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Case Report: Type 2 Diabetes Mellitus for The Elderly with Less Family Support

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CASE REPORT

Mrs. R, 65 years old came to Puskesmas B with complaints of fatigue during activities accompanied by weakness since 1 week ago. The patient has been diagnosed with Diabetes Mellitus since 2 years ago, but the patient admitted that she sometimes went to the health center once every 2 or 3 months depending on the patient's complaints. According to the patient's acknowledgment, initially complaints of fatigue were felt rarely but gradually became more frequent and appeared during light activities and felt continuously. Complaints are not accompanied by blurred vision or numbness.

The patient admitted that if the medicine from the puskesmas ran out, complaints in the form of frequent thirst, frequent urination, hunger, and fatigue were felt again which indicated that the patient's blood sugar was rising, the patient admitted that the highest blood sugar reached 600 mg/dL. During Mrs. R's treatment, Mrs. R not only went to the health center for treatment but also frequently went to midwives and paramedics near the house.

Mrs. R took the drugs metformin and glimepiride if she had just gone to a health professional when she had a complaint, Mrs. R admitted that because of the complaint of feeling weak, Mrs. R often consumed date juice 3 times 1 spoon every day. Mrs. R is often given explanations by health workers to maintain her diet, but according to her she still can't regulate her diet properly. Mrs. R still can be active and currently the patient is active as a housewife, every Saturday, Mrs. R follows the program from the village, namely elderly gymnastics, on other days Mrs. R does not do sports, and only does home activities. Mrs. R denied smoking history, denied drinking alcohol, and denied drugs. Mrs. R currently lives with her husband and one grandson.

On physical examination found, general condition: looks moderately ill; consciousness: compos mentis; blood pressure 120/80 mmHg; pulse: 80x/minute; breathing: 20x/minute; body temperature: 36.4 °C; weight: 58kg; height: 155cm; Patient BMI: 24.8 overweight nutritional status. Current blood sugar 300 mg/dl. Mrs. R once checked blood at the biolab partner clinical laboratory on August 25, 2020 with an HbA1c result of 8.7%. Lipid profile Cholesterol 203mg/dL, Triglycerides 137mg/dL, HDL 73mg/dL, LDL 132mg/dL. Kidney function urea 29 mg/dL, Creatinine 0.64 mg/dL.

Biological Diagnosis and Psychosocial Diagnosis

A holistic diagnosis was formulated as the patient having a complaint of fatigue during activities accompanied by weakness since 1 week ago, she is worried that her condition would worsen and wishes that her pain can relieved and her condition controlled in order to carry out her normal daily activities. The patient is considered as an elderly overweight lady, with uncontrolled diet with little physical activity.

Diagnosis was made based on patients' history, physical and lab examination, which was conducted both at the puskesmas and during home visits. Though she denied any classical symptoms of diabetes, a current blood sugar of 300 mg/dl and risk factors of being overweight, with uncontrolled diet and physical activity leads to the diagnosis of diabetes type 2.

On psychosocial diagnosis, the patient is deeply concerned that the disease will get worse. She has no prior awareness or knowledge of diabetes, referring to only her awareness that illnesses will take longer to heal.

The patient assumes this disease is a disease that does not need routine treatment. She lives with her husband and one grandson. Currently the patient has seven children, the first to fifth children are married, the sixth and seventh children are not married but live in different cities with the patient.

Assessment

Table 1. Results of Depression Screening with *Geriatric Depression Scale* (GDS)

1	Apakah anda sebenarnya puas dengan kehidupan anda?	YA	**TIDAK**
2	Apakah anda telah meninggalkan banyak kegiatan dan minat atau kesenangan anda?	**YA**	TIDAK
3	Apakah anda merasa kehidupan anda kosong?	**YA**	TIDAK
4	Apakah anda sering merasa bosan?	**YA**	TIDAK
5	Apakah anad mempunyai semangat yang baik setiap saat?	YA	**TIDAK**
6	Apakah anda takut bahwa sesuatu yang buruk akan terjadi pada anda?	**YA**	TIDAK
7	Apakah anda merasa bahagia untuk sebagian besar hidup anda?	YA	**TIDAK**
8	Apakah anda sering merasa tidak berdaya?	**YA**	TIDAK
9	Apakah anda lebih senang tinggal di rumah daripada pergi ke luar dan mengerjakan sesuatu hal yang baru?	**YA**	TIDAK
10	Apakah anda merasa mempunyai banyak masalah dengan daya ingat anda dibandingkan kebanyakan orang?	**YA**	TIDAK
11	Apakah anda pikir bahwa hidup anak sekarang ini menyenangkan?	YA	**TIDAK**
12	Apakah anda merasa tidak berharga seperti perasaan anda saat ini?	**YA**	TIDAK
13	Apakah anda merasa penuh semangat?	YA	**TIDAK**
14	Apakah anda merasa bahwa keadaan anda tidak ada harapan?	**YA**	TIDAK
15	Apakah anda pikir bahwa orang lain lebih baik keadaannya dari anda?	**YA**	TIDAK
	SKOR :.....		

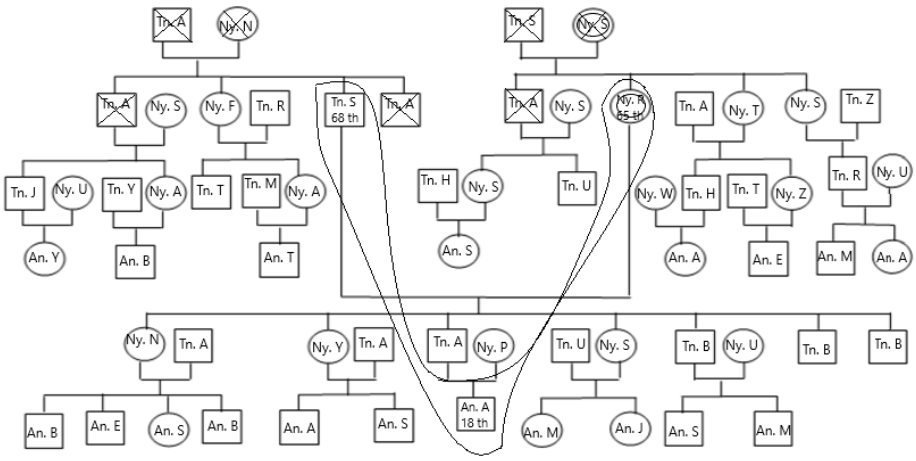
Geriatric Depression Scale score: 3 (point number 2, 4, 9)

Table 2. *Mini Mental State Examination* (MMSE) Instrument Screening Results

Maximum Score	Senior Score	Information
10	10	Orientation
3	3	Registration
5	5	Attention and Calculation
3	3	Remember
9	9	Language
Awareness: compos mentis		
Interview Place: patient's house		

Family Assessment Tools

Figure 1. Genogram



Information:

Figure 2. Family Map

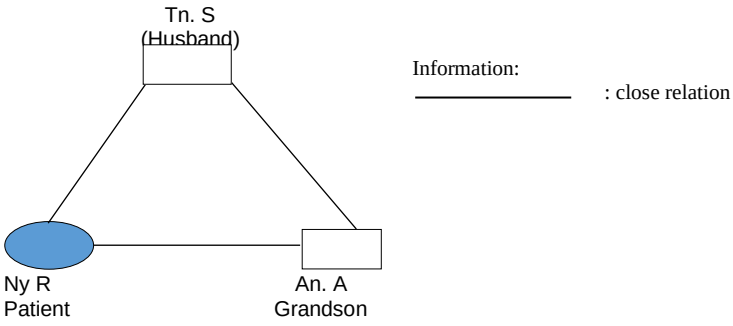


Table 3. Family APGAR Score

Adaptation	*: 2*
Partnership	*: 2*
Growth	*: 2*
Affection	*: 2*
Resolve	*:1*

Total Family APGAR Score: 9 (good family function).

Table 4. *Family SCREEM Analysis*

SOURCE	PATHOLOGY	KET
Social	Good interaction between family members, patient participation in active community activities. Currently the patient spends time at home with family members.	-
Culture	Satisfaction or pride in good culture, this can be seen from daily interactions both in the family and in the environment, many cultural traditions are still followed. Using Javanese language, manners and politeness.	-
Religious	The application of the teachings is also good, this can be seen from the sufferers and their families who routinely pray five times a day, the patients also wear headscarves and the patient's husband often prays to the mosque.	-
Economic	This family is classified as middle class, primary needs can be met, secondary needs and economic plans are adequate, a priority scale is needed to meet the needs of life	+
Educational	Low education of family members, patient and husband are elementary school graduates	+
Medical	In seeking health services, families use puskesmas services and use the Jamkesmas card (BPJS) for treatment. Patients claim that they will only seek treatment if there are complaints, patients rarely do health checks regarding their illness.	+

FORMULATION OF THE PROBLEM

The problem in this case is multidimensional, not only the clinical aspect of the multimorbidity of diabetes type 2 and overweight, but also the psychosocial aspect of the patient which determines her ability to self-manage her disease. Type 2 diabetes is a disabling disease resulting in cognitive and functional disabilities and dependencies, which cause a significant burden on the healthcare and social care resources. Type 2 diabetes demands long-term care, which poses challenges for personal, family and public resources. However, type 2 diabetes is a self manageable disease, in which patients are able to care for 99% of their own needs.

Diabetes management in older adults presents challenges because there is extensive variability within this population in terms of clinical presentation, psychosocial environment, and resource availability. A person's living situation and degree of available social support can affect both glycemic goals and the ways in which diabetes is managed. Diabetes management can differ across the spectrum according to where elderly patients live (i.e., whether they are community welling or live in an assisted-living facility or a nursing home).

The elderly population is biologically heterogeneous, thereby necessitating a comprehensive assessment, one that includes functional aspects in the decision-making process. Among adults of all ages, elderly people have the highest risk of hypoglycaemia as a complication of diabetes treatment. Loss of body mass connected with age and frailty syndrome can result in a relevant decrease in the demand for anti-diabetic medications, both orally dministered and insulin. Similarly, kidney function decreasing with age may cause the situation when the doses of drugs stimulating insulin secretion or insulin doses, which so far have been correctly controlling the course of the disease, become too high.

DISCUSSION

Aging and diabetes increase the risk of certain comorbidities (geriatric syndromes) including cognitive dysfunction, depression, functional disabilities, falls and fractures, polypharmacy, chronic pain, and urinary incontinence. It is important to recognize these conditions because they can interfere with patients' ability to perform diabetes self-care. If clinicians are not aware of these coexisting conditions, they may prescribe treatment that is too complex for a patient with cognitive dysfunction or miss an opportunity to treat depression that can lead to nonadherence to medication and social isolation.

The major causes of diabetes were overweightedness, obesity, heredity, and lifestyle which includes smoking and alcoholism. Personal lifestyle and eating habits which lead to overweightedness and obesity were the primary causes of type 2 diabetes. Type 2 diabetes had a hereditary factor from a close family and was associated with gene mutations that are transferred to the genetic line of the family. In the case of chronic disease such as diabetes, the patient is burdened by a condition that occurs in complex interdependencies that continue across the lifespan. They are highly influenced by non clinical factors such as socioeconomic status, education, employment, and environment. It is then crucial for the primary care physician to manage the care of the patient both clinically and psychosocially, with great consideration towards the patients' social circumstances.

Diabetes Management in Elderly

The early implementation of multimodal and multidisciplinary interventions in elderly patients with type 2 diabetes, based on nutritional education and promoting physical activity, has been shown effective for maintaining functional autonomy. Lifestyle modification is important as the starting point for all patients with diabetes, including older adults. Although very restrictive diets are not recommended for older adults, counseling to avoid large carbohydrate loads at any one meal can reduce glucose excursions without unnecessary dietary restriction. Exercise is also important for all ages. It is important to consider patients' physical abilities when developing an exercise plan.

From the results of nutritional assessment by nutrition officers the following results were obtained: weight: 58 kg; height: 155 cm; BMI: 24.8 kg/m2 (Overweight).

Calculate energy requirements in JMP patients:

Using the Brocca formula can be determined Ideal Weight (BBI) = (Height - 100) x 1 kg = 55 kg.

Basal Energy = BBI x 25 kcal/kg BB = 55 x 25 = 1,375 calories

Correction of 65 years old reduces 10% = -137.5 calories

Correction of mild activity added 20% = +275 calories

Correction of fat nutritional status = -20% = -275 calories

So the need for energy = 1.375-137.5 + 275-275 = 1,237.5 calories.

There was a statistically significant relationship between dietary practice and a higher mean fasting blood sugar. The high sweet consumption is a major factor that can be targeted to improve diabetes control among patients of Malay ethnicity.

Nutrition education programs have shown improved metabolic control in the elderly. Excessively low-calorie diets should be avoided in elderly patients due to increased risk of hypoglycemia and malnutrition, as these diets typically provide few proteins.

Physical activities are one of the pillars of controlling type 2 diabetes. Physical activity, especially multicomponent activity (aerobic, resistance, flexibility and balance), has shown its efficacy in the elderly with diabetes, improving not only glycemic control but also functional independence, selfesteem and quality of life. Resistance training to increase muscle mass is considered an essential component for preventing and treating DM2 in the elderly and is the program of choice for frail elderly patients. Moderate to high-intensity exercises are, in contrast to previous assumptions, more effective for glycemic control and are generally safe for the elderly population .

As a general rule for elderly patients, it is recommended that treatment be started with antidiabetic agents with low hypoglycemic risk (especially metformin and dipeptidyl peptidase-4 inhibitors (DPP-4I) at low doses, with a progressive increase in dose, monitoring the response after each increase). As much as possible, drugs associated with a high risk of hypoglycemia (sulfonylureas and insulin, especiallyprandial and mixtures) should be avoided. Its safety in the treatment of seniors has been confirmed in several studies. Its advantages are: efficiency in decreasing HbA1c level, beneficial effect on body mass and lipid profile, and the fact that metformin is a medication which improves the prognosis.

Education

Diabetes self-care in elderly patients was significantly associated with the patients diabetes knowledge. Patients who had a good and acceptable diabetes knowledge were found to have higher diabetes self-care compared to those with low knowledge. Education is a key factor, and must be made a priority. This investment will ensure long-term

reductions in the high costs generated by diabetes complications. Two meta-analyses showed that patient education has led to an increase in patient knowledge and had a positive effect on metabolic control.

The evidence showed that the self-efficacy and motivation of the patient, together with adequate knowledge, can significantly forecast behavioural changes. Motivation and self-efficacy (self-confidence) were important to form an intention to change. With intention and proper education, an individual can achieve his or her specific goals with the belief that they will maintain the changes. Meanwhile, a study conducted in 2017 to explore type 2 diabetes patients' preference for DSME (*Diabetes Self-Management Education*). showed that patients prefer to be educated through fewer sessions and short periods of time.This collectively indicates that the content of the educational sessions and how they are delivered to patients' need appear to be more important than the number and duration of the educational sessions.

Family Support

Systematic reviews have shown that families are one of the main sources of social support for adults with DM and that families actively participate in the health care of adults and elders. Care is most often provided by a family member when patients do have blood relatives, not only because of their existing relationship but also because this responsibility is culturally. Social support can be considered a personal dimension of family relationships, i.e., to occur as a result of these relationships, regardless of family structure.

Patients may get support from friends, family members, nurses or physicians. The findings outlined here were consistent with those of various studies worldwide, indicating a positive correlation between family support and diabetes self-care. Elderly patients who were taken care of by their family during illness, had higher levels of diabetes self-care compared to those who had no caretaker during illness, or had been taken care of by others, such as friends or nursing home staff. Family support, was found to increase adherence to diet and exercise compared to those without support. [5]

Many studies incorporated the details of family members in program activities such as providing emotional support regarding problem-solving and helping patients to solve their emotional distress or provide information and roles to facilitate, accommodate, remind, motivate and partner with behavior change and perform tasks. Some studies in this literature review found that family members were included in an intervention program. Engaging family members could help patients strengthen self-management interventions and lengthen the effectiveness gained from the intervention.

Religion and spirituality of the members of a family can influence both positively and negatively the approach of the family facing a problem; in other words, it can interfere with their ability to deal with a particular pathology. The spirituality and religion can still influence family habits, values and health care to the patient.

Understanding family profiles is a way to understand patients as a part of their families holistically. In addition to risk assessment, family history information can be used to personalize health messages, which are potentially more effective in promoting healthy lifestyles than standardized health messages.

Risk of Depression

Diabetes can also increase the risk of depression. For patients with diabetes, poor control of blood sugar, strict diet and physical exercise requirements, and treatment may increase the incidence of depression. It was found that chronic stress could cause hyper-activation of the hypothalamic-pituitary-adrenal axis and an increase in cortical, which has been proposed to be an important pathway to interpret the clinical relationships between diabetes and depression.

The study of Goldney et al, showed increased prevalence of depression almost 24% of the diabetics compared with 17.1% of the non-diabetics. Also Gavard et al, in a systematic review of depression in diabetes provided the range of 8.5%-27.3% regarding the prevalence of depression in diabetics. On the other hand depression is related with a 60% increased risk of type 2 diabetes.

The great increase in the risk of comorbid depression in diabetic patients might be attributed to the psychosocial burden of disease, poor social support, awareness of having a chronic disease or its related complications and disabilities, and the consequential psychologic burden. Also, co-morbid depression among persons living with diabetes is associated with poor markers of diabetes control, including glycemic control, retinopathy, nephropathy, neuropathy, micro-vascular complications, [6] nd sexual dysfunction .

The psychological and pharmacological treatment of depression in subjects with diabetes is associated with significant clinical improvements. Such improvements occur not only in mood but also in adherence to diet and treatment regimens for type 2 diabetes, thereby impacting glycemic control, reducing chronic complications and improving quality of life.

Multivariate analysis revealed that, among elderly diabetic patients, those who were overweight, with poor physical capability and activity, and having multiple additional illnesses, had an increased risk of depression; while the use of metformin decreased the risk of depressive symptoms.

Activating and empowering assesses whether physicians initiate family meetings to resolve a patient's health problem, or problems that arise because of the health problem; conduct family counselling to solve the patient's health problems; increase the family's skill to manage the patient's health problems; increase the family's knowledge to manage the patient's health problems; assess family coping; and identify the impact of the patient's illness on the family.

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