



(RESEARCH ARTICLE)



## Community development through training in making milk jelly candy as a signature product of Medowo Tourism Village, Kandangan District, Kediri

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### Abstract

The community service program conducted by lecturers and postgraduate students from the Faculty of Veterinary Medicine, Universitas Airlangga, aims to provide education on the production of milk jelly candy in Medowo Village, Kandangan District, Kediri Regency. Milk, as a highly nutritious animal-based food that has long been consumed globally, can be processed into various derivative products with longer shelf life, diverse flavors, and high economic value. Milk production in Medowo is known for its relatively stable volume and good quality, as it is sourced directly from local farmers and mostly meets or approaches the Indonesian National Standard (SNI). However, this potential has not been optimally utilized, as most residents still sell raw milk without any further processing. Milk jelly candy is one of the processed products with strong ties to local farmers, offering high economic value, broad market segmentation, and the potential to be developed by MSMEs in creating quality local products. This study highlights a sustainable educational program in which milk jelly candy is positioned as a leading local product with high market value, aimed at improving community welfare and advancing Medowo Village as a tourism destination.

**Keywords:** Smallholder Farmers; Community Empowerment; Milk Jelly Candy; Medowo Village

### 1. Introduction

Medowo Village, located in Kandangan District, Kediri Regency, lies on the slopes of Mount Anjasmoro and holds high potential for the development of dairy farming. Administratively, the village consists of five hamlets: Sidomulyo, Medowo, Sidorejo, Mulyorejo, and Ringinagung, with a population structure divided into fifteen neighborhood associations (RW) and thirty-four neighborhood units (RT). The total population of Medowo Village is recorded at 3.695 people, most of whom rely on the primary sector, especially livestock and agriculture [1]. The geographic and climatic conditions of the area are highly suitable for dairy farming, which is why the majority of the community engages in dairy cattle farming alongside rice field cultivation. The milk produced is quite substantial and is managed through a local milk cooperative, which then distributes it directly to processing companies. Nevertheless, the community's knowledge regarding the management and utilization of fresh milk remains suboptimal [2].

Milk is a strategic agricultural commodity with high nutritional value and plays an important role in meeting the community's need for animal protein [3]. However, in Indonesia, milk production, which predominantly comes from small-scale local farms, still faces challenges in improving quality at the farmer level [4]. Cow's milk contains a variety of essential nutrients, including water, fat, proteins (casein and whey), lactose, as well as vitamins and minerals such as calcium, phosphorus, B-complex vitamins, and vitamin D, which contribute to bone health, immune function, and metabolic activity [5]. While it is beneficial, not everyone favors it in their liquid form. Milk consumption in Indonesia

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is recorded at 16.23 liters per capita per year, which is relatively low compared to other Southeast Asian countries such as Malaysia (50.9 liters), Brunei (129.1 liters), Vietnam (20.1 liters), and Singapore (46.1 liters) per capita per year. Given these conditions, it is necessary to promote efforts that can increase public interest in milk consumption among Indonesians [6, 7].

Jelly candy is a popular confectionery among children due to its sweet flavor and chewy consistency. As defined by SNI 3547-2-2008 (BSN, 2008), jelly candy is a soft-textured sweet made from hydrocolloid substances such as agar, gum, pectin, starch, carrageenan, gelatin, and others that enhance its chewiness. Additional ingredients typically include glucose, sucrose, and flavoring agents [8]. Dairy milk can also be added into the mixture, creating a flavorful taste, with beneficial nutrition. The milk itself contains high calcium, which can be an additional daily intake for children. Processing milk into candy is an effective way to extend its shelf life and enhance its economic value, and allows it to become a more durable product with added market potential [7, 9]. Other ingredients such as fruits and probiotics can also be added into the mixture to create additional variations, thus increasing its nutrition and economic values [10, 11].

The community's limited knowledge and the low level of milk consumption among the population are crucial issues that need attention. This aligns with the potential of Medowo Village in developing dairy milk production and creating its own signature product. This community service (Pengmas) aims to educate the local Micro, Small, and Medium Enterprises (MSME) on how to process fresh milk into value-added products with broader market appeal. Through this approach, it is expected that Medowo Village can become a productive center for quality dairy products and advance the local economic system in the future.

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## 2. Material and Methods

This community service activity was conducted on June 21, 2025, in Medowo Village, Kandangan District, Kediri Regency, East Java Province. The location was chosen based on the characteristics of Medowo Village as a center of dairy cattle farming, predominantly composed of smallholder farms, and the presence of an active local dairy cooperative.

The target participants in this study were local residents of Medowo Village. The inclusion criteria comprised local residents, particularly housewives, who were willing to participate in the entire series of planned educational and monitoring activities.

### 2.1. Methods

The community service activity, consisting of educational sessions and training on milk jelly production techniques, was conducted on June 21, 2025, at the KUD Kertajaya area in Medowo Village, Kandangan District, Kediri Regency. The activity involved local residents, faculty members from the Faculty of Veterinary Medicine (FKH), Universitas Airlangga (UNAIR), and postgraduate students from FKH UNAIR

The educational intervention in this study was implemented through a participatory approach with structured stages. The initial stage of the community service activities involved a preliminary survey and obtaining permits from relevant authorities to ensure that the program complied with applicable legal provisions. This phase served as part of an exploratory design aimed at gaining contextual understanding of the program's location and target community, including the social, technical, and institutional aspects related to milk production. Subsequently, a preliminary survey was conducted to obtain a comprehensive overview of field conditions and to identify the main problems faced by the farmers' group, particularly regarding the processing of cow's milk. This survey reflected the principle of needs assessment, which emphasizes identifying the actual needs of the community before implementing an intervention [12].

In the second stage, the activities continued with education delivered through an interactive presentation on milk jelly candy products. Before the educational session, a pre-test was administered to measure the farmers' baseline knowledge using a structured questionnaire. The questionnaire was designed to explore the participants' understanding of the basic aspects of milk jelly candy and to assess the local residents' knowledge of the product.

The program proceeded with an educational session on milk jelly candy, during which participants were encouraged to engage in discussions and pose questions to the facilitators, consisting of lecturers and assisting students. The educational material was prepared comprehensively and tailored to the participants' level of understanding. The session focused on interactive discussions and a question-answer segment between the service team and participants, covering topics such as dairy products, ingredients, economic aspects, product advantages, and marketing strategies. Upon completion of the presentation, a hands-on practice session was conducted, where participants made milk jelly

candy using the prepared materials. This practice demonstrated the required tools and ingredients, the production process, and showcased the finished, market-ready product.

Participants then completed a post-test to evaluate improvements in their knowledge and skills, using the same questions from the pre-test. This stage implemented a participatory education-based outreach strategy, emphasizing technical improvement through interactive media, pre- and post-tests, and open discussions.

The final stage involved quantitative evaluation by comparing pre- and post-test results to assess the extent of knowledge improvement. This model adopted a quasi-experimental design, which, despite lacking a control group, allowed for knowledge gains before and after training to serve as an indicator of success [13]. The success of the community service program was measured by the increased post-test scores, reflecting improved participant understanding and heightened awareness of the economic potential of processed milk products in Medowo Village. This approach was designed to ensure the sustainability of the program, deliver tangible impact, and support the development of the dairy farming sector and tourism in Medowo Village, Kandangan District, Kediri Regency.

### 3. Result and Discussion

This series of community service activities focused on education and hands-on practice in producing milk jelly candy. The program was carried out with local farmers in Medowo Village, Kandangan District, Kediri Regency as the primary target audience. The event commenced with opening remarks delivered by the program chair, the head of KUD Kertajaya, and the vice dean of the Faculty of Veterinary Medicine, Universitas Airlangga, marking the official launch of this educational initiative.



**Figure 1** Documentation with local residents of Medowo Village, Kediri Regency



**Figure 2** Documentation of counseling regarding Jelly Milk Candy



**Figure 3** Documentation of Jelly Milk Candy making practice



**Figure 4** Jelly Milk Candy products ready to be marketed

The data obtained from the pre-test and post-test are presented in Table 1. Based on the collected data, education on milking techniques and milk quality showed an improvement in understanding among local residents in the KUD Kertajaya area, Medowo Village. Knowledge of the nutritional content of milk increased from 43% to 100%, indicating that participants now possess a deeper understanding of the nutrients present in milk. Awareness of dairy-derived processed products also rose from 34% to 100%, and knowledge of potential milk-based products that can be developed increased from 49% to 100%. These improvements enable local residents to consider alternative ways of processing their milk into higher-value, economically beneficial products.

**Table 1** Understanding Before and After Education on Dairy Products and Milk Jelly Candy

No.	Indicator	Initial Understanding	Final Understanding
1.	In your opinion, what are the nutritional components of milk?	43%	97%
2.	Do you know about dairy processed products?	34%	100%
3.	What dairy processed products do you know?	49%	100%
4.	Do you know about milk jelly candy?	31%	97%

5.	Have you ever consumed milk jelly candy?	26%	100%
6.	Have you ever tried making milk jelly candy?	26%	100%
7.	What are the basic ingredients needed to make milk jelly candy?	6%	97%
8.	What is the function of jelly/agar-agar as a basic ingredient in making milk jelly	14%	100%
9.	What is the function of sugar in making milk jelly candy?	20%	100%
10.	In your opinion, what are the advantages of milk jelly candy compared to regular snacks?	48%	100%

The implementation of community service through education and hands-on practice in producing milk jelly candy in Medowo Village demonstrated success in enhancing residents' knowledge and skills in processing milk into value-added products. This was evidenced by significant improvements in all measured indicators from the pre- and post-tests. Participants' knowledge of milk's nutritional content increased from 43% to 97%, understanding of dairy processed products rose from 34% to 100%, and awareness of milk jelly candy improved from 31% to 97%. Additionally, participants' experience in consuming and making milk jelly candy increased markedly from only 26% to 100%.

This significant improvement indicates that the participatory method-comprising pre-test, interactive education, hands-on practice, discussion, and post-test-was effective in building participants' capacity. Practice-based education enabled participants not only to grasp theoretical concepts but also to gain direct experience in product preparation. This aligns with findings by Mulyani [13], who reported that a quasi-experimental strategy without a control group but with pre- and post-intervention measurements is effective in demonstrating program impact.

Beyond enhancing knowledge, the program also carries important economic implications. With the knowledge of how to process milk into milk jelly candy, the community can develop small and medium-sized enterprises (SMEs) producing high-value products compared to selling fresh milk alone. The advantages of this product, such as longer shelf life, flavors appealing to children, and retained calcium content, broaden its market segment and support local economic diversification.

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#### 4. Conclusion

The community service program involving education and training on milk jelly candy production in Medowo Village, Kandangan District, Kediri, successfully enhanced local residents' knowledge and skills in processing milk into value-added products. Pre- and post-test results showed significant improvements across all indicators, including understanding of milk nutrition, dairy products, ingredients, production process, and product advantages. The participatory education combined with hands-on practice proved effective in equipping participants with both theoretical knowledge and practical skills while fostering new economic opportunities through small-scale milk-based enterprises. Continued support is recommended to maintain product quality, ensure hygienic practices, and expand market potential, thereby improving community welfare and strengthening Medowo Village's identity as a tourism destination with signature dairy products.

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#### Compliance with ethical standards

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##### *Disclosure of conflict of interest*

No conflict of interest to be disclosed.

### *Statement of informed consent*

Informed consent was obtained from all individual participants included in the study.

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