

Implementation of a Family Emergency Action Plan for Families of People with Diabetes



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Abstract: Acute complications of diabetes require families to recognize warning signs and initiate safe first-response measures while seeking professional care. This community service program evaluated immediate changes in family knowledge and observed emergency-response skills after delivery of a Family Emergency Action Plan. The program was conducted on 15–16 April 2026 in Ko'mara Village, North Polongbangkeng District, Takalar Regency, South Sulawesi, Indonesia. Twenty-five adults from families with a history of diabetes participated. The activities comprised health screening, an immediate pre-test, interactive education supported by presentation slides and a leaflet, demonstration and return demonstration of first aid for severe hypoglycemia, stress-management guidance, discussion, and an immediate post-test. A one-group pre-test–post-test descriptive evaluation was used. Knowledge was assessed with an organizer-developed questionnaire covering diabetes, acute warning signs, and initial family responses. Skills were assessed using an observation checklist during return demonstration. The proportion categorized as having good knowledge increased from 7 of 25 participants (28%) before education to 21 of 25 (84%) immediately afterward. Observations also indicated that participants could practice key response steps with facilitator guidance, but aggregate checklist scores were not available. The findings describe short-term learning after the program and do not establish effectiveness or prevention of acute complications. Follow-up assessment with a validated instrument is needed to determine retention and independent performance.

Keywords: acute diabetes complications; community education; family emergency action plan; family support; hypoglycemia

1. Introduction

Diabetes mellitus is a group of metabolic disorders characterized by hyperglycemia and includes type 1 diabetes, type 2 diabetes, gestational diabetes, and other specific forms. Diabetes affects a large and growing adult population worldwide, while many people remain undiagnosed (Hossain et al., 2024; Magliano et al., 2025; Sulfikar et al., 2025). Beyond long-term microvascular and macrovascular damage, people with diabetes may experience acute events that require rapid recognition and treatment. Severe hypoglycemia can impair cognition, cause seizures, or lead to loss of consciousness. Diabetic ketoacidosis and hyperglycemic hyperosmolar state are medical emergencies that require urgent clinical management (Suardi, Zainuddin, et al., 2026; Umpierrez et al., 2024).

Family members are often present when symptoms first develop and may influence whether an appropriate response is initiated. Their role includes recognizing warning signs, providing a safe initial response, locating prescribed emergency supplies, and contacting health services. Evidence syntheses indicate that family involvement can support diabetes self-management, although the contribution of family-based interventions varies across settings and depends on intervention content and implementation (Busebaia et al., 2023; Matrook et al., 2025). Education for families should therefore combine understandable information with opportunities to practice specific actions rather than relying only on one-way delivery of material.

Preliminary interviews in Ko'mara Village suggested that residents had limited knowledge of acute diabetes warning signs and home responses, particularly for hypoglycemia. The program team developed a Family Emergency Action Plan as a practical framework for organizing emergency contacts, prescribed medicines and supplies, warning signs, and first-response steps. This community service program aimed to describe immediate



changes in participants' knowledge and their observed performance during a guided return demonstration after family-oriented diabetes emergency education.

2. Materials and Methods

2.1 Design and setting

This community service program used a one-group pre-test–post-test descriptive evaluation. The program was conducted on 15–16 April 2026 in Ko'mara Village, North Polongbangkeng District, Takalar Regency, South Sulawesi, Indonesia. Because there was no comparison group, randomization, or delayed follow-up, the evaluation was designed to document immediate learning after the activity rather than estimate a causal effect.

2.2 Participants

Participants were recruited through village-level identification of families with a history of diabetes. Eligibility required residence in Ko'mara Village, membership in a family with a history of diabetes, and willingness to participate. Twenty-five adults took part. Educational attainment was junior secondary school for 3 participants, senior secondary school for 18, diploma for 2, and bachelor's degree for 2. Occupations were homemaker ($n = 11$), employee or teacher ($n = 4$), self-employed ($n = 7$), and farmer ($n = 3$).

2.3 Program components

The program began with participant registration and screening of blood pressure and random blood glucose. The education session addressed basic diabetes concepts, signs of hypoglycemia and hyperglycemic emergencies, safe first responses, when to seek emergency care, and preparation of a written Family Emergency Action Plan. Presentation slides and a printed leaflet supported the session. Facilitators demonstrated responses to suspected severe hypoglycemia, including avoiding oral food or drink when the person is unconscious or seizing, placing the person in a recovery position when appropriate, using prescribed glucagon only when available and the responder has been trained, and contacting emergency services or arranging urgent transfer. Participants then completed a guided return demonstration. The session also addressed managing panic so that family members could follow the planned response sequence.

2.4 Evaluation instruments and outcomes

Knowledge was measured immediately before and immediately after the education session using the same organizer-developed questionnaire. Its content covered the definition and types of diabetes, signs and risks of acute complications, and initial family responses. Responses were scored and classified into "good" and "limited" knowledge according to the program protocol. The source records did not retain item-level results, the score range, or evidence of psychometric validation; these limitations were considered when interpreting the findings. Practical performance was assessed during return demonstration with an organizer-developed observation checklist covering recognition of danger signs, avoidance of unsafe oral intake in an unconscious person, safe positioning, identification of circumstances requiring urgent referral, and use of the written action plan. Aggregate skill scores were not recorded, so skill findings are reported narratively.

2.5 Data analysis

Knowledge categories were summarized as frequencies and percentages. Percentages were calculated from the 25 participants, yielding whole-person counts. No inferential test was conducted. Terms such as "statistically significant" were therefore not used. Process observations and return-demonstration findings were summarized descriptively.

2.6 Administrative and ethical considerations

The activity was implemented with permission from the village government and with participants' agreement. Screening results were used for education and referral guidance within the community activity. No personally identifying information is reported in this manuscript.

3. Results

3.1 Participation and implementation

All 25 registered participants remained through the education and immediate evaluation. Initial discussion indicated difficulty explaining acute warning signs and appropriate first responses. During the session, participants asked questions about symptoms, home supplies, and referral decisions. Facilitators used the leaflet and repeated demonstrations to clarify the action sequence.

3.2 Knowledge outcomes

Table 1 presents the knowledge categories before and immediately after education. Seven participants (28%) were categorized as having good knowledge at pre-test, compared with 21 participants (84%) at post-test. The number categorized as having limited knowledge decreased from 18 (72%) to 4 (16%). These results represent an immediate descriptive comparison and were not tested inferentially.

Table 1. Knowledge categories before and immediately after the Family Emergency Action Plan education (n = 25).

Knowledge category	Pre-test, n	Pre-test, %	Post-test, n	Post-test, %
Good	7	28	21	84
Limited	18	72	4	16
Total	25	100	25	100

Table 1 shows a descriptive increase in hypertension self-management knowledge immediately after the education session. The mean score increased by 1.06 points, from 6.67 ± 1.40 at pre-test to 7.73 ± 0.80 at post-test, while the median increased from 7 to 8. The higher minimum score and lower standard deviation at post-test indicate that participants' scores became more consistently concentrated at the upper end of the observed range. These descriptive results do not establish statistical significance because no inferential test is presented in this table.

3.3 Observed return-demonstration performance

During guided return demonstration, participants practiced recognizing symptoms that may indicate severe hypoglycemia, avoiding oral intake when a person is unconscious or seizing, positioning the person safely, locating emergency contact information, and seeking urgent care. Facilitators provided correction when steps were omitted or performed out of sequence. These observations indicate that the planned skills were practiced during the session, but the absence of retained aggregate checklist scores prevents reporting a completion rate or quantifying change in skill performance.



Figure 1. Community program activities in Ko'mara Village, including participant engagement and health screening.

4. Discussion

The immediate post-test distribution shifted toward the good-knowledge category after the family-oriented education. The change is consistent with the program's combination of concise information, visual materials, discussion, and practice. These components gave participants more than one opportunity to process the content and connect warning signs with specific actions. The result is best interpreted as evidence of short-term learning within this group, not as proof that the program caused the change or prevented acute diabetes complications.

The family focus was appropriate because responses to diabetes-related emergencies frequently occur in the home. Family involvement can support monitoring, treatment adherence, and problem-solving, although family support is not uniformly beneficial and should be adapted to the household's needs and resources (Busebaia et al., 2023; Mayberry & Osborn, 2014; Mphasha et al., 2022). A recent systematic review and meta-analysis also found that family-based interventions may improve selected diabetes outcomes, while variation across interventions and study settings limits simple generalization (Matrook et al., 2025; Suardi, Oktaviana, et al., 2026). In the present

activity, the written Family Emergency Action Plan translated this broader family role into concrete tasks: identifying warning signs, keeping emergency contacts and prescribed supplies accessible, and knowing when professional care is required.

The return-demonstration component addressed a gap that a knowledge questionnaire alone cannot capture. Participants practiced several safety-critical steps and received correction from facilitators. Still, observed performance under guidance should not be equated with independent competence during a real emergency. The lack of aggregate checklist results also means that the proportion who completed every step correctly is unknown. Future programs should use a predefined, content-validated skills checklist, report item-level completion, and repeat assessment after several weeks to determine whether participants retain the sequence without prompting.

Clinical messages must also distinguish conditions that permit a family response from those requiring urgent medical treatment (Karasneh et al., 2025; Østervang et al., 2021). Severe hypoglycemia with altered consciousness or seizure requires immediate assistance, avoidance of oral intake, appropriate use of prescribed glucagon by a trained person, and emergency referral. Suspected diabetic ketoacidosis or hyperglycemic hyperosmolar state requires urgent clinical evaluation and cannot be managed by education alone (American Diabetes Association Professional Practice Committee for Diabetes, 2026; Fayman et al., 2017; Mustafa et al., 2023). The Family Emergency Action Plan is therefore a preparedness and early-response aid, not a substitute for professional assessment or definitive treatment.

Several limitations restrict interpretation. The evaluation involved a small convenience group from one village, had no comparison group, and measured knowledge only immediately after the session. The organizer-developed questionnaire lacked documented psychometric testing, item-level scores were unavailable, and skill checklist totals were not retained. The program did not measure actual emergency responses, glycemic outcomes, complication incidence, or health-service use. Subsequent implementation should preserve raw pre-test and post-test scores, validate the knowledge and skill instruments, add delayed follow-up, and document referral outcomes. A controlled design would be required before making claims about effectiveness or complication prevention.

5. Conclusions

Among 25 participants in Ko'mara Village, the proportion classified as having good knowledge increased from 28% before the session to 84% immediately afterward. Participants also practiced key first-response steps during guided return demonstration, although aggregate skill scores were unavailable. These findings support the feasibility of delivering a family-oriented emergency preparedness program in this setting and justify a more rigorous follow-up evaluation. They do not establish that the program independently improved clinical outcomes or prevented acute diabetes complications.

Conflict of Interest

The authors declare no conflict of interest related to the community service program or this manuscript.

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