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CLINICAL TRIAL REPORT

Smartphone App-Based Psychoeducation for Caregivers of People with Dementia in Vietnam: A Pilot Randomized Controlled Trial

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Purpose: Caring for people with dementia (PwD) is demanding, particularly for family caregivers in lower-middle-income countries like Vietnam, where support is limited. This study assessed the feasibility and preliminary impact of a smartphone-based psychoeducational program for caregivers of PwD.

Participants and Methods: In a pilot randomized controlled trial, 60 family caregivers were recruited from the Geriatrics Department of a public hospital and randomly assigned (1:1) to either an intervention or a usual care group. Eligible participants were aged 18 or older, primarily responsible for daily care, had at least a primary education, used a smartphone with internet access and Zalo, and reported moderate stress. The intervention group received a 7-week psychoeducational program via Zalo, featuring videos and interactive group chats. Feasibility was assessed through recruitment, retention, and data collection rates. Engagement and acceptability were measured through caregiver participation and feedback. Preliminary effects on depression, anxiety, stress, dementia knowledge, caregiver burden, social support, and health-related quality of life were explored.

Results: Of the 62 caregivers approached, 60 enrolled (96.7%), and 54 completed the study (90% retention). Assessment completion rates were 96.7% immediately after the intervention and 93.1% at the 3-month follow-up. Over 85% of participants were engaged weekly, and all participants rated the program content positively. Acceptability was high, with more than 89% expressing satisfaction with the content, format, and duration. Preliminary findings indicated improvements in psychological distress, dementia knowledge, caregiver burden, and quality of life.

Conclusion: This is the first study in Vietnam to evaluate a smartphone-based psychoeducational intervention for caregivers of PwD. The program was feasible, well-accepted, and showed potential benefits. It offers a promising, scalable support model for caregivers in resource-limited settings and warrants further investigation in a larger trial.

Keywords: acceptability, distress, feasibility, knowledge, quality of life, support

Introduction

The growing global aging population has led to a notable increase in the prevalence of non-communicable diseases among older adults.[1] Dementia represents a leading cause of disability and mortality in this age group. According to the

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World Health Organization, it ranks as the seventh leading cause of death worldwide.[2] The escalating burden of dementia presents substantial challenges for healthcare systems, especially in low- and middle-income countries (LMICs), where resources and infrastructure for long-term care may be limited.[3–5]

Individuals diagnosed with dementia typically live an average of four to eight years following diagnosis, although some may survive for 10 to 20 years.[6] Most people with dementia (PwD) are cared for at home, primarily by family members.[7,8] This is especially evident in many Asian countries, where strong cultural values emphasize filial responsibility, and adult children are frequently expected to care for their aging parents.[9,10] Alongside the physical demands of caregiving, such as spending long hours delivering personal and medical care, caregivers often face considerable psychological distress.[11,12] Common challenges include heightened levels of stress, anxiety, and depressive symptoms.[13] Research indicates that the prevalence of depressive symptoms among caregivers of PwD can reach as high as 40%.[13,14]

Although family members are recognized as informal caregivers and often referred to as[15] the "second invisible patients", they frequently receive limited attention and support within the healthcare systems for people with dementia, particularly in LMICs.[16,17] In Vietnam, for instance, dementia has been identified as a public health priority[18] since 2017; however, current policies and services for PwD and their caregivers remain insufficient and underdeveloped.[19,20]

Psychoeducational interventions are effective in reducing psychological distress and enhancing caregiving skills among family caregivers of PwD.[21–23] In particular, technology-based approaches offer increased accessibility and convenience, especially for informal caregivers who often have time constraints.[24,25] Notably, support for dementia caregivers is identified as one of the seven strategic action areas in the World Health Organization's Global Action Plan on the Public Health Response to Dementia.[26]

In Vietnam, there is a scarcity of intervention studies aimed at supporting caregivers of individuals with dementia. One cluster randomized controlled trial in Northern Vietnam utilized a multicomponent intervention adapted from the Resources for Enhancing Alzheimer's Caregiver Health (REACH) program[27] and reported positive outcomes, including reductions in caregiver burden and depressive symptoms.[16] The intervention includes structured sessions focused on problem-solving, mood regulation through cognitive restructuring, stress reduction techniques, and effective communication. However, it was delivered face-to-face by trained healthcare professionals in caregivers' homes or clinics. This delivery method may limit scalability, particularly in settings with workforce constraints or logistical barriers. Technology-based interventions offer flexible, asynchronous access to educational content, stress management tools, and caregiver support without requiring in-person sessions.[28] Moreover, this approach may overcome geographic and time-related barriers, reaching a broader population of informal caregivers.[29]

To address the gap in caregiver support, we conducted a pilot randomized controlled trial to evaluate the feasibility of a psychoeducational intervention[30] delivered through a smartphone application for family caregivers of PwD in Ho Chi Minh City, the most populous city in southern Vietnam. This technology-based approach offers a practical and scalable way to enhance caregiving competencies and alleviate caregiver stress. In Phase 1, a qualitative study was carried out to explore the informational and skill-based needs of dementia caregivers, which informed the development of the intervention content. In Phase 2, we hypothesize that the smartphone-based intervention will be feasible and acceptable to family caregivers of PwD and potentially reduce psychological distress among this population.

This feasibility trial (Phase 2) aimed to evaluate both the practicality of the intervention and the appropriateness of the study procedures in preparation for a fully powered randomized controlled trial.[30] The primary objectives included: (1) determining the recruitment rate; (2) evaluating the retention rate at post-intervention and the three-month follow-up; (3) assessing the completion rate of outcome assessments; and (4) examining caregivers' acceptance and engagement with the intervention. Additionally, key outcome domains were examined to inform the future randomized controlled trial (RCT), across the following measures: symptoms of depression, anxiety, and stress; dementia-related knowledge; caregiving burden; perceived social support; and health-related quality of life.

Materials and Methods

The detailed methods of this pilot trial have been previously published in the study protocol paper.[30] The CONSORT checklist is provided in Appendix 1.

Trial Design

This pilot RCT employed a parallel-group design with a 1:1 allocation ratio. Following informed consent and baseline assessments, participants were randomly assigned to either the intervention group or the usual care group.

Randomisation and Procedure

Randomization was carried out by an independent statistician to ensure allocation concealment. A permuted block randomization method with varying block sizes was used to generate sequentially numbered, sealed envelopes. The randomization sequence was concealed from all investigators and study personnel involved in participant recruitment to prevent selection bias. After the baseline interview, each participant received an envelope labeled with their order number in the recruitment process. Inside, a group designation was marked: those marked "A" were assigned to the intervention group, while those marked "B" were assigned to the usual care group. This assignment process was managed by a separate member of the research team to preserve blinding and minimize bias. Baseline assessments were administered through face-to-face interviews, and two follow-up assessments (post-intervention and three-month follow-up) were completed via telephone. Study data were collected and managed using REDCap electronic data capture tools hosted at the University of Medicine and Pharmacy at Ho Chi Minh City.[31,32]

Blinding

The researcher who conducted the outcome assessments was unaware of participants' group assignments, ensuring that data collection was carried out without knowledge of whether individuals were in the intervention or usual care group.

Participants

Eligible participants were adult family caregivers (≥18 years) of community-dwelling individuals with dementia admitted to the Geriatrics Department at Nhan dan Gia Dinh Hospital, Ho Chi Minh City. Caregivers, who had provided care for at least six months, were literate in Vietnamese, owned a smartphone with the Zalo app, and had a Distress Thermometer score of 4 or higher, were included. Those with severe comorbidities, cognitive impairment, or sensory limitations were excluded. A non-study physician screened eligible participants, introduced the study, and obtained written informed consent.

Interventions

Participants were enrolled in a closed Zalo chat group, "The Caregiver Support group", moderated by trained facilitators. Over seven weeks, weekly psychoeducational content, developed based on Phase 1 findings, was delivered. Seven topics were covered: dementia progression, caregiver preparation, caregiver self-care, feeding and incontinence care, behavior changes, fall prevention, pressure injury prevention, and care. Posts included discussion topics and interactive multiple-choice questions. Follow-up phone calls reinforced understanding. Facilitators promoted discussion and gathered questions, offering expert-reviewed answers. Full details of the intervention are outlined in the protocol paper.[30]

Usual Care

Participants did receive usual care. To meet minimal ethical standards, they received links to publicly available dementia information (https://www.alz.org/asian/about/stages.asp?nL=VI&dL=VI).

Outcomes

Primary Outcomes

To address the main goal, the following feasibility outcomes were evaluated: participant recruitment rate, retention, and the completion rates of outcome assessments after the intervention and at three-month follow-up. Feasibility was assessed using a traffic light model with three outcome levels: feasible (above the upper threshold), infeasible (below the lower threshold), and requiring revision (between the thresholds) (Appendix Table 2). The thresholds were determined based on existing literature and input from the Steering Committee.[33,34] Participant involvement was assessed based on their engagement with the chat group, including reading posts, asking questions, and participating in

discussions. The acceptability of the intervention among participants in the intervention group was evaluated immediately after the intervention. Intervention acceptability was assessed using a structured questionnaire with 5-point Likert scale items, evaluating participants' satisfaction with the content, format, group interaction, and overall duration. As it was not feasible to conduct a focus group discussion, participants were invited to respond to an open-ended question to offer additional feedback on the intervention and the overall study experience.

Secondary Outcomes

The secondary aim was to investigate the potential impact of the intervention on caregiver outcomes, which were assessed at baseline, immediately after the intervention, and at the three-month follow-up. Symptoms of depression, anxiety, and stress were measured using the Vietnamese-adapted Depression Anxiety Stress Scale (DASS-21). Other outcomes for caregivers included dementia knowledge (a 7-item questionnaire adapted from the Northern Ireland Life and Times Survey), perceived social support (Multidimensional Scale of Perceived Social Support, MSPSS), caregiver burden (4-item Zarit scale), and health-related quality of life (the Vietnamese version of the SF-36). Full descriptions of the outcome measures are available in the published protocol.[30]

Demographic data were collected for both caregivers and their care recipients. Shared variables included age, gender, educational attainment, marital status, living arrangement, employment status (current or former), the presence of chronic conditions, and the number of medications. Additional information for caregivers included their relationship to PwD, average monthly income, and caregiving duration. For PwD, further data were collected on functional status, dementia stage, and time since diagnosis.

Sample Size

Given that this study was a pilot randomized controlled trial, a formal sample size calculation was not deemed necessary. A total of 60 participants were enrolled. This sample size aligns with established guidelines for pilot studies,[34,35] which are designed to inform the development of larger-scale trials.

Statistical Methods

For the primary outcome, feasibility metrics were calculated as percentages. The recruitment rate was defined as the ratio of individuals who consented to participate compared to the total number invited. The retention rate for each group was defined as the proportion of participants who completed the study out of the total number of individuals who initially provided consent to participate. Outcome assessment completion rates were defined as the proportion of participants who fully completed the assigned outcome measures among those present at the post-intervention and three-month follow-up time points. The acceptability of the intervention was assessed by calculating the proportion of participants who rated each item with a score of 4 or 5 on the Likert scale, indicating positive endorsement. Qualitative feedback from open-ended responses was thematically analyzed to further explore participants' views on the intervention. Continuous variables were compared using *t*-tests or Mann–Whitney *U*-tests, as appropriate. Categorical variables were analyzed using Chi-square tests or Fisher's exact tests. A p-value of <0.05 was considered significant.

Secondary outcomes were evaluated by comparing the mean or median scores of DASS-21, dementia knowledge, perceived social support, caregiver burden, and health-related quality of life across intervention and control groups over time. Linear mixed-effects models were used, with group-by-time interaction terms to assess differential changes between the groups. Analyses followed the intention-to-treat principle. All statistical analyses were performed using Stata version 16.0 (StataCorp LLC, College Station, TX, USA).

Results

We approached 62 eligible caregivers for participation, of whom two declined due to time constraints; 60 participants were randomly allocated. Within the intervention group, two participants discontinued their involvement during the intervention phase, and one during the follow-up data collection due to the passing of their care recipient. In the usual care group, three participants were lost to follow-up as they could no longer be reached. The flow of participants throughout the study is presented in Figure 1.

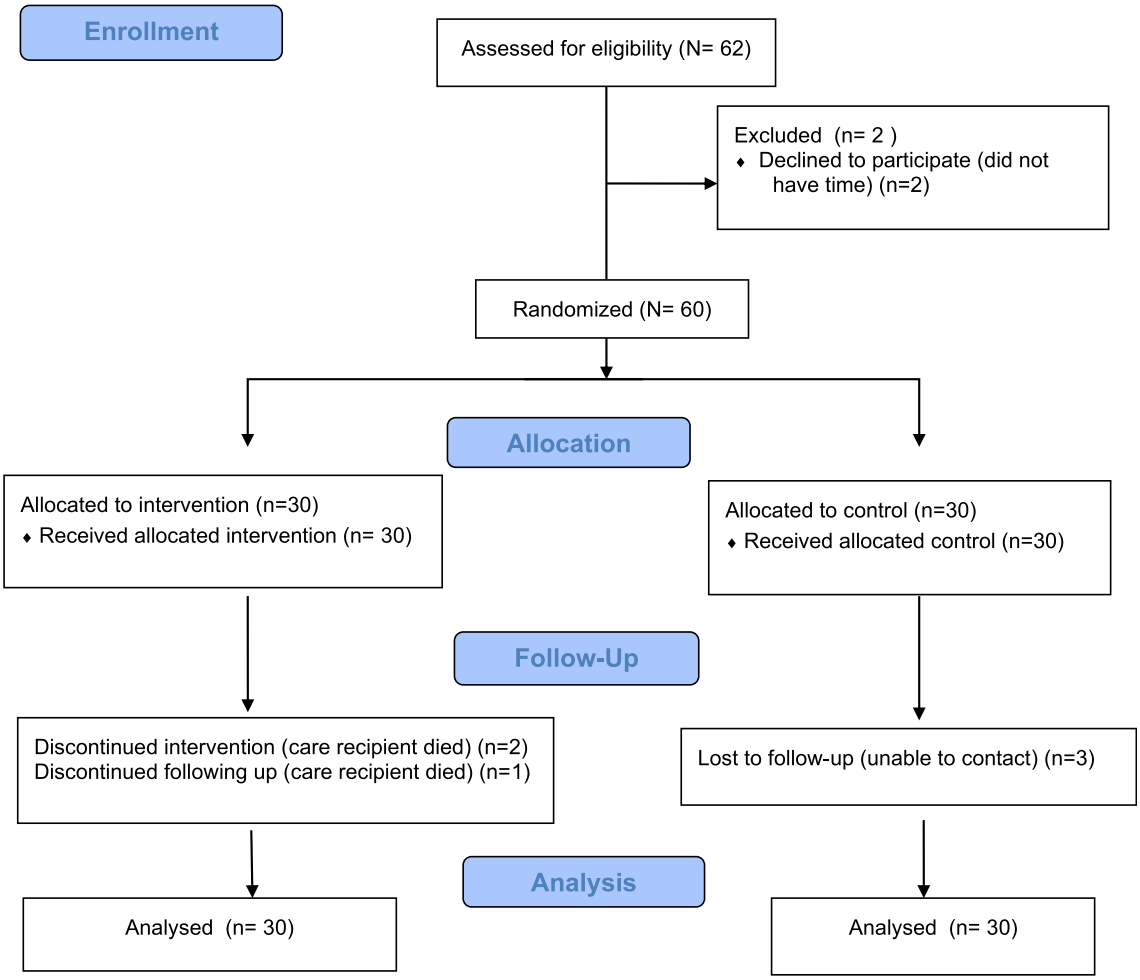

Figure 1 Participant flow per CONSORT 2010.

Most caregivers were female (over 75%) and middle-aged. Most participants were adult children of PwD. No significant differences were observed in demographic characteristics between the intervention and usual care groups. The demographic information of the participants is presented in Table 1.

Details regarding the characteristics of the care recipients are shown in Table 2. The majority (80%) were categorized as having severe dementia, with an average duration of five years since their diagnosis. The characteristics of PwD in both groups were not significantly different.

Primary Outcomes

Feasibility of Methodology

The recruitment rate was 96.7% (60 out of 62 eligible caregivers approached). The overall retention rate was 90%, with 54 participants completing the study. Retention was identical across groups, with 27 participants remaining in both the intervention and usual care arms. Outcome assessments were completed by 58 of 60 (96.7%) participants after the intervention, and 54 of 58 (93.1%) at the three-month follow-up.

Feasibility of the Intervention

Participant Engagement

As illustrated in Figure 2, more than 85% of participants engaged with the intervention content every week. Additionally, five participants (16.7%) asked questions in the chat group, while seven (23.3%) actively participated in group discussions. However, weekly ratings of topic interest were completed by all participants (100%).

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Table 1 Demographic Characteristics of Caregivers (N = 60)

Factors	Arm		p
	Intervention, n (%) (n = 30)	Usual Care, n (%) (n = 30)	
Age(year) *M (SD)*	56.1 (10.1)	54.6 (8.1)	0.537
Gender			
Male	7 (23.3)	6 (20.0)	0.754
Female	23 (76.7)	24 (80.0)	
Educational level			
Primary school	5 (16.7)	4 (13.3)	0.572
Secondary school	6 (20.0)	11 (36.7)	
High school	11 (36.7)	9 (30.0)	
Tertiary school/University/Post-graduate	8 (26.7)	6 (20.0)	
Marital status			
Widow/Single/Divorced	14 (46.7)	11 (36.7)	0.432
Having a partner	16 (53.3)	19 (63.3)	
Relationship with care recipient			
Spouse	2 (6.7)	1 (3.3)	0.761
Son/Daughter	18 (60.0)	21 (70.0)	
Son/Daughter-in-law	3 (10.0)	3 (10.0)	
Relatives	5 (16.7)	5 (16.7)	
Others	2 (6.7)	0 (0)	
Occupation			
Farmer	1 (3.3)	0 (0)	0.138
Worker	9 (30.0)	13 (43.3)	
Business	5 (16.7)	9 (30.0)	
Officer	6 (20.0)	1 (3.3)	
Others	9 (30.0)	7 (23.3)	
Living with a care recipient (yes)	27 (90.0)	23 (76.7)	0.299
Primary income			
Pension	6 (20.0)	5 (16.7)	0.931
Saving money	3 (10.0)	5 (16.7)	
From children	9 (30.0)	8 (26.7)	
Paid work	12 (40.0)	12 (40.0)	

(*Continued*)

Table 1 (Continued).

Factors	Arm		p
	Intervention, n (%) (n = 30)	Usual Care, n (%) (n = 30)	
Chronic disease			
Hypertension	2 (6.7)	8 (26.7)	0.080
Diabetes	2 (6.7)	0 (0)	0.492
Osteoarthritis/Arthritis	11 (36.7)	5 (16.7)	0.080
GI diseases	2 (6.7)	3 (10.0)	0.999
Chronic obstructive pulmonary disease/Asthma	0 (0)	2 (6.7)	0.492
Chronic kidney disease	0 (0)	1 (3.3)	0.999
Cancer	1 (3.3)	0 (0)	0.999
Dyslipidemia	2 (6.7)	2 (6.7)	0.999
Others	6 (20.0)	9 (30.0)	0.371
Number of chronic diseases			
0	10 (33.3)	13 (43.3)	0.216
1	16 (53.3)	9 (30.0)	
2	2 (6.7)	6 (20.0)	
3	2 (6.7)	2 (6.7)	
Multimorbidity (yes)	3 (10.0)	7 (23.3)	0.299
Number of medications *Median (IQR)*	1.0 (0–1.0)	0 (0–1.0)	0.608*
Polypharmacy (yes)	0 (0)	1 (3.3)	0.999**
Duration of care (years) *Median (IQR)*	3.0 (2.0–6.0)	3.0 (1.0–5.0)	0.362*
Average care hours per day			
4-6	5 (16.7)	9 (30.0)	0.067
7-9	6 (20.0)	11 (36.7)	
>9	19 (63.3)	10 (33.3)	
Average income per month (million VND)			
< 5	10 (33.3)	13 (43.3)	0.426
≥ 5	20 (66.7)	17 (56.7)	

Notes: *Mann–Whitney *U*-tests were utilized. **Fisher's exact test was applied.
Abbreviations: GI, gastrointestinal; VND, Vietnam dong.

Intervention Acceptability

Regarding intervention acceptability, 96.4% of participants rated the content as satisfactory (Likert score 4 or 5), followed by over 90% for the format of the intervention and mode of interaction, and 89.3% for the overall duration (Table 3). These findings indicate a high level of satisfaction across key components of the intervention. Additionally, qualitative feedback collected during the intervention and follow-up revealed preferences and concerns, such as a desire for more opportunities to ask questions privately, and the perception that the evaluation questionnaire was somewhat lengthy.

Table 2 Demographic Characteristics of Care Recipients (N = 60)

Factors	Arm		p
	Intervention, n (%)	Control, n (%)	
Age (year) *M (SD)*	83.1 (8.0)	83.4 (7.0)	0.904
Gender			
Male	11 (36.7)	10 (33.3)	0.787
Female	19 (63.3)	20 (66.7)	
Educational level			
Primary school	11 (36.7)	14 (46.7)	0.892
Secondary school	6 (20.0)	5 (16.7)	
High school	6 (20.0)	5 (16.7)	
Tertiary school/University/Post-graduate	7 (23.3)	6 (20.0)	
Occupation			
Farmer	4 (13.3)	2 (6.7)	0.277
Worker	5 (16.7)	6 (20.0)	
Business	2 (6.7)	8 (26.7)	
Officer	8 (26.7)	6 (20.0)	
Others	11 (36.7)	8 (26.7)	
Marital status			
Widow/Single/Divorced	22 (73.3)	24 (80.0)	0.542
Living status			
Alone	1 (3.3)	1 (3.3)	0.741*
With family	29 (96.7)	27 (90.0)	
With others	0 (0)	2 (6.7)	
Primary income			
Pension	10 (33.3)	11 (36.7)	0.787
Saving money	2 (6.7)	4 (13.3)	
From children	18 (60.0)	18 (60.0)	
Chronic diseases			
Hypertension	24 (80.0)	22 (73.3)	0.542
Diabetes	11 (36.7)	8 (26.7)	0.405
Ischemic heart disease	4 (13.3)	3 (10.0)	0.999*
Osteoarthritis/Arthritis	3 (10.0)	5 (16.7)	0.706*
GI diseases	1 (3.3)	4 (13.3)	0.353*
Chronic obstructive pulmonary disease/Asthma	3 (10.0)	2 (6.7)	0.999*
Chronic kidney disease	1 (3.3)	1 (3.3)	0.999*
Heart failure	1 (3.3)	4 (13.3)	0.353*

(*Continued*)

Table 2 (Continued).

Factors	Arm		p
	Intervention, n (%)	Control, n (%)	
Cancer	1 (3.3)	0 (0)	0.999*
Dyslipidemia	2 (6.7)	3 (10.0)	0.999*
Stroke	15 (50.0)	14 (46.7)	0.796
Others	9 (30.0)	11 (36.7)	0.584
Number of chronic diseases *M (SD)*	2.6 (1.5)	2.5 (1.1)	0.806
Multimorbidity (yes)	24 (80.0)	24 (80.0)	0.999*
Number of medications *M (SD)*	3.7 (2.4)	4.3 (2.6)	0.359
Polypharmacy (yes)	13 (43.3)	17 (56.7)	0.302
ADL impairment (yes)	27 (93.1)	28 (93.3)	0.999*
ADL impairment detail			
Eating	23 (76.7)	19 (63.3)	0.260
Bathing	26 (86.7)	23 (76.7)	0.506
Dressing	24 (80.0)	23 (76.7)	0.754
Toileting	23 (76.7)	22 (73.3)	0.766
Ambulating	24 (80.0)	22 (73.3)	0.542
Incontinence	21 (70.0)	15 (50.0)	0.114
ADL score *M (SD)*	1.1 (2.0)	1.5 (2.1)	0.490
IADL impairment details			
Telephone	22 (73.3)	21 (70.0)	0.774
Cooking	29 (96.7)	25 (83.3)	0.195
Housekeeping	29 (96.7)	26 (86.7)	0.353
Washing	27 (90.0)	26 (86.7)	0.999
Shopping	29 (96.7)	27 (90.0)	0.612
Managing finance	28 (93.3)	25 (83.3)	0.424
Managing medication	29 (96.7)	28 (93.3)	0.999
Transport	28 (93.3)	27 (90.0)	0.999
IADL score *M (SD)*	0.4 (0.8)	0.6 (1.4)	0.370
Dementia severity			
Mild	0 (0)	2 (6.7)	0.285*
Moderate	4 (13.3)	6 (20.0)	
Severe	26 (86.7)	22 (73.3)	
Duration of dementia (years) *M (SD)*	5.0 (4.7)	5.8 (4.2)	0.497*

Note: *Fisher's exact tests were applied.
Abbreviations: ADL, activities of daily living; IADL, instrumental activities of daily living; GI, gastrointestinal.

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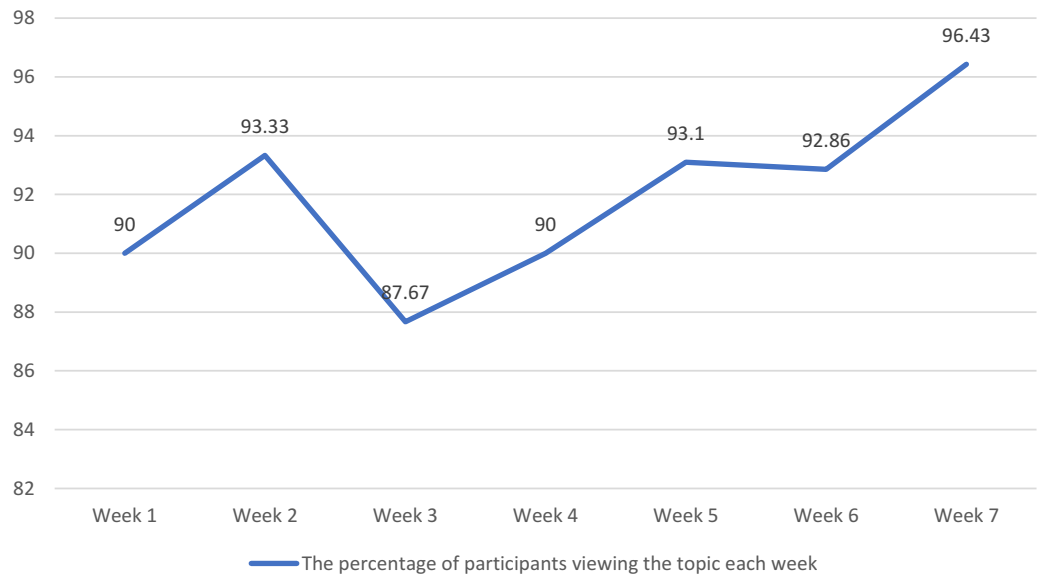

Figure 2 Participant engagement with the intervention content.

The Preliminary Effectiveness of the Intervention

Table 4 presents the means and 95% confidence intervals (CIs) for the DASS-21, dementia knowledge, ZBI-4, MSPSS, and SF-36 scores at each time point. Preliminary findings suggest that the intervention group demonstrated improvements across several outcomes, including reduced psychological distress, increased dementia-related knowledge, and enhanced perceived social support and quality of life.

Harms

Throughout the study period, there were no reports of harm related to participation in the intervention reported.

Discussion

The objective of this study was to evaluate the feasibility of the methodology and of the implementation of a smartphone-based psychoeducational intervention delivered via the Zalo application for caregivers of people with dementia, as well as to explore its preliminary effects on psychological distress, dementia-related knowledge, caregiver burden, perceived social support, and health-related quality of life.

The results demonstrated high recruitment, retention, and assessment completion rates, all of which exceeded the predefined upper feasible thresholds. These findings support the strong feasibility of a future fully powered RCT. The

Table 3 Acceptability of the Intervention Among Participants in the Intervention Group (N =28)

Questions	Strongly Disagree n (%)	Disagree n (%)	Neither n (%)	Agree n (%)	Strongly Agree n (%)
I found the information provided in the intervention to be helpful and practical.			1 (3.6)	12 (42.8)	15 (53.6)
The way the intervention was delivered was appropriate for me.			2 (7.2)	12 (42.8)	14 (50.0)
The group interaction enhanced my understanding of the content.			2 (7.2)	15 (53.6)	11 (39.2)
The duration of the intervention was appropriate.			3 (10.7)	13 (46.5)	12 (42.8)

Table 4 Outcomes in the Intervention and Usual Care Groups Across Three Time Points

Outcomes	Timepoint	Intervention (mean ± SD)	Usual Care (mean ± SD)	β (95% CI)	p
DASS-21 total	Baseline	36.0 ± 23.4	30.1 ± 19.1		
	Post-intervention	17.9 ± 13.2	34.3 ± 15.5	–16.3 (–23.7 to –9.0)	<0.001
	3 months	17.1 ± 9.1	37.0 ± 15.8	–19.9 (–26.9 to –2.8)	<0.001
MSPSS	Baseline	3.0 ± 1.3	2.6 ± 0.9		
	Post-intervention	3.6 ± 1.1	2.3 ± 0.7	+1.3 (0.8 to 1.8)	<0.001
	3 months	3.7 ± 0.9	2.3 ± 0.6	+1.4 (1.0 to 1.9)	<0.001
Dementia knowledge	Baseline	3.8 ± 1.5	3.5 ± 1.2		
	Post-intervention	6.0 ± 0.7	2.9 ± 1.2	+3.1 (2.7 to 3.6)	<0.001
	3 months	6.4 ± 0.6	3.1 ± 0.9	+3.3 (2.9 to 3.7)	<0.001
ZBI-4	Baseline	9.1 ± 3.7	8.8 ± 3.1		
	Post-intervention	6.4 ± 2.7	9.8 ± 2.4	–3.4 (–4.7 to –2.0)	<0.001
	3 months	6.4 ± 2.1	9.8 ± 2.0	–3.4 (–4.6 to –2.3)	<0.001
SF-36: Physical functioning	Baseline	65.8 ± 19.7	67.7 ± 19.9)		
	Post-intervention	75.4 ± 14.8	60.2 ± 17.6	+15.2 (6.6 to 23.8)	<0.001
	3 months	76.5 ± 12.8	54.4 ± 17.7	+22.0 (13.6 to 30.1)	<0.001
SF36: Role limitations due to physical health	Baseline	60.8 ± 38.7	55.8 ± 38.1		
	Post-intervention	86.6 ± 22.0	47.5 ± 36.8	+39.1 (23.0 to 55.2)	<0.001
	3 months	89.8 ± 17.3	38.3 ± 28.8	+51.4 (38.1 to 64.6)	<0.001
SF36: Role limitations due to emotional problems	Baseline	65.6 ± 38.6	68.9 ± 34.9		
	Post-intervention	89.3 ± 24.1	57.8 ± 24.7	+31.5 (18.7 to 44.3)	<0.001
	3 months	91.4 ± 17.5	51.9 ± 21.4	+39.5 (28.8 to 50.2)	<0.001

Abbreviations: DASS-21, Depression, Anxiety and Stress Scale - 21 Items; MSPSS, Multidimensional Scale of Perceived Social Support; Post, postintervention; SF-36, Short Form 36-Item Survey; 3 months, three-month follow-up after the intervention; ZBI-4, Zarit Burden Interview, 4-item.

recruitment rate was slightly higher than that of a previous pilot trial[36] in the USA using a mobile telehealth platform for caregivers of PwD (88%). In contrast, retention and assessment completion rates were broadly similar across both studies (90% vs 85% retention; 96.7% and 93.1% vs 88.5% completion). These similarities reinforce the consistency of feasibility indicators across mobile-based caregiver support interventions in diverse contexts. The consistently high rates observed suggest that the study procedures, including participant eligibility criteria, recruitment approaches, and follow-up protocol, were well-tailored to the target population.

Although overall participant engagement and intervention acceptability were high, this may be partly attributed to the familiarity and popularity of the Zalo app among Vietnamese adults. However, certain aspects warrant consideration while planning a fully powered RCT. Specifically, the relatively low rates of question-asking and group discussion participation in the chat group highlight a potential limitation. Some participants expressed a preference for asking questions privately. Cultural factors may influence this tendency. In many Asian cultures, including Vietnamese culture, maintaining social harmony and avoiding public embarrassment is highly valued over individual expression or public questioning.[37,38]

Preliminary findings from the linear mixed-effects model indicate the potential impact of the intervention on several outcome areas, including dementia-related knowledge, caregiver burden, psychological distress, and certain aspects of health-related quality of life. The results observed indicate that the intervention may have a positive initial effect. However, further research with a larger sample size is necessary to confirm the robustness and sustainability of these effects.

The interpretation of our findings should take into account several study limitations. First, the pilot RCT was conducted in a metropolitan setting (Ho Chi Minh City), so caution is warranted when generalising the results to other contexts, particularly rural areas, where the social and economic situations of older adults and family caregivers may differ significantly. Second, the intervention was designed for the Zalo smartphone application and required participants to have a minimum primary education level (at least fifth grade). As a result, caregivers without access to smartphones or with low literacy were excluded, even though they represent a population that may experience higher levels of psychological distress and have a greater need for support. This exclusion may have limited the intervention's reach to more vulnerable caregiver populations. Future studies should include caregivers from rural areas and those with limited literacy to improve the generalizability of the intervention. In addition, future interventions should incorporate options for anonymous submission of questions or feedback to enhance privacy and address cultural considerations. Despite these limitations, the study employed a contextually appropriate intervention. Zalo is one of the most widely used messaging applications in Vietnam, which enhances both the feasibility and real-world applicability of the program. The intervention format is particularly suitable for caregivers of PwD who often face time constraints, offering a convenient and accessible means of receiving psychoeducational support. The use of a familiar digital platform may therefore help expand access to caregiver support services in resource-limited settings.

Conclusions

This pilot study demonstrated the high feasibility and acceptability of delivering a psychoeducational intervention through the Zalo app to caregivers of PwD. High rates of recruitment, retention, and outcome completion, along with preliminary indications of improvements in psychological well-being, caregiver burden, dementia knowledge, and perceived social support, suggest that the intervention is both practical and potentially effective. Importantly, the use of Zalo, a free, familiar, and widely adopted platform, enhanced accessibility for caregivers, many of whom face time constraints and limited access to formal support services. These findings support the scalability of Zalo-based interventions and provide a strong foundation for conducting a fully powered randomized controlled trial in the future.

Trial Registration

A Mobile Phone-based Intervention on Dementia Patients' Caregivers in Vietnam. ID: NCT04958707. URL: https://clinicaltrials.gov/study/NCT04958707?locStr=Ho%20Chi%20Minh,%20Ho%20Chi%20Minh%20City,%20Vietnam&country=Vietnam&state=Ho%20Chi%20Minh%20City&city=Ho%20Chi%20Minh%20City&cond=dementia&term=NCT04958707&rank=1

Abbreviations

LMCs, lower-middle-income countries; PwD, people with dementia.

Data Sharing Statement

De-identified individual participant data, along with the study protocol, will be available from the corresponding author upon reasonable request. Data will be accessible by Email and will be available starting 12 months after publication for a period of two years.

Ethics Approval and Informed Consent

The study was approved by the Institutional Review Board of the University of Medicine and Pharmacy at Ho Chi Minh City (Approval No. 299/HĐĐĐ-ĐHYD) and conducted in accordance with the principles of the World Medical Association Declaration of Helsinki.

Consent for Publication

Written informed consent was obtained from all participants prior to their involvement in the study. This manuscript does not contain any identifiable personal data, such as photographs or private details. All participants agreed to the use of their anonymized data for publication purposes.

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Author Contributions

All authors made a significant contribution to the work reported, whether that is in conception, study design, execution, data acquisition, or analysis and interpretation, or in all these areas; participated in drafting, revising, or critically reviewing the article; gave final approval of the version to be published; agreed on the journal to which the article was submitted; and commit to being accountable for all aspects of the work.

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Disclosure

The authors have no conflict of interest to declare for this work.

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