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# Correlation Between Social Support And Strees Level on The Elderly Patients of Diabetes Melitus Type 2

Yualita Putri Pamungkas
*Faculty of Sports Science*
Universitas Negeri Malang
Malang, Indonesia
yua.putri10@gmail.com

Rara Warih Gayatri
*Faculty of Sports Science*
Universitas Negeri Malang
Malang, Indonesia
rara.warih.fik@um.ac.id

***Abstract*— This study aims to know the correlation between social suppot and stress level in patients with type 2 diabetes mellitus in the Janti's Public Health Center. This research uses the method correlational quantitative approach, with cross sectional design, and sample in this study were patients with type 2 diabetes mellitus aged 60-69 years in the area of the Janti's Public Health Center who fullfill inclusion criteria. The sampling technique using non-probability sampling technique with quota sampling approach. The collection data is conducted by means of Measurement of social support using quitionare and cortisol hormon measured with *Enzyme Linked Immunosorbent Assay* (ELISA) method. While the data analysis technique using *Spearman* correlation test with significance level of 0.05 or ($p$ < 0,05). Based on the result of the data analysis, there is a significant correlation between social support and stress level in patient type 2 diabetes mellitus aged 60-69 years in the Janti's Public Health Center, Malang.**

***Keywords—Social Support, Level of Stress, Diabetes Melitus***

## I. INTRODUCTION (*HEADING 1*)

Diabetes mellitus (DM) is a metabolic disorder diseases which characterized by increased blood sugar levels due to disruption of insulin function [2]. DM type 2 is more plentiful (90-95%) than DM type 1 (5-10%) of the total patient DM in the world [51]. The prevalence of DM have increased sharply both in developed countries and developing countries [43]. According to the [49] the prevalence of DM in 2014 reached 422 million people in the world. Data from the [18] stated that the prevalence DM in 2015 reached 415 million people estimated to be in the year 2040 reached 642 million people in the world. The prevalence of DM in Southeast Asia also have increasing from 4,1% to 8,6% in 2014 (WHO, 2016:2).

According to The Ministry of Health Republic Indonesia [22] stated that prevalence of DM Indonesia is also increase from 1,1% to 2,1% in 2013. [22] explained that in Indonesia the prevalence of DM reached 176,689,336 people, whereas in East Java reached 28.855.895 peoples. The Health Office of Malang City explained that patient of DM in Malang City reached 20.063 people in 2016. Based on the data from The Health Office of Malang City in 2014, 2016, and 2017, Janti's Public Health Center has genesis number of the highest DM between the other public health, it is 2.989 peoples. Meanwhile, in 2015 Janti's Public Health Center has genesis number of second most DM after Kendalkerep's Public Health Center. The high prevalence of DM proves that the DM was a seriously problem in public health sector.

The case of DM tends to increase 1-4 times at the age of above 65 years or the age of the elderly [30]. This is due to a decrease sensitivity of cells to insulin as they get older [40]. The aging process contributes to the development of type 2 DM through the function of β cells disorders and the adaptation of the β cells disorders to insulin resistance [25].

Stress can occur at various ages start children until the elderly [12]. However, the elderly tend to stress due to the elderly have to adjust to the changing conditions of physical, mental, and social [16]. According to [19], stated that the older of age of person then life transition faced by more and more. One of the factors that caused the elderly stressed is the lack of acceptance from family or environment [37]. In addition, the other factors that caused stress can also lack of social support [50]. Someone who has a low social support tend to increasing stress [21]. Social support can help patient of type 2 DM in overcoming the disease to increase of allegiance towards the treatment [38]. Besides, social support is can lower cortisol response stated the stress [7]. Based on the above, the researcher want to know the correlation between social support and stress level on the elderly patients type 2 DM at Janti's Public Health Center.

## II. METHOD

This research used correlational method with cross sectional study, with sample of type 2 DM patient aged 60-69 years in the Janti's Public Health Center who fulfill in criteria of conclusion i.e. haven't complication, not speech and hearing disorders, not being in the restore operation and are willing to be shown by the respondent's signature on informed consent. Whereas, the criteria inclusion in this research are the patient of type 2 DM in Janti's Public Health Center that do not fill questionnaire complete, it comes on up to 09.30 hours, and have been doing heavy physical activity.

The technique of data collection for variable levels of the stress hormone cortisol were measured using venous blood samples, while collecting data for the social support variables were measured using a questionnaire, include favourable questions and unfavourable questions. Before being used research instrument, the questionnaire have validation by judgment expert test then calculated the levels of test using

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validations aikens. After validation, the researcher conducted trials test reliability using Cronbach's Alpha.

Sampling techniques using non-probability sampling with quota sampling approach, using minimum of total sample were 35 samples. Meanwhile, the data analysis techniques using Spearman correlation test with significance level 0.05 or ($p < 0.05$). All this research procedure has been approved by the Commission of Health Ethics Research in Faculty of Medicine University of Brawijaya Malang number 28/EC/KEPK – S1/02/2018.

## III. RESULT AND DISSCUSION

Here there are distribution of frequency respondent based on gender.

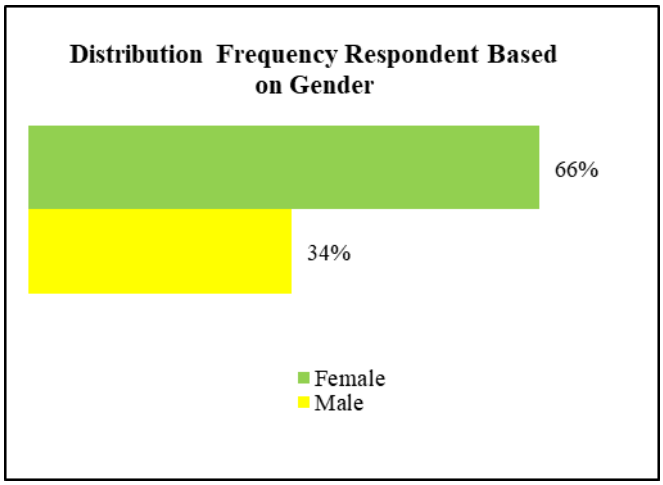


Fig. 1. Distribution of the frequency respondent based on gender

Based on the figure 1 showed that female is more than male, it is about 66%. While, for male have 34% percentage.

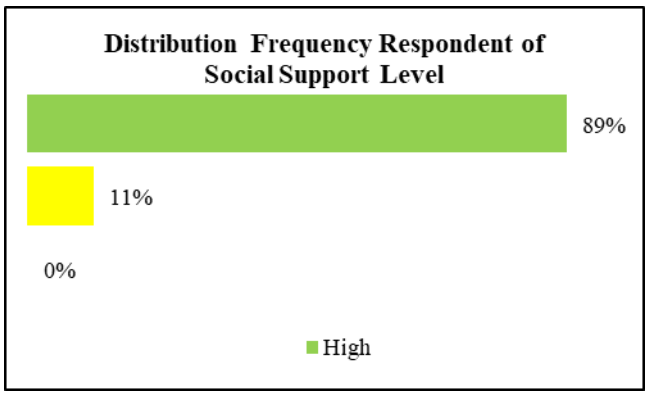


Fig. 2. Distribution frequency respondent of social support level

Figure 2 showed that none of the respondent who have low social support. While, respondents who have social support levels in low and medium levels are 11% and 89%.

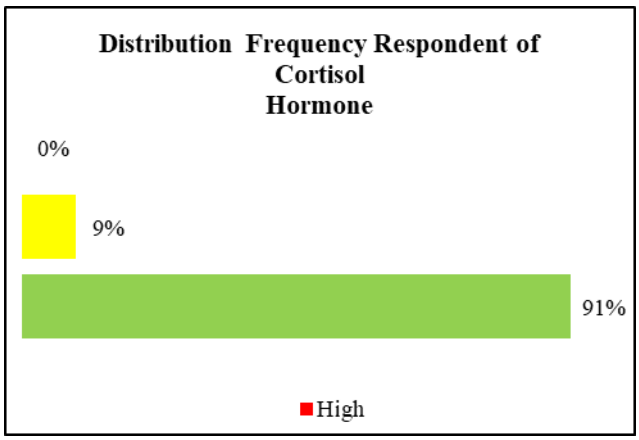


Fig. 3. Distribution of frequency respondent of hormone cortisol

Figure 3 showed that the cortisol hormone levels have medium category is 9% and low category is 91%, while, there is no high cortisol hormone.

TABLE I. SPEARMAN BROWN CORRELLATION OF SOCIAL SUPPORT AND HORMONE CORTISOL

| | | | Cortisol | Social Support |
|---|---|---|---|---|
| Spearman's rho | Cortisol | Correlation Coefficient | 1.000 | -0.757 |
| | | Sig. (2-tailed) | . | 0.000* |
| | | N | 35 | 35 |
| | Social Support | Correlation Coefficient | -0.757 | 1.000 |
| | | Sig. (2-tailed) | 0.000* | . |
| | | N | 35 | 35 |

The symbol (*) showed the significant correlation ($p < 0,05$). Table 1 showed that there is a significant correlation between social support with a level of stressed measured by cortisol levels (sig. 0000 or $p < 0.05$) while, there is a negative correlation patterns.

Based on the result of the data analysis, the frequency distribution of the social support levels patient of type 2 DM with respondent aged 60-69 years at Janti's Public Health Center showed that there is no respondent who have low social support. Meanwhile, 89% have high social support and 11% have medium social support levels. Social support is the act of giving encouragement, or assistance to others in form of verbal and non-verbal, real and unreal to solve a problem or difficulty [29].

Social support can come from other people who have very close relationship, such as family, friends, and neighbour (Li et al., 2014:1). However, the most important in the concept of social support is not from who give but how interpret social assistance recipients and how the benefit can felt so will be giving effect to self-satisfaction or capabilities in decision making [23]. So, the success of someone in interpret the

supports of others will determine the level of perceived social support can be meants as encouragement or as a burden [46].

Based on the result of the data analysis, the frequency distribution of the stress levels patient of type 2 DM with respondent aged 60-69 years at Janti's Public Health Center that measured by cortisol hormone showed that 91% respondent have low stress levels. While, 9% of respondent have medium levels of stress, and there is no respondent have high levels of stress. According to [8], low levels of stress caused by exposure to stress every day, such as traffic congestion, sleep disorders, and get critical from the other person. Exposure to stress every day (daily hassles) is the source of stress or stressor which require adjustment and can be overcome in short time [12].

Stressors come from the environment such as the demands of others, from yourself such as a desire that is not achieved, or of a mind such as individual assessment of the environment [33]. Living with a diagnosis of DM can be a stressor for the patient [51]. Monitoring diet program, weight loss, and blood sugar, as well as the changing patterns of changing patterns of life is a stressor that must be faced by DM patients and it needs the efforts of adaptability (Yan et al., 2017:318). Sometimes DM sufferers can't accept that he is suffering from a disease that cannot be cured so it can't be enjoying his life. This is the cause of occurrence of stress even depression in people with DM [36].

Stress levels are also influenced by a person's age [36]. In this study, the respondents are elderly with 60-69 years of age it is because in this age is decline health conditions mainly psychological health [24]. In addition, to adjust the changing patterns of life for type 2 DM patients, the elderly also have demand in adjusting to the changes that occur in physical and psychology, which often becomes a stressor for the elderly [37].

The result of Spearman correlation test showed that there is a significant correlation between social support with the stress level aged 60-69 years in Janti's Public Health Center (sig. 0.000 or $p < 0.05$). It means that the higher level of social support then the lower of stress level. These result is supported by [21]. which states that a person who has a low social support tend to increased stress. Thus, the research by the [42] concluded that a person who has high social support tend to have good health and quality more quickly recover from stressful conditions. It is supported by [1] which is doing research on the 119 adults who suffer from type 2 DM obtained same results, and suggested that social support can lower the stress level of a person.

Individuals who respond to a social support as an able support and in accordance with his needs then the individual can feel positive impact social support for health [35]. Social support is believed to be an important contributor in human health especially in terms of biopsikososial [3]. Social support can help a person in improving mental health and to avoid acute or chronic stress [13].

Consciously or unconsciously, someone use social support systems to cope the stress (Ma et al., 2015:3). On the conditions of stress, social support can avoid the dangers of stress and can provide problem-solving strategies thus reducing stress [48]. In addition, social support is able to describe the decline in stress from all sources of stress include psychological distres [45]. On the other hand social support can be helpful in coping with stress, also help a person to achieve self-esteem and self-efficacy as well as control your emotions [48].

Stress will harm the body in this case of a long period of time or chronic [6]. Stress affects physiological disorders such as increased heart rate and blood pressure, hormone secretion of catecholamines, cortisol, ACTH, CRF, and decreased growth hormone as well as the decline of the immune system [5]. According to [28], a sustained stress potentially damaging to health particularly in the development and function of the brain. While social support can reduce stress and inhibit the effects of the neuroendrokin of depression through a decrease in cortisol levels [15]. So, social support is a great stress-buffering or barrier stress [32]. Feel supported and care by people nearby will caused the individual not easily assess a specific condition as a threat so will lower the body's physiological reactivity in overcoming stresor (Eisen-berger et al., 2007:1602).

Physiological response of stress is the development mechanisms of neuroendocrine [14]. The hormone cortisol plays a key role in the response of stress, cortisol will increase if the situation is considered a stress for the body [10]. Disregulasi sirkardian rhythm of cortisol is one of the markers of stress that can harm the body [6]. The function of the cortisol in the body is taking energy from adipose tissue and muscle tissue to suppress the immune system [10]. Stress in the short term will trigger stress hormones to induce the activity of leukocytes out of blood and to potential organ received a stressor [6]. High cortisol have related with some diseases, such as cardio-vascular diseases, type 2 DM, depression, and lower of wound healing [10].

Stress in DM people is caused by a lack of social support (Yan et al., 2017:319). The low social support in people with type 2 DM result in non-compliance on diet, decreased activity, and improve emotional distres [39]. Social support is an important factor for the management of chronic disease in sufferers [47]. Based on [3], states that social support may impact positively on the health condition of chronic disease management. That is because the social support can improve self management for the better and more confident in health conditions [34]. High levels of social support indirectly can prevent the development of diabetes through healthy habits such as increasing physical activity, and pattern settings eat better [11]. So the social support helps patient of type 2 DM to control blood sugar levels, such as the existence of a family that always remind to check health or help regulate his diet [41]. This is because in the control of blood sugar necessary psychosocial interventions with social support especially emotionally [4].

In addition to helping chronic disease management, social support can also prevent mental health disorders mainly on elderly experiencing psychosocial distres like fatigue, loneliness, and depression [16]. It is known that the elderly tend to experience a variety of health problems, especially

mental health caused by limited social relations and stress [24]. While stress can lower your physical and psychological health conditions so as to result in a decrease in the quality of life [20].

## IV. CONCLUSSION

Based on the results of data analysis using the Spearman correlation test showed that there is a significant difference between social support with the stress levels in people with type 2 DM aged 60-69 years in Janti's Public Health Center (sig. 0.000 or $p < 0.05$). It is mean that the higher level of social support, then the lower of stress level and the instead the lower of social support then the higher of stress level.

## REFERENCES

[1] Baek, R.N., Tanenbaum, M.L., & Gonzales, J.S. 2014. Diabetes Bueden and Diabetes Distress: The Buffering Effect of Social Support. Ann Behav Med, 48(2):145-155. DOI: 10.100-7/s12160-013-9585-4.Diabetes.

[2] Banoriztanto, A. 2017. Gaya Hidup Penderita Diabetes Mellitus Tipe 2 Terkait Aspek Pola Makan Dan Physical Activity Di Kota Malang. Skripsi tidak diterbit-kan. Malang: FIK UM.

[3] Brunelli, A. A., Murphy, G. C., & Athanasou, J. A. 2016. Effec-tiveness of Social Support Group Interventions for Psychosocial Outcomes: A Metaanalytic Re-view. The Australian Journal of Rehabilitation Counselling, 22 (2):104-127. DOI: 10.1017/j-rc.2016.9.

[4] Chew, B., Khoo, E., & Chia, Y. 2015. Social Support and Glycemic Control in Adult Patients With Type 2 Diabetes Mellitus. Asia Pacific Journal of Public Health, 27(2):166-173. DOI 10.1177/10-10539511431300.

[5] Cohen, S. 1992. Stress, Social Support, and Disorder The Meaning of Mea-surment of Social Support. New York: Hemisphere Press.

[6] Dhabhar, F. S. 2014. Effects of Stress on Immune Function: the Good, the Bad, and the Beautiful. Immunologic Research, 58(2–3):193–210. DOI: 10.1007/s12-026-014-8517-0.

[7] Ditzen, B., Schmidt, S., Strauss, B., Nater, U. M., Ehlert, U., & Heinrichs, M. 2008. Adult attachment and social support interact to reduce psychological but not cortisol responses to stress. Journal of Psychosomatic Research, 64-(5), 479–486. DOI: 10.1016/j.jpsy-chores.2007.11.011.

[8] Efendi, M.R. 2008. Hubungan Tingkat Stres dengan Diabetes Mellitus (DM) Tipe II pada Usia Pertengahan (45-59 Tahun) di Persatuan Diabetes Indonesia (Persadia) Rs Pku Muham-madiyah Yogyakarta Tahun 2008. Skripsi Tidak Diterbitkan. Yogyakarta: Program Studi Ilmu Keperawatan Sekolah Tinggi Ilmu Kesehatan 'Aisyiyah.

[9] Eisenberger, N. I., Taylor, S. E., Gable, S. L., Hilmert, C. J., & Lieberman, M. D. 2007. Neural Pathways Link Social Support to At-tenuated Neuroendocrine Stress Responses. NeuroImage, 35 (4): 1601–16-12. DOI: 10.10-16/j.neuroimage.2007.01.038.

[10] Faresjo, A., Theodorsson, E., Cha-tziarzenis, M., Sapouna, V., Claesson, H. P., Koppner, J., & Faresjö, T. 2013. Higher Perceived Stress but Lower Cortisol Levels Found among Young Greek Adults Living in a Stressful Social Environment in Comparison with Swedish Young Adults. PLoS ONE, 8(9):1–8. DOI: 10.13-71/jour-nal.pone.0073828.

[11] Gallo, L. C., Fortmann, A. L., McCur-ley, J. L., Isasi, C. R., Penedo, F. J., Daviglus, M. L., Roesch, S.C., Talavera, G.A., Gouskova, N., Gonzales, F., Scheineiderman, N., & Carnethon, M. R. 2014. Associations of Structural and Functional Social Support With Diabetes Prevalence in U.S. Hispa-nics/Latinos: Results From The HCHS/SOL Socio-cultural Ancillary Study. Journal of Behavioral Medicine, 38(1):-160–170. DOI: 10.1007/s1-0865-014-9588-z.

[12] Gaol, N. T. L. 2016. Teori Stres: Stimulus, Respons, dan Transaksional. Buletin Psikologi, 24(1):1–11. DOI 10.2214-6/bpsi.11224.

[13] Gariepy, G., Honkaniemi, H., & Ques-nel-Vallée, A. 2016. Social Support and Protection From Depression: Systematic Review of Current Findings in Western Countries. British Journal of Psychiatry, 209(4):284–293.DOI:10.1192/b-jp.bp.115.169094.

[14] Haczku, A., & Panettieri, R. A. 2010. Social Stress and Asthma: the Role of Corticosteroid Insen-sitivity. Journal of Allergy and Clinical Immunology, 125 (3) :550–558. DOI: 10.101-6/j.ja-ci.2009.11.005.

[15] Holt-Lunstad, J., Birmingham, W. A., & Light, K. C. 2008. Influence Of a "Warm Touch" Support Enhan-cement Intervention Among Married Couples on Ambulatory Blood Pressure, Oxytocin, Alpha Amylase, and Cortisol. Psycho-somatic Medicine, 70(9):976–985. DOI: 10.1097/PSY.0b013-e318187aef7.

[16] Indriana, Y., Kristiana, I.F., Sonda, A.A., & Intanirian, A. 2010. Tingkat Stres Lansia di Panti Wredha "Pucang Gading" Semarang. Jurnal Psikologi Undip, 8(2):87-96.

[17] Inoue, M., & Yamaoka, K. 2017. Social Factors Associated with Psy-chological Distress and Health Problems among Elderly Mem-bers of a Disaster Affected Popu-lation: Subgroup Analysis of a 1-Year Postdisaster Survey in Ishinomaki Area, Japan. Disaster Medicine and Public Health Preparedness, 11(1):64–71. DOI:10.1017/dmp.2016.147.

[18] International Diabetes Federation. 2015. IDF Diabetes Atlas Seventh Edition (online), (https://www.i-df.org/elibrary/epidemiology re-search/diabetes atlas/13-diabetes atlas-seventh-edition.html), di-akses 26 September 2017.

[19] Jaka, R., Prabowo, T., & Dewi, S. 2015. Senam Lansia dan Tingkat Stres pada Lansia di Dusun Polaman Argorejo Kecamatan Sedayu 2 Kabupaten Bantul Yogyakarta. Journal Ners and Midwifery Indonesia, 3(2):-110-115. DOI 10.2192-7/jnki.2015.3(2).110-115.

[20] Juliandari, N.M., Kusnanto, & Hidayati, L. 2015. Hubungan Antara Dukung-an Sosial dan Coping Stres dengan Kualitas Hidup Pasien TB Paru di Puskesmas Perak Timur Surabaya Tahun 2014. (Online),(http://journal.unair.ac.id) diakses pada 16 April 2018.

[21] Keita, D.A., Casazza, K., Fernandez, J. R., Goran, M. I., & Gower, B. 2012. Do Neighbourhoods Matter? Neighbourhood Disorder and Longterm Trends in Serum Cortisol Levels. Journal of Epidemiology and Community Health, 66 (1): 24–29. DOI: 10.1136/jech.200-9.092676.

[22] Kemenkes RI. 2014. Waspada Dia-betes Eat Well Live Well. Jakarta: Infodatin Pusat Data dan Informasi Kementerian Kesehat-an RI.

[23] Kumalasari, F., & Ahyani, L. N. 2012. Hubungan Antara Dukungan Sosial dengan Penyesuaian Diri Remaja di Panti Asuhan. Jurnal Psikologi Pitutur, 1(1):21–31.

[24] Kwag, K. H., Martin, P., Russell, D., Franke, W., & Kohut, M. 2011. The Impact of Perceived Stress, Social Support, and Home-Based Physical Activity on Mental Health among Older Adults. The International Journal of Aging and Human Development, 72 (2):1-37–154. DOI: 10.2190/A-G.72.2.c.

[25] Lee, P.G. & Halter, J.B. 2017. The Pathophysiology of Hyper-glycemia in Older Adults: Clinical Considerations. Dia-betes Care, 40:444-452.

[26] Li, H., Ji, Y., & Chen, T. 2014. The Roles Of Different Sources Of Social Support On Emotional Well-Being Among Chinese Elderly. PLoS ONE, 9 (3):1–8. DOI: 10.1371/journal.pone.0-090051.

[27] Ma, L., Li, Y., Wang, J., Zhu, H., Yang, W., Cao, R., Qian, Y., & Feng, M. 2015. Quality of Life is Related to Social Support in Elderly Osteoporosis Patients in a Chinese Population. PLoS ONE, 10(6):1–11. DOI: 10.13-71/journal.pone.0127849.

[28] Malhi, G. S. 2008. An Emphasis on Stress. Acta Neuropsychiatrica, 20 (3): 111. DOI: 10.111-1/j.1601-5215.2008.00308.x.

[29] Marni, A., & Yuniawati, R. (2015). Hu-bungan Antara Dukungan Sosial dengan Penerimaan Diri Pada Lansia Di Panti Wredha Budhi Dharma Yogyakarta. Empathy, 3(1), 1–7.

[30] Meidikayanti, W., & Wahyuni, C.U. 2017. Hubungan Dukungan Keluarga dengan Kualitas Hidup Diabetes Melitus Tipe 2 Di Puskesmas Pademawu. Jurnal Berkala Epidemiologi 5 (2): 240–252. DOI:10.20473/jbe.v5i2.2017.240-252.

[31] Mikkonen, J. & Dennis R. 2010. Social Dterminant od Health: The Canadian Facts. Toronto: York University School of Health Policy and Management.

[32] Miller, T. A., & DiMatteo, M. R. 2013. Importance of family/social support and impact on adherence to diabetic therapy. Diabetes,

Metabolic Syndrome and Obesity: Targets and Therapy, 6: 421–426. DOI: 10.2147/DM-SO.S36368.

[33] Musradinur. 2016. Stres dan Cara Me-ngatasinya Dalam Perspektif Psikologi. Jurnal Edukasi, 2-(2):183-200.

[34] Nicklett, E. J., Heisler, M. E. M., Spe-ncer, M. S., & Rosland, A. 2013. Direct Social Support and Long-Term Health Among Middle-Aged and Older Adults With Type 2 Diabetes Mellitus. Journals of Gerontology, Series B: Psychological Sciences and Social Sciences, 68 (6): 933–43. DOI 10.1093/geronb/gbt100.

[35] Noviarini, N. A., Dewi, M. P., & Prabowo, H. 2013. Hubungan antara Dukungan Sosial dengan Kualitas Hidup pada Pecandu Narkoba yang sedang Menjalani Rehabilitasi. Proceeding PESAT (Psikologi, Ekonomi, Sastra, Arsitektur Dan Teknik Sipil, 5:116-122.

[36] Nugroho, S.A., & Purwanti, O.S. 2017. Hubungan Antara Tingkat Stres dengan Kadar Gula Darah pada Pasien Diabetes Mellitus di Wilayah Kerja Puskesmas Suko-harjo I Kabupaten Sukoharjo. Skripsi tidak diterbitkan. Karta-sura: FIK UMS.

[37] Pratiwi, M.M.S., & Pribadi, A.S. 2013. Stres pada Lansia. Psycho Idea, 11(1):79-89.

[38] Ramkisson, S., Pillay, B. J., & Sibanda, W. 2017. Social support and coping in adults with type 2 diabetes. African Journal of Primary Health Care & Family Medicine, 9(1):1–8. DOI 10.4102/phc-fm.v9i1.14-05.

[39] Rembang, V.P., Katuuk, M.E., & Malara, R. 2017. Hubungan Dukungan Sosial Dan Motivasi Dengan Perawatan Mandiri Pada Pasien Diabetes Dalam Rsud Mokopido Toli-Toli. E-Journal Keperawat-an (E-Kp), 5(1):1-10.

[40] Rosyada, A. & Trihandini, I. 2013. Determinan Komplikasi Kro-nik Diabetes Melitus pada La-njut Usia. Jurnal Kesehatan Masya-rakat Nasional, 7(9):-395-401.

[41] Shao, Y., Liang, L., Shi L., Wan, C., & Yu, S. 2017. The Effect of Social Support on Glycemic Control in Patients with Type 2 Diabetes Mellitus: The Mediating Roles of Self-Ef-ficacy and Adherence. Journal of Diabetes Research, 2017:1–8. DOI: 10.1155/2017/2-804178.

[42] Strom, J. L., & Egede, L. E. 2012. The Impact of Social Support on Outcomes in Adult Patients with Type 2 Diabetes: a Sys-tematic Review. Curr Diab Rep, 12(6): 769–781. DOI:1-0.1007/s11892-012-0317-0.

[43] Supriati, L., Bintari R.K. & Haris F.S. 2017. Hubungan Tingkat Kecer-dasan Emosional Dengan Tingkat Stres Pada Penderita Diabetes Mellitus Di Rumah Sakit Tentara dr. Soe-praoen Malang. Majalah Kesehatan FKUB, 4 (2): 79-87.

[44] Susilowati, A.T. 2007. Hubungan Antara Dukungan Sosial dan Tingkat Stres Orangtua dari Anak Autis. Skripsi tidak diterbitkan. Yogya-karta: Fakultas Psikologi Univer-sitas Sanata Dharma.

[45] Suttajit, S., Punpuing, S., Jirapramukpitak, T., Tangchonlatip, K., Darawut-timaprakorn, N., Stewart, R., Dewey, M.E., Prince, M., & Abas, M. A. 2010. Impairment, Disability, Social Support and Depression Among Older Parents in Rural Thailand. Psychological Medicine, 40(10): 1711–1721. DOI:10.1017/S00-3329170999208X.

[46] Thoits, P. A. 2011. Mechanisms Lin-king Social Ties and Support to Physical and Mental Health. Journal of Health and Social Behavior, 52(2):145–161. DOI 10.1177/00221465103-95592.

[47] Vaccaro, J. A., Exebio, J. C., Zarini, G. G., & Huffman, F. G. 2014. The Role of Family/Friend Social Support in Diabetes Self-Management for Mino-rities with Type 2 Diabetes. World Journal of Nutrition and Health, 2(1):1–9. DOI 10.12691/jnh-2-1-1.

[48] Wang, X., Cai, L., Qian, J., & Peng, J. 2014. Social Support Moderates Stress Effects on Depression. International Journal of Mental Health Systems, 8(1):-1-5. DOI 10.1186/1752-4458-8-41.

[49] World Health Organization. 2016. Global Report on Diabetes. Fran-ce: WHO

[50] Yan, L.S., Marisdayana, R., & OR Irma, R. 2017. Hubungan Penerimaan Diri dan Tingkat Stres pada Penderita Diabetes Mellitus. Jurnal Endurance, 2(3):312-322, DOI: 10.222-16/jen.v2i3.2234.

[51] Zainuddin, Mhd., Wasisto, U. & Herlina. 2015. Hubungan Stres dengan Kualitas Hidup Penderita Diabetes Mellitus Tipe 2. JOM, 2 (1): 890-898.