

IMPROVING ELDERLY HEALTH STATUS THROUGH HEALTH EDUCATION WITH RANDOM BLOOD GLUCOSE SCREENING AMONG ELDERLY MEMBERS OF GKJW SEMAMPIR CONGREGATION

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Article info	ABSTRACT
Corresponding Author: Akde Triyoga akdetriyoga021273@gmail.com STIKES RS Baptis Kediri, Indonesia	Implementation of improving elderly health status through health education using the random blood glucose screening at GKJW Semampir Congregation, Kediri showed that 20% of the elderly had started to suffer from Elderly Diabetes, and 60% of the elderly were healthy. The elderly need to maintain their health by regulating a healthy diet, physical activity that is appropriate for the elderly and maintaining stress and elderly life. In the elderly group, education and training need to be provided in compiling a food menu that can prevent Diabetes Mellitus and physical activities that are safe and appropriate for the elderly. Keywords: <i>elderly health status, random blood glucose screening, health education</i>
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INTRODUCTION

Indonesia is currently facing major challenges in the health sector, one of which is the increasing prevalence of non-communicable diseases (NCDs), especially diabetes mellitus (DM). According to data from the International Diabetes Federation (IDF) in 2021, Indonesia ranks fifth with the largest number of diabetes sufferers in the world, reaching around 19.5 million adults. This figure is expected to continue to increase if massive preventive and promotive efforts are not carried out in the community (IDF, 2021).

Diabetes mellitus is a chronic disease that occurs due to metabolic disorders, especially in the use of insulin which causes increased blood glucose levels. If not treated properly, DM can cause various serious complications such as heart disease, stroke, kidney failure, visual impairment, and even amputation (Ministry of Health of the Republic of Indonesia, 2018). One group that is very vulnerable to this disease is the elderly. The aging process causes physiological and metabolic changes that have an impact on increased insulin resistance, decreased muscle mass, and decreased physical activity, all of which can increase the risk of developing diabetes (Setiati & Alwi, 2014).

Based on the results of the 2018 Basic Health Research (Riskesdas), the prevalence of diabetes mellitus in Indonesia in the age group ≥ 55 years has increased significantly compared to younger age groups. This shows the importance of early detection and routine

monitoring of blood sugar levels in the elderly as a form of promotive and preventive efforts. Instant blood sugar screening is a simple and fast method to detect glucose metabolism disorders. Although not a final diagnosis, this examination is able to provide a fairly accurate initial picture of the condition of glucose levels in the individual's blood, so that further follow-up can be carried out (Widjaja & Supartondo, 2017).

In the context of the church community, especially in the members of the East Java Christian Church (GKJW) Semampir Congregation, the elderly group has an important role in church and community life. However, attention to the health of the elderly, especially regarding the risk of degenerative diseases such as diabetes, is still limited. Most of the elderly in this church environment do not have routine access to health services or are not aware of the importance of regular blood sugar checks. Some of them have never had a blood sugar check at all.

Seeing this situation, this community service activity was carried out with the aim of conducting a short blood sugar screening on elderly members of the GKJW Semampir Congregation as an effort to detect the risk of diabetes mellitus early. This activity is also expected to provide health education related to the importance of maintaining a diet, physical activity, and routine monitoring of blood sugar levels for the elderly, so that they can improve their quality of life holistically. This service not only functions as a health service activity, but also as a form of church concern for its elderly members.

The implementation of this health screening is relevant to the community-based health care (CBHC) approach, where the community is actively involved in efforts to improve their own health (Notoatmodjo, 2014). Empowering the church community to detect and manage non-communicable diseases is one innovative form of promotive strategy in community-based health services. The church as a social and spiritual institution has the power to mobilize community participation, including in terms of increasing awareness of the importance of elderly health.

Furthermore, this activity is in line with the Healthy Living Community Movement (GERMAS) program initiated by the Indonesian Ministry of Health, which encourages the community to carry out early detection of diseases through routine health checks. GERMAS emphasizes the importance of behavioral changes towards a healthy lifestyle, including regular health checks that include measuring blood pressure, blood sugar levels, and cholesterol (Indonesian Ministry of Health, 2016).

Therefore, the implementation of momentary blood sugar screening at the GKJW Semampir Congregation is expected to be able to encourage collective awareness of church members in maintaining the health of the elderly, as well as becoming a model of church service that not only pays attention to spiritual needs, but also the physical and social aspects of its members. The hope for the future is that this activity can become a sustainable program integrated into church health services, both through collaboration with health workers and through training church health cadres. Thus, this community service activity is not only technical medical in nature, but is also part of a comprehensive pastoral service, which reaches all aspects of the lives of the congregation, including the health of the elderly. A healthy church is a church whose members are spiritually, physically, and socially prosperous.

METHOD

Implementation in community service of improving elderly health status through health education with a random blood glucose screening method aimed at the elderly. This community service activity was carried out at the GKJW Semampir Congregation in Kediri City. The method used in this activity was carried out through intervention in the form of direct examination of the target, namely the elderly. Detection of Diabetes Mellitus was carried out using a glucometer.

RESULT AND DISCUSSION

Implementation

The planned work procedures to support the work method implemented through community activities include:

1. Random Blood Glucose Examination Procedure for the Elderly.

A random blood glucose examination (GDS) is a fast and easy screening method to determine a person's blood glucose levels at a certain time, regardless of the last mealtime. GDS is often used in public health services for early detection of diabetes mellitus, especially in high-risk groups such as the elderly. According to the Indonesian Endocrinology Association (PERKENI, 2021), GDS examination has an important value as an early indicator in determining the presence of glucose metabolism disorders, especially when combined with clinical symptoms or relevant medical history.

Preparation Before Examination

1) Preparation of tools and materials:

- a. Glucometer (digital blood sugar measuring device)
- b. Test strips according to the type of glucometer
- c. Lancet (small needle for drawing blood)
- d. Alcohol swab
- e. Disposable gloves
- f. Dry tissue or cotton

2) Preparation of participants:

- a. The elderly are informed in advance about the purpose and process of the examination.
- b. Make sure the elderly person is resting for at least 10 minutes beforehand.
- c. Record the last mealtime for more accurate interpretation

Examination Steps

- a. Wash the officer's hands with soap or use hand sanitizer, then wear clean gloves.
- b. Turn on the glucometer, make sure the device is ready to use.
- c. Insert the test strip into the device according to the manufacturer's instructions.
- d. Select the finger to be drawn from, usually the ring finger or middle finger of the non-dominant hand.
- e. Clean the tip of the finger with an alcohol swab, let it dry.
- f. Use a lancet to prick the tip of the finger until a drop of blood comes out.
- g. Place the blood on the test strip according to the device's instructions.
- h. Wait for the results to appear on the glucometer screen, usually within 5–10 seconds.
- i. Record the blood sugar level results.
- j. Stop the bleeding with dry cotton or tissue and press lightly.

- k. Dispose of the disposable device in a medical waste bin.
- l. Clean the officer's hands again, remove gloves, and wash hands

Table 1. Interpretation of Results (based on PERKENI and WHO)

Category	Random Blood Glucose (mg/dL)
Normal	< 140 mg/dL
Impaired Glucose Tolerance	140 – 199 mg/dL
Diabetes Melitus	≥ 200 mg/dL

Note: If the result is ≥ 200 mg/dL accompanied by classic symptoms (frequent thirst, frequent urination, drastic weight loss), then it is sufficient to establish a diagnosis of DM. However, if there are no symptoms, re-examination is needed such as Fasting Blood Sugar (FBS) or Oral Glucose Tolerance Test (OGTT) (PERKENI, 2021; WHO, 2006).

2. Health Education to Prevent Diabetes Mellitus in the Elderly

1) Healthy Diet for Prevention of Diabetes Mellitus

a. Principles of Balanced Diet

- a) Consume food according to daily calories needs.
- b) Fulfill macronutrient (carbohydrate, protein, fat) and micronutrient (vitamin, mineral) needs.
- c) Implement “Isi Piringku” from the Ministry of Health: $\frac{1}{2}$ plate of vegetables and fruit, $\frac{1}{4}$ plate of carbohydrates, $\frac{1}{4}$ plate of protein (animal/vegetable).
- d) Avoid foods high in sugar, salt, and saturated fat

b. Recommended Food Types

- a) Complex carbohydrates: brown rice, sweet potatoes, corn, oats.
- b) High fiber: green vegetables (spinach, broccoli), fruit (apples, pears, papaya).
- c) Lean protein: fish, tempeh, tofu, skinless chicken breast.
- d) Healthy fats: olive oil, avocado, nuts

c. Foods to Limit

- a) Simple sugars: candy, sweet drinks, sweet cakes.
- b) Fried foods, fast food, excessive coconut milk.
- c) High calorie packaged drinks

d. Eating Habits

- a) Eat regularly 3 times a day with 2 snacks of fruit or healthy food.
- b) Do not overeat at one time.
- c) Avoid snacking on high-calorie foods at night

2) Physical Activity as Diabetes Prevention.

Physical activity plays a major role in regulating blood glucose levels by increasing insulin sensitivity and helping with weight control. WHO (2020) recommends that seniors remain physically active for at least 150 minutes per week with moderate intensity

a. Types of Physical Activity Recommended for the Elderly

- a) Elderly gymnastics: a combination of light movements for flexibility and strength.
- b) Walking: at least 30 minutes per day, 5 days a week.
- c) Stationary cycling or swimming for those who are able.
- d) Light household activities: gardening, sweeping, etc.

- b. Safe Activity Guide for the Elderly
 - a) Warm up before activity and cool down afterwards.
 - b) Wear comfortable footwear.
 - c) Avoid heavy activities that can trigger falls.
 - d) Drink enough water before and after activities.
- 3) Other Lifestyle Management:
 - a. Stress Management
 - a) Prolonged stress can increase cortisol levels which trigger increased blood glucose.
 - b) Relaxation techniques such as deep breathing, prayer, meditation, or fun hobbies are very helpful
 - b. Adequate Sleep
 - a) Adequate sleep (7-8 hours) has been shown to maintain the balance of insulin and blood sugar hormones.
 - b) Lack of sleep increases the risk of insulin resistance (Widjaja, 2017)

Discussion

The problem that was a priority for the elderly at GKJW Semampir Congregation, Kediri, was that there had never been any counseling for the elderly regarding good food diets to consume and food that should be avoided. Therefore, through this community service activity, the proposed solution is to conduct a momentary blood sugar check on the elderly using a glucometer method so that diabetes mellitus can be detected early and its treatment can be carried out quickly and accurately.



Figure 1. Random Blood Glucose Screening Activity

Table 2. Results of Random Blood Glucose Screening in the Elderly at the GKJW Semampir Congregation Kediri on June 22, 2025

Elderly	Results of Random Blood Glucose Screening	Percentage
4 elderly	Diabetes Melitus	20 %
16 elderly	Normal	80 %
20 elderly		100 %

The table above showed that the results of random blood glucose screening on 20 elderly showed 20% results of Diabetes Mellitus and 60% results of Normal, meaning that elderly who had suffered from Diabetes Mellitus were found at the GKJW Semampir Congregation Kediri.



Figure 2. Health Education About Diabetes Mellitus

Health education for the elderly is carried out using leaflets about Diabetes Mellitus, as well as signs, symptoms and its impacts. The elderly need to maintain their health with a healthy lifestyle to prevent spikes in blood sugar levels by regulating a healthy diet, physical activity that is appropriate for the elderly and maintaining stress and elderly life. In the elderly group, education and training need to be provided in compiling a food menu that can prevent Diabetes Mellitus as well as safe and appropriate physical activities for the elderly.

CONCLUSION

Implementation of improving the health of the elderly through health education using the random blood glucose screening method at GKJW Semampir Congregation, Kediri showed that 20% of the elderly had started to suffer from Elderly Diabetes, and 60% of the elderly were healthy. The elderly need to maintain their health by regulating a healthy diet, physical activity that is appropriate for the elderly and maintaining stress-free and elderly life. The elderly group needs to be given education and training in compiling a food menu that can prevent Diabetes Mellitus and physical activities that are safe and appropriate for the elderly.

BIBLIOGRAPHY

- Departemen Kesehatan RI. (2018). *Situasi dan Analisis Diabetes*. Jakarta: Pusat Data dan Informasi Kemenkes RI.
- International Diabetes Federation. (2021). *IDF Diabetes Atlas 10th Edition*. Brussels: IDF.
- Kementerian Kesehatan RI. (2016). *Gerakan Masyarakat Hidup Sehat (GERMAS)*. Jakarta: Kemenkes RI.
- Notoatmodjo, S. (2014). *Promosi Kesehatan dan Perilaku Kesehatan*. Jakarta: Rineka Cipta.
- Setiati, S., & Alwi, I. (2014). *Buku Ajar Ilmu Penyakit Dalam Volume II*. Jakarta: Interna Publishing.
- Widjaja, A., & Supartondo, A. (2017). Pemeriksaan glukosa darah: metode dan interpretasi. *Majalah Kedokteran Indonesia*, 67(2), 89–94
- PERKENI**. (2021). *Pedoman Pengelolaan dan Pencegahan Diabetes Melitus Tipe 2 di Indonesia*. Jakarta: Perkumpulan Endokrinologi Indonesia.
- Kementerian Kesehatan RI**. (2018). *Pedoman Gizi Seimbang & Isi Piringku*. Jakarta: Direktorat Gizi Masyarakat.
- WHO**. (2020). *Guidelines on Physical Activity and Sedentary Behaviour*. Geneva: World Health Organization.
- Widjaja, A.** (2017). Peran Pola Tidur dalam Pengendalian Gula Darah. *Jurnal Kedokteran Indonesia*, 67(2), 101–105.
- Zainudin, M.** (2020). Pengaruh Aktivitas Fisik terhadap Kadar Gula Darah pada Lansia. *Jurnal Keperawatan dan Promosi Kesehatan*, 8(1), 45–50.