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Development of Family Medicinal Gardens (TOGA) through the Tato Macan Program to Strengthen Community Health and Economic Resilience

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A B S T R A C T

The Tato Macan Program (Taman TOGA Makin Cantik) is part of Prokesmas Puja, an integrated community health initiative. It focuses on improving health and economic resilience by making better use of Family Medicinal Gardens (TOGA).The program was created to address two key issues: idle land that was not being utilised productively and the need for additional nutrition for tuberculosis patients and children at risk of stunted growth. Activities include transforming unused land into TOGA demo gardens, training health cadres and local people to cultivate and process herbal plants, and creating value-added products such as herbal teas, packaged jamu, and moringa chips.In line with circular economy principles, the program also promotes composting organic waste and using biogas to support production. These efforts have led to the development of stronger skills among health cadres and community members, the growth of model TOGA gardens, and the establishment of new micro-enterprises specialising in herbal products. Families benefit directly through extra income and reduced household expenses.Beyond its local impact, Tato Macan has inspired other communities through knowledge sharing, helping the program spread more widely. In short, it contributes to health by offering functional foods, to society by empowering cadres, and to the economy by diversifying community businesses.

Contribution to Sustainable Development Goals (SDGs):
SDG 1: No Poverty
SDG 2: Zero Hunger
SDG 3: Good Health and Well-Being
SDG 5: Gender Equality
SDG 12: Responsible Consumption and Production
SDG 13: Climate Action

1. INTRODUCTION

1.1. Research Background

Public health is a fundamental pillar of sustainable development, as it directly contributes to improving quality of life and the productivity of human resources. In Indonesia, public health challenges remain complex and multidimensional, particularly regarding infectious diseases such as tuberculosis (TB) and nutritional problems such as stunting, both of which still have a high prevalence. Tuberculosis, as a contagious disease, has major socio-economic impacts due to its high morbidity and mortality rates, while stunting hinders children's cognitive and physical

development, ultimately reducing the quality of future generations [1, 2].

These two problems cannot be addressed solely through interventions in the health sector; instead, they require a holistic and integrated approach. Community empowerment and the sustainable use of local resources are key to strengthening health resilience [3, 4]. One underutilised local resource is non-productive community land, which can be developed for cultivating Family Medicinal Gardens (TOGA). TOGA serves a dual function: as a source of traditional medicine to support family health and as functional food that contributes to improving community nutritional status [5].

The development of TOGA not only strengthens community self-reliance in managing health and nutrition but also creates opportunities for innovative economic activities through the production of value-added herbal products. The innovative Tato Macan Program (Taman TOGA Makin Cantik), as part of Prokesmas Puja, serves as a concrete example of integrating health, nutrition, environment, and community economics. The program encourages communities to grow TOGA, use it in daily life, and process it into ready-to-consume herbal products, thereby supporting the creation of a healthy, self-reliant, and empowered society in a sustainable manner [6, 7].

This holistic approach aligns with the concept of sustainable health development, which emphasises collaborative cross-sector governance, community synergy, strengthening public health capacity, and active community engagement in maintaining family and environmental health [3, 8]. Strengthening community capacity in utilizing local potential such as TOGA can therefore serve as an effective strategy to address health challenges while also supporting sustainable social and economic development in Indonesia.

1.2. Literature Review

Family Medicinal Gardens (TOGA) have long been recognized in Indonesian culture as an essential part of traditional medicine. Several types of TOGA, such as turmeric (Curcuma longa), ginger (Zingiber officinale), Javanese turmeric (Curcuma xanthorrhiza), and moringa (Moringa oleifera), have been proven to contain bioactive compounds that function as antioxidants and anti-inflammatories, as well as sources of essential nutrients for the body. These compounds help strengthen the immune system and overall body resilience, which are particularly important for vulnerable groups such as tuberculosis patients and children at risk of stunting [9, 10, 11].

Beyond health benefits, the development of TOGA holds significant socio-economic value. Processing medicinal plants into derivative products, such as instant jamu, herbal teas, and snacks, has provided additional income for communities, especially during the COVID-19 pandemic. This approach involves community empowerment, aligning with the concept of community-based health development, which fosters active public participation in maintaining health through the utilisation of local resources [6, 12, 13].

Furthermore, TOGA development efforts support the principles of sustainable development. By utilising non-productive land, such as home yards and vacant plots, communities can reduce their dependence on synthetic drugs while integrating organic waste management into the production cycle. This aligns with the goals of sustainable consumption and production, as well as mitigating negative environmental impacts [6, 11, 14]. Programs such as Tato Macan, which integrate TOGA cultivation, education, and processing into ready-to-consume products, represent a concrete example of implementing this holistic approach.

In conclusion, the development and utilisation of TOGA contribute not only to improving public health and nutritional quality but also support community economic empowerment and sustainable environmental protection.

1.3. Research Objective

The main objective of the Tato Macan Program (*Taman TOGA Makin Cantik*) is to provide an integrated solution to address public health, nutrition, and community economic empowerment challenges through the utilization of Family Medicinal Gardens (TOGA). By harnessing local potential in the form of non-productive land and community resources, this program not only focuses on providing natural health alternatives but also promotes economic self-reliance and environmental sustainability.

Specifically, the objectives of this program are to:

1. Enhance the use of TOGA as a source of family health, particularly in supporting the nutritional recovery of tuberculosis patients and preventing stunting in children.
2. Optimise non-productive land into model TOGA gardens that can serve as educational centres and sources of inspiration for communities to utilise local resources.
3. Promote the empowerment of health cadres and community groups, especially women's farmer groups (*Kelompok Wanita Tani/KWT*), through training in cultivation, processing, and management of TOGA derivative products.
4. Develop value-added herbal products such as tea, *jamu* (traditional herbal drink), and functional foods as new business opportunities that contribute to increasing household income.
5. Implement sustainable environmental practices through the use of organic waste as compost fertilizer and the reduction of open burning practices that may cause pollution.
6. Support the achievement of the Sustainable Development Goals (SDGs) in the areas of health, food security, gender empowerment, economic growth, and sustainable consumption and production.

2. MATERIALS AND METHODS

2.1. Location and Time of Activities

The Tato Macan Program (Taman TOGA Makin Cantik) was implemented in Samboja District, Kutai Kartanegara Regency, East Kalimantan. This location was chosen because of the abundance of underutilized non-productive land and the community's high demand for access to functional foods and natural health alternatives. The demonstration plot used in this program covers an area of approximately 625 m², which was utilized as a TOGA plot with various types of medicinal and spice plants (empon-empon).

The program was carried out in stages over the course of one year, including preparation, implementation, mentoring, and evaluation. This timeframe was designed not only to provide the

community with theoretical knowledge but also to equip them with practical experience in the sustainable cultivation and utilization of TOGA.

2.2. Target Participants

The primary target of this program is the community in Samboja District, including health cadres, farmer groups, women's farmer groups (*Kelompok Wanita Tani/KWT*), as well as families with members affected by TB and children at risk of stunting. The direct involvement of women's groups is one of the program's main focuses, considering their strategic role in managing family health and utilizing home gardens. In addition, the program also targets the younger generation as agents of change to ensure its future replication.

2.3. Implementation Stages

The program was implemented in stages by integrating education, mentoring, and community empowerment. The implementation phases included:

1. Identification of Potential and Social Mapping
   Conducted to assess the condition of non-productive land, community health needs, and target groups to be involved. This process also aimed to identify local potential that could be integrated into the program.
2. Program Socialization
   The community was introduced to the objectives of the program, the benefits of TOGA as functional food and traditional medicine, and the urgency of reducing dependence on synthetic chemicals.
3. Training on TOGA Cultivation and Processing
   Participants were trained in planting techniques, maintenance, and processing TOGA into derivative products such as herbal teas, packaged *jamu*, and functional foods.
4. Establishment of TOGA Demonstration Plot
   An area of 625 m² was developed into a model garden with approximately 30 types of medicinal plants. This plot serves as a center for community learning and practice.
5. Intensive Mentoring
   The implementation team guided the community in developing TOGA gardens and managing processed products, including aspects of business management and marketing.
6. Monitoring and Evaluation
   Carried out periodically to assess program effectiveness, the sustainability of TOGA utilization, and its resulting economic and social impacts.

2.4. Methodological Approach

The method used in implementing the program was a community-based participatory approach. Through this method, the community was not only the beneficiary but also played an active role as planners, implementers, and program managers. This approach was strengthened by the principle of asset-based community development, which emphasizes the utilization of local potential as the primary capital for development. In addition, the program applied the principles of adult education (andragogy) by prioritizing hands-on practice, group discussions, and peer-to-peer knowledge exchange. Through this method, participants not only acquired technical skills but also developed a strong sense of ownership toward the program.

3. RESULT AND DISCUSSION

The implementation of the Tato Macan Program (Taman TOGA Makin Cantik) generated a range of achievements that can be reviewed from health, social, economic, and environmental perspectives. The program's impact was not only felt directly by the beneficiary communities but also contributed to long-term changes in healthy lifestyles and the sustainability of the local economy.

3.1 Enhancing the Use of TOGA for Health

The program successfully optimized 625 m² of non-productive land into a TOGA demonstration plot with approximately 30 types of medicinal plants. The utilization of TOGA has proven to support community health, particularly in fulfilling additional nutritional needs for tuberculosis (TB) patients and children at risk of stunting. Plants such as moringa, Javanese turmeric, and ginger serve as sources of functional food rich in nutrients while also functioning as traditional medicine. This finding is consistent with studies emphasizing the role of TOGA in improving nutritional status and immune resilience [1, 5].

3.2 Community Empowerment and Capacity Building

A significant outcome of the program is the increased capacity of communities to manage TOGA, from cultivation to product processing. Health cadres, farmer groups, and women's farmer groups (*Kelompok Wanita Tani/KWT*) actively participated at every stage of the activities. The involvement of women is particularly noteworthy, as it demonstrates the strengthening of gender roles in managing family health while also creating economic opportunities. This empowerment aligns with the community-based health development approach, where communities are fully engaged in maintaining their own health and well-being [2, 7].

3.3 Development of Value-Added Herbal Products

Beyond household consumption, TOGA was also processed into derivative products with added value, such as herbal teas, packaged *jamu*, and moringa chips. These products opened up micro-enterprise opportunities in the herbal sector, which helped increase community income. The program's economic impact was not only reflected in financial gains but also in household cost efficiency through savings on synthetic medicines and fertilizers. These findings highlight the strong connection between the use of local resources and improved community economic welfare, consistent with the concept of community-based creative economy [6].

3.4 Application of Sustainable Environmental Principles

The Tato Macan Program also integrated circular economy principles into resource management. Organic waste was processed into compost fertilizer, while biogas waste was reused to support TOGA-based production. These practices reduced dependence on external inputs while minimizing pollution from open burning. Thus, the program contributed to environmental risk mitigation while strengthening local ecological resilience [3, 8].

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3.5 Social Impact and Program Replication

From a social perspective, the program raised community awareness of the importance of preventive health based on local resources. The TOGA gardens developed functioned not only as production areas but also as educational centers and tangible models that could be replicated by other communities. Knowledge transfer to 17 neighborhood units (*RT*) demonstrated the program's wide multiplier effect, making it a promising model for community-based public health development in other regions.=

Overall, the implementation of the Tato Macan Program highlights the importance of utilizing TOGA as a multidimensional strategy encompassing health, social, economic, and environmental aspects. The program's success is consistent with literature emphasizing the role of community empowerment in building health and economic resilience. This innovation also demonstrates that local resource-based solutions can serve as effective strategies for achieving sustainable development goals.

4. CONCLUSION

The Tato Macan Program (Taman TOGA Makin Cantik), as part of the *Prokesmas Puja* initiative, has demonstrated that the utilization of non-productive land for cultivating Family Medicinal Plants (*Tanaman Obat Keluarga* / TOGA) can provide a holistic solution that sustainably integrates health, social, economic, and environmental dimensions. The use of TOGA not only functions as a source of functional food supporting the recovery of tuberculosis (TB) patients and the prevention of stunting in children, but also strengthens community self-reliance in maintaining family health. Furthermore, the active involvement of community groups—particularly women—in the cultivation and processing of TOGA derivative products such as herbal teas, packaged *jamu*, and moringa chips has created opportunities for the creative economy, contributing to increased household income. On the environmental side, the application of circular economy principles through the processing of organic waste into compost fertilizer and the reduction of open burning practices has shown tangible contributions to mitigating environmental risks and climate change. Thus, the Tato Macan Program can be regarded as an innovation model based on local potential that not only improves public health quality but also reinforces economic and ecological resilience while contributing to the achievement of the Sustainable Development Goals (SDGs).

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