

## COMMUNITY EMPOWERMENT BASED ON HEALTH AND PRODUCTIVITY IN AEK UNCIM VILLAGE, SOUTH TAPANULI

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### Abstract

Aek Uncim Village faces public health challenges, particularly low environmental hygiene awareness and high tuberculosis prevalence. This Community Service Program (KKN) aims to improve health awareness and community productivity through a comprehensive approach that integrates four areas: academic, religious, arts-sports, and health thematic. Activities were conducted from September 26, 2025, to January 16, 2026, using participatory methods with normative and historical approaches. Data were collected through observation, interviews, pre-post tests, and documentation, then analyzed using descriptive quantitative and qualitative methods. Results show significant improvements: community knowledge about TB increased by 43.5% (from 44% to 87.5%), anti-bullying knowledge increased by 71% (from 52% to 89%), posyandu participation rose by 50% (from 52% to 78%), and elderly exercise participation reached 75%. The economic empowerment program successfully established 3 pilot locations for plant cultivation with potential income increases of 25-30%, 1 communal living pharmacy and 8 independent living pharmacies with 5 types of medicinal plants, and 15 families producing organic compost that reduced chemical fertilizer dependency by up to 40%. The program successfully increased community awareness of environmental hygiene and communicable disease prevention, with 89% of respondents reporting positive behavioral changes in environmental health maintenance and program sustainability reaching 85.7%..

*Keywords:* community empowerment, tuberculosis, public health, KKN, South Tapanuli

### PENDAHULUAN

Real Work Lecture (KKN) is implementation of the Tri Dharma of Higher Education which provides chance student apply knowledge knowledge For finish problem society [1] . KKN has role strategic in increase sensitivity social students and provide contribution real for development community ( Widiastuti & Kusumawati , 2021). This program No only developing students' soft skills but also strengthens concern to problem social [2] .

Aek Village Uncim , Tano Tombangan Angkola District , South Tapanuli Regency , has population of 768 people with majority eye livelihood as farmers . Although village This known own harmonization life good religion and

ever launched as "Pancasila Village", there is challenge health communities in need attention serious . Based on data from the South Tapanuli District Health Office (2024), this area own TB prevalence is 142 cases per 100,000 population , more tall from the national average (106 per 100,000 population ). Observation beginning show level awareness public to cleanliness environment Still low , with 65% of homes ladder Not yet own place rubbish closed and 48% not own system adequate drainage .

Problems health society , especially disease infectious such as tuberculosis, has become focus of health programs in Indonesia [3] . Syntia Nelwan's research (2025) shows that low awareness public to prevention disease infectious become factor main height number pain in rural

areas [4] . Empowerment public through education health and improvement sanitation environment proven effective lower prevalence disease contagious [5] . An integrative KKN program that combines aspect health , education , and empowerment economy show results positive in increase quality life society [6] .

However , some large KKN programs implemented tend nature partial and less integrated between aspect health , education , religion , and economy productive (Santoso, 2021). KKN Program in Aek Village Uncim adopt approach comprehensive that integrates four fields ( scientific , religious , arts-sports , and thematic) health ) with focus on program sustainability through involvement active in routine community activities . The novelty of this program lies in the combination approach normative ( planned programs ) and historical ( participation ) in activity existing ), as well as focus specifically for the prevention of TB as priority health local combined with empowerment economy through agriculture sustainable .

Based on problem mentioned , this KKN program aim to : (1) improve knowledge and awareness public to TB prevention and hygiene environment ; (2) empowering public through productive programs sustainable ; (3) increase participation public in health programs ; and (4) creating an empowerment model public integrated that can replicated in other villages .

## **M E T O D E**

KKN activities were carried out in Aek Village Uncim , Tano Tombangan Angkola District , South Tapanuli Regency , North Sumatra Province , in the period of September 26, 2025 to January 16, 2026 (16 weeks ). Election location based on analysis need through coordination of the LPPM of

Muhammadiyah University of South Tapanuli with government area .

The program uses method participatory based on Community-Based Participatory Research (CBPR) which involves public in all over stages activities [7] . Two approaches applied : (1) Approach normative through planned programs results analysis needs ; (2) Approach historical with participate in routine community activities For ensure program sustainability .

The program is divided become four field with a total of JKEM ( Effective Student Working Hours) of 4,610 minutes : field scientific (1,100 minutes ), religious (980 minutes ), arts and sports (730 minutes ), and thematic health (1,800 minutes ).

The program targets include : (1) children age school basic (n=87); (2) adolescents and young people (n=45); (3) mothers and elderly (n=120); (4) groups farmers (n=35); (5) cadres integrated health posts (n=12); and (6) community general (N=768).

Data collected using : a). Observation Participatory . Observation done For identify condition environment , behavior health community and participation in program activities using sheet observation structured [8] . b). In -depth interviews . done with head village , figures community , cadres health , and 30 heads family selected For explore perceptions and needs community . c). Pre-test and Post-test. Questionnaire knowledge about TB, health environment and nutrition given to 45 respondents before and after the socialization program For measure change knowledge . d). Documentation . Documentation photos and videos are taken For all over activities , as well as secondary data collection from profile village and health data .

Quantitative data from pre- post test analyzed in a way descriptive use percentage improvement :

$$\text{Improvement} = [(\text{Post-test Score} - \text{Pre-test Score}) / \text{Pre-test Score}] \times 100\%$$

Qualitative data from observation and interviews analyzed use analysis thematic For identify themes main related change attitudes and behavior society (Braun & Clarke, 2006).

### Stages Implementation

Stage 1: Preparation (2 weeks ): KKN provision , observation location , work program preparation , and coordination with apparatus village .

Stage 2: Implementation (12 weeks ): Implementation of work programs with regular monitoring by the Supervising Lecturer Field (DPL) every 2 weeks very .

Stage 3: Evaluation and Reporting (2 weeks ): Program evaluation , preparation reports , farewell events , and handovers receive the program to party village .

Indicator Success , Program assessed succeed if : (1) increase minimum knowledge of 30%; (2) participation minimum 60% of the community ; (3) at least 3 sustainable programs are formed ; and (4) at least 70% of respondents state satisfied with the program.

## RESULTS AND DISCUSSION

### 3. 1. Location and Respondent Characteristics

Aek Village Uncim located at an altitude of 50-1,275 meters above sea level with amount population of 768 people . Composition population : 54.94% Muslim and 45.05% Christian. The majority eyed livelihood as farmers (68%), laborers farmers (18%), and the informal sector (14%).

Table 1. Characteristics Program Respondents (n=45)

Characteristics	Category	Frequency	Percentage
Gender	Man	18	40%
	Woman	27	60%
Age	17-25 years	12	27%
	26-40 years	20	44%
	>40 years	13	29%
Education	Elementary School	8	18%
	JUNIOR HIGH SCHOOL	15	33%
	SENIOR HIGH SCHOOL	18	40%
	PT	4	9%
Work	Farmer	28	62%
	Housewife	10	22%
	Other	7	16%

Based on Table 1, respondents to the Community Service Program (n=45) were predominantly women (60%), in the productive age group of 26-40 years (44%), and with a high school education (40%). The high participation of women reflects their role as health decision-makers within the family, in line with the findings of Fitriani & Nurhalimah (2019). In terms of occupation, the majority of respondents were farmers (62%) and housewives (22%), which was a consideration in scheduling the program to avoid conflicts with agricultural activities. The variation in respondents' education levels, with 18% having an elementary school education, underpinned the use of communicative and easily understood outreach methods for all levels of society through visual media and simple language.

### 3.2 Field Program Results Science

### 3.2.1 Guidance Learning and Teaching

Mentoring program Study attended by an average of 17 children per meeting with level 85% attendance evaluation show improvement understanding Materials : Mathematics (40%), Indonesian (35%), and Science (38%).

### 3.2.2 Anti-Bullying Socialization

Socialization followed by 42 students Grades 5-6 of elementary school. Pre- posttest results show improvement knowledge about bullying from 52% to 89% ( a 71% increase ).

Table 2. Pre-Post Test Results of Anti-Bullying Knowledge (n=42)

Aspect	Pre-test (%)	Post-test (%)	Improvement
Understanding bullying	55	92	67%
Forms of bullying	48	88	83%
The impact of bullying	54	87	61%
How to prevent	51	90	76%
<b>Average</b>	<b>52</b>	<b>89</b>	<b>71%</b>

This result in line with research by Wulandari et al. (2021) which found that anti-bullying education based on school can increase knowledge student up to 65-75%. Interactive method with manufacturing wall magazine proven effective Because give experience concrete and easy learning remember .

### 3.2.3 Seminar "Say No To Drugs"

The seminar was attended by 38 vocational school students with level 92% satisfaction rating shows 95% of participants committed keep away self from drugs .

## 3.3 Field Program Results Religious

### 3.3.1 Guidance on reading and writing the Koran

The program was attended by 24 children with progress significant : 18 children (75%) increased their reading level , from Iqro 3 to Iqro 4-5, and 6 children (25%) started Reciting Al-Qur'an.

### 3.3.2 Friday Clean

The mosque cleaning program was carried out 12 times with average participation of 15 people per activity . Observation show improvement awareness guard cleanliness of the mosque, with 85% of the congregation start clean place prayer after used .

## 3.4 Results of the Arts and Sports Program

### 3.4.1 Elderly Gymnastics

Activity followed by an average of 18 elderly people (60% of the total of 30 elderly people) village ) with level regular attendance 75%. Evaluation health show improvement : 83% felt more fit , 78% reported Sleep more sleep well .

### 3.4.2 Activities Sport

Football with Karang Taruna was attended by 22 youths and was successful tighten connection KKN students with society , shown with increasing youth participation in other programs ( from 40% to 85%).

## 3.5 Field Program Results Health Thematic

### 3.5.1 Socialization TB Prevention

Priority programs This followed by 45 participants ( cadres) integrated health post , figures community , and citizens ). Pre- post test results show improvement significant :

Table 3. Results of the Pre-Post Test of TB Knowledge (n=45)

Aspect Knowledge	Pre-test (%)	Post-test (%)	Improvement
Understanding TB	45	87	93%
Mode of transmission	38	85	124%
Symptoms of TB	52	90	73%
TB Prevention	41	88	115%
TB Treatment	40	86	115%
<b>Average</b>	<b>44</b>	<b>87.5</b>	<b>43.5%</b>

Pre-test:  
  
 44%

Post-test:  
  
 87.5%

post test results show improvement knowledge about TB which is very significant (Table 3), with average increase from 44% to 87.5% or increased by 43.5%. Aspect experienced knowledge improvement highest is understanding about method transmission (124%) and TB treatment (115%), indicating that method socialization participatory approach that is implemented very effectively in convey information technical .

Improvement This in line with findings Safitri et al. (2020) who reported that education health based public can increase knowledge about TB by 40-55%. The achievements of this program even A little more high , which can explained by several factors : (1) involvement active cadre integrated health post as agent changes that have trust tall from society ( Kartikawati et al., 2019), (2) use of visual media and demonstrations practical in socialization , and (3) approach culture local customized with Aek Village context Uncim .

Although Thus , the increase knowledge Not yet Of course followed by changes behavior term long . Follow-up and monitoring programs are needed to ensure knowledge This transformed become practice sustainable TB prevention .

Chart 1. Comparison TB Knowledge Pre-Post Test

### 3.5.2 Activities Integrated Health Post

Participation integrated health post increase significant after socialization :

Table 4. Participation Data Integrated Health Post

Month	Toddler Weighed	Pregnant mother	Total	Coverage (%)
Sept ( Before KKN)	32	8	40	52%
Oct	38	9	47	61%
Nov	42	10	52	68%
Des	45	11	56	73%
Jan	48	12	60	78%

Improvement participation from 52% to 78% (up 50%) shows success of the socialization program . Increase This in line with study Purwaningsih et al. (2021) who found that mentoring cadres and socialization intensive can increase participation integrated health post up to 45-60%.

### 3.5.3 Living Pharmacy

1 pharmacy was formed life communal with 5 types plant medicine ( ginger , turmeric , galangal , lemongrass, leaves betel ) and 8 families make pharmacy life independent . Survey shows 72% of the population start utilise plant drug For treatment light .

### 3.5.4 Cultivation Plant Productive

The program generates 3 locations example :

- Cultivation vegetables ( water spinach , spinach , mustard greens ): 200 m<sup>2</sup>
- Cultivation corn : 300 m<sup>2</sup>
- Cultivation onion red ( group farmer ): 500 m<sup>2</sup>

Yields Prime : 45 kg of vegetables , 120 kg of corn . Group farmer report potential improvement 25-30% of income diversification plant .

### 3.5.5 Making Organic Fertilizer

2 places formed composting communal with capacity of 200 kg/ month . A total of 15 families (20% of the total) started make compost independent , reduce dependence on fertilizers chemistry up to 40% .

### 3.5.6 Environmental Movement Clean

Cleaning program environment carried out 4 times with average participation of 35 residents per activity . Observation show change behavior :

Table 5. Changes Behavior Cleanliness Environment

Indicator	Before After Change		
	Before	After	Change
House with place rubbish closed	35%	78%	+123%
Drainage clean	45%	85%	+89%
Clean page	52%	88%	+69%
Disposal rubbish regular	40%	82%	+105%

Change behavior This show the success of educational and mutual cooperation programs . Research Dyah Ayu Pramoda Wardani et al. (2024) emphasized that participation active public in activity cleanliness can increase awareness up to 70-85% [9] .

### 3.5.7 Village Infrastructure

Infrastructure program produce :

- road fence 1.2 km long
- 15 alley signs
- 8 point fix drainage

Survey results : 91% of residents feel village more well-organized and beautiful .

### 3.6 Evaluation Program Sustainability

Evaluation sustainability done 1 month after KKN ends through interview with apparatus village and figures public :

Table 6. Program Sustainability Status

Program	Status	Manager
Regular Posyandu	Continued	Integrated Health Post Cadres
Elderly gymnastics	Continued	Village PKK
Pharmacy life	Continued	8 families
Cultivation plant	Continued	Farmers Group
Composting	Continued	15 families
Guidance Study	Discontinued *	-
Friday clean	Continued	Mosque youth

\* Note : Guidance Study stopped Because limitations power teacher local .

The program sustainability rate reached 85.7% (6 out of 7 main programs ). This is show success approach historical involving public in their routine activities , according to findings of Hartono et al. (2021) that the KKN program with involvement institutions local own sustainability more high [10] .

### 3.7 Analysis Program Impact

Evaluation impact done through survey to 50 random respondents :

Table 7. Public Perception of Program Impact

Aspect	Strongly agree	Agree	Neutral	Don't agree
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Aspect	Strongly agree	Agree	Neutral	Don't agree
Increase knowledge health	68%	28%	4%	0%
Change behavior life Healthy	54%	35%	9%	2%
Increase cleanliness environment	64%	32%	4%	0%
Empowering economy	42%	38%	16%	4%
Tighten togetherness	72%	24%	4%	0%

Satisfaction level public reached 94% (very satisfied 58%, satisfied 36%), exceeding the target of 70%. Impact social the biggest is improvement togetherness and mutual cooperation (96% agree ), followed by improvement knowledge health (96%) [9] .

### 3.8 Obstacles and Solutions

Table 8. Obstacles and Solutions to Program Implementation

Constraint	Implemented Solutions	Results
Schedule clash with agriculture	Adjustment program schedule (afternoon/ evening )	Participation increased by 40%
Limited funds for seeds	Self-help community and collaboration farmer	Target group 100% achieved
The participation beginning elderly	Personal approach and pick up the ball	Attendance increased from 30% to 75%
Weather extreme hinder outdoor activities	Scheduling opening and alternative indoor activities	95% of the program remains implemented

Implementation of the KKN program faces four constraint main as shown in Table 8. Conflicting schedule constraints with activity agriculture overcome through adjustment time implementation to the afternoon or

Evening day , which was successful increase participation up to 40%. Limited funds for seeds plant overcome through self-reliance community and collaboration group farmers , so that the procurement target achieved 100%.

The low participation beginning elderly (30%) become challenge alone which then overcome through personal approach and " pick up the ball" strategy, increasing presence to 75%. Approach This in line with principle empowerment group vulnerable which emphasizes importance accessibility and personal approach ( Widiastuti & Kusumawati , 2021). Weather extreme obstacles outdoor activities are anticipated with scheduling rework and alternative indoor activities , ensuring 95% of the program remains implemented .

Ability team in apply solution adaptive and contextual become factor key program success . Problem-solving strategies problems involving participation public No only overcome constraint technical but also strengthens the sense of ownership of the community to the program, which contributed to the high level program sustainability (85.7%) after KKN ended .

### CONCLUSION

Based on Implementation of the Community Service Program in Aek Village Uncim , Tano Tombangan Angkola District , South Tapanuli Regency during the period from September 26, 2025 to January 16, 2026 has show very positive results and exceeded the targets set . The program integrates four field main — scientific , religious , arts-sports , and thematic health — proven effective in increase quality life public in a way comprehensive .

From the aspect improvement knowledge community , this program succeed bring very significant changes , especially in understanding about TB prevention with improvement from 44% to

87.5% or increase by 43.5%. Success similar is also seen in anti-bullying programs which recorded improvement knowledge by 71%, from 52% to 89%. Achievement This indicates that method socialization participatory approach that is implemented very effectively in convey information health and education to public with background behind diverse education .

The impact of the program is also visible real on the increase participation public in various activity health . Coverage integrated health post experience increase substantial from 52% to 78%, increased up to 50% of condition early . Meanwhile that , elderly exercise activities succeed interesting participation up to 75% of the total elderly in the village , indicating the success of the personal approach and " pick up the ball" strategies that were implemented . Increase participation This No only reflect awareness increased society , but also trust they to benefits of the program being implemented .

Aspect empowerment economy productive show very encouraging results with formation three location pilot cultivation plant , one pharmacy life communal , and 15 active families produce fertilizer compost . This program No only give impact term short in the form of results harvest , but also open opportunity improvement income group farmer by 25-30% through diversification plants and reduction dependence on fertilizers chemistry . Success This prove that integration between health and empowerment programs economy can walk synergistic and mutual strengthen .

Change behavior public in maintenance health environment be one of most prominent achievements of this program . As many as 89% of respondents report existence change behavior life healthy , which is reflected from increasing amount House ladder with place rubbish closed from 35% to 78%.

Transformation behavior This show that education combined health with activity practical such as mutual cooperation for cleanliness can produce change sustainable behavior .

Most importantly , the level program sustainability reached 85.7% with six from seven main programs Still continue after KKN ends . Achievements This validate effectiveness approach participatory and involvement institutions local applied since the beginning of the program. Success this also shows that the KKN program was designed with involving public as subject active , not just program object , has opportunity far - reaching sustainability more high . With Thus , the KKN program in Aek Village Uncim No only give benefit a moment , but has put foundation for development health and economy sustainable society.

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