

Development of a Culturally Tailored Care Model for Chronic Disease Management in The Coastal Community: A Modified Delphi Study

Laode Saltar¹, Heltty Heltty², Sitti Mikarna Kaimuddin³

1. Department of Community and Family Nursing, Faculty of Health Sciences, Universitas Mandala Waluya, Southeast Sulawesi, Indonesia
2. Department of Medical Surgical Nursing, Faculty of Health Sciences, Universitas Mandala Waluya, Southeast Sulawesi, Indonesia
3. Department of Psychology, Faculty of Teacher Training and Education, Universitas Halu Oleo, Southeast Sulawesi, Indonesia

*E-mail: saltarstikesmw@gmail.com

Abstract

Chronic noncommunicable diseases (NCDs), particularly hypertension and type 2 diabetes mellitus, are increasing in Indonesia's coastal communities including the Bajo population in Southeast Sulawesi. Limited healthcare access, cultural barriers, and low preventive health engagement exacerbate the disease burden in these communities. Culturally tailored interventions are needed to enhance self-awareness and improve chronic disease management. This study aimed to develop and validate a culturally sensitive care model for chronic disease management in the Bajo coastal community. A three-round modified Delphi method was used with 26 panelists representing health professionals, community leaders, policymakers, and family members recruited through community health centers and community health worker networks. The first round gathered qualitative input on cultural values, traditional practices, barriers, and care model components. The second and third rounds quantitatively assessed proposed components for consensus, defined as $\geq 75\%$ agreement with ratings ≥ 4 on a 5-point Likert scale. Eleven of the twelve proposed components achieved full consensus. High-priority elements included integration of traditional and biomedical care, family and community involvement, culturally relevant health education, flexible service schedules, and routine free health checks. The panel emphasized communication in the local language, engagement of trusted local figures, and employment of culturally competent health workers. One component, the use of local broadcasting media, was rejected because it was perceived as having low feasibility. This study presents a culturally sensitive care framework that operationalizes cultural integration through traditional-biomedical collaboration, family engagement, culturally adapted education, and community-based screening in Indigenous and remote settings. Future studies should prioritize pilot implementation of this framework and evaluation of its feasibility, acceptability, and health outcomes in coastal settings.

Keywords: culturally tailored care, coastal Bajo community, chronic disease, Delphi method, health self-awareness

Abstrak

Pengembangan Model Perawatan Berbasis Budaya untuk Pengelolaan Penyakit Kronis pada Komunitas Pesisir: Studi Modified Delphi. Penyakit tidak menular, khususnya hipertensi dan diabetes melitus tipe 2, semakin meluas di masyarakat pesisir Indonesia, termasuk masyarakat Bajo di Sulawesi Tenggara. Keterbatasan akses layanan kesehatan, hambatan budaya, dan rendahnya upaya pencegahan menjadi faktor meningkatnya angka penderita di komunitas tersebut. Oleh karena itu, intervensi yang peka dengan budaya setempat diperlukan untuk meningkatkan kesadaran masyarakat dan meningkatkan kualitas pengelolaan penyakit kronis. Penelitian ini bertujuan untuk mengembangkan dan memvalidasi model perawatan peka budaya dalam pengelolaan penyakit kronis pada komunitas pesisir di Sulawesi Tenggara. Metode modified Delphi tiga putaran digunakan dengan melibatkan 26 panelis yang terdiri dari tenaga kesehatan, tokoh masyarakat, pembuat kebijakan, dan anggota keluarga yang direkrut melalui puskesmas dan jejaring tenaga kesehatan masyarakat. Putaran pertama adalah mengumpulkan masukan kualitatif terkait nilai budaya, praktik tradisional, hambatan, dan komponen model perawatan. Putaran kedua dan ketiga adalah menilai komponen yang diusulkan secara kuantitatif untuk mencapai konsensus, menghasilkan $\geq 75\%$ kesepakatan dengan skor ≥ 4 pada skala Likert 5 poin. Sebanyak sebelas dari dua belas komponen yang diusulkan mencapai konsensus penuh. Komponen prioritas meliputi integrasi perawatan tradisional dan biomedis, keterlibatan keluarga dan komunitas, edukasi kesehatan yang relevan secara budaya, jadwal layanan yang fleksibel, serta pemeriksaan kesehatan rutin gratis. Panelis juga menekankan pentingnya komunikasi dalam bahasa lokal, keterlibatan tokoh yang dipercaya, serta tenaga kesehatan yang

memiliki kompetensi budaya. Satu komponen, yaitu penggunaan media penyiaran lokal, tidak disepakati karena dinilai memiliki tingkat kelayakan yang rendah. Penelitian ini menghasilkan kerangka perawatan sensitif budaya yang mengoperasionalkan integrasi budaya melalui kolaborasi tradisional-biomedis, keterlibatan keluarga, edukasi yang disesuaikan secara budaya, serta skrining berbasis komunitas pada konteks masyarakat adat dan wilayah terpencil. Penelitian selanjutnya perlu memprioritaskan uji implementasi awal serta evaluasi kelayakan, penerimaan, dan luaran kesehatan dari model ini di wilayah pesisir.

Kata kunci: *perawatan berbasis budaya, komunitas pesisir, penyakit kronis, metode Delphi, kesadaran diri kesehatan*

Introduction

Chronic noncommunicable diseases (NCDs) such as hypertension and type 2 diabetes mellitus (T2DM) remain major contributors to global morbidity and mortality. In Indonesia, the 2023 Basic Health Research (BHR) Survey reported hypertension prevalence at 30.8% and T2DM at 11.7% ([Ministry of Health of the Republic of Indonesia, 2023](#)). In Southeast Sulawesi, hypertension prevalence reached 29.3% in 2024 ([Southeast Sulawesi Provincial Health Office, 2024](#)). Local data from the Soropia Health Center show a rise in hypertension cases from 1,149 in 2022 to 1,735 in 2023, then a slight decline to 1,674 in 2024 ([Soropia Community Health Center, 2024](#)). T2DM cases also increased before stabilizing. Among the Bajo community, these patterns are intensified by limited health-care access, poor infrastructure, geographic isolation, and low participation in NCD preventive programs, particularly among men, with engagement dropping to 60% in 2024 and only 12% of participants being male.

Barriers such as inaccessible geography, inadequate facilities, and poor transportation services disproportionately affect coastal communities ([Setyaningtyas & Ayuningtyas, 2025](#)). Among the Bajo, these constraints often lead to delayed diagnosis due to infrequent clinic visits, poor continuity of care because of irregular follow-up, and reliance on traditional healers or home remedies as the primary management for chronic conditions. Addressing these challenges requires both service availability and responsiveness to community norms and knowledge systems.

Effective NCD control also depends on self-awareness, which is defined as an individual's ability

to recognize symptoms, disease progression, and their impact, facilitating early detection, adherence to treatment, and lifestyle change ([Dharmapatni & Putri, 2023](#)). When combined with clinical indicators such as blood pressure, HbA1c, and subjective well-being, self-awareness strengthens patient outcomes. However, translating this into practice requires adequate health literacy. In Bajo communities, dissemination of health information is hindered by language barriers, low literacy, and culturally mismatched messages ([Nutbeam et al., 2018](#)), which weaken comprehension and compliance.

To address these issues, growing evidence supports the use of culturally tailored interventions, especially community-based culturally adapted education (CBCTE). Such approaches have been found to improve clinical outcomes and patient engagement, as shown in Black, Hispanic, and Indigenous populations, by employing bilingual materials, cultural dietary guidance, and family integration ([Kovanur Sampath et al., 2025](#); [Singh et al., 2023](#)). These findings underscore the importance of interventions grounded in cultural context for sustainable impact.

This study drew upon Leininger's transcultural nursing theory and the health belief model (HBM) to design, develop, and validate a culturally relevant care model for the Bajo coastal community using a modified Delphi approach. Although culturally tailored interventions have been shown to improve engagement and health outcomes in diverse and Indigenous populations globally ([Cipta et al., 2024](#); [Osmancevic et al., 2025](#)), their application to chronic disease care in Indonesian and Southeast Asian coastal or Indigenous settings remains limited, with scarce empirical evidence. Leininger's theory was selec-

ted to ensure cultural congruence in care practices (McFarland & Wehbe-Alamah, 2019), while HBM provided a behavioral lens through which individual perceptions influencing chronic disease management could be addressed (Tsai et al., 2021). The modified Delphi method was chosen as a systematic and transparent approach to integrate theoretical insights with local expertise and achieve consensus on culturally appropriate care components in a context where empirical guidance is limited (Schifano & Niederberger, 2025). These frameworks emphasize culturally congruent care and the influence of behavioral factors on health actions (Abraham & Sheeran, 2015; Leininger & McFarland, 2002). Despite their global use, few studies have applied these frameworks to rural, Indigenous, or coastal populations.

Conceptually, the model presented here extends existing culturally sensitive care approaches by combining Leininger's cultural congruence principles with HBM-based behavioral pathways and translating them into operational components such as family-mediated decision support and structured traditional-biomedical collaboration. The study employed a modified Delphi method as a systematic and transparent approach to integrate theoretical insights with local knowledge and to achieve expert consensus on culturally and contextually appropriate care components in settings where empirical guidance is limited.

Methods

This qualitative study used a modified Delphi design to develop a culturally tailored care model for managing hypertension and diabetes mellitus in the Bajo coastal community in South-east Sulawesi. The study was conducted from March-June 2025 and involved a multidisciplinary expert panel.

Expert Panel and Recruitment. A total of 26 panelists were purposively recruited based on (1) years of experience working with coastal communities (≥ 2 years) and (2) relevant expertise in community health and local sociocultural practices. Panelists included nurses, midwives, public

health experts, traditional healers, health cadres, and community leaders. Recruitment was facilitated through the local health authority and community networks, with deliberate efforts to ensure balanced representation across professional, community, and traditional roles to capture diverse yet complementary perspectives. All participants provided written informed consent, and ethical approval was obtained from the Health Research Ethics Committee of Universitas Mandala Waluya (Ref: 152/KEP.UMW/VIII/2025).

Modified Delphi Procedure. The Delphi process comprised three rounds (Figure 1). Round 1 used semi-structured questionnaires informed by the literature and expert input to explore eight domains-cultural beliefs and practices, access barriers, integration of traditional and biomedical care, health education and communication, social influences, care strategies, community engagement, and health system challenges and was administered through written questionnaires and facilitated discussions. The responses were analyzed thematically and synthesized into an initial draft model. All Delphi materials were reviewed and piloted for clarity and cultural appropriateness prior to administration to minimize bias in expert judgments. In Rounds 2 and 3, panelists rated each component using a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree). Percentage agreement, median scores, and interquartile ranges (IQR) were calculated to assess central tendency and dispersion. Stability between rounds was evaluated by comparing changes in median and IQR values.

Consensus Criteria, Feedback, and Response Rates. Consensus was defined a priori as $\geq 75\%$ agreement (ratings of 4–5). The $\geq 75\%$ threshold was selected based on commonly accepted methodological standards in Delphi studies in which agreement levels between 70%-80% are considered indicative of consensus (Arveda et al., 2025; Diamond et al., 2014; Niederberger, 2020). Items meeting the threshold were retained; those below were revised based on anonymized feedback and rerated, while items consistently judged irrelevant or redundant were removed.

The process ended after three planned rounds or earlier if all items met consensus. After each round, panelists received anonymized feedback including percentage agreement and synthesized comments to support iterative refinement. Changes across rounds were documented by tracking whether each proposed component was retained, revised, or removed based on quantitative agreement levels and qualitative panel feedback. All 26 panelists participated across all rounds, with no attrition. To minimize bias, panelists' responses remained anonymous throughout the Delphi process, and feedback was provided in aggregated form to prevent undue influence from the research team.

Trustworthiness, Reliability, and Data Analysis. Rigor was enhanced through prolonged engagement, member checking, peer debriefing, triangulation, and maintenance of reflexive journals and an audit trail (Cypress, 2017). Within the Delphi process, member checking was conducted by sharing summarized findings, draft model components, and revised items with panelists across rounds to confirm accuracy, clarity, and interpretive alignment. For Round 1, qualitative coding used a constant comparative approach, with coding independently verified by two reviewers and discrepancies resolved through iterative discussion (Gunbayi, 2024; Nowell et al., 2017). In Rounds 2 and 3, descriptive statistics were used to quantify agreement and determine whether items met the consensus threshold. Consensus findings were interpreted as collective expert agreement rather than absolute correctness, and items lacking consensus were treated as informative indicators of divergent perspectives.

In terms of gender, most participants were female (61.5%), which aligns with the known composition of the healthcare and community engagement sectors in Indonesian coastal settings. Educationally, most participants had attained at least a bachelor's degree (46.2%), with 15.3% having completed postgraduate education (master's or doctorate). Few participants (15.4%) had only a high school diploma. This distribution reflects a panel equipped with both

the practical experience and academic competence necessary for consensus-building on culturally informed healthcare.

Professionally, 54% of respondents were practicing healthcare workers (e.g., nurses and midwives), supported by representation from public health experts (19.2%), community leaders, health cadres, and family caregivers. Nearly 89% of respondents had lived or worked in coastal areas of Southeast Sulawesi for more than 10 years, indicating a deep familiarity with the local context.

The first round of the Delphi method yielded rich qualitative insights that shaped a culturally sensitive care model for managing hypertension and diabetes in coastal communities. Thematic analysis identified eight dimensions, which were analytically clustered into three overarching domains based on conceptual similarity and functional relevance: cultural beliefs and practices, health system challenges, and model design components. Dimensions reflecting meaning-making, spiritual interpretations of illness, and traditional health practices were grouped under cultural beliefs and practices; dimensions related to access, service availability, and continuity of care formed the Health System Challenges domain; and dimensions focused on intervention strategies, roles, and implementation mechanisms comprised the Model Design Components domain.

Cultural and spiritual beliefs were found to be central to care-seeking behavior, with illness often seen as fate or spiritual imbalance, prompting reliance on herbal remedies, massage, and rituals such as *selamatan* (a traditional communal prayer ritual), which delayed biomedical care.

Participants also highlighted systemic barriers including geographic isolation, poor infrastructure, and limited health literacy, compounded by mistrust in services perceived as culturally insensitive. One panelist emphasized that "remote or difficult-to-reach locations, especially during the rainy season or high tides discourage

routine check-ups or continued treatment” (Table 3, Comment 8), while another noted that “reliance on shamans or alternative medicine may cause delays or refusal of medical treatment” (Table 3, Comment 10).

Family members, elders, religious figures, and traditional healers were described as key decision-makers in chronic disease care. As one respondent stated, “before visiting the clinic or hospital, many first seek help from shamans who are believed to understand the spiritual and physical causes of illness” (Table 3, Comment 7), underscoring the central role of trusted cultural authorities.

To address these challenges, panelists emphasized integrating traditional and biomedical practices, engaging local leaders, and strengthening culturally responsive communication. Participants stressed that “health education approaches for coastal communities should align with local characteristics, such as using regional language and cultural values” (Table 3, Comment 12), and that “involving traditional leaders, religious leaders, health cadres, or village heads... makes the message more likely to be accepted” (Table 3, Comment 13). Joint engagement between traditional healers and health professionals, supported by community outreach and family-centered education, was therefore recommended to foster trust and promote sustainable behavior change.

Analysis showed that cultural beliefs and practices strongly influence health behavior in the Bajo coastal community. There is deep trust in traditional medicine, including herbal remedies, *selamatan* (a traditional communal prayer ritual), and spiritual cleansing. Illness is often viewed as divine will, which discourages preventive action. Traditional diets high in salt and sugar, such as frequent consumption of salted fish and sweet snacks, were also noted as contributors to chronic disease risk.

Traditional practices such as herbal infusions, massage, cupping, ritual fasting, and sea bathing are commonly used as initial treatments before seeking healthcare services. These practices

reflect a holistic understanding of illness that integrates physical, spiritual, and social dimensions of well-being within the Bajo community. Many participants perceived illness as closely connected to spiritual imbalance, cultural beliefs, and environmental influences, which reinforced the continued reliance on traditional healing approaches.

As a result, biomedical treatment is often sought only after symptoms worsen or traditional remedies are considered ineffective. Health service access is limited due to geographic isolation, poor infrastructure, seasonal constraints, and inadequate transportation. Participants also highlighted that low health literacy, language barriers, and distrust toward biomedical services contributed to delays in diagnosis and treatment. In this context, traditional healers were frequently viewed as more accessible, culturally familiar, and trustworthy than formal healthcare providers.

Respondents emphasized the importance of integrating traditional and biomedical care under appropriate medical supervision to improve trust and community acceptance of chronic disease management programs.

Health education delivered in the local language and adapted to cultural practices was considered essential for improving comprehension and adherence to treatment recommendations. Participants also stressed the importance of involving traditional healers, religious leaders, family members, and village authorities as active partners in health promotion and community outreach activities. Such collaborative approaches were perceived as more culturally acceptable and more likely to strengthen engagement with formal healthcare services.

The proposed intervention strategies included nurse-led home visits, family-based education, group discussions, community support groups, and the training of culturally competent local health workers. Respondents also identified free routine screenings and health promotion activities aligned with community routines as critical

strategies for increasing health awareness and sustaining long-term engagement in chronic disease prevention and management. The consensus results from the second and third rounds

of the Delphi process demonstrated strong expert agreement regarding the importance and feasibility of these culturally responsive care components, as summarized in Table 4.

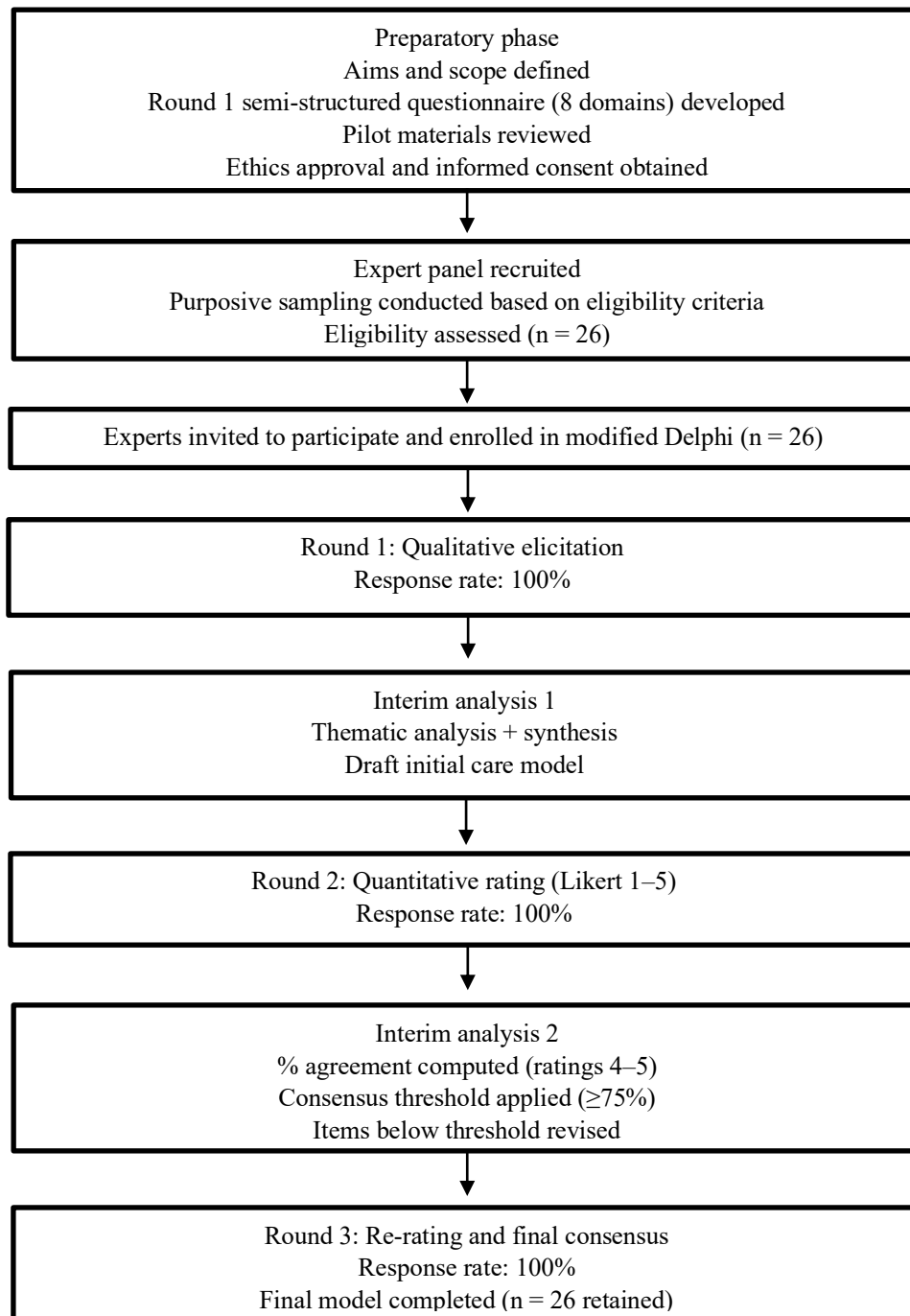


Figure 1. CONSORT-style Flow Diagram of the Modified Delphi Process

Table 1. Participant Characteristics

Profile	Frequency (n = 26)	Percentage (%)
Age (years)		
<30 years	2	7.7
30–39 years	6	23
40–49 years	14	54
≥50 years	4	15.3
Gender		
Male	10	38.5
Female	16	61.5
Education		
Senior High School	4	15.4
Diploma	6	23.1
Bachelor’s Degree	12	46.2
Master’s Degree	3	11.5
Doctorate	1	3.8
Occupation/Profession		
Primary Health Center Head	1	3.8
Nursing Lecturer	1	3.8
Public Health Expert	5	19.2
Health Practitioner (nurse, midwife)	14	54
Health Cadre	2	7.7
Community Leader	2	7.7
Family Member of Patient	1	3.8
Years Living/Working in Coastal Area		
<5 years	1	3.8
5–10 years	2	7.7
>10 years	23	88.5

Table 2. Results from the First Round of the Modified Delphi.

No.	Question	Dimensions
1	In your opinion, what cultural values or beliefs influence the behavior of coastal communities in managing hypertension and diabetes?	Cultural Values and Beliefs
2	What traditional practices are commonly used by coastal communities when dealing with conditions such as high blood pressure or high blood sugar?	Traditional Health Practices
3	What do you think are the challenges in providing effective healthcare services to coastal communities?	Health Service Delivery Challenges
4	In your view, who are the key figures influencing decisions about chronic disease care in coastal communities?	Influential Figures in Health Decisions
5	What components do you think should be included in a culturally sensitive healthcare model for coastal areas?	Core Components of a Culturally Sensitive Model
6	What forms of communication or health education approaches are most effective for coastal communities?	Communication and Health Education Approaches
7	How should medical and traditional treatments be coordinated in the context of caring for patients with hypertension and diabetes?	Coordination of Traditional and Medical Treatment
8	What strategies can be applied to increase the awareness of coastal communities regarding the importance of health monitoring?	Strategies to Enhance Health Awareness

Table 3. Qualitative Data Analysis.

No.	Comments	Categories	Themes
1	“Coastal communities still believe in healing rituals, both traditional and herbal medicine.”	Belief in traditional healing	Cultural Values and Beliefs about Illness
2	“Illness is often seen as fate; people accept it with minimal preventive effort.”	Fatalistic view of illness	
3	“Traditional diets often include salted fish and sugary foods.”	High salt and sugar intake	
4	“People use local herbal remedies like boiling soursop or bay leaves to manage blood sugar.”	Use of local herbal treatments	Traditional Health Practices
5	“Traditional massage and practices like cupping and food taboos are used to relieve symptoms.”	Traditional therapies and restrictions	
6	“Healing rituals and spiritual practices like <i>selamatan</i> and sea bathing are used to treat illness.”	Ritual healing and cleansing	
7	“Shamans are usually consulted before going to clinics or hospitals.”	Initial reliance on shamans	
8	“Remote areas and poor weather often make healthcare access difficult.”	Geographic isolation and transport issues	Health Service Delivery Challenges
9	“Lack of family support and limited health infrastructure are ongoing challenges.”	Weak family and facility support	
10	“Low understanding of disease and reliance on shamans delay formal treatment.”	Low health literacy and treatment delay	
11	“Family, shamans, and community leaders influence health decisions.”	Key influencers in care-seeking	Influential Figures in Health Decision-Making
12	“Involving trusted figures like religious and village leaders helps improve message acceptance.”	Role of local authorities	
13	“Health education should use local language and reflect community values.”	Context-sensitive education	Culturally Appropriate Communication and Health Education
14	“Involving trusted figures like religious and village leaders helps improve message acceptance.”	Role of local authorities	
15	“Home visits, flexible schedules, and group education build trust and improve access.”	Interactive and adaptive strategies	
16	“Traditional and modern medicine should be integrated in treatment.”	Need for integration	Integration and Coordination of Traditional and Biomedical Care
17	“Traditional healers and medical staff should collaborate to ensure safe, evidence-based care.”	Coordinated traditional and medical care	
18	“Health workers should understand local culture and train traditional healers in basic health.”	Cultural competence and training	
19	“Family involvement improves patient participation in care.”	Family-oriented strategies	Strategies to Enhance Health Awareness
20	“Education using relatable examples and local language is more effective.”	Locally grounded education	
21	“Free routine screenings for blood pressure and blood sugar are important.”	Routine health checks	
22	“Local volunteers who understand the culture and language should be empowered.”	Empowerment of culturally competent workers	

Table 4. Consensus Results of the Delphi Panel

Number of items	Statement	Mean (SD)	Agreement Status
	Scale description: 1: Very unimportant; 2: Unimportant; 3: Less important; 4: Important; 5: Very important		
1	Integrating traditional medicine for managing hypertension and diabetes that does not conflict with modern medicine, such as herbal remedies	4.61 (0.48)	Agreed
2	Involving traditional/community leaders, village officials, and health cadres in public health education for coastal communities	4.73 (0.44)	Agreed
3	Providing care guidelines and health education using the local language and simple visual media	4.42 (0.49)	Agreed
4	Conducting regular home visits by nurses/health cadres	4.57 (0.49)	Agreed
5	Utilizing local media such as mosque loudspeakers or fishing boats for health education	3.00 (0.88)	Rejected
6	Conducting group health counseling	4.38 (0.48)	Agreed
7	Providing basic training for traditional healers/experienced healers	4.38 (0.74)	Agreed
8	Providing free routine check-ups such as blood pressure, blood sugar, and simple consultations	4.88 (0.32)	Agreed
9	Involving families in education and disease care	4.81 (0.39)	Agreed
10	Empowering local cadres who understand the culture	4.53 (0.49)	Agreed
11	Adjusting a healthy and balanced diet (salt and sugar) with local food sources (e.g., sea fish, traditional cakes)	4.61 (0.48)	Agreed
12	Providing flexible service schedules adjusted to the routines of coastal residents	4.69 (0.46)	Agreed

Note. Consensus was defined as $\geq 75\%$ of panelists rating an item as 4 or 5. Items with $< 50\%$ agreement were classified as rejected.

Table 4 shows strong consensus among panelists on most components of a culturally sensitive care model for chronic disease management in coastal communities. Eleven of twelve items (91.7%) met the predefined consensus criterion ($\geq 75\%$ agreement with ratings ≥ 4). Mean scores ranged from 4.38 to 4.88 (SD = 0.32–0.74), indicating consistent ratings. Median values ranged from 4 to 5, with IQRs of 4-5 or 5-5, reflecting high central agreement and low dispersion.

The highest-rated component was routine free check-ups (mean = 4.88, SD = 0.32; median = 5, IQR = 5-5) followed by family involvement (mean = 4.81, SD = 0.39; median = 5, IQR = 4-5). Engagement of traditional and community leaders and flexible service schedules were similar-

ly supported (median = 5, IQR = 4-5).

Other retained components, including traditional-biomedical integration, culturally adapted education, home visits, group counseling, healer training, dietary adaptation, and empowerment of local health workers, also demonstrated strong agreement (median = 4-5, IQR = 4-5). These findings indicate that panelists consistently valued care components that were clinically relevant, culturally acceptable, and feasible for community-based implementation. In contrast, the use of local media did not reach consensus (mean = 3.00, SD = 0.88; median = 3, IQR = 2-4), suggesting lower perceived feasibility and greater variability in expert ratings. Minimal changes in median and IQR values between Rounds 2 and 3 indicate

stability of expert responses and support the robustness of the final consensus.

Discussion

The composition of the Delphi panel reflects methodological best practices in culturally sensitive health research in which multidisciplinary and demographically diverse expertise is essential to capture the complexity of community health contexts (Efthymiou et al., 2023; Izudin et al., 2025). The predominance of female participants is consistent with regional patterns in Southeast Asia, where nurses, midwives, and community health volunteers play central roles in chronic disease management (Witter et al., 2017). The panel's wide range of educational and professional backgrounds, spanning health practitioners, public health experts, community leaders, and family representatives, enhanced the contextual grounding and relevance of the consensus process (Ng et al., 2024).

The high level of consensus achieved across the second and third Delphi rounds indicates strong alignment regarding the core components of a culturally sensitive care model. Strategies such as integrating traditional and biomedical care, involving family and community actors, offering flexible service delivery, and providing routine health monitoring were consistently prioritized. These findings underscore the importance of accessibility and social embeddedness in chronic disease management within coastal and collectivist communities. In contrast, the limited support for health education via loudspeakers or mass local media suggests that impersonal communication channels may be less effective in contexts where trust and interpersonal interaction are central to knowledge transmission.

The interpretation of these findings aligns with global and regional evidence emphasizing the value of culturally grounded, community-based approaches to chronic disease care (Wardani et al., 2025). Flexible service strategies are particularly relevant in coastal settings, where environmental and occupational factors, such as fishing

cycles, shape daily routines and healthcare access (Maziyya & Nurhamsyah, 2025). The preference for face-to-face communication over mass messaging is also consistent with prior research highlighting the role of communal learning and direct interaction in similar sociocultural contexts (Artanto, 2017), even where mass media approaches have shown effectiveness elsewhere (Rasyid et al., 2025).

Several Delphi items revealed areas of nuanced consideration rather than straightforward endorsement. While culturally tailored educational materials were strongly supported, panelists raised practical concerns regarding implementation, particularly for populations with low literacy or strong oral traditions. Similarly, group-based education was viewed positively but constrained by irregular attendance related to livelihood demands. Suggested adaptations, including smaller or gender-specific sessions led by trusted local figures, reflect context-sensitive refinements rather than rejection of the strategy itself (Galmarini et al., 2024; Pertiwi et al., 2025).

The integration of traditional healers into chronic disease care generated the most debate, reflecting broader discussions in the literature. While inclusion of traditional practitioners may enhance trust and cultural relevance (Wardani et al., 2025), concerns remain regarding clinical safety and evidence-based practice (Burayu & Degefa, 2024). The consensus achieved suggests cautious acceptance of structured collaboration, emphasizing supervision, dialogue, and basic training rather than unregulated integration.

Conceptually, the validated care model aligns with a broader shift in global health away from top-down biomedical frameworks toward participatory, context-sensitive approaches grounded in local knowledge systems (Fadem et al., 2025; Zegarra-Parodi et al., 2025). The eight-dimensional framework reflects established international models that incorporate cultural beliefs, family dynamics, and localized education into health system design (Kanu et al., 2024; Snijders

et al., 2025). Importantly, this study illustrates how cultural, logistical, and symbolic dimensions intersect to shape health behavior and access in coastal Indigenous communities.

From a practice-oriented perspective, these findings underscore the importance of strengthening cultural competence among health workers, applying locally relevant and context-sensitive health education, and ensuring coordinated engagement with key community actors. Collectively, these strategies are essential for building trust, increasing service uptake, and improving chronic disease management in coastal and culturally diverse settings while also supporting the development of a more inclusive and responsive health system. For dissemination, the model can be incorporated into primary healthcare programs through structured community outreach, culturally tailored education, and collaboration with trusted local figures such as village leaders, religious representatives, and health cadres. Operational implementation may include nurse-led home visits, group counseling, routine screening activities, and coordinated referral pathways supported by culturally appropriate communication. Nurse-led home visits foster personalized, culturally sensitive interactions within family contexts, strengthening therapeutic relationships, reducing perceived barriers and mistrust, and enhancing sustained engagement with formal healthcare services (Theodosopoulos et al., 2024). Similarly, the health belief model (HBM) explains that tailored educational interventions increase perceived susceptibility and perceived benefits, strengthen self-efficacy, and provide cues for action, thereby enhancing motivation and adherence to preventive screening behaviors (Abed et al., 2026). Group counseling and coordinated referrals leverage social influence and normative belief change to reinforce positive health behaviors, consistent with integrated behavioral science perspectives on community engagement (Bakhshi et al., 2023).

From a policy and practice perspective, the model offers a framework for integrating culturally responsive chronic disease management into pri-

mary healthcare services. Health authorities should formalize collaboration with community and traditional leaders, incorporate nurse-led home visits and culturally adapted education into routine care, and provide workforce training in culturally responsive communication. These measures may strengthen service uptake, community trust, and chronic disease outcomes in coastal and underserved populations.

This model was developed through expert consensus within a single coastal context, which may limit its transferability to other Indigenous or coastal populations. The use of purposive sampling introduces the possibility of selection bias, and limited physician representation may have constrained the breadth of clinical perspectives. Additionally, reliance on self-reported measures raises concerns regarding information bias and socially desirable responses. The model has not yet undergone implementation testing; therefore, its feasibility, effectiveness, and sustainability remain to be empirically established. Future research should involve larger and more diverse samples, incorporate objective clinical indicators, include longitudinal follow-up, and pursue external validation through independent review by health authorities and community stakeholders to enhance credibility, contextual adaptability, and applicability prior to large-scale dissemination.

Conclusion

This study developed a culturally tailored care model for managing hypertension and diabetes in a Bajo coastal community by integrating biomedical care with local beliefs, family engagement, and the influence of trusted community figures. The findings underscore that effective chronic disease management in coastal settings requires culturally grounded health literacy, community-based outreach, and structured collaboration between traditional and formal healthcare systems. Expert consensus emphasized nurse-led home visits, family-centered education, local language communication, and traditional-biomedical integration to strengthen

self-awareness and sustain healthy behaviors.

Future research should move beyond model development to pilot implementation and rigorous evaluation using quasi-experimental or randomized designs, with measurable clinical outcomes such as blood pressure and glycemic control. Longitudinal and comparative studies across different coastal or Indigenous settings are needed to assess sustainability, scalability, and contextual adaptability.

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Data Availability Statement

The qualitative data collected and analyzed in this study are not publicly available due to ethical considerations and the need to protect participant confidentiality. However, anonymized data may be made available by the corresponding author upon reasonable request and subject to approval by the relevant institutional ethics committee.

Author Contributions

Laode Saltar: Conceptualization, Methodology, Investigation, Data Curation, Funding Acquisition, Project Administration, Writing – original draft, Writing - review and editing. **Helty Helty:** Methodology, Investigation, Data Curation, Formal Analysis, Validation, Writing – re-

view and editing. **Sitti Mikarna Kaimuddin:** Conceptualization, Methodology, Formal Analysis, Validation, Supervision, Writing - review and editing.

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