

CHAPTER 2 LITERATURE REVIEW

2.1. Elderly

2.1.1. Definition of Elderly

Elderly is the final stage of life, generally beginning at age 60 and continuing until death. This period is usually defined by various changes that affect a person's physical, psychological, and social condition (Masril et al., 2022). Aging causes changes in the structure and function of cells, tissues, and organs, which increases the risk of chronic diseases (Akbar et al., 2020).

Aging is a natural process that cannot be avoided and will be experienced by every individual who lives a long life. The speed at which aging occurs varies from person to person, depending on various internal and external factors. In general, human life is divided into several stages, from infancy to old age, and when a person reaches the age of 60, the body's ability to repair itself begins to decline. This makes the elderly more susceptible to infections and other health problems (World Health Organization, 2019).

The aging process makes older adults vulnerable to various health problems. Older adults often experience a decline in bodily functions due to the loss of muscle tissue, nervous system, and other tissues. The effects of aging can affect various aspects of life, including social, economic, physical, mental, and biological aspects.

Besides that, older folks are more likely to get degenerative diseases. (Azizah, 2019). The elderly often suffer from non-communicable diseases such as hypertension, stroke, arthritis or rheumatism, gout, and diabetes mellitus. (J et al., 2020).

2.1.2. Elderly Age Limit

Based on Government Regulation No. 43 of 2004, elderly people are individuals aged 60 years and above, as quoted by Fitria and Aisyah (2020). The WHO divides the elderly into several categories:

1. Ages 60-74: Early elderly
2. Ages 75-84: Middle-aged elderly
3. Ages 85-94: Advanced elderly
4. Ages 95 and up: Very Elderly

Meanwhile, according to the Indonesian Ministry of Health (*Depkes RI*):

- a) Pre-elderly: 45-59 years old
- b) Elderly: ≥ 60 years old
- c) High-risk elderly: ≥ 70 years old or ≥ 60 years old with health problems
- d) Potential elderly : still independent
- e) Non-potential elderly: completely dependent on others (Khasanah, 2021).

2.1.3. The Aging Process

Aging is a gradual change in the human body that is influenced by biological, social, and environmental factors (Maghfuroh & Yelni, 2023). Various factors can influence the rate of aging, one of which is physical activity. Increasing physical activity can improve health status, enhance functional ability in performing daily activities, slow down the aging process, and prevent premature aging in the elderly. Regular physical exercise can delay age-related bodily changes and is crucial for maintaining optimal health and sustaining work capacity over a longer period of time (Olena Andrieieva et al., 2019).

Aging is a natural process experienced by every individual over time, characterized by complex biological, psychological, and social changes. Among all these aspects, biological changes are the main component that reflects the core of this process. Biological changes are often clearly visible, one of which is the reduction in the number of cells in the body. The process of apoptosis, or programmed cell death, is the primary cause of the decrease in cell numbers within organs and tissues. As age increases, this phenomenon can lead to a decline in the function of vital organs such as the liver, kidneys, and lungs, which in turn impacts overall health (Badriah et al., 2024).

During the aging process, there is also a decrease in cells, a reduction in body fluids, a decrease in intracellular fluids, a decrease in the number of brain cells, and brain shrinkage (atrophy), which

causes the brain to lose approximately 5-10% of its weight (Siregar & Susi, 2022). Cognitive development in late adult life varies from person to person. Some aspects of intelligence, such as information processing speed and abstract thinking ability, generally decline with age. (Fahlevi et al., 2023).

Cognitive changes that occur in individuals in late adulthood affect brain performance, which is influenced by information stored in memory and an individual's lifestyle. The human brain has the flexibility to develop through increased brain vitality. This increase aims to optimize brain function, which ultimately impacts an individual's cognitive development. However, in late adulthood, brain function and performance tend to degenerate, which can lead to a decline in information processing speed and some intelligence abilities. (Fahlevi et al., 2023).

2.1.4. Changes That Occur in the Elderly

Based on Kusumo (2020), the elderly experience various physiological changes, including :

1) Sensory System

- Auditory: Older adults may experience presbycusis, which is hearing loss due to a loss of sensitivity to high-pitched sounds. This condition causes sounds to be unclear, making words difficult to understand. It affects about half of the population over the age of 60.

2) Integumentary System

- Skin: Skin becomes thinner, saggy, and loses elasticity. This condition is triggered by a decrease in oil and sweat glands, as well as the appearance of brown spots (liver spots).

3) Musculoskeletal System

- Connective tissue: Collagen and elastin, which are connective tissues that support the skin, tendons, and cartilage, stretch irregularly.
- Bones: There is a decrease in bone density, which can lead to osteoporosis, pain, deformities, and even fractures.
- Muscles: Muscle fibers decrease in number and size, while fat and connective tissue in muscles increase.
- Joints: The connective tissue around the joints (tendons, ligaments, and fascia) experiences a decrease in elasticity.

4) Cardiovascular and Respiratory Systems

- Cardiovascular: Cardiac mass increases, the left ventricle undergoes hypertrophy, and the heart's ability to stretch decreases due to changes in connective tissue and the accumulation of lipofuscin. The cardiac conduction system also changes into connective tissue.
- Respiratory: The connective tissue of the lungs undergoes changes, so that total lung capacity remains the same, but lung reserve volume increases to compensate. Changes in the

muscles, cartilage, and joints of the thorax reduce respiratory movement and thoracic flexibility.

5) Nervous System

The elderly tend to experience a decrease in sensitivity to stimuli and touch and show slower responses. (Siregar & Susi, 2022).

6) Cell

The elderly experience a decline in cells, a reduction in body fluids, a decrease in intracellular fluids, a reduction in the number of brain cells, and brain shrinkage (atrophy), which causes brain weight to decrease by around 5-10%. (Siregar & Susi, 2022).

7) Cognitive

The elderly will experience cognitive changes, particularly related to memory loss (senility), the ability to remember, learn, understand or perceive, solve problems, make decisions, achieve goals, and motivation (Dewi dkk., 2022).

2.1.5. Health Problems in the Elderly

The elderly are more susceptible to disease due to degenerative processes that affect various body systems. Some common conditions that are often encountered include:

1) Diabetes Mellitus

Diabetes type 2 is the most common form of diabetes, accounting for approximately 85-90% of all diabetes cases, and

is often found in the elderly population. Diabetes poses a major challenge in global health due to its high prevalence and increased risk of complications and mortality in the elderly compared to younger age groups (Liang Bin et al., 2020).

2) Hypertension

Hypertension is one of the non-communicable diseases that is a leading cause of early death globally. A person is diagnosed with hypertension if their systolic blood pressure exceeds 140 mmHg or their diastolic blood pressure exceeds 90 mmHg (Yunus et al., 2023).

Hypertension in the elderly is generally caused by changes in the structure and function of peripheral blood vessels, which also affect blood pressure. These changes include the development of atherosclerosis, reduced elasticity of connective tissue, and decreased ability of smooth muscle cells in blood vessels to relax. As a result, the ability of blood vessels to stretch and dilate decreases. This condition makes the aorta and large arteries less effective in accommodating the volume of blood pumped by the heart, leading to reduced cardiac output and increased peripheral resistance. (Smeltzer & Bare, 2001 in Maulana, 2016).

3) Joint Pain

The aging process causes a decline in bodily functions, including those of the musculoskeletal system. In older adults,

bones lose calcium content, making them more susceptible to fractures, while joint inflammation can cause increasingly intense pain. Additionally, there is a reduction in cartilage in weight-bearing joints. The rupture of joint capsule components and progressive changes in collagen within connective tissue further exacerbate this condition. As a result, the elderly may experience pain, inflammation, reduced joint mobility, and deformities (Gunadi et al., 2020).

4) Stroke

A stroke occurs when the supply of oxygen and nutrients to the brain is disrupted due to a blockage or rupture of blood vessels in the brain. This condition is the third leading cause of disability worldwide, as it can cause neurological disorders such as vision problems, speech difficulties, limited mobility, and paralysis of the face or limbs. The risk of stroke increase with age in the elderly (Oktarina et al., 2021).

5) Depression

Aging brings physical and structural changes accompanied by a decline in bodily functions. Difficulty adjusting to psychological changes is a common problem among the elderly, and this can increase the risk of mental disorders such as depression (Sonhaji et al., 2021).

2.2. Hypertension

2.2.1. Definition of Hypertension

Blood pressure measurements yield two values. The first value (the top number) represents the pressure when the heart contracts (systolic), while the second value (the bottom number) indicates the pressure when the heart is in the relaxation phase (diastolic). Hypertension, or high blood pressure, is a condition where a person's blood pressure is above normal levels. This is determined by measuring systolic and diastolic blood pressure using a blood pressure monitor. A person is considered to have hypertension if their systolic blood pressure reaches at least 140 mmHg and their diastolic blood pressure reaches at least 90 mmHg (Kemenkes RI, 2021).

Hypertension, or high blood pressure, is a disorder of the blood vessel walls characterized by increased blood pressure. This condition inhibits the flow of oxygen and nutrients to the body tissues that need them, forcing the heart to work harder to meet these needs. If it persists for a long time, this condition can become a chronic disease (Hastuti, 2022).

2.2.2. Classification of Hypertension

Based on PDHI (2021), hypertension can be classified into two main groups, namely based on the causative factors and severity, with the following details:

a. Based on Etiology

1) Primary Hypertension (Essensial)

Primary hypertension is the most common form of hypertension, accounting for about 90% of all cases. Although the exact cause is unknown, this condition is thought to be related to hereditary factors, lifestyle, and environmental conditions. This type of hypertension is more common in women, individuals living in urban areas, and those who experience chronic psychological stress due to work or certain personality traits, such as frustration.

2) Secondary Hypertension

This type accounts for 5-10% of hypertension cases and is generally caused by specific medical conditions that can be treated. Early treatment is very important to prevent complications, such as:

- Renal hypertension: occurs as a result of ischemia in the kidneys, which stimulates the release of the hormone renin from the organ.

- Hormonal hypertension: cause by hormonal imbalances, such as in conditions such as adrenogenital syndrome, primary hyperaldosteronism, cushing's syndrome, pheochromocytoma, or as a result of hormonal contraception use.
- Neurogenic Hypertension: this increase in blood pressure can be triggered by disorders of the brain, such as encephalitis, brain swelling (cerebral edema), bleeding in the brain, or tremors that activate the sympathetic nervous system.

b. Based on the Degree of Severity

Table 2.1
Classification of Hypertension

Category	Blood Pressure Systolic (mmHg)	Blood Pressure Diastolic (mmHg)
Normal	<130	85
Normal-high	130-139	85-89
Grade 1 Hypertension	140-159	90-99
Grade 2 Hypertension	≥160	≥110

Source: International Society of Hypertension Global Hypertension Practice Guidelines, 2020

2.2.3. Risk Factors

Hypertension risk factors are divided into two types, namely those that can be controlled and those that cannot be controlled, including:

a. Controllable Factors

1) Obesity

Weight gain causes an increase in body fat. If this condition persists for a long time, it can affect blood flow and

oxygen distribution throughout the body. This triggers dilation of blood vessels and an increase in blood pressure. Obesity also increases fat tissue, which requires more blood flow, thereby increasing the volume of blood that the heart must pump. Excess weight can cause salt and water retention due to elevated insulin levels, which in turn increases blood volume and accelerates heart rate. The combination of these factors results in elevated blood pressure (Kartika et al., 2021).

2) Lack of Activity

A lack of physical activity can increase the likelihood of developing hypertension, as this condition is often associated with weight gain. Individuals who are physically inactive typically have a faster heart rate, which causes the heart muscle to work harder when pumping blood with each contraction. This condition puts additional strain on the cardiovascular system and can trigger an increase in blood pressure (Maharatu, 2019).

3) Excessive Salt Intake

Based on the World Health Organization (WHO), following the recommended salt intake can help lower the risk of hypertension. The WHO suggests limiting sodium intake to a maximum of 100 mmol per day, which is equivalent to approximately 2.4 grams of sodium or 6 grams of salt. Excessive sodium intake can increase sodium levels in extracellular fluid.

In an effort to balance this condition, fluid from inside the cells moves to the outside of the cells, causing an increase in extracellular fluid volume. This also increases blood volume, which ultimately poses a risk of causing hypertension (Siswanto et al., 2020).

4) Smoking and Alcohol Consumption

The nicotine and carbon monoxide inhaled when smoking enter the bloodstream and damage the endothelial lining of the arteries. This damage increases the risk of arteriosclerosis and causes an increase in blood pressure (Kartika et al., 2021). In addition, alcohol consumption also has a negative impact on health. Alcohol can be a trigger for hypertension because its effects are similar to those of carbon dioxide, namely increasing blood acidity, making blood thicker, and forcing the heart to work harder to pump blood. Additionally, alcohol can increase cortisol levels in the body, which then stimulates the renin-angiotensin-aldosterone system (RAAS), leading to elevated blood pressure and an increased risk of hypertension (Mega et al., 2019).

5) Stress

Stress or emotional pressure such as sadness, anger, fear, depression, or guilt can stimulate the adrenal glands to release the hormone adrenaline. This hormone accelerates and

strengthens the heartbeat, causing blood pressure to rise. If stress persists over a long period of time, the body will attempt to adapt, but this can lead to organ dysfunction or pathological changes. One of the effects of this condition is the development of hypertension (Kartika et al., 2021).

b. Uncontrollable Factors

1) Family History

Having a family member with a history of hypertension can increase the likelihood of someone developing the same condition. The risk of hypertension in individuals who have close family members with a history of hypertension increases up to fourfold. Statistical data shows that when one parent has a non-communicable disease, their child has a 25% chance of developing it during their lifetime. However, if both parents have the same disease, the risk can increase to 60% (Unger et al., 2020).

2) Age

As we age, our bodies undergo physiological changes, one of which is thickening of the blood vessel walls caused by collagen accumulation in the muscle layer of the vessels. This condition makes blood vessels less elastic and restricts blood flow, typically beginning around the age of 45. Additionally, there is an increase in peripheral resistance, a decrease in

baroreceptor sensitivity to changes in blood pressure, and impaired kidney function, including reduced blood flow to the kidneys and a decrease in glomerular filtration rate. These factors are classified as causes of hypertension that are beyond an individual's control (Musfirah & Masriadi, 2019)

3) Gender

Men are more likely to develop hypertension than women. This is related to psychological factors, such as the work pressure often experienced by men, as well as unhealthy habits such as smoking. Meanwhile, women have a lower risk before menopause because the hormone estrogen provides protection against cardiovascular disease (Tumanduk et al., 2019)

2.2.4. Etiology

Based on its cause, hypertension is classified into two main categories: primary (essential) hypertension, whose exact cause is unknown, and secondary hypertension, which arises from other medical conditions such as narrowing of the renal arteries or disorders of the renal parenchyma (Yogi, 2019).

If left untreated, long-term hypertension can have serious consequences, as it can potentially cause damage to various organs such as the heart, brain, eyes, kidneys, and large blood vessels. Hypertension can be treated through two main approaches: medical treatment (pharmacological) and non-pharmacological methods.

Non-pharmacological approaches include lifestyle modifications, such as adopting a healthy diet, exercising regularly, reducing alcohol consumption, and consuming nutritious foods. Pharmacological approaches involve taking antihypertensive medications to help control blood pressure. Often, both approaches must be implemented simultaneously to maintain blood pressure within normal ranges and prevent further complications (Zainuddin et al., 2022).

2.2.5. Signs and Symptoms

Hypertension is a serious disease and often does not present with obvious symptoms. Due to its elusive nature, this condition is known as a silent killer, as many individuals are unaware that they are experiencing (Purnamasari & Meutia, 2023). Some common signs that may appear in people with hypertension include:

- a. Heartbeat that feels fast or irregular
- b. Blurred vision
- c. Headache accompanied by a heavy feeling in the back of the neck
- d. The appearance of ringing in the ears
- e. Feelings of anxiety or uneasiness arise
- f. Pain or discomfort in the chest
- g. Easily fatigued

2.2.6. Pathophysiology

Human blood contains angiotensinogen, which is produced by the liver. The mechanism of hypertension begins with the conversion of angiotensin I to angiotensin II, which is mediated by the angiotensin-converting enzyme (ACE). Angiotensin I is produced from the conversion of angiotensinogen in the blood with the help of the hormone renin. After that, angiotensin I is converted into angiotensin II by the ACE enzyme found in lung tissue. Angiotensin II plays a crucial role in regulating blood pressure (Marhabatsar & Sijid, 2021).

Angiotensin II functions to increase blood pressure through the constriction of arteries. Its effect occurs through rapid vasoconstriction. Antidiuretic hormone (ADH) or vasopressin is one of the fastest-acting vasoconstrictors in the body. ADH is produced in the hypothalamus and plays a role in regulating osmolality and urine volume through the kidneys. Increased ADH levels reduce urine production, resulting in less fluid being excreted by the body. This condition leads to increased osmolality and an increase in fluid volume in the extracellular space, as fluid is drawn from the intracellular compartment. This increases blood volume, which can ultimately lead to hypertension. (Marhabatsar & Sijid, 2021).

High blood pressure can also be caused by the hormone aldosterone, a steroid hormone secreted by the glomerulosa cells in

the adrenal cortex. The adrenal cortex plays a key role in regulating sodium (Na) reabsorption and potassium (K) excretion in the renal tubules. Aldosterone enhances this process by stimulating the activity of the sodium-potassium ATPase enzyme, which increases sodium reabsorption and potassium excretion. Additionally, this hormone increases sodium permeability in the luminal membrane of the cortex. When sodium levels from salt (NaCl) increase, the body needs to dilute them by increasing extracellular fluid volume. This increase in extracellular fluid can ultimately lead to hypertension (Marhabatsar & Sijid, 2021).

2.2.7. Complications

Based on Maulana (2022), hypertension can cause various complications, including:

1) Stroke

A stroke can occur due to the rupture of blood vessels in the brain caused by high blood pressure, or due to an embolism originating from blood vessels outside the brain that are under high pressure and then block blood flow to the brain.

2) Kidney failure

Gradual damage to the capillaries of the kidneys (glomeruli) caused by high blood pressure can lead to kidney failure. Damage to the glomerular membrane allows blood to enter the nephrons,

the main working units of the kidneys, which can then interfere with the filtration process and cause hypoxia or cell death.

3) Encephalopathy (brain damage)

Brain damage is often found in malignant hypertension, when extreme blood pressure causes increased capillary pressure and forces fluid to leak into the interstitial space in the central nervous system.

4) Myocardial infarction

Myocardial infarction occurs when a coronary artery blocked by atherosclerosis is unable to supply sufficient oxygen to the heart muscle tissue, or when a blood clot (thrombus) forms and obstructs blood flow in the vessel.

2.2.8. Management

The high incidence of hypertension in Indonesia poses a challenge for healthcare professionals to optimize the treatment methods provided (Siswati et al., 2023). The treatment of hypertension can be divided into two types, namely:

1) Pharmacology

Pharmacological treatment for hypertension varies depending on the severity of the disease and the presence or absence of complications. Based on consensus, the management of hypertension consists of three steps. In steps I and II, a combination of two types of drugs is used, namely ACEi/ARB (such as captopril

or lisinopril) and CCB/diuretics (such as furosemide or cipro). In step III, a diuretic or alpha/beta blocker, such as spironolactone, is added. sipro) (PDHI, 2021)

2) Non-pharmacological

Non-pharmacological therapy is a complementary treatment to pharmacological therapy for hypertension. This approach focuses more on lifestyle and habit changes, such as following a low-salt or low-sodium diet, using herbal remedies, drinking boiled bay leaf water, and practicing relaxation therapy. Additionally, non-pharmacological approaches are often chosen as an alternative or complement to medication therapy because they are considered safer and have minimal long-term side effects. However, many people still lack understanding of its benefits or are reluctant to undergo this therapy, citing the need for a long time commitment and high consistency. As a result, many prefer pharmacological therapy, which although provides faster results, can cause long-term side effects (Iqbal & Handayani, 2022).

2.3. Knowledge

2.3.1. Definition of Knowledge

Knowledge is the result of an individual's recognition of an object through sensory activity. This information is generally received through the five senses, with the eyes and ears as the main channels.

A person's actions or behavior (overt behavior) are influenced by their knowledge or cognitive domain (Cahyono, 2019).

Patients' understanding of hypertension is very important, especially in recognizing the appropriate treatment to improve their health. With good management, high blood pressure can be controlled, thereby reducing the risk of recurrence. When combined with lifestyle changes and antihypertensive medication, blood pressure within the normal range generally will not damage the heart or other organs. (Herawati et al., 2020).

Based on Mujahidullah (2012) in (Aditya, 2022), the aging process also affects the decline in brain function, one of which is marked by changes in intelligence (IQ). Decline in right brain function in the elderly can lead to difficulties in nonverbal communication, problem-solving, concentration, and recognizing faces. Additionally, another change is a decline in memory. Due to the reduced brain function, the elderly have difficulty processing stimuli, which ultimately impacts their ability to remember.

2.3.2. Factors Affecting Knowledge

Darsini, Fahrurrozi, and Cahyono (2019) state that a person's level of knowledge is influenced by various factors, which can generally be divided into two groups, namely internal factors and external factors.

a. Internal factors

1) Age

Age affects a person's way of thinking and ability to capture information. As age increases, an individual's maturity level, mindset and understanding also develop. This makes a person more receptive to information so their knowledge tends to increase.

2) Gender

Gender also plays a role in influencing knowledge levels. In general, women are more dominant in using the right hemisphere of the brain, while men usually have superior motor skills compared to women.

b. External factors

1) Education

The education process helps individuals receive and understand information. The higher a person's level of education, the greater his or her ability to gain and expand knowledge, including knowledge in the health sector. Formal education has a strong relationship with a person's level of knowledge, where the higher the level of education, the wider the knowledge is expected. However, a low level of education does not necessarily reflect a lack of knowledge, because nowadays information can be obtained through various

sources other than formal education. (Afriani et al., 2023). The attitude of hypertensive patients is influenced by their level of knowledge and behavior related to efforts to prevent an increase in blood pressure. Attitude is a form of belief and view that individuals have towards a particular object or condition, which is relatively consistent and can affect the way they react. A person who shows a positive attitude towards something generally has a good understanding or a positive view of it. (Susiati, Irna., Hidayati., 2016 dalam Afriani et al., 2023). Most of the elderly suffering from hypertension showed a positive attitude, this was due to their fairly good understanding of hypertension (Zaitun, 2018 dalam Afriani et al., 2023).

2) Job

A job is a form of activity that a person carries out to earn income to make ends meet. In addition, through work activities, a person can also add insight, experience, and get information from their work environment.

2.3.3. Level of Knowledge

Knowledge is the result of the process of understanding and recognizing something that is obtained after the individual senses an object. According to Notoatmodjo (2010) in Syamsi and Asmi (2019), there are six levels of knowledge, namely:

1) Know

Knowing is a person's basic ability to recall information or material that has been previously acquired. This ability includes recognition and recall of specific facts. This level is the simplest and is usually assessed through activities such as explaining or mentioning.

2) Comprehension

Comprehension refers to a person's ability to correctly explain known information and interpret material accurately. Someone who understands the material can usually provide relevant examples.

3) Application

Application refers to a person's ability to use acquired knowledge or concepts in real-life situations. This includes applying principles, laws, and formulas in appropriate contexts.

4) Analysis

Analysis is the skill of breaking down information into smaller elements while still understanding the relationships between parts of a system or structure. Analysis is demonstrated through activities such as comparing, separating, or describing.

5) Synthesis

Synthesis is the ability to combine separate elements into a new, coherent structure or form. Synthesis often involves designing, summarizing, or adapting ideas into new formulations.

6) Evaluation

Evaluation is the ability to assess or consider information or objects, either based on established standards or independently developed criteria.

2.4. Self-Management

2.4.1. Definition of Self Management

Self-management is an individual's capacity to independently carry out care measures to maintain survival, improve health conditions, and achieve optimal quality of life. This involves an individual's efforts to manage symptoms, carry out treatment, adapt to physical and mental conditions, and change lifestyle patterns in accordance with the disease they are suffering from. The primary goal of self-management is to enable individuals, particularly those with chronic illnesses, to effectively manage their health on an ongoing basis (Simanullang, 2019)

Self-management in hypertension is an individual's effort to take control of themselves in order to maintain behaviors that support blood pressure control. These efforts include regular blood pressure monitoring, routine physical activity, and adopting a healthier

lifestyle. This approach aims to help individuals control their condition in the long term and improve their quality of life (Cahyani, 2021). Self-management of hypertension is a health behavior that develops through interaction between individuals and their environment. This action is carried out by adopting a healthy lifestyle, such as avoiding alcohol consumption, limiting salt intake, and implementing a diet rich in calcium and magnesium to maintain stable blood pressure and support overall health (Fernalia et al., 2019).

2.4.2. Objectives

The goal of self-management is to maintain a healthy life through various positive efforts designed to optimize health services. These efforts involve monitoring the emergence of new signs or symptoms, preventing complications, reducing bodily dysfunction, and improving quality of life and self-confidence. Additionally, self-management is crucial for preventing the deterioration of health conditions, including adhering to treatment, following a healthy diet, engaging in exercise, and avoiding smoking and reducing salt intake (Fernalia et al., 2021).

2.4.3. Component

There are five main components in self-care management for people with hypertension (Nabila et al., 2022), namely :

1) Self-integration

The patient's ability to manage daily activities that support health, such as maintaining a healthy diet and controlling weight.

Steps that need to be taken by people with hypertension include:

- a. Controlling the portion and type of food consumed
- b. Increase consumption of vegetables and grains
- c. Reducing fat intake
- d. Avoiding alcohol consumption
- e. Choose low-salt foods
- f. Stop smoking
- g. Manage stress through activities such as listening to music and getting enough rest.

2) Self-regulation

Self-regulatory behavior includes a number of important steps (Ekawati et al., 2021), including:

- a. Understanding the factors that cause changes in blood pressure
- b. Recognizing the signs and symptoms of hypertension and hypotension
- c. Managing signs and symptoms effectively
- d. Take appropriate action when symptoms appear
- e. Developing an approach to decision-making for managing blood pressure

- f. Compare blood pressure variations as part of the assessment process.
- g. Controlling conditions that can affect hypertension

3) Interaction with health workers

Based on Sintyawati (2021), the collaboration between health workers and patients aims to achieve more effective behavior through supportive interactions, involving various actions such as:

- a. Open a discussion space where patients can comfortably and freely express their complaints or obstacles they face
- b. Assisting patients in changing their behavior by providing motivation and solutions to the problems they face
- c. Encourage others, such as family members or friends, to participate in monitoring the patient's blood pressure
- d. Facilitate patients in asking questions about things they do not understand, in order to deepen their understanding of managing their health condition.

4) Blood pressure monitoring

Blood pressure monitoring includes several things, among others:

- a. Measure blood pressure when experiencing pain
- b. Check blood pressure when signs or symptoms related to blood pressure appear

c. Perform regular blood pressure checks to assist in decision-making regarding self-care.

5) Compliance with recommended rules

Adherence to recommendations involves the patient's commitment to taking medication regularly according to schedule, accompanied by the belief that they are able to follow and carry out treatment as directed by doctors and health workers (Nurarifah & Damayanti, 2022).

2.4.4. Factors Affecting Self Management

Various factors that influence the ability of patients with hypertension to manage self-management:

1) Age

Age is one of the aspects that influences an individual's ability to manage self-management for people with hypertension. With increasing age, there are developments in a person's way of thinking and understanding, which can ultimately encourage improvements in self-care behavior (Maisarah, 2022).

2) Gender

Gender differences also influence self-management abilities in individuals with hypertension. The results of this study are in line with the findings of Ryandini & Ade Kritianti (2021), which revealed that women have a greater potential to develop hypertension after passing through menopause, which generally

begins at the age of 45. Suboptimal self-management can lead to a decrease in estrogen levels.

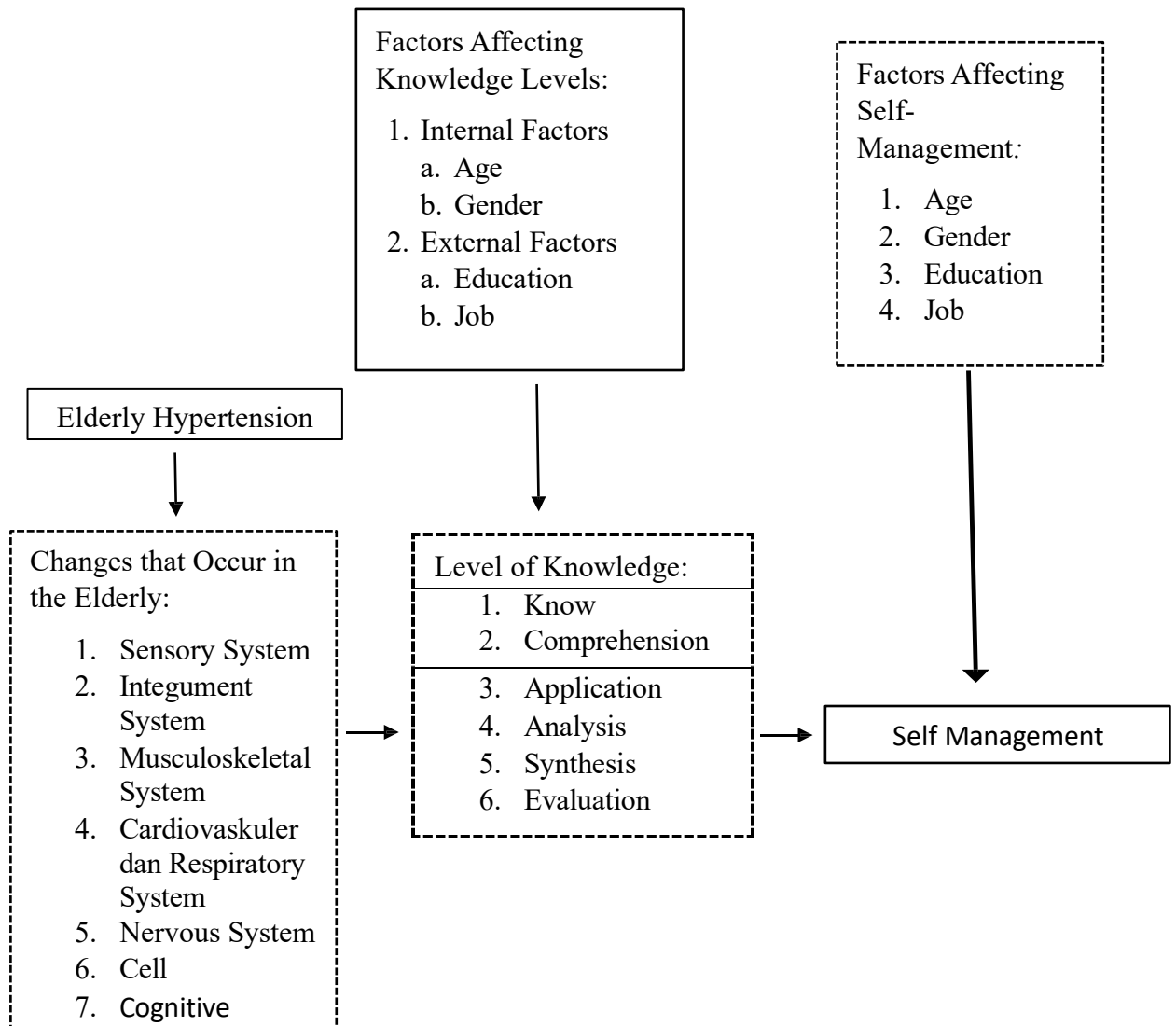
3) Education

The level of education affects an individual's ability and knowledge in practicing self-care management. A higher level of education makes it easier for someone to access information, which contributes to increased knowledge. This knowledge then supports an individual's ability to manage their lifestyle and apply self-care management optimally (Soviarni & Rosiska, 2022).

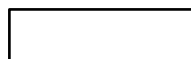
4) Knowledge

Adequate knowledge plays an important role in supporting success and promoting a healthy lifestyle. This knowledge can increase awareness, confidence, and belief in practicing self-care management for hypertension. Thus, good knowledge helps in managing blood pressure and encourages individual compliance with self-management for hypertension (Pramadaningati et al., 2021).

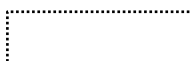
2.5. Research Concept of Framework



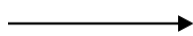
Description :



: Variables under study



: Variables not study



: Connecting variable

2. 6 Hypothesis

The hypothesis to be used in this study is:

1. H_0 = There is no correlation between the level of knowledge about hypertension and self-management in elderly people with hypertension.
2. H_1 = There is a relationship between the level of knowledge about hypertension and self-management in elderly people with hypertension.