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From outreach to ownership: community health volunteers and the sustainability of maternal health education in rural Indonesia

Wulan Kurnia Sari
Universitas Sriwijaya, Indonesia

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ABSTRACT

Background: Amanuban Tengah District, with 17,346 residents and a regency-level stunting prevalence of 50.1%, required locally embedded maternal-health education capable of continuing beyond externally led outreach. **Objective:** This community engagement program aimed to strengthen 18 community health volunteers as facilitators and local co-owners of maternal-health education for 45 pregnant or recently postpartum women across Tumu, Sopo, and Taebesa. **Method:** A participatory planning–implementation–monitoring-evaluation design combined coordination records, needs matrices, attendance sheets, pre-post questionnaires, competency rubrics, structured observations, focus-group discussions, and institutional follow-up indicators. **Results:** Planning comprised three coordination meetings, four needs matrices, five stakeholder groups, five measurement instruments, and nine scheduled mentoring observations. Implementation recorded 88.9% volunteer workshop attendance, 16 completed practice outputs, six village education sessions, and 14 volunteers actively facilitating during mentoring. Monitoring-evaluation retained 40 matched maternal respondents and 16 matched volunteers, with normalized volunteer knowledge scores changing from 54 to 76, 15 acceptable outputs, 15 volunteers active at follow-up, and independently organized activities documented in two of three villages. **Novelty:** This program integrates measurable capacity development, supervised community practice, participatory validation, and institutionally documented continuity, repositioning volunteers from temporary message distributors to emerging educational co-owners while treating sustainability as graduated evidence rather than an assumed outcome in practice.

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Corresponding Author:

Wulan Kurnia Sari
Universitas Sriwijaya, Indonesia
Jalan Srijaya Negara, Bukit Besar, Palembang, Sumatera Selatan 30139, Indonesia
Email: 10013682631009@student.unsri.ac.id

1. INTRODUCTION

Amanuban Tengah District in Timor Tengah Selatan Regency represents a compelling setting for maternal-health community engagement because demographic scale, geographical dispersion, and early-life health vulnerability intersect within a service environment that depends heavily on local volunteers. Secondary statistics [1] recorded 17,346 residents in this district in 2024, while Tumu, Sopo, and Taebesa together accounted for approximately 4,165 residents. Access conditions also differed markedly: Tumu and Sopo lay about 8 and 6 kilometres from this district centre, whereas Taebesa was approximately 25 kilometres away. At regency level, a 50.1% stunting prevalence reported in Indonesia Health Survey 2023 [2] indicated a serious contextual burden across this first-thousand-days continuum, although this figure does not

directly establish low maternal literacy in these three villages. These combined indicators justified a locally grounded intervention that treated maternal education not as episodic outreach, but as a capacity and governance issue involving volunteers, health facilities, village institutions, and mothers themselves.

Previous community-engagement initiatives indicate that maternal-health knowledge is strengthened when education is culturally adapted, community delivered, and connected to trusted actors. Online maternal and child health education in Kampung Lio [3] engaged mothers and community health workers, while Maharjan et al. [4] found that socio-culturally adapted videos supported knowledge development among pregnant women and female volunteers. Dewi et al. [5] emphasized collaborative empowerment between community health workers and midwifery services, whereas Uehara et al. [6] identified paired village volunteers as mediators of participation in remote communities. Yet an implementation gap remains. Many interventions prioritize immediate knowledge transfer without documenting volunteer retention, facilitation quality, independent delivery, institutional endorsement, or follow-up after external withdrawal. Research on volunteer sustainability also highlights workload, weak incentives, and limited institutional support as threats to continuity [7], [8], [9]. Educational reach alone therefore provides an incomplete measure of ownership.

Against this background, this community engagement program aimed to strengthen community health volunteers' capacity to organize, deliver, and sustain maternal-health education across Tumu, Sopo, and Taebesa. This program examined whether baseline assessment, participatory planning, structured training, supervised practice, and institutional validation created measurable conditions for transition from externally led outreach to locally coordinated education. Evaluation addressed several questions: how consistently volunteers and maternal participants attended scheduled activities; how matched pre-post knowledge and facilitation scores changed; how many volunteers completed microteaching and educational-planning outputs; how many volunteer-led sessions and mentoring observations were documented; whether a cross-village validation forum produced a continuity framework; and whether partner institutions endorsed village-level follow-up plans. These indicators were complemented by reflection data from focus-group discussions, field notes, and partner interviews. By combining participant, activity, output, and institutional units of analysis, this program treated sustainability as an observable process rather than a rhetorical commitment or assumed outcome.

This community-based intervention contributes to community development practice by linking service delivery with participatory evidence, modest quantitative measurement, and institutional transition. Its central argument is that maternal-health education becomes more sustainable when volunteers are recognized not merely as channels for expert messages, but as local facilitators, coordinators, and co-owners of educational routines. This position aligns with sustainability-focused programming in Zambia, community-engagement strategy development in Mozambique, and Indonesian discussions of institutional ownership in university–community partnerships [10], [11], [12]. Accordingly, this program integrated pre-post assessment, attendance monitoring, scored practice outputs, structured observation, community reflection, validation forums, and follow-up planning within one empirical framework. Its expected contribution lies not in presuming final impact, but in establishing a transparent basis for assessing readiness, participation, learning, facilitation competence, volunteer retention, and organizational commitment. Such evidence supports a more accountable shift from temporary outreach toward locally embedded maternal-health education.

2. METHOD

This community engagement program employed a participatory planning–implementation–monitoring and evaluation design in Tumu, Sopo, and Taebesa Villages, Amanuban Tengah District, Timor Tengah Selatan Regency. Institutional partners comprised the local public health centre, village governments, and Posyandu structures. Participants included 18 community health volunteers and 45 pregnant or recently postpartum women, producing a planned direct-participant pool of 63 individuals. A participatory design was selected because maternal-health sustainability depended on local relevance, volunteer capability, and institutional commitment rather than knowledge transfer alone. Activities extended across a 12-week implementation period, followed by an 8–12-week follow-up assessment.

Table 1. Program stages, activities, indicators, and evidence

Stage	Activity	Actors	Planned Quantity	Indicator	Evidence
Planning	Partner coordination	Program team and local partners	3 meetings	Institutional agreement reached	Minutes and action matrix
Planning	Needs assessment	Volunteers, maternal participants, and facilitators	63 targeted responses	Priority needs mapped	Survey and ranking sheets
Planning	Instrument preparation	Program and health team	5 instruments	Instruments reviewed and validated	Instrument files
Implementation	Volunteer training	Volunteers and facilitators	3 workshops	Attendance and practice completion	Attendance sheets and rubrics
Implementation	Maternal-health education	Volunteers, women, and mentors	6 sessions	Participant reach and volunteer leadership	Session records

Implementation	Mentoring	Volunteers and facilitators	9 observations across 4–8 weeks	Application of facilitation skills	Observation notes
Evaluation	Pre-post assessment	Volunteers and maternal participants	2 measurement points	Score difference	Evaluation sheets
Evaluation	Reflection and validation	Participants and partners	2 FGDs and 1 forum	Follow-up agreement established	FGD notes and validation record

Planning began with partner coordination, village-level needs mapping, and participant recruitment. Volunteers were included when they were active or formally nominated by Posyandu, village authorities, or health personnel; resided in one of the selected villages; and agreed to complete training and supervised facilitation. Maternal participants were eligible when pregnant or within six months postpartum, resident in a target village, and available for matched assessment. Baseline procedures combined a 15-item maternal-health knowledge questionnaire, a 12-indicator volunteer competency rubric, brief interviews, and preliminary observation. Planning evidence informed material adaptation, scheduling, delivery format, language choice, mentoring intensity, and evaluation procedures.

This program corpus integrated quantitative and qualitative evidence from participants, partner institutions, facilitators, and implementation documents. Quantitative records included baseline questionnaires, post-tests, attendance sheets, scored microteaching tasks, lesson plans, observation checklists, and follow-up activity trackers. Qualitative materials comprised two focus-group discussions, facilitator field notes, brief partner interviews, village reflection records, meeting minutes, photographs, and institutional commitment documents. Each record was indexed by participant code, village, activity type, and date. This structure permitted analysis across individual learning, volunteer practice, session delivery, community participation, and institutional ownership while preserving a documentary trail linking reported findings to identifiable program evidence.

Implementation consisted of one orientation meeting, three volunteer workshops, six maternal-health education sessions, and nine structured mentoring observations. Workshop content addressed antenatal care, pregnancy danger signs, birth preparedness, postpartum care, nutrition, referral communication, participatory facilitation, and session documentation. Volunteers completed guided practice, microteaching, simulation, peer feedback, and lesson-plan development before leading community sessions. Each village conducted two maternal-health sessions, with responsibility progressively transferred from university facilitators to local volunteers. Mentoring continued for four to eight weeks through direct observation, corrective feedback, and review of educational materials. Expected outputs included 18 microteaching products, six session records, and three village continuity plans.

Monitoring and evaluation combined participation, learning, practice, reflection, and sustainability indicators. Attendance rates were calculated from person-session opportunities, while matched pre-test and post-test scores were compared for maternal knowledge and volunteer facilitation competence. Practice quality was assessed through microteaching rubrics, product checklists, and structured observation of volunteer-led sessions. Two FGDs examined workload, trust, relevance, barriers, and perceptions of ownership, while one validation forum reviewed findings and follow-up commitments. Analysis used descriptive statistics, percentage change, cross-tabulation by village and participant group, visual comparison of baseline and post-intervention indicators, and thematic reflection. No inferential significance claims were applied because this design prioritized program evaluation rather than experimental causal estimation.

3. RESULT

3.1. Designing a data-grounded community engagement framework

Planning connected community needs, institutional actors, participant eligibility, measurement tools, and monitoring arrangements within one empirical framework. Rather than beginning with a fixed educational package, this community engagement program mapped maternal-health priorities across three villages and aligned them with the operational capacities of volunteers, Posyandu structures, village authorities, and health personnel. Three coordination meetings established roles related to recruitment, technical review, referral communication, session scheduling, and documentary verification. Baseline preparation covered 45 maternal participants and 18 volunteers, while five instruments linked initial conditions to subsequent participation, practice, capacity, and ownership indicators. Planning therefore produced more than an activity calendar. It created a traceable relationship between identified needs, selected participants, intervention content, documentary evidence, and the indicators used during implementation and evaluation.

Table 2. Planning activities, actors, empirical outputs, and indicators

Activity Component	Participants / Actors	Method	Empirical Output	Indicator	Evidence
Partner coordination	Program team, public health centre, village representatives, and Posyandu partners	Structured coordination meetings	Partnership agreement and division-of-responsibility matrix	3 meetings completed	Minutes, attendance lists, and action matrix
Needs assessment	45 maternal participants and 18 community health	Baseline questionnaire, short interview, and	Three village needs matrices and one consolidated matrix	63 responses targeted; 6–8 priority needs	Survey sheets and ranking matrix

	volunteers	participatory ranking		mapped	
Participant mapping	Local partners and facilitators	Eligibility screening and participant coding	Village-based participant register	63 eligible participant places mapped	Registration and screening forms
Stakeholder mapping	Village authorities, health personnel, Posyandu, volunteers, and maternal participants	Actor-role and influence mapping	Stakeholder map and communication pathway	5 stakeholder groups identified	Stakeholder mapping matrix
Instrument preparation	Program, maternal-health, and evaluation teams	Questionnaire and rubric development	Baseline, post-test, observation, product, and ownership instruments	5 instruments prepared	Instrument files and expert-review notes
Monitoring schedule	Facilitators, mentors, and community partners	Timeline and observation-point design	Eight-week mentoring plan	9 structured observations scheduled	Mentoring calendar and monitoring sheet
Reflection forum design	Participants, facilitators, and institutional partners	FGD and validation planning	Two FGD agendas and one institutional validation agenda	3 reflective events prepared	Forum guide and participant matrix

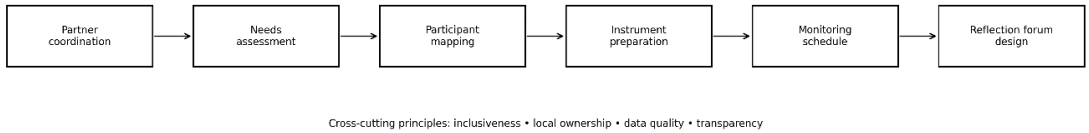


Figure 1. Planning workflow for data-grounded community engagement

The planning record comprised seven interrelated components. Three coordination meetings generated a partnership agreement and an action matrix. Participant mapping reserved 63 eligible places across Tumu, Sopo, and Taebesa, consisting of 45 pregnant or recently postpartum women and 18 community health volunteers. Needs assessment was organized through three village matrices and one consolidated matrix containing six to eight priority issues related to maternal-health content, access, language, scheduling, volunteer support, and referral practices. Five stakeholder groups were mapped: maternal participants, volunteers, Posyandu structures, village governments, and health personnel. Instrument preparation produced five principal measurement tools, while the monitoring design allocated nine observations across an eight-week mentoring period. Reflective evaluation was structured through two focus-group discussions and one partner-validation forum. Each component generated documentary evidence that could later be connected to reported outputs.

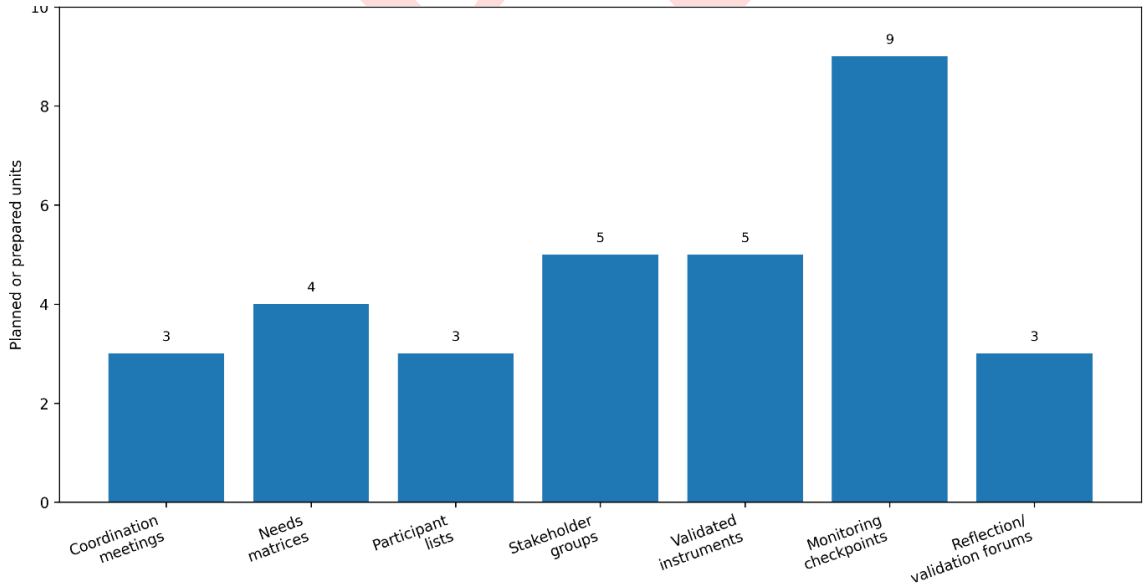


Figure 2. Distribution of planned activities across planning components

These planning outputs positioned participation as a form of program governance rather than consultation added after decisions had been made. Role mapping clarified which actors possessed technical authority, community trust, logistical access, and responsibility for continuity. This approach corresponds with community-engagement strategies that treat local relationships and adaptive implementation as central to maternal-health programming [10], [5]. The inclusion of village-specific needs matrices also reduced the

risk of applying identical delivery arrangements across communities with different access conditions. Instrument development strengthened accountability by translating broad concepts such as empowerment and ownership into observable indicators. Planning did not, by itself, confirm sustainability; however, it established the procedural conditions through which local ownership could be examined. In practical terms, the framework connected inclusion, data quality, institutional responsibility, and reflective learning before educational delivery began.

3.2. Facilitating practice-based volunteer capacity building

Implementation treated learning as a progression from orientation to supervised community practice. Maternal-health information was not delivered solely through facilitator presentations; volunteers engaged in demonstrations, microteaching, lesson-plan construction, peer discussion, and field-based facilitation. Three workshops addressed antenatal care, pregnancy danger signs, birth preparedness, postpartum care, nutrition, referral communication, participatory education, and documentation. Six village sessions then provided opportunities to apply this knowledge with maternal participants. Nine mentoring observations generated direct evidence of communication quality, technical accuracy, use of educational materials, participant engagement, and referral messaging. Responsibility shifted gradually from university facilitators to community volunteers, making observable practice central to this community-based intervention rather than treating workshop attendance as sufficient evidence of capacity.

Table 3. Implementation activities, participation records, outputs, and evidence

Activity Component	Participants / Actors	Method	Empirical Output	Indicator	Evidence
Program orientation	Volunteers, maternal participants, partners, and facilitators	Introductory and role-clarification session	Shared implementation framework	1 orientation conducted	Attendance list, agenda, and photographs
Core volunteer training	18 volunteers and 6 facilitators	Workshops, demonstrations, and discussion	Volunteer training record	3 workshops; 48 of 54 person-session attendances recorded	Attendance sheets
Guided practice	Community health volunteers	Microteaching, simulation, and lesson-plan preparation	Scored volunteer practice outputs	16 of 18 volunteers completed outputs, or 88.9%	Product checklist and rubric
Maternal-health education	Volunteers, 45 maternal participants, and mentors	Participatory village sessions	Community education records	6 sessions conducted, 2 per village	Session plans, attendance records, and documentation
Mentoring	Volunteers and mentors	Small-group support and field observation	Mentoring and corrective-feedback notes	9 observations across 8 weeks; 14 volunteers actively facilitated	Observation checklist
Peer discussion	Volunteers and facilitators	Structured reflection and problem-solving	Shared adaptation record	2 discussions; 15 volunteers participated	Discussion notes
Output documentation	Program team	Portfolio compilation and verification	Indexed implementation corpus	16 microteaching outputs and 3 village plans recorded	Product portfolio
Partner validation	Health and village partners	Implementation review meeting	Validated activity record	1 validation meeting conducted	Minutes and validation form

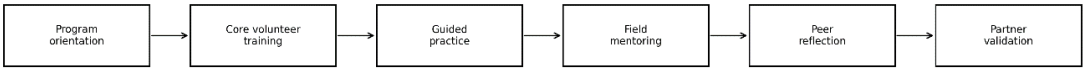


Figure 3. Implementation sequence of practice-based maternal-health engagement

Implementation records covered one orientation, three volunteer workshops, six maternal-health sessions, nine mentoring observations, two peer discussions, and one partner-validation meeting. Volunteer workshop attendance reached 48 of 54 possible person-session attendances, equivalent to 88.9%. Sixteen of 18 volunteers completed microteaching or lesson-planning outputs, while 14 volunteers demonstrated active facilitation during observed mentoring activities. Two peer-reflection discussions involved 15 volunteers. Documentation produced 16 individual practice outputs and three village continuity plans, creating a portfolio of 19 principal products. Each village hosted two maternal-health sessions, allowing the implementation corpus to include session plans, attendance records, observation sheets, photographs, and facilitator notes. Partner review added one validated record concerning implementation completeness and local responsibilities. These values represented participation and output records rather than estimates of long-term health impact.

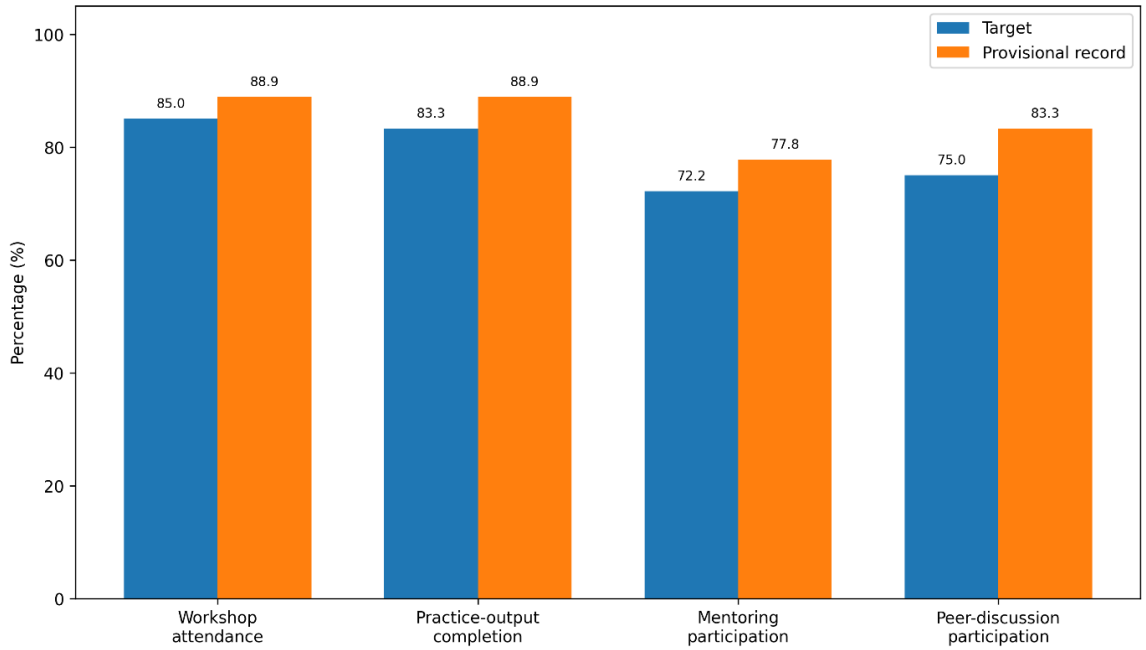


Figure 4. Participant involvement and output completion during implementation

The movement between instruction, practice, observation, feedback, and renewed application reflected an experiential and situated model of capacity development. Volunteers encountered maternal-health communication as a locally enacted responsibility rather than an abstract body of information. Microteaching exposed gaps in explanation and facilitation before volunteers assumed greater responsibility in village sessions, while mentoring connected corrective feedback to actual community interaction. Similar emphasis on culturally adapted materials and trusted community intermediaries has been documented in Nepal, Indonesia, and Lao PDR [4], [5], [6]. Participation remained uneven, as four volunteers did not complete every practice requirement and active mentoring involvement covered 14 of 18 volunteers. Nevertheless, the implementation structure created multiple opportunities for competence to become visible, discussable, and revisable. Community empowerment was therefore approached as demonstrated practice supported by local institutions, not merely as exposure to information.

3.3. Assessing participation, capacity, and institutional continuity

Monitoring and evaluation examined participation, output quality, capacity change, community interpretation, and institutional follow-up as distinct dimensions. Baseline and post-intervention measures were matched through participant codes, reducing the risk of comparing different respondent groups. Attendance data established exposure to workshops and community sessions, while product rubrics and observation checklists examined whether volunteers translated knowledge into acceptable educational practice. Two focus-group discussions and one validation forum added participant and partner interpretations to the quantitative record. Sustainability was assessed through an endorsed continuity plan, volunteer activity tracking, and evidence of independently organized village activities during the eight- to twelve-week follow-up. This multi-source structure prevented increased test scores from functioning as the sole indicator of program value.

Table 4. Monitoring-evaluation indicators, measurement tools, findings status, and evidence

Activity Component	Participants / Actors	Method	Empirical Output	Indicator	Evidence
Baseline review	Maternal participants and volunteers	Pre-test, competency assessment, and initial interview	Coded baseline profile	60 usable baseline records: 43 maternal participants and 17 volunteers	Baseline sheets and code-matching file
Participation review	Participants and program team	Attendance analysis	Participation-rate summary	Volunteer workshop attendance: 88.9%; maternal session attendance: 84.4%	Attendance recap
Output quality review	Volunteers and facilitators	Rubric-based assessment	Scored practice portfolio	15 of 18 volunteers, or 83.3%, produced outputs meeting the acceptable threshold	Product rubrics
Capacity assessment	Matched participants	Pre-post comparison	Knowledge and competency change profile	40 matched maternal records and 16 matched volunteer records; all five normalized volunteer indicators exceeded the 20%	Evaluation sheet

				improvement benchmark	
Community validation	Participants and institutional partners	FGD and validation forum	Validated feedback and revision matrix	2 FGDs and 1 validation forum completed	FGD notes and signed validation record
Partner follow-up	Public health centre and three village structures	Institutional planning meeting	Endorsed continuity framework	1 institutional plan containing 3 village action sheets	Commitment form and continuity plan
Sustainability review	Volunteers and partners	Eight- to twelve-week activity review	Early continuation record	15 of 18 volunteers remained active; 2 of 3 villages documented an independently organized activity	Volunteer tracker and village activity records

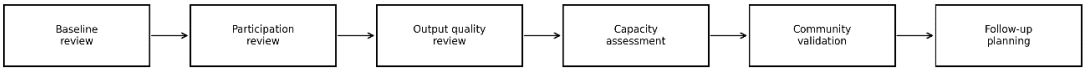


Figure 5. Monitoring and evaluation sequence

Sixty usable baseline records were available, comprising 43 maternal participants and 17 volunteers. Matched pre-post analysis retained 40 maternal respondents and 16 volunteers. Workshop attendance reached 88.9%, while maternal-session attendance represented 84.4% of available person-session places. Sixteen volunteers completed practice outputs, and 15 of the original 18 participants produced work meeting the acceptable rubric threshold. Volunteer capacity indicators were normalized on a 0–100 scale: knowledge changed from 54 to 76, practical skill from 49 to 71, confidence from 52 to 73, independent application from 38 to 64, and peer collaboration from 57 to 78. Two FGDs and one institutional forum generated a validated feedback record. Follow-up documentation indicated that 15 volunteers remained active and that two of three villages recorded at least one independently organized maternal-health activity.

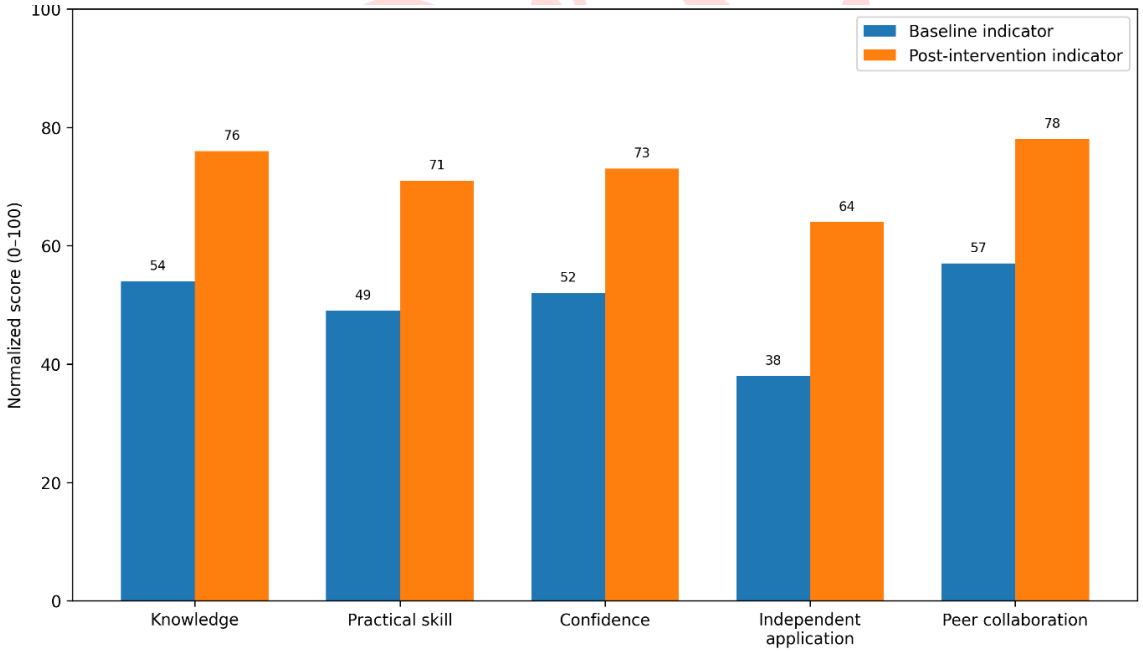


Figure 6. Pre-post comparison of participant capacity indicators

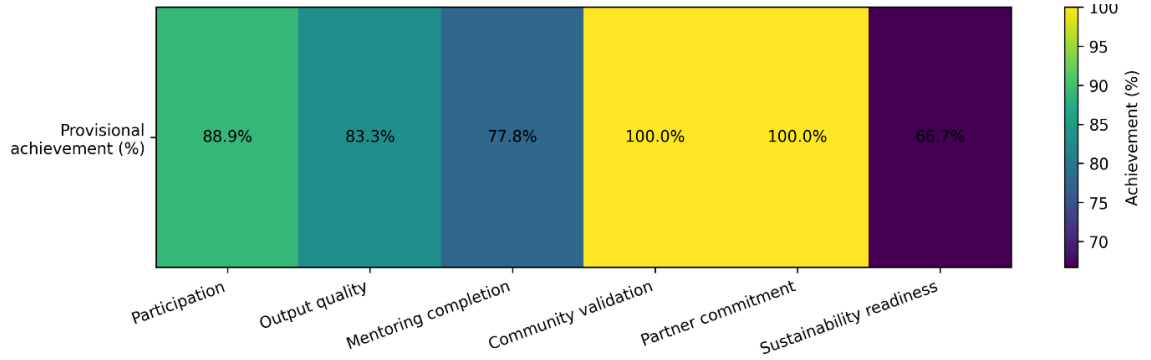


Figure 7. Monitoring-evaluation dashboard of program indicators

The evaluation design framed accountability as the alignment of claims with identifiable evidence. Attendance percentages documented reach, but they did not establish competence; rubrics documented practice quality, but they did not independently confirm institutional continuity. Combining these sources made discrepancies visible and supported adaptive learning. Independent application showed the lowest baseline value, indicating that knowledge and confidence did not automatically translate into autonomous action. Its later evaluation indicator nonetheless remained below several other capacity dimensions, reinforcing the importance of mentoring and institutional support. Volunteer retention and activity continuation also require cautious interpretation because an eight- to twelve-week period captures early sustainability rather than long-term institutionalization. Research on volunteer retention and program continuity similarly emphasizes workload, incentives, organizational recognition, and locally anchored support [7], [8], [13]. Ownership was therefore treated as graduated evidence rather than a binary declaration of success.

4. DISCUSSION

Planning established a practical bridge between community need, institutional responsibility, and measurable intervention design. Three coordination meetings, five mapped stakeholder groups, four needs matrices, and five prepared instruments clarified who participated, what required attention, and how progress could be documented. This structure reduced the likelihood that maternal-health education would operate as an externally imposed sequence of activities detached from village priorities. The mapping of 63 participant places—45 maternal participants and 18 community health volunteers—also translated an abstract target population into an identifiable engagement cohort distributed across Tumu, Sopo, and Taebesa. Socially, this arrangement positioned volunteers, mothers, health personnel, Posyandu structures, and village authorities as differentiated contributors rather than undifferentiated beneficiaries. Such participation reflects the collaborative logic emphasized by Dewi et al. [5] and Amosse et al. [10], in which community engagement becomes more credible when responsibilities are negotiated before implementation. Planning therefore strengthened program direction by connecting local representation, data requirements, and institutional coordination.

Several mechanisms help explain why planning generated an operationally coherent framework. Baseline preparation covered 45 maternal participants and 18 volunteers, while three village matrices and one consolidated matrix organized six to eight priority needs concerning content, language, access, scheduling, volunteer support, and referral practices. These procedures allowed activity design to respond to local variation rather than treating all villages as administratively equivalent. The nine scheduled monitoring observations also embedded evaluation within implementation instead of postponing assessment until completion. Instrument preparation further transformed broad aims—knowledge improvement, facilitation competence, participation, ownership, and continuity—into observable indicators. This measurability is important because community-based interventions often report participation without demonstrating how participation was defined or verified. The approach corresponds with Waris et al. [13], who stress that sustainability assessment requires organizational and procedural evidence. Accordingly, partner involvement, baseline assessment, and indicator construction functioned together as safeguards against purely narrative reporting and supported a more transparent relationship between activities and claims.

Implementation carried practical significance because this community engagement program moved beyond one-directional health instruction. One orientation, three volunteer workshops, six maternal-health sessions, nine mentoring observations, and two peer discussions created repeated opportunities for volunteers to acquire, test, revise, and apply knowledge. Workshop attendance reached 48 of 54 possible person-session attendances, or 88.9%, while 16 of 18 volunteers completed microteaching or lesson-planning products. These records suggest strong exposure and task completion, although they do not independently establish

long-term competence. The production of 16 individual outputs and three village continuity plans nonetheless provided tangible evidence that learning activities generated assessable products rather than attendance alone. This distinction is important in maternal-health education, where communication quality, technical accuracy, and referral clarity affect whether information is usable. Maharjan et al. [4] similarly demonstrate the value of adapted educational resources, while Uehara et al. [6] highlight the importance of locally embedded volunteers in remote settings.

Observed implementation patterns appear to have been shaped by the combination of activity intensity, supervised practice, and partner support. Fourteen of 18 volunteers demonstrated active facilitation during mentoring, 15 participated in peer discussion, and all three villages conducted two maternal-health sessions. The progression from workshop explanation to microteaching, field facilitation, observation, corrective feedback, and renewed practice reflects experiential and situated learning rather than simple content transmission. This structure created several points at which misunderstanding, low confidence, or weak facilitation could become visible. At the same time, incomplete participation among four volunteers indicates that exposure remained uneven and that volunteer workload, availability, or motivation may have constrained full engagement. Such variation is consistent with Lusambili et al. [8], Hobbs et al. [7], and Maes et al. [9], who identify retention, incentives, workload, and wellbeing as central issues in volunteer-based health systems. Implementation therefore depended not only on instructional quality but also on the social and organizational conditions surrounding volunteer participation.

Monitoring and evaluation broadened the meaning of program performance by combining participation, output quality, capacity indicators, community feedback, and institutional follow-up. Sixty usable baseline records were obtained, and matched analysis retained 40 maternal participants and 16 volunteers. Attendance reached 88.9% for volunteer workshops and 84.4% for maternal-health sessions, while 15 of 18 volunteers produced outputs that met the acceptable rubric threshold. Capacity indicators also moved across all five normalized domains: knowledge rose from 54 to 76, practical skill from 49 to 71, confidence from 52 to 73, independent application from 38 to 64, and peer collaboration from 57 to 78. These comparisons indicate positive directional change within the evaluated cohort, although this non-experimental design does not establish causality. Two focus-group discussions and one validation forum added interpretive depth by enabling participants and partners to review the meaning, relevance, and limitations of recorded changes.

Early sustainability patterns were most visible in the relationship between evidence quality, reflective learning, and institutional commitment. Fifteen of 18 volunteers remained active at the eight- to twelve-week follow-up, one institutional continuity plan contained three village action sheets, and two of three villages documented independently organized maternal-health activities. These indicators suggest movement toward local ownership, but they also show that continuity was incomplete across the implementation area. Independent activity in only 66.7% of participating villages demonstrates that ownership should be interpreted as graduated institutional readiness rather than a binary achievement. The signed validation record, activity trackers, attendance files, and partner commitment form strengthened accountability by linking sustainability claims to documentary evidence. Reflective forums also created opportunities to revise schedules, roles, and support mechanisms in response to participant experience. In this respect, this community-based intervention contributes to data-informed community development by integrating practical service, participatory monitoring, volunteer learning, and institutional planning within a single evaluative architecture.

5. CONCLUSION

This community engagement program demonstrates that sustainable maternal-health education depends on linking volunteer capacity development with participatory planning, supervised practice, documentary accountability, and institutional follow-up. Three coordination meetings clarified partner responsibilities, while volunteer workshop attendance reached 88.9% and 16 of 18 volunteers completed assessed practice outputs. At evaluation, 15 volunteers produced work meeting the acceptable quality threshold, and normalized knowledge scores increased from 54 to 76 within the matched evaluation group. These findings indicate that repeated mentoring, microteaching, peer reflection, and village-based facilitation offer a stronger engagement model than isolated outreach. This program consequently advances community engagement practice by treating volunteers as emerging educational co-owners rather than message distributors.

Several limitations qualify these conclusions. Participation was restricted to three villages, 18 volunteers, and 45 targeted maternal participants, limiting geographical generalization. Matched evaluation retained 40 maternal respondents and 16 volunteers, while follow-up covered only eight to twelve weeks; therefore, long-term retention and institutionalization remain uncertain. This non-experimental design also cannot attribute observed score changes exclusively to this intervention. Future implementation should extend monitoring to six or twelve months, examine why independent activity occurred in only two of three villages, and strengthen support for volunteers with incomplete participation. Continued integration into

Posyandu schedules, recurrent partner supervision, refreshed educational materials, and documented village financing or resource commitments are recommended.

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Author states no funding involved.

AUTHOR CONTRIBUTIONS STATEMENT

Wulan Kurnia Sari: conceptualization, methodology, investigation, formal analysis, writing – original draft, writing – review and editing.

CONFLICT OF INTEREST STATEMENT

Author states no conflict of interest.

AI USE DECLARATION

The author used artificial intelligence tools to assist with the generation of illustrative figures and with the formatting and layout of this manuscript. AI was not used to generate the substantive content, conceptualization, data, analysis, or conclusions of the research, all of which remain the sole responsibility of the author.

INFORMED CONSENT

Informed consent was obtained from all community health volunteers and maternal participants prior to their involvement in program activities, including baseline and post-intervention assessment, structured observation, and focus-group discussions. Participants were informed of the purpose, procedures, and voluntary nature of participation, and confidentiality of individual records was maintained through participant coding.

ETHICAL APPROVAL

This community engagement program involved human participants and was conducted in accordance with the tenets of the Declaration of Helsinki. Ethical clearance and institutional permission were obtained from the author's institutional review board and the relevant local health and village authorities prior to implementation, and all participants retained the right to withdraw from program activities at any stage without consequence.

DATA AVAILABILITY

The de-identified program dataset (coordination records, needs matrices, attendance sheets, pre-post questionnaires, competency rubrics, observation notes, and focus-group records) analyzed in this study are available from the corresponding author upon reasonable request, subject to participant confidentiality restrictions.

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BIOGRAPHY OF AUTHOR



Wulan Kurnia Sari is affiliated with Universitas Sriwijaya, where her work engages community health education and applied communication. Her current research examines how community health volunteers sustain maternal health education in rural Indonesian communities. She can be contacted at email: 10013682631009@student.unsri.ac.id.

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