

Empowering Rural Communities through Household Garden Utilization: An Asset-Based Approach to Butterfly Pea Cultivation

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ABSTRACT

This community empowerment program aimed to strengthen household garden utilization through butterfly pea (*Clitoria ternatea*) cultivation in Sumberame Village, Gresik, Indonesia. The program employed the Asset-Based Community Development (ABCD) approach through five stages: Define, Discovery, Dream, Design, and Deliver. The participants were members of the Family Welfare Empowerment (PKK) community. Activities included community assessment, cultivation education, butterfly pea tea preparation demonstrations, and distribution of seedlings and planting media. Data were collected through interviews, observations, and documentation. The results indicated increased utilization of previously underused household garden spaces, greater awareness of environmental management, and improved community knowledge regarding butterfly pea cultivation, maintenance, drying, and processing. Participants also gained practical experience in utilizing locally available resources for household purposes. The program demonstrates that an ABCD-based approach can transform household gardens into productive community assets while strengthening knowledge, environmental awareness, and opportunities for sustainable household resource utilization. Sustainability requires continued community participation, mentoring, and monitoring.

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INTRODUCTION

Home garden utilization represents an effective community empowerment strategy for strengthening household food security, promoting family health, and improving environmental quality. Household gardens can provide accessible spaces for cultivating food and medicinal plants while contributing to household nutrition and community resilience. Recent studies indicate that home gardening can support food availability, dietary diversity, and household well-being, although its impacts may vary depending on local conditions and the continuity of the intervention (Hume et al.,

2022; Issahaku et al., 2023; Baliki et al., 2023). Optimizing household garden spaces enables communities to cultivate beneficial plants without requiring extensive land, particularly through the cultivation of family medicinal plants (TOGA). One increasingly popular TOGA plant, owing to its ease of cultivation and potential health-related properties, is butterfly pea flower (*Clitoria ternatea*). Butterfly pea flowers are rich in anthocyanins, particularly polyacylated anthocyanins known as ternatins, as well as other phenolic and flavonoid compounds that contribute to their antioxidant properties (Vidana Gamage et al., 2021; Jamsari et al., 2021). Recent research has further identified various bioactive compounds in *C. ternatea* and demonstrated its potential antioxidant activity (Padmanabhan et al., 2024). However, although the plant has demonstrated promising biological activities, much of the evidence regarding its therapeutic effects remains based on laboratory and preclinical studies, and further clinical research is required to establish its efficacy in humans (Maia et al., 2025).

The Community Service Program (KKN) of Universitas Islam Al Azhar Gresik, conducted on November 11, 2025, at the Sumberame Village Hall, Wringinanom District, Gresik, Indonesia, was implemented under the theme “Utilizing Household Gardens through Butterfly Pea Flower Cultivation.” The primary target group was members of the Family Welfare Empowerment (PKK) organization, who play a significant role in household management, family health decision-making, and community-based environmental initiatives. The selection of butterfly pea flower as the focus of the program was supported by its potential as a locally available plant resource that can be cultivated in limited household spaces. Previous studies have demonstrated that butterfly pea flowers contain bioactive compounds with antioxidant properties and potential applications in functional foods and beverages (Vidana Gamage et al., 2021; Gonçalves et al., 2024). In addition, the plant has attracted increasing attention because its anthocyanin-rich extracts can function as natural food colorants and provide additional functional properties in food products (Vidana Gamage et al., 2021; Sai-Ut et al., 2021). These characteristics make butterfly pea flower particularly relevant to community-based programs that seek to integrate household gardening, health education, and local resource utilization.

The activity began with an educational session addressing the benefits of butterfly pea flower, appropriate cultivation techniques for household gardens, and its potential development into economically valuable household products. Community-based gardening interventions have been associated with improvements in food-related behavior, community participation, and several psychosocial outcomes, although the strength of evidence differs across contexts (Hume et al., 2022). Following the educational session, KKN students conducted a demonstration of butterfly pea flower tea preparation, providing participants with a simple and practical method for utilizing the plant as a household herbal beverage. The preparation process began with boiling water. Fresh or dried butterfly pea flowers were subsequently steeped until the water developed its characteristic blue-purple color. This extraction method is consistent with previous research indicating that hot-water extraction can effectively obtain anthocyanin compounds from fresh or dried butterfly pea petals (Vidana Gamage et al., 2021). The use of butterfly pea flowers in beverages is also supported by their potential as a natural source of blue pigmentation and antioxidant compounds (Santos et al., 2020).

To enhance the flavor and sensory appeal, sugar was added in an appropriate amount, followed by fresh lemon juice. Upon the addition of lemon juice, the beverage changed from blue to purple, illustrating the response of anthocyanin pigments to changes in acidity and pH. The color transformation represents an important educational feature of butterfly pea flower beverages because the anthocyanins contained in the flowers are sensitive to pH changes. Research has shown that butterfly pea anthocyanins display distinctive color characteristics under different pH conditions and possess potential applications as natural pH-sensitive pigments (Vidana Gamage et al., 2021; Sai-Ut et al., 2021). Thus, the tea demonstration provided not only practical knowledge about herbal beverage preparation but also an accessible introduction to the chemical properties of natural pigments. The PKK

participants actively engaged in the discussion, particularly regarding the potential health-related benefits of butterfly pea flower, appropriate methods for storing dried flowers, and recommended consumption practices.

Following the educational session and practical demonstration, participants received butterfly pea flower seedlings in polybags along with dried butterfly pea flowers and instructions for their utilization. The distribution of seedlings was intended to facilitate the immediate adoption of butterfly pea cultivation within participants' household environments. This strategy reflects the principles of Asset-Based Community Development (ABCD), which emphasize the identification and mobilization of existing community assets rather than relying primarily on external resources. ABCD encourages communities to recognize their own capacities, physical resources, social networks, and locally available assets as foundations for sustainable development (Cunningham et al., 2022; Reddy & Barbalat, 2022). Previous studies have similarly demonstrated that asset-based approaches can strengthen community participation and encourage locally driven development (Nugraha et al., 2024; Suroiyah & Hikmawati, 2021). Consequently, the program sought to transform knowledge gained through the educational intervention into a practical and sustainable household activity in Sumberame Village.

In the long term, household-level butterfly pea cultivation may contribute to family well-being, the aesthetic improvement of residential environments, and the development of small-scale economic opportunities. Research on home gardens indicates that such spaces can contribute to household food and nutritional security, although the magnitude and sustainability of these benefits depend on the continuity of cultivation practices, household participation, and local environmental conditions (Issahaku et al., 2023; Alam et al., 2023). Butterfly pea-based products also have considerable potential for further development, particularly as herbal beverages, natural food colorants, functional food ingredients, and other plant-based products. Recent research has highlighted the technological and commercial potential of *C. ternatea* in food applications, including its use as a natural colorant and source of bioactive compounds (Maia et al., 2025; Padmanabhan et al., 2024). Therefore, continued community assistance could move beyond cultivation toward product development, packaging, marketing, and collective entrepreneurship through the PKK community.

Thus, the program represented more than a conventional community education activity; it constituted a practical community empowerment initiative aimed at strengthening knowledge, skills, and household-level resource utilization. The program demonstrates that underutilized household gardens can be transformed into productive community assets through a combination of education, practical demonstration, seedling distribution, and community participation. This approach is consistent with the broader principles of asset-based empowerment, which emphasize community ownership, participation, and the mobilization of locally available resources (Cunningham et al., 2022; Reddy & Barbalat, 2022). The cultivation and utilization of butterfly pea flowers may therefore serve as a simple yet potentially impactful strategy for promoting family well-being, environmental quality, and community-based economic development in Sumberame Village. Nevertheless, future programs should include longer-term monitoring to assess adoption rates, continuity of cultivation, changes in household practices, and the actual economic and health-related outcomes of butterfly pea utilization.

METHODS

The community service program employed the Asset-Based Community Development (ABCD) approach as its primary empowerment strategy. ABCD emphasizes community development by identifying, strengthening, and utilizing existing community assets and resources to increase local capacity and self-reliance (Kaliurang, 2019). The approach recognizes five major categories of community assets: individual capacities, associations, institutions, physical or material resources, and

social connections or communication networks (Ansori, 2021). In this program, the empowerment target was the community of Sumberame Village, Wringinanom District, Gresik Regency, with particular attention to the potential of household gardens as underutilized community assets. The specific asset developed was the cultivation and utilization of butterfly pea flowers (*Clitoria ternatea*) as a household herbal plant.

The empowerment process followed the 5-D cycle within the ABCD framework, consisting of Define, Discover, Dream, Design, and Deliver or Destiny. The first stage, Define, involved determining the specific topic and direction of the empowerment program. Based on initial observations and discussions with community members, the selected topic was "Utilizing Household Gardens through Butterfly Pea Flower Cultivation as a Herbal Plant to Improve Community Health." The topic was selected because household garden spaces were considered valuable yet underutilized assets, while butterfly pea flowers offered a practical option because they are relatively easy to cultivate and can be utilized as a household herbal resource.

The Discover stage focused on identifying existing assets, community conditions, interests, and needs through in-depth exploration. Data were obtained through interviews with village officials and several members of the Sumberame Village PKK group, complemented by direct observations of household garden conditions. The findings indicated that many households possessed garden spaces that had not been optimally utilized, despite relatively favorable soil conditions and sunlight exposure for herbal plant cultivation. Community members also expressed interest in plants with potential health benefits that could be cultivated and processed independently at home. This interest was particularly relevant because some residents reported concerns related to hypertension and high cholesterol, creating a perceived need for accessible and easily cultivated herbal resources.

The Dream stage was directed toward developing a shared aspiration for more productive and sustainable household garden utilization. Through the empowerment program, residents were encouraged to envision their household gardens not merely as residential spaces but as productive assets that could support family health, environmental improvement, and potentially household economic activities. Butterfly pea flower cultivation was therefore introduced as a practical alternative that could be implemented on a small scale using relatively simple materials and appropriate cultivation techniques. The expected outcome was increased community knowledge and skills in cultivating and utilizing butterfly pea flowers while simultaneously encouraging more productive use of available household land.

The Design stage involved developing practical strategies for implementing the identified aspirations. The first activity focused on preparing the planting medium using polybags filled with a mixture of loose soil and compost. Butterfly pea seeds were planted in small holes and lightly covered with soil, after which the plants were watered adequately and placed in areas receiving sufficient sunlight. As butterfly pea is a climbing plant, bamboo stakes or similar supports were prepared to facilitate its growth. Following the cultivation preparation, the empowerment team conducted direct community outreach to provide information on the benefits of butterfly pea flowers, cultivation techniques, processing methods, and their potential use as herbal products. This stage was designed to ensure that participants obtained both conceptual knowledge and practical skills.

The final stage, Deliver or Destiny, involved implementing, monitoring, and evaluating the empowerment activities. The program was implemented through direct engagement with the Sumberame community, particularly PKK members, focusing on practical butterfly pea cultivation and the processing of flowers into herbal tea. The evaluation indicated that dried butterfly pea flowers were more suitable for herbal tea preparation than fresh flowers because they produced a stronger aroma and more pronounced color. The program also provided participants with butterfly pea seedlings and dried flowers to facilitate continued practice after the intervention. The selection of PKK members as the primary empowerment subjects was based on their strategic role in household management and

family health practices, as well as their access to household garden spaces. Through the ABCD approach, the program therefore sought not only to transfer knowledge but also to strengthen community capacity by transforming existing household garden assets into resources that could support health, environmental improvement, and potential household-level economic development.

FINDINGS AND DISCUSSION

Changes in the Empowerment Process among the Community of Sumberame Village, Wringinanom District, Gresik Regency

In accordance with the Asset-Based Community Development (ABCD) approach employed in this community empowerment program, the stages of empowerment implemented in Sumberame Village, Wringinanom District, Gresik Regency, followed a framework that emphasizes the identification, mobilization, and strengthening of existing community assets. ABCD differs from deficit-oriented approaches because it begins with what communities already possess, including individual capacities, social relationships, institutions, physical resources, and local environmental assets (Cunningham et al., 2022; Ward, 2023). Recent studies also indicate that ABCD can strengthen community participation by encouraging residents to identify local priorities and mobilize resources available within their own communities (Najiha, 2023; Wajdi et al., 2024). In the present program, the household garden was identified as an underutilized physical asset, while the PKK women's community represented an important social asset that could support the implementation and continuation of the program.

First, Define. At this stage, the empowerment team determined the topic to be addressed in the community empowerment program. The process involved several steps, including identifying the topic. The topic was determined between November 7 and 9, 2025, by the community empowerment team in Sumberame Village. The selected topic was "Utilizing Household Gardens through Butterfly Pea Flower Cultivation." The topic was selected because most households in Sumberame Village had garden spaces that were not yet optimally utilized, while there was also a need for locally available plants that could provide household benefits. The utilization of household and community gardens has been associated with food-related, psychosocial, and community benefits, although the strength of these outcomes varies according to context and implementation quality (Hume et al., 2022). In addition, household gardens can function as important spaces for cultivating food and medicinal plants while improving the productive use of limited residential land (Alam et al., 2023). Butterfly pea flower (*Clitoria ternatea*) was selected because it is relatively easy to cultivate and contains bioactive compounds, particularly anthocyanins known as ternatins, which have demonstrated antioxidant properties (Vidana Gamage et al., 2021; Jamsari et al., 2021). The second step involved determining the target community. Following discussions and coordination among the community empowerment team in Sumberame Village, the community selected for asset development was the PKK women's community of Sumberame Village, Wringinanom District, Gresik Regency. The selection of the topic and target community was based on initial surveys and observations indicating that PKK members had a strong interest in herbal plants and access to household garden spaces that could be utilized for butterfly pea cultivation. The involvement of women-based community organizations is also relevant to community empowerment because such groups can facilitate collective participation, knowledge sharing, and the mobilization of local resources (Najiha, 2023).

Second, Discovery. At this stage, the empowerment team conducted an in-depth exploration by collecting information through interviews and observations in Sumberame Village, Wringinanom District, Gresik Regency. The exploration focused on the existing condition of household garden utilization and the potential for butterfly pea cultivation within the community. The Discovery stage is

particularly important within the ABCD framework because it allows facilitators to identify assets and community priorities before designing an intervention. Ward (2023) emphasizes that ABCD interventions require attention to the social and contextual conditions in which community assets are mobilized. Similarly, Cunningham et al. (2022) argue that community participation is more sustainable when local priorities and existing capacities become the basis for empowerment activities.

Interview Results. An interview was conducted with a village official on November 10, 2025, in Sumberame Village. The informant, referred to as Bu Siska, provided information concerning household garden utilization and community interest in herbal plants, particularly butterfly pea flowers. She explained that household garden utilization in Sumberame Village remained relatively limited. Many residents still left their garden spaces vacant or used them only for ordinary ornamental plants, despite the potential for cultivating herbal plants such as butterfly pea flowers. She also explained that some residents, particularly women, frequently reported health concerns related to high blood pressure and cholesterol. However, community knowledge regarding butterfly pea flowers as a potential herbal resource remained limited. The lack of information concerning cultivation and processing methods was identified as one factor contributing to the limited cultivation of butterfly pea flowers. Therefore, the empowerment program was considered necessary to encourage residents to utilize their household gardens more productively. This finding is consistent with previous research showing that community gardening initiatives can improve access to plant-based resources while also strengthening social and community outcomes (Hume et al., 2022). Nevertheless, the potential health benefits of butterfly pea should be communicated as complementary rather than as a substitute for medical treatment, because much of the evidence concerning its bioactive properties remains based on laboratory and preclinical research (Vidana Gamage et al., 2021; Maia et al., 2025).

Observation Results. The interview findings were further supported by field observations conducted from November 7 to 9, 2025, in Sumberame Village, Wringinanom District, Gresik Regency. Direct observations indicated that many household garden spaces had not been optimally utilized and were left vacant without productive plants. The soil conditions were relatively fertile and moist, making them potentially suitable for butterfly pea cultivation, as evidenced by the growth of wild grasses and shrubs in several areas. In addition, some residents had limited knowledge regarding the diverse potential uses of butterfly pea flowers, including their use as ornamental plants, herbal beverages, and natural food colorants. Previous research has demonstrated that butterfly pea flowers are rich in anthocyanins and that their extracts can be utilized as natural blue pigments in food and beverage applications (Vidana Gamage et al., 2021; Sai-Ut et al., 2021). Consequently, household garden spaces had not yet been directed toward plants with potential functional and economic value. At the same time, community members demonstrated an interest in gardening activities, although their interests had not yet been directed toward plants capable of generating additional value. These conditions indicate that household garden utilization through butterfly pea cultivation has considerable potential as a community empowerment initiative.

Third, Dream. At this stage, the empowerment team envisioned the ideal conditions to be achieved following the implementation of the household garden utilization program through butterfly pea cultivation. The primary aspiration was to create a greener, more productive, and aesthetically appealing environment in Sumberame Village by utilizing previously underused household garden spaces. The empowerment team also expected butterfly pea cultivation to increase community awareness of the importance of utilizing spaces surrounding the home in more productive ways while creating potential economic opportunities. This aspiration is consistent with research demonstrating that community gardening can contribute to positive psychosocial and community outcomes, although

the available evidence remains heterogeneous (Hume et al., 2022). In addition to functioning as an ornamental plant, butterfly pea flowers have potential economic value because they can be processed into herbal beverages, natural food colorants, and functional food products. The high anthocyanin content of butterfly pea flowers, particularly ternatins, contributes to their distinctive blue color and provides potential applications in food and beverage products (Vidana Gamage et al., 2021; Jamsari et al., 2021). Therefore, the community was expected not only to benefit from cleaner and more organized residential environments but also to acquire greater knowledge concerning the management and utilization of beneficial plants. The program was also expected to encourage a culture of plant care and strengthen residents' awareness of cleanliness and environmental management around their homes.

Fourth, Design. The program design was developed to translate the identified aspirations into practical activities. One of the main strategies involved preparing butterfly pea planting-medium samples to be distributed to residents of Sumberame Village through direct community engagement. The samples were prepared on November 8, 2025, as practical demonstrations to help residents understand how to plant and maintain butterfly pea flowers properly. Each sample consisted of a polybag containing a mixture of soil, organic fertilizer, and ready-to-plant butterfly pea seedlings. Residents could subsequently place the polybags in their respective household gardens. The preparation process involved several steps: (1) preparing the materials and equipment, including polybags, loose soil, organic fertilizer, a small shovel, and high-quality butterfly pea seedlings; (2) mixing the soil and organic fertilizer in balanced proportions and filling approximately three-quarters of the polybag with the growing medium; (3) planting the butterfly pea seedling by making a small hole in the center of the growing medium, inserting the seedling, and lightly covering it with soil; and (4) lightly watering the plant to maintain adequate moisture and facilitate initial adaptation. The completed planting samples were placed in areas receiving sufficient sunlight before being distributed to residents as practical models of simple butterfly pea cultivation that could be replicated in household gardens. The use of simple and locally accessible materials is consistent with the ABCD principle of mobilizing resources that are already available within the community rather than creating dependence on external inputs (Cunningham et al., 2022; Wajdi et al., 2024).

Program Implementation. The program was conducted on November 11, 2025, from 08:00 until completion. The morning activities consisted of an educational session on the benefits of butterfly pea flowers, a demonstration of butterfly pea tea preparation, and the distribution of planting-medium samples and butterfly pea seedlings to residents of Sumberame Village, Wringinanom District, Gresik Regency. The empowerment team engaged directly with community members by explaining how to prepare butterfly pea tea, cultivate butterfly pea flowers, understand their potential health and environmental benefits, and recognize the importance of utilizing household gardens as productive green spaces. The use of a practical demonstration was intended to strengthen participants' ability to translate knowledge into action. Previous research on community gardening suggests that participatory and practical activities can contribute to improved community engagement and positive behavioral outcomes, although sustained effects require continued participation and follow-up (Hume et al., 2022). In the case of butterfly pea flower, the tea preparation demonstration also introduced participants to a simple household application of the plant. Hot-water extraction is a feasible method for obtaining anthocyanins from fresh or dried butterfly pea petals, while the pigments exhibit distinctive color changes under different pH conditions (Vidana Gamage et al., 2021). Thus, the activity integrated community education, practical skills, local asset utilization, and the introduction of potential value-added applications within a single empowerment intervention.



Figure 1: PKK members trying butterfly pea flower tea.

Fifth, Deliver or Destiny. The final stage involved the implementation and evaluation of the empowerment program. The implementation was conducted on November 11, 2025, from 08:00 until completion, and proceeded smoothly from the opening session to the core activities and closing session. The program was led by one of the community empowerment team members, Mokhammad Ainul Yaqien. The opening session began with greetings and the recitation of Surah Al-Fatihah, led by the master of ceremonies, Aulia Hana Pertiwi. The core session was then led by the researcher and community empowerment team, focusing on the benefits of cultivating butterfly pea flowers in household gardens, factors affecting plant growth, and the importance of utilizing household gardens as potential sources of family food resources. The participants were also introduced to the health-related potential of butterfly pea flowers, their antioxidant content, appropriate cultivation and maintenance practices, and their potential contribution to household food security.

The empowerment team subsequently demonstrated how to process butterfly pea flowers into herbal tea, beginning with harvesting fully opened flowers, lightly washing them, drying them under sunlight, and preparing them for brewing to produce the characteristic blue-purple beverage. Participants were also informed that butterfly pea tea could be combined with honey or lemon to enhance its taste and sensory appeal. After the educational and practical sessions, the empowerment team distributed butterfly pea seedlings accompanied by brief cultivation guidelines to residents of Sumberame Village so that they could cultivate and further develop the plants in their household gardens.

The activity concluded with a prayer led by Wildanul Ihsan, one of the members of the community empowerment team. Nevertheless, several challenges were identified during program implementation. The primary challenge was the limited knowledge and awareness of residents regarding the productive utilization of household gardens, which required patience and sustained explanation during the educational process. In addition, some residents showed limited interest in cultivation because they perceived the activity as inconvenient, particularly in terms of preparing the growing medium, maintaining the plants, and waiting for the butterfly pea flowers to grow. Some residents were more accustomed to purchasing ready-made products from the market than cultivating and processing butterfly pea flowers independently into beverages such as butterfly pea tea.

Changes in the Outcomes of Community Empowerment in Sumberame Village, Wringinanom District, Gresik Regency

Following the implementation of the empowerment process through the Define, Discovery, Dream, Design, and Deliver stages, several changes were observed within the community. First, before the empowerment program, household garden utilization in Sumberame Village was still very limited, and many residents had insufficient knowledge regarding the potential benefits of butterfly pea cultivation. Following the implementation of the butterfly pea cultivation program, residents began to utilize their household garden spaces more productively. The butterfly pea seedlings planted by residents demonstrated positive growth, thereby increasing the potential availability of raw materials for preparing butterfly pea tea and other herbal products. The transformation of underutilized household spaces into productive gardens is consistent with evidence that home gardening can contribute to household food availability, dietary diversity, and resilience when supported by appropriate knowledge and community participation (Galhena et al., 2022; Carney et al., 2023).

Second, community awareness regarding household garden utilization and environmental cleanliness increased compared with the situation prior to the program, when residents paid less attention to the potential of open spaces around their homes. Following the intervention, residents began to recognize household gardens as potential sources of useful plants, particularly butterfly pea flowers, which are relatively easy to maintain and possess multiple potential uses. This change is important because community gardening is not limited to the production of plants but can also encourage social interaction, environmental awareness, and stronger community engagement. Previous research has shown that participation in gardening activities can contribute to psychosocial well-being and strengthen connections between individuals and their local environment (Soga et al., 2021; Spano et al., 2023).

Third, the program increased residents' knowledge and understanding of butterfly pea flowers, including their potential health-related properties, as well as practical knowledge concerning planting, maintenance, drying, and processing the flowers into butterfly pea tea. Participants consequently gained a better understanding of how a simple and locally available plant could become part of a healthier and more sustainable household lifestyle. This finding is relevant to research showing that community-based educational interventions can strengthen knowledge and practical competencies when participants are directly involved in experiential learning activities (McCormack et al., 2022). In relation to butterfly pea, its anthocyanin-rich composition and antioxidant properties have attracted attention for applications in functional beverages and food products (Kunyanga et al., 2022). Nevertheless, the health-related benefits observed in this program should be interpreted primarily as increased health literacy and awareness, rather than evidence that butterfly pea consumption directly treats hypertension or hypercholesterolemia. Further clinical studies are needed to establish such therapeutic effects in human populations.

Implications and Sustainability

The implementation of the community empowerment program has several implications for the community of Sumberame Village, particularly in relation to the productive utilization of household gardens, health awareness, and community capacity development. The application of the Asset-Based Community Development (ABCD) approach demonstrates that household gardens can be transformed from underutilized spaces into productive community assets. Through butterfly pea flower cultivation, residents gained practical knowledge about planting, maintaining, harvesting, drying, and processing locally available plants. This indicates that community empowerment can be strengthened when interventions are developed from existing assets and community needs rather than introducing resources that are entirely external to the community. The findings are consistent with the ABCD principle that sustainable empowerment should build upon existing capacities, resources, and social networks within the community.

From a health perspective, the program increased residents' knowledge regarding the potential utilization of butterfly pea flowers as a herbal resource. Participants were introduced to the processing of butterfly pea flowers into tea and to practical methods for drying and storing the flowers. This knowledge provides an alternative form of household-level health literacy and encourages residents to recognize the potential value of plants available in their immediate environment. However, the program should be understood primarily as a health education and empowerment initiative, rather than as a clinical intervention. Claims regarding the ability of butterfly pea flower to treat or control hypertension and cholesterol should therefore be communicated carefully and supported by appropriate scientific evidence.

The program also has implications for environmental sustainability. The utilization of household gardens for butterfly pea cultivation can encourage residents to maintain previously unused spaces and transform them into productive green areas. Increased awareness of household garden management may contribute to cleaner, greener, and more aesthetically organized residential environments. The cultivation of climbing butterfly pea plants also provides an opportunity to integrate ornamental and productive functions within limited household spaces. In this respect, the program demonstrates that small-scale household gardening can become part of a broader community-based strategy for improving environmental quality.

The economic implications of the program are also potentially significant. Butterfly pea flowers can be processed into herbal tea and other value-added products, creating opportunities for household-level economic activities. Although the present program did not directly measure changes in household income or establish a commercial production system, the knowledge and seedlings provided to residents create an initial foundation for future product development. Further development could involve collective cultivation through the PKK community, standardized drying and packaging practices, product diversification, and small-scale marketing. Such activities could strengthen the transition from a community empowerment program based on knowledge transfer toward a more sustainable community-based enterprise.

The sustainability of the program depends largely on the community's ability and willingness to continue cultivating butterfly pea flowers after the intervention. The distribution of seedlings and cultivation guidelines was therefore an important component of the program because it enabled participants to continue the practice independently in their household gardens. Nevertheless, the findings also identified challenges, particularly limited community knowledge and the perception that cultivation requires additional time and effort. Some residents preferred purchasing ready-made products rather than cultivating and processing butterfly pea flowers themselves. These challenges indicate that sustainability requires continued assistance rather than relying solely on a single intervention.

CONCLUSION

The community empowerment program in Sumberame Village, Wringinanom District, Gresik Regency, demonstrated that the utilization of household gardens through butterfly pea flower (*Clitoria ternatea*) cultivation can serve as a practical strategy for community empowerment. Implemented through the Asset-Based Community Development (ABCD) approach and its 5-D cycle—Define, Discovery, Dream, Design, and Deliver/Destiny the program successfully connected existing household garden resources with community interests and needs. The empowerment process involved the identification of underutilized garden spaces, community exploration through interviews and observations, practical cultivation training, butterfly pea tea processing demonstrations, and the distribution of seedlings and cultivation guidelines.

The program resulted in several positive changes, particularly in residents' understanding of household garden utilization, butterfly pea cultivation, and the processing of butterfly pea flowers into

herbal tea. Residents began to recognize household gardens as productive spaces that could support family health, environmental improvement, and potential household economic activities. The distribution of seedlings also provided an opportunity for participants to continue cultivating butterfly pea flowers after the program. However, the sustainability of the initiative remains influenced by limited community knowledge, perceptions that cultivation requires additional effort, and residents' preference for purchasing ready-made products.

Therefore, the sustainability of the program requires continued community participation, particularly through the PKK group, as well as periodic mentoring and monitoring. Future empowerment programs should focus not only on increasing knowledge but also on strengthening cultivation practices, developing value-added butterfly pea products, and creating collective activities that can encourage long-term adoption. Overall, the program indicates that the ABCD approach can transform existing household resources into meaningful assets for community development, while butterfly pea cultivation provides a simple and locally applicable entry point for integrating health awareness, environmental sustainability, and potential economic empowerment at the household level.

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