

**APPLICATION OF BLUE COLOR THERAPY TO REDUCING STRESS LEVELS IN THE ELDERLY  
IN THE AREA PUSKESMAS ROWOSARI SEMARANG**

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**ABSTRACT**

*Decreased physical abilities, the emergence of disease, and psychosocial changes are sources of stress in the elderly which can develop into depression and even suicide. Treatment with anti-depressant in the long run cause dangerous side effects. Blue color therapy is a safe complementary therapy using electromagnetic radiation spectrum which produces a relaxing effect and reducing stress in the elderly. This therapy is one of the non pharmacological therapies that can reduce stress levels in the elderly in the area of puskesmas rowosari semarang. The type of research used is descriptive method of case study approach. The subject used by 2 people with the criteria of being willing to be an opponent, no suffer from color blindness, elderly with mild to moderate stress levels, elderly who like the blue color. Measurement of stress levels using depression anxiety stress scale (DASS42), interventions of blue color therapy for 7 consecutive days, the results of the analysis obtained by subject 1 decreased from 20 (moderate stress) to 14 (mild stress), subject II from 22 (moderate stress) to 16 (moderate stress). The result of the case studies concluded that there was a reduction in stress levels reaching 6 score DASS42. The application of blue color therapy is recommended as a nursing intervention in the management of reduced stress levels in the elderly. The application of blue therapy is effective in reducing stress in the elderly, so it is recommended as a nursing intervention in the management of reducing stress levels in the elderly.*

**Keywords :** Elderly, Blue Therapy, Stress Scale

**1. INTRODUCTION**

Families are two or more individuals who are joined by blood, marriage, and adoption in one household, who interact with each other in roles and create and maintain a culture. 1 Families have health care functions that affect each other's family status. 2 Families have a very important role in the care of all family members, including the elderly who live at home. A good family role will support the health status of the elderly and vice versa if the role of the family is lacking, then the health status of the elderly will decrease

Elderly is someone who has reached the age of more than 60 years. 4 Elderly is not a disease, but is an advanced stage of a process characterized by a decrease in the body's ability to adapt to environmental stress. 5 Psychosocial changes in the elderly such as retirement are also a major source of stress because they are misunderstood by the elderly as a form of passivity and isolation. 6 Other changes are structural and physiological (decreased) in the elderly, this decrease in physical ability is accompanied by a decrease in body resistance and an increased risk of various diseases that make all work that can be done alone, now must be helped by someone else. else this is what you can

cause stress. This decrease in physical ability can cause the elderly to become stressed

Stress is a condition caused by the interaction of the individual with the environment, causing perceptions between those originating from situations originating in the biological, psychological and social systems of a person. Stress is the body's natural reaction to defend itself from psychological stress. The human body is specially designed to be able to feel and respond to this psychological disorder. The goal is to be able to feel and respond and be ready to avoid danger. 9

Stress has a total impact on individuals such as the impact: physical, social, intellectual, psychological, and spiritual. In the elderly, stress itself causes a decrease in the quality of life in the elderly. 10 High stressors and unpleasant life events cause mental and psychosocial problems in the elderly such as short term memory (memory disorders), frustration, anxiety, loneliness, to depression. Depression

is one of the effects of stress that experiences disturbances in the natural feeling (affective mood) which is characterized by moodiness, lethargy, loss of passion for life, lack of enthusiasm, and feeling helpless, feeling guilty or hopeless, causing a sense of suicidal ideation. suicide) or suicidal behavior, as many as 40% of people with depression have suicidal ideation, and only less than 15% of those who succeed in doing so.

Raden's research (2015) shows a high level of stress in the elderly, with 21.25% showing severe complaints and 18.75% showing moderate complaints. Nussbaum (1998) reported that the prevalence of stress was between 2% and 8% for the elderly living in the community. This scale increases to 10% for the elderly in health care institutions and 15% for the elderly in nursing homes or intensive care. The usual scale of stress among the elderly is consistently between 18% and 40%.<sup>10</sup>

The high rate of depression due to unresolved stress and the many effects of stress on the elderly make stress need to be treated as early as possible. Pharmacological handling is usually done to reduce stress levels by giving antidepressants, giving these drugs to the elderly needs special consideration because chemicals consumed for a long time can affect the balance of mobility, dizziness, nausea, vomiting, constipation and aggravating the work of the kidneys. . Elderly who consume antidepressant drugs for a long time will cause confusion, loss of concentration and interfere with memory of the elderly. <sup>12</sup> This is a consideration for providing safer non-pharmacological treatment such as color therapy.

Color therapy on the human body works on physiological and psychological aspects. Psychologically certain color combinations can also cause the human condition to be relaxed, relaxed, and calm, for example the colors yellow and blue.<sup>13</sup> Color therapy, also known as chromotherapy, is a complementary therapy using the visible spectrum (color) of electromagnetic radiation to cure disease. Color energy is able to balance one's body from physical, emotional, spiritual and mental

Holzberg & Alberth's theory states that exposure to color produces light, when it enters the eye it is reduced to 3 components of RBD (Red, Green, Blue) then the light is transmitted by 3 channels, red-green, blue-yellow, black-white, and delivered to the limbic system via the retinohypothalamic tract. followed by the nervous system to the Autonomic Nervus (ANS) to the endocrine system. This will stimulate the hormones serotonin and endorphins, thereby improving mood, relaxing and reducing muscle tension and stress.<sup>12</sup> One of the colors that has been proven to reduce stress is Blue. Blue has a character with a short wavelength ranging from 380-780 nanometers. These waves can increase blood circulation and have a relaxing effect. Exposure to blue produces cool and calming vibrations that can lower blood pressure and heart rate, which can relieve anxiety and stress.<sup>11</sup>

Various studies have shown that blue color therapy can have a positive effect on stress levels in the elderly. One of the studies conducted by Ni Wayan et al (2016) showed that blue color therapy was effective in reducing the stress level of the elderly in BPSTW DIY Province Budi Kasihan Bantul Unit, with the result that there was a 9.73% decrease in the elderly with stress.<sup>6</sup> Another study conducted by Devi (2012) showed that green color therapy can reduce stress in the elderly at the Tresna Werda Wana Seraya Social Institution, Denpasar by 80%, both for the elderly with mild stress and severe stress.<sup>25</sup>. Based on the description above, the authors are interested in carrying out a case study with the title "The Application of Blue Color Therapy to Stress Levels in the Elderly in the Target Area of the Rowosari Health Center Semarang"

## **2. LITERATURE REVIEW**

### **2.1. Family**

Families are household members who are most related through blood ties, adoption or marriage.<sup>13</sup> Families are two or more individuals who are joined by blood, marriage, and adoption relations in one household, who interact with each other in roles and create and maintain a culture.<sup>1</sup> The family is the smallest unit that lives together, so it has emotional ties and develops in social relations, roles, and tasks.<sup>14</sup>

### **2.2. Etiology**

Based on the cause of hypertension can be divided into two:

1. Primary (essential) hypertension

Primary hypertension is an increase in blood pressure that has no known cause (ideopathic).

2. Secondary hypertension (non essential)

Secondary hypertension is an increase in blood pressure whose main cause is known to include blood vessel disorders, kidney disease, thyroid gland disorders, diabetes mellitus, diseases related to pregnancy and adrenal gland disorders. (15)

### **2.3. Elderly**

Elderly is someone who has reached the age of more than 60 years. This stage is the stage where a person's body reaches the point of maximum development. After that the body begins to shrink or experience a decrease in the volume and density of both organs and bones due to the reduced number of cells in the body.<sup>19</sup>

The elderly body will also experience a gradual decline in function so that it cannot withstand attacks of infection and cell damage. Cells in the body will experience progressive and comprehensive damage in the body. This process is known as the aging process. This aging process is natural and cannot be avoided by all living things.<sup>9</sup>

#### 2.4. Stress

Stres adalah reaksi alami tubuh untuk mempertahankan diri dari tekanan secara psikis. Tubuh manusia dirancang khusus agar bisa merasakan dan merespon gangguan psikis ini. Tujuannya agar bisa merasakan dan merespon dan saip untuk menghindari bahaya.<sup>9</sup> Stres memberikan rangsangan kepada seseorang dalam hal mencapai suatu tahapan perubahan dalam hidupnya. Stres yang terlalu banyak mengakibatkan perasaan negatif, gangguan dalam mencapai realitas, tidak mampu menyelesaikan masalah dalam hidupnya dan bahkan mengakibatkan masalah kesehatan pada seluruh sistem yang ada dalam tubuh manusia.<sup>12</sup>



Image 1. Elderly Stress

#### 2.5. THE CONCEPT OF BLUE COLOR THERAPY TO REDUCE STRESS LEVEL IN THE ELDERLY

Chromotherapy adalah pita sempit dalam spektrum energi elektromagnetik kosmis, yang dikenal manusia sebagai spektrum warna yang terlihat. Ini terdiri dari merah, hijau, biru dan turunan gabungan mereka, menghasilkan warna yang dapat dipahami yang jatuh antara ultraviolet dan rentang inframerah energi atau getaran. Warna-warna visual ini dengan panjang gelombang dan osilasi uniknya, ketika dikombinasikan dengan sumber cahaya dan secara selektif diterapkan pada organ-organ atau sistem kehidupan yang terganggu, menyediakan energi penyembuhan yang diperlukan oleh tubuh. Cahaya mempengaruhi tubuh fisik dan eterik.

Warna menghasilkan impuls listrik dan arus magnetik atau medan energi yang merupakan aktivator utama dari proses biokimia dan hormonal dalam tubuh manusia, stimulan atau obat penenang yang diperlukan untuk menyeimbangkan seluruh sistem dan organnya.<sup>12</sup> Warna biru menggambarkan pengetahuan serta memiliki efek menenangkan. Jika digunakan secara baik, warna biru mampu memberi ketenangan serta meningkatkan komunikasi terhadap lingkungan sekitar.<sup>24</sup>



Image 2. Chromoterapy Therapy

### 3. RESEARCH METHODOLOGY

### **3.1. Case Study Subject**

The inclusion criteria in this case study include:

1. Willing to be a respondent.
2. Do not suffer from color blindness.
3. Does not have eye disorders (visual disturbances: cataracts).
4. Not experiencing severe cognitive problems.
5. No confusion about color
6. Elderly with mild to moderate stress levels.
7. Seniors who like the color blue.

### **3.2. Study Focus**

The focus of this study is the application of blue color therapy to stress levels in the elderly.

### **3.3. Data Collection Method**

The data collection method used is structured observation of stress levels in the elderly, before and after giving blue color therapy. The steps for collecting data are as follows:

1. Manage licensing with Rowosari Health Center to conduct case studies
2. Explain the purpose, objectives, and timing of the research to the head of the puskesmas or the nurse in charge of the case study site and ask for approval to involve the subject in the case study
3. Find and determine respondents who fit the inclusion and exclusion criteria
4. Asking the patient to sign the informed consent as proof of approval of the case study on behalf of the subject
5. Measure the level of stress in the elderly.
6. Identify and discuss with the subject the application of blue color therapy to stress levels in the elderly, as well as the time contract for the implementation of the action
7. Keeping the meeting time contract and conducting a stress level assessment before giving blue color therapy using the Depression Anxiety Stress observation sheet (DASS 42).
8. Perform blue color therapy intervention with a duration of 10 minutes.
9. Reviewing the stress level of the elderly again as post-test data.
10. Make a contract for the next meeting and repeat the procedure at points 7, 8, 9 & 10 to 7 meetings for 1 week.
11. Perform data processing.
12. Presenting the results of data processing or research results in the form of tables and narratives.

### **3.4. Location and Time of Case Study**

The research was conducted in the Rowosari Community Health Center target area on 09-21 March 2020.

### **3.5. Data Analysis and Presentation**

Data processing using descriptive analysis. Descriptive analysis is a data processing process by describing and summarizing the data naturally in the form of tables and graphs. This data processing was carried out to determine changes in stress levels in the elderly by using blue color therapy. The level of stress can be measured using the DASS 42 questionnaire sheet which consists of 14 questions, with the interpretation of the results: Assessment criteria: 18

1. Normal : 0-14
2. Mild Stress: 15-18
3. Moderate Stress: 19-25
4. Severe Stress: 26-33
5. Very Heavy: Over 34

## **4. RESULTS AND DISCUSSION**

### **4.1. Overview of Case Study Subjects**

#### **Subject I**

Researchers conducted an initial assessment on March 9, 2020 at 10.00 WIB. The results of the study obtained data, Subject I was 60 years old, male, last education was junior high school. Subject I is a farmer, complaining of sore feet after an accident a year ago. Subjects are not color blind, able to sit, do not have visual impairment and like the color blue. Subject I said that he had never followed blue color therapy to reduce stress levels.

Subject I lives with his wife, children, daughter-in-law and grandchildren, including extended family type, family with middle age development stage, affective family care function, socio-economic, good reproduction and fairly good health care function. The results of the study of 5 family nursing functions obtained data on the subject and the family knew that the subject was difficult to relax and sometimes

anxious, but thought it was a normal thing that happened to the elderly, for the causes and treatments they did not know so they did not do home care to deal with these conditions. The level of family independence is at level I because the subject and family do not understand about stress in the elderly and do not take any treatment because they think that the symptoms that appear are normal.

The results of the assessment of the stress level at the beginning, the client did not know if he had a moderate stress level disorder with a score of 20. The results of the assessment with the DASS42 showed that the client felt angry often, was unable to feel positive thoughts, was unable to carry out an activity, and tended to be excessive in a situation. The client has felt unsteady (legs want to fall off), it is difficult to relax, feels himself in a situation that makes him very anxious and will be relieved when it all ends. Clients have felt that there is nothing to look forward to in the future, are easily irritated, and spend a lot of energy feeling anxious. Clients feel sad, depressed, and impatient when delays occur. The client conveys that the anxiety and feeling of depression arose after an accident and his leg injury still hurts even though he has been taken to hospital for treatment. This disturbs the client because he has physical limitations due to his aching legs. Objective data on subject I the client looks tense.

#### **Subject II**

This research was conducted an initial assessment on March 9, 2020 at 14.00 WIB. The results of the study of subject II obtained data for 64 years old, female with the last elementary education. Subject II does not work, there are no other complaints. Subjects are not color blind, able to sit, do not have visual impairment and like the color blue. Subject II said that he had never followed blue therapy to reduce stress levels.

Subject II lives alone at home and is a family in the elderly stage, the function of family care is affective, socio-economic, the function of health care is not good in an effort to prevent the subject rarely going to the puskesmas. The level of family independence is at level I because the subject and family do not understand about stress in the elderly and do not take any treatment because they think that the symptoms that appear are normal.

The results of the assessment of the stress level at the beginning, the stress level was moderate with a score of 22. The results of the DASS examination showed the client felt angry often, was unable to feel positive thoughts, and tended to be excessive in a situation. The client finds it difficult to relax, feels himself in a situation that makes him very anxious and will be relieved when this is all over. Clients have felt that there is nothing to look forward to in the future, are easily irritated, and spend a lot of energy worrying. Clients feel sad, depressed, impatient when there is a delay. The client feels anxious because now he is only at home alone, his child is married and is not at home with the client, for finance the client can only rely on the gift of his child because the client is no longer at home.

#### **4.2. Discussion**

The results of the initial nursing assessment obtained were that subject I had moderate stress disorder with a score of 20 in subject I and a score of 22 in subject II. Researchers measured the initial data using the DASS42 questionnaire which consisted of 42 questions. The diagnosis raised from the two subjects was Coping Ineffectiveness (00069) with Environmental Management Intervention (0450), and the action taken to reduce stress levels was blue color therapy which focused on reducing stress levels in the elderly.

The initial data obtained included the sex of subject I male and subject II female. Subject I was 60 years old and subject II was 64 years old, the stress level of subject I was moderate stress disorder and subject II was moderate stress disorder. This data is in accordance with the description of psychosocial factors which show that the majority of the elderly experience an increase in stress levels. Increasing age causes a decrease in physical ability accompanied by a decrease in body resistance and an increased risk of various diseases. As a result, work that can be done alone is now sometimes assisted by other people so that it triggers stress.<sup>6</sup> According to research by Yudha T (2011) age is an important factor causing stress, the older you get, the easier it is to experience stress. This is due to the decline in various abilities such as visual abilities, thinking, remembering and hearing

Factors that affect the level of stress in subject II is higher than subject I are gender and the subject's daily activities. Subject II is an elderly female, the literature mentions that when entering old age, women are no longer able to produce the hormones estrogen & progesterone. This hormone affects mood swings suddenly, so that women are more easily stressed.<sup>22</sup> Subject I also has productive and enjoyable activities compared to Subject II because the first subject every morning goes to the fields and often goes with his family, while Subject II only takes care of the house. his grandson. Activity has an important role in stress levels. Stress can be prevented by exercising regularly, adjusting diet, increasing spirituality and channeling hobbies. Pleasant activities will trigger the release of endorphins that make you feel comfortable and calm.<sup>22</sup> Factors that cause stress in subject I are physical factors, namely the presence of pain in the client's

legs after an accident. Factors that cause stress in subject II are family and financial factors, the client lives alone at home because her husband has died and her child is not at home with the client, the client's finances only rely on giving her child because the client is no longer working.

Blue color therapy using blue cloth is a therapy that is still unknown to the elderly because of the lack of information about this therapy. The intervention in the form of blue color therapy for subject I and subject II has been carried out according to the SOP. In the process of giving blue color therapy, the author involves the family, namely his wife and children on subject I and children and grandchildren on subject II. The existence of family involvement in the nursing process aims to increase family independence in caring for elderly family members who experience increased stress levels. The family has a big role in the incidence of stress in the elderly because family support can keep stress away from the elderly. Social support is considered important for the happiness of the elderly, because it makes the elderly feel that their existence is still meaningful to their family and others around them.<sup>7</sup> The families of both subjects were equally supportive during therapy. Subject I was accompanied by therapy by his wife and children, the family helped if the client's grandson interfered with the therapy. Subject II was accompanied by one of his children during therapy. The families of the two subjects are willing to help continue this color therapy.

Researchers conducted research for 7 consecutive days starting from March 9-15, 2020. The initial stage carried out by researchers was to ask for approval from the subject and family and then examine the stress level of the two subjects. The researcher was assisted by the family to prepare the blue cloth media which was installed around the living room. After the therapy environment was ready, the subject was instructed to enter and then sit back and relax while observing the blue color on the cloth for 10 minutes. Researchers visited Subject I to provide therapy every 13.00-14.00 WIB, while for Subject II it was held every 10.00-11.00 WIB. The response of the two subjects after being given therapy was that both of them said they were calmer and more relaxed, and they could control their thoughts more when they faced something. Measurement of stress levels with DASS 42 was carried out again on day 7 after the therapy series was completed.

The results of the nursing evaluation obtained after treatment for 7 meetings, in both subjects there was a decrease in stress levels. Subject I decreased by 6 DASS42 scores from 20 to 14 initially, subject II also experienced a decrease of 6 DASS42 scores from 22 to 16. This result shows that both subjects experienced an average decrease of 6 points in DASS42 scores. These results support previous research from Devi (2012) which showed green color therapy can reduce stress in the elderly at the Tresna Werdha Wana Seraya Social Institution, Denpasar by 80% for both the elderly with mild stress and moderate stress.<sup>6</sup> Other studies conducted by Ni Wayan Yeni Pratiwi (2016) also showed that blue color therapy can reduce stress levels in the elderly living in BPTSW Budi Kasihan unit, Bantul.

The results of the study (Ni WayanYeni 2016) show that the energy of the blue color is able to balance a person's body from physical, emotional, spiritual and mental so that it can reduce stress. Color therapy, also known as chromotherapy, is a complementary therapy that uses the visible spectrum (color) of electromagnetic radiation to treat disease. Color energy is able to balance one's body from physical, emotional, spiritual and mental.<sup>12</sup> One color that has been proven to reduce stress is Blue. Blue has a character with a short wavelength ranging from 380-780 nanometers. These waves can increase blood circulation and have a relaxing effect. Exposure to blue produces cool and calming vibrations that can lower blood pressure and heart rate, which can relieve anxiety and stress.<sup>11</sup>

The decrease in stress levels in subject I and subject II was the same, namely 6 DASS42 scores for Subject I and subject II. This is influenced by internal factors, namely good support from both families during the therapy process. After the arrival of researchers, the function of family health care and the level of family independence increased. The information obtained by the family about how to care for a sick family, including experiencing various changes that trigger stress, makes the family better understand in caring for the elderly. There was an increase in the level of independence for the two families, for subject I's family from independence level I to III because the family now understood the handling of stress in the elderly, decided to go to the health center for health checks related to foot pain experienced by the client and was willing to do blue color therapy independently. Subject II's family also increased from independence level I to II because the family conveyed that they understood stress management in the elderly, provided support during therapy and were willing to continue blue color therapy independently.

## **5. CONCLUSION**

Based on the case study exposure and discussion of stress levels in the elderly after being given nursing intervention in the form of blue color therapy with a family nursing care approach, it can be concluded that family nurses can act as educators and caregivers to improve the 5 health care functions and the level of family independence, there is a decrease in the level of stress after being given intervention for

7 meetings in 2 weeks got better (decrease). Subject I experienced a decrease in stress levels from a score of 20 (moderate stress) to 14 (normal). Subject II experienced a decrease in stress levels from a score of 22 (moderate stress) to 16 (moderate stress).

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