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IMPLEMENTATION OF MINDFULNESS IN 66-YEARS-OLD FEMALE WITH DIABETIC POST SURGERY: A CASE REPORT TO INFORM NURSING ROLE TO DELIVER HOLISTIC CARE

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ABSTRACT
Currently, there are no suggested psychological interventions or outcomes in the diabetic management guidelines. This case report presents the management of a 66-year-old female patient, Mrs. R, with diabetes mellitus, hypertension, and gastroesophageal reflux disease (GERD) who underwent exploratory laparotomy for retained stone exploration in the common bile duct (CBD). This Case report aimed to explore the implementation of mindfulness in patients post-operative. The patient experienced significant hyperglycemia, with blood glucose levels peaking at 436 mm Hg. Psychological assessment revealed a severe anxiety score of 31, which likely contributed to her unstable glycemic control. Throughout her unstable glycemic control. Throughout her severe condition, the patient was managed with total parenteral nutrition (TPN) due to fasting and green gastric contents, as part of the nursing intervention. Comprehensive nursing interventions, including regular blood glucose monitoring, insulin administration, and psychological support were employed. Mindfulness techniques such as guided meditation and breathing exercises have been introduced to alleviate hospital-induced distress and manage blood glucose levels. Following these interventions, her blood glucose level decreased to 167 mmHg, and the patient reported feeling calmer and more spiritually connected (Hamilton Rating Scale/ HARS 18). This case describes the management of post-surgical diabetic patients, highlighting the benefits of integrating psychological interventions to improve glycemic control and overall patient outcomes. Therefore, psychological interventions, particularly mindfulness, are needed for integration in diabetes management, especially in hospitals.

Keywords: mindfulness; nursing; post surgery

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INTRODUCTION

Diabetes mellitus is a chronic condition that requires meticulous management, particularly during periods of increased physical stress such as post-surgical recovery. Surgical interventions in patients with diabetes are often complicated by the hypermetabolic stress response, which can lead to significant fluctuations in blood glucose levels (Duncan, 2012; Lean et al., 2019). This instability frequently results in hyperglycemia, a condition characterized by elevated blood glucose levels. Hyperglycemia in postsurgical patients is associated with numerous adverse outcomes, including delayed wound healing, increased susceptibility to infections, and a heightened risk of cardiovascular events. Consequently, patients with diabetes often experience a prolonged hospital stay (LOS), exacerbating healthcare costs and resource utilization (Greco et al., 2016).

The extended LOS for diabetic patients post-surgery is not merely a result of physical complications. Psychological factors, particularly hospital-induced distress, also play a crucial role. Hospital-related stressors may trigger allostatic overload, loss of control, mental distress, visible medical equipment, lack of exposure to light and nature, and interactions with staff (Böhm et al., 2020; Ford et al., 2023). These combined stressors can contribute to an unpleasant experience for vulnerable inpatients. This psychological distress can further complicate the management of diabetes, leading to a vicious cycle where stress-induced hyperglycemia prolongs the recovery period, thereby further extending the hospital stay (Frisch et al., 2010). Hypnosis has been shown not only to reduce anxiety in medical conditions but also to change physiological parameters, and has been effective in the management of diabetes, including regulation of blood sugar, increased compliance, and weight loss in adults and adolescents (Pereira, 2017). Psychological distress triggers a cascade of hormonal responses that can severely disrupt glucose homeostasis (Yaribeygi et al., 2022). Furthermore, patients with diabetes often require intensive monitoring and intervention post-surgery. The complexity of care for these patients necessitates a multidisciplinary approach, with nurses playing a pivotal role in providing both clinical and emotional support.

Stress activates the hypothalamic-pituitary-adrenal (HPA) axis, leading to the release of cortisol and other stress hormones that increase blood glucose levels (Hannibal & Bishop, 2014). This response was particularly pronounced in hospitalized patients with diabetes. Psychological interventions aimed at reducing distress can therefore have a significant impact on glycemic control. By addressing the emotional and psychological needs of patients, nurses can help mitigate this stress response, leading to better management of blood glucose levels and potentially shorter hospital stays (Kalra et al., 2018). This case report aims to illustrate the importance of nursing care in managing hyperglycemia induced by hospital distress in post-surgical diabetic patients. Through a detailed examination of a patient's experience and the nursing interventions employed, this report underscores the necessity of integrating emotional and psychological support into the standard care regimen for patients with diabetes. In ADA guidance for DM, there is no suggested psychological intervention and outcome (American Diabetes Association Professional Practice Committee, 2024). The insights gained from this case can inform best practices for nursing care, ultimately improving patient outcomes, reducing the length of hospital stay, and enhancing the quality of care provided. This Case report aimed to explore the implementation of mindfulness in patients post-operative.

METHOD

This case report employed a descriptive approach to examine the implementation of mindfulness-based interventions in managing hospital-induced stress and hyperglycemia in a post-surgical diabetic patient. Data were collected through patient interviews, medical records, blood glucose monitoring, and psychological assessments conducted during the hospitalization period. The setting was an internal medicine ward in a public hospital in Bandung, Indonesia. The patient was identified through purposive sampling based on the inclusion criteria: a post-surgical patient with diabetes mellitus experiencing hyperglycemia and significant psychological distress. Informed consent was obtained before the study began, ensuring the patient's understanding and voluntary participation. Psychological distress was evaluated using the Hamilton Anxiety Rating Scale (HARS), administered at admission and throughout the hospitalization period to monitor changes in anxiety levels. Blood glucose levels were recorded multiple times daily to assess glycemic control and its fluctuations in response to interventions. Interventions included routine medical management with insulin administration, nutritional support via total parenteral nutrition (TPN), and the introduction of mindfulness-based therapies. Mindfulness practices, such as guided meditation and breathing exercises, were implemented daily under the guidance of trained staff. The duration, frequency, and adherence to mindfulness interventions were documented to evaluate their impact on the patient's psychological and physiological outcomes.

RESULT

This was a case-report study. The study was conducted in an internal-medical ward in a public hospital in Bandung, West Java, Indonesia. The patients provided informed consent before participating in the study. Mrs. R, a 66-year-old retired teacher with a history of hypertension and diabetes mellitus, was admitted to the emergency department on May 10, 2024, with severe abdominal pain. The pain was described as sharp and localized to the abdominal region, intensifying with movement and alleviating when lying down. Her medical history included controlled hypertension, diabetes mellitus, and gastroesophageal reflux disease (GERD). Upon admission, her blood glucose level was 82 mmHg until 436 mmHg on May 21. Mrs. R underwent exploratory laparotomy for retained stone exploration in the common bile duct (CBD). Physical examination revealed somnolence, with vital signs indicating a blood pressure of 122/67 mmHg, heart rate of 84 beats per minute, respiratory rate of 15 breaths per minute, and a temperature of 36.2°C. Laboratory results showed hyperglycemia (281 mg/dL), anemia (hemoglobin 10.2 g/dL), and elevated bilirubin levels.

A psychological assessment using the Hamilton Anxiety Rating Scale (HARS) indicated a score of 31suggeseting for severe anxiety (min-max 14-56, respectively). The patient expressed significant worry about her children at home, adding to her emotional distress. This heightened anxiety likely contributed to her unstable glucose level. Postoperatively, Mrs. R experienced significant hyperglycemia, which was attributed to both the physical stress of surgery and psychological stress of hospitalization.

The glucose profile during hospitalization showed significant fluctuations. Initial glucose levels were moderately controlled but showed a dramatic increase, particularly on May 21, when the glucose level peaked at 436 mm Hg. This spike coincided with the patient's reported increased anxiety and concerns regarding her family, illustrating the impact of psychological stress on glucose homeostasis.

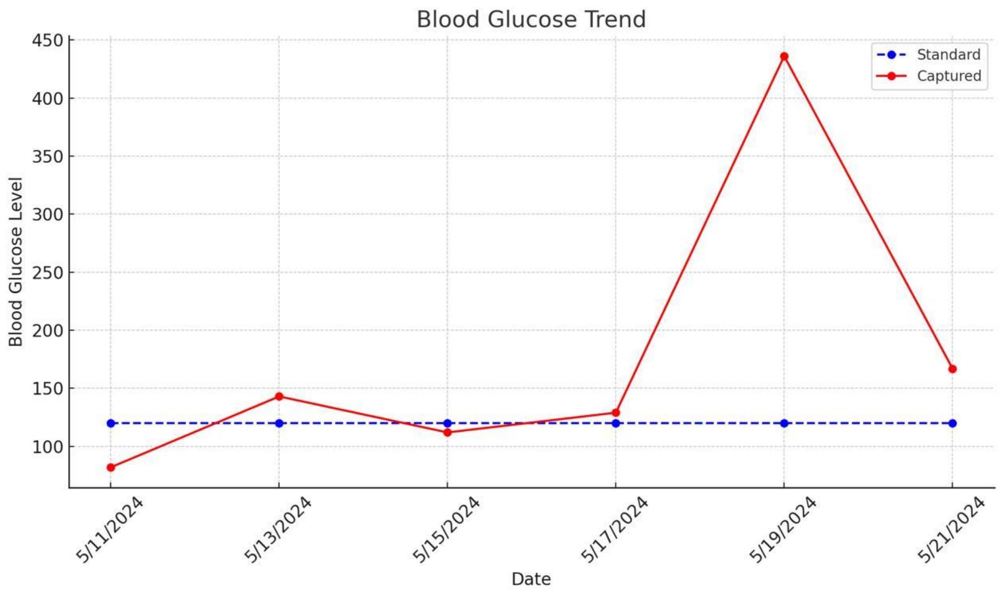

Figure 1. Blood glucose level over time

Throughout her hospital stay, Mrs. R was managed with total parenteral nutrition (TPN) because her gastric contents remained green, indicating bile, and she was fasting. TPN was necessary to meet her nutritional needs and support her recovery, but oral intake was not feasible. The TPN regimen was carefully monitored and adjusted to manage her blood glucose level and prevent further complications. In addition to medical and nutritional interventions, mindfulness techniques have been introduced as a complementary therapy to reduce hospital-induced distress and help manage blood glucose levels. Mindfulness practices, including guided meditation and breathing exercises, were integrated into her daily routine to alleviate anxiety and promote relaxation.adopted from (Komariah et al., 2023). Following mindfulness interventions, Mrs. R's blood glucose level decreased to 167 mm Hg. She reported feeling "*lebih tenang dan lebih dekat dengan Tuhan*" (more calm and closer to God). The HARS score decreased from 31 to 18. These responses indicate the positive impact of mindfulness on her psychological state, which contributes to better glycemic control. Blood glucose levels decreased from 436 mg/dL to 167 mg/dL.

Therapy, including nutritional interventions and mindfulness techniques, was introduced as a complementary therapy to reduce hospital-induced distress and help manage her blood glucose levels. Mindfulness practices, including guided meditation and breathing exercises, were integrated into her daily routine to alleviate anxiety and promote relaxation. Mrs. R responded positively to these interventions, contributing to a more stable emotional state and better control of her blood glucose levels. Comprehensive nursing interventions focusing on both medical and emotional support, including the implementation of mindfulness practices, were employed to stabilize her condition and effectively manage her glucose levels. These interventions included regular monitoring of blood glucose levels, administration of insulin as needed, and psychological support to address her anxiety and concerns about her family.

DISCUSSION

Mrs. R underscores the complex interplay between physical and psychological factors in the management of diabetes mellitus post-surgery. The significant fluctuations in her blood glucose levels highlight the impact of surgical stress and hospital-induced anxiety on glycemic level. Initial stable glucose readings were followed by dramatic increases, particularly the peak at 436 mmHg, illustrating that psychological distress can severely disrupt glucose homeostasis. Stress activates the hypothalamic-pituitary-adrenal (HPA) axis, releasing counterregulatory hormones like cortisol, which elevate blood glucose levels and exacerbate insulin resistance. Additionally, psychological distress increases inflammatory cytokines, further complicating metabolic balance. Nutritional support via total parenteral nutrition (TPN) was essential but required meticulous monitoring to prevent worsening hyperglycemia (Ferdian et al., 2024; Hikmat et al., 2022). The integration of mindfulness practices, such as guided meditation and breathing exercises, effectively alleviated the patient's anxiety, as shown by a reduction in her Hamilton Anxiety Rating Scale (HARS) score from 31 to 18, and stabilized her blood glucose levels (Hikmat et al., 2024). These results underscore the critical role of addressing psychological stress in comprehensive diabetes management, particularly during periods of heightened vulnerability, such as post-surgical recovery. This case highlights the need for a multidisciplinary approach that combines medical, nutritional, and psychological interventions to optimize outcomes for diabetic patients (Yosep, Hikmat, et al., 2023).

Diabetes mellitus requires meticulous management, especially during stressful events such as surgery. Surgical stress triggers hormonal responses that elevate blood glucose levels, thus complicating the recovery process. Stress-induced hyperglycemia (SIH) leads to insulin resistance and elevated blood glucose levels via various mechanisms (Holubová et al., 2019; McCowen et al., 2001). Stress hyperglycemia was defined as a blood glucose level > 140 mg/dl and further stratified into groups according to the severity of post-operative hyperglycemia with blood glucose values between 140-180 mg/dl (Davis et al., 2018). Counterregulatory hormones, such as catecholamines, cortisol, glucagon, and growth hormones, disrupt glucose homeostasis (Vedantam et al., 2022). Additionally, psychological stress elevates the levels of inflammatory cytokines, exacerbating metabolic imbalances (Vedantam et al., 2022). Psychological distress exacerbates this problem. The patient's severe anxiety, as evidenced by a HARS score of 31, played a critical role in her glycemic instability. Psychological stress activates the HPA axis, leading to elevated cortisol levels, which increase blood glucose levels (Hannibal & Bishop, 2014; O'Brien et al., 2016).

Mindfulness interventions have shown promise as an effective psychological strategy for managing hospital-induced distress and its impact on glycemic control in postoperative diabetic patients. Techniques such as guided meditation and breathing exercises help to reduce anxiety by promoting relaxation and lowering cortisol levels, which are known to disrupt glucose homeostasis (Yosep, Mardhiyah, et al., 2023). By addressing the psychological stress that activates the hypothalamic-pituitary-adrenal (HPA) axis and exacerbates hyperglycemia, mindfulness supports the stabilization of both emotional and physiological states. These interventions not only alleviate mental distress but also enhance the body's ability to manage metabolic imbalances caused by surgical stress (Ee et al., 2020). The integration of mindfulness into nursing care highlights its value in a multidisciplinary approach to managing diabetes, emphasizing the need to address emotional well-being alongside medical and nutritional interventions (Saslow et al., 2017).

TPN was necessitated by the patient's fasting state and presence of green gastric contents, indicating bile. TPN provided essential nutrients during the post-operative period, when oral intake was not feasible. However, TPN requires careful monitoring to prevent hyperglycemia in patients with diabetes. For patients with TPN, regular insulin may be added to the solution if more than 20 units of insulin are required within 24 h. Initially, 1 unit of regular insulin was added to 10 mg of dextrose in solution (American Diabetes Association Professional Practice Committee, 2024). In addition to medical and nutritional interventions, mindfulness techniques have been introduced to mitigate hospital-induced distress and to help manage blood glucose levels. Mindfulness practices such as guided meditation and breathing exercises were integrated into daily routines. Research indicates that mindfulness can reduce stress by lowering cortisol levels, thereby demonstrating the efficacy of psychological interventions in stabilizing blood glucose levels (Kian et al., 2018). The integration of mindfulness practices into her care regimen contributed to a more stable emotional state and better glycemic control, highlighting the importance of such interventions in managing complex medical conditions.

This case illustrates the intricate relationship between psychological stress and glycemic control in a diabetic patient post-surgery. The patient experience highlights the significant impact of hospital-induced anxiety on blood glucose levels, demonstrating the need for integrating psychological support, such as mindfulness practices, in diabetic treatment. By integrating medical, nutritional, and psychological support, healthcare providers can enhance patient outcomes, reduce hospital stays, and improve the overall well-being of patients with diabetes undergoing surgery.

CONCLUSION

This case report highlights the intricate relationship between psychological distress and glycemic control in post-surgical diabetic patients. The implementation of mindfulness-based interventions demonstrated a significant reduction in anxiety levels, as evidenced by a decrease in the HARS score, and contributed to improved glycemic stability. These findings underscore the necessity of integrating psychological support, such as mindfulness practices, into the standard care regimen for diabetic patients, particularly during periods of heightened stress, such as post-surgical recovery. By addressing both the physiological and psychological needs of patients, healthcare providers can enhance patient outcomes, reduce the length of hospital stay, and improve the overall quality of care. This case emphasizes the critical role of comprehensive nursing interventions that incorporate emotional support alongside medical and nutritional management. Further research is needed to validate these findings and explore the broader applicability of mindfulness-based practices in the management of stress-induced hyperglycemia.

REFERENCES

American Diabetes Association Professional Practice Committee. (2024). 9. Pharmacologic Approaches to Glycemic Treatment: Standards of Care in Diabetes-2024. *Diabetes Care*, *47*(Suppl 1), S158–S178. https://doi.org/10.2337/dc24-S009

Böhm, A.-K., Jensen, M. L., Sørensen, M. R., & Stargardt, T. (2020). Real-World Evidence of User Engagement With Mobile Health for Diabetes Management: Longitudinal Observational Study. *JMIR MHealth and UHealth*, *8*(11), e22212–e22212. https://doi.org/10.2196/22212

Davis, G., Fayfman, M., Reyes-Umpierrez, D., Hafeez, S., Pasquel, F. J., Vellanki, P., Haw, J. S., Peng, L., Jacobs, S., & Umpierrez, G. E. (2018). Stress hyperglycemia in general surgery: Why should we care? *Journal of Diabetes and Its Complications*, *32*(3), 305–309. https://doi.org/10.1016/j.jdiacomp.2017.11.010

Duncan, A. E. (2012). Hyperglycemia and perioperative glucose management. *Current Pharmaceutical Design*, *18*(38), 6195–6203. https://doi.org/10.2174/138161212803832236

Ee, C., de Courten, B., Avard, N., de Manincor, M., Al-Dabbas, M. A., Hao, J., McBride, K., Dubois, S., White, R. L., Fleming, C., Egger, G., Blair, A., Stevens, J., MacMillan, F., Deed, G., Grant, S., Templeman, K., & Chang, D. (2020). Shared Medical Appointments and Mindfulness for Type 2 Diabetes-A Mixed-Methods Feasibility Study. *Frontiers in Endocrinology*, *11*, 570777. https://doi.org/10.3389/fendo.2020.570777

Ferdian, D., Hikmat, R., Anshor, A., Irwan, I., & Triyanto, T. (2024). Overview of Nutritional Status Among Female Students. *Indonesian Journal of Global Health Research*, *6*(2 SE-Articles). https://doi.org/10.37287/ijghr.v6i2.2943

Ford, D. M., Budworth, L., Lawton, R., Teale, E. A., & O'Connor, D. B. (2023). In-hospital stress and patient outcomes: A systematic review and meta-analysis. *PLoS ONE*, *18*(3 March), 1–17. https://doi.org/10.1371/journal.pone.0282789

Frisch, A., Chandra, P., Smiley, D., Peng, L., Rizzo, M., Gatcliffe, C., Hudson, M., Mendoza, J., Johnson, R., Lin, E., & Umpierrez, G. E. (2010). Prevalence and clinical outcome of hyperglycemia in the perioperative period in noncardiac surgery. *Diabetes Care*, *33*(8), 1783–1788. https://doi.org/10.2337/dc10-0304

Greco, G., Ferket, B. S., D'Alessandro, D. A., Shi, W., Horvath, K. A., Rosen, A., Welsh, S., Bagiella, E., Neill, A. E., Williams, D. L., Greenberg, A., Browndyke, J. N., Gillinov, A. M., Mayer, M. Lou, Keim-Malpass, J., Gupta, L. S., Hohmann, S. F., Gelijns, A. C., O'Gara, P. T., & Moskowitz, A. J. (2016). Diabetes and the association of postoperative hyperglycemia with clinical and economic outcomes in cardiac surgery. *Diabetes Care*, *39*(3), 408–417. https://doi.org/10.2337/dc15-1817

Hannibal, K. E., & Bishop, M. D. (2014). Chronic stress, cortisol dysfunction, and pain: a psychoneuroendocrine rationale for stress management in pain rehabilitation. *Physical Therapy*, *94*(12), 1816–1825. https://doi.org/10.2522/ptj.20130597

Hikmat, R., Rahayu, U., Pebrianti, S., Cahyani, E. M., Sari, C. P., & Afrilia, G. (2022). Post-operative pain management with non-pharmacological interventions in patients undergoing breast cancer surgery: A systematic scoping review. *The Journal of Palembang Nursing Studies*, *1*(3 SE-Review), 125–133. https://doi.org/10.55048/jpns.v1i3.24

Hikmat, R., Yosep, I., Widianti, E., Suryani, S., Sriati, A., & Susanti, I. (2024). Stuart Stress Adaptation and Nola Pender's Model on Mental Nursing Care of Patients Schizophrenia: Case Study. *OBM Neurobiology*, *08*(04), 249. https://doi.org/10.21926/obm.neurobiol.2404249

Holubová, A., Vlasáková, M., Mužík, J., & Brož, J. (2019). Customizing the Types of Technologies Used by Patients With Type 1 Diabetes Mellitus for Diabetes Treatment: Case Series on Patient Experience. *JMIR MHealth and UHealth*, *7*(7), e11527–e11527. https://doi.org/10.2196/11527

Kalra, S., Jena, B. N., & Yeravdekar, R. (2018). Emotional and psychological needs of people with diabetes. *Indian Journal of Endocrinology and Metabolism*, *22*(5), 696–704. https://doi.org/10.4103/ijem.IJEM_579_17

Kian, A. A., Vahdani, B., Noorbala, A. A., Nejatisafa, A., Arbabi, M., Zenoozian, S., & Nakhjavani, M. (2018). The impact of mindfulness-based stress reduction on emotional wellbeing and glycemic control of patients with type 2 diabetes mellitus. *Journal of Diabetes Research*, *2018*, 6–11. https://doi.org/10.1155/2018/1986820

Komariah, M., Ibrahim, K., Pahria, T., Rahayuwati, L., & Somantri, I. (2023). Effect of Mindfulness Breathing Meditation on Depression, Anxiety, and Stress: A Randomized Controlled Trial among University Students. *Healthcare (Switzerland)*, *11*(1). https://doi.org/10.3390/healthcare11010026

Lean, M. E. J., Leslie, W. S., Barnes, A. C., Brosnahan, N., Thom, G., McCombie, L., Peters, C., Zhyzhneuskaya, S., Al-Mrabeh, A., Hollingsworth, K. G., Rodrigues, A. M., Rehackova, L., Adamson, A. J., Sniehotta, F. F., Mathers, J. C., Ross, H. M., McIlvenna, Y., Welsh, P., Kean, S., … Taylor, R. (2019). Durability of a primary care-led weight-management intervention for remission of type 2 diabetes: 2-year results of the DiRECT open-label, cluster-randomised trial. *The Lancet. Diabetes & Endocrinology*, *7*(5), 344–355. https://doi.org/10.1016/S2213-8587(19)30068-3

McCowen, K. C., Malhotra, A., & Bistrian, B. R. (2001). Stress-induced hyperglycemia. *Critical Care Clinics*, *17*(1), 107–124. https://doi.org/10.1016/S0749-0704(05)70154-8

O'Brien, C. L., Ski, C. F., Thompson, D. R., Moore, G., Mancuso, S., Jenkins, A., Ward, G., MacIsaac, R. J., Loh, M., Knowles, S. R., Rossell, S. L., & Castle, D. J. (2016). The Mental Health in Diabetes Service (MINDS) to enhance psychosocial health: study protocol for a randomized controlled trial. *Trials*, *17*(1), 444. https://doi.org/10.1186/s13063-016-1561-4

Pereira, M. da G. (2017). Changing the mind: hypnosis and diabetes. *Revista Latino-Americana de Enfermagem*, *25*, e2868. https://doi.org/10.1590/1518-8345.0000.2868

Saslow, L. R., Mason, A. E., Kim, S., Goldman, V., Ploutz-Snyder, R., Bayandorian, H., Daubenmier, J., Hecht, F. M., & Moskowitz, J. T. (2017). An Online Intervention Comparing a Very Low-Carbohydrate Ketogenic Diet and Lifestyle Recommendations Versus a Plate Method Diet in Overweight Individuals With Type 2 Diabetes: A

Randomized Controlled Trial. *Journal of Medical Internet Research*, *19*(2), e36–e36. https://doi.org/10.2196/jmir.5806

Vedantam, D., Poman, D. S., Motwani, L., Asif, N., Patel, A., & Anne, K. K. (2022). Stress-Induced Hyperglycemia: Consequences and Management. *Cureus*, *14*(7), e26714. https://doi.org/10.7759/cureus.26714

Yaribeygi, H., Maleki, M., Butler, A. E., Jamialahmadi, T., & Sahebkar, A. (2022). Molecular Mechanisms Linking Stress and Insulin Resistance. *EXCLI Journal*, *21*, 317–334. https://doi.org/10.17179/excli2021-4382

Yosep, I., Hikmat, R., & Mardhiyah, A. (2023). Types of Digital-Based Nursing Interventions for Reducing Stress and Depression Symptoms on Adolescents During COVID-19 Pandemic: A Scoping Review. *Journal of Multidisciplinary Healthcare*, *16*, 785–795. https://doi.org/10.2147/JMDH.S406688

Yosep, I., Mardhiyah, A., & Sriati, A. (2023). Mindfulness Intervention for Improving Psychological Wellbeing Among Students During COVID-19 Pandemic: A Scoping Review. *Journal of Multidisciplinary Healthcare*, *16*, 1425–1437. https://doi.org/10.2147/JMDH.S411849