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Original Research

The Influence of Spiritual Care with Callista Roy's Adaptation Theory Approach on Serotonin Levels in Ischemic Stroke Patients

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ABSTRACT

Background: *Ischemic stroke causes physical disability, which can result in an inability to adapt, causing a 72% decrease in serotonin. Decreased serotonin can cause mood changes that adversely impact stroke outcomes. The aim of this research is to determine the effect of spiritual care using Callista Roy's adaptation theory approach on serotonin levels in Ischemic Stroke Patients.*

Methods: *The type of research is quasi-experimental with a pretest-posttest control group design. The population of the study was outpatients of ischemic stroke patients at Dr. Moewardi Hospital. The sample size was 60 respondents consisting of 30 respondents in the control group and 30 respondents in the intervention group. The intervention group was given a spiritual care intervention by the researcher consisting of 5 sessions each meeting with a duration of 30 minutes. The spiritual care intervention was given once a week 12 times for 3 months and the control group was given standard spiritual therapy by the outpatient nurse at RSUD Dr. Moewardi Surakarta. Serotonin examination using ELISA kit. Data analysis using independent sample t-test.*

Results: *There is an influence of spiritual care with the Callista Roy theory approach on the serotonin levels of ischemic stroke patients with a significance of 0.001 (p value <0.05).*

Conclusion: *Spiritual care interventions with Callista Roy's theoretical approach have a significant influence on improving serotonin levels in ischemic stroke patients, which can reduce anxiety. It is recommended that ischemic stroke patients be given spiritual care 12 times for 3 months.*

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INTRODUCTION

Stroke is an emergency disease and requires immediate assistance. According to the World Stroke Organisation in 2018, stroke is the second leading cause of death and the leading cause of disability with a total of 87%. Currently, worldwide there are 80

million people who experience stroke, with 5.5 million people dying per year and more than 116 million years experiencing disability.

Disability can occur as a result of functional decline, and the tendency to experience persistent health problems can potentially cause an inability to carry out daily activities. Patients who suffer from physical disabilities will trigger negative perceptions of biopsychosocial life. Patients have negative perceptions, causing feelings of pessimism, anxiety, and depression about the future (Anderson, 2019).

Stroke patients experience anxiety, which is characterised by a decrease in serotonin by 72% (Primadona et al., 2020). Decreased serotonin will result in mood changes that will have an impact on limiting physical activity, which can worsen stroke outcomes (de Vries et al., 2022; Graaf et al., 2020). Serotonin levels can be influenced by several factors, including spiritual factors (Saniotis, 2018). Spirituality can guide patients to give positive meaning to every event and be patient in dealing with problems that have an impact on increasing serotonin production (Lono Wijayanti, 2017).

Spiritual care model interventions can foster hope about the potential for healing (Afshar et al., 2021). Patients have high hopes that will make patients more obedient to undergo regular stroke treatment. The role of spiritual care is very important in helping patients meet their spiritual needs related to interactions with their God, who have contributed to finding the meaning and purpose of life and an optimistic attitude so that they have a better ability to adapt to the disease (Fatoni, 2020).

Good adaptability will form mental resilience during ischemic stroke treatment, so an exclusive spiritual care program is needed, including programs in the neurology polyclinic (Lono Wijayanti, 2017; Khalajinia et al., 2021; Salamizadeh et al., 2017). Callista Roy's adaptation theory model aims to improve adaptive responses in every dimension of physiology, self-concept, interdependence, and role function (Alligood, 2017). Nurses have an important role in providing nursing actions that can manipulate focal, contextual, or residual stimuli, so with the manipulation of all these stimuli, patients are expected to be able to adapt (Alligood, 2017).

Nurses manipulate stimuli using spiritual care interventions to provide spiritual guidance to patients in tolerating harmful threats and family involvement in biopsychosocial care, so it is hoped that it can realise patient independence in determining adaptive behaviour (Yilmaz & Kara, 2020). Previous research on the spiritual care model used the development of nurse competencies to reduce stress and improve the quality of spiritual care and spiritual well-being of patients (Haghparast et al., 2021; Ghorbani et al., 2020). The spiritual care model is an interprofessional collaborative intervention in providing spiritual services by helping patients understand the meaning of illness and gain hope to overcome the disease situation (Góes & Crossetti, 2020).

Previous research on the spiritual care model used the development of nurse competency to reduce stress and improve the quality of spiritual care and patient spiritual well-being (Haghparast et al., 2021; Ghorbani et al., 2020). However, the scope of the spiritual care model still needs to be developed from a different perspective as an independent care intervention for the treatment of psychosocial adaptation disorders resulting from the impact of stroke (Dharma et al., 2020). One of the encapsulating models that has a broad and deep meaning in adaptation in the biopsychosocial dimension to chronic illness is the Callista Roy theoretical adaptation model.

The spiritual care model with the Callista Roy theoretical adaptation approach is an effort to cope with coping mechanisms in adapting by getting closer to God, oneself,

and other people. This spiritual value will be able to overcome the increase in cortisol caused by the low adaptation ability of stroke patients. This study aims to determine the effect of spiritual care using Callista Roy's adaptation theory approach on serotonin levels in ischemic stroke patients.

MATERIALS AND METHODS

This study is a type of quasi-experimental study with a pre-test-post-test control group design (Sugiyono, 2022). The research population and also the research location were outpatient ischemic stroke patients undergoing rehabilitation at the Dr. Moewardi General Hospital Polyclinic, Surakarta. The research period was from October 2022 to October 2023. Sampling in this study was using the consecutive sampling technique.

The researcher divided the control group into the intervention group by selecting the inclusion and exclusion criteria, then if they had met 25 samples from each research group based on the results of the Slovin formula calculation. The probability of a drop out occurring is estimated to be 20%, so the tolerance for additional sample sizes is 5 samples (Sastroasmoro & Ismail, 2014). The number of samples was 30 samples for each research group. So the total number of intervention groups and control groups is 60 samples.

The number of samples in the intervention group was 30 respondents and 30 respondents in the control group. Inclusion criteria Patients aged 30-60 years, Patients with a GCS score ≥14, History of first stroke, Typical ischemic stroke patients with lesions in the internal capsule as indicated by brain CT scan results, Patients with treatment according to the PERDOSSI guidelines and willing to become research participants by signing a letter of consent or informed consent. The independent variable is the spiritual care model. The dependent variable is the level of the serotonin hormone.

Serotonin level examination by taking venous blood specimens of ± 3 ml in the morning by laboratory staff. Serotonin reagent comes from the United States. Serotonin examination using the ELISA method. The ethical clearance test for this research was obtained through the research ethics committee of Dr. Moewardi Surakarta General Hospital based on letter number 1.012 / VII / HREC / 2022.

Before collecting data, the researcher explained the research, its procedures, and other related information to the respondents. Respondents then signed the informed consent form. Samples were taken by purposive sampling and then divided into 2 groups, namely the intervention and control groups. All subjects, both the intervention and control groups, were pre-tested first by measuring serotonin hormone levels using the ELISA method. Researchers provided spiritual intervention once a week for 5 sessions with 12 interventions for 3 months.

Each intervention takes 30 minutes to be given directly to the patient at the neurology clinic at RSUD Dr. Moewardi Surakarta. Forms of spiritual care intervention such as spiritual emotional freedom techniques, prayer, listening to spiritual music, range of motion exercises, and social skills. While the control group was only given generic spiritual therapy from the hospital. After being given intervention according to the target frequency for 3 months, the intervention group and the control group were then given a post-test with the same method to measure their serotonin hormone levels. Bivariate data analysis used the independent sample t-test and paired t-test (Sugiyono, 2022).

RESULTS

Based on Table 1, the results for the intervention group and the control group for the age variable.

Table 1. Frequency Distribution of Respondents

Respondent characteristics	Category	Intervention group		Control group		X^2	P-value
		N	%	N	%		
Age	20-40 Years	5	16,7	6	20,0	2,963	0,085
	41-60 Years	25	83,3	24	80,0		
Gender	Male	18	60,0	20	66,7	0,287	0,592
	Female	12	40,0	10	33,3		
Education	Elementery	13	43,3	18	60,0	6,347	0,155
	High school	14	46,7	8	26,7		
	University	3	10,0	4	13,3		
Compliance	2x absent	9	30	11	36,7	0,487	0,920
	fully present	21	70	19	63,3		

Which was tested using chi-square, obtained a correlation value of 2.963 with a significance of 0.085, so it can be concluded that the age variable is not significantly correlated with spiritual care. In the intervention and control groups, the gender variable was tested using chi-square, and a correlation value of 0.287 was obtained with a significance of 0.592, so it can be concluded that the gender variable is not significantly correlated with spiritual care. In the intervention and control groups, the education variable was tested using Fisher's exact test, and a correlation value of 6.347 was obtained with a significance of 0.155, so that it can be concluded that the education variable is not significantly correlated with spiritual care.

In the intervention and control groups on the compliance variable, which was tested using Fisher's exact test, a correlation value of 0.487 was obtained with a significance of 0.920, so that it can be concluded that the compliance variable is not significantly correlated with spiritual care.

Table 2. Normality Test

	Pre	Post	Statistic	df	Sig
Serotonin	464.82	540.48	.096	60	.200*

Table 2, the data normality test using Kolmogorov-Smirnov shows the results of the serotonin normality test obtained a significance value of 0.2, which means that the data is normally distributed, so the test uses the independent sample t-test.

Table 3. The Influence of Spiritual Care on Serotonin Levels (N=30)

Variables	N	Mean	Median	SD	Min	Max	t	p-value
Pre Serotonin (Intervention)	30	432,30	376,50	264,054	96	1012		0,379
Post Serotonin (Control)	30	497,33	349,00	307,714	75	948		

Variables	N	Mean	Median	SD	Min	Max	t	p-value
Post Serotonin (Intervention)	30	436,07	418,00	206,053	111	835	3,579	0,001
Serotonin (Control)	30	644,90	667,50	244,329	77	1041		

Based on Table 3, the average value in the pre-intervention group was 432.30 (SD=264.054), and the average in the pre-control group was 497.33 (SD=307.714). The average serotonin value in the post-intervention group was 436.07 (SD = 206.053). The mean serotonin value in the post-control group was 644.90 (SD = 244.329).

The conclusion from comparing the pre- and post-averages is that there was a decrease in the average serotonin levels in the intervention group and an increase in the average serotonin levels in the control group. The t value is 3.579 (> t table 2.00172), and the p-value is 0.001 (p-value < 0.05) this means that there is a significant influence of spiritual care actions using Callista Roy's adaptation theory approach on serotonin levels in ischemic stroke patients.

DISCUSSION

The results of the study showed that there was an influence of spiritual care treatments with the Callista Roy adaptation theory approach on serotonin levels in ischemic stroke patients with a significance value of 0.001 (p value <0.05). Serotonin plays a role in controlling mood, anxiety, depression, and so on (Berger et al., 2018). Serotonin, or 5-HT, plays an important role in the development and persistence of anxiety disorders (Kaur & Singh, 2017).

Based on Primadona's research (2020), ischemic stroke patients experience anxiety, which is characterised by a decrease in serotonin by 72% (Primadona et al., 2020). Decreased serotonin will result in mood changes that will have an impact on limiting physical activity, which can worsen stroke outcomes (de Vries et al., 2022; Graaf et al., 2020). Serotonin plays a role in controlling various emotional levels. Serotonin also plays a role in controlling mood, anxiety, depression, and so on (Berger et al., 2018).

Serotonin, or 5-HT, plays an important role in the development and persistence of anxiety disorders in addition to GABA. Serotonin neurones are involved in changes in appetite, energy, sleep, mood, and cognitive function in anxiety (Kaur & Singh, 2017). Ischemic stroke patients experiencing symptoms of limb weakness will affect the patient's psychological impact.

Patients feel disappointed, hopeless, sad, and afraid of their medical condition, which hinders them from carrying out activities so that patients experience anxiety (Nelsone et al., 2023). Patients who undergo treatment in hospitals generally only receive medical treatment, while early detection and treatment of psychological aspects as a reaction to physical complaints are still lacking (Devereux & Berns, 2023). According to Callista Roy's adaptation theory, in order for patients to maintain their lives, patients must respond positively to physiological changes by adapting.

Patients in adapting need coping mechanisms to help solve problems. Patients who are unable to adapt will experience low self-efficacy, fear, emotional instability, decreased serotonin, and poor health status (Maleki et al., 2018; M. Suhron et al., 2023; Kanen et al., 2021). Spiritual care will stimulate the pituitary in the hypothalamus so

that it can control CRF, which results in decreased cortisol and ACTH hormones that cause stress so that it will secrete neurotransmitters, serotonin, and endorphin hormones (Sara Herlina et al., 2023).

When the serotonin hormone is secreted by the brain, it will activate the parasympathetic nervous system to work, which causes the body to become more relaxed and calm again and improve blood pressure, respiration, and pulse. These results are supported by Willemse's opinion (2020) that spiritual care can influence the improvement of physical and psychological illness problems by achieving peace and happiness in life (Willemse et al., 2020). Based on the results of research on the average serotonin before and after serotonin intervention, it was found that the intervention and control groups experienced an abnormal increase before being given the intervention.

After receiving spiritual care intervention, serotonin levels decreased to near-normal levels. Normal serotonin values are 101-283 ng/ml (Sumekar et al., 2022). Meanwhile, the serotonin group still experienced a significant increase. High serotonin causes tremors, fast heartbeat, headaches, and high blood pressure. Several factors cause serotonin to be too high, such as seizures, muscle stiffness, hyperthermia, mecobalamin, and citicoline drugs (Foong et al., 2018), (Ren et al., 2020), (Jasielski et al., 2020). Therefore, the research hypothesis has been proven that spiritual care interventions can influence normal serotonin.

Forms of spiritual care treatments include prayer, prayer as a cure for anxiety because it produces several medical and psychological effects, namely balancing serotonin and norepinephrine levels, which have a pleasing effect on the heart, calming the mind, and also relaxing several muscles, especially the shoulder muscles, which often cause psychological tension (Hatri Istiarini et al., 2021). Spiritual care treatment is an adaptive coping mechanism by expressing feelings and controlling anger by getting closer to God, so that it has an impact on psychological well-being, which is accompanied by an increase in serotonin levels (Graça & Brandão, 2024) and (de Vries et al., 2022). Spiritual care treatment is not only an interaction with God but also an interaction with the social environment.

According to Matsunaga's research (2017), it was found that the presence of friends in social interactions with empathy and sharing happiness can increase serotonin and reduce patient anxiety (Matsunaga et al., 2017). Effective spiritual care plays an important role when facing pressure or stressors, so that individuals tend to be calmer and less prone to anxiety in living their lives.
The results of this research serve as a reference for formulating policies, especially in neurology clinics, as an effort to rehabilitate spiritual care using Callista Roy's adaptation theory approach, which is useful in preparing the adaptation of ischemic stroke patients in a comprehensive manner.

The limitations of this research are that the respondents are Muslim, Christian, and Catholic, so it is recommended that research be carried out on other religions. Another limitation is that respondents still receive outpatient treatment at the hospital, but this research has not been carried out on respondents in the community.

CONCLUSION

Spiritual care treatments with Callista Roy's theoretical approach have a significant influence on improving serotonin levels in ischemic stroke patients, which can reduce anxiety. It is recommended that spiritual care be provided to ischemic stroke patients 12 times over 3 months.

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REFERENCES

Afshar, M., Sadat, Z., & Bagheri, M. (2021). The Effect of Spiritual Counseling on Hope in Patients with Multiple Sclerosis: A Randomized Clinical Trial. *International Journal of Community Based Nursing and Midwifery*, *9*(4), 319–322. https://doi.org/10.30476/ijcbnm.2021.88605.1523

Alligood, M. R. (2017). *Pakar Teori Keperawatan dan Karya Mereka* (A. Y. S.Hamid & K. Ibrahim (eds.); 8th ed.). Elsevier Ltd.

Anderson, S. C. (2019). The global burden of stroke: persistent and disabling. *The Lancet Neurology*, *18*, 439. https://doi.org/10.1016/S1474-4422(19)30030-4

De Vries, L. P., van de Weijer, M. P., & Bartels, M. (2022). The Human Physiology Of Well-Being: A Systematic Review On The Association Between Neurotransmitters, Hormones, Inflammatory Markers, The Microbiome And Well-Being. *Neuroscience and Biobehavioral Reviews*, *139*, 104733. https://doi.org/10.1016/j.neubiorev.2022.104733

Devereux, N., & Berns, A. M. (2023). Evaluation & Treatment of Psychological Effects of Stroke. *Delaware Journal of Public Health*, 1–16. https://doi.org/10.32481/DJPH.2023.08.011

Dharma, K. K., Parellangi, A., & Rahayu, H. (2020). Religious Spiritual And Psycososial Coping Training(RS-PCT) Meningkatkan Penerimaan Diri Dan Efikasi Diri Pada Pasien Paska Stroke. *Jurnal Keperawatan Silampari*, *3*(2), 520–533. https://doi.org/https://doi.org/10.31539/jks.v3i2.1147

Fatoni, H. A. (2020). *Integrasi Zikir dan Pikir. Dasar Pengembangan Pendidikan Islam* (A. Faqih (ed.); Edisi 1). Forum Pemuda Aswaja. http://repository.radenintan.ac.id/11995/1/Buku Zikir dan Fikir Lengkap.pdf

Foong, A.-L., Grindrod, K. A., Patel, T., & Kellar, J. (2018). Demystifing Serotonin Syndrom (or serotonin toxicity). *Canadian Family Physician*, *64*, 720–727. https://doi.org/10.1080/15563650.2021.1993242.

Ghorbani, M., Mohammadi, E., Aghabozorgi, R., & Ramezani, M. (2020). The Effect of Applying Spiritual Care Model on Well-Being and Quality of Care in Cancer Patients. *Supportive Care in Cancer*, *29*(5), 2749–2760. https://doi.org/10.1007/s00520-020-05781-7

Góes, M. G. O. de, & Crossetti, M. da G. de O. (2020). Developing a Spiritual Care

Model for Patients and Their Relatives in Illness. *Rev Gaúcha Enferm*, *41*, 1–10. https://doi.org/https://doi.org/10.1590/1983-1447.2020.20190150

Graaf, J. A. de, Schepers, V. P. M., Nijsse, B., & Heugten, C. M. Van. (2020). The Influence of Psychological Factors and Mood on The Course of Participation up to Four Years After Stroke. *Disability and Rehabilitation*, 1–8. https://doi.org/10.1080/09638288.2020.1808089

Graça, L., & Brandão, T. (2024). Religious/Spiritual Coping, Emotion Regulation, Psychological Well-Being, and Life Satisfaction among University Students. *Journal of Psychology and Theology*, 1–11. https://doi.org/10.1177/00916471231223920

Haghparast, A., Tabatabaei, H. S., Ghanbari, N., & Maleki, L. (2021). The Effect of the Spiritual Care Model Based on the Righteous Heart on the Post-Traumatic Stress of Veterans in 2019. *Teikyo Medical Journal*, *44*(02), 859–867.

Hatri Istiarini, C., Putri Ferdinand, A., Pratiwi, A., Newo, D., Purbo Sasongko, D., Yuni Prihantari, I., & Wolla, R. (2021). Jenis Terapi Dukungan Spiritual yang Mempengaruhi Kecemasan Pada Pasien Pre Operasi: Literatur Review Types of Spiritual Support Therapy Affecting Anxiety in Preoperative Patients: Literature Review. *Medika Respati : Jurnal Ilmiah Kesehatan*, *16*(3), 159–168.

Jasielski, P., Pięd̨el, F., Piwek, M., Rocka, A., Petit, V., & Rejdak, K. (2020). Application Of Citicoline In Neurological Disorders: A Systematic Review. *Nutrients*, *12*(10), 1–21. https://doi.org/10.3390/nu12103113

Kanen, J. W., Arntz, F. E., Yellowlees, R., Cardinal, R. N., Price, A., Christmas, D. M., Apergis-Schoute, A. M., Sahakian, B. J., & Robbins, T. W. (2021). Serotonin Depletion Amplifies Distinct Human Social Emotions As a Function Of Individual Differences In Personality. *Translational Psychiatry*, *11*(81), 1–12. https://doi.org/10.1038/s41398-020-00880-9

Kaur, S., & Singh, R. (2017). Role of Different Neurotransmitters in Anxiety : A Systematic Review. *International Journal of Pharmaceutical Sciences and Research*, *8*(2), 411–421. https://doi.org/10.13040/IJPSR.0975-8232.8(2).411-21

Khalajinia, Z., Tehran, H. A., & Heidari, A. (2021). Explaining The Perception of Spiritual Care from The Perspective of Health Personnel: A Qualitative Study. *Journal of Education and Health Promotion* |, *10*(53), 1–6. https://doi.org/10.4103/jehp.jehp_599_20

Lono Wijayanti. (2017). Pengaruh Spiritual Care Terhadap Depresi dan Pemaknaan Hidup pada Klien Gagal Ginjal Terminal Dengan Hemodialisa di Rumah Sakit Islam Surabaya. In *Universitas Airlangga Surabaya*. Universitas Airlangga Surabaya.

M. Suhron, M.Hasinuddin, Faisal Amir, Siti Sulaiha, & M. Fajar Sadiq. (2023). How is

the Coping Mechanism, the Function of Adolescent Role in the Implementation of Vaccination of Covid-19 Vaccine Based on Psychological Distress? : Cross-sectional Study. *Journal Of Nursing Practice*, *7*(1), 45–56. https://doi.org/10.30994/jnp.v7i1.337

Maleki, B., Mohammadi, N. A., & Shahriari, M. (2018). The Application of Roy ' s Adaptation Model to Promote Psychosocial Status of CVA Patients. *Journal of Addiction Research*, *2*(2), 1–5. https://opastonline.com/storage/2018/11/the-application-of-roys-adaptation-model-to-promote-psychosocial-status-of-cva-patients-jar.18.pdf

Matsunaga, M., Ishii, K., Ohtsubo, Y., Noguch, Y., Ochi, M., & Yamasue, H. (2017). Association Between Salivary Serotonin and The Social Sharing of happiness. *PLoS ONE*, *12*(7), 10–15. https://doi.org/10.1371/journal.pone.0180391

Nelsone, L., Rafsten, L., Abzhandadze, T., & Sunnerhagen, K. S. (2023). A cohort study on anxiety and perceived recovery 3 and 12 months after mild to moderate stroke. *Frontiers in Neurology*, *14*, 1–9. https://doi.org/10.3389/fneur.2023.1273864

Primadona, E., Pudjonarko, D., Rahmawati, D., Kustiowati, E., Suryawati, H., & Budisulystio, T. (2020). Hubungan Antara Kadar Serotonin Serum dengan Fungsi Kognitif pada Pasien Nyeri Kepala Tipe Tegang Kronis. *Neurona*, *38*(1), 1–7. https://www.neurona.web.id/paper-detail.do?id=1202

Ren, X., Chou, Y., Jiang, X., Hao, R., Wang, Y., Chen, Y., & Li, X. (2020). Effects of Oral Vitamin B1 and Mecobalamin on Dry Eye Disease. *Journal of Ophthalmology*, *1*, 1–9. https://doi.org/10.1155/2020/9539674

Salamizadeh, A., Mirzaei, T., & Ravari, A. (2017). The Impact of Spiritual Care Education on the Self-Efficacy of the Family Caregivers of Elderly People with Alzheimer ' s Disease Original A rticle. *Int J Community Based Nurs Midwifery*, *5*(3), 231–238. https://pdfs.semanticscholar.org/d75b/106243afc2e45d43b492a6a332ddbee171c8.pdf

Saniotis, A. (2018). Understanding Mind/Body Medicine from Muslim Religious Practices of Salat and Dhikr. *Journal of Religion and Health*, 5–7. https://doi.org/10.1007/s10943-014-9992-2

Sara Herlina, Wiwi Sartika, & Siti Qomariah. (2023). Dampak Spiritual Emotional Freedom Technique (Seft) Terhadap Tingkat Nyeri Haid Pada Siswi Di Pekanbaru. *Jurnal Mutiara Kesehatan Masyarakat*, *8*(2), 60–66. https://doi.org/10.51544/jmkm.v8i2.4571

Sastroasmoro, S., & Ismail, S. (2014). *Dasar-Dasar Metodologi Penelitian Klinis* (Edisi 5). Sagung Seto.

Sugiyono. (2022). *Metode Penelitian Kuantitatif* (Sugiyono (ed.); Cetakan ke). Alfabeta.

Sumekar, T. A., Jusup, I., Wardani, N. D., Hadiati, T., Sulchan, M., & Fitrikasari, A. (2022). The role of Zinc Intake in Serotonin and Cortisol Level in Patient with Depression. *Journal of Biomedicine and Translational Research*, *1*(1), 26–31. https://doi.org/10.14710/jbtr.v1i1.13808

Willemse, S., Smeets, W., van Leeuwen, E., Nielen-Rosier, T., Janssen, L., & Foudraine, N. (2020). Spiritual Care in The Intensive Care Unit: An Integrative Literature Research. *Journal of Critical Care*, 1–21. https://doi.org/10.1016/j.jcrc.2020.01.026

Yilmaz, C. K., & Kara, F. Ş. (2020). The Effect of Spiritual Well-Being on Adaptation to Chronic Illness Among People with Chronic Illnesses. *Perspectives in Psychiatric Care*, 1–8. https://doi.org/10.1111/ppc.12566