#### **ORIGINAL ARTICLE**

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# Implementation of *Binaan Inovatif Sehat Mandiri Aktif* (BIMA): A Community Resilience Program for COVID-19 at Griya Lare Utami Bantul



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#### ABSTRACT

**Introduction:** Resilience is the key to overcoming the significant challenges of pandemics or large-scale disasters. **Methods:** A cross-sectional study design was performed in the study report. The BIMA program implementation lasted from June to November 2022 at Griya Lare Utami, Bantul. DIY, through integrated community services (*BIMA*): Training (**B**: Building/ *Binaan*): training for cadres to screen potential health problems, Innovative Activities (I: *Inovatif*): valid information literacy (anti-hoax) for families and Canva training for youth organizations, Independent of Menu (**M**: *Mandiri menu*): Independently develops menus, practical locally available for Small and Medium Enterprise (SME), and Active (**A**: *Aktif*); counseling actions, competitions to make fish products, and poster designs, and evaluation of activities for community society.

**Results:** The BIMA program involved 172 people from health cadres (n=12), Youth Organizations (n=24), Innovative Families (n=12), and Small and Medium Enterprises (SME) (n=11), with community members (n=113). The results showed significant differences after the program in cadre roles (p=0.01), Canva training (p=0.01), innovation family training (p=0.04), and knowledge of balanced nutrition (p=0.002). Meanwhile, the respondents' understanding regarding the development of local food products was similar after participating in the activity (p=0.082). These results indicate that the BIMA program succeeded in increasing the knowledge and skills of the respondents.

**Conclusion:** The BIMA Program has effectively enhanced the roles of health workers, health literacy, and nutrition management. However, it requires further advancement in the development of local products. The initiative is recommended to persist with activities aimed at extensive community empowerment, incorporating collaboration with pertinent sectors.

### Keywords: community services; COVID-19; health cadres; non-communicable diseases; resilience. Cite This Article: Fithriyyah, Y.N., Saifudin, I.M.M.Y., Martani, H.R., Khalish, G., Arumningtyas, F., Ermamilia, A., Wanti, I.F., Aulawi, K., Haryani., Kustanti, A. 2024. Implementation of *Binaan Inovatif Sehat Mandiri Aktif* (BIMA): A Community Resilience Program for COVID-19 at Griya Lare Utami Bantul. *Journal of Community Empowerment for Health* 7(2): 68-75. DOI: 10.22146/ jcoemph.82755

healthcare workers, have hampered pandemic management efforts.<sup>2,3</sup> and Misinformation further hoaxes complicate the situation, underscoring the need for improved information literacy.<sup>4</sup> Additionally, limited access to healthy food has impacted community resilience. The key to addressing these issues is to build community resilience for the future.

According to Dinar et al. in 2022, resilience is the key to overcoming the significant challenges of pandemics or large-scale disasters. Resilience involves the community's ability to respond to crises, adapt, and bounce back from adversity.<sup>5</sup> A resilient community will be

better equipped to respond and recover from the impact of COVID-19. This will help protect the public health and well-being and ensure our community members can survive and thrive. Developing community-level strategies to build and maintain resilience is essential.<sup>6</sup> This approach includes fostering solid relationships and providing education and training for the community through integrated community services.<sup>7</sup>

The results of community services show that informal health counseling related to COVID-19 can increase public knowledge.<sup>8</sup> However, these results are insufficient because systematic efforts

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### INTRODUCTION

The Coronavirus Disease 2019 (COVID-19) pandemic, which has been going on since March 2020 in Indonesia, has impacted all aspects of life. The government's massive effort to slow down the rate of growth of cases emphasized the socialization of the Clean and Healthy Behaviors/Perilaku Hidup Bersih dan Sehat (PHBS) program so that a resilient community is created during the pandemic through various timelines.1 During the COVID-19 pandemic, it has become evident that shortcomings in health and social systems, including a lack of cadre

are needed to integrate various aspects of life, and characteristics are adjusted to the age level in society. Efforts to build a resilient community begin with increasing public awareness regarding health, being intelligent in seeking information, and being motivated to participate in existing health programs on an ongoing basis.6 Integrated community service is a way to improve people's welfare. The benefits include improving the quality of life, efficiency, and effectiveness of public services and building resilience and solidarity among citizens. This is important to improve people's welfare and the quality of public services.

Before the community service implementation, we conducted a Needs Assessment on June 18, 2022, collaborating with community leaders, health care Karang Taruna, and the entrepreneurial community in Bangunharjo, Sewon. The assessment highlighted several significant deficiencies in capacity building and training efforts. The analysis revealed the current absence of an integrated health cadre training program. Additionally, a majority need to be made aware of how to select accurate information to prevent the spread of hoaxes. Karang Taruna representatives expressed a need for specific training, such as business design and promotion in digital media. Meanwhile, representatives from mothers and the entrepreneurial community highlighted the need for guidance in presenting nutritious menus and developing healthy food options available to the community.

Therefore, we created a BIMA program (Building, Innovative, Menu, Active), integrated through various training efforts with several targets. The BIMA Program offers an innovative and comprehensive strategy to address the impacts of the COVID-19 pandemic, focusing on the Public Health 3.0 approach. It involves monitoring and evaluation based on the framework by Wong et al. (2021), underscoring the importance of crosssectoral collaboration and active community engagement.<sup>10</sup> This approach is designed to identify and address gaps in economic, social, and health impacts caused by the pandemic.

The detailed BIMA program, namely

BIMA Cadre Training (B: Building / Binaan): assisting health cadres in the community based on identifying potential health problems, providing interventions and evaluations, Innovative Activities (I: Inovatif): providing valid information literacy, intelligent and wise for the community and preventing the spread of hoaxes in society by utilizing existing digital technology innovations and design training.<sup>11</sup> Independent menu (M: Menu/ Mandiri menu): developing healthy food and drink menus, practically by utilizing materials that are cheap and readily available in the community. In addition to training selected families, they will be given capital stimulus for small-scale production and marketing. Active (A: Aktif): conduct active outreach activities, demonstrating processed fish products, poster designs, and health screening in the evaluation stage. The hope is that the BIMA program will create a resilient, active, intelligent, information-literate, and innovative community to be a model for other village communities. BIMA community service activities occurred at Griva Lare Utami in Bakung, Bangunharjo Village, Sewon, Bantul Regency. This study aimed to analyze the effectiveness of implementing the BIMA program in increasing the capacity building for the knowledge of the COVID-19 resilient community.

### **METHODS**

The research was conducted with a preposttest design without a control group, aiming to determine the effectiveness before and after the program. The implementation of BIMA is carried out through a series of innovative training activities with a methodology that includes discussion, practice, and competition between participants. All participants are provided a guide module developed by the authors with Copyright EC00202242222. These activities target various groups, including the community, health workers, the younger generation, Small and Medium Enterprise (SMEs), and the public. Activities will occur from June to November 2022 at Griya Lare Utami in Bakung, Bangunharjo Village, Sewon, Bantul Regency. Data collection was carried out through interviews and questionnaire

responses. This initiative enabled the authors to collect comprehensive data by involving relevant stakeholders in a participatory process and evaluating its effectiveness. Implementation of BIMA's integrated community service program includes Need Assessment, Cadre Training (B: *Binaan*), Innovative Activities (I: Innovative), Menu Independence (M: *Menu Mandiri*), and Active Participation (A: Active), with details of the activities presented in Table 1.

Data collection involved filling out a questionnaire to evaluate the program. The data were later analyzed with univariate and bivariate analyses. If the data had a normal distribution, the analysis used a paired t-test. The alternative test used the Wilcoxon test. This study received an approval letter from the Medical and Health Research Ethics Committee of the Faculty of Medicine, Public Health and Nursing, University Gadjah Mada, Yogyakarta, Indonesia, with number KE/ FK/0828/EC/2022.

### RESULT

The BIMA program was conducted from June to November 2022, involving a total of 172 community members. The training component of the program reached 59 individuals, detailed as follows: Building, which included health training for 12 cadres; training in design activities for 24 youths; innovation in healthy menu training for 12 families; development of local foods by 11 Small and Medium Enterprise (SMEs) groups; and active counseling sessions reaching 86 community members (Figures 1-3). The characteristics of the respondents are presented in Table 2.

Table 3 shows the majority of cadres in assisted activities (n = 12) were aged 18-40 (25%), female (100%) with high school education (50%), and unemployed/ housewife (66.67%). There were youths engaged in innovative activities (n = 24), the majority aged 18-40 (100%), male sex (75%) with high school education (91.7%). However, all respondents to Innovative Family activities (n=12) were women aged 18-40 (100%) with high school education (58.3%). The same is true for the independent activities of the SME local menu (n=11). All participants were

Activity	<b>Execution time</b>	Target	Method	Outcomes
Need Assessment	June 2022	Figure community, cadres, and youth	Discussions and interviews are filling out the questionnaire.	Plans for the future to continue
B: training for cadres to screen potential health		Cadre	Discuss NCD and infectious diseases, and practice	Module:
problems			measuring anthropometry, blood sugar levels, acid	1. First aid
			urates, and cholesterol. Questionnaire: role implementation cadre and post-test quiz	2. GCU 3. NCD
I: Innovative Activities: valid information literacy (anti-hoax) families	July 15, 2022	Families	Discussion and practice applications prevent hoaxes. Questionnaire: literacy and pre-post-test quiz.	Upgrade Module Health Literacy
	July 26, 2022	youth organizations ( <i>karangtaruna</i> )	Giving Material and Practice canvas	Build Module-Based Digital <i>Poster Canva</i>
I: Canva training				
Independent Menu. M: develops menus, practical locally available for Usaha Mikro, Kecil, dan Menengah/ SME.	July 15, 2022	SMEs	Discussion and practice cooking local menu three processed catfish.	Guidelines for Module Balanced Nutrition and Development of Modules Local Products and Healthy Cooking videos
A: counseling actions, competitions to make fish products and poster designs	November 11, 2022	Public	Counseling, games, and competitions <i>poster</i> design and type of food menu	<ol> <li>Winner race <i>posters</i> and cooking, quiz health games</li> <li>Submission of a health screening tool to cadres:</li> <li>Demonstration videos</li> </ol>
Evaluation whole activity	November 25, 2022	Representative figure community and coral cadets	Screening, discussion, and strengthening of PHBS in the community	Health screening results

Table 1.	Implementation of the BIMA (June - November 2022)
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Abbreviation; A; Active, B; Building/*Binaan*, I; Innovative, M; *Mandiri* Menu, NCD; noncommunicable diseases, GCU; Cholesterol, Uric Acid, PHBS; *Perilaku Hidup Bersih dan Sehat* /the Clean and Healthy Behaviors, SME; Small and Medium Enterprise.



Figure 1. Training of the screening potential health problems for cadre.

women aged 18-40 (100%). For active counseling and competition activities (n=86), the majority were women (76.7%), who were aged 41-60 (39.5%), while for the **e**valuation and health screening carried out by health, 27 participants participated, the majority were women (77.78%) aged 18-40 years (74.07%).

The description of the achievement

of community strengthening activities in terms of implementing the role of cadres, knowledge of aid management, and literacy skills after the BIMA program shows that the implementation knowledge of the role of cadres is 58.3% in the excellent category and the majority of first aid are in the 58.3% good category, while 16.7% are in the poor category. The Adolescent Health Literacy ability category reached 79.2%, which is good (Table 4).

We tested the distribution of data with the Shapiro Wilk test for the knowledge of cadres, which was not normally distributed, with the values of p=0.023 and p=0.002, so we used the Wilcoxon test. As for the understanding of health literacy and nutritional self-sufficiency, the data were normally distributed, so we used the Paired t-test.

Table 5 showed results of the different tests that there were significant differences after and before the BIMA program in Building/*Binaan*: the role of cadres (p=0.01), innovation training for families (p=0.04), canva training (p=0.01), and knowledge of balanced nutrition (p=0.002). On the other hand, the respondents' understanding regarding the development of local food products was similar after participating in the activity (p=0.082). Nonetheless, these results indicate that the BIMA program



**Figure 2.** Canva design training for a youth organization and training demonstration for SMEs.



Figure 3. Implementation of the BIMA program. (https://youtu.be/vdHJPTVP7Fg)

can be an effective means of community empowerment to increase the knowledge and skills of respondents.

### DISCUSSION

This research aimed to assess the BIMA program's efficacy in enhancing knowledge for building COVID-19 resilient communities. According to the assessment findings, the BIMA initiative demonstrates a practical approach in executing its activities, as evidenced by the substantial engagement of participants in each activity. Notably, all individuals involved in the health cadres and SME training sessions were women. This trend reflects the global composition of health cadres, where around 70% of health and social sector professionals are female.<sup>12</sup> In addition, women's activeness is based on the role of homemakers that they hold. Gender beliefs in most Indonesian people consider that, ideally, housewives stay home and care for their families.<sup>13</sup> This enables them to understand the health needs of their family members, and they tend to be involved in health promotion activities in the community.

Enhancing public health and building resilience to COVID-19 involves more than just providing health-related education through empowerment programs. It requires a comprehensive approach that integrates various aspects of life, including economic considerations, tailored to the community's potential, cultural nuances, and demographic characteristics. Simply put, a holistic strategy is essential to effectively strengthen the community's capacity to navigate and withstand the challenges posed by COVID-19.14,15 The rationale behind this approach is further supported by the primary objectives of the Tangguh COVID-19 Village, which center around preserving both the economic well-being and public health within the community (Ministry of Villages, Development of Disadvantaged Regions and Transmigration, 2022). Therefore, the BIMA program provides education and empowerment to cadres and the community regarding health problems (NCD and first-aid in accidents), graphic design training, increased efforts in health literacy for youth, and training and business assistance for the surrounding community.

The evaluation findings of the BIMA program, particularly concerning community-strengthening activities. outcomes. Cadres' indicate positive performance in addressing Non-Communicable Diseases (NCDs) was notably successful, and their proficiency in providing first aid for accident victims was satisfactory. Cadres equipped with training and practical experience play a crucial role in preventing and managing NCDs, offering benefits such as streamlined coordination and cost reduction in health programs. Their contributions are valuable in enhancing the overall effectiveness of health initiatives.<sup>16-18</sup> With good first-aid knowledge, it is hoped that cadres can provide examples of proper handling because unfair practices can cause more harm than aid to injured people.<sup>19</sup> This training aims to help cadres identify health problems faced by the community and find the right solutions to solve these problems. This training will also help cadres increase their involvement in community service.

Furthermore, the assessment of each training session revealed a substantial improvement in knowledge levels. The evaluation underscores the considerable effectiveness of the BIMA program in enhancing the roles of health cadres, boosting health literacy and graphic design awareness among adolescents, augmenting knowledge regarding

Table 2.	Characteristics respondents the BIMA program (n=145)
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Category	B: training for cadres (n=12)	l: Youth activity (n=24)	l: Innovative: family (n=12)	M: Local food (n=11)	Active counseling (n=86)
			Frequency (%	)	
		Age	2		
18-40	3 (25)	24 (100)	12 (100)	0 (0)	11 (12.8)
41-60	6 (50)	0 (0)	0 (0)	11 (100)	34 (39.5)
61-71	3 (24)	0 (0)	0 (0)	0 (0)	41 (47.7)
		Sex			
Female	12 (100)	6 (25)	12 (100)	11 (100)	66 (76.7)
Male	0 (0)	18 (75)	0 (0)	0 (0)	20 (23.3)
		Educat	tion		
Elementary school	2 (16,67)	0 (0)	2 (16.7)	2 (18.18)	n/a
Junior high school	3 (25)	0 (0)	3 (25)	2 (18.18)	n/a
Senior high school	6 (50)	22 (91.7)	7 (58.3)	6 (54.55)	n/a
Diploma	1 (8,33)	1 (4.2)	0 (0)	1 (9.09)	n/a
Bachelor	0 (0)	1 (4.2)	0 (0)	0 (0)	n/a
		Occupa	tion		
Student	0 (0)	7 (29.2)	0 (0)	0 (0)	n/a
Self-employed	1 (8,33)	7 (29.2)	1 (8.3)	8 (72.73)	n/a
Private employee	1 (8,33)	4 (16.7)	1 (8.3)	0 (0)	n/a
others	2 (16,67)	1 (4.2)	0 (0)	0 (0)	n/a
Unemployment /housewife	8 (66,67)	5 (20.8)	10 (83.4)	3 (27.27)	n/a

Abbreviation; B; Building/Binaan, I; Innovative, M; Menu, A; Active, n/a= not applicable (due to unexamined data).

balanced nutrition, and fostering the development of local food products in the community. The enhancement of these diverse knowledge domains serves as the foundational building block for fortifying community resilience in Bangunharjo village against the challenges posed by COVID-19. Consistent with the previous study, which asserted that training activities significantly contribute to the improvement of knowledge among participating cadres, the training program has an impact not only on knowledge but also on the skills of the participants.<sup>20-22</sup>

There are significant differences in the execution of cadre roles. The BIMA program's efficacy in elevating the knowledge capacity of a COVID-19 resilient community is notably attributed to the active engagement of cadres. Broadening the responsibilities of cadres within the BIMA program can yield positive outcomes in enhancing the overall public health status, particularly in preventing Non-Communicable Diseases (NCDs). Well-informed cadres are equipped to furnish the community with precise and valuable information, empowering them to make informed decisions and take adequate measures to

steer clear of NCDs.<sup>16,17</sup> In the COVID-19 pandemic, efforts to control and manage NCDs are increasingly important because the risk factors for death and disability arising from NCDs and COVID-19 are very high.<sup>23</sup> Health cadres who have been trained and have good knowledge will better understand the prevention and treatment of NCDs so that they can provide accurate and helpful information to the public about COVID-19.

Enhancing the resilience of adolescents, or their ability to withstand challenges, crucial. The category assessing is adolescent health literacy demonstrated encouraging outcomes. Health literacy, in this context, refers to understanding health information, mainly information derived from social media. Social media, serving as an interactive platform supporting social interactions, is actively utilized by individuals, communities, and organizations.<sup>24</sup> Access to health literacy through social media is profoundly crucial for knowledge. It becomes paramount to discern and differentiate between accurate information and hoaxes. Training initiatives focusing on health literacy for youth are vital in building their capacity to access precise and reliable healthrelated information.<sup>20</sup> These efforts involve directing individuals to official social media pages of government agencies, both domestic and international, such as the Indonesian Ministry of Health and the World Health Organization (WHO).

Enhancing food security by fostering the development of local food products through the involvement of Small and Medium Enterprises (SMEs) is an independent measure to fortify the capacity of a COVID-19 resilient community. SMEs play a vital role by gaining insights into recognizing local food potential and receiving guidance on processing procedures to assess nutritional value. Amid the COVID-19 pandemic, food security, particularly in developing nations like Indonesia, has been significantly impacted. Addressing food security involves providing essential ingredients and ensuring their transformation into healthy and nutritious dishes.<sup>25</sup> The pandemic has reduced people's purchasing power, so the development of local food potential is felt to be the most effective and efficient, apart from the fact that providing the ingredients is relatively easy and the price is relatively low and affordable for the community.

Category		n	9	6	
Age					
15-44	20		74.07		
45-59	4		14.81		
>60		3	11.11		
		Sex			
Male		6	22.	.22	
Female	2	21	77.	.78	
		Heart rate			
<60		0	0.		
60-100		21	77.	.78	
>100		6	22.	22	
		Blood glucose			
80-200		25	92.	.59	
>200		2	7.	41	
		Cholesterol			
<200		15	55.56		
200-239	7		25.93		
>240	5		18.52		
Uric acid					
Male					
<3.4		0	(		
3.4-7.0	5		18.52		
>7.0		1	3.	70	
Female					
<2.4	0		0		
2.4-6.0	15		55.56		
>6.0		6	22.	.22	
		Blood pressure			
	Systole (n)	Diastole (n)	Systole (%)	Diastole (%)	
<120/80	12	13	44.44	48.15	
120-139/80-89	11	11	40.74	40.74	
140-159/90-99	3	2	11.11	7.41	
>160/>100	1	1	3.70	3.70	

Table 3.Evaluation and health screening results (n= 27)

# Table 4. Analysis achievement activity strengthening public after the BIMA program

Catagony	Post-test n (%)		
Category			
Knowledge of the role cadres (n=12)			
Good	7 (58.3)		
Fair	3 (25)		
Low	2 (16.7)		
Knowledge of First aid (n=12)			
Good	3 (25)		
Fair	7 (58.03)		
Low	2 (16.07)		
Knowledge of the literacy (n=24)			
Good	19 (79.2)		
Fair	5 (20.8)		
Low	0 (0)		

Ultimately, the findings of this study are anticipated to serve as a source of inspiration for public health practitioners to initiate community empowerment programs within the health sector. Likewise, various social organizations and community groups are encouraged to tailor activities to their specific contexts. A cross-sectoral policy is imperative to ensure such programs' sustained success. It is crucial to provide ongoing support for initiatives to strengthen communities' capacity to be resilient against COVID-19. It is worth noting that this study has certain limitations in data collection, with the absence of in-depth interviews representing a notable gap. Consequently, further research with a more precise design is recommended to gain insights and refine the findings.

## CONCLUSIONS

The BIMA Program has successfully integrated public health approaches by engaging multiple sectors within the community. The findings reveal significant improvements in the knowledge and skills of participants, particularly in the roles of health workers, health literacy, and nutrition management. The Canva design training and balanced nutrition knowledge were practical and statistically significant. However, local food product development remained the same before and after the program. This highlights the importance of continuing the program to enhance skills post-training. The BIMA program has shown potential as a means of empowerment and resilience for the community by improving participants' knowledge and skills post-pandemic. It is recommended to expand the BIMA program to more communities, focusing on digital skill training and future health literacy marketing approaches in collaboration with local health centers, while strengthening local networks for sustainability.

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program				
		Means (SD)	p Value	
B: training for cadres		Implementation role cadre		
	Pre-test	11.58 (1.782)	0.01ª	
	Post-test	16.42 (0.793)	0.01	
I: Innovative training for youth and family	Knowledge health literacy			
	Pre-test	3.95 (0.69)	$0.04^{b}$	
	Post-test	4.58 (0.71)	0.04*	
		Canva design knowledge		
	Pre-test	3.70 (0.62)	0.01h	
	Post-test	4.29 (0.85)	0.01 <sup>b</sup>	
M: Independent Menu to develop healthy menus with local	al Knowledge-related nutrition balanced			
foods	Pre-test	12.55 (2.30)		
	Post-test	15.27 (2.00)	0.002 <sup>b</sup>	
	K	Inowledge-related development product lo	cal food	
	Pre-test	8.36 (1.80)		
	Post-test	9.18 (1.17)	0.082 <sup>b</sup>	

# Table 5. Different test knowledge respondents before and after the activity strengthening public with the BIMA program

Description: a=Wilcoxon test; b=Paired t-test.

Abbreviation: B: Building/Binaan; I: Innovative; M: Menu; A: Active:

### **CONFLICT OF INTERESTS**

There are no conflicts of interest.

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