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Cultural adaptation of the Reducing Disability in Alzheimer’s Disease (RDAD) protocol for an intervention to reduce behavioral and psychological symptoms of dementia in Thailand

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The authors have no conflict of interest to report. All authors have contributed to the study, agree with the presented findings, and the manuscript has not been published before nor is being considered for publication in another journal.

The procedures involving experiments on human subjects are done in accord with the ethical standards of the Committee on Human Experimentation of the institution in which the experiments were done or in accord with the Helsinki Declaration of 1975.

Abstract

Background: The Reducing Disability in Alzheimer’s Disease (RDAD) program is an evidence-based intervention found to be feasible for implementation in community settings in the United States, and effective in reducing depression, one of the major behavioral and psychological symptoms of dementia (BPSD). The goal of the study is to culturally adapt the RDAD for persons with dementia living in community settings of Thailand.

Methods: Key adaptation steps included: 1) assess the community, 2) understand/select the intervention, 3) consult with experts/stakeholders, 4) decide what needs to be adapted, 5) adapt the original program, 6) train staff, and 7) pilot test the adapted materials.

Results: Modifications to the original RDAD protocol included changes in number of sessions, mode of delivery, and the specific pleasant activities targeted. The pilot test demonstrated the feasibility and acceptance of the adapted RDAD intervention protocol. Implementers were able to comprehend and implement the core components of the intervention, while family members demonstrated ability to follow instructions, gain knowledge about dementia, and improve skills for setting up realistic goals.

Conclusion: Following the key adaptation steps outlined above, we were able to successfully modify the RDAD for the Thai cultural context, maintaining core components of the original protocol. Program implementers demonstrated their ability to supervise family caregivers and help them gain the knowledge and skills needed to provide care for older adults with dementia. Findings from the pilot studies were incorporated into final training and intervention protocols currently being implemented and evaluated in a randomized implementation trial in Thailand.

Keywords

Reducing Disability in Alzheimer’s Disease; RDAD; behavioral and psychological symptoms of dementia; BPSD; depression; dementia; cultural adaptation; family caregivers; care provision

INTRODUCTION

The World Health Organization (WHO) defines dementia as “a syndrome in which there is deterioration in cognitive function beyond what might be expected from the usual consequence of biological aging” [1]. Principal goals of dementia care are optimizing physical health, cognition, activity, and well-being, identifying and treating accompanying physical illness, understanding and managing challenging behavioral and psychological symptoms, and providing information and long-term supports for caregivers [2]. Approximately 55 million people worldwide have dementia, with over 60% living in low- and- middle income countries (LMICs). Along with the expected increases in population aging, this number is expected to increase to 78 million in 2030 and 139 million by 2050 [1]. There is currently no cure for dementia, and medicines and disease modifying therapies have limited efficacy. In their Mental Health Gap Action Programme (mhGAP) WHO identified dementia as a public health priority, especially for LMICs and has called for effective packages of health and social care for persons living with dementia, and particularly, for knowledge and skills training programs for caregivers, who provide the majority of care for persons with dementia [1].

Over ninety percent of persons with dementia suffer from neuropsychiatric symptoms, commonly referred to as behavioral and psychological symptoms of dementia (BPSD) [2, 3]. These include a heterogeneous group of non-cognitive symptoms including agitation, anxiety, irritability, depression, apathy, disinhibition, delusions, hallucinations, sleep and appetite changes. These symptoms are unpredictable, resulting from the interactions among biological, psychological and social factors [3, 4], and can have serious consequences, both for the person with dementia as well as their caregivers [2, 4]. BPSDs have been associated with a worsening of cognition and progression to more severe stages of dementia. They have also been identified as impacting caregiver burden, increasing the risk of falls and fractures, often being a precipitating factor for institutionalization [2, 3].

There is a large literature on best practices for the management of BPSDs, with a non-pharmacological approach being the preferred initial treatment [2, 5, 6], including aromatherapy, massage, bright light therapy, and physical exercise [7–9]. A number of studies have demonstrated the positive effect of multicomponent interventions that combine exercise plus behavioral/psychological intervention for reducing depression and other BPSD and improving emotional outcomes for family care providers [4, 10, 11]. In general, recommended first-line treatment for BPSD typically begins with a non-pharmaceutical approach that is both patient-centered and caregiver-centered, along with home-based behavioral management techniques to build the capacity of caregivers to better manage symptoms [4, 12].

In Thailand, approximately 3.3 percent of older adults age 60 and over have some form of dementia [13]. The proportion of those who suffer from dementia increases from 1 percent in the 60–64 age group to 31.3 percent in 90 age group [13]. In general, older adults suffering from long-term dependency caused by conditions such as dementia, stroke, and other chronic disease typically remain at home where they receive care from family caregivers. Eighty-five percent of Thai family caregivers are female, with approximately 30% being elderly themselves and 30% reporting chronic health problems [14]. Two-thirds of caregivers report emotional problems, including anxiety and depression, and experience stress and conflicts with other family members [14].

In response to the increasing number of older adults living with their families who are either bed-ridden or confined to home for other reasons, the Thailand National Health Security Office (NHSO), starting from 2016, allocated funding to support the Long-term Care (LTC) Services System with the aim of caring for older adults who are dependent, i.e., those who are bed-ridden, homebound, and in need of LTC [15]. The system is two-tiered, including Care Managers (CMs) and Community Caregivers (CGs). CMs are mostly nurses, who receive training to collaborate with a multidisciplinary team in the evaluation and design of recommended services to be incorporated in the person's individual care plan. CMs supervise CGs, community-based volunteers who are trained to provide care following the recommendations in the individual care plan. CGs are recruited from the communities in which patients live and trained to deliver basic health care services, including wound dressing, administration of medication, vital signs assessment, and to supervise and assist the patient with activities of daily living (ADLs), physical therapy to promote mobility and exercise, and other services specified in the individual care plan. As most CGs live in

community, they know patients personally, and can pay face-to-face visits to the patient's home for provision of care. CGs then report on the status of the elderly's conditions back to the CM assigned to the patient [16, 17]. While the LTC service in Thailand has grown rapidly in recently years, with an increasing number of older adults with dementia receiving services, no special efforts have been devoted to developing much needed care programs for elders with dementia and their caregivers. The LTC services often lead to extra workload on CMs and CGs, because these services are provided on top of the existing regular health care services.

Need for culturally adapted evidence-based intervention to enhance dementia care

Caregiving is a developmental process existing across multiple stakeholders, including care recipient, family caregiver, and the healthcare system, where the culture of the caregiver shapes their approach to caregiving, and the culture of the healthcare system affects caregiver quality of life [18]. Cultural adaptation is needed to ensure validity and acceptability of the intervention to both health care providers and family caregivers of patients who are involved in implementing the intervention.

One of the key strategies for enhancing dementia care in lower- and middle-income countries (LMICs) has been the adaptation of evidence-based intervention programs that have been developed and evaluated in other settings, mostly in developed countries, and the implementation of these interventions in a community where there is a salient need for care and the political will to expand care capacity. Following this strategy, a collaboration was formed between investigators from the U.S. and Thailand, with funding from the National Institute of Mental Health (NIMH), to implement a research program called "The Partnership in Implementation Science for Geriatric Mental Health (PRISM)." The primary aim of the partnership has been to test the effectiveness of an implementation support strategy in delivering an evidence-based intervention to reduce BPSD in community dwelling Thai older adults with dementia. This paper reports the results of the cultural adaptation of the evidence based Reducing Disability in Alzheimer's Disease (RDAD) intervention for the Thai context, which will be incorporated into a randomized control trial to test the implementation support strategy.

According to Escoffery and colleagues [19] adaptation of an existing evidence based intervention should be made to make the protocol feasible, patient-centered, culturally-based, acceptable, and compatible with the existing care system in which it is being implemented -- in our case, the Thai LTC system. To adapt the RDAD for the Thai context, we relied on steps commonly included across different theoretical frameworks for adapting public health evidence-based interventions, as identified in both a scoping and systematic review by Escoffery and colleagues [19, 20]. These steps included: 1) assess the community, 2) understand/select the intervention, 3) consult with experts/stakeholders, 4) decide what needs to be adapted, 5) adapt the original program, 6) train staff, and 7) pilot test the adapted materials. Implementation (step 8) and evaluation (step 9) of adapted intervention will be reported in a subsequent paper. A central aspect of any adaptation process is the delicate balancing of competing constructs, that of maintaining fidelity to the original intervention, while at the same time making needed cultural modifications for the local

context. Escoffery and colleagues recommend that organizations implementing EBIs should report adaptation steps to give their audience insights into the modifications made in content, logistics, training, monitoring, and/or evaluation [19, 20].

METHODS

Study setting

In 2018, researchers from the U.S. and Thailand presented the project to representatives from the Ministry of Public Health and received approval to launch the project. All parties agreed in the selection of Khon Kaen Province as the main study site because the LTC system was most fully implemented there, and data indicated that the percentage of older adults with dementia out of older adults seen by primary care setting in the province (9/319) was similar to the incidence of dementia at the national level (approximately 3.3%) [13], therefore Khon Kaen could be used to as the study site to represent Thailand situation. The study was approved by the Ethics Committee of the Institute for Development of Human Research Protections, Health Systems Research Institute, Thailand, as well as the Institutional Review Board of Harvard Medical School.

Adaptation processes followed the 11 steps identified by Escoffery *et al.* [19], : (1) assess the current care delivery system and resources in the community, (2) understand relevant EBIs, (3) select appropriate EBI, (4) consult with experts in intervention design and implementation, (5) consult with stakeholders in implementation settings, (6) work with experienced implementers to decide what needs to be adapted, (7) adapt original intervention program, (8) train staff to implement the modified intervention, (9) test adapted materials, (10) implement, and (11) evaluate intervention.

RESULTS

Step 1: Assess the current care delivery system and resources in the community

Researchers from the U.S. and Thailand presented the project to representatives from the Thai Ministry of Public Health and received approval to launch the study. All parties agreed in the selection of Khon Kaen Province as the main study site because the long-term care (LTC) system, where persons with dementia receive care, was most fully implemented there, and data indicated that the percentage of older adults with dementia was similar to the incidence of dementia at the national level (approximately 3.3%) [21]. Therefore Khon Kaen could be used as a study site to represent the overall situation in Thailand. The study was approved by the Ethics Committee of the Institute for Development of Human Research Protections, Health Systems Research Institute, Thailand, as well as the Institutional Review Board of Harvard Medical School. Due to concerns about potential contamination in the full randomized controlled trial, the study team decided to select a different, but socioeconomically comparable, community to pilot the RDAD protocol. The Thai research team conducted several meetings to both confirm the setting characteristics related to feasibility and also to select a community for the pilot.

Step 2: Understand the evidence-based interventions

During the grant application process, investigators conducted a thorough literature review focusing on non-pharmacological interventions for persons with BPSD, given the widely accepted belief that non-pharmacological treatment for BPSD was the best choice, considering both *effectiveness* in improvement of BPSD and *feasibility* in lower- and middle-income countries where medical professional resources are limited. After a review of the existing evidence-based interventions for BPSD, the study team selected the Reducing Disability in Alzheimer's Disease (RDAD) program for inclusion in the proposal, based on several considerations, including: (1) effectiveness based on published evidence that the intervention led to a range of desirable outcomes in older adults with BPSD, specifically improvement in the psychological symptom of depression [22], as well as reduction in the frequency and severity of care recipient behavior problems compared to controls [23]; (2) each of the core components of the intervention (described in Step 3) could be implemented in the LTC system, where older adults with dementia receive care; (3) all program components could be delivered by community-based health personnel without extensive training which, consistent with the "task-shifting" concept, is feasible in Thailand where community health workers play a central role in supporting home-based long term care services; (4) evidence from multiple subsequent studies conducted by Teri and colleagues [9, 24, 25] demonstrating that RDAD could be implemented with fidelity across a number of different community-based settings, suggesting generalizability of the protocol; and (5) the multicomponent nature of the RDAD intervention, which is consistent with the literature support for multicomponent interventions for the treatment of BPSD [26]. Meetings were held with representatives of the LTC system, to ensure their buy in for the proposed intervention, which was received.

Step 3: Select appropriate evidence-based intervention

The selected RDAD intervention involves a multicomponent exercise plus behavioral/ psychosocial intervention for older adults with dementia and their family caregivers [9, 10, 22]. The RDAD protocol is based on behavioral and gerontological theory and uses a structured problem-solving process to train family caregivers to guide the person with dementia through a structured exercise program, address behavioral issues that occur, and increase engagement in pleasant events in which both family caregivers and the person living with dementia can enjoy participating in [8]. The protocol comprises 5 core components, including communication, knowledge and realistic expectations, pleasant events, behavioral interventions, and physical activity [9]. The *communication* component emphasizes the importance of appropriate communication between family caregivers and persons with dementia, providing specific recommendations regarding how best to enhance such interactions. The *knowledge* component includes information and education about dementia and goal setting, so that family caregivers can understand the disease process, set realistic expectations for their loved ones, and identify ways to compensate for dementia-related impairments as the disease progresses. *Pleasant events* are incorporated throughout the intervention to ensure that all activities are conducted in such a way as to improve quality of life for the person living with dementia and their caregiver. For example, pleasant activities can be enjoyed at the same time people are exercising, by encouraging the person with dementia to engage in gardening, an activity they enjoy, while at the same time, they

reap the benefits of exercise as they walk around their garden. *Behavioral interventions* that incorporate social support, pleasant events, and the well-established A-B-C behavioral problem solving approach to behavior management [9] are introduced and reinforced through an individualized person-centered approach to break down problem behaviors into multiple steps that enable the caregiver to systematically identify the antecedents (A) that precede the problem behavior, the problem behavior (B), and the consequences (C) to the behavior, so that they can identify and modify precipitating factors. Physical activity, including stretching, flexibility, strengthening, balance and endurance, are introduced using activities that the older adult patients themselves enjoy. Every effort is made so that the physical activity is enjoyable and pleasant for the older adult, and not seen as a burden or chore. In addition to these core components, additional topics are included as needed, including nutrition, relaxation techniques, and assessment of the home environment to minimize fall risks [9].

Step 4: Consult with experts in intervention design and implementation

Consistent with recommendations by Escoffery and colleagues [16], the research team invited Professor Linda Teri, originator of RDAD, to travel to Thailand to gain understanding of the cultural context in which the intervention would take place and the nature of patients with BPSD who would be participating, as well as to discuss challenges to the protocol's implementation in community-based studies conducted in the U.S. Prior to her visit, the study team had participated in several webinars in which she introduced the team to the overall RDAD study protocol, as well the individual program components. While in Thailand, Dr. Teri met with the study team over a period of 4 days, in which she had meetings with researchers, the director of Rongkham Hospital, CMs, and CGs, and then paid a visit to the homes of older adults with BPSD to better understand the actual living conditions where the intervention would be implemented. Over this period, Dr. Teri provided more detailed information about the original RDAD protocol, focusing on its underlying philosophy and activities, including problem-based behavioral management strategies included in the ABC approach, and the evidence-based progression of physical activities to be included in the intervention. We also invited several experts from the United States to Thailand, including an internationally known geriatric psychiatrist to help CMs and CGs evaluate patients with BPSD, and an expert in exercise science and physical therapy, to help evaluate the patient's ambulatory status, in order to determine that the case identification process would fit with the workflow of local clinical practice.

Step 5: Consult with stakeholders about implementation settings

Several meetings were held with local stakeholders to obtain their support for implementation of the pilot study. Seventeen stakeholders attended an initial meeting, including: the director of Rongkham District Health Office; 2 nurses from Rongkham Hospitals; 5 public health practitioners from local administration offices of Rongkham Subdistricts; 1 mental health nurse; 1 physiotherapist; 3 nurses from a health promotion subdistrict hospital; and 4 family caregivers of older adults with dementia. The research team presented the project, including program objectives and expected outcomes. After that, a discussion was held with participants to identify their knowledge gaps on dementia care, explore barriers to taking care of community dwelling older adults with dementia,

and elicit input on how the proposed intervention could alleviate possible barriers to care. The stakeholder group expressed their concerns about the consequences of BPSD, as they cause conflict and burden on family caregivers. The consensus of the group was that any protocol needed to be culturally appropriate for Thai older adults, able to be integrated with the person's existing individual care plan in the LTC system; and, an intervention in which family caregivers could play a key role in caring for their relatives with dementia. There were 2 additional meetings with the Rongkham Hospital LTC team after this to further clarify the process and protocol.

Step 6: Work with experienced implementers to decide what needs to be adapted

Following stakeholder discussions and agreement from the Rongkham LTC team to participate in the pilot study, the research team including Dr. Teri visited persons with dementia in their homes, where CMs and CGs demonstrated how they provided care in the elder's home environment. Making these site visits was important for Dr. Teri to observe differences in how care was provided between the Thai setting and the US and for the team to operationalize how best to begin implementation. After visiting the homes of 4 older adults with dementia and their caregivers, stakeholders including all participants from the initial meeting (except the director of Rongkham Hospital) met with Dr. Teri and the study team to identify and finalize what needed to be adapted from the original protocol to suit the Thai setting.

Step 7: Adapt original intervention program

The Thai research team had the original protocol officially translated from English to Thai by a translator from the Language Institute, Khon Kaen University. The Thai version was reviewed by the researchers and a meeting was set among a group of providers to confirm that the translated version would be understandable by CMs and CGs who would be conducting the intervention. As a result, a conceptual translation, rather than a literal translation was conducted, with some terms changed or replaced to be more compatible with Thai culture.

The following recommendations were made, some of which were mainly to further emphasize the points already included in the original protocol, while other recommendations involved adapting the intervention content according to Thai cultural and social contexts: 1) starting physical activity from what patients can do and gradually increase in intensity and duration, a point that was not highlighted in the original protocol; 2) for patients with restricted joint movement and difficulties lifting their arms or legs, going only as far as patient can tolerate, increasing as slowly as possible; 3) explaining the purpose of the physical activities to the patients, as older adults in Thailand are not typically expected to engage in physical activity [27]; 4) making physical activities pleasant by adding traditional songs, local dances and community-based activities led by CM and CGs; 5) involving family caregivers or neighbors in order to supervise the persons with dementia while they are doing these physical activities, which also provides an opportunity for family caregivers to engage in the physical activity, improve communication, and minimize stress among family members.

Specific adaptations were established for several logistic parts of the intervention protocol, as presented in Table 1.

The adapted version of RDAD includes the same 13 sessions as the original RDAD, but provided over 12 weeks, instead of 16 per the original RDAD. The adapted version of RDAD includes the same 13 sessions as the original RDAD but we provided all 13 sessions in shorter duration (12 weeks) whereas the original RDAD was provided in 16 weeks. We manage to end the RDAD sessions sooner than the original RDAD because we want to integrate the RDAD follow-up sessions with the existing LTC service.

A cultural adaptation was implemented for the specific physical activity included, specifically using the traditional Konga dance that is also a pleasant event, in which the dancer moves both upper and lower extremities in repetitive cycles following a song rhythm. Other culturally acceptable physical activities included folding cloth and rice watering, which are performed as part of day-to-day activities that most Thai older adults are familiar with, having performed them earlier in their lives. The Thai RDAD protocol was readily integrated into the LTC system by adding recommended protocol activities into the older adult's existing care plan, which was routinely made for all LTC patients, including persons with a diagnosis of dementia. Reminders of physical activity guidelines, with step-by-step pictures, were placed on the walls so family caregivers could follow the recommended physical activity guidelines in encouraging the older adults to exercise. This idea originated from CMs and CGs, based on their experience being in the homes of older adults receiving services in the LTC system. Having posters on the walls served as reminders to exercise, as well as guidelines for how to exercise.

After reviewing all the modifications, the research team, including the originator of the RDAD, agreed that adaptations in the language used by the CMs and CGs, the number of sessions involved, the kind of culturally appropriate pleasant events incorporated, and the means of follow-up could be made without impacting the core components (program fidelity) of the original protocol.

Step 8: Train staff to implement modified intervention

Two formal training courses were provided after Dr. Teri's visit. The first one targeted CMs (n=5) and CGs (n=3), and focused on sharing RDAD content, training on how patients with dementia in the community would be recruited into the study, and how the intervention would be implemented in the patient's home. A second training included the same participants, as well as an exercise scientist and a physiotherapist to review and provide recommendations and exercise precautions to assure the safety of the recommended physical activities. The study team consulted with a nutritionist, dental practitioner assistant, and mental health nurse to identify what kinds of additional supports (e.g., basic nutritional advice, simple dental care, and basic physical examination) persons might need prior to participating in the physical activity component of the intervention. After classroom training, the participants were invited to practice with the patients in their home settings under supervision of trainers.

Step 9: Test adapted materials

There were 2 processes in Step 9: a pilot study using the culturally modified protocol with 4 elderly LTC patients with dementia, followed by a focus group session with Care Mangers and Community Caregivers after completing the protocol.

Process 1: Pilot study with 4 older adult patients with dementia—During September-November 2019, a pilot study was conducted to test the Thai RDAD protocol with 4 older adults with BPSD, two males and two females, both of whom were eligible to be registered in the LTC system where the Rongkham Hospital team was responsible for providing care. Participants were selected based on proposed study criteria: positive screen for dementia (TMSE) [28] and one or more BPSD (NPI-Q) [29]; aged 60 years and older; ability to walk a short distance (Ambulatory Walk Test) [30]; and consent of family caregivers and assent from LTC patients to participate. Each patient was assigned 1 CM and 4 CGs, as is routine in the LTC setting where there are 4 CGs assigned to be responsible for providing services to each patient. One of the CGs is typically the primary CG responsible for delivering all intervention sessions, while other three CGs go along during home visits when they are available to provide support for activity and assistance in documentation.

Characteristics of participants: Case No.1 was a 79-year-old male whose main behavioral problem was hiding things in inappropriate places, e.g., hiding his shoes, money, or left-over food in different places where no one could find them. Case No.2 was a 78-year-old male who had aggressive behavior and often spat out saliva on the floor. Case No.3 was an 83-year-old female living with her daughter who ran her own business as a small cloth factory in the home. The daughter reported her mother had several problem behaviors, including begging for food or money from neighbors, as well as pouring rice into every water container, as if preparing to cook. Case 4 was an 86-year-old female living with her daughter, who needed help with bathing and dressing, due to her diminished skills in activities of daily living.

Delivery of adapted intervention: Each care team went out to the patient's home and delivered care activities according to the Thai RDAD protocol as shown in Table 2. The activities in each session were comprised of both physical activity and problem-based behavioral management strategies which were gradually increased session by session according to the patient's condition and family caregiver ability. After each session, the care team documented activities implemented and sent out a summary of activities to the research team, together with photos, taken with permission from family caregivers, showing physical activity and pleasant events engaged in by the patients.

Process 2: Qualitative evaluation with focus group—After completing all activities in the Thai RDAD protocol, a focus group was conducted to obtain insights and perceptions from the CMs, CGs, and family caregivers who participated in the pilot study. One family caregiver of each patient with dementia, four CMs and fifteen CGs participated. A focus group interview guide was developed and consisted of 3 questions focused on: (a) changes in perceptions of family caregivers toward caring for someone with dementia, (b) the experience and roles of CMs and CGs in providing care for dementia using the Thai

modified RDAD protocol, and (c) perceived feasibility of the integration of the Thai RDAD protocol within the LTC system. One researcher facilitated the focus group discussion, allowing participants to share their experiences and feelings, while another researcher took notes on the sessions.

Results of the focus group: Three themes emerged from the qualitative analysis as summarized below.

1. More understanding and having realistic expectations towards older adults with dementia by family caregivers and community members was helpful. Family members expressed that they had better understanding and more knowledge of dementia, and thus would be able to set more realistic goals for their loved ones. They believed that this would lead to decreased tension and improved communication between the family caregiver and the patient. After following the recommendations by the CMs and CGs who delivered intervention activities according to the protocol, family caregivers realized that they could better manage BPSD, while accepting that they could not solve the problems completely. They also suggested that other community members could learn from family caregivers who had participated in the program, and perhaps be able to reduce negative stereotypes about dementia.

“My mother and I have been suffering from my father’s strange behavior for a long time. I usually cry when I am alone. He spits almost all the time and often wakes up in the middle of the night. We cannot sleep because we worry about him going outside the house and get lost. Now I can understand what’s wrong with my father. I am grateful for this program and would like to thank all CMs and CGs. I think this is a good program and every family with patients with dementia should participate in the program” (patient’s daughter)

2. Need for confidence in implementing Thai RDAD protocol for CMs and CGs to find it acceptable: In the beginning, CMs and CGs were overwhelmed with the new activities they were being asked to perform; the tasks seemed to be very demanding in that they were asked to provide very structured care to older persons with dementia in their homes, something with which they had no prior experience. Session by session, they gained more knowledge of dementia and became more confident in their delivery of the various program components. They noted that the multidisciplinary team, with whom they had regular meetings, comprised of nurses, nutritionist, physiotherapist and dental care practitioner was important in supporting their ability to monitor medication adherence, provide basic dental care, make appropriate food recommendations, and in performing psychological and physical evaluations of the patients participating in the program.

“We would like to thank the patient to give us the opportunity to learn more on dementia and BPSD management. Now we feel more confident on providing care for others” (CM).

“The patient’s daughter told us that her mother cannot take a shower without her providing step by step instructions. After working with the family, we realized that the patient enjoyed reading. To help the patient take shower by herself, the CM and CC wrote the individual steps of taking a shower in cards, one step per card, and put them on the bathroom wall. This enabled the patient to take a shower by herself by reading the cards” (CM)

3. Feasibility of integrating RDAD protocol into existing LTC plans mandated by the LTC system: CMs believed that a major benefit of the Thai RDAD protocol was the feasibility of its being incorporated into the existing activities included in the LTC system’s individual care plans for patients. They suggested that the structured protocol would help other CMs and CGs to provide additional care by integrating activities of each step in the protocol into the regular activity schedule in care plans for older adults with dementia.

“It’s good that now I can provide additional care for the patients. Previously, care plan for older adults with or without dementia had almost similar. Now we can add physical activities and behavioral management process for those with BPSD. We also provide psychological supports and communicate better with family caregiver regarding basic knowledge of dementia and what not to expect from the patients.” (CM)

Steps 10 and 11: Implementation and evaluation

The Thai modified RDAD protocol is currently being implemented in a randomized controlled implementation trial conducted in Khon Kaen Province. The implementation phase will be completed and the evaluation of the implementation trial will be published after trial completion.

DISCUSSION

Cultural adaptation is important for those aiming to implement EBIs in local settings that are different from where the EBI was initially implemented. This paper is the first study reporting the adaptation process of the original RDAD protocol to be compatible within the Thai cultural context. Cultural adaptation of the protocol can be summarized into 4 parts. First, the duration of the intervention was reduced, from 16 weeks in the original protocol to 12 weeks in the Thai version, in order to be compatible with the time structure of the existing LTC service. Second, the mode of follow-up was changed from phone calls to home visits, because, in general, the Thai community is small and conveniently located so it was just as convenient to have face-to-face visits. Third, providers of the Thai protocol were CMs and CGs working in the LTC system, as opposed to home health care professionals in the original study, as it was determined that the protocol should be delivered in LTC, which was already established in the area and where staff could add on RDAD protocol activities into their routine care plan as part of the services delivered through the LTC system. This integration of the adapted RDAD protocol into the LTC system offers the possibility of ensuring the sustainability of the protocol into routine care after the project is completed. The final adaptation was related to the designation of pleasant events to be incorporated into

the intervention that would be culturally based to facilitate physical activity and enhance behavioral management strategies.

Based on qualitative data collected through consultation and discussion meetings with experts in intervention and implementation research and stakeholders of care delivery from local communities including CMs and CGs, District Health Office leaders and family caregivers, a modified Thai-RDAD protocol was developed to fit into the clinical, social, and cultural practice of local Thai LTC settings. The protocol offers the promise of increasing level of understanding of dementia among service providers as well as family caregivers.

According to both experts and stakeholders' perspectives, fidelity to the general RDAD protocol was maintained in that its 5 core components, including knowledge, communication, pleasant events, problem-based behavioral management, and physical activities were all included in the Thai RDAD protocol, which was delivered over a shorter period. Fidelity at each session level was ensured by having the care team document implemented activities and compare them against a checklist provided by the original RDAD protocol.

In summary, pilot testing of the Thai RDAD protocol was conducted. Feasibility of implementing the Thai RDAD protocol was supported through the pilot testing. On the provider side, CMs and CGs demonstrated their ability to comprehend the protocol, teach, and closely supervise family caregivers in implementing the core components of the intervention. On the participating patient and family side, family members demonstrated comprehension, ability to follow instructions, and acceptance of the Thai RDAD protocol and all of its core program components, and found it beneficial in that the protocol helped them gain more knowledge about dementia and skills for setting up realistic goals. However, further measurement of level of understanding of LTC staff toward the adapted protocol should be conducted and the results can be used to improve the training curriculum to ensure all participants can provide appropriate care for older adults with dementia.

Study limitations

A notable limitation of the study is that the Thai RDAD protocol is a time and labor-intensive intervention that requires extensive commitment to staff training. Further work with CMs and CGs is needed to learn effective ways of delivering additional training in order to reinforce learning and encourage continued fidelity to the protocol. Help from experts for CM and community CG should be available in a timely manner and on a friendly platform for example, by phone or online communication should they need it whilst providing the protocol. Older adults with dementia and family caregivers may need additional assistance, for example, microfinance to help the family with self-employment, home and environment modifications to accommodate physical difficulties of persons with dementia and family caregivers who are also elder. The number of participants in this study was small and all of them were from the same community which was unlikely to represent the Thai context. Future study should see that more representative samples of Thai community are recruited

CONCLUSION

The key advantage of this work is the detailed presentation of a process for a systematic cultural adaptation of an evidence-based intervention for BPSD which was developed in the U.S. and needed to be culturally adapted so that it could be implemented in Thailand where population and contexts differ greatly from the original site. We believe that through careful adherence to this process, the five core components of the RDAD protocol were maintained, even with needed modifications so that it could be implemented in Thailand.

Prior to integrating the RDAD intervention protocol into Thailand's LTC system, it was necessary to adapt an evidence-based protocol according to local clinical, social, and cultural contexts. Effective adaptation requires a systematic approach to synthesize perspectives from intervention developers, researchers, and stakeholders of care delivery from local communities, and then pilot testing of the modified protocol. This paper describes the process in detail to encourage other researchers in their work in this arena. If the larger randomized implementation trial is found to be successful, the Thai RDAD protocol could eventually be incorporated into the existing LTC system through the individual care plan and contribute to reducing BPSD and depression as well as improving quality of life of older adults with dementia and their caregivers in Thailand.

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Table 1

Comparison between the original and the modified RDAD protocol

	Original RDAD Protocol (18)	Thai RDAD Protocol
Number and scheduling of sessions	13 sessions in the first 6 weeks and 4 months follow-up (16 weeks in total) (9 face-to-face hourly sessions: 2 sessions/week for the first 3 weeks 1 session/week for the next 3 weeks then 4 follow-up phone calls-once a month for the next 4 months)	13 sessions in 12 weeks (2 sessions/week for the first 4 weeks; 1 session/week for the next 5 weeks)
Providers of the RDAD intervention to patients	Home health care professionals	Care Managers and Community Caregivers in Long-term Care system
Mode of delivery	Direct provision of the protocol by health care professionals identified above	Direct provision of the protocol by health providers identified above and integrated with Long-term Care system
Recipients	Patients with dementia Family caregivers	Patients with dementia Family caregivers
Place of delivery	At home	At Home
Means of follow up	By phone	Home visits
Means of physical activity guidelines	Direct one-on-one training and manual with trainers, caregivers, and persons with dementia	Direct one-on-one training and manual with posters, and large printouts to stick to the walls as reminders.
Pleasant events	Identified by caregiver and person with dementia to be individualized, feasible, and appropriate to the person's level of impairment: e.g., being outside, shopping, reading, listening radio, watching TV, looking at magazines and/or newspapers, having meals with friends, eating snacks, being with family, helping around house, wearing favorite clothes, being complimented, exercises, grooming, going for a ride, recalling and discussing past events	Culturally-based pleasant events: - "Konga Dance": traditional dance in the area; helping caregiver/daughter folding clothes; - watering sticky rice before cooking; gardening
Language	English	Thai

Table 2

Thai RDAD protocol

Week	Session	Provided by	Activities
1	1	CM/Community CGs	Introduction of the protocol and the benefits of the protocol
	2	CM/Community CGs	PA: warm-up, cool-down and balance training Realistic expectations for family caregivers toward the goals of the intervention
2	3	CM/Community CGs	PA: strengthening exercise Introduction of problem-based behavioral management program (ABC)
	4	CM/Community CGs	PA: endurance exercise Follow up: the application of ABC program to identify: Antecedents (A); Behaviors (B) and Consequences (C).
3	5	CM/Community CGs	PA: review and ensure regular PA practice Follow up: the application of ABC program: develop an action plan to manage the behaviors.
	6	CM/Community CGs	PA: review and ensure regular PA practice and safety Follow up: the application of ABC program: to investigate the results of the action plan and develop plans for other behaviors. Introduction of pleasant events
4	7	CM/Community CGs	PA: review and ensure regular PA practice Follow up: the application of ABC framework and evaluate success of introduction of pleasant events Introduction to nutrition management
	8	CM/Community CGs	PA: review and ensure regular PA practice Follow up: family caregiver's ability to cope with the burden of care
5	9	CM/Community CGs	PA: review and ensure regular PA practice Follow up: BPSD management using ABC framework for problem behaviors
6	10	Community CGs	PA review and follow-up
7	11	Community CGs	PA review and follow-up
8	12	Community CGs	PA review and follow-up
12	13	Community CGs	PA review and follow-up

CM, Care manger; CG, Caregiver; PA, Physical activity.