, as well as other changed forms such as ice cream, butter, and cheese. Learning about fermented milk is very important to familiarize school-aged children with sour milk products, which some people have limited tolerance for. When the consumption of fermented milk begins to become a habit from childhood, the sour taste detected naturally will no longer be a factor causing low consumption of fermented milk. Moreover, an introduction to the importance of

fermented milk can be started by providing pictures of the nutrition and health benefits of such fermented milk products. A reference underlined various fermented milks as healthy food, mainly related to the presence of lactic acid bacteria (**Shiby & Mishra, 2013**).

On the other hand, awareness of the benefits of fermented milk can also be started by instilling pride in local products, such as dadiah, as a cultural food identity of the Minangkabau people. A reference highlights dadiah as Minangkabau fermented milk integrated with buffalo utilization area produced by the presence of an abundance of microorganisms naturally living in the inner side of bamboo walls (Putra et al., 2011). As implied from a previous study, the eating patterns might also be influenced by consumer pride in eating the food (Mahasuweerachai et al., 2023). Some limitations of the existence of dadiah on the market already explained to the student. Apart from that, by describing the existence of buffalo, its milk, and its relationship with many symbols of buffalo in Minangkabau culture, psychologically, it could grow the student pride in dadiah as Minangkabau food origin.



Picture 2. Extension activities of fermented milk consumption in MDA Surau Gadang

Moreover, there are two critical targets related to implementing the nutrition education program in the school, i.e., knowledge improvement and behavior changes (Blom-Hoffman et al., 2004). Regardless, this extension activity is the initial approach to enlarging the students' knowledge of fermented milk products. The behavior changes required longer time and more intense approaches, particularly it could also be applied in the school and the family.

Extension of cheese consumption

The extension of cheese consumption was carried out among students at SD 34 Saniangbaka. This elementary school is located in Jorong Aia Angek, Saniangbaka. This activity was carried out at 11 a.m. in a classroom attended by 16 participants.

The extension was conveyed through a short lecture explaining the types of dairy livestock, the cheese production process, various types of cheese, and the nutritional content of cheese. Apart from that, as an additional substance, it also explains how to look at food packaging, from the composition to the expiration date. How to detect damage to packaged food is also explained in this activity. Similar to other extension activities, this activity is accompanied by a discussion and a quiz. At the end of the activity, all participants obtained free products such as white bread with fillings containing cheese, butter, sprinkles; while some other milk products were also provided.

In general, the enthusiasm of the participants was quite good. Some participants were also able to show discussion skills that were precisely for children their age when asked

questions by the community service team. This indirectly illustrates the depth of their knowledge and good self-confidence when discussing.



Picture 3. Extension of cheese consumption in SD 34 Saniangbaka

Compared to UHT milk and fermented milk, cheese might be categorized as a less frequently consumed food by participants; in fact, quite a few people consumed cheese for the first time during this activity. Therefore, for the participants, cheese might be considered a luxury food. However, this activity has introduced participants to other milk derivative products, most previously obtained from liquid or dissolving powdered products. Thus, it is hoped that broader insight regarding dairy products will be obtained by participants.

Cheese is popular as a nutritious- and high-energy food, mainly due to its rich content in fat and protein (Walther et al., 2008). However, over consumption is not recommended as it relates to its saturated fat content (Rashidinejad et al., 2017). Moreover, the children's health quality is influenced by dietary diversity (Singh & Sharma, 2020). In more detail, it could be explained that nutritional adequacy is associated with variation in food intake. Varied food determines the completeness of nutrient needs both for macro- and micro-nutrients (Ardianti et al., 2021). Thus, the introduction of cheese in this activity is intended as an option to diversify the nutrition source of school students, particularly for those with high intensity, but not for daily consumption.

A reference highlighted knowledge and dietary behaviour of school-age students might enhanced by the message conveyed during nutritional education programs (Power et al., 2005). Similarly, a study on elementary school students implied that the diversity of food intake corresponds with the nutrition information obtained (Yoon et al., 2000). Related to this extension, the activity potentially enlarges students' knowledge of cheese as another type of dairy product.

CONCLUSION

Community service through extension provides a deeper explanation of matters related to the dairy products. It was expanded knowledge of school age students. The activity can indirectly increase students' awareness regarding the importance of consuming dairy products to fulfill their nutritional intake. School mealtime programs are interesting to apply to future activities for all school students.

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