Cultural-Based Diabetes Self-Care Management Education for People with Type 2 Diabetes Mellitus: Empowering Community Health Workers (Kaders) Program Evaluation

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Abstract

Aims: The aim of this study was to understand the perspectives of Kaders, community health nurses (CHNs), and the community on an empowerment program for Kaders in Indonesia. The program aimed to help Kaders provide cultural-based diabetes self-care management education for people with type 2 diabetes mellitus (T2DM).

Methods: The empowerment program consisted of a four-month training program, including two full-day sessions on cultural-based health education for people with T2DM, followed by four months of monitoring T2DM patients. Fifteen Kaders from community health centers in Makassar City participated in the program. Focus group discussions (FGDs) were conducted with Kaders to explore their perceptions and experiences related to the program. Interviews were also conducted with CHNs and people with T2DM regarding their perceptions of the program. Data was analyzed using thematic analysis by Colaizzi's approach.

Results: The FGDs with Kaders resulted in four themes: overall training, guideline book, education and monitoring program, and potential obstacles. CHNs highlighted the benefits of the program, the guideline book, and the impact on patients. Patients identified three themes, including the benefits of the program, what was taught, and what was improved.

Conclusion: The empowerment program for Kaders in Indonesia has proven to be beneficial for Kaders, CHNs, and the community. Kaders have the potential to provide effective and efficient health education with proper preparation and empowerment through knowledge and skills.

Keywords: Community health workers, Kader, Community health centres, Puskesmas, people with T2DM

Introduction

The involvement of community members in helping healthcare workers to improve community health is very important. This is not something new; yet, it has been claimed that the community health worker programs have their origins in Ding Xian, China, in the 1920s (Perry et al., 2014). In the USA it has been introduced in the early 1960s (Brooks et al., 2018). Community health workers have been acknowledged as a vital component of primary care since the Alma Ata Declaration in 1978 (Perry, 2020) and have been identified as one approach to address the growing shortage of health workers in some countries, particularly in low-income countries (Lehmann & Sanders, 2007; Perry et al., 2014). The concept of the CHW varies from country to country, but they are members of the community who work for compensation or as volunteers, collaborating with the local health care system. CHWs mostly have the same ethnicity, language, socioeconomic status, and life experiences as the people they work with (Scott et al., 2018). The role of CHWs includes care coordination, providing health coaching, conducting health assessment, acting as a resource link, helping in case management and medication management, providing health education, and health literacy support (Hartzler et al., 2018).

Making broad generalizations about the profile of CHWs around the world is difficult because their role must adapt to local socioeconomic and cultural norms and practices to gain community acceptability and ownership (Lehmann & Sanders, 2007; National Institute of Health, 2014). In Indonesia, CHWs are known as health volunteers or community health volunteers, referred to as Kaders in Bahasa Indonesia, derived from the term "cadre." Kaders were introduced in the 1970s and were recruited and trained to help healthcare workers provide health and nutrition promotion in each village (Perry et al., 2017). In the 1980s, when The Indonesian Ministry of Health (MOH) established the Posyandu program aimed at reducing maternal and child mortality and improving family planning acceptance, Kaders were trained to assist (Leimena, 1989; Setiawan & Christiani, 2018). The roles of Kaders in Posyandu sessions mostly involve administrative tasks such as helping at the registration desk and completing the child health record (Ministry of Health Indonesia, 2011; Perry et al., 2017). They provide voluntary service without financial compensation, except for small reimbursements for their transportation expenses (Perry, 2020). However, they may receive benefits, such as free medical treatment from community health centres (Puskesmas) in their working area (Rahmawati & Bajorek, 2015).

Although the Indonesian government expanded the form of Posyandu healthcare services to the elderly in 1997 (Rahmawati & Bajorek, 2015) the roles of Kaders in Posyandu for the elderly remain under-utilized, especially in some parts of Indonesia, particularly in the central and eastern regions. For example, in urban areas like Makassar City in South Sulawesi Province, the role of Kaders is mainly limited to reminding the elderly in their area to attend Posyandu sessions. Initial interviews with community health nurses from Puskesmas in Makassar city showed that Kaders had never been involved in health education activities, especially for the elderly, and were only involved in administrative tasks such as reminding people with T2DM to attend Puskesmas for their regular monthly check-ups. Therefore, empowering Kaders and enhancing their roles is essential to help healthcare workers improve public health, especially for people with chronic diseases, including diabetes mellitus. This paper aims to evaluate the impact of the community health workers' empowerment program on improving the knowledge and skills of Kaders to provide health education for people with T2DM in Makassar

City, qualitatively from the perspectives of Kaders, Community Health Nurses (CHNs), and the community.

Methods

A qualitative evaluation study was conducted in Makassar City, South Sulawesi Province, Indonesia, from July to December 2021. The study aimed to evaluate the impact of an empowerment program provided to community health volunteers or Kadersto educate and assist people with T2DM to improve their self-care management and glucose control. The study generated qualitative data from focus group discussions with Kaders (4 groups) and interviews with CHNs and people with T2DM to explore their thoughts about the program. This paper is part of a larger study that focused on developing a culturally integrated health education program for people with T2DM by collaborating with community health nurses in Puskesmas and involving Kaders in providing health education and monitoring the goals of people with T2DM.

The Makassar District Health Office recommended the study sites based on the number of people with T2DM. Invitations were sent to five Puskesmas, and three Kaders were recruited from each. The inclusion criteria required the Kaders to have worked actively for the last six months, be able to read and write, and live in the Puskesmas working areas. 15 Kaders were chosen to receive two training days and then responsible for educating and assisting three people with T2DM to control their glucose levels. Three Kaders withdrew two months after training, and their patients were excluded from this study.

A four-month empowerment program was conducted from July to December 2021. Kaders received a two-day training on Diabetes Self-Management Education (DSME) and integrating cultural beliefs related to food choices. They were also given an integrated cultural health education guideline book. The book was developed by a research team of academics from three universities in Makassar City, including one with a doctoral degree in CHN, one with a master's degree in nursing management and expertise in transcultural nursing, and one with a master's degree in medical surgical nursing. The book's content was developed from relevant literature and written in the local Bahasa Indonesia language. After the training, each Kader was assigned to educate three Makassarese people with T2DM and monitor their glucose levels for three months. The program's first month was focused on providing health education, while the next three months were dedicated to monitoring patients' self-management to control their glucose level.

After the training program, a qualitative evaluation was conducted to assess the impact on the Kaders' work with the community. Two focus group discussions (FGDs) were conducted to explore their experience and perception of the training and the program's implementation. A nurse educator and a research assistant led each FGD. The first FGD was conducted after the second day of training and asked introductory questions followed by questions about the Kaders' perceptions of the training, cultural aspects of health education, and barriers to providing culturally-based health education. The FGDs were recorded, and field notes were taken. Prior to the main discussion, the facilitator asked introductory questions for 15 minutes, such as their role as health volunteers and experience with T2DM education. They then asked about perceptions of the training, including cultural aspects and barriers to health education. Introductory questions are used to start a discussion and focus on the research questions, typically consisting of a series of questions followed by impromptu follow-up questions by the facilitator to encourage detailed responses (Hennink, 2014). The FGD was recorded, and facilitators made field

notes. Three additional FGDs were conducted to monitor the Kaders' health education and patient monitoring activities. In total, four FGDs were conducted with the Kaders. The number of FGDs based on the number of participants involved in this study. A typical recommendation for focus group studies suggests carrying out a minimum of two focus groups for every demographic category included in the research (Hennink et al., 2019). In this study, we used another three Our results reinforce the recommendation to hold three groups within group of Kaders, which ensures a more comprehensive exploration of particular issues and enhances the ability to fully capture the nuances of conceptual codes.

After the empowerment program, CHNs (n=5) were interviewed for 30-45 minutes to evaluate the Kaders' performance and the program's impact on the community. People with T2DM (n=13) who received education and assistance from the Kaders were also interviewed. The principal investigator, a doctoral degree holder in Community Health Nursing with experience in qualitative studies, conducted the interviews after obtaining informed consent. Audio recordings were made using digital recorder. Ethical approval was obtained from The Health Research Ethics Commission from the Faculty of Public Health Universitas Hasanuddin (No: 6261/UN4.14.1/TP.01.02/2021).

Data Analysis

Onwuegbuzie et al. (2009) state that there is no specific framework for analyzing focus group data. Qualitative analysis aims to provide understanding rather than search for truth (Metzler & Scott, 2013), and traditional qualitative data analysis methods are used for analyzing focus group data. Thematic analysis, qualitative content analysis, and constructionist methods are the three main approaches used. For this study, thematic analysis was used, and Open code 4.03 software was used for data analysis. The steps involved in thematic analysis included familiarization with the data, creating initial codes, searching for themes, reviewing themes, defining and identifying themes, and preparing the report (Speziale & Carpenter, 2011). The research team members and facilitators checked keywords and responses for accuracy, and themes were discussed and agreed upon by the authors.

Results

This study includes three groups: Kaders (n=13), CHNs (n=5), and people with T2DM who were monitored by Kaders (n=13). Kaders are mainly married, aged 36 to 53, and have worked for 2 to 15 years. CHNs are mainly female, aged 32 to 50, and have other tasks besides their main responsibilities. The patients are mainly female, aged 47 to 75, and have had T2DM for 2 to 10 years (Table 1).

Table 1. Demographic characteristics of participants

Characteristics of Kaders (n=13)

Community Health Centres	Initial	Age (year)	Educational Background	Marital Status	Other work	Working as *Kaders* (years, month)
PKM01	Kader1	41	Junior High School	Married	Housewife	3 years
	Kader2	43	Senior High School	Married	Housewife	4 years 6 months
	Kader3	36	Senior High School	Married	Housewife	3 years 3 months
PKM02	Kader4	51	Senior High School	Married	Housewife	15 years

	Kader5	53	Senior High School	Married	Housewife	15 years
	Kader6	40	Senior High School	Married	Housewife	6 years
PKM03	Kader7	41	Senior High School	Married	Housewife	9 years 3 months
	Kader8	39	Senior High School	Married	Housewife	2 years
	Kader9	44	Senior High School	Married	Kindergarten teacher	11 years
PKM04	Kader10	43	Senior High School	Married	Housewife	4 years
PKM05	Kader11	48	Senior High School	Married	Housewife	4 years
	Kader12	49	Senior High School	Married	Housewife	3 years 11 months
	Kader13	42	Diploma	Married	Housewife	5 years

Characteristics of CHNs (n=5)

Community Health Centres	Initial	Age (year)	Educational Background	Gender	Task in PKM	Other tasks in PKM
PKM01	CHN01	35	Master of Nursing	F	Prolanis*	Yes
PKM02	CHN02	43	Master of Nursing	F	Prolanis*	Yes
PKM03	CHN03	32	Diploma in Public Health	F	Prolanis*	Yes
PKM04	CHN04	40	Bachelor in Nursing	F	Prolanis*	Yes
PKM05	CHN05	50	Diploma in Nursing	F	Prolanis*	Yes

**Prolanis: Program Pengelolaan Penyakit Kronis* or The Chronic Disease Management Program is a program initiated by the Social Insurance Administration Organization or *Badan Penyelenggara Jaminan Sosial (BPJS) in Bahasa Indonesia*

Characteristics of patients (n=13)

Community Health Centres	Initial	Age (year)	Educational Background	Gender	Occupation	Length of DM
PKM01	P1	57	Senior High School	F	Housewife	2 years
	P2	75	Elementary	F	Housewife	6 years
	P3	60	Senior High School	M	Civil servant	3 years
PKM02	P4	65	University	M	Retired	3 years
	P5	56	University	F	Housewife	8 years
	P6	56	Senior High School	F	Housewife	7 years
PKM03	P7	55	University	F	Civil servant	10 years
	P8	51	Senior High School	F	Housewife	6 years
	P9	57	Senior High School	F	Housewife	9 years
PKM04	P10	51	Senior High School	F	Housewife	8 years
PKM05	P11	47	Senior High School	F	Housewife	5 years

P12	63	University	F	Housewife	6 years
P13	48	University	M	Entrepreneur	5 years

Kaders Perspective

Evaluation from this program was conducted using a qualitative approach, where data were collected through focus group discussions (FGDs). Analysis of the FGD transcripts resulted in four themes from the perspective of the Kaders: overall training, guideline book, education and monitoring program, and potential obstacles (Table 2).

Table 2. Kaders' perspectives (n=13)

Kaders Perspective	Summary of Responses	Exemplar Quotes
Overall Training	• Learned new things • More aware of cultural aspects • Effective health education methods	• "What I learned is that culture is really affecting patient's lifestyle" (Kader7) • "Using local language in health education is more understood by the patient" *(*Kader5*)*
Guideline book	• Very helpful • New knowledge • Plain and simple language • Pictures to explain	• "Very useful for me and the patients, easy to understand" (Kader1) • "The book contains pictures and uses local language; it is very helpful" (Kader5) • "The monitoring table is really good to control what patients have been done, so we know when to educate them again" (Kader12)
Education and monitoring program	• Benefit for Kaders • Benefit for patient • Improve relationship with the community • Improving patient's involvement	• "Not only patients gain benefit from this program, but I also learned a lot because I should read before I assist the patient" (Kader10) • "Patient more active in choosing what good for them" (Kader3) • "Patient actively write down what they have eaten and exercise they did" (Kader6)
Potential obstacles	• Patient's education level • Patient's mood • Matching the schedule • Lack of confidence	• "I need extra effort to teach my patient, she was very old and I think she did not go to junior high school" (Kader2) • "My patient does not really like being told what to do or what to eat, so I should look for other strategies to educate him" (Kader9) • "Some patients just cancelled the appointment" (Kader12) • "I need to read the book before I meet my patients, otherwise, I will not able to answer their questions" (Kader11)

The Kaders found the training satisfactory and reported increased knowledge and skills in providing health education for people with type 2 diabetes mellitus. They also gained confidence in educating patients about their diabetes. During the training, participants were introduced to cultural integrated health education and the importance of using the patient's native language. They were also taught health coaching methods, which they found more effective than basic health education.

The participants identified language and topic mastery as the main barriers to providing health education, along with the level of education of the patient.

Community Health Nurses' Perspective

Interviews were conducted with 4 CHNs responsible for the Prolanis program at the Puskesmas, which is important to evaluate the Kaders' training and performance, as well as its impact on patients. The FGD resulted in three main themes: benefit of the program, guideline book, and impact on patients (Table 3).

Table 3. Community Health Nurses Perspectives (n=5)

CHNs Perspective	Summary of Responses	Exemplar Quotes
Benefits of the program	• Improving the roles of Kaders • Improve relationship with the community • Benefit for the Prolanis program	• "It increases the involvement of the Kaders, advancing their role to educate and helping patients to control their glucose level" (CHN01) • "We've been very busy with the work at the Puskesmas, rarely have time to visit and control the patient at home, the Kaders can help us with this" (CHN03) • "Really help me in Prolanis program" (CHN05)
Guideline book	• Very helpful • New knowledge • Plain and simple language • Pictures to explain	• "Very useful for patients, easy to understand" (CHN02) • "The book uses local language; it is very helpful" (CHN05)
Impact on the Patients	• More controlled • Improving patient involvement • Get support	• "Patient knows that every week the Kaders will meet or call them about their progress, so they prepared themselves" (CHN04) • "Kaders visit to check what patients have been doing, help the patients managing themselves" (CHN02)

All participants agreed that the training has significantly improved the knowledge and skills of the Kaders in providing health education for people with T2DM. According to the participants, the Kaders are now more confident in using the guideline book and providing education and monitoring for people with T2DM in the Puskesmas. The CHNs also acknowledged that home visits are only sometimes possible due to the shortage of CHNs and their other tasks. However, they have observed that patients are now more engaged in their care, actively participating in health education sessions, and keeping records of their activities for weekly reporting to the Kaders. The CHNs also agree that the guideline book has been a useful tool for the Kaders.

Patient's Perspective

Thirteen people with T2DM who participated in the program were randomly selected and interviewed about their experience. Three themes emerged: the program's benefits, what was taught, and what improved. All participants reported positive feedback, appreciated the increased information provided by the Kaders beyond reminders for regular check-ups, and found the Kaders' education delivery easy to understand. The Kaders were trained on several topics including nutrition, exercise, foot care, medication, and visiting health care to control blood sugar, and most participants mentioned that they learned about nutrition, exercise, medication, and blood sugar control (Table 4).

Table 4. Patients' Perspectives (n=15)

Patients Perspective	Summary of Responses	Exemplar Quotes
The benefits of the program	• Gained knowledge • Feel supported • Kaders available to answer questions	• "I rarely been visited by Kader or nurse from PKM to teach me or to ask my health, I feel like supported" (P5) • "I like being visited by the Kaders, I have someone to talk about my situation and get advice" (P4) • "I always wait for the weekend where my Kaders will come and check my progress, I feel supported" (P10)
What has been taught	• Healthy eating • Regular exercise • Medication • Regular blood sugar control	• "The Kaders teach me what to eat, when to eat, the portion, and so on. The control paper helps me see what I have been eating for a whole week." (P1) • "Although I got information from the doctor about my medication, the *Kader* make sure I got it right" (P5)
What has been improved	• Healthy eating habit • Doing more exercise • Aware of regular check-up appointment	• "Now I am more motivated to do exercise because I know the Kaders will ask me about this" • "I have more regular eating time; in the past I always eat whenever I want to eat"

Discussion

The Community Health Workers (CWHs) have played a wide range of roles and activities. While some CHWs are assigned to a wide range of duties that can be preventive, therapeutic, or developmental in nature, others are assigned to highly particular treatments (Hartzler et al., 2018). In many countries such as the US, Pakistan, and Uganda CHWs assist people to access the care they need (Balcazar et al., 2011; Collinsworth et al., 2014) provide culturally relevant health education and information (Pérez-Escamilla et al., 2015), provide informal counseling and advice on health practices (Lewin et al., 2010), advocate for individual and community health needs (Collinsworth et al., 2013), and provide certain direct services including first aid, blood pressure screening and mental health (Adair et al., 2012; Pérez-Escamilla et al., 2015; Waitzkin et al., 2011). Previous studies also show that the involvement of the CHWs in providing healthcare brings cost-saving to people with chronic disease (Moffett et al., 2018; Viswanathan et al., 2010).

The CWHs have potential to enhance primary care access and quality, but their role still needs to be utilized in some countries. In one review study (Hartzler et al., 2018), It was found that there are many CHW roles in primary care, namely organizing care for the community, providing health education and health coaching, social support, health assessment and administration. In Indonesia, the role of CWHs od Kaders is only simple basic roles such as assisting in community health assessment, social support and helping community health nurses to remind the patient to come to the Puskesmas for regular check-ups or to attend their monthly meeting activities for people with chronic disease. In this current study, all Kaders are actively involved in the integrated health post (*Posyandu*) program, as this happens in most areas of Indonesia. In one study in Indonesia, Kaders have actively involved in health-integrated posts (Posyandu) held in the villages for mother and child health and elderly health (Rohmani & Utari, 2021). However,

their role is mostly for administration, yet some of them also provide health education. In many countries, CWHs are encouraged to provide health education after receiving proper health education training (Jauhar et al., 2019). Providing health education requires skills and sufficient knowledge about the topic. In Indonesia, most health education was delivered as it is without any preparation and unstructured (Kadar et al., 2014), thus using appropriate health education methods is also important to deliver effective and efficient health education. Health coaching is known as one of the best approaches in helping patients with chronic disease to improve their self-care management and health outcome because it empowers the patients to (Kivelä et al., 2014; Zuraida et al., 2021). In addition, integrating cultural aspects in health education also has been proven more effective in helping the patient increasing their motivation, mental health status and adherence (Brunk et al., 2017; Hadziabdic et al., 2020; Sinclair et al., 2020). There are some barriers faced by health professionals as well as community health workers in providing health education. In this current study, participants mentioned language, patient level of education and need to comprehend more thoroughly about the topic were found as barriers. Similar results were found in one study (Heshmati et al., 2020) that inadequate ability of CHWs in providing health education, educator's wrong beliefs, cultural aspects were three among many other barriers faced by the health professional and community health workers in educating health to the community.

In certain working condition like in some parts of Indonesia, the lack of health staff and one nurse can have several tasks in Puskesmas become obstacles for CHNs performing health promotion activities (Kadar et al., 2014). Empowering the roles of CWHs undoubtedly can help the work of health professionals in community settings including Indonesia. Some studies argue that many positive impacts of the involvement of CWHs in community health's program include reducing hospital cost (Moffett et al., 2018) and readmission (Burns et al., 2014) as well as improving health outcomes of the community (Collinsworth et al., 2013). By preparing the *Kaders* in Indonesia with proper skills and knowledge, they can play an essential role in improving the community's health outcomes and quality of life. It is recommended that skills to provide health education to the community should be included as one of the competencies Kaders in Indonesia should have. It is timely to involve them more into other health promotion activities. In doing so, they should be equipped with skills and knowledge accordingly. Support from local community and local government is crucial to these Kaders as they work voluntarily. To strengthen their roles, Kaders need training to upscale their knowledge and skills to improve the community health outcomes (Perveen et al., 2022). The main strength of this study is it showed the benefit of empowering community health workers in helping work of healthcare professionals in the community. However, qualitative study may not represent a general picture of all community health workers in Indonesia. Thus, the findings are limited to a particular region and may not be generalizable for the global population, yet provide a valuable contribution to global healthcare practice, offering a template for culturally sensitive empowerment initiatives in diverse settings.

Limitations

While this study provides valuable insights, it is important to acknowledge a notable limitation. Firstly, the participant group consisted of a specific subset, namely Kaders, which might only partially represent the broader population or diverse cultural backgrounds. This could affect the generalizability of the conclusions. Additionally, the study's focus on short-term impacts limits our understanding of the program's long-term effectiveness and sustainability. The

reliance on self-reported data introduces potential biases, as participants may respond in ways they perceive as desirable rather than providing accurate assessments. Short-term assessments offer valuable initial insights, allowing for quick program adjustments if needed. A complementary long-term study could provide a comprehensive understanding of both immediate and lasting effects.

Contribution to Global Nursing Practice

This study holds global relevance by showcasing the effectiveness of an empowerment program for Kaders in Indonesia. By equipping community health workers (Kaders) with cultural-based diabetes education, the program elevates healthcare provision. The research findings, encompassing positive outcomes and patient advantages, present a versatile blueprint backed by robust qualitative methods. This model extends a valuable contribution to worldwide healthcare practices, serving as a guide for culturally attuned empowerment projects across different contexts.

Conclusion

Based on the information provided, it can be concluded that the training program for Kaders on cultural integrated health education and health coaching approach had a positive impact on their knowledge and skills in providing health education for people with T2DM. Participants reported increased confidence in educating patients about their diabetes and appreciated the use of local and simple language in delivering the education. The program was also found to have benefits for patients, with participants reporting increased knowledge on nutrition, exercise, medication, and blood sugar control. Health education inevitably has been proven to help patients with chronic disease including people with T2DM in improving their self-care management ability. Integrating cultural aspects in health education such as using native language of the patient or explaining food that is familiar to the patient surely will have more impact on that health education. Overall, the study highlights the importance of training community health workers and providing culturally-sensitive health education to improve diabetes management in the community. Community health workers or community health volunteers can be utilized more in helping people with T2DM in the community, thus they must be prepared and empowered with knowledge and skills in helping them provide effective and efficient health education.

Author Contribution

All authors have accepted responsibility for the entire content of this manuscript and approved its submission.

Conflict of Interest

There is no conflict of interest in this study.

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