Jurnal Keperawatan Global
Vol. 10, No. 1, June 2025
https://doi.org/10.37341/jkg.v9i2.668

**Original Research**

# Diabetes Self-Care and Quality of Life Improvement Through Community Self-Help Group

**Zaroan Supriadi[1*], Kumboyono Kumboyono[2], Dina Dewi Sartika Lestari Ismail[3], Niko Dima Kristianingrum[4], Yati Sri Hayati[5], Annisa Wuri Kartika[6]**

[1,2,3,4,5,6] Master of Nursing, Department of Nursing, Faculty of Health Sciences, Universitas Brawijaya, Indonesia

**ABSTRACT**

***Background:*** *Type 2 diabetes mellitus (T2DM) remains a major cause of death worldwide due to complications, and its incidence is fairly high and predicted to continue to rise each year. This contributes to a low quality of life and poor self-care management, necessitating an effective treatment strategy consisting of self-help group (SHG) therapy that expands social networks, receives information, and receives emotional support from group members in order to provide numerous benefits. The purpose of this study was to assess if community-based self-help group interventions improve the quality of life and self-care management of individuals with T2DM.*

***Methods****: This study employed a Quasi-experiment non-equivalent control group pre-test and post-test design with a self-help group intervention (n=30) for one month. The sample was selected using the approach of purposive selection with the following inclusion criteria: age between 40 and 65 years, T2DM experience between 3 and 5 years, and the ability to converse, read, and write effectively. Statistical paired sample t-test and independent sample t-test were used to assess the data.*

***Results:*** *In both groups, self-care management, quality of life, and blood glucose levels at baseline were comparable. After one month of intervention, self-care management, quality of life, and blood glucose levels were significantly better in the intervention group than in the control group ($p<0.05$).*

***Conclusion:*** *In this study, the self-care management and quality of life of individuals with T2DM improved following SHG intervention. Integrating public health effort with an interpersonal collaboration approach will provide an optimal integrated contribution to resolving chronic deseases.*

**ARTICLE HISTORY**
Received: December 31st, 2025
Accepted: August 19th, 2025

**KEYWORDS**
diabetes mellitus, quality of life, self-care management, self-help group;

**CONTACT**
Zaroan Supriadi
✉
zarwan66@gmail.com
Master of Nursing, Department of Nursing, Faculty of Health Sciences, Universitas Brawijaya. Malang. Jl. Veteran No. 10-11, Ketawanggede, Lowokwaru District, Malang City, East Java 65145 Indonesia.

**Cite this as:** Supriadi, Z., Kumboyono, K., Dewi Sartika Lestari Ismail, D., Dima Kristianingrum, N., Sri Hayati, Y., & Wuri Kartika, A. (2025). Diabetes Self-Care and Quality of Life Improvement Through Community Self-Help Group. *JKG (JURNAL KEPERAWATAN GLOBAL)*, *10*(1), 12–23. https://doi.org/10.37341/jkg.v10i1.668

## INTRODUCTION

Globally, diabetes mellitus (DM) is a significant health concern (Esmaeilpour-BandBoni, Gholami-Shilsar, & Khanaki, 2021). The prevalence will reach 537 million

by 2021 and will be present in a number of nations, including the United States (15-24%), Europe (10-13%), Caucasus (4-6%), and Africa (2-4%). According to projections, the global population will increase by approximately 783 million individuals by 2045.

Indonesia's 19.465 million cases of diabetes in 2021 would place it fifth in the world (International Diabetes Federation, 2021). According to the 2023 Indonesian Health Survey (SKI), the prevalence of diabetes mellitus in Indonesia reached 11.7%, an increase compared to the 2018 Basic Health Research (Riskesdas), which recorded a prevalence of 10.9%. DM disabled in the Province of East Java ranks fifth with around 842,004 souls, or 2.02% of the total population of 41,644,099 souls (Ministry of Health Republic of Indonesia, 2023).

Type 2 diabetes mellitus (T2DM) complicates matters regardless of whether they are aural complications or kinetic complications (Belsti et al., 2020; Saputri, 2020). Additionally, it prevents an increase in the death rate. Data from the International Diabetes Federation (IDF) for 2021 indicate that there are 6.7 billion diabetics worldwide, with 1.39 billion residing in Thailand, the world's most populous nation. This is followed by the United States with a total of 669.000 diabetics, while Indonesia is third behind Pakistan and Japan with a total of 236.000 diabetics (International Diabetes Federation, 2021).

Reducing stress and adopting healthy lifestyle behaviors, such as adopting a balanced diet, increasing physical exercise, and keeping an appropriate body weight, might mitigate complications and complications-related concerns associated with T2DM, as well as improve quality of life. Healthy lifestyle interventions effectively reduce the risk of type 2 diabetes. It is suggested that only three T2DM practitioners are able to adequately treat their disease, and that more people than anticipated should be aware of the major links between their condition and its management (Cosentino, Grant, & Aboyans, 2019). A study in Nepal found 54% of diabetic patients reported inadequate management of disease-modifying medicines (Ishwari Adhikari & Santosh, 2021).

Importantly, management of the condition through self-care will reduce blood glucose levels and improve consequences for persons with T2DM (Mulya & Kosassy, 2020). Self-care management has been demonstrated to enhance peripheral vascular circulation in T2DM patients by 70-80% (Embuai, Siauta, & Tuasikal, 2019), Through regular physical activity, a balanced diet, the management of blood sugar levels, the consumption of high-quality supplements, a knowledge of and response to pain signals, and other means, one might form sound ideas regarding health care issues and the prevention of complications (Pienaar & Reid, 2020).

However, in order to apply a broad and complex behavior, diabetes commitment is necessary. This behavior must be ingrained in existing lifestyles, aspirations, and priorities thus, it is not unexpected that the majority of individuals with T2DM believe that everyday diabetes management is difficult, if not burdensome, and have difficulty doing self-care activities correctly (Ahola & Groop, 2013) (Glasgow & Eakin, 1998), that effect life quality, such as psychological, social, economic, and public health conditions, in the context of responses to stress, anxiety, and depression (AbuAlhommos et al., 2022; Halder et al., 2020; Suyanto & Astuti, 2022).

The success of diabetes management depends on an individual's level of involvement in treating existing symptoms. Regular self-care management will prevent complications, therefore T2DM can be managed with self-care. It is necessary for individuals' commitment to diabetic self-care management to improve their quality of

life (Fadli, 2022). The single procedure that could be performed using SHG treatment. SHG is a team that strives to improve people's health by creating collaborative connections among its members to achieve common objectives (Borkman & Munn-giddings, 2020; Dinyati, Wilandika, & Supriyatna, 2019; Prabsangob, 2018) that can help people with T2DM learn to cope with their situation and improve their lives.

SHG encourages people with T2DM to share information and expertise in order to properly treat their disease (Prabsangob, 2018). Social support and resources such as SHG will be crucial for persons with limited health knowledge in order to encourage the establishment of healthy attitudes and behaviors, boost the utilization of frequent visits to health professionals, improve health status, and minimize hospital care costs (Prabsangob, 2018; Prabsangob, Somrongthong, Kumar, & Anwar, 2019). The SHG program was effective in assisting individuals with T2DM to enhance their health literacy and self-care practices in order to control their blood glucose.

There are still barriers to implementing the DM management pillars notwithstanding the complexity of the diabetic issue (Noviyanti, Suryanto, & Rahman, 2021). Therefore, social support from the group is required. It is anticipated that the function of group members as a support system will increase knowledge of self-care actions that will improve the quality of life for those with T2DM. As a self-managed activity, SHG will foster emotional and social bonds among its participants through the exchange of feelings and mutual motivation.

Consequently, the commitment of SHG members to adopting optimal self-care management will increase, and SHG will become an alternative to group therapy for enhancing the quality of life and self-care management of individuals with T2DM in the community. This study aims to determine whether the SHG therapy intervention for one month in the T2DM group results in an improvement in quality of life and self-care management.

## MATERIALS AND METHOD

A quasi-experimental, non-equivalent control group pre-test and post-test design with a self-help group intervention was utilized as the study design. This study intends to determine how type 2 diabetes patients' personal and living standards have altered prior to and during SHG treatments. Comparison of self-care management scores and quality of life based on figure 1’s design.

This study's respondents were T2DM patients that visited the Dau Health Center and are recorded in the ePuskesmas application between January and March 2022 up to 91 individuals. Purposive sampling was employed for the sampling method. To enhance the proportion of sixty individuals with T2DM, the following conditions must be met: (1) T2DM patients must be between the ages of 40 and 65; (2) they must have had the disease for three to five years; (3) they must be able to read, write, and communicate properly; and (4) there should be no complications. SHG intervention has never been utilized before.

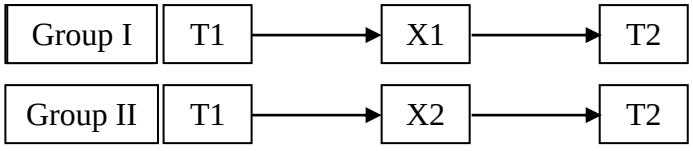


**Figure 1.** Research design

**Note:**
T1: Pre-test
T2: Post-test
X1: SHG group intervention with 4 sessions
X2: Health counseling group intervention

This study method requires a preliminary investigation to determine the homogeneity of the population at every class level. The researcher conducts a pre-test to evaluate the respondent's personal and living standards management. A person who divides a group in half: X1 = 4 session experiment sample: 1 facilitator functioning as the session leader: 3 sessions of supervised private training, X2=group control with 1 session of health education. The participant appraised the management of their personal and life quality using the post-test results.

Each respondent in this study willingly provided written informed consent and consented to publication. The intervention consisted of SHG therapy to enhance self-care management and quality of life, and to maintain stable blood glucose levels. Four 60–90-minute sessions of SHG therapy are administered weekly for one month. Collecting research data through the use of a paper questionnaire. Each questionnaire consists of three sections.

The first section contains a variety of questions regarding the respondents' demographic information. Demographic information includes age, gender, marital status, last education, occupation, monthly income, duration of T2DM, and kind of treatment administered. The second section was adapted from the Diabetes Self-Management Questionnaire (DSMQ) (Schmitt et al., 2013). This section comprises 16 items, with each responder requested to evaluate each topic using a 4-point Likert scale: 1 (never), 2 (occasionally), 3 (often), and 4 (very often). The overall score ranges between 16 and 64.

The third section is adopted from The World Health Organization Quality of Life (WHOQOL)-BREF (World Health Organization (WHO), 2012) Indonesian language version. This section consists of 26 items, and each respondent was asked to rate each item based on a 5-point Likert scale, namely point 1 (very bad/not at all/very unsatisfactory/never/, 2 (poor/a little/unsatisfactory/rarely), 3 (mediocre/moderately/quite often), 4 (good/satisfactory/often/very often), to 5 points (very good/very satisfactory/excessively/fully experienced/always), after being transformed between 0-100. The validity and reliability tests yielded no values less than 0.254 for any question item, thus declaring this questionnaire valid. Reliability statistical analysis was performed and showed that cronbach's alpha was 0.928 for DSMQ and 0.905 for WHOQOL-BREF, indicating that the study instrument had good internal consistency.

Researchers followed World Health Organization criteria after receiving permission from the original authors to use, modify, and translate the DSMQ research instrument (World Health Organization, 2022) to comprehend and apply research instrumentation. First, the instrument was translated from the original language into Indonesian. Then, expert judgment is carried out by a bilingual academic with experience in doing in-depth research to identify the appropriateness of the instruments that are being used, conceptual correspondence, and faltering premises. After that, the instrument DSMQ version in Indonesian was translated into English-by-English

speakers, and there was no significant difference between the two versions of the language.

The suitability and psychometric properties of the Indonesian language version of the DSMQ research instrument were checked by the researchers by conducting a pilot study of 58 respondents who met the inclusion criteria. Therefore, participants in the pilot study revealed that the questionnaire was easy to understand, easy to read, and the average time needed to answer the questionnaire was 6 minutes. After obtaining approval from the targeted public health, the researcher, assisted by public health officers and health cadres, approached the prospective respondents and explained the nature, purpose, and benefits of the research. Then, each respondent was checked for blood glucose levels, given a copy of the questionnaire, and asked to fill in all the items and return them to the researcher after completing the questionnaire.

Descriptive statistics were used to assess demographic characteristics and calculate their self-care management and quality of life scores. Researchers use SPSS 24.0 (IBM Corp., Armonk, N.Y., USA) to analyze data. As a result, the standard deviation (SD), frequency, and percentage are used to display statistics related to the population demographics, management of self-defense, and living standards. The Shapiro-Wilk test for data normality for each variable was used, yielding a normally distributed data with a *p*-value >0.05. The purpose of the paired sample t-test is to determine whether there are differences in the management of self-care or the quality of life for people with T2DM before and after SHG intervention.

The research protocol was approved by the Health Research Ethics Committee Faculty of Health Sciences Brawijaya University, Malang (Number: 4042/UN10.F17.10/TU/2022). Furthermore, the researcher informed the eligible respondents about their rights to participate voluntarily, withdraw at any time, confidentiality, and privacy. Respondents who agreed to participate were asked to sign a consent form. To maintain anonymity, all study respondents were asked not to write their names and addresses or other identifying information on the questionnaire. In addition, respondents were informed that all complete questionnaires would be placed in a special researcher's cabinet during the study period, to maintain confidentiality.

## RESULTS

The majority of participants were women (86.7% in the intervention group and 83.3% in the control group), aged 40–65 years (56.7% aged 56–65 years in the intervention group and 50.0% aged 46–55 years in the control group). Most of them had elementary school education (53.3% in the intervention group and 40.0% in the control group). Participants were diagnosed with T2DM for more than one year, with a duration ranging from 3 to 5 years (43.3% in the intervention group and 46.7% in the control group for 3 years).

All participants were unable to control their blood glucose levels (glucose level >200 mg/dl). There were no significant differences between the socio-demographic characteristics regarding gender, age, and duration of DM in the intervention and control groups, only at the level of education, which was slightly different between the groups, but not too significant as shown in Table 1.

**Table 1.** Characteristics of Respondents (n = 60)

| Variable | Intervention (n=30) | | Control (n=30) | |
|---|---|---|---|---|
| | n | % | n | % |
| **Gender** | | | | |
| Male | 4 | 13.3 | 5 | 16.7 |
| Female | 26 | 86.7 | 25 | 83.3 |
| **Total** | **30** | **100** | **30** | **100** |
| **Age** | | | | |
| 40-45 years | 3 | 10.0 | 3 | 10.0 |
| 46-55 years | 10 | 33.3 | 15 | 50.0 |
| 56-65 years | 17 | 56.7 | 12 | 40.0 |
| **Total** | **30** | **100** | **30** | **100** |
| **Level of Education** | | | | |
| Low | 16 | 53.3 | 12 | 40 |
| Medium | 14 | 46.7 | 12 | 40 |
| High | 0 | 0 | 6 | 20 |
| **Total** | **30** | **100** | **30** | **100** |
| **Duration of diabetes** | | | | |
| 3 years | 13 | 43.3 | 14 | 46.7 |
| 4 years | 4 | 13.4 | 7 | 23.3 |
| 5 years | 13 | 43.3 | 9 | 30.0 |
| **Total** | **30** | **100** | **30** | **100** |

Note: n = number of observations; % = percentage of observations

Table 2 indicate an improvement in self-care management scores and a higher quality of life in the intervention group compared to the control group. In the intervention group, self-care management increased from 38.77±7.74 to 49.53±5.94, and quality of life improved from 64.17±10.19 to 79.40±10.23, with consistent improvements across all domains (physical, psychological, social, and environmental). In contrast, the control group showed only minimal changes. Furthermore, the blood glucose levels in the intervention group decreased from 272.53±112.41 to 217.07±81.99, whereas the reduction in the control group was smaller (from 255.80±75.38 to 241.33±86.09).

**Table 2.** Comparison of Self-Care Management, Quality of Life, and Glucose Levels Between Intervention and Control Groups Before and After Intervention (n = 60)

| Variable | Intervention (n=30) | | Control (n=30) | |
|---|---|---|---|---|
| | Pre- (Mean±SD) | Post- (Mean±SD) | Pre- (Mean±SD) | Post- (Mean±SD) |
| **Self-care Management** | 38.77±7.74 | 49.53±5.94 | 41.83±7.302 | 42.17±7.41 |
| **Quality of Life** | 64.17±10.19 | 79.40±10.23 | 65.97±11.46 | 67.70±11.77 |
| Physical | 55.03±10.62 | 74.27±13.48 | 59.80±15.53 | 62.93±15.05 |
| Phsychologis | 53.83±14.85 | 78.63±13.59 | 59.00±18.31 | 60.90±16.61 |
| Social | 57.53±19.09 | 72.50±18.23 | 54.37±16.98 | 55.60±17.46 |
| Environment | 59.47±17.38 | 74.47±15.59 | 57.83±16.29 | 59.90±17.78 |
| **Glucose Level** | 272.53±112.41 | 217.07±81.99 | 255.80±75.38 | 241.33±86.09 |

Note: SD = Standard Deviation

The results of the dependent t test (Table 3) showed that in the intervention group there was a significant increase in self-care management (MD = -10.77; $p < 0.001$) and overall quality of life (MD = -15.24; $p < 0.001$), including in all domains, namely physical, psychological, social, and environmental ($p < 0.001$). Additionally, blood glucose levels decreased significantly (MD = 50.47; $p = 0.009$). In contrast, the control group showed only a small increase in self-care management, quality of life, physical, and psychological domains ($p < 0.05$), while the social, environmental, and blood glucose levels did not show significant changes ($p > 0.05$).

**Table 3.** Self-Help Groups Effect on Self-Care Management, Quality of Life and Glucose Levels (n = 60)

| Variable | MD (Pre-Post) | SD | 95%CI | | *p-Value** |
|---|---|---|---|---|---|
| | | | Lower | *Upper* | |
| **Intervention Group (n=30)** | | | | | |
| Self-care Management | -10.77 | 6.39 | -13.15 | -8.381 | **<0.001** |
| Quality of life | -15.24 | 8.37 | -18.36 | -12.11 | **<0.001** |
| Physical | -19.23 | 11.10 | -23.38 | -15.09 | **<0.001** |
| Phsychologis | -24.80 | 12.62 | -29.51 | -20.09 | **<0.001** |
| Social | -14.97 | 14.86 | -20.52 | -9.42 | **<0.001** |
| Environment | -15.00 | 14.32 | -20.35 | -9.65 | **<0.001** |
| Glucose level | 50.47 | 98.36 | 13.74 | 87.19 | **0.009** |
| **Control Group (n=30)** | | | | | |
| Self-care Management | -0.33 | 0.80 | -0.63 | -0.03 | **0.030** |
| Quality of life | -1.73 | 4.02 | -3.23 | -0.23 | **0.025** |
| Physical | -3.13 | 7.02 | -5.75 | -0.51 | **0.021** |
| Phsychologis | -1.90 | 4.13 | -3.44 | -0.36 | **0.018** |
| Social | -1.23 | 3.42 | -2.51 | 0.04 | 0.058 |
| Environment | -2.07 | 9.83 | -5.74 | 1.60 | 0.259 |
| Glucose level | 14.47 | 57.95 | -7.17 | 36.11 | 0.182 |

Note: MD = Mean Difference; SD = Standard Deviation; * Dependent T-test

## DISCUSSION

SHG intervention in this study is successful and beneficial to T2DM patients. SHG activities improve self-care management of people with T2DM in the intervention group. SHG consistently follows the letter of the law in its research since its participants collaborated to share information about their own health.

SHG could also increase access to, knowledge of, and use of health information and self-defense capabilities, as demonstrated by our team's improvement in managing self-defense, as well as the quality of life for patients with T2DM following intervention. Although we also highlight the improvement in group control after health counseling, the improvement in scores management for the intervention group is more than that of the control group. This is supported by study results show that people who participate in self-help groups are socio-psychologically in terms of increasing self-confidence, decision-making, health awareness, and active participation (Srivastava & Singh, 2020).

The intervention group's blood glucose levels were not significantly different from those of the control group after one month. However, the average value suggested that the intervention group's reduction in blood glucose levels was more pronounced and consistent than that of the control group. This is supported by reseach, the self-help

group programs were effective and could help people with T2DM improve self-care behaviors to control their blood glucose levels (Suksatan et al., 2021).

According to the study, SHG has a considerable influence on people with T2DM, making SHG treatments the only community-level activities that can improve the management of T2DM risk factors effectively and efficiently. This is supported by research result Singh et al., (2022) demonstrated that in people with T2DM in their early years, group-based self-management support led to positive short-term changes in behavior and a sense of empowerment. In a study conducted by Kulsum et al., (2021) it explained that the SHG could increase knowledge and attitudes by providing information from each other SHG member.

In addition to improving self-care management, the results of the study also showed a significant increase in the quality of life for people with T2DM after the SHG intervention, both in terms of physical health, psychological health, social relations and environmental health. Than et al., (2021) explained SHG plays a crucial role in enhancing its members' level of living. (Kusumastiwi et al., 2019) found that the SHG program apart from helping people with T2DM solve T2DM problems, can also strengthen each other and give a sense of togetherness among people with T2DM.

This is also supported by research which shows that SGH affects the quality of life of the elderly. In the control group that received health education, the quality of life improved significantly in terms of physical and psychological health, but not in terms of social interactions and environmental health. Thus, SHG, as a better group therapy, has a high level of psychological and social support for enhancing self-care behavior and quality of life in T2DM patients (Anggarawati & Sari, 2021).

During the implementation of the SHG program, it was challenging to plan meetings between members due to their diverse activities. Explained that there was a barrier in SHG namely the lack of culturally appropriate T2DM education/awareness programs in the community seemed to be the main obstacle for the majority of the older and illiterate participants, while the younger participants reported time constraints. In addition, it is hoped that it can maintain the level of participation of group members to continue to be present in SHG activities, because it is based on research in the United States stated that respondents had been SHG members for an average of one to two years, and there was a statistically significant decline in attendance between the two waves, from slightly more than 50%to less than 50% of scheduled meetings. The frequency of group meetings or conversations fell from once or twice a month to once or twice a year (Pardhan et al., 2020).

However, this study demonstrates that the treatment of diabetes could be improved with educational support programs. This type of educational and supporting approach should be enhanced and assessed periodically in order to gain a better understanding of the major changes that could improve the attitudes and behaviors of individuals with T2DM. This is where nurses play a crucial role in continuously educating people with T2DM, ensuring they maintain attitudes and behaviors that support their health and quality of life.

We recommend SHG as a peer-reviewed journal to improve the general population's condition management. In addition to that, multicenter studies are required for the results of the study to be generalized. Measurement HbA1c was not conducted in this study to determine the effectiveness of the therapeutic intervention because the SHG intervention was only conducted for a period of 4 weeks, whereas the HbA1c

study was conducted for a period of 8 to 12 weeks previously and there was a high cost to the study's respondents.

The primary flaw with this study's methodology is the use of the purposive sampling technique. Nonprobability sampling does not guarantee that all respondents characteristcs are equally distributed throughout the two groups, but there are significant practical considerations for employing the random sampling technique in sample-based research.

## CONCLUSION

The implementation of the SHG program is beneficial for treating T2DM since it can improve self-care management and quality of life of T2DM patients' health as well as make interventional procedures safer and more effective. SHG is able to improve the self-care management skills and all domains of quality of life, including physical, psychological, social and environmental abilities of people with T2DM. Furthermore, SHG will help respondents better understand how to develop a T2DM management program based on communities. This study has proven that SHG effectively improves self-care management and quality of life in chronic diseases. Nevertheless, further large-scale investigations are needed, and it is necessary to add psychoeducational topics that researchers have not included in this study.

## ACKNOWLEDGEMENT

The author would like to thank all the respondents involved in this research, the Master of Nursing, Department of Nursing, Faculty of Health Sciences, Brawijaya University, and the Ministry of Health of the Republic of Indonesia who have supported this research.

## REFERENCES

AbuAlhommos, A. K., Alturaifi, A. H., Al-Bin Hamdhah, A. M., Al-Ramadhan, H. H., Al Ali, Z. A., & Al Nasser, H. J. (2022a). The health-related quality of life of patients with type 2 diabetes in Saudi Arabia. *Patient Preference and Adherence*, *Volume 16*(May), 1233–1245. https://doi.org/10.2147/ppa.s353525

Anggarawati, T., & Sari, N. W. (2021). Peningkatan kualitas hidup lansia melalui self help group di rumah pelayanan sosial lanjut usia. *Indonesia Jurnal Perawat*, *6*(1), 33–41.

Belsti, Y., Akalu, Y., & Animut, Y. (2020). Attitude, practice and its associated factors towards Diabetes complications among type 2 diabetic patients at Addis Zemen District hospital, Northwest Ethiopia. *BMC Public Health*, *20*(1), 1–12. https://doi.org/10.1186/s12889-020-08953-6

Ben-Ari, A. T. (2002). Dimensions and predictions of professional involvement in self-help groups: A view from within. *National Association of Social Workers*, *27*(2), 95–103. https://doi.org/10.1093/hsw/27.2.95

Borkman, T., & Munn-giddings, C. (2020). Self-Help Groups. *Springer Nature Switzerland AG*, 1–7. https://doi.org/https://doi.org/10.1007/978-3-319-99675-2_84-1

Cosentino, F., Grant, P., & Aboyans, V. (2019). ESC guidelines on diabetes, pre-diabetes, and cardiovascular diseases developed in collaboration with the EASD. *Eur Heart J 2019*, 1–69.

Dinyati, A. I., Wilandika, A., & Supriyatna, I. D. (2019). Pengaruh self help group terhadap self care pada pasien diabetes melitus di Persadia cabang Rumah Sakit Muhammadiyah Bandung. *Jurnal Keperawatan 'Aisyiyah*, *6*(1), 37–45.

Embuai, S., Siauta, M., & Tuasikal, H. (2019). Efektitifitas diabetes sef care activity status vaskuler pasien diabetes melitus. *Moluccas Health Journal*, *1*(April), 1–9.

Esmaeilpour-BandBoni, M., Gholami-Shilsar, F., & Khanaki, K. (2021). The Effects of telephone-based telenursing on glycated hemoglobin among older adults with type 2 diabetes mellitus: A randomized controlled trial. *Journal for Nurse Practitioners*, *17*(3), 305–309. https://doi.org/10.1016/j.nurpra.2020.09.015

Fadli. (2022). *The impact of self-management-based care interventions on quality of life in type 2 diabetes mellitus patients: A philosophical perspective*. Retrieved June 19, 2023, from https://www.medrxiv.org/content/10.1101/2022.06.27.22276988v1.full.pdf

Glasgow, R., & Eakin, E. (1998). *Issues in diabetes self-management. in the handbook of behaviour change* (S. Shumaker, E. Schron, J. Ockene, & W. McBee, Eds.). New York: Springer Publishing Company.

Halder, S., Samajdar, S., & Mahato, A. K. (2020). An exploratory study of cognitive functioning and psychological well-being in middle-aged adults with diabetes mellitus. *Journal of Social Health and Diabetes*, *8*(01), 008–012. https://doi.org/10.1055/s-0040-1719223

International Diabetes Federation. (2021). IDF diabetes atlas 10th edition. In *Diabetes Research and Clinical Practice*, 102. https://doi.org/10.1016/j.diabres.2013.10.013

Ishwari Adhikari, B., & Santosh, B. (2021). Self-care Management among Patients with Type 2 Diabetes Mellitus in Tanahun, Nepal. *Archives of Community Medicine and Public Health*, *7*, 037–042. https://doi.org/10.17352/2455-5479.000131

Kulsum, U., Ulfa, M., & Wicaksono, K. E. (2021). Pengaruh self help group terhadap pengetahuan pasien dengan penyakit kronis. *Media Husada Journal of Nursing Science*, *2*(1), 64–69. https://doi.org/10.33475/mhjns.v1i2.15

Kusumastiwi, T., Suryani, L., & P, D. A. (2019). Meningkatkan kesehatan mental penderita diabetes melitus di komunitas dengan kegiatan kelompok Swabantu (Self Help Group). *Jurnal Surya Masyarakat*, *1*(2), 92. https://doi.org/10.26714/jsm.1.2.2019.92-98

Ministry of Health Republic of Indonesia. (2023). *Indonesian health survey*. Jakarta. Retrieved June 19, 2024 from https://www.badankebijakan.kemkes.go.id/en/hasil-ski-2023/

Mulya, A. P., & Kosassy, S. M. (2020). Pola aktivitas self care pada pasien diabetes mellitus tipe II. *Fundamental and Management Nursing Journal*, *3*(2), 59. https://doi.org/10.20473/fmnj.v3i2.21194

Noviyanti, L. W., Suryanto, & Rahman, R. T. (2021). Peningkatan Perilaku Perawatan Diri Pasien Melalui Diabetes Self Management Education And Support. *Media Karya Kesehatan*, *4*(1), 67–77.

Pardhan, S., Nakafero, G., Raman, R., & Sapkota, R. (2020). Barriers to diabetes awareness and self-help are influenced by people's demographics: perspectives of South Asians with type 2 diabetes. *Ethnicity and Health*, *25*(6), 843–861. https://doi.org/10.1080/13557858.2018.1455809

Pienaar, M., & Reid, M. (2020). Self-management in face-to-face peer support for adults with type 2 diabetes living in low- or middle-income countries: A systematic review. *BMC Public Health*, *20*(1), 1–11. https://doi.org/10.1186/s12889-020-09954-1

Prabsangob, K. (2018). Effectiveness of self-help group program for improving self-care behavior among type 2 diabetic patients receiving services at Sub-Disdrict Health Promotion Hospitals in Bangkonthee District, Samut Songkram Province, Thailand. *International Academic Research Conference in Vienna*, 39–45.

Prabsangob, K., Somrongthong, R., Kumar, R., & Anwar, F. (2019). Effectivenes of self-help group program for the management of type-2 diabetes patients in rural Thailand. *Pakistan Journal of Nutrition*, *18*(2), 141–145.

Saputri, R. D. (2020). Komplikasi sistemik pada pasien diabetes melitus tipe 2. *Jurnal Ilmiah Kesehatan Sandi Husada*, *11*(1), 230–236. https://doi.org/10.35816/jiskh.v11i1.254

Schmitt, A., Gahr, A., Hermanns, N., Kulzer, B., Huber, J., & Hakk, T. (2013). The Diabetes Self-Management Questionnaire (DSMQ): Development and evaluation of an instrument to assess diabetes self-care activities associated with glycaemic control. *Journal Health and Quality of Life Outcomes*, *11*(1), 1. https://doi.org/10.1186/1477-7525-11-138

Singh, D. K., Mondol, S., Satpathy, I., & Chandra Mohan Patnaik, B. (2022). Self-Care Practices (SCPs) among the type II diabetics affiliating to the Self-Help Groups (SHGs) in Bangladesh. *Journal of Medicinal and Chemical Sciences*, *5*(6), 1075–1084. https://doi.org/10.26655/JMCHEMSCI.2022.6.20

Singh, M., Pal, R., Ranjan, R., Sarker, G., DR, B., & Pal, S. (2017). Diabetes and dementia: Myth and reality. *Journal of Krishna Institute of Medical Sciences University*, *6*, 7–12.

Srivastava, N., & Singh, R. (2020). Role of self-help group in women empowerment. *SSRN Electronic Journal*, *8*(7), 91–105. https://doi.org/10.2139/ssrn.3623759

Suksatan, W., Prabsangob, K., & Choompunuch, B. (2021). Association between health literacy, self-care behavior, and blood sugar level among older patients with type 2 diabetes in rural Thai communities. *Annals of Geriatric Medicine and Research*, *25*(4), 318–323. https://doi.org/10.4235/agmr.21.0117

Suyanto, S., & Astuti, S. L. D. (2022). Differences in level of spiritual well-being of patients with type 2 diabetes mellitus in urban and rural areas. *JKG (Jurnal Keperawatan Global)*, *7*(1), 10–18. https://doi.org/10.37341/jkg.v0i0.404

Than, M. W., Zaw, N. T., Minn, K., Saw, Y. M., Kiriya, J., Jimba, M., … Shibanuma, A. (2021). Assessing depressive symptoms among people living with HIV in Yangon city, Myanmar: Does being a member of self-help group matter? *PLoS ONE*, *16*(3 March), 1–15. https://doi.org/10.1371/journal.pone.0248807

Van Puffelen, A. L., Rijken, M., Heijmans, M. J., Nijpels, G., Rutten, G. E., & Schellevis, F. G. (2014). Living with diabetes: A group-based self-management support programme for T2DM patients in the early phases of illness and their partners, study protocol of a randomized controlled trial. *BMC Health Services Research*, *14*, 1–8. https://doi.org/10.1186/1472-6963-14-144

World Health Organization. (2022). Process of translation and adaptation of instruments. WHO guidelines on translation and adaptation of instruments. Retrieved 9 June, 2024 from Manual for WHO Disability Assessment Schedule WHODAS 2.0 website: https://terrance.who.int/mediacentre/data/WHODAS/Guidelines/WHODAS 2.0 Translation guidelines.pdf

World Health Organization (WHO). (2012). *WHOQOL: Measuring Quality of Life* (Program on Mental Health, Ed.). Division of Mental Helath and Prevention of Substance Abuse WHO. Retrieved 9 June, 2024 from https://www.who.int/tools/whoqol