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Case Study of the Standardized Nutrition Care Process in a Patient with Diabetes Mellitus

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ABSTRACT

In Indonesia, the number of people living with DM reached 19.5 million in 2021, making it the country with the fifth highest prevalence worldwide. This study aimed to assess the standardized nutritional care provided to a DM patient at RSAU Dr. Dody Sardjoto through an observational case study involving a single subject. Nutritional assessment indicated the patient was overweight and exhibited elevated blood pressure. Over a three-day monitoring period, nutrient intake exceeded daily requirements: energy intake ranged from 110–120%, protein 96–103%, fat 138–153%, and carbohydrates 106–128%. In conclusion, the patient was prescribed a 1500 kcal diabetic diet (DM RG). A gradual reduction in random blood glucose levels was observed, from 281 mg/dL on day one to 232 mg/dL on day three, although levels remained above the normal range

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CASE REPORTS

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Key Messages:

- Diabetes Mellitus is a global health issue with rising prevalence, including 19.5 million cases in Indonesia as of 2021, driven by unhealthy diets and sedentary lifestyles.
- Type 2 diabetes results from insulin resistance or decreased insulin production, often linked to high sugar and fat intake and low fiber consumption, increasing the risk of complications.
- Case studies on standardized nutrition care are essential to evaluate the effectiveness of dietary interventions in managing diabetes and preventing further complications.

INTRODUCTION

Diabetes Mellitus (DM) is a degenerative disease that has long been a major health issue in both developed and developing countries. This condition is caused by various factors, one of which is lifestyle changes. DM is a metabolic disorder closely related to dietary patterns and nutritional balance. One of the main contributing factors to the development of DM is the consumption of foods high in sugar and saturated fats, along with inadequate intake of fiber and essential micronutrients.

In Indonesia, DM is also a growing public health concern. The Ministry of Health reported 19.5 million diabetes cases in 2021, representing approximately 1.5% of the total population of 172.5 million. According to WHO data, Indonesia ranks fifth globally in terms of the number of diabetes cases, following China, India, Pakistan, and the United States. In South Sulawesi alone, the number of DM cases reached 33,693 in 2018 (Riskesdas, 2018).

Nutritional care for hospitalized patients with diabetes is a crucial component of intervention that must be carried out appropriately. It plays an essential role in blood glucose control and dietary management. This process includes assessment, diagnosis, intervention, monitoring, and evaluation. These stages follow a standardized nutrition care process, serving not only as a clinical protocol but also as an educational approach to foster patient commitment to dietary and lifestyle adherence. This study aims to implement the principles of the standardized nutrition care process in diabetic patients to achieve better blood glucose control.

CASE DESCRIPTION

Assessment: Mrs. N, born November 10, 1972 aged 52 years, undergraduate education, working as a housewife, was a patient at Dr. Dody Sardjito Hospital Makassar with a medical record number 084874. Entering the hospital on February 1, 2025 in the Wren with Diabetes Milletus Media Diagnosis. Anthropometric data is 65 kg body weight, 159 cm height, body mass index 25.7 kg/m2 (over body weight), ideal body weight 53.1 kg. The main complaint is weak since one day ago and lack of appetite, the history of the previous disease is hypertension and history of family diseases does not exist.

The results of laboratory tests are known to fast blood sugar is 279 mg/dl (height) compared to normal references 70-126 mg/dl. Blood sugar 2 hours PP is 419 mg/dl (tall) compared to the reference 200 mg/dl. Triglyceride 235 mg/dl (high) compared to the reference (200 mg/dl). Blood pressure examination on February 12, 2025 is 160/100 mmHg (hypertension) compared to normal references 120/80 mmHg. Body temperature 36 C (normal), pulse 90 times/minute (normal) compared to the reference 60-100 times/minute. Respiration rate is 20 times/minute (normal) compared to the reference (16-20 times per minute).

The patient's dietary history before entering the hospital is eating at home 2 times a day and 1 time interrupting with staple white rice, animal side dishes of fish and cooking chickens or fried, vegetable side dishes of orek tempeh and sometimes fried flour, often consume vegetables and fruits such as coconuts. Often consume fried food and fruit ice. Recall consumption results are known to be 1177.4 kcal while their needs are 1525, 9 kcal or 77% reach (less) needs. Protein intake is 49.5 g while the need is 76.2 g or 64% achieves (less) needs, fat intake is 13.8 g, 33.9 g or 40% of the achievement of lack of need, carbohydrate intake 216.6 g, needs 228.8 g or 94% (sufficient).

Nutritional diagnosis; NI-2.1 Lack of oral food and drink intake is related to lack of appetite characterized by food intake below normal, namely energy (70%), protein (58%), fat (36%). NI-5.4 Decreased need for sodium nutrients associated with increased blood pressure is characterized by blood pressure 160/100 mmHg. NC-2.2 Changes in Laboratory Value Related to Nutrition associated with metabolic disorders are characterized by the results of the examination indicating GDP levels 279 mg/dl, GD2JPP 419 mg/dl and triglycerides 235 mg/dl.

DISCUSSION

Nutritional intervention. Nutritional needs are determined based on the consensus of Perkeni, 2021, namely ideal body weight multiplied by 25 kcal with age correction (BMR-5%), activity correction (age correction + 10%), metabolic stress correction (activity correction + 10%). The total energy requirement is 1525.9 kcal. Protein needs are set 20% of energy requirements or 76.2 g. Fat requirements are set at 20% of energy requirements or 33.9 g. Carbohydrate requirements are 60% of energy requirements or 228.8 g.

Nutrition therapy given to patients is a type of DM 1500 low salt diet 1. Soft food form, oral administration method, 3 times the main food and 1 time interlude food. Oral giving route. The purpose of nutritional therapy is to meet the patient's nutritional needs, achieve and maintain normal sugar levels, reach normal blood pressure.

Diet Requirements: Energy As needed from the calculation results, protein 76.2 gr/day. Fat 33.9 gr/day, carbohydrates 228.8 gr/day, sodium intake is limited to 600 mg/day, the use of pure sugar in drinks and food is not allowed unless the sugar is slightly as a spice. Fiber intake is recommended 25 gr/hr by prioritizing water soluble fiber contained in vegetables and fruit. Enough vitamins and minerals. Feeding pays attention to 3 J (amount, type, schedule), limiting consumption of saturated fat and cholesterol. This diet requirement has been met after intervention for three days.

Monitoring and evaluation. Food assessment intake is carried out for 3 days, namely on March 13-15, 2025 in the inpatient room (Wren) RSAU Dr. Dody Sardjoto. The food served to patients is hospital food. The food served is adjusted to the calculation of the patient's nutritional needs. Eating intake that is observed 3 days includes breakfast, lunch, and dinner.

Table 1. Laboratory examination results

Date Intervention	Energy and Macronutrient	RDA	Actual intake	Percentage of RDA	Status
13 March 2025	Energy (kcal)	1525,9	1685,9	110%	Optimal
	Protein (g)	76,2	77,7	101%	Optimal
	Fat (g)	33,9	47	138%	Over
	Carbohydrate (g)	228,8	242,7	106%	optimal
14 March 2025	Energy (kcal)	1525,9	1699,4	111%	optimal
	Protein (g)	76,2	74	96%	Optimal
	Fat (g)	33,9	47,6	140%	Over
	Carbohydrate (g)	228,8	248,7	108%	Optimal
15 March 2025	Energy (kcal)	1525,9	1835,7	120%	Optimal
	Protein (g)	76,2	79,1	103%	Optimal
	Fat (g)	33,9	51,9	153%	Over
	Carbohydrate (g)	228,8	295	128%	over

The following is the image of the radiology examination results.

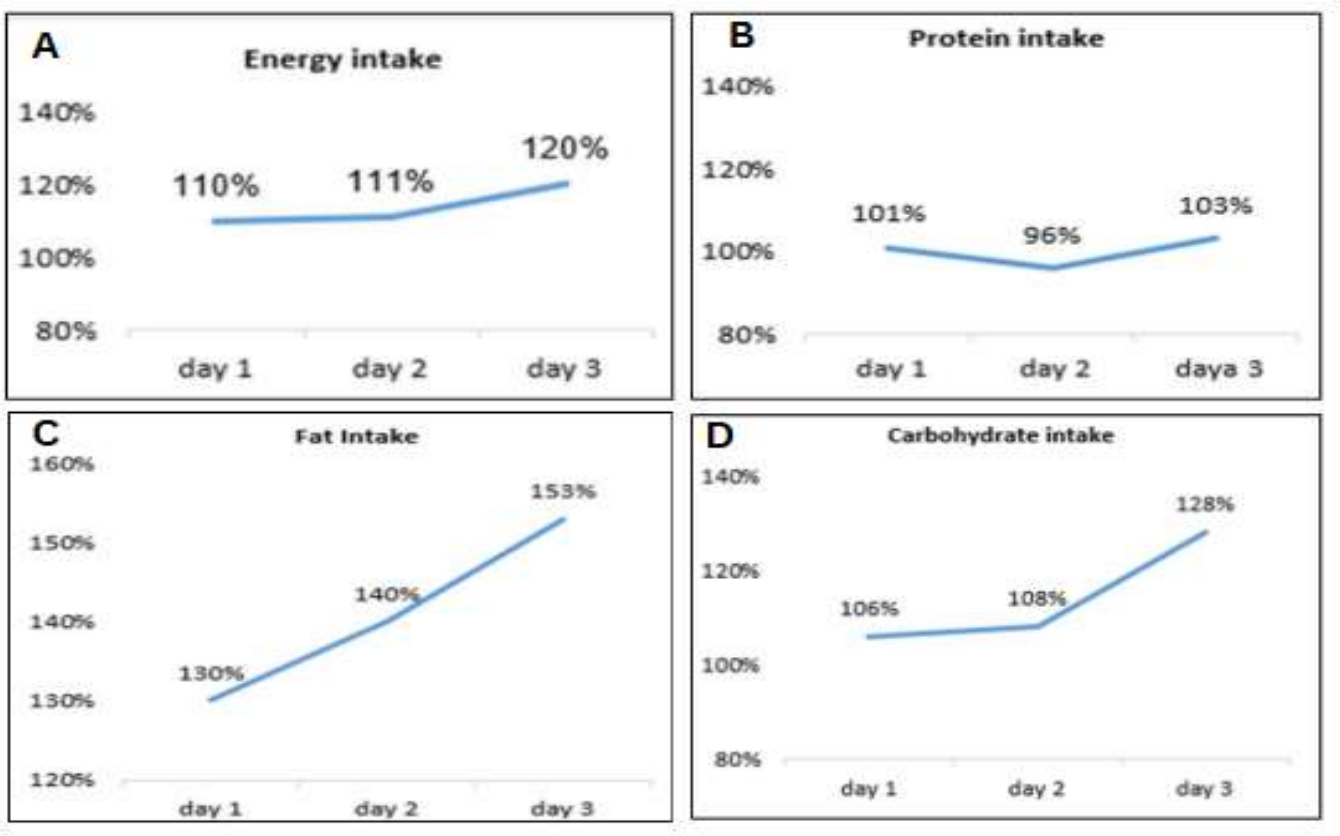

Figure 1. Cranium AP Lateral (Conventional non- contrast)

The findings of this case study highlight the importance of applying a standardized Nutrition Care Process (NCP) in managing complex pediatric conditions. The integration of clinical data, biochemical indicators, and individualized dietary interventions proved effective in stabilizing the patient's nutritional status and supporting recovery. However, to enhance the generalizability of such interventions, future research should explore similar cases across diverse clinical settings and populations (15)(16)(17)

One notable limitation in the current study is the predominance of local references, which may restrict the broader applicability of the findings. Future researchers are encouraged to incorporate international guidelines and evidence-based practices from global institutions such as ASPEN, WHO, and ESPNIC. These sources offer comprehensive frameworks for nutritional management in critical care and can serve as benchmarks for evaluating the effectiveness of interventions in pediatric intensive care units worldwide (18)(19)

Moreover, longitudinal studies involving larger sample sizes and extended monitoring periods are recommended to assess the long-term impact of nutritional therapy on clinical outcomes. Comparative analysis between different intervention models such as enteral vs. parenteral nutrition, or low-sodium vs. standard diabetic diets—could provide deeper insights into optimizing care strategies. By expanding the scope of research and integrating global perspectives, future studies can contribute to the development of universally applicable nutrition protocols for critically ill pediatric patients (20)

CONCLUSION

Based on the case description, the CRAB criteria approach in diagnosing multiple myeloma indicated that this patient meets the criteria for multiple myeloma. The CRAB criteria can be used as a guideline for diagnosing multiple myeloma, especially in areas with limited access to comprehensive laboratory testing. This approach enables a quick diagnosis, allowing prompt management of the condition.

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Conflicts of Interest: The authors declare no conflict of interest.

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