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Research Article
Effectiveness of Self-Help Group Program for the Management of Type-2 Diabetes Patients in Rural Thailand

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Abstract

Background and Objective: A Self-Help Group (SHG) program was designed based on the concept of social cognitive theory. This program applied an action research approach for type 2 diabetes mellitus (T2DM) patients in community based-care. This study aimed to evaluate the effectiveness of an SHG program on health literacy, self-care behaviors and blood sugar levels in T2DM patients in a rural Thai community. **Materials and Methods:** A quasi-experimental study design was used through validated and reliable questionnaires. Seventy T2DM patients between 50 and 80 years living in a rural Thai community were included in this study. Patients were assigned to the intervention or control group (n = 35 each) to test the effectiveness of an SHG program across three months. Descriptive statistics and independent paired t-test was used to compare baseline and intervention effects. The study was approved by Chulalongkorn University in Thailand. **Results:** Health literacy, self-care behaviors and HbA1c levels were similar across both groups at baseline. Following three months of intervention, health literacy, self-care behaviors and HbA1c levels were significantly improved in the intervention group compared to the control groups ($p<0.05$). **Conclusion:** This SHG program is effective and may help T2DM patients improve their health literacy and self-care behaviors to control their blood sugar levels.

Key words: Diabetes mellitus, patient management, intervention, health literacy, blood sugar control, self-care behaviors

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Competing Interest: The author has declared that no competing interest exists.

Data Availability: All relevant data are within the paper and its supporting information files.

INTRODUCTION

Diabetes mellitus (DM) is a major threat to global public health and is affecting a larger proportion of populations in developing countries[1]. The World Health Organization (WHO) estimated that 180 million people worldwide have DM; this number is likely to increase to 300 million by the year 2025[2,3]. The number of DM patients has increased four times over the last two decades in Thailand[4]. However, only 36% of DM patients meet their glycemic control levels (HbA1c <7%) due to poor management of the disease[5]. DM patients with low health literacy have less control over their blood glucose levels; these patients need education of diabetes risk factors, symptoms, diet counseling, exercise, blood sugar monitoring and proper medication use[6-12]. Educational programs place a significant demand on health care providers, as they require a large time commitment, specific training, teaching and communication skills, a supportive attitude and a readiness to listen. Effective education also requires training in delivery. Therefore, a refresher on training and continuous counseling could improve the health of DM patients[13].

Research on the effectiveness of novel interventions in local rural communities in Thailand and their applications could improve outcomes for DM patients. This study aimed to determine the effectiveness of a Self-Help Group (SHG) program that focused on health literacy, self-care behaviors and blood sugar levels in Type 2 (T2) DM patients in a rural Thai community.

MATERIALS AND METHODS

A quasi-experimental design was used in this study of 70 DM patients in central Thailand. Sample size calculation was based on assumption of differences in HbA1c among the intervention group. Using an alpha of 0.05 with a power of 0.80, 26 participants per group were needed to detect a difference. We made assumptions on two sides because the SHG program could have both negative and positive effects compared to a group that did not receive the intervention[14]. Potential participants were Thai nationals with T2DM between 50 and 80 years who were registered at community hospitals and able to attend self-help group sessions. Participants with cognitive impairments were excluded from the study.

Seventy participants were identified and invited to participate in the study by trained data collectors by using a list of 135 T2DM patients. 35 participants were assigned to an intervention group registered in the Jormploug sub-district health promotion hospital and 35 were assigned to the control group from Bang Prom and Bang Yeerong sub-district health promotion hospitals. The participants provided written consent and the ethical review board of Chulalongkorn University Thailand approved this study.

Data were obtained before and after the intervention through validated, reliable questionnaires on socio-demographic characteristics, self-care behaviors and health literacy; HbA1c levels were obtained from health records[15]. The mean score for health literacy was used to determine the level of knowledge regarding T2DM and a five-point Likert scale was used to evaluate self-care behaviors[3].

Data analysis: Descriptive statistics were used to assess demographic characteristics and calculate their scores on health literacy and self-care behaviors. Paired and unpaired *t* tests and Chi-squares were used to determine statistical significance of the results.

Intervention self-help group program: The SHG program was applied to the intervention groups across three months, while a regular and routine care for DM patients were provided for the control group. A health promotion program was implemented by using SHG techniques and the action research approach involved following five interactive stages modified and adopted from a similar study[13].

Planning: The researchers built relationships with participants, their families, administrative staff, village volunteers and healthcare officials involved in this study. The intervention schedule was managed with mutual understanding of administrative requirements and participants over a 2 h information session.

Action: The level of knowledge and relevant information on diabetes management of the participants was evaluated.

Observation: Participants attended sessions and observed the main purpose of the intervention.

Reflection: Blood sugar levels were measured during the intervention and evaluated for changes after completion of the intervention.

Revision: Participants revised the sessions to remember the information more effectively.

RESULTS

All seventy participants included in the study completed the intervention. Participants reported that they enjoyed the

Table 1: Characteristics, health literacy, self-care behavior and HbA1c levels of the intervention and the control groups at baseline

Variables	Intervention (n = 35)	Control (n =35)	p-value
Gender: Female (No., %)	26.00 (74.28)	26.00 (74.28)	1.00[a]
Age (Mean±SD)	60.08 (8.8)	61.60 (6.42)	0.69[b]
Duration of diabetes (years) (Mean±SD)	9.02 (6.65)	7.20 (5.52)	0.21[b]
Health literacy (Mean±SD)	36.40 (8.98)	38.40 (9.69)	0.37[b]
Self-care behavior (Mean±SD)	68.60 (7.38)	66.65 (6.79)	0.25[b]
HbA1c (%)	7.41 (1.01)	7.74 (1.35)	0.25[b]

Significant at p<0.05, [a]Chi-square, [b]t-test

Table 2: Health literacy, self-care behavior and HbA1c levels of the intervention and control groups after three months of participation in the programs

Variables	Intervention (n = 35)	Control (n = 35)	p-value
Health literacy (Mean±SD)	41.65 (4.12)	38.11 (8.74)	0.034*
Self-care behavior (Mean±SD)	72.82 (6.45)	66.62 (6.75)	0.000**
HbA1c (%)	7.12 (0.70)	7.75 (0.91)	0.002**

*p<0.05, **p<0.01

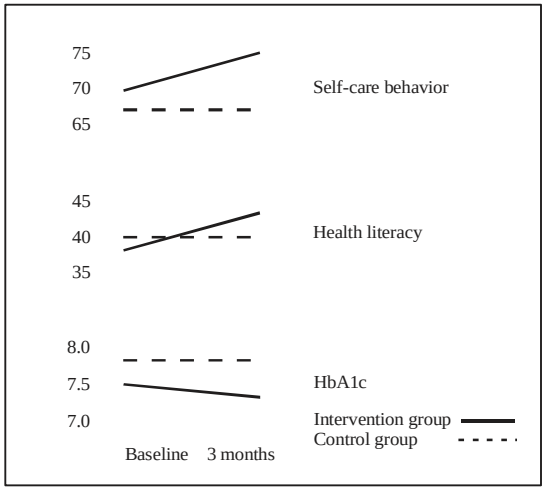

Fig. 1: Change over time across health literacy, self-care behavior and HbA1c levels of the intervention and control groups from baseline to three months

experience and shared their positive comments about the objectives, content, approach, material, ambiance and quality of instruction. The majority of the participants were female and between 50-76 years old. Most participants were diagnosed with T2DM more than one year prior to the study (range: 1-20 years) and were not able to control their blood sugar (HbA1c >7.0). At baseline, there was no significant difference between socio-demographic characteristics (gender, age, duration of DM and blood sugar) between groups. SHG program variables, including health literacy, self-care behaviors and HbA1c, were not significantly different at baseline between groups (p>0.05) (Table 1).

Following three months of SHG program intervention, there was a statistically significant difference in health literacy level, self-care behaviors and HbA1c between the intervention and control groups (p<0.05) (Table 2).

The intervention continuously improved health literacy, self-care behaviors and HbA1c in the intervention group from baseline to three months; however, there was no effect on the control group at any time point (Fig. 1).

DISCUSSION

The SHG intervention evaluated in this study was found to be effective and beneficial for T2DM patients. However, other interventional studies have found that these types of awareness programs among patients might limit their disease[16]. SHG activities can increase knowledge of disease management and foster better communication with family and peers. SHG programs are well aligned with the action research approach since participants work together to share information regarding their health. SHG programs can also help increase the ability to access, understand and use health information and self-care capacity, as our findings showed significant improvement in health literacy and self-care behavior, as well as diabetes control, following intervention. The results of this study revealed a significant improvement in HbA1c levels in the intervention group compared to the control group after three months. In the intervention group, self-care behavior increased significantly, whereas HbA1c levels decreased.

Considering the relationship between self-care behavior and blood glucose levels in T2DM patients, good self-care behavior may help reduce blood sugar levels[17]. A recent study showed a significant relationship between self-care behavior and blood sugar, as exercise was shown to prevent T2DM[18]. Studies also suggest that long-term intervention might affect HbA1c levels in T2DM patients[19]. Another study also showed a significant relationship between self-care behaviors and HbA1c in patients with T2DM, as counseling related to DM proved effective in controlling blood glucose levels[20]. These

findings are consistent with previous studies where self-help groups and social support were found to improve health literacy and self-care behaviors in T2DM patients[3,13,21-24]. In addition, blood sugar levels can be managed through exercise[13,25].

Our study was conducted in two health centers in rural Thailand and was not based on a nationally representative sample. Thus, our findings cannot be generalized to the whole country. The current study also limits its purview to assess the feasibility of training regarding management of T2DM. The evidence from this study suggests that it is possible to improve diabetes management with educative programs. This kind of educative approach should be scaled up and evaluated over time to better understand the substantial changes it can bring to the attitudes and behaviors of T2DM patients.

CONCLUSION

This study found that implementation of a three-month SHG program was beneficial for the management of T2DM in patients living in rural community of Thailand. This study will help researchers better understand how to develop diabetes management programs.

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