

OPTIMIZING POSYANDU LANSIA AS A DISASTER PREPAREDNESS EDUCATION MEDIA THROUGH A PARTICIPATORY APPROACH: TRAINING FOR HEALTH CADRES AT PUSKESMAS BELIMBING, PADANG CITY

Sari Setiarini¹, Mariza Elsi², Erwina herman³, Delma Puja⁴

1,2,3 Program Studi D3 Keperawatan, Akademi Keperawatan Universitas Baiturrahmah, Padang, Indonesia

ABSTRACT

Older adults are a vulnerable group who face a higher risk of injury and mortality during disasters due to limited mobility, sensory decline, and frequent comorbidities. Posyandu Lansia, an existing community-based health service that meets routinely, holds strong potential to be optimized as a channel for disaster preparedness education, yet its activities have so far focused only on routine health checks. This community service activity aimed to strengthen the capacity of Posyandu Lansia health cadres as disaster preparedness educators for older adults through a participatory approach. The activity involved 16 health cadres from Posyandu Lansia in the working area of Puskesmas Belimbing, Padang City (total sampling), using a pre-experimental one-group pretest-posttest design. The intervention consisted of a participatory needs assessment, joint development of a disaster preparedness education module, training on basic disaster concepts, evacuation routes, and emergency preparedness kits, and a simple simulation exercise. Data were collected using a knowledge questionnaire administered before and after the intervention and analyzed descriptively and with a paired-sample test. The results showed a significant increase in cadres' knowledge scores from pretest (65.2 ± 8.8) to posttest (82.7 ± 6.9), a mean difference of 17.5 points (26.8% increase, $p=0.001$), indicating that the participatory training was effective in improving cadre readiness to deliver disaster preparedness education. A printed education module was also produced as a direct output of this activity and is being prepared for copyright (HKI) registration so that it can be formally recognized and replicated by other Posyandu Lansia.

Keywords: Disaster Preparedness, Health Cadre, Participatory Education, Posyandu Lansia, Community Service

INTRODUCTION

West Sumatra, including Padang City, is an area with a high risk of natural disasters, particularly earthquakes originating from the Semangko Fault and the Mentawai Megathrust subduction zone, in addition to flood and landslide hazards. In disaster situations, older adults are recognized as a vulnerable group with a higher risk of death and injury compared to the productive-age population, owing to limited mobility, declining vision and hearing, dependence on routine medication, and frequent comorbidities such as hypertension, diabetes mellitus, and musculoskeletal disorders.

Posyandu Lansia is a community-based health service that has run routinely on a monthly basis in many areas, supported by health cadres who already have close relationships and the trust of the older adults they serve. To date, Posyandu Lansia activities have mostly focused on blood pressure checks, weight monitoring, and supplementary feeding, while disaster preparedness content has never been integrated into the routine agenda. Because cadres are the party with the most frequent and trusted contact with older adults, strengthening cadre capacity is a strategic entry point before education can be extended to older adults themselves.

This activity is a continuation of the proposing team's ongoing community service and research agenda on disaster preparedness in primary health care settings, which has previously focused on strengthening the readiness of Puskesmas nurses. The current activity extends this agenda to Posyandu Lansia cadres as frontline educators for older adults, in line with the team's expertise in gerontological nursing. Based on the conditions described above, a community service activity was carried out to strengthen the knowledge and readiness of Posyandu Lansia cadres at Puskesmas Belimbing, Padang City, in delivering disaster preparedness education through a participatory training approach.

Analysis Problem

Problem identification was carried out through coordination with Puskesmas Belimbing, direct observation of Posyandu Lansia activities, and informal interviews with cadres. The problems identified are as follows:

1. Posyandu Lansia cadres have never received training or educational material on disaster preparedness that they could pass on to older adults.
2. Routine Posyandu Lansia activities do not yet integrate disaster mitigation and preparedness content into their schedule or materials.
3. No education module on disaster preparedness has been specifically designed to be delivered by cadres to older adults.
4. Cadres' knowledge of basic disaster concepts, evacuation routes, and emergency preparedness kits is still limited, which constrains their confidence to act as educators.

Problem Solution

Based on the problems identified, the proposing team offered a solution in the form of participatory training for Posyandu Lansia cadres to strengthen their knowledge and readiness to become disaster preparedness educators for older adults. A participatory approach was chosen because involving cadres from the needs-assessment stage through module development builds a sense of ownership of the material, which supports the sustainability of disaster education within routine Posyandu Lansia activities beyond the life of this community service activity.

Solution Which Offered

1. Participatory needs assessment through focus group discussion (FGD) with cadres to identify gaps in disaster knowledge and preferred learning formats.

2. Joint development of a printed disaster preparedness education module tailored to the cadres' and older adults' characteristics, prepared for copyright (HKI) registration.
3. Training on basic disaster concepts, hazard types in West Sumatra, warning signs, evacuation routes, and emergency preparedness kits (tas siaga bencana).
4. Simple simulation exercise (tabletop discussion and basic evacuation drill) to reinforce practical skills.
5. Evaluation of cadres' knowledge before and after the intervention using a pretest-posttest design.

Method Implementation And Evaluation

This community service activity used a pre-experimental one-group pretest-posttest design, in which cadres' disaster preparedness knowledge was measured before and after the training intervention, without a comparison group. The activity was implemented through participatory training (face-to-face) for Posyandu Lansia cadres in the working area of Puskesmas Belimbing, Padang City. The training was delivered using lecture, group discussion, and simulation methods, supported by the printed education module developed jointly with the cadres.

The population and sample of this activity were all active Posyandu Lansia cadres in the working area of Puskesmas Belimbing, totaling 16 cadres, recruited using total sampling. Data were collected using a knowledge questionnaire on disaster preparedness, administered before (pretest) and after (posttest) the intervention. Data were analyzed descriptively for respondent characteristics and using a paired-sample test (paired t-test or Wilcoxon test, depending on data normality) to compare pretest and posttest scores, with a significance level of $p < 0.05$.

The activity was carried out in several stages. Planning included coordination with Puskesmas Belimbing, a participatory needs assessment through FGD, and joint

development of the education module. Implementation began with the pretest, followed by delivery of the training material, module distribution, and a simple simulation exercise. The activity closed with the posttest and a joint evaluation session with the cadres to formulate a plan for continuing disaster education within routine Posyandu Lansia activities.

Respondent Characteristics

Characteristic	Frequency (f)	Percentage (%)
Age		
< 45 years	10	62.5
≥ 45 years	6	37.5
Last Education		
Junior/Senior High School	13	81.3
Higher Education	3	18.8
Length of Service as Cadre		
< 5 years	7	43.8
≥ 5 years	9	56.3
Prior Disaster Training		
Ever	0	0
Never	16	100

Table 1. Respondent characteristics (n=16)

A total of 16 Posyandu Lansia cadres from the working area of Puskesmas Belimbing participated in this activity (total sampling). The majority of cadres were under 45 years old (62.5%), had a junior/senior high school education (81.3%), and had served as a cadre for five years or more (56.3%). A notable finding is that all cadres (100%) had never previously received disaster-related training, confirming that this participatory training was their first structured exposure to disaster preparedness material.

Evaluation Activity Devotion Public

The disaster preparedness training for Posyandu Lansia cadres was carried out in

the working area of Puskesmas Belimbing, Padang City, and ran according to the planned schedule. The activity was evaluated comprehensively through three aspects: input evaluation, process evaluation, and result evaluation, as described below.

Input Evaluation

The input evaluation showed that all preparation components were ready before the activity began. The training module had been jointly developed with cadre input during the participatory needs assessment stage, the knowledge questionnaire had been prepared for the pretest and posttest, and coordination with Puskesmas Belimbing regarding the venue and schedule had been completed in advance.

Process Evaluation

The process evaluation showed good cadre engagement throughout the activity. Cadres actively participated in the FGD during the needs-assessment stage, followed the training material attentively, and took part in the simulation exercise. All 16 invited cadres attended and completed the full training session, including both the pretest and posttest.

Result Evaluation

Variable	Pret est (Me an± SD)	Post test (Me an± SD)	Me an Dif fer enc e	% In cr ea se	P - v a l u e
Cadre Disaster Preparedness Knowledge	65.2 ± 8.8	82.7 ± 6.9	17.5	26.8 %	0.001

Table 2. Cadres’ knowledge scores before and after the training intervention

The result evaluation showed that

cadres’ mean knowledge score increased from 65.2±8.8 at pretest to 82.7±6.9 at posttest, a mean difference of 17.5 points, corresponding to a 26.8% increase. This difference was statistically significant ($p=0.001<0.05$), indicating that the participatory training was effective in improving cadres’ disaster preparedness knowledge. Cadres were also able to correctly explain the basic concept of disaster, mention at least one evacuation route and assembly point, and describe the contents of an emergency preparedness kit during the closing discussion, indicating that the training objectives were achieved.

Discussion

The increase in cadres’ knowledge following this participatory training is consistent with prior evidence showing that structured, simulation-supported training produces better knowledge gains than lecture-only approaches (Purwadi et al., 2021). Because cadres are the party with the closest and most trusted relationship with older adults in the community, strengthening their disaster knowledge first is a strategic step before extending education directly to older adults, who may face greater barriers to retaining new information due to cognitive and sensory decline.

These findings also support the broader research gap identified in disaster nursing literature, where most primary studies on disaster preparedness rely on cross-sectional designs, leaving evidence on the effectiveness of training interventions relatively scarce (Oktarina et al., 2024). By using a pre-post design, this activity contributes preliminary evidence of the effectiveness of participatory cadre training as a strategy to optimize the existing Posyandu Lansia infrastructure for disaster education, without requiring the establishment of a new community forum.

The participatory approach used in this activity, in which cadres were involved in developing the education module rather

than merely receiving it, is expected to strengthen their sense of ownership of the material and support the sustainability of disaster education within routine Posyandu Lansia sessions after this community service activity concludes. The resulting module, which was produced with direct input from the cadres, is a tangible output that is intended to be formally registered for copyright (HKI) protection so that it can be recognized as an original work of the proposing team and replicated by other Posyandu Lansia in similar disaster-prone areas.

This activity has several limitations that should be acknowledged. The evaluation was limited to cadres' knowledge and did not directly measure changes in older adults' disaster preparedness, nor did it include a comparison group or a long-term follow-up. Future activities are recommended to extend the evaluation to the older adult beneficiaries once cadres begin delivering the module independently, and to consider a quasi-experimental design with a control group to strengthen the methodological rigor of the evidence.

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