

# Family Participation to Promote Medication Adherence Among Thai-Muslim Older Adults With Hypertension: Action Research Study

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- PMID: 35199624
- DOI: [10.1177/10436596221077672](https://doi.org/10.1177/10436596221077672)

## Abstract

**Introduction:** Nonadherence to antihypertensive medications has been found increasingly prevalent in Thailand, yet the critical cultural resources of Islamic belief systems and family support are seldom mobilized to support adherence. Our study aimed to develop, implement, and evaluate an Islamic-based intervention program to promote medication adherence among Muslim older adults with uncontrolled hypertension in southern Thailand.

**Method:** An action research with codesign and family participation principles was utilized. Within action research cycles, interviews with Thai-Muslim older adults, family primary caregivers, and health care professionals were undertaken alongside participant observations.

**Results:** A qualitative audit demonstrated an improved medication adherence with all stakeholders expressing their desire to further engage and maintain the new intervention program.

**Discussion:** Engaging with Islamic doctrine and concepts of family participation could support an improvement in antihypertensive medication adherence for Muslim older adults. Codesigning enables recognition of community belief systems, forming an important step toward improving community-based medication adherence.

**Keywords:** Islamic doctrine; Thai-Muslim; action research; family participation; medication adherence; older adults.

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Hypertension is a major public health burden that is rapidly increasing among older adults worldwide (Vrjens et al., 2017). To date, antihypertensive medication adherence remains poor in Thailand and globally (Vrjens et al., 2017). Forgetfulness, inadequate knowledge and drug side effects were common predictors of non-adherence to medication (Gavrilova et al., 2019; van der Laan et al., 2017; Vrjens et al., 2017). Family caregivers could primarily support older adults' medication adherence by reminding them of the drug- taking time, preparing a regular medication supply (Ashoorkhani et al., 2018; Shanin et al., 2021) and providing transportation access to medical care services (Sheilini et al., 2019). Older adults who are connected to active social networks, such as their families, are more likely to have better physical and mental health well-being and quality of life than those who are less involved (Thomas et al., 2017; Turan et al., 2019).

In Thailand, non-adherence has been found to be increasingly prevalent among conservative Muslims in the rural southern regions. In Islamic teachings, Muslims are expected to pay respect to older adults and have a duty to care for their parents particularly in times of sickness (Bensaid & Grine, 2014). Few research studies reported the impact of Islamic beliefs on medication adherence (Noumani et al., 2018; Wangjhi, 2015). One study outlined staff nurses' roles in community-based clinical care for southern Thai-Muslim older adults with hypertension and their family caregivers. The findings reported a lack of family members' awareness in drug adherence, but failed to identify the reasons for non-participation in the care (Wangjhi, 2015). Hence, there is a need to develop a comprehensive Islamic-based intervention drawing on family

support to promote medication adherence. Within this context, our study aimed to develop and evaluate an Islamic-based intervention program to promote medication adherence among Muslim older adults with uncontrolled hypertension.

## **Method**

### **Design**

An action research (AR) with co-design principles drawing on collaborative conceptualization was utilized to enable mutual identification of the research problem and co-developing new strategies to improve community healthcare services (Polit & Beck, 2021). Healthcare providers and healthcare recipients agreed to use Muslim cultural resources in planning the project alongside the research team. Concept of participation (Cohen & Uphoff, 1980) was also applied to strengthen the sense of all stakeholders' ownership.

### **Ethical consideration**

This research was approved by Ethics Committee of Faculty of Nursing, Prince of Songkla University on December 8, 2016 (certified MHESI 68105/2532, November 23, 2020). The Provincial Ministry of Public Health also authorized ethical approval for this research. Prior to data collection, an informed consent document was signed by all participants.

### **Setting**

This AR took place at a Paku Community Health Center (PC-HC), in Paku District of Pattani Province. The core healthcare personnel were all Thai-Muslim. A physician and a pharmacist were working as in-chief supervisors for referred drug treatment and drug counseling. Three clinical nurses provided routine care clinic-based services, including drug counseling and home visits. The PC-HC chronic health record data (of year 2018) revealed that one-fifth of older adults had chronic hypertension. Of these, only 20 % were able to keep blood pressure under

control. The incidence of strokes in particular were found to be increasing each year, with 38 % of those being lost follow-up and missed their medications.

### **Participants**

A purposive sampling was used to draw on family dyads of the identified older adults, that is, having uncontrolled hypertension and inconsistent medication adherence within the past six months, and living with family caregivers but infrequently receiving drug care assistance. Five family dyads (older adults and primary caregivers) were recruited. Besides, five healthcare providers (HCPs) at the clinic, that is, three clinical nurses, a physician and a pharmacist agreed to participate. Altogether, fifteen participants involved in this AR study.

All HCPs were female, aged 29-40, had worked at PC-HC for over 5 years, and had experiences in community-based elderly care. All nurses were registered-nurses, married and had attended elder-care workshops. The older adults were aged 60 -72, four female and one male, two married and three widowed. All co-habituated with their family caregivers and were unemployed with incomes below the Thai poverty line. All had finished Muslim-based compulsory education and spoke local-Malay dialect fluently. All had hypertension for over 5 years and had experienced poor medication adherence along with high blood pressure level. The family caregivers were aged 27-45; four female and one male; three married and two singled. All had completed the compulsory Thai schooling, were employed but had incomes below the Thai poverty line (Thai National Statistic Department, 2018).

### **Data collection**

Data were collected during December 2016- June 2018, using a semi-structured guide individual in-depth interviews and further co-design discussion. Interview sessions and observations of participants' responses, interactions and reflections were noted in field-notes

taking and documented in the logbook. A reciprocal process took place whereby all stakeholders and members of the research team informed each other about the applicable knowledge components and effective problem-solving actions. The logbook was also used during program activity sessions to document what had worked (or not) for each activity. All interviews were tape recorded and transcribed. Tapes, notes and transcripts were kept secure. Participants were given numbers in order that no names were disclosed, with only the named researchers able to match the real names and identities with these materials. The field researcher reviewed the transcripts with participants and another researcher to confirm accuracy (Polit & Beck, 2021).

### **Data analysis**

The research team listened to audio tapes, read and reread then verified, coded and categorized transcript data. Words, phrases and statements that described participant awareness, beliefs, understandings and needs were identified and highlighted to form themes that reflected participants' responses. To develop and refine the themes, a constant comparison approach was used (Polit & Beck, 2021). Emergent themes were organizing following steps in an AR process. The coding and themes were developed manually by the research team. This initial phase was followed by validation of the content together with participant "member checking" using excerpts from the transcripts to illustrate how their statements were coded and categorized. Results of the first interview served as the starting point for the next interview. The data collected then were analyzed using the same process. The coding scheme was applied to all the following interviews and refined to avoid overlap, ambiguity, and lack of clarity. Content analysis of reflective field notes and memos reported in the logbook was also conducted.

### **Rigor**

Dependability was ensured by having another researcher check the accuracy of the emergent themes for each stakeholder group and then across groups. Credibility was achieved through co-participant member checking with key project partners and key participants, and through method triangulation. Transferability was demonstrated by using detailed descriptions of the context, approaches, and activities of the study. Confirmability was achieved by having all the authors review all data and documents and also creating an inquiry audit throughout the project (Polit & Beck, 2021).

## Results

An action research cycle with four phases of the program was depicted in Figure 1.

### **Phase 1: Assessment (Problem Identification/Situation Analysis)**

Each participant was interviewed once or twice, for about 30 minutes in a private room at the PC-HC. The clinical nurses were asked to describe their routine care services, clinical management, perceived causes of non-adherence, and nature of family support in drug care. The physician and the pharmacist were interviewed to ascertain medical treatments and drug counseling provision. Using local Malay dialect, five family dyads were asked to describe their awareness, beliefs, thoughts about the causes of the non-adherence and perceptions of available resources to improve adherence. For example, 'Can you tell me about a non-adherence situation you encountered? Please give an example.' Further questions, such as 'How did you feel about this?' and 'How do you deal with drug side effects problems?' were asked. For family caregivers, the above questions were modified to fit with their caregiving roles and their involvement in drug care assistance.

The perceived causes of non-adherence and the needs to improve healthcare services were identified. Four themes emerged: forgetfulness, inadequate knowledge of drug efficacy and

poor management of drug side effects, misunderstanding (of symptom-free) and misbeliefs (about Islamic teaching). These themes were further validated with all participants. Inadequate knowledge of how to handle drug side effects and the misunderstanding that 'No symptoms meant recovery', making it unimportant to take any more drugs, were reported. A belief in fatalism and that the teaching of the Islamic doctrine, such as, 'It's Allah's wish', 'His desire to test us' thus 'No need to get treated' were also specified. In addition, being unaware of the risks posed by drugs non-adherence, lack of knowledge about the needs of drug care assistance and lack of transportation were mentioned by family caregivers. The importance of integrating Islamic doctrine into family support models was confirmed by all clinical nurses.

#### **Phase 2: Planning phase (Action Plans of Program Activities)**

The program was developed through meetings and workshops. As co-project partners, the clinical nurses organized the weekly meetings and workshops, and co-designed a program with the family dyads to address underlying causes of the non-adherences and to improve health care services. The field researcher acted as the facilitator encouraging clinical nurses to express their ideas, opinions, needs, and expectations concerning the future program. Field observations and nurses' comments on the initial work (proposed by research team) were also collected. Program goals, program plans and potential approaches for integrating Islamic doctrine and family participation were discussed. Data collected during each meeting were categorized and structured by the research team and then validated by the nurse participants. Data collection and data analysis were interactive and in congruence with the interviews. A refinement workshop was finally organized, in which the clinical nurses were asked to validate the program adequacy with respect to the needs of family dyads and their clinical roles.



After the underlying causes had been identified, the program goals, content and structures were thus clarified. The intervention consisted of a co-proposed action plan that integrated Islamic doctrine, participation concepts and family support. The proposed program was designed to run for a 6-week period – starting from a pre-activity to concluding with an evaluation. Several program activities ran alongside with various strategies utilized under four approaches (see figure 2: Box A). Prior to program implementation, the program guidelines and flowcharts were co-designed and developed with stakeholders to support the field researcher and project partners following the project activities. Details of each session were presented below.

The pre-activity, besides several program co-constructed activities were initially developed. Pre-assessment aimed to gather baseline information (elder's blood pressure (BP), drug adherence scores and a residual drug pill-counts report). Pre-health education aimed to assess knowledge, awareness, beliefs and understandings towards medication adherence and side effects management of the family dyads. Lastly, pre-family participation aimed to assess family caregivers' commitment and intention to assist in elder drug care.

A health education approach was designed to address the underlying causes of inadequate knowledge/misconceptions in Islamic beliefs (led to inconsistent drug use), to increase participants' awareness and to emphasize the importance of consistent drug use. Program activities with various tools and strategies were utilized. For example, a 'Power of faith enhancing wisdom decision' activity was conducted together with a bilingual handbook (in Thai/Arabic) that integrated 'Islamic-based drug care'. The handbook contained selective verses that reflected Muslim beliefs relying upon (Almighty God)/Allah (Subhanho Watala) in times of sickness. These were read and discussed together. For instance: "*And when I am ill, it is He who cures me*" (Shu'araa 26: 80, The Qur'an), and "*It's Muslim's duty to take medications as*

*treatment when one gets sick to serve Allah (SWT) 's wishes'* (adapted verse 3/321, Hadith Ahmad) were used to signify the importance of consistent medication adherence and to help correct misconceptions and misunderstanding. This handbook was used as a primary source of informational support together with the drug-checklist form and residual pill-counts report.

A family participation approach was also designed to engage family caregivers to support their older parent's medication regime and to raise awareness of their importance role in drug care assistance. For instance, "*Azan-calling time*" for Na-maz (announcement call for Muslims to come praying in respect to Allah) was used as a 'sound reminder' strategy about medication uptake, using the pretext of "Azan calling time" (five times a day: before dawn, near lunch, late afternoon, evening, and night time) prior to Na-maz ("Adhan", 2021). Participatory assessment forms, commitment forms 'Ban Ta San Ya' (of family dyads' intentions to support elder's medication adherence), and drug-checklist forms all constituted new tools to help promote family participation. The draft commitment form was co-designed and signed by each of family dyads in front of eyewitnesses (clinical nurse/field researcher).

A medication workshop practice approach was also co-designed to accord with Muslim cultural beliefs aiming to address 'forgetfulness.' Family caregivers engaged by practicing residual pill-counts, filling in drug-checklist forms and developing 'drug reminding tools for Allah' (a calendar/a drug box)- using familiar Muslim's symbols presenting periods of time alongside verses of Allah's teachings. The follow-up visits approach, titled 'phone-call' visits, and 'home visit for Allah' aimed to closely monitor medication use and to provide an observational overview of these activities. During each phone-call, the nurse asked whether the predetermined goals of medication adherence had been achieved. Emotional support with positive reinforcement were provided throughout.

New program tools were validated by a nurse with expertise in elder care and a pharmacist well experienced in drug care, and a Muslim instructor with expertise in Islamic teachings. Translation and back-translation (Thai to Arabic, vice versa) of all program tools were also conducted by a bilingual research assistant to ensure validity (Ngai et al., 2007).

### **Phase 3: Implementation phase**

The third phase was the six-week implementation commencing with asking the family dyads for their input into the content, structures and adequacy of the program with respect to their needs. The data collection and data analysis constituted an interactive process. The same logbook was used during the program activity sessions to document efficacy. Data collected were categorized and structured by the research team and validated by all of the participants. Minor details of the program guidelines were adjusted to address stakeholders' suggestions. The program was administered as originally planned in terms of content, order of topics, tools and methods used. The duration of one approach (family participation) was longer than the initial plan. The length of time devoted to each approach was flexible and there was no attrition with all family dyads continued their involvement throughout.

### **Phase 4: Evaluation phase**

To evaluate the program, three data collection methods were used: a) participant observation of each activity session and analysis of the semi-structured logbook; b) an informal group discussion seeking feedback concerning the whole program; and c) a semi-structured in-depth interview (about program feasibility, acceptability, adequacy and satisfaction) with all participants after program completion. Blood pressure levels, drug adherence scores, residual pill-counts report, and family caregivers' commitment were measured. Critiques/suggestions for program improvement were also further sought. The adequacy of the initial design with respect

to the program actual contents was assessed through participant observation. A content analysis of the intervention process data and of the informal group discussion session data was performed simultaneously. A thematic analysis of the interview transcripts was undertaken to provide in-depth participant data on the overall program. These triangulated data sources were then used to modify and refine the program further (Polit & Beck, 2021).

Overall, the program was well regarded by all participants as it met their needs and expectations. The program was not only evaluated as feasible (i.e., useful and effective) but also was viewed as acceptable (i.e., appropriate and applicable) and realistic for clinical practice through providing clear useable guidelines and flowcharts. Several new tools incorporating Islamic faith and morality and using quotes from The Quran's were seen to fit well (adequacy) with Muslim cultural practices. The bilingual handbook was very much appreciated.

"Mor-se (thanks) for giving this handbook. 'Kah' never seen it like this before ... But now, with *this handbook*, 'Kah' really liked it cause' for somethings 'Kah' didn't know, now 'Kah' could read it many times. Mor-se 'Bor-mor'." (Caregiver 4)

The drug-care handbook and drug-checklist forms were also mentioned as helpful.

"...Ma's *drug-checklist form* in the rear pages of the handbook, '... it's very helpful. It reminded 'Kah' not forget what/when to do and to be careful in Ma's drugs..." (Caregiver 3)

The program goals had a positive impact and had been well achieved. Family dyads reported that they had gained more knowledge and awareness of drug use and drug side effects, increased self-confidence in handling drug side effects, had their misconceptions or misbeliefs challenged, and reported a clearer understanding of the caregiver's roles. "In the past, 'Ma' took drugs by herself, inconsistently. I didn't know it's importance. Since now, I must help check Ma's drugs carefully." (Caregiver 1)

The core program outcomes were appeared to have been obtained, with blood pressure readings returning to normal levels. This finding, however, should be considered with cautions since many other variables were not assessed and could have contributed to this change. Nonetheless, the high drug adherence scores along with the low residual pill-counts report helped confirm these successful outcomes. Furthermore, the family caregivers also committed to further assist in their older adults' medication adherence as well as support their transportation needs.

### **Potential role conflict**

Researcher's roles and responsibilities were regularly clarified during the research process in order to lessen potential role conflict. The field researcher declared his multiple roles and his potential bias with the clinical nurses. Close collaborative working with his research supervisor, who was independent from PC-HC and regularly shared dialogues and information with project partners seemed to help alleviate and address this potential role conflict.

### **Discussion**

Prior to the commencement of this AR, family members were unaware of their importance role in supporting older adults' medication adherence and transportation to care services. Our findings underscored the powerful Islamic morality beliefs that advocate Muslim family participation in caring for their older adult parents (Bensaid & Grine, 2014). Upon completion of the program activities, family caregivers felt better prepared to assist with medication adherence. Our results supported the previous findings stated that having family members involved in caring for older adults could yield better outcomes (Ashoorkhani et al., 2018; Thomas et al., 2017). Language barriers were also seen to hinder care service provision and lead to poor communication between older adults and their healthcare providers constituting a novel finding in Thailand to date.

Inconsistent medication adherence were multi-faceted causes and mostly occurred at the individual level, similar to previous findings with forgetfulness the most common cause cited (Gavrilova et al., 2019; Vrijens et al., 2017). Barriers to accessing care, lack of transportation, misunderstandings and misbeliefs were also reported by the family dyads, similarly to other studies (Ashoorkhani et al., 2018; Sheilini et al. 2019). Most of these family dyads believed that illness or healing was “God’s wish”. Some patients thus took medications consistently, while others did so occasionally, similarly to the findings of Noumani et al. (2018). These beliefs in God (as central to healing or getting sick) could influence rural conservative Thai-Muslims family dyads’ health seeking behaviors. Linking such beliefs to inform future optimal health outcomes is needed for healthcare providers to better address the community care needs of Muslim older adults (Bensaid & Grine, 2014; Degazon & Perdue, 2016). In our study, we co-created a bilingual (Thai/Arabic) handbook for rural Thai Muslims with low levels of literacy and limited reading abilities (in Thai). Consequently, all of the family dyads appreciated the handbook, reporting their better understanding in the core concepts addressed. Our findings supported that provision of bilingual materials could foster knowledge acquisition (Wilson, 2011) and enhance family dyads’ confidence with medication compliance. Incorporating self-efficacy into practice over time could increase patient’s self-confidence in adopting behavioral change (Noumani et al, 2018).

Staff preparation for the implementation was also necessary, in keeping with co-design principles (Holloway & Wheeler, 2010). During the workshop training, all clinical nurses received education about the purpose and significance of the study and how to apply various tools that integrated Islamic doctrine to enhance supportive family commitments to the program.

This process ensured that these nurses be able to maintain a sense of control, build support, and develop partnerships with older adults and their families (Polit & Beck, 2021).

**Limitations:**

This study had some limitations including a small number of co-design participants, an inherent social desirability biases from the sampling nature, and paternalism inherent in medication adherence treatment. Nevertheless, the baseline audit data and the rotational engagement of all identified stakeholders helped confirm transferability and credibility.

**Implications:**

Our findings suggest that drawing on combination of Islamic doctrines and family participation concepts could help improving medication adherence for Muslim older adult patients. Our findings highlight that working alongside cultural belief systems is an important step toward improving adherence regime. Islamic beliefs should be adopted into nursing practice interventions to improve medication care. For example, nursing undergraduate and post-graduate specialty in community care should be aware of and understand how Muslim cultural beliefs and religious doctrine significantly influence community, family, and individual health risks and health seeking behaviors. By culturally practice with family-centered care, clinical nurses could then facilitate medication adherence regimens and optimal health outcomes.

**Conclusion**

Identifying shared goals and engaging between patients, their families, allied community healthcare providers and researchers in practical interventions can bring about improved clinical outcomes. These novel findings set new priorities for future research with Muslim populations to incorporate Islamic doctrine and familial beliefs components into community-based interventions.

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Figure 1

*Phases of the program, based on action research cycle with co-design principles*

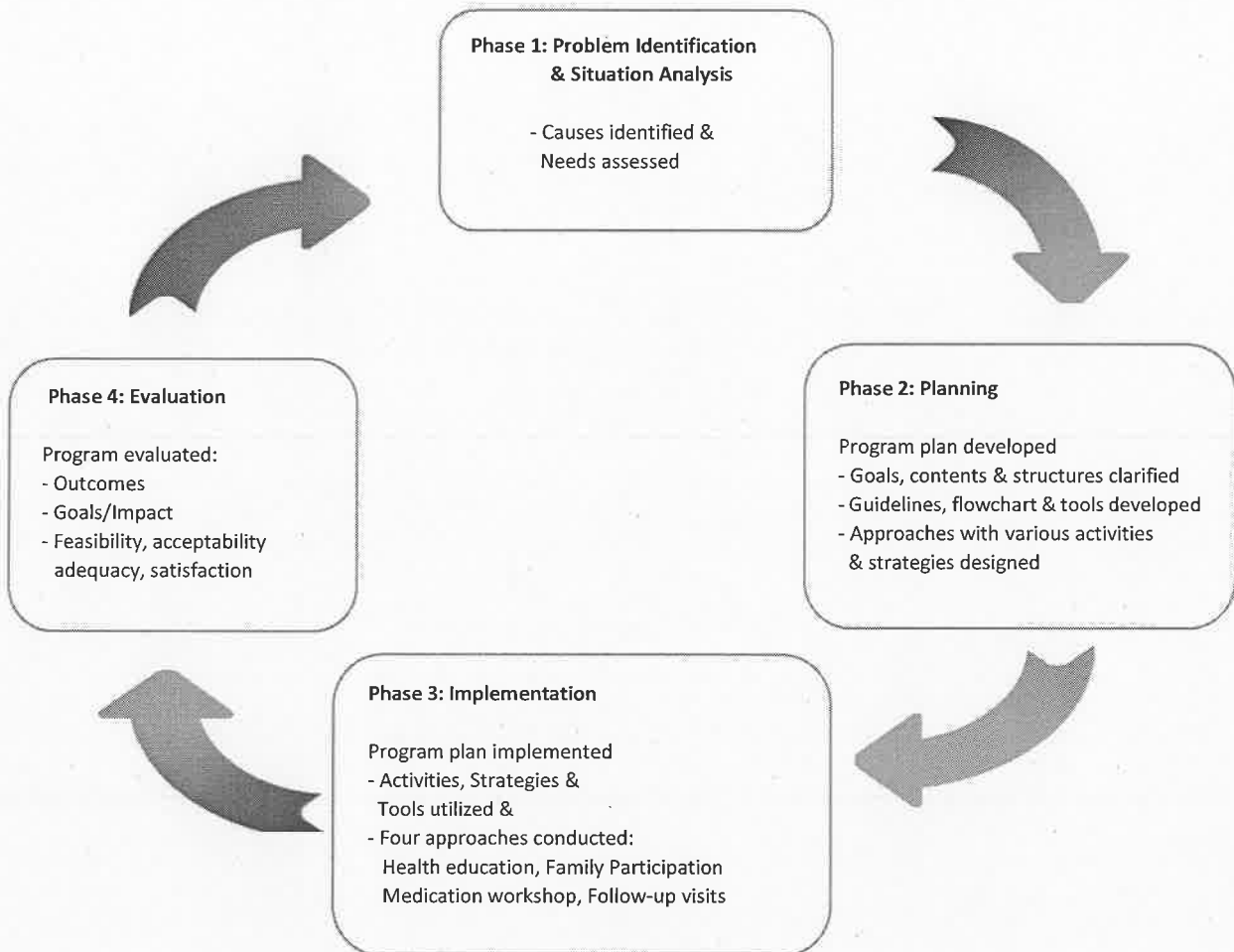
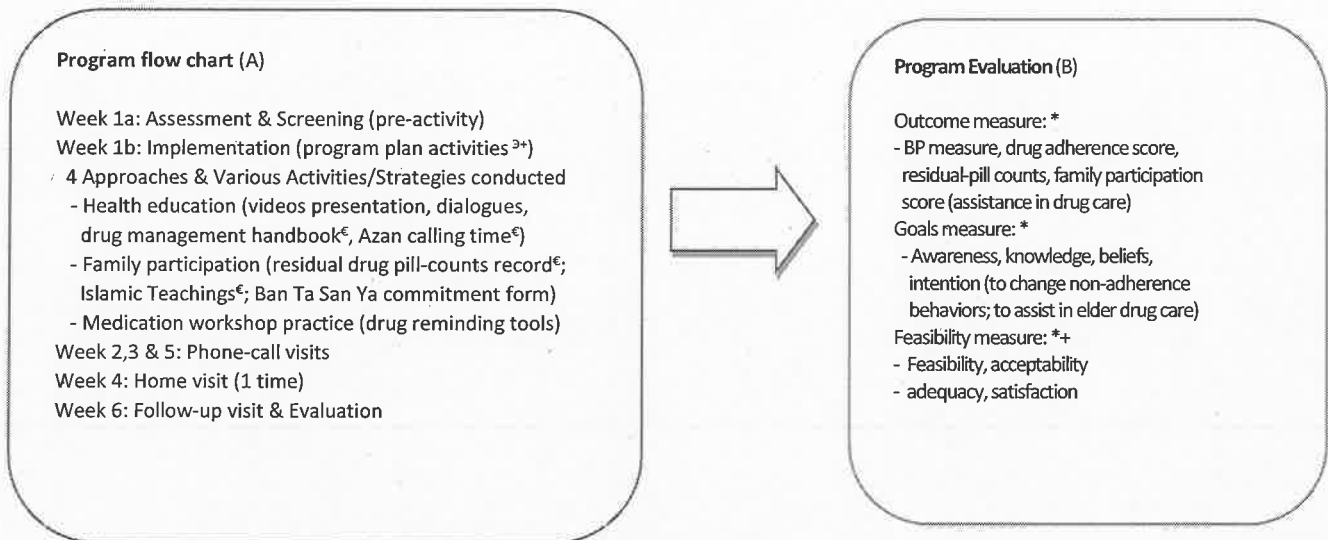


Figure 2

## Program flowchart



Note. Box A: <sup>€</sup> Mutually applied; <sup>3+</sup> Integrated Islamic doctrine along with participation concept. Box B: \* With family dyads; + With clinical nurses; BP = Blood Pressure.