Asian Journal of Community Services (AJCS)
Vol. 5, No. 8 2026: 607-622

Empowering Church Congregation Members Through Healthy Food Processing Education and Cooking Demonstrations to Promote Healthy Living Behavior at GKJW Manukan Congregation, Surabaya

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A R T I C L E I N F O

Keywords: Community Empowerment, Healthy Cooking, Balanced Nutrition, Healthy Lifestyle, Community Service

Received : 18, April
Revised : 20, June
Accepted: 22, August

A B S T R A C T

Rising consumption of ultra-processed foods is driving increases in diabetes, hypertension, obesity, and heart disease. Nutrition education serves as a key preventive strategy for improving community health. This program aimed to enhance knowledge, skills, and awareness of the GKJW Manukan Church congregation in Surabaya regarding healthy food selection, nutritious cooking, and balanced meal planning. Using a Participatory Action Research (PAR) approach combined with Participatory Learning and Action (PLA), the program engaged housewives, adolescents, elderly members, and young families through nutrition education, cooking demonstrations, hands-on practice, and pre-/post-test evaluations. Results showed strong engagement and improved understanding of balanced nutrition and healthy cooking, supported by a sustainable recipe booklet as a replicable community health model.

INTRODUCTION

The increasing prevalence of non-communicable diseases (NCDs) has become one of the main challenges of public health development in various countries. Non-communicable diseases such as cardiovascular disease, diabetes mellitus, cancer, and chronic lung disease are the leading causes of death globally (Karma & Yurianda, 2024). The World Health Organization reports that approximately 74% of deaths worldwide are caused by non-communicable diseases, most of which are related to behavioral risk factors, including unhealthy dietary patterns (WHO, 2026). One of the main risk factors for the rise of NCDs is the change in community consumption patterns that increasingly rely on processed foods and ultra-processed foods, which generally have high sugar, sodium, and saturated fat content, but low fiber and micronutrients (Monteiro et al., 2019).

In Indonesia, nutrition problems are no longer only related to undernutrition, but also face the phenomenon of the double burden of malnutrition, namely the simultaneous occurrence of undernutrition and overnutrition (Fauzy et al., 2025; Kala & Jannah, 2023). The results of the 2023 Indonesian Health Survey (SKI) show that Indonesia still faces the double burden of malnutrition, namely the existence of undernutrition problems alongside an increasing prevalence of overweight and non-communicable diseases related to community consumption patterns (BKPK, 2023). This condition indicates that changes in food consumption behavior are one of the priorities in promotive and preventive efforts at the community level.

FAO (2023) and WHO (2026) affirm that healthy dietary patterns must be based on food diversity, increased consumption of vegetables and fruits, restriction of free sugar, salt, and saturated fat consumption, as well as the utilization of local food that is safe, nutritious, and sustainable. These recommendations are in line with the Balanced Nutrition Guidelines published by the Ministry of Health of the Republic of Indonesia, which emphasize four main pillars, namely consumption of diverse food, clean living behavior, adequate physical activity, and regular weight monitoring (Ministry of Health of the Republic of Indonesia, 2023).

Although access to nutrition information is increasingly easy to obtain through digital media, its implementation in daily life still faces various obstacles. Many families understand the importance of healthy food, but do not yet have the skills to select food ingredients, apply processing techniques that can maintain nutritional content, or plan economical and nutritious family menus (Hilmi et al., 2022). Research shows that increased knowledge does not necessarily lead to behavioral change if it is not accompanied by direct practical experience (Contento & Koch, 2020; Ronto et al., 2016).

Increased nutrition knowledge does not always result in behavioral change if individuals do not have practical skills in selecting, processing, and preparing healthy food. Therefore, the food literacy approach, which integrates knowledge, skills, and food decision-making ability, becomes an important strategy in building healthy eating behavior (Truman et al., 2020; Vidgen & Gallegos, 2014). Cooking demonstration is one of the experience-based educational methods that is effective because it allows participants to gain knowledge as well as practical skills in processing healthy food. The practice-based approach has been proven to increase individual self-efficacy in preparing healthy food and support long-term changes in consumption behavior (Begley et al., 2018; Contento & Koch, 2020).

In addition to learning methods, the social environment also plays an important role in the success of health behavior change. Health behavior change is influenced not only by individual factors, but also by the social environment and community support. Community-based health promotion approaches enable communities to play an active role in the change process, thereby increasing the sustainability of health programs (Nutbeam & Lloyd, 2021; Wallerstein et al., 2017). In the Indonesian context, the church, as a socio-religious institution, has a strategic role in building the holistic well-being of its congregation, not only through spiritual services, but also through health services, education, and community empowerment.

GKJW Manukan Congregation Surabaya is one of the churches that actively organizes various congregation development activities. Based on the results of initial coordination with the Council of GKJW Manukan Congregation Surabaya, it is known that most participants are housewives, young families, adolescents, and the elderly, who play an important role in determining family food consumption patterns. However, no integrated training combining nutrition education, cooking demonstration, hands-on practice, and the provision of educational media in the form of a healthy recipe booklet had previously been held. This condition forms the basis for the development of this community service program.

As a vocational higher education institution with competence in the field of culinary arts and food management, Akademi Sages has a responsibility to implement the Three Pillars of Higher Education (*Tri Dharma Perguruan Tinggi*) through applicable, partner-needs-based community service activities. The competence of lecturers and students in the field of food processing, food safety, and nutritious menu planning is an important asset in supporting the improvement of community capacity. Knowledge transfer through a combination of counseling, cooking demonstration, hands-on practice, and participatory discussion is expected to be more effective than purely theoretical material delivery.

The Participatory Action Research (PAR) approach positions the community as an active partner in the process of problem identification, planning, action, reflection, and program evaluation. This approach aims to produce social change through collaboration between academics and the community (Kemmis et al., 2014; Wallerstein et al., 2017). Through this approach, it is hoped that there will be an increase in the knowledge, skills, and awareness of participants in selecting food ingredients, applying healthy cooking techniques, and planning nutritious family menus based on local food. In addition to producing behavioral change, this activity also produces educational media in the form of a healthy recipe booklet as a means of sustainable learning for the congregation.

The novelty of this activity lies in the integration of nutrition education, culinary demonstration, participatory practice, and church community empowerment in a single community service model oriented toward behavioral change. This model not only increases healthy food literacy, but also strengthens the church's role as a center for family health empowerment. Therefore, this activity is expected to become a community service model that can be replicated in other religious communities or community organizations.

IMPLEMENTATION AND METHODS

Activity Design

This community service activity uses a Participatory Action Research (PAR) approach combined with the Participatory Learning and Action (PLA) method. The PAR approach was chosen because it positions the community as an active partner (co-researcher) in the empowerment process, starting from problem identification, activity planning, implementation of actions, observation, reflection, to program evaluation. This approach aims not only to produce practical change, but also to build community capacity so that they are able to develop solutions independently and sustainably (Kemmis et al., 2014; Wallerstein et al., 2017).

The PLA method is used to strengthen the participatory learning process through the direct involvement of participants in discussion activities, practice, reflection on experience, and decision-making. The PLA approach emphasizes that communities have local knowledge that needs to be valued and combined with academic knowledge so as to produce solutions that are more suited to community needs (Pretty et al., 1995). The selection of a participatory approach in this activity is based on the concept that health behavior change is influenced not only by an increase in individual knowledge, but also by social factors, the environment, and community support. Therefore, active participant involvement becomes an important factor in increasing the success of community-based health promotion programs (Nutbeam & Lloyd, 2021).

Location and Activity Target

The activity was carried out at GKJW Manukan Congregation, Surabaya City, East Java. The activity partner was the Council of GKJW Manukan Congregation, which played a role in supporting the implementation of the program through participant coordination, provision of activity facilities, and mentoring during the implementation process. The selection of the church community as a partner is based on the concept that community-based institutions have a strategic role in supporting health behavior change through strengthening social capital, interpersonal support, and the sustainability of community health programs (Wallerstein et al., 2017).

The activity targets consisted of housewives, young families, adolescents, the elderly, and church service administrators. These groups were selected because they play an important role in determining family food decisions, from the selection of food ingredients, the processing process, to the formation of healthy eating habits within the household. The family-based approach is important because food consumption behavior at the household level is greatly influenced by the knowledge, skills, and ability of the family's food manager in applying the principles of balanced nutrition (Contento & Koch, 2020).

Implementation Stages

The implementation of the activity was carried out through four main stages as shown:

a. Preparation Stage
   The preparation stage began with coordination with the Council of GKJW Manukan Congregation Surabaya to conduct a needs assessment and determine the form of intervention appropriate to the characteristics of the participants. The process of needs identification is an important part of the community empowerment approach because programs designed based on local needs have a higher chance of success and sustainability (Wallerstein et al., 2017). At this stage, nutrition education materials were prepared, a healthy recipe booklet was compiled, evaluation instruments in the form of pre-tests and post-tests were prepared, and cooking demonstration materials and equipment were prepared.
b. Implementation Stage
   The implementation of the activity began with measuring the participants' initial knowledge through a pre-test regarding the concept of balanced nutrition, food safety, food ingredient selection, and healthy food processing techniques. This was followed by counseling on the principles of balanced nutrition, the utilization of local food, household food safety, and food processing techniques capable of maintaining nutritional quality. Effective nutrition education does not only focus on the delivery of information, but must also improve individuals' ability to apply that knowledge in daily life. The skill-based nutrition education approach has been proven to be more effective in improving healthy eating behavior compared to education that is only oriented toward knowledge (Contento & Koch, 2020).

Healthy cooking demonstration was conducted as an experiential learning method that allows participants to directly see, try, and evaluate the food processing process. This method was chosen because the ability to process food is one of the important components in the concept of food literacy, namely a person's ability to plan, select, prepare, and consume healthy food (Vidgen & Gallegos, 2014). Cooking demonstration activities combined with hands-on practice are known to be able to improve cooking skills, self-efficacy, and individual motivation in providing healthy food for the family (Begley et al., 2018).

c. Evaluation Stage

Evaluation was carried out after the entire series of practice activities was completed through several methods, namely:

1) A post-test to measure the increase in participants' knowledge after participating in the activity.
2) Observation of skills during cooking practice using an assessment sheet covering aspects of sanitation, use of equipment, cooking technique, food presentation, and group cooperation.
3) A participant satisfaction questionnaire using a five-point Likert scale to determine participants' perceptions of the quality of the material, the presenters' ability, the benefits of the activity, the facilities, and the sustainability of the program.

In addition to quantitative evaluation, a reflective discussion was also conducted to obtain input from participants regarding the application of the material in daily life.

d. Follow-up Stage

As an effort to maintain the sustainability of the program, the community service team distributed the healthy recipe booklet to all participants in both printed and digital form. In addition, an online communication medium was formed as a means of consultation regarding healthy food processing and sharing experiences in applying healthy menus in the family environment. Further mentoring was also directed toward supporting the formation of healthy food cadres within the church environment, who are expected to become agents of change in healthy living behavior for other congregation members.

Data Collection Instruments

Activity data were collected using several instruments, namely a cooking practice skills observation sheet, pre-test and post-test instruments, a participant satisfaction questionnaire, brief interviews, and activity documentation. The use of a combination of quantitative and qualitative methods is in accordance with the principles of community empowerment program evaluation because it is able to describe changes in knowledge while also understanding participants' experiences during the activity (Creswell & Creswell, 2017).

Data Analysis Technique

Quantitative data were analyzed descriptively using mean values, percentages, and frequency distribution to describe changes in participants' knowledge level. Comparison of pre-test and post-test results can be used as an initial indicator of the effectiveness of the community health education intervention. If statistical assumptions are met, the analysis can use the Paired Sample t-test, while data that are not normally distributed can be analyzed using the Wilcoxon Signed Rank Test. Qualitative data from observation, interviews, and documentation were analyzed using an interactive analysis approach covering data reduction, data presentation, and conclusion drawing (Miles et al., 2018).

Program Success Indicators

Program success indicators were compiled based on the principles of community empowerment evaluation covering aspects of process (process evaluation), direct results (output), and changes in participant ability (outcome) (Wallerstein et al., 2017). The success of the activity was then measured based on the following indicators:

Table 1. Community Service Program (PkM) Success Indicators

Aspect	Indicator	Target
Participation	Participant attendance	≥80%
Knowledge	Increase in post-test results	≥30%
Skill	Participants able to practice healthy cooking techniques	≥75%
Satisfaction	Participant satisfaction level	≥85%
Output	Healthy recipe booklet	100% complete
Academic Output	Scientific article	1 article

These indicators were compiled based on the objectives of the activity and used as a reference in evaluating the effectiveness of the community empowerment program, as follows:

Figure 1. Program Implementation Flow

RESULTS AND DISCUSSION

Implementation of Community Service Activities

The Community Service (PkM) activity was carried out at GKJW Manukan Congregation Surabaya as an implementation of the Three Pillars of Higher Education (*Tri Dharma Perguruan Tinggi*) of Akademi Sages in the field of community empowerment through health education. This activity aimed to improve the knowledge, skills, and awareness of the congregation regarding the importance of healthy eating patterns through nutrition counseling, cooking demonstration, and healthy food processing practice based on local food ingredients.

Figure 2. Location of GKJW Manukan Congregation Surabaya

The implementation of the activity received full support from the Council of GKJW Manukan Congregation Surabaya, which played a role in participant coordination, provision of the venue, and mentoring during the activity. Participants consisted of housewives, young families, adolescents, the elderly, and church administrators, who are a strategic group in determining family food consumption patterns. The involvement of various age groups strengthened the learning process because it allowed for the exchange of experiences regarding food consumption habits within the family environment.

The series of activities began with participant registration and completion of a pre-test to determine the initial level of knowledge regarding the principles of balanced nutrition, household food safety, healthy cooking techniques, and family menu planning. This was followed by counseling delivered interactively using presentation media, food ingredient examples, and group discussion. After the counseling session, the activity continued with a healthy cooking demonstration showcasing food processing techniques capable of maintaining nutritional content, such as the use of steaming, boiling, baking, and stir-frying with a small amount of oil. As a form of experiential learning, participants were then divided into small groups to directly practice the food processing techniques that had been demonstrated. The entire practice process was accompanied by lecturers and students so that participants received intensive guidance. The activity was closed with discussion, shared reflection, completion of the post-test, and distribution of the healthy recipe booklet as an educational medium that could be used independently after the activity ended.

Increase in Participants' Knowledge of Healthy Food and Balanced Nutrition

Nutrition counseling was an important initial stage in building participants' understanding of the relationship between food consumption patterns and health. The material provided covered the principles of balanced nutrition, selection of local food ingredients, household food safety, healthy cooking techniques, and planning of economical and nutritious family menus. During the delivery of the material, participants showed high enthusiasm through active discussion and sharing experiences related to daily cooking habits. Most participants stated that frying remained the most frequently used cooking technique because it was considered practical and produced flavors preferred by the family.

Through the educational activity, participants gained an understanding that food processing methods affect the nutritional quality of food. Reducing excessive oil use, selecting fresh food ingredients, and applying cooking methods such as steaming, boiling, and baking are simple strategies that can be applied within the household. The results of the pre-test and post-test evaluation showed a tendency toward increased understanding among participants after participating in the activity. Participants were better able to explain the concept of balanced nutrition, recognize the composition of a healthy menu, and understand the importance of restricting sugar, salt, and fat consumption. This finding is consistent with Contento and Koch (2020), who explained that effective nutrition education must not only increase knowledge, but must also build individuals' ability to apply nutritional information into daily practice.

In addition, the increase in participants' knowledge supports the concept of food literacy, in which a person not only understands food information but also has the ability to select, process, and consume food that supports health (Truman et al., 2017).

Figure 3. Healthy Food Counseling Activity

The results of the evaluation through pre-test and post-test showed a tendency toward increased participant understanding of the material provided. This increase was evident from participants' ability to re-explain the principles of balanced nutrition, recognize the composition of healthy food, and understand the importance of restricting sugar, salt, and fat consumption, in accordance with the statements of the Ministry of Health of the Republic of Indonesia (2023) and WHO (2025). This result is consistent with the research of Steinke et al. (2026), which states that food literacy is one of the important determinants in shaping healthy eating behavior because it covers individuals' ability to plan, select, prepare, and consume food appropriately. Food literacy interventions combined with education and cooking practice have been proven to have the potential to improve healthy eating behavior in various community groups, including groups with different socioeconomic statuses. In addition, the increase in knowledge was also supported by the use of varied learning media, such as food ingredient examples, healthy menu illustrations, and two-way discussion that allowed participants to connect the material with daily experience. This approach has been proven to improve conceptual understanding while also motivating participants to begin applying healthy eating patterns within the family environment.

Improvement of Healthy Food Processing Skills through Cooking Demonstration

One of the main aspects of this activity was the application of the cooking demonstration method followed by participants' hands-on practice. This method was chosen because food processing skills cannot be sufficiently obtained through the delivery of theory alone, but require direct experience so that participants are able to apply them independently. The demonstration was carried out through several stages, namely selection of raw materials, food sanitation and hygiene, ingredient washing technique, cutting technique, cooking temperature control, appropriate use of oil, and food presentation. Participants appeared active in following each stage and were able to practice healthy food processing techniques with the guidance of lecturers and students. Several participants also stated that the practice activity provided a new understanding of how to process food that remains delicious yet is healthier.

The observation results showed that most participants were able to: select healthier food ingredients, apply simple hygiene and sanitation principles, use low-oil cooking techniques, and plan menus with a more balanced composition. These results reinforce the research of Begley et al. (2018), which states that practice-based cooking education programs can improve individuals' ability to prepare healthy food and increase self-efficacy in applying healthy eating patterns. Experiential learning also allows participants to connect new knowledge with daily experience so that the process of behavioral change becomes easier to apply (Kolb, 2015).

Figure 4. Cooking Demonstration and Explanation of the Healthy Food Cooking Process

Direct mentoring during practice provided participants with the opportunity to ask questions about various obstacles frequently encountered in food processing at home. This discussion produced various practical solutions that were easy to apply by utilizing local food ingredients available in the surrounding environment. The observation results showed that most participants were able to practice healthy cooking techniques in accordance with the stages of the demonstration. This ability shows that practice-based learning provides a more meaningful experience compared to learning that only relies on theoretical delivery of material. This finding supports the results of the research of Truman et al. (2017), which explains that food literacy is an important part of health promotion because it covers individuals' ability to understand food information, make food decisions, and apply healthy eating behavior, especially at home.

Figure 5. Cooking Demonstration Results: 2 Healthy and Balanced Food Menus

Effectiveness of the Participatory Action Research (PAR) Approach

The PAR and PLA approaches in this activity provided space for participants to play an active role as part of the empowerment process. Participants were not only recipients of information, but were also involved in discussion, practice, reflection, and the development of solutions based on their own experiences. During the activity, participants actively shared various problems faced in providing healthy family food, such as limited cooking time, limited menu variety, and food ingredient cost considerations.

Through participatory discussion, the community service team together with participants were able to find more realistic solutions, such as the utilization of local food ingredients, the planning of weekly family menus, and the modification of cooking techniques to be healthier.

This approach is consistent with the principle of Community-Based Participatory Research (CBPR), which positions the community as an equal partner in producing solutions based on local needs (Wallerstein et al., 2017). The success of the participatory approach is also reinforced by Kemmis et al. (2014), who explained that PAR is able to produce social change because the learning process occurs through real action and shared reflection.

Figure 6. Participatory Action Research (PAR) and Participatory Learning and Action (PLA)

This result is consistent with the concept of community empowerment put forward by Nutbeam and Lloyd (2021), that the success of health promotion is greatly influenced by the active involvement of the community in all stages of the program. The higher the level of community participation, the greater the opportunity for sustainable behavioral change to occur.

The Role of the Church as a Community-Based Health Promotion Medium

The results of the activity show that the church has great potential as a center for community health empowerment. The church has often been viewed as an institution of spiritual service, but through this activity it is evident that the church can also become a strategic space for supporting the improvement of the congregation's quality of life through health education. The church environment provides a sense of comfort and social trust for participants, thereby increasing participation and engagement during the activity.

The community-based health promotion approach emphasizes that behavioral change is more easily achieved when individuals receive social support from their closest environment (Nutbeam & Lloyd, 2021). This program also shows that the integration of church service values with health education can support the concept of holistic service, namely attention to spiritual, social, and health needs simultaneously.

Figure 7. Group Photo with Some Participants of the Healthy Food Cooking Demonstration

The church community-based approach also enables the formation of sustainable social support. After the activity ended, participants could still share experiences regarding the application of healthy menus, so that behavioral change did not stop at the time the activity was implemented. This model has the potential to be replicated in other church communities as well as other community organizations.

Program Outputs and Impact

In addition to increasing participants' knowledge and skills, this activity produced several outputs, namely: a healthy recipe booklet, nutrition education materials, activity documentation, a scientific article on community service, and strengthened cooperation between Akademi Sages and GKJW Manukan Congregation Surabaya. The healthy recipe booklet became one form of program sustainability because it can be used by participants as a guide in applying healthy menus at home. Sustainable educational media such as this are important for maintaining behavioral change after the intervention program ends.

From the higher education institution's perspective, this activity provided project-based learning experience for students through direct involvement in community service. The model of collaboration between higher education institutions and communities also supports the implementation of the Three Pillars of Higher Education, particularly in the field of community service.

Overall, the activity shows that the integration of nutrition education, cooking demonstration, participatory approach, and community support can serve as an effective community empowerment model in improving healthy food literacy and supporting the prevention of non-communicable diseases.

CONCLUSIONS AND RECOMMENDATIONS

The Community Service activity carried out at GKJW Manukan Congregation Surabaya succeeded in implementing a community empowerment program through healthy food processing training and cooking demonstration as an effort to improve healthy living behavior. The program was implemented using the Participatory Action Research (PAR) approach combined with the Participatory Learning and Action (PLA) method so that participants were actively involved in each stage of the activity, from needs identification, material delivery, cooking demonstration, group practice, to evaluation.

The implementation of counseling combined with cooking demonstration provided a more comprehensive learning experience compared to conventional lecture methods. Participants not only gained understanding of the concept of balanced nutrition, food safety, and appropriate food processing techniques, but were also able to directly practice various cooking techniques that maintain the nutritional quality of food. This activity shows that the experiential learning approach is able to improve participants' skills in selecting food ingredients, processing food healthily, and planning balanced, nutritious family menus using local food ingredients that are easy to obtain and economical. In addition, the high participation of participants during the activity reflects that the participatory approach was able to create an interactive learning atmosphere and encourage the process of experience sharing among community members.

From an institutional perspective, this activity strengthened the partnership between Akademi Sages and GKJW Manukan Congregation Surabaya in the implementation of community-based promotive and preventive health programs. Outputs in the form of a healthy recipe booklet, activity documentation, and a scientific article serve as a form of program sustainability as well as educational media that can be continuously utilized by the congregation. Meanwhile, in general, the community empowerment model through the integration of nutrition education, cooking demonstration, participatory practice, and community mentoring has proven to be an effective approach in improving healthy food literacy. This model has the potential to be replicated in other religious communities or community organizations as part of a promotive strategy in the prevention of non-communicable diseases.

The results of the activity provide several important implications for the development of community service programs. First, the activity shows that nutrition education will have a greater impact when combined with direct practice. This approach makes it easier for participants to apply the knowledge gained into daily life, thereby increasing the likelihood of behavioral change occurring. Second, the church can serve as a center for community health empowerment through the integration of spiritual service and health service. The community-based approach enables the creation of sustainable social support so that the application of healthy living behavior does not stop after the activity ends. Third, synergy between higher education institutions and religious institutions becomes an effective model of collaboration in the implementation of the Three Pillars of Higher Education, particularly in the field of community service. The involvement of lecturers and students not only improves the quality

of program implementation, but also strengthens experience-based learning (service learning).

Based on the results of the activity implementation, several recommendations can be developed for the next program. Regular mentoring should be carried out to monitor the application of healthy menus within participants' family environments, alongside the development of healthy cooking classes with more specific themes, such as menus for the elderly, menus for children, menus for people with diabetes mellitus, and low-salt menus for people with hypertension. A digital-based training module that can be accessed independently by the community should also be compiled, together with the formation of healthy food cadres within the church environment as education agents who can continue the activity independently. Finally, further research should be developed on the effectiveness of long-term food consumption behavior change through evaluation several months after the activity takes place.

ACKNOWLEDGMENT

The authors express their appreciation and gratitude to the Council of GKJW Manukan Congregation Surabaya for their willingness to become a partner in the implementation of this Community Service activity. Thanks are also extended to the leadership of Akademi Sages for providing institutional support, to all lecturers and students involved in the implementation of the activity, and to all participants who actively participated. The collaboration that has been established is expected to become the basis for the

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