THESIS

THE CORRELATION BETWEEN ILLNESS PERCEPTION AND SELF-CARE MANAGEMENT IN TYPE 2 DIABETES MELLITUS PATIENTS IN THE WORKING AREA OF KABAT PUBLIC HEALTH CENTER BANYUWANGI IN 2023

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To obtain a Bachelor of Nursing Degree (S. Kep) in the Bachelor of Nursing Sciences Study Program at STIKES Banyuwangi

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STATEMENT OF ORIGINALITY

I hereby declare that this thesis is the result of my own scientific writing, and I do not do plagiarism activities in writing this thesis entitled:

"The Correlation Between Illness Perception and Self-care Management in Type 2 Diabetes Mellitus Patients in The Working Area of Kabat Public Health Center Banyuwangi in 2023"

If one day I am proven to do plagiarism activities, then I will take full responsibility and accept consequences.

This I make this statement with truth.

Banyuwangi, 2023

Statement Maker

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2019.02.005

CHAPTER 1
INTRODUCTION

1.1 Background

One of the health problems that always increase every year is diabetes mellitus. Diabetes mellitus (DM) is the third largest non-infectious chronic disease worldwide after cancer and cardiovascular diseases (WHO, 2022). Knowledge about diabetes mellitus is still low in diabetes mellitus patients. It happens because some of the patients still do not understand about their disease, they still have low and negative illness perception of the diabetes mellitus which they suffer from (Amendezo et al., 2017).

Patients' illness perception is assumed influencing their self-care management of the disease (Kusuma et al., 2019). Positive illness perceptions of the disease will make people with diabetes mellitus undergo treatment and medication regularly. Conversely if the patient has a negative illness perception, it will cause unhappiness so that they do not carry out regular care and treatment (Sawyer et al., 2019). Negative illness perception in diabetes mellitus can cause a bad impact on self-care management in people with diabetes mellitus (Januar et al., 2017). Bad self-care management among diabetes patients results to bad glycaemic control, increase in complications such as retinopathy, nephropathy, and it is the main cause of mortality (Karimy, Koohestani &Araban, 2018).

Globally, in 2021, it was estimated that 537 million people have diabetes, and this number is projected to reach 643 million by 2030, and 783 million by 2045 (WHO, 2022). The countries with the largest numbers of adults with diabetes aged 20–79 years in 2021 were China, India and Pakistan. Indonesia

was in fifth place with the number of people with diabetes mellitus as many as 19.5 million people (IDF, 2021). Based on data from the Indonesian Ministry of Health's Basic Health Research (Riskesdas) in 2018, the highest prevalence of diabetes mellitus was found in DKI Jakarta, which was 3.4% (Kemenkes RI., 2020). The highest increase number of diabetes mellitus patients in East Java was in 2020 which were 841,971. The highest increase of diabetes mellitus was in Surabaya city, which were 94,076 cases. Banyuwangi Regency was in 8th place with a total of 33,974 cases (Dinas Kesehatan Provinsi Jawa Timur, 2020). The highest diabetics in Banyuwangi Regency in 2021 were in Kalibaru Public Health Center, which were 950 people, Kabat Public Health Center, which were 915 people, and Badean Public Health Center, which were 656 people (Dinas Kesehatan Kabupaten Banyuwangi, 2021).

Based on research from Firmansyah & Purwanti, (2021) about the description of the illness perception in the type 2 diabetes patients, from 94 samples it was found that type 2 diabetes mellitus patients who had negative perception of disease had a larger number of 48 respondents (51.1%), while 46 respondents (48.9%) who had positive illness perception of type 2 diabetes mellitus were minority in this study. Based on research results from Despitasari & Sastra (2020), from 60 samples of type 2 diabetes mellitus that had been studied, the results showed that 56.7% of respondents had poor self-care management.

Based on the result of a preliminary study on Friday, 30 December 2023 conducted on 10 patients with type 2 diabetes mellitus in the working area of Kabat Public Health Center Banyuwangi, it was obtained an average value of

illness perception of 47, that 7 patients (70%) had a value of Illness perception less than 40. It means that most patients still had low illness perception about T2DM. From 10 respondents, it also obtained an average value of self-care management that was 62, that there are 6 patients (60%) who had a value of self-care management less than 60. It means that most patients still had low self-care management.

Diabetes mellitus can cause several complications if proper management is not carried out to control glucose levels in the blood and if it is left unchecked over the long term. It can cause damage to many of the body's organs, leading to disabling and life-threatening health complications such as cardiovascular diseases (CVD), nerve damage (neuropathy), kidney damage (nephropathy), lower-limb amputation, and eye disease (mainly affecting the retina) resulting in visual loss and even blindness (IDF, 2021). How people with diabetes mellitus prevent the risks of complications that will occur is influenced by how the illness perception about the disease they suffer from. Illness perception is thought to be an important psychosocial factor that can motivate patients to self-manage their diabetes (Hashimoto et al., 2019).

Chew's research (2014) stated that disease perception is an important parameter of a person's health behaviour such as medication adherence, quality of life, clinical parameters and functional recovery. Everyone's perception of a disease is different, so it will also have an impact on different health behaviour. (Atwa & Wahed, (2019) in Muhashonah, 2020). If diabetes mellitus patients have negative perceptions about their disease, in which patients consider their disease to be something that is threatening or is called fatalistic (a view of

hopelessness in everything that ends in surrender), they will not make maximum effort to manage their disease (Kugbey et al., 2017). Conversely, if diabetes mellitus patients have positive perceptions about their disease, they will carry out good self-care management to control their disease. Diabetes self-care management aims to achieve blood sugar levels within the normal range to prevent complications and reduce morbidity and mortality due to diabetes mellitus. Self-care management that can be carried out by diabetes mellitus patients includes good medication management, making meal arrangements, physical exercise or sport, controlling blood sugar levels regularly and doing regular foot care (Istiyawanti, 2019).

The illness perception in people with diabetes mellitus needs to be improved to prevent complications. One thing that can be done by patients to increase their illness perception is searching information and knowledge about diabetes mellitus. One of which is by actively participating and searching information in PROLANIS activities to increase the illness perception and knowing how diabetes mellitus self-care management should be carried out (Firmansyah & Purwanti, 2021). The family support is also needed in improving illness perception and self-care management in patient. Therefore, families can provide knowledge about diabetes mellitus, provide psychosocial support, remind or control self-care management, etc (Wardani, 2014). Illness perception can be improved through health education about how to manage the illness and self-care management given by health care providers (Anggraeni et al., 2020).

Based on the background above, the researcher is interested in taking the title and researching about the correlation between illness perception and self-care management in type 2 diabetes mellitus patients in the working area of Kabat Public Health Center Banyuwangi in 2023.

1.2 Formulation of the Problem

Based on the description of the background above, the formulation of the problem in this study are:

1.2.1 What is Type 2 Diabetes Mellitus?

1.2.2 What is the illness perception in Type 2 Diabetes Mellitus patients?

1.2.3 What is the self-care management in Type 2 Diabetes Mellitus patients?

1.2.4 Is there any correlation between illness perception and self-care management in type 2 diabetes mellitus patients in the working area of Kabat Public Health Center Banyuwangi in 2023?

1.3 The Objective of the Study

1.3.1 General Purpose

The purpose of this study was to find out the correlation between illness perception and self-care management in type 2 diabetes mellitus patients in the working area of Kabat Public Health Center Banyuwangi in 2023.

1.3.2 Specific Aim

1. Identify the illness perception in type 2 diabetes mellitus patients in the working area of Kabat Public Health Center Banyuwangi in 2023.

2. Identify the self-care management in type 2 diabetes mellitus patients in the working area of Kabat Public Health Center Banyuwangi in 2023.
3. Analyse the correlation between illness perception and self-care management in type 2 diabetes mellitus patients in the working area of Kabat Public Health Center Banyuwangi in 2023.

1.4 Expected Result

1.4.1 Theoretical

Adding knowledge in the field of medical surgical nursing care by looking at the correlation between illness perception and self-care management in type 2 diabetes mellitus patients in the working area of Kabat Public Health Center Banyuwangi in 2023.

1.4.2 Practical

1. **For Participants**

   This research can provide information regarding the importance of having positive illness perception so that patients with type 2 diabetes mellitus can have good understanding about self-care management and the complications can be prevented.

2. **For Educational Institutions**

   It is one of the developments in science, especially to prevent complications for people with diabetes mellitus, by increasing illness perceptions and self-care management of people with diabetes mellitus.

3. For Public Health Center

This research can provide information related to preventing the risk of complications of diabetes mellitus and implementing self-care management by increasing perceptions of patients with diabetes mellitus.

4. For Further Researcher

This research can be used as a reference for further research. Further researcher can explore dan examine other factors that can influence self-care management which can prevent complication in type 2 diabetes mellitus patients.

CHAPTER 2
LITERATURE REVIEW

2.1 Concept of Diabetes Mellitus

2.1.1 Definition

Diabetes mellitus is a condition of chronically elevated blood glucose concentrations which give rise to its main symptom of passing large quantities of sweet–tasting urine (diabetes from the Greek word meaning ‘a siphon’, as the body acts as a conduit for the excess fluid, and mellitus from the Greek and Latin for honey). The fundamental underlying abnormality is a net (relative or absolute) deficiency of the hormone insulin. Insulin is essentially the only hormone that can lower blood glucose (Bilous, 2021).

Diabetes mellitus is recognized as one of the four major non-communicable diseases besides cardiovascular disease, cancer, and chronic respiratory diseases in the world (Nguyen et al., 2022). Diabetes mellitus is a serious, chronic condition that occurs when the body cannot produce enough insulin or cannot effectively use the insulin it does produce. Diabetes mellitus, more simply called diabetes, is a serious, long-term (or “chronic”) condition that occurs when raised levels of blood glucose occur because the body cannot produce any or enough of the hormone insulin or cannot effectively use the insulin it produces (IDF, 2021).

2.1.2 Classification

1. **Type 1 Diabetes Mellitus**

Type 1 diabetes mellitus is caused by an autoimmune process in which the body's immune system attacks the insulin producing beta-cells of the pancreas. As a result, the body produces very little or no insulin. People with type 1 diabetes mellitus need daily insulin injections to keep their blood glucose level within an appropriate range. Without insulin, they would not survive. However, with daily insulin treatment, regular blood glucose monitoring, education and support, they can live healthy lives and delay or prevent many of the complications associated with diabetes mellitus (IDF, 2021).

2. **Type 2 Diabetes Mellitus**

Type 2 diabetes mellitus is a group of metabolic diseases characterized by hyperglycaemia, resulting from defects in insulin secretion, insulin action or both (Decroli, 2019). Type 2 diabetes mellitus, previously referred to as "noninsulin-dependent diabetes mellitus" or "adult-onset diabetes mellitus," accounts for 90–95% of all diabetes. This form encompasses individuals who have relative (rather than absolute) insulin deficiency and have peripheral insulin resistance. At least initially, and often throughout their lifetime, these individuals may not need insulin treatment to survive (ADA, 2022).

3. Gestational Diabetes

Gestational diabetes is characterized by an increase in blood glucose during pregnancy. This condition usually occurs in the 24th week of pregnancy and blood glucose levels will return to normal after giving birth (Kemenkes RI., 2020). Available evidence suggests that many cases of gestational diabetes mellitus are preexisting hyperglycemia detected by routine screening in pregnancy, because routine screening is not widely performed in non-pregnant women of reproductive age. Early clinical examination is important because of the short- and long-term maternal and fetal risks (ADA, 2022).

2.1.3 Etiology

Type 1 diabetes mellitus caused by an autoimmune process in which the body's immune system attacks the insulin- producing beta-cells of the pancreas. The causes of type 2 diabetes mellitus are resistance insulin, disfunction cell beta pancreas, obesity, increasing age, ethnicity, bad lifestyle, family history. As with type 1 diabetes mellitus, contributors to type 2 diabetes mellitus risk are thought to include polygenic and environmental triggers.

Risk factors for gestational diabetes mellitus include older age, overweight and obesity, previous gestational diabetes mellitus, excessive weight gain during pregnancy, a family history of diabetes mellitus, polycystic ovary syndrome, habitual smoking and a history of stillbirth or giving birth to an infant with a congenital abnormality (IDF, 2021).

2.1.4 Signs and Symptoms

Signs and symptoms of diabetes mellitus according to the research from Bhatt et al., (2016) divided into acute and chronic acute symptoms of diabetes mellitus, namely:

1. Polyphagia (eating a lot)
2. Polydipsia (drinking a lot)
3. Polyuria (urinating a lot / frequent urination at night)
4. Appetite increases but weight loss quickly (5-10 kg within 2-4 weeks)
5. Easily tired.

Chronic symptoms of diabetes mellitus are:

1. Tingling
2. The skin feels hot or like being pricked by a needle
3. Numb feeling on the skin
4. Cramps
5. Fatigue
6. Easily sleepy
7. Vision begins to blur
8. Teeth are easy to lose
9. Decreased sexual ability even in men can occur impotence,
10. Pregnant women often experience miscarriage or death of the fetus in the womb or with a baby weighing more than 4 kg.

2.1.5 Pathophysiology

Insulin resistance in muscle and liver cells, and pancreatic beta cell failure has been recognized as a pathophysiology of type 2 DM. Recent results indicate that beta cell failure occurs earlier and is more severe than previously thought. Other organs involved in type 2 DM are adipose tissue (increased lipolysis), gastrointestinal (incretin deficiency), pancreatic alpha cells (hyperglucagonemia), kidney (increased glucose absorption), and brain (insulin resistance), which play a role in causing glucose disorders. tolerance. Currently, three new pathways of the pathogenesis of the unpleasant octet have been discovered which mediate the occurrence of hyperglycemia in type 2 DM. Eleven important organs in impaired glucose tolerance (egregious eleven) need to be understood because this pathophysiological basis provides the concept:

1. Treatment should be aimed at improving the pathogenesis interference, not just to lower HbA1c
2. The required combination treatment must be based on drug performance according to the pathophysiology of type 2 DM
3. Treatment should be started as early as possible to prevent or slow the progression of beta-cell damage that has occurred in patients with impaired glucose tolerance (PERKENI, 2021).

2.1.6 Complications

Diabetes mellitus if left unchecked over the long term, can cause damage to many of the body's organs, leading to disabling and life-threatening health complications such as cardiovascular diseases (CVD),

nerve damage (neuropathy), kidney damage (nephropathy), lower-limb amputation, and eye disease (mainly affecting the retina) resulting in visual loss and even blindness (IDF, 2021).

1. **Impaired Vision (Retinopathy)**

Persistently high blood glucose levels are the main cause of retinopathy. The network of blood vessels that supply the retina can become damaged in retinopathy causing permanent vision loss. Retinopathy can affect vision, which is why it is important that people with diabetes have regular eye exams. If detected early, treatment can be given to prevent blindness. Maintaining good blood glucose control greatly reduces the risk of retinopathy.

2. **Cardiovascular Disorders**

Cardiovascular disease is the most common cause of death and disability among people with diabetes mellitus. Cardiovascular disease that accompanies diabetes mellitus includes angina, myocardial infarction (heart attack), stroke, peripheral arterial disease and congestive heart failure. Hypertension, high cholesterol, hyperglycaemia and other risk factors contribute to an increased risk of cardiovascular complications.

3. **Pregnancy Complication**

Women with diabetes mellitus are at risk for a number of complications during pregnancy, because high glucose levels can affect fetal development. Women with diabetes mellitus require careful monitoring before and during pregnancy in order to minimize the risk of complications. Hyperglycaemia during pregnancy can cause changes in the

fetus that lead to excess baby size and weight. This in turn can cause problems during delivery, injury to the baby and mother, and hypoglycaemia in the baby after birth. Babies who are exposed to high blood glucose in the womb can later be at high risk of developing type 2 diabetes later in life.

4. Ulcer Diabetic

Diabetic foot in patients with diabetes mellitus occurs due to nerve damage. Diabetics experience problems with poor circulation to the feet, as a result of damaged blood vessels. This problem increases the risk of ulceration, infection and amputation. Individuals who have diabetes face a risk of amputation that may be 25 times greater than individuals who do not have diabetes mellitus. If individuals exercise good management, most amputations can be avoided.

5. Oral Health

Diabetes mellitus can be a threat to oral health. There is an increased risk of inflammation of the tissue around the teeth (periodontitis) in people with poor glucose control. Periodontitis is a major cause of tooth loss and is associated with an increased risk of cardiovascular disease. Management of periodontitis is very important in diabetics because optimal oral hygiene can prevent tooth loss, promote a healthy diet and improve glucose control.

6. Kidney Disease (Nephropathy)

Patients with diabetes mellitus are more likely to have kidney disease (nephropathy) than individuals who do not have diabetes. Diabetes is one of the main causes of chronic kidney disease. This disease is caused

by damage to small blood vessels, which can cause the kidneys to become less efficient, or to fail completely. Maintaining a normal blood glucose level and normal blood pressure greatly reduces the risk of nephropathy.

7. Nerve Damage (Neuropathy)

Nerve damage (neuropathy) also results from prolonged high blood glucose levels. This can affect any nerve in the body. The most common type is peripheral neuropathy, which primarily affects the sensory nerves in the feet. This can cause pain, tingling, and loss of sensation. This is important because it can cause unrecognized injuries, resulting in ulcerations, serious infections and in some cases amputation. Neuropathy can also cause erectile dysfunction, as well as problems with digestion, urination and a number of other functions.

2.1.7 Diagnose

Diabetes mellitus is diagnosed by identifying chronic hyperglycemic (Bilous, 2021). The American Diabetes Association (ADA) inclusion of HbA1c as part of the diagnostic criteria of diabetes and pre diabetes. Method of diabetes diagnosis are:

1. Oral glucose tolerance test (OGTT)
2. Fasting blood glucose (FBG)
3. Haemoglobin A1c (HbA1c)
4. Self-reported diabetes
5. Medical record or clinical diagnosis

For type 2 diabetes, in the presence of symptoms (e.g. polyuria, polydipsia and unexplained weight loss) the diagnosis can be made based

on: a random venous plasma glucose concentration ≥ 11.1 mmol/l or in the absence of symptoms by a fasting plasma glucose concentration ≥ 7.0 mmol/l (whole blood ≥ 6.1 mmol/l or HbA1c ≥ 6.5%). If elevated values are detected in asymptomatic people, repeat testing, preferably with the same test, is recommended as soon as practical on a subsequent day to confirm the diagnosis (IDF, 2021).

2.1.8 Intervention

The management of diabetes mellitus begins with adopting a healthy lifestyle (medical nutrition therapy and physical activity) along with pharmacological interventions with oral anti-hyperglycaemic drugs and/or injections. Knowledge of self-monitoring, signs and symptoms of hypoglycaemia and how to treat it should be imparted to the patient. Knowledge of self-monitoring can be done after receiving special training (PERKENI, 2021).

1. Education

Education with the aim of promoting healthy living, should always be carried out as part of prevention efforts and is a very important part of the holistic management of diabetes mellitus. Educational materials consist of initial level educational materials and advanced educational materials continued. Educational materials at the initial level are carried out in Primary Health Services which include:

1. Material about the course of diabetes mellitus disease
2. The meaning and need for continuous control and monitoring of diabetes mellitus

3. Diabetes mellitus complications and risks Non-pharmacological and pharmacological interventions and treatment targets
4. Interactions between food intake, physical activity, and oral antihyperglycemic drugs or insulin and other drugs
5. Means of self-monitoring blood glucose and understanding blood or urine glucose results independently (only if self-monitoring blood glucose is not available)
6. Recognize the symptoms and early treatment of hypoglycaemic
7. The importance of regular physical exercise
8. The importance of foot care
9. How to use the health care facility

Educational materials at the advanced level are carried out in Secondary and/or Tertiary Health Services, which include:

1. Recognize and prevent acute complications of diabetes mellitus
2. Knowledge of chronic complications of diabetes mellitus
3. Diabetes mellitus management while suffering from other diseases
4. Plans for specific activities (example: sports)
5. Special conditions encountered (example: pregnancy, fasting, hospitalization conditions)
6. The results of research and current knowledge and the latest technology about diabetes mellitus
7. Maintenance / foot care.

2. Combination Therapy

Controlling diet and physical activity is the main thing in the management of DM, but if necessaries it can be done together with oral antihyperglycemic drugs or a single combination early on. Administering oral antihyperglycemic drugs and insulin always starts with a low dose, and then increases it gradually according to the response of blood glucose levels. Combination therapy of oral antihyperglycemic drugs, either separately or in a fixed dose combination, must use two types of drugs with different mechanisms of action.

3. Self-Care Management

1) Blood Glucose Monitoring

Blood glucose monitoring is a form of self-care management that is important to do regularly. Good blood glucose control has been shown to reduce the risk of complications in people with type 1 DM (T1DM) and type 2 DM (T2DM).

Purpose of checking blood glucose:

a) Determine whether the therapeutic goals have been achieved
b) Make adjustments to drug doses, if the therapeutic target has not been achieved (PERKENI, 2021).

2) Diet Management

Have a healthy diet a major role and is considered an important component of an overall healthy lifestyle for DM patients. Management of a healthy diet in people with diabetes, apart from having to balance

intake of carbohydrates, protein and fat, also needs to meet metabolic needs and individual choices (ADA, 2022).

The dietary recommendations are essentially the same for type 1 and type 2 diabetes 'Diabetic' foods that contain sorbitol or fructose or glucose as sweetener are not necessary. Sucrose need be significantly restricted from the diabetic diet, and a moderate amount for sweetening is acceptable. The focus of dietary plans should be on balancing energy intake to energy expenditure and the quality of fat and carbohydrate, rather than the quantity alone. Foods that normally improve glycemic control and CVD risk are whole grains (brown rice, whole-wheat breads, oats) and high-fibre foods (grains, cereals, fruits, vegetables, and nuts) (Bilous, 2021).

3) Physical Activity

Physical activity should be tailored to the individual patient, according to physical condition and lifestyle, but simple advice might include moderate activity as part of the daily schedule, such as walking for 30–60 minutes per day (preferably an extra 30–60 minutes). Current guidelines suggest that people with diabetes should accumulate a minimum of 150 minutes of moderate to vigorous intensity aerobic exercise each week, spread over at least 3 days of the week, with no more than 2 consecutive days without exercise. In addition, people with diabetes (including elderly people) should perform resistance exercise at least twice a week, and preferably 3 times per week in addition to aerobic exercise (Bilous, 2021).

4) Pharmacological Therapy

Pharmacological therapy consists of oral medication and injectable forms. Selection and determination of oral hypoglycemic drugs used must be considering the severity of diabetes (glycemia level) as well as the condition general health of the patient including other diseases and existing complications. Pharmacological therapy in the form of injections is insulin therapy, where in insulin therapy is a must for people with Type 1 DM. DM Type I, Langerhans β cells of the patient's pancreatic gland are damaged, so can no longer produce insulin. Although in part most people with Type 2 DM do not require insulin therapy, but nearly 30% do required insulin therapy in addition to oral hypoglycemic therapy (PERKENI, 2021).

5) Foot Care

Perform a comprehensive foot care at least annually to identify risk factors for ulcers and amputations. Foot ulcers and amputation, which are consequences of diabetic neuropath and/or peripheral arterial disease (PAD), are common and represent major causes of morbidity and mortality in people with diabetes. Early recognition and treatment of patients with diabetes and feet at risk for ulcers and amputations can delay or prevent adverse outcomes (ADA, 2022).

2.2 Concept of Illness Perception

2.2.1 Definition

Illness perception is how individuals view their disease whether the disease is serious and will last a long time or not, and how big the impact of the disease is on the individual's life (Hilmayani et al., 2021). Illness perception involve cognitive and emotional representations, which provide an insight into how patients develop coping strategies that ultimately affect clinical outcomes (Balasubramaniam et al., 2019).

2.2.2 Dimension of Illness Perception

According to the research from (Leventhal et al., 2016), the dimension of illness perception consists of 9 items, namely:

1. Consequences, namely the effects and results of the disease that are felt.
2. Timeline, namely how long the individual believes that the disease will last.
3. Personal control, namely the extent to which individuals believe they can recover from their illness and how individuals control their disease
4. Treatment control, namely the perception of how much treatment can be used to help control a disease.
5. Identity, namely the identity of the individual in describing a disease that is felt.
6. Concern, namely the idea that arises from within about the cause of the disease.

7. Illness comprehensibility, namely an explanation of the form of one's understanding to feel and evaluate related to the disease
8. Emotion, namely the emotional aspect to describe worries about illness.
9. Causal representation, namely a perception of how much the patient is emotionally affected by the disease.

2.2.3 Illness Perception in Diabetes Mellitus

Chronically ill patients such as people with type 2 diabetes develop perceptions of their illness, which will influence their coping behavior. Perceptions are formed once a health threat has been recognized. Many people with type 2 diabetes suffer from multimorbidity, for example the combination with cardiovascular disease. Perceptions of illness may influence perceptions of the other condition (Vos et al., 2018). Someone perceives their illness to be valuable or not valuable to their life depending on how they perceive it.

Illness perception in people with diabetes mellitus is formed through 2 processes, namely the process of sharing and emotion. The process of cognition includes how individuals respond to their illness such as identifying signs and symptoms, etiology, negative impacts and treatment. Emotional processes include the patient's emotional state during the face of diabetes mellitus. The perception that people with diabetes mellitus have will later influence how the patient behaves in preventing the emergence of dangers that will threaten his life, namely complications from diabetes mellitus (Hagger & Orbell, 2022)

2.2.4 Factors Affecting an Illness Perception

1. Gender

Research conducted by (Joshi et al., 2015) found that many diabetics who are adult women are more prone to experiencing symptoms of depression and anxiety. Female gender has a more unstable emotional condition than male diabetics, so they are prone to have negative perceptions of their disease.

2. Education Level

The illness perception in diabetes mellitus patients with a high level of education can affect the knowledge of people with diabetes. Better understanding about diabetes mellitus will affect about how patients manage their illness (Firmansyah & Purwanti, 2021).

3. Duration of Disease

The duration of suffering from diabetes can also affect complications in diabetics, so that complications arising from diabetes lead to negative perceptions of the disease.

4. Psychologic Condition

Research by Kugbey et al., (2015) stated that the perception of illness is influenced by psychological distress, depression, anxiety and compulsive obsessions of people with diabetes when they have diabetes.

2.2.5 Impact of Illness Perception in Diabetes Mellitus

1. Positive Illness Perception

A positive perception of the disease is when a person can understand the disease and how to properly control the disease (Banowo, 2021). Positive illness perception will make people with diabetes mellitus do treatment and medication regularly (Haskas et al., 2022). This can prevent the complications in people with diabetes mellitus, also prevent the psychological problems that are prone to be experienced by diabetics, one of which is distress.

2. Negative Illness Perception

Negative perceptions about disease mean that a person cannot properly understand the disease and the right way to control the disease (Banowo, 2021). When patients see their illness as more threatening or have negative perceptions of their disease, they are likely to despair. Thus, they do not put much effort into their own recovery in the management of the disease (N, Kugbey, et al, 2017). When type 2 diabetes mellitus patients have a negative perception of their disease, they tend to do lower self-care. This causes the risk of developing complications of diabetes mellitus is also getting bigger (Banowo, 2021).

2.2.6 Illness Perception's Measurement

1. The Illness Perception Questionnaire (IPQ)

The Illness Perception Questionnaire (IPQ) is a new method for assessing cognitive representations of disease. The IPQ is a

theoretically derived measure consisting of five scales that provide information about the five components found to underlie the cognitive representation of disease. Weinman distinguishes 5 domains of disease perception representation namely identity, timeline, consequences, control and causes. The IPQ assessment uses a Likert scale with a score of 1 – 5 where a score of 1 indicates disagree and a score of 5 indicates strongly agree (Weinman et al., 1996).

2. The Illness Perception Questionnaire- Revised (IPQ-R)

The Illness Perception Questionnaire- Revised (IPQ-R) is a revision of the original IPQ developed by Moss – Morris (2002). The IPQ-R version contains 7 cognitive and emotional domains including acute/chronic timelines, cyclical timelines, consequences, personal control, treatment control, disease coherence, emotional representation. Causes are categorized as follows: 1) psychological attribution (stress or worry, mental attitude, problems in family, overwork, emotional state, personality), 2) risk factors (heredity, diet, past poor medical care, daily behavior - days, aging, cigarettes, alcohol), 3) immunity (germs, viruses, pollution, altered immunity), 4) accidents or opportunities (coincidence or bad luck, injuries, and accidents) (Moss-Morris et al., 2002).

3. B-IPQ (Brief Illness Perception Questionnaire)

The B-IPQ (Brief Illness Perception Questionnaire) is an instrument used to assess patient perceptions of disease that describes

the process of how patients respond to health threats (pain) felt by patients. The BIPQ was used to assess the dimensions of disease perception which consisted of 8 question items with an 11 points scale (range 0-10). Each question item describes the dimensions of CSM, namely cognitive representation of five question items and emotional representation of three question items. Question items concern consequences (patients' beliefs about how strong the disease affects daily life), timeline (patients' beliefs about the chronic course of the disease), personal control (patients' beliefs about their own ability to control the disease), treatment control (patients' beliefs regarding disease control with drugs), identity (concerning about the experience of symptoms that arise as a result of disease progression), concern (regarding the patient's feelings of worry/concern about his illness), emotional response (patient's emotional response related to illness) and understanding (image patient's understanding of the disease) (Antari et al., 2016).

The B-IPQ provides a rapid assessment of perceptions of disease, which is especially helpful to researchers in patient populations with chronic diseases, large-scale studies, and in repeat study designs. In the IPQ questionnaire only includes five dimensions of disease perception with a five-point Likert scale. The IPQ-R questionnaire has more than 80 question items and is not effective when applied to patients with chronic diseases. The B-IPQ is a shorter and more appropriate questionnaire for patients with disease, as well

as quicker to complete. In addition, B-IPQ is also more acceptable to those who are limited in their reading and writing abilities. The B-IPQ is a short questionnaire that covers all the dimensions that exist in perception of disease, this questionnaire aims not only to build a very short and simple measure of perception of disease, but also to build a measure with an alternative format to the multifactorial Likert scale approach used in the IPQ and IPQ-R (Broadbent et al., 2006). This questionnaire has been tested for validity and reliability tests in Indonesia on type 2 DM patients and has been translated, so that it can be used for patients with type 2 diabetes mellitus in Indonesia.

2.3 Concept of Self-care Management

2.3.1 Definition

According to the health agency World Health Organization (WHO) Self-care management is an effort to maintain health, prevent disease, improve health status, and overcome disabilities according to the capabilities of individuals, families and communities with or without the support of health care providers (WHO, 2022).

2.3.2 Self-care Management in Diabetes Mellitus

Self-care management is an action taken by individuals to control diabetes mellitus, in the form of treatment and prevention of complications. the better the diabetes mellitus self-care management, the blood glucose levels will be controlled, and in the end complications can also be prevented, so as to improve the quality of life of diabetes mellitus patients (Hidayatin, 2020). Self-care management in patients with diabetes mellitus

among them are monitoring blood glucose levels, diet management, physical activity, pharmacological therapy, foot care.

1. Blood Glucose Monitoring

Blood glucose monitoring is a form of self-care management that is important to do regularly. Good blood glucose control has been shown to reduce the risk of complications in people with type 1 DM (T1DM) and type 2 DM (T2DM).

Purpose of checking blood glucose:

1. Determine whether the therapeutic goals have been achieved
2. Make adjustments to drug doses, if the therapeutic target has not been achieved.

Blood glucose execution time during fasting, 1 or 2 hours after eating, or randomly periodically as needed. The frequency of inspections is carried out at least once a month (PERKENI, 2021)

2. Diet Management

The dietary recommendations are essentially the same for type 1 and type 2 diabetes 'Diabetic' foods that contain sorbitol or fructose or glucose as sweetener are not necessary. Sucrose need be significantly restricted from the diabetic diet, and a moderate amount for sweetening is acceptable. The focus of dietary plans should be on balancing energy intake to energy expenditure and the quality of fat and carbohydrate, rather than the quantity alone. Foods that normally improve glycaemic control and CVD risk are whole grains (brown

rice, whole-wheat breads, oats) and high-fibre foods (grains, cereals, fruits, vegetables, and nuts) (Bilous, 2021).

3. Physical Activity

Physical activity should be tailored to the individual patient, according to physical condition and lifestyle, but simple advice might include moderate activity as part of the daily schedule, such as walking for 30–60 minutes per day (preferably an extra 30–60 minutes). Current guidelines suggest that people with diabetes should accumulate a minimum of 150 minutes of moderate to vigorous intensity aerobic exercise each week, spread over at least 3 days of the week, with no more than 2 consecutive days without exercise.

In addition, people with diabetes (including elderly people) should perform resistance exercise at least twice a week, and preferably 3 times per week in addition to aerobic exercise (Bilous, 2021). Physical activity is effective in controlling blood glucose in people with diabetes mellitus because when the body is active, the body will need glucose as fuel to produce energy (AD Ariyani, 2022).

4. Pharmacological Therapy

Pharmacological therapy consists of oral medication and injectable forms. Selection and determination of oral hypoglycaemic drugs used must be considering the severity of diabetes (glycemia level) as well as the condition general health of the patient including

other diseases and existing complications. Pharmacological therapy in the form of injections is insulin therapy, where in insulin therapy is a must for people with Type 1 DM. Type 1 DM, Langerhans β cells of the patient's pancreatic gland are damaged, so can no longer produce insulin. Although in part most people with Type 2 DM do not require insulin therapy, but nearly 30% do required insulin therapy in addition to oral hypoglycaemia therapy (PERKENI, 2021).

5. **Foot Care**

Perform a comprehensive foot care at least annually to identify risk factors for ulcers and amputations. Foot ulcers and amputation, which are consequences of diabetic neuropath and/or peripheral arterial disease (PAD), are common and represent major causes of morbidity and mortality in people with diabetes. Early recognition and treatment of patients with diabetes and feet at risk for ulcers and amputations can delay or prevent adverse outcomes (ADA, 2022).

2.3.3 Factors Affecting Self-Care Management in Diabetes Mellitus

According to the research from Ningrum et al (2019) the factors that affect the self-care management, including:

1. **Age**

Generaly humans experience physiological changes in diabetes mellitus patients usually occur at the age of over 30 years and are mostly experienced by adults over 40 years of age because insulin

resistance in diabetes mellitus patients increases at the age of 40-60 years. Age is very closely related to the increase in blood sugar levels so that as age increases, the prevalence of DM and impaired glucose tolerance is higher.

2. Gender

Self-care management can be done by anyone who suffers from diabetes mellitus, both men and women, but in fact women seem to care more about their health so they try optimally to do self-care management of the disease they are experiencing.

3. Education Level

Good education will produce positive behaviour so that it is more open and objective in receiving information, especially information about diabetes mellitus self-care management.

4. Illness Perception

Illness perception is how individuals view their disease such as how individuals feel that the illness they are suffering from is a serious illness that will last a long time or how big the impact of the disease is on an individual's life (Hilmayani et al., 2021). Illness perception involve cognitive and emotional representations, which provide an insight into how patients develop coping strategies that ultimately affect clinical outcomes (Balasubramaniam et al., 2019).

Illness perception is the main concept of the Common-Sense Model (CSM), according to this model individuals hold beliefs about their disease so that it determines how individuals respond to their

disease (Leventhal et al., 2016). So, the illness perception is the belief that an individual has about his illness that can motivate individuals to manage their disease independently. Someone who has a positive perception of the disease will have an impact on positive self-care management. Conversely, someone who has a negative perception of their illness will also have a negative impact on self-care management.

5. Duration of Disease

Patients with a longer DM diagnosis will experience good self-care management. Diabetics with older diagnoses have a greater understanding of its importance diabetes self-management behavior so they easily seek information regarding diabetes care. Patients with diagnosed disease years to be able to accept his illness and its treatment, and will have better adaptation to disease by integrating new lifestyle in everyday life.

6. Family Support

Family support is a process that establishes relationships between families through attitudes, actions and family acceptance that occur during life. When someone has diabetes mellitus, they need help from those around them, especially family, by telling the diabetes mellitus condition to those closest to them, it will help in controlling diet and medication.

2.3.4 Self-care Management's Measurement

Self-care behaviour in type 2 Diabetes Mellitus can be measured using the Summary of Diabetes Self-care Activities (SDSCA) Revised

questionnaire developed by Toobert et al (2000). This instrument assesses 6 aspects of self-care, namely: diet, physical activity, blood glucose monitoring, foot care, and smoking habits. This instrument consists of 18 questions with 17 questions having 8 alternative answers, namely 0 days to 7 days and 1 question with 2 alternative answers, namely "yes" and "no". This instrument is valid based on validity tests conducted by previous researchers using Cronbach's alpha coefficient of 0.72 and 0.98 for the Content validity index (Sugiharto et al., 2019)

2.4 The Correlation Between Illness Perception and Self-care Management in Type 2 Diabetes Mellitus Patients

Based on research results from Ledford et al (2019), from the 757 samples of patients living with prediabetes or type 2 diabetes that have been studied, multivariate tests demonstrate that patients living with T2DM have an overall different personal model of disease than patients living with pre-DM. Patients who have been diagnosed with T2DM report a better understanding of their disease and perceive it to be more chronic in nature than patients living with pre-DM. Based on research from Banowo (2021), from 58 samples, this study showed that the results of the Pearson Product Moment test showed a value of $p = 0.000$, meaning that there was a significant relationship between illness perception and self-care in patients with type 2 diabetes mellitus patients at the Padang City Public Health Centre.

There are also other studies from (Branch et al., 2021) that show the results of Illness perception in patients with type II diabetes was 45.9 ± 39.46 (range 0-70), and the duration of the disease was 7.97 ± 2.67. The medication

adherence score was 1.69 ± 2.93 (range 0-8). According to the severity of medication adherence of type II diabetic patients, 154 patients (59.2%) had poor drug adherence. Researcher found that low medication adherence is predictable when the illness perception is low. There is a significant relationship between illness perception and medication adherence in patients with type II diabetes. that low medication adherence is predictable when the illness perception is low.

Based on research results from (Hashimoto et al., 2019) from the 157 samples, There was a significant correlation between patients' perception of disease/diabetes knowledge and medication adherence. A low level of adherence to medications (group 4) was associated with patient's perception (odds ratio (OR) = 0.697; 95% confidence interval (CI): 0.523–0.930). A medium level of adherence to medications (group 3) was associated with high BMI (OR = 1.159; 95% CI: 1.034– 1.300) and poor diabetes knowledge (OR = 0.844; 95% CI: 0.741–0.961).

Based on research results from (Kim et al., 2019) In total, there were 189 participants. The median ages were 45 years for the young group, 58 for the middle group, and 73 for the older group, the positive association between illness perception and self-care management ($r = 0.268$, $p = 0.000$), and the negative association of illness perception and phosphorus ($r = -0.233$, $p = 0.001$) decreased. On the other hand, the positive association between illness perception and potassium increased ($r = 0.244$, $p = 0.001$), and the significant association between illness perception and hemoglobin disappeared. The change after the adjusted age group may be explained some effect of age group to the association of illness perception, self-care management, and clinical

outcomes. Illness perception is not directly related to mortality in this study, but illness perception does relate to self-care management and health outcomes.

2.5 Synthesize Table

Table 2.5 Synthesize Table: The Correlation Between Illness Perception and Self-care Management Type 2 Diabetes Mellitus Patients in the working area of Kabat Public Health Center Banyuwangi in 2023

No	Author	Study Design & Sample	Data Analysis	Variable and Measurement	Result	Conclusion
1	(Ledford et al., 2019) **Title:** The relationship between patient perceptions of diabetes and glycemic control: A study of patients living with prediabetes or type 2 diabetes	1. A cross-sectional study 2. N= 1028 3. n=757 samples 4. Sampling technique: Purposive sampling	Multivariate analysis of covariance (MANCOVA)	1. Variable Independent Patient perceptions of diabetes used Diabetes Illness Representations Questionnaire (DIRQ) 2. Variable Dependent Glycemic control used instrument health record: diagnosis (pre-DM or T2DM)	Among 757 respondents, multivariate tests demonstrate that patients living with T2DM have an overall different personal model of disease than patients living with pre-DM. Patients who have been diagnosed with T2DM report a better understanding of their disease and perceive it to be more chronic in nature than patients living with pre-DM. Findings revealed a potential but less significant difference in perceived seriousness.	In this first application of personal models of disease to prediabetes, results inform implications for clinicians to talk with patients about pre-DM. Patients living with pre-DM indicate less understanding of the "disease" and perceive it to be less "chronic," which may result from unclear clinician

				and most recent hemoglobin A1c at the time of survey.		
2	(Banowo, 2021) **Title:** The correlation of Illness Perception and Self-Care of Type 2 Diabetes Mellitus Patients at Padang City Health Center	1. A cross-sectional study 2. N= - 3. n= 58 samples 4. Sampling technique: Accidental sampling	Analytical correlational, Pearson Product Moment test.	1. Variable Independent Illness perception used instrument Brief Illness Perception Questionnaire (BIPQ) 2. Variable Dependent Self-care used instrument Summary of Diabetes Self Care Activities (SDSCA) Revised	This study showed that the average illness perception was 37.36 and self-care was 28.83. There was a correlation between illness perception with self-care of type 2 diabetes mellitus patients with a p-value = 0.000.	This study suggested that patients with type 2 diabetes mellitus carry out all components of self- care to prevent complications and increase their perceptions related to type 2 diabetes mellitus.
3	(Branch et al., 2021) **Title:**	1. A cross sectional study 2. N= -	SPSS 20 software. And using	1. Variable Independent	The results showed that the mean score of illness perception of type II	Based on the results of this study on the relationship between illness perception

	The relationship between illness perception and medication adherence in patients with diabetes mellitus type II: illness perception and medication adherence	3. n= 260 samples 4. sampling technique: systematic random sampling	descriptive statistics, Pearson correlation coefficient, Chi-square test, ANNOVA	Illness perception used instrument Brief Illness Perception Questionnaire (BIPQ) 2. Variable Dependent Medication adherence used instrument Morisky medication Adherence Scale (MMAS-8)	diabetes was 46.39 ± 9.45 (range 0-70) and the mean score of medication Adherence was 2.93 ± 1.9 (range 0-8). The results of Pearson correlation test showed a significant relationship between illness perception and medication Adherence ($P < 0.001$, $r = 0.199$). Also, the regression model showed that the dimensions of disease comprehension and personal control from illness perception were significantly related to medication Adherence of type II diabetic patients ($P < 0.001$).	and medical adherence in diabetic patients, it is suggested that in order to understand the increase in adherence to therapy, the perception of the disease should be increased through education to patients. Patients' illness beliefs are candidates for a psycho-educational intervention that should be targeted at improved disease management practices and better adherence to recommended healthy behaviors. Introduction
4	(Hashimoto et al., 2019) **Title:**	1. A cross-sectional study	Component analysis (PCA), cluster analyses,	1. Variable Independent Patient's perception used	PCA showed the interpretable medication adherence of patients with	In patients with T2DM, the patient's diabetes perception of "living an

	The relationship between patients' perception of type 2 diabetes and medication adherence: a cross-sectional study in Japan	2. N= - 3. n=157 samples 4. Sampling technique: Cluster sampling	and multiple regression analyses	instrument interview questionnaire 2. Variable Dependent Medication adherence used instrument interview questionnaire Ueno method	diabetes by using component 1 ("accessibility to medical treatment") and component 2 ("status of taking medicines"). We identified four groups that show significantly different medication adherence by using cluster analysis on the basis of the two components. Multiple regression analysis showed that body mass index (BMI), family history of diabetes, one factor of patient's perception (living an orderly life), and diabetes knowledge were found to be significant predictors of medication adherence in patients with T2DM.	orderly life" is associated with medication adherence. A poor adherence group may be able to change their adherence to diabetes treatment by developing the perception of "living an orderly life."

5	(Kim et al., 2019) **Title:** Illness Perceptions, Self-Care Management, and Clinical Outcomes According to Age-Group in Korean Hemodialysis Patients	1. A cross-sectional study 2. N= 318 3.n= 189 samples 4. Sampling technique: Cluster sampling	Fisher's exact test, Kruskal–Wallis test and the Bonferroni, Pearson's correlation coefficient and partial correlation coefficient	1. Variable Independent Illness perceptions motivation used instrument Brief Illness Perception Questionnaire (BIPQ) 2. Variable Dependent Self-care behavior using used instrument the Patient Activation Measure (PAM)	Illness perception was related to self-care behavior including 43.2% variance in diet, 11.4% variance in physical exercise, 9.1% variance in blood sugar screening, 11.7% variance in treatment compliance, and 10.1% variance in foot care, and they were statistically significant. Motivation was related to self-care behavior including 0.04% variance in physical exercise, 0.08% variance in blood sugar screening, and 0.04% variance in treatment compliance, and they were statistically significant.	Illness perception and motivation are related to self-care in patients with type 2 diabetes mellitus.

CHAPTER 3

CONCEPTUAL FRAMEWORK AND HYPOTHESIS

3.1 Conceptual Framework

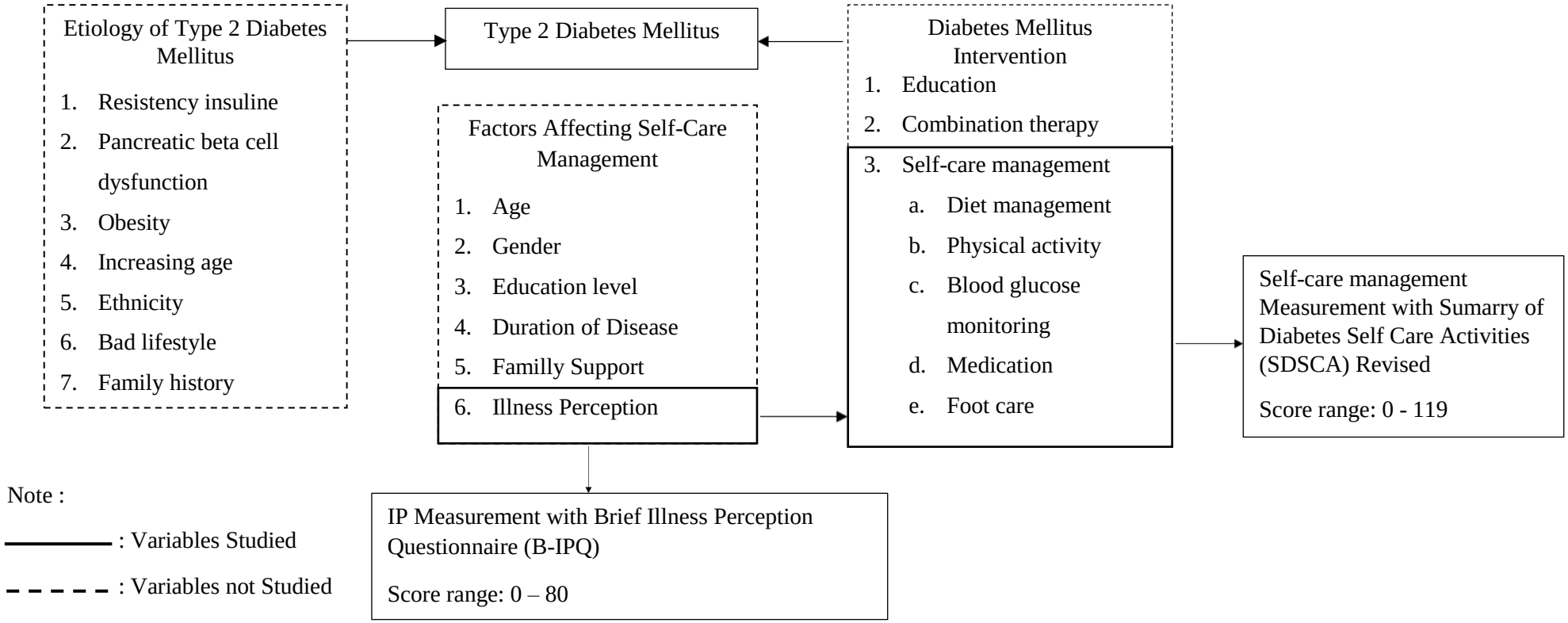

Figure 3.1 Conceptual Framework of the Correlation between Illness Perception and Self-care Management in Type 2 Diabetes Mellitus Patients in The Working Area of Puskesmas Kabat Banyuwangi in 2023

3.2 Hypothesis

Hypothesis is a statement of assumptions or temporary answers about the correlation between two or more variables that are expected to answer a question in research (Nursalam, 2020).

Ha: There is correlation between illness perception and self-care management in type 2 diabetes mellitus patients in the working area of Kabat Public Health Center Banyuwangi in 2023.

CHAPTER 4

RESEARCH METHOD

4.1 Research Design

This study used non-experimental quantitative research with correlational design. Quantitative research is a research that is meant to reveal symptoms holistically-contextually through collecting data from natural backgrounds by utilizing the researcher himself as a key instrument. Quantitative research is descriptive in nature and tends to use an inductive analysis approach (Ahyar et al., 2020).

The method used in this study was cross-sectional method. Cross-sectional research is a type of research that emphasizes the time of measurement/observation of independent and dependent variable data only once at a time (Nursalam, 2020). Cross-sectional research method in this study was conducted to determine the correlation between illness perception and self-care management in type 2 Diabetes Mellitus patients in the working area of Kabat Public Health Center Banyuwangi in 2023, in which measurements of illness perception and self-care management variables are carried out at the same time.

4.2 Frame Work

A framework is a work chart designed by researchers including whom will be researched (research subjects) and which variable influence the research (Aziz Alimul H, 2016).

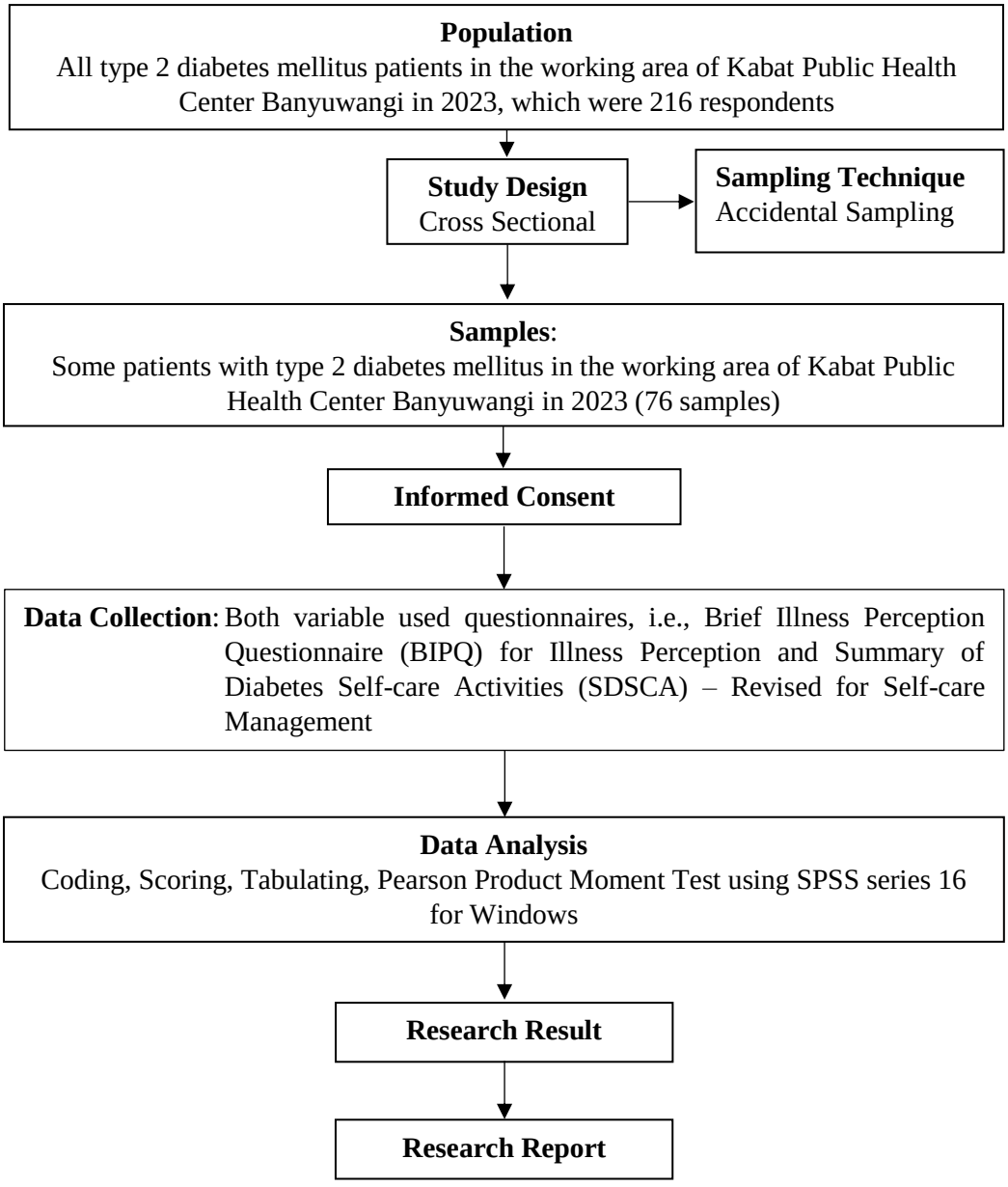

Figure 4.1 Frame Work: The Correlation between Illness Perception and Self-care Management in Type 2 Diabetes Mellitus Patients in The Working Area of Kabat Public Health Center Banyuwangi in 2023

4.3 Population, Samples, and Sampling Technique

4.3.1 Population

Population is a group of people or objects that have general characteristics that are determined by researchers to be studied which then conclusions are drawn (Sucipto, 2020; Sugiyono, 2016). The population in this study were all patients who had been diagnosed with Type 2 Diabetes Mellitus in the working area of Kabat Public Health Center Banyuwangi with the total number of 216 people in 2023.

4.3.2 Samples

According to Siyoto & Ali Sodik M (2015), sample is a portion of the number and characteristics possessed by the population, or a small part of members of the population chosen based on certain procedures that can represent the population. The sample in this study were some patients who had been diagnosed with Type 2 Diabetes Mellitus in the working area of Kabat Public Health Center Banyuwangi, which were 76 people in 2022.

For determining the amount of sample, this study used Yamanee calculation formula to estimate the proportion of the population, as follows (Sugiyono, 2019):

$$n = \frac{N}{1 + N\,(d)^2}$$

Note:

n = number of samples

N = number of populations

d = error rate in sampling (10% = 0,1)

$$n = \frac{216}{1+216(0,1)^2}$$

$$= \frac{216}{1+216(0,01)}$$

$$= \frac{216}{1+2,16}$$

$$= \frac{216}{3,16}$$

= 68,3 is rounded up to 70 respondents

To replace the sample space that dropped out, the researcher added 10 % of the sample.

1. Criteria of Sample

1) Inclusion Sample

Inclusion criteria are the characteristics of research subjects in general taken from a target population that is accessible and will be studied by the researchers (Nursalam, 2020). In this study, the sample were type 2 DM patients who were recorded and were in the working area of Kabat Public Health Center Banyuwangi, and they met the following criteria:

a. Patients who wants to be a respondent
b. Patients aged >20 years
c. Patients who has diagnose with T2DM more than 1 year
d. Patients who can write and read

2) Exclusion Sample

Exclusion criteria are eliminating or removing subjects who do not met the inclusion criteria of the study for various reasons so they could not become the sample in the study (Nursalam, 2020). Exclusion criteria of this study were:

a. Patient who was not cooperative
b. Patient who had a complication disease
c. Patient who experienced sudden health problems such as fatigue, weakness, dizziness and other problems that make it impossible for the patients to be a respondent.

4.3.3 Sampling Technique

Sampling is a process of selecting a portion of the population to become representative of the population. Sampling techniques are the methods used in sampling in order to obtain a sample that is truly in accordance with the entire research subject (Nursalam, 2020).

The sampling used in this study is nonprobability sampling technique. The nonprobability sampling technique used was accidental sampling. Accidental sampling is the process of taking samples based on samples that the researcher happens to meet. The respondents who are match with the inclusion criteria are used as sample by the researcher. In its application, the researcher chose the sample based on the criteria that has been determined in the working area of Kabat Public Health Center Banyuwangi in 2023.

4.4 Identification Variable

Variables are behaviors or characteristics that give different values to something (objects, people, etc.). The characteristics possessed by members of a group (people, objects, situations) are different from those possessed by the group. In research, variables are characterized as degree, amount and difference. Variable is also a concept at various abstract levels which is defined as a facility to measure or manipulate a study (Nursalam, 2020).

4.4.1 Independent Variable

Independent variable is a variable that affects or its value determines other variables. A stimulus activity that is manipulated by the researcher creates an impact on the dependent variable. Independent variables are usually manipulated, observed, and measured to find out their correlation or influence on other variables. In nursing science, the independent variable is usually a nursing stimulus or intervention given to the client to influence the client's behavior (Nursalam, 2020). In this study the independent variable is illness perception.

4.4.2 Dependent Variable

Dependent variable is a variable whose value is determined by other variables. The response variable will appear as a result of the manipulation of other variables. In the behavioral sciences, the dependent variable is the observed behavioral aspect of an organism that is subjected to a stimulus. In other words, the dependent variable is a factor that is observed and measured to determine whether there is a correlation

or influence from the independent variable (Nursalam, 2020). In this study the dependent variable is self-care management.

4.5 Operational Definition

Table 4.5 Operational Definition of The Correlation Between Illness Perception and Self-care Management in Type 2 Diabetes Mellitus Patients in the working area of Kabat Public Health Center Banyuwangi in 2023

No	Variable	Operational Definition	Parameter	Measurement	Scale	Scoring
1	Illness Perception	Diabetes Mellitus patients' beliefs about their disease. It consists of 9 dimensions of the disease.	a. Consequence b. Timeline c. Personal Control d. Treatment control e. Identity f. Concern g. Illness Comprehensibility h. Emotion i. Causal Factors	Brief Illness Perception Questionnaire (B-IPQ)	Ratio	Score range 0 - 80
2	Self-care Management	Self-care management includes the patient's skills during the past week including diet management, physical activity, blood glucose monitoring, medication and foot care.	a. Diet Management b. Physical Activity c. Blood Glucose Monitoring d. Medication e. Foot Care	Summary of Diabetes Self-care Activities (SDSCA) Revised	Ratio	Score range 0 - 119

4.6 Data Collection and Data Analysis

4.6.1 Research Instrument

The research instrument used in this study consisted of 2 questionnaires, namely the illness perception questionnaire and the self-care questionnaire for diabetes mellitus patients.

1. **Illness Perception**

   Illness perception in type 2 Diabetes Mellitus is measured by using Brief Illness Perception Questionnaire (B-IPQ). This questionnaire consists of 9 question items using a ratio scale with a range of 0-10 and there is 1 essay question. The range of scores in B-IPQ questionnaire is 0-80 (Broadbent et al., 2006). The result of the validity test by Bangga (2016) showed that 8 question items in Indonesian version of B-IPQ had $r > 0.3$ and $p = 95\%$ (0.05). Those values are the value limit of instrument item that could be used in the research. The result of validity test using Cronbach's alpha showed that the coefficient was $0.812 > 0.7$ (0.05) with 95% confidence level (0.05) and individual sub-scale of 0.506 – 0.816.

2. **Self-care Management**

   Self-care management in type 2 Diabetes Mellitus is measured by using Summary of Diabetes Self-care Activities (SDSCA) - Revised (Toobert et al., 2000). This instrument assesses aspects of self-care management, namely diet, physical activity, blood sugar monitoring, foot care, and smoking status. The total questions of the instrument are 17 questions. The validity test was carried out by

previous researchers using Cronbach's alpha. The coefficient obtained content validity index of 0.72 and 0.98 (Sugiharto Ph et al., 2018).

For assessment, it was used score that starts from 0-7 depending how many days the patient do self-care in a week. Ratings of positive questions are 0 = 0, 1 = 1, 2 = 2, 3 = 3, 4 = 4, 5 = 5, 6 = 6, 7 = 7. While on negative questions, the opposite applies. The total score is 0 – 119 with the assessment stating that the higher the score, the better the self-care management**.**

4.6.2 Research Location and Time

1. Location or place of research

This research conducted in the working area of Kabat Public Health Center Banyuwangi.

2. Time of research

This research was be conducted on August, 12th – 19th 2023.

4.6.3 Data Collection

1. Primary Data

Primary data is data obtained from direct respondents by filling out a questionnaire that had been determined by the researcher, namely illness perception questionnaire, and self-care management questionnaire. The stages in collecting primary data were as follows:

1) The researcher submits a permit for initial data collection and research to the Center of Research and Community Services (PPPM) STIKES Banyuwangi.

2) The researcher submitted a permit for data collection and research at Banyuwangi City Health Department by bringing a letter from the Center of Research and Community Services (PPPM) STIKES Banyuwangi.
3) The researcher submitted a permit for data collection and research which was granted to the Head of the Kabat Public Health Center Banyuwangi.
4) After the researcher got a permission letter to do research in the working area of Kabat Public Health Center Banyuwangi, the researcher did the research in the working area of Kabat Public Health Center Banyuwangi.
5) The respondents who were willing to be the research sample signed the available informed consent form.
6) After the prospective respondent agreed to be involved in the research, the researcher or research assistant would lead the filling out of the questionnaire with guided interviews to answer the questionnaire. Each respondent took 5-10 minutes completing the questionnaire.

2. Secondary Data

Secondary data was obtained from the Banyuwangi Regency Health Office and Kabat Public Health Center Banyuwangi.

4.6.4 Data Analysis

1. Editing

Editing is an activity to check and correct entries questionnaire. Editing includes filling out, completeness of answers in questionnaires and the answer relevance to the questionnaire by making data corrections. When filling out the questionnaire, it must be immediately processed for editing so that if an error or incompleteness occurs in the process of filling it out, the respondent can correct it. The researcher re-checked some of the questionnaire answers that were not in accordance with the statement (Toulasik, 2019).

2. Coding

Coding is changing data in the form of sentences or letters into numeric data. Coding is done by marking each answer, categorizing the answers and then put them in a table to make it easier to analyze (Toulasik, 2019). Coding in this study is as follows:

1) Age
    a. Late adult 36 – 45 years old (1)
    b. Early elderly 46 – 55 years old (2)
    c. Late elderly 56 – ≥ 65 years old (3)
2) Gender
    a. Male (1)
    b. Female (2)

3) Education levels

   a. Low (1)

   b. Moderate (2)

   c. High (3)

4) Occupation

   a. Unemployed (1)

   b. Farmer (2)

   c. Private sector employees (3)

   d. Entrepreneur (4)

   e. Civil servant (5)

   f. Housewife (6)

   g. Other (7)

5) Duration of disease

   a. 1 – 5 years (1)

   b. 6 – 10 years (2)

   c. >10 years (3)

6) Comorbid disease

   a. No (1)

   b. HT (2)

7) Treatment

   a. Not taking medicine (1)

   b. Medicine prescription (2)

   c. Herbal medicine (3)

   d. Insulin (4)

e. Medicine prescription & herbal medicine (5)

f. Medicine prescription & insulin (6)

3. Scoring

Scoring is the activity of adding up the values obtained from the data collection sheet of the respondents (Nursalam, 2020). In this study, data collection on both variables used questionnaire sheets.

In this study, the range of scores of the independent variable (illness perception) is 0 – 80. While, the range of scores of the dependent variable (self-care management) is 0 – 119.

4. Tabulating

Tabulation is systematic arrangement of data in column and rows. It is designed to simplify presentation of data for the purpose of analysis and statistical inferences (Clark, 2018).

5. Statistical Analysis

1) Univariate Analysis

Univariate analysis is an analysis to describe characteristics of each variable in the study (Notoatmodjo, 2022). The univariate analyses in this study are the illness perception and the self-care management.

2) Bivariate Analysis

Bivariate analysis is used to determine the interaction of dependent and independent variables in the form of correlation (Sujarweni, 2015). The illness perception variable and self-care management variable were tabulated by using SPSS 16 for

Windows. For the Statistic test, this study used Pearson Product Moment Test with SPSS 16 for Windows to determine the correlation between the independent variable and the dependent variable.

Table 4.6 Data Analysis: The Correlation Between Illness Perception and Self-care Management Type 2 Diabetes Mellitus Patients in the working area of Kabat Public Health Center Banyuwangi in 2023

No	Purpose	Variables	Measurement Scale	Statistic Approach
1	Identification of demographics data variables	Demographic Characteristics 1. Age 2. Gender 3. Education level 4. Occupation 5. Duration of diagnosis 6. Comorbid disease 7. Treatment	 Ordinal Nominal Ordinal Nominal Ordinal Nominal Nominal	Descriptive Statistics
2	The correlation between illness perception and self-care management in type 2 diabetes mellitus patients	Data results of Illness Perception from the questionnaire	Ratio	Pearson Product Moment Test
		Data results of Self-care Management from the questionnaire	Ratio	Pearson Product Moment Test

4.7 Research Ethics

The respondents who have the requirements will have their rights protected to ensure confidentiality. This research has been tested for the ethical feasibility of research and has received ethical permission from Research Ethics Committee Banyuwangi Institute of Health Sciences with the research ethics number NO. 108/01/KEPK-STIKESBWI/VI/2023. Before the research process

is carried out, respondents are given an explanation of the benefits and objectives of the research. After respondent agrees, they are asked to sign a letter of agreement to become a respondent. Furthermore, researchers conduct research by paying attention to ethical issues which include the following:

1) **Justice**

In research, respondents must be treated fairly since before the research was conducted to the completion of research without any concern (Nursalam, 2020). Research respondents were treated equally based on moral values, dignity and human rights by researchers. In addition, researchers did not discriminate the respondents in terms of gender, education or occupation while participating in the research.

2) **Informed Consent**

The researcher distributed informed consent sheets to respondents before conducting the research. Respondents obtained complete and thorough information about the purpose of the research carried out. The respondent had the right to be a respondent or not in the research that was conducted (Nursalam, 2020).

3) **Anonymity**

In research, the respondents have the right to ask the researchers to keep their data confidentially. The researchers may not disseminate the respondent data that has been obtained to parties who are not involved in the research process (Nursalam, 2020). The researcher did not include the respondent's name or use initials with the aim of protecting the respondent's identity.

4) Confidentiality

Researchers give the same treatment to each respondent, either before, during or after participating in the study.

5) Non-Maleficence

Respondents must be kept away from unfavorable conditions in research. The researcher must convince the respondent that the respondent's participation in the research that will be carried out will not be detrimental in any form (Nursalam, 2020). The benefit that can be given from this research is the correlation between illness perception and self-care management in type 2 diabetes mellitus patients and also this research can be useful for type 2 diabetes mellitus patients in controlling their blood sugar.

4.8 Research Limitations

1) The effect of social and cultural factors (language) on respondents made it difficult for some respondents to understand the questions from the questionnaire. Mostly respondents speak Javanese and Osing and do not too fluence in bahasa Indonesia, so the researcher had to accompany each respondent in filling out the questionnaire.
2) Some of respondents did not completely fill the questions in the questionnaire, therefore some respondents fell out from the inclusion criteria.