

The Effect of Positive Thinking on Depression Level in Diabetes Mellitus Patients

I Wayan Candra^{1*}, I G A Harini², I Nengah Sumirta³, I Dewa Made Ruspawan⁴, I Made Mertha⁵, Ni Nyoman Hartati⁶, I Dewa Ayu Ketut Surinati⁷, Ni Luh Putu Yuniанти Suntari⁸

Denpasar Health Polytechnic Nursing Department, Poltekkes Kemenkes Denpasar, Bali, Indonesia^{1,2,3,4,5,6,7,8}

Corresponding Author: 1*



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ABSTRACT

The effect of positive thinking on the level of depression in diabetic Mellitus patients. Diabetes mellitus is a chronic disease that cannot be cured. It is not contagious but has a high risk of disrupting one's life. This study aims to prove the effect of positive thinking on the level of depression in patients with diabetes mellitus. This type of research is a pre-experimental One-Group Pre-test-posttest Design. The sampling technique is purposive sampling. The number of samples in this study was 34 people. Data collection techniques used Beck Depression Inventory-II (BDI-II). The results of the investigation before treatment were positive thinking depression level in study subjects, mild depression in 12 people (35.3%), depression was 18 (52.29%), and significant depression for 4 people (11.8%). After being given a favorable thinking treatment, the depression level of the study subjects was: normal/not depressed in 1 person (2.9%), mild depression in 17 people (50%), moderate depression in 15 people (44.1%), and significant depression 1 person (2.9%). Paired t-test results: mean before treatment 21.9412, after treatment 19.1765, $t = 5.787$, and $p = 0.000$. There is a significant effect of positive thinking on the level of depression in patients with diabetes mellitus. Positive thinking can reduce depression levels in patients with diabetes mellitus.



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1. Introduction

Changes in lifestyle and socioeconomic status of society cause a shift in disease patterns, one of which is a disease that attracts attention among the community, diabetes mellitus, with changes in the accompanying psychological aspects. Diabetes mellitus is a chronic disease that cannot be cured. It is not contagious but has a high risk of disrupting a person's life. Diabetes mellitus (DM), commonly referred to as diabetes, is a condition that makes some people doubt their quality and life expectancy after being told that they have diabetes [20]. [2] states that diabetes mellitus is characterized by blood glucose levels exceeding normal. Insulin produced by the pancreas gland is significant in maintaining the balance of blood glucose levels, namely for ordinary people (non-diabetic), fasting time between 60-120 mg/dl and two hours after eating below 140 mg/dl. Disturbances in insulin action result in disturbed balance, so blood glucose levels tend to

rise. According to Askandar (2006), the primary disorder lies in carbohydrate metabolism, usually accompanied by fat and protein disturbances. [2] further stated that signs and symptoms in patients with diabetes mellitus are complaints of drinking a lot (polydipsia), eating a lot (polyphagia), urinating a lot (polyuria), weakness, and weight loss for no apparent reason. Blood sugar levels during fasting are 126 mg/dL, and blood sugar levels are 140 mg/dL [17].

The International Diabetes Federation (2015) recorded a global prevalence of diabetes mellitus at 8.8% (415 million people). This trend continues so that diabetes mellitus will increase to 10.4% (642 million people) in 2040. China, India, and America occupy the top three countries with the highest number of DM patients. Indonesia ranks seventh with the number of DM patients, as many as 10 million. If it continues, it is estimated that by 2040 it will increase to 16.2 million people or ranks sixth. The number of diabetes mellitus patients in Indonesia in 2014 was 12,191,564 million (Kemenkes RI, 2014). The Bali Provincial Health Office recorded the number of diabetes mellitus patients in 2014 as 5,511 people, in 2015 as many as 6,542 people, and in 2016 as many as 7,654 people. Data from the Karangasem District Health Office (2016) noted that DM was included in the ten most outpatient diseases, which ranked third with 1,940 cases. Data from the Manggis Karangasem Health Center's medical records showed that the number of DM patients in 2014 was 364. In 2015 as many as 378 people, and in 2016 as many as 384 people. In August 2017, the number of DM patients was recorded as 136 people.

[13], from the research results, found that 41 of the patients with diabetes mellitus studied experienced depression from mild to moderate depression. Psychosocial problems in patients with diabetes mellitus are that they tend to view themselves negatively, feel hopeless, and cannot accept their situation. Treatment does not only focus on physical problems but also the patient's psychological problems, namely the depression experienced by the patient. Diabetes mellitus [16]. Depression is a feeling disorder characterized by dysphoric effects (loss of excitement/passion) and other symptoms such as disorders [11]. Depression is a feeling (affective) disorder that can occur repeatedly and is characterized by sadness, loss of passion, disturbed appetite, and feeling tired quickly. Usually, the patient has poor concentration, so his activities will be disturbed when he experiences signs and symptoms of depression (World Health Organization, 2017). [11] found that those who are depressed feel inclined to show negative behavior in their environment, such as always being irritable, irritable, sensitive, anxious, and inferior when they are among groups and limited social interaction because they are often alone.

According to [5], various problems/psychosocial impacts can arise in patients with diabetes mellitus. Patients with diabetes mellitus who cannot accept their illness will have a negative view. For example, patients who feel hopeless and useless and have low self-esteem can cause patients to feel depressed. This can cause social interaction and interpersonal relationships with other people to be disrupted. The impact on patients with diabetes mellitus is that it triggers physical and psychological stressors, which can cause life disturbances. This can progress to feelings of restlessness, fear, anxiety, and depression. Once you know someone has diabetes, they will experience various changes, become afraid and anxious, panic and angry, remain silent, and some are rebellious. [21] found that three emotional phases are generally experienced by someone with diabetes: rejection, anger, and depression. The state of depression occurs because the patient feels no longer free to make friends, eats as he pleases, chooses activities he likes, and feels constantly monitored. [19] found that depression experienced by a person is associated with threats to one's physical integrity and self-esteem.

Overcoming the depression experienced by diabetic patients can be done with positive thinking [3]. The situation experienced by diabetic patients is often only treated with anti-diabetic drugs, without paying

attention to the psychological impact that occurs with comprehensive treatment, such as positive thinking to help overcome depression experienced by diabetic patients. [4] argues that when a person suffers from a dangerous disease, loses one of his organs, or loses a loved one, he goes through psychological stages such as anger, rejection, depression, and sadness, by thinking positively and by focusing on efforts to solve the problem of the negative situation experienced can be resolved. Furthermore, [4] states that we cannot change the past because it has passed. What can be changed is the perspective on past experiences. We can learn lessons and then make the desired changes. Positive thinking therapy aims to help individuals fix negative ways of thinking that will lead to pessimism and doubt in moving forward because of anxiety, worry, and uncertainty about achievement or self-efficacy. Through therapy, individuals are expected to become individuals who are full of self-confidence, have clear goals in life so that they understand what should be done, grow motivation, and have broad thinking in understanding a problem [4].

[7] suggests that positive thinking is the best condition for activating the release of the happiness hormone. In reality, doing this is more challenging than it sounds. In a happy situation, it is easy to think positively. How can we think positively when faced with failure or uncomfortable situations? This critical question becomes very important if we are to achieve a significant revolution in the brain. The essence of positive thinking lies in our ability to keep thinking positively even though we do not find anything positive.

2. METHODS

This study used a one-group pre-posttest design. In this design, the researcher observes/measures the research subject group before the intervention is carried out and then is observed/measured again after the intervention. The number of samples is 34 people with the sampling technique. The instrument used to collect data is Beck Depression Inventory (BDI) II. The BDI-II research instrument consisted of 21 items to measure the intensity of depression in healthy and physically ill people. Each item consists of four to five statements that indicate specific symptoms of depression. To analyze and prove the effect of positive thinking intervention on decreasing depression levels in diabetes mellitus patients, paired t-tests were used.

3. RESULTS AND DISCUSSION

3.1 RESULTS

The next step is to process and analyze the data on the existing research results. The results obtained in this study include the characteristics of the research subjects and the level of depression in patients with diabetes mellitus before being given favorable thinking treatment. The level of depression of research subjects in patients with diabetes mellitus after being given favorable thinking treatment. The effect of positive thinking on the level of depression in patients with diabetes mellitus. The following are the results of the research obtained which will be described in detail below.

3.1.1 Characteristics of research subjects

The characteristics or characteristics of all research subjects of hypertensive patients obtained in this study include various aspects, including age, gender, education, and occupation. One by one, the following will describe in detail all the characteristics of the research subjects obtained in this study.

Table 1. Distribution of characteristics of research subjects with diabetes mellitus by age

| No | Age | F | % |
|----|---------|----|------|
| 1 | 31 – 59 | 18 | 52,9 |
| 2 | < 60 | 16 | 47,1 |
| n | | 34 | 100 |

Table 1 above shows that the age of the most research subjects is in the age group 31-59 years as many as 18 people (52.9%).

Table 2. Distribution of the characteristics of the research subjects of diabetes mellitus patients by sex

| No | Sex | F | % |
|----|--------|----|------|
| 1 | Male | 16 | 47,1 |
| 2 | Female | 18 | 52,9 |
| n | | 34 | 100 |

Table 2 above shows the gender of the research subjects who are mostly female as many as 18 people (52,9%)

Table 3. Distribution of the characteristics of the research subjects of diabetes mellitus patients based on education level

| No | Education level | F | % |
|----|-----------------|----|------|
| 1 | Elementary | 15 | 44,1 |
| 2 | Middle | 14 | 41,2 |
| 4 | Universities | 5 | 14,7 |
| n | | 34 | 100 |

Table 3 above shows that the highest level of education of research subjects is at the elementary level of 15 people (44,1%).

Table 4. Distribution of the characteristics of the research subjects of diabetes mellitus patients by occupation

| No | Type of Work | F | % |
|----|--------------|----|------|
| 1 | Working | 30 | 88,2 |
| 2 | Not working | 4 | 11,8 |
| n | | 34 | 100 |

Table 4 above shows the occupations of the most research subjects are working, amounting to 28 people (%).

3.1.2 Depression level of study subjects with diabetes mellitus patients before being given positive thinking treatment

Table 5. Distribution of depression levels in Diabetes Mellitus patients before being given Positive Thinking treatment

| No | Depression level | f | % |
|----|------------------|----|------|
| 1 | Mild | 12 | 35,3 |
| 1 | Moderate | 18 | 52,9 |
| 2 | Severe | 4 | 11,8 |
| n | | 34 | 100 |

Table 5 above shows that the level of depression of the research subjects before being given positive

thinking treatment mostly experienced moderate depression in 18 people (52.9%).

3.1.3 Depression level of research subjects with diabetes mellitus patients after being given positive thinking treatment

Table 6. Distribution of depression levels in Diabetes Mellitus patients after being given Positive Thinking

| No | Depression level | f | % |
|----|----------------------|----|------|
| 1 | No depression/normal | 1 | 2,9 |
| 2 | Mild | 17 | 50,0 |
| 3 | Moderate | 15 | 44,1 |
| 4 | Weight | 1 | 2,9 |
| | n | 34 | 100 |

Table 6 above shows that the level of depression of the research subjects of diabetes mellitus patients after being given positive thinking treatment mostly experienced mild depression 17 people (50%)

3.1.4 The effect of positive thinking on the level of depression in diabetic patient's mellitus

To determine the effect of Positive Thinking on the level of depression in patients with diabetes mellitus, the paired t test parametric statistic test was used. The results of statistical tests using the paired t test technique are presented in the following table.

Table 7. Summary of statistical test results paired t test the effect of positive thinking on the level of depression in patients with diabetes mellitus

| Average before treatment Positive Thinking | Average after treatment Positive Thinking | t | df | P |
|--|---|-------|----|-------|
| 21.9412 | 19.1765 | 5.787 | 33 | 0.000 |

Table 7 above shows the mean value before treatment 21.9412 and after treatment 19.1765, $t = 5.787$ and $p = 0.000$, $p < 0.050$. The research hypothesis is accepted. There is a significant effect of positive thinking on the level of depression in patients with diabetes mellitus, that positive thinking can significantly reduce the level of depression in patients with diabetes mellitus.

3.2 DISCUSSION

3.2.1 Diabetes Mellitus before being given positive thinking

The study's results on subjects of diabetes mellitus patients before being given positive thinking showed that 12 people had mild depression, 18 experienced moderate depression, and 4 experienced severe depression. Most experienced moderate depression 18 people (52.9%). [21] found that three emotional phases are generally experienced by someone with diabetes: rejection, anger, and depression. The state of depression occurs because the patient feels no longer free to make friends, eats as he pleases, chooses activities he likes, and feels constantly monitored. [19] found that depression experienced by a person is associated with threats to one's physical integrity and self-esteem.

Mohamed, Kadir and Yacob's (2012) research entitled A Study on Depression among Patients with Type 2 Diabetes Mellitus in North-East Coast Malaysia with several research subjects, 260 patients with diabetes mellitus, showed that the prevalence of depression in patients with diabetes mellitus was 12.30% (32 patients out of 260 patients). The results of Seides' (2014) study entitled Effects of Depression on Aspects of Self-Care in Type 2 Diabetes with a sample of 126 patients with type 2 diabetes mellitus showed that symptoms of depression in patients with diabetes mellitus were influenced by poor glucose control, 5.10% self-esteem. Poor care 9.30% poor dietary management and complications of type 2 diabetes mellitus. [1], in his review entitled The Association between Diabetes Mellitus and Depression, reviewed several studies on diabetes and depression. All of these studies showed that the incidence of depression is two to three times higher in diabetic patients. The results of Decroli, Karsuita, and Sulastri research entitled The Relationship between the Number of Chronic Complications and the Degree of Depression Symptoms in Patients with Type 2 Diabetes Mellitus at the Polyclinic of Dr. M. Djamil Padang with 76 subjects with diabetes mellitus showed an average or minimum degree of depressive symptoms as much as 64.50%, a mild degree of 27.60% and a moderate degree of 7.90%. Symptoms of depression in research subjects with one complication were 6.90%, with two complications at 42.40%, three complications at 88.80% and four complications at 60%. This means that the greater the number of complications experienced by patients with diabetes mellitus, the higher the degree of depression experienced, so that results.

Donsu (2014) conducted research at various health centers in Sleman Regency entitled The Role of Psychological Factors against Depression in Type 2 Diabetes Mellitus Patients with a sample of 248 diabetes mellitus patients showing the results that depression is very closely related to diabetes mellitus. Psychological factors such as support, Social skills, optimism, resilience and self-esteem affect the development of depression in patients with diabetes mellitus, so psychological aspects also control diabetes mellitus. Hidajat and Siregar's research (2017) at the Gambir Health Center, Central Jakarta, entitled Factors Playing a Role in Depression, Anxiety and Stress in Type 2 Diabetes Mellitus Patients with a sample of 5 diabetes mellitus patients obtained the results that the role of cognitive aspects, length of illness, personality traits, and Economic factors reasonably influence depression, anxiety and stress in patients with diabetes mellitus.

3.2.2 The level of depression in diabetes mellitus patients after being given positive thinking.

The results showed the mean value before treatment was 21.9412 and after treatment was 19.1765, $t = 5.787$ and $p = 0.000$, $p < 0.050$. There is a significant effect of positive thinking that can reduce the level of depression in patients with diabetes mellitus. The results of this study follow [4], who found that positive thinking can reduce depression, depression, and loss of enthusiasm in living life. [14] found that positive thinking training can reduce depression in patients with diabetes mellitus. [10] found the same in other patients with congestive heart failure. In their research, positive thinking techniques and positive affirmations can reduce the level of depression they experience.

[7] found that people who habitually think positively have strong disease resistance, while those who always have opposing views will quickly fall ill. Substances whose formation in the body depends on this mindset are hormones. The most important hormones related to perspective are adrenaline, noradrenaline, beta-endorphins and enkephalins. Noradrenaline is produced in the brain when stressed and anxious if we fear the adrenaline that appears. A person constantly suffering from severe stress can fall ill, grow old quickly, and die prematurely from noradrenaline poisoning.

Conversely, if you face something with a smile and positively, what will flow are beneficial hormones and activate brain cells, and make the body healthy. The hormones that make us happy and happy have the term

"brain morphine" because their chemical structure and effects anesthetize it is similar to morphine. In morphine for anesthesia, it depends on the risk of dependence and side effects, while on the happiness hormone, we do not have to worry about it.

[15] suggests that it is necessary to realize the importance of positive thinking in times of difficulty and suffering because that is when positive thinking is needed. It is much easier to think positive when things are going well. The real test is the extent to which a person can think positive when faced with a difficult situation. Scientists often have to face difficult situations in their lengthy research projects. Often they are struck with feelings of failure and hopelessness. The point is to find ways to prevent yourself from becoming discouraged at such times. It is essential to remind yourself that every situation in life has two sides: good things and also bad things. It all depends on our interpretation. For example, a disease, when sick, it is easy to notice the negative side: illness prevents us from working and causes financial stress.

At the same time, illness also has a positive impact, for example, appreciating special people in life or giving time to think about ideas hampered by a busy work schedule. Maybe you have heard of an experience about how a severe illness has changed a person's life in a positive direction. The trick is to look at it from a broader perspective and believe that being sick will help you develop constructively. Should be able to look at the whole situation and try to see the positive side of everything that happens in our lives. Genes play an irreplaceable role. For example, if a doctor tells his patient he has cancer, he is often depressed. Even a very stable person will feel depressed. Doctors in Japan generally do not tell patients who have cancer, not because there are no proper treatment methods that have been developed. Instead, patients perceive this information as traumatic. Permission of notification is becoming a common practice because healing methods continue to develop rapidly, and scientists are now recognizing the truth of the adage "Diseases come from the mind". Thoughts have a considerable influence on everyone. When interpreted positively, illness, failing an exam, or losing a job can be accepted with gratitude.

The results of this study imply that positive thinking can be used to reduce the level of depression in diabetes mellitus patients in various health care centers and/or in the community. Positive thinking can improve the mind's ability to overcome problems. The ability to think positively to overcome existing problems arises from the growth of an intense/high self-confidence in the person concerned. High self-confidence, optimism, radiant facial expressions, focused thoughts on problems and solutions to overcome them, steady body movements, intense courage, slow, deep breathing and positive self-suggestions. Using feelings strongly tied to self-image always strengthens the subconscious so that it becomes a belief. Then with more relaxed breathing, allowing all the potential contained within him to be realized to overcome the problems he faces. To achieve such abilities, a person needs to train himself to continue to think positively when facing a problem, especially when facing a problem or unwanted event and not finding any positive things that exist from the events encountered. [8] believe that a positive mental attitude can build hope and overcome discouragement and lack of courage.

By having and developing a positive mental attitude, you will feel a state of mind that is always good, healthy, and productive when reacting with others and when choosing actions. We will feel happy in ourselves and have our air, light, and feelings that make us appreciate and feel worthy. It can attract positive things and circumstances and reject negative things. The influence of a positive mental attitude will occur automatically, but achieving it cannot be done automatically. A positive mental attitude requires a continuous application process to practice it without having to think, just like when buttoning a shirt or tying shoelaces. A positive mental attitude can be as natural as when you breathe. We are all ruled by positive or negative habits depending on the choice. We can choose not to let negative thoughts rule our

thoughts. Can make a conscious decision to replace negative thoughts and ideas and use them with positive ones. A positive mental attitude will attract its advantages like a magnet attracts metal, attracts people, and success. It becomes a shield from doubt and despair when misfortunes enter our lives and visit us.

This study has weaknesses, including that not all confounding variables can be controlled. The duration of suffering from diabetes mellitus cannot be classified based on the ability to think positively and the level of depression they experience. The severity of the pain experienced has also not been distinguished in terms of the incidence of depression experienced and the ability to think positively. The personality type of each patient has not been classified as related to the incidence of depression experienced and the ability to think positively. The ability to do positive thinking is closely related to using the human right and left brains. Using the dominant right brain allows a person to more quickly train himself to do positive thinking because the dominance of the right brain is accepting, and creative-imaginative.

4. CONCLUSION

The level of depression of the research subjects of diabetes mellitus patients before being given positive thinking treatment mostly experienced moderate depression in 18 people (52,9%). The level of depression of the research subjects of diabetes mellitus patients after being given positive thinking treatment mainly experienced mild depression in 17 people (50%). There is a significant effect of positive thinking on the level of depression in patients with diabetes mellitus, that positive thinking can significantly reduce the level of depression in patients with diabetes mellitus. The previous average was 21.9412, and after 19.1765, $t=5.787$ and $p=0.000$.

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6. ETHICAL CLEARANCE

Research ethics were obtained at the Health Research Ethics Commission (KEPK) of the Health Polytechnic of the Ministry of Health Denpasar with Letter number LB.02.03/EA/KEPK/0284/2019.

7. REFERENCE

[1] Badescu, S. V. 2016 'The association between Diabetes mellitus and Depression.', *Journal of medicine and life*, 9(2), pp. 120–5. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/27453739> <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=PMC4863499>.

[2] Badawi, 2009. *Melawan Dan Mencegah Diabetes*. Yogyakarta: Araskah.

[3] Davis, M., Eshelman, E.R dan McKay, M. 2005. *Panduan Relaksasi dan Reduksi Stres (Edisi III)*. Terjemahan oleh Achir Yani S Hamid dan Budi Anna Keliat. Jakarta: Penerbit Buku kedokteran EGC

[4] Elfiky, I. 2015. *Terapi Berpikir Positif (Cetakan XVIII)*. Terjemahan oleh Khalifurrahman Fath dan M. Taufik Damas. Tangerang: Penerbit Zaman

[5] Groot, M.D., David, Franch., 2010. *Depression Among Adults with Diabetes melitus: Prevalence, Impact and Treatment Options*. *Diabetes Spectrum*.

- [6] Huffman, J. C., DuBois, C. M., Millstein, R. A., Celano, C. M., & Wexler, D. 2015. Positive Psychological Interventions for Patients with type 2 Diabetes: Rationale, Theoretical Model, and Intervention Development. *Journal of Diabetes Research*, Vol.20,15, 9–11.
- [7] Haruyama,S. (2014).*The Miracle of Endorphin Sehat Mudah dan Praktis dengan Hormon Kebahagiaan*.Bandung:Qanita
- [8] Hill, N., dan Ritt, M.J. 2004. *Keys to Positive Thinking*. Virginia: Published by arrangement with The Napoleon Hill Foundation 1 College Avenue, Wise.
- [9] Jakubowski-Spector,P.Facilitating the Growth of Women Through Assertive Training.*The Counseling Psychologist*.1973,4,75-86.
- [10] Janah,N., dan Putri,Y.S.E.2015.Penerapan teknik Berpikir Positif dan Afirmasi positif pada klien Ketidakberdayaan dengan Gagal Jantung Kongestif.*Jurnal Keperawatan Jiwa*,3,2,114-123.
- [11] Lubis, N. L. 2016. *Depresi Tinjauan Psikologis*. Jakarta: Kencana.
- [12] Lazarus,A.Behavior Rehearsal vs. Non-directive Therapy vs Advice in Effecting Behavior Change. *Behavioral Research and Therapy Journal*. 1966,4,120-209
- [13] Mustika IW, Candra IW, Yuniati SC, NLP. The Relationship between the Level of Spiritual and Self-Esteem on Depression towards Patients with Diabetes Mellitus. *Internasional Research Journal of Engineering, IT & Scientific Research (IRJEIS)*. July 2016;2(7):105–98.
- [14] Marthan,A.P.,Hardjanta,G.,dan Yudiati,E.A.2013.Pengaruh Pelatihan Berpikir Positif terhadap Depresi pada penderita Diabetes melitus. *Jurnal Prediksi Kajian Ilmiah Psikologi*,2,1,29-33
- [15] Murakami, K. 2007. *Tuhan dalam Gen Kita*. Terjemahan oleh Winny Prasetyowati. Jakarta: PT Mizan Pustaka
- [16] Perry & Potter, 2005, *Buku Ajar Fundamental Keperawatan*, Edisi 4, Volume 1, Jakarta: EGC.
- [17] PERKENI, 2015. *Konsensus Pengelolaan dan Pencegahan Diabetes melitus Tipe II di Indonesia 2015*, Jakarta: PB.PERKENI.
- [18] Riset Kesehatan Dasar (Riskesdas) 2012 (internet).2013 (cited 2014 Feb 28).Available from:<http://depkes.go.id/downloads/riskesdas2013/Hasil%20Riskesdas%202013.pdf>.
- [19] Stuart,G. 2006.*Buku Saku Keperawatan Jiwa*.Jakarta: EGC
- [20] Savitri, R. 2003. *Terapi baru menyembuhkan diabetes*. Jogyakarta : Andi Offset
- [21] Tandra, H. 2008.*Segala sesuatu yang harus anda ketahui tentang diabetes*. Jakarta: PT Gramedia Pustaka Utama.