Factors Associated With The Empathetic of Staff at The Central Laboratory Installation Of M. Djamil Hospital Padang

Annisa Safitri[1], Zelly Dia Rofinda[2*], Nelmi Silvia[3]

[1]Public Health Master's Program, Faculty of Medicine, Universitas Andalas, Padang, Indonesia
[2]Department of Clinical Pathology and Laboratory Medicine, Faculty of Medicine, Universitas Andalas, Padang, Indonesia
[3]Department of Public Health and Community Medicine, Faculty of Medicine, Universitas Andalas, Padang, Indonesia
[*]Corresponding Author:
Email: zellydiarofinda@med.unand.ac.id

Abstract.

Empathy is a crucial component for healthcare professionals to build relationships with patients and improve the quality of care. However, it is often overlooked among laboratory personnel who tend to focus more on technical aspects. Individual and organizational factors are suspected to contribute to decreased empathy among laboratory staff. This study aimed to identify the factors associated with empathy among staff at the Central Laboratory Installation of M. Djamil Hospital Padang. This study employed a Mixed Method design using a Concurrent Embedded model involving 53 laboratory staff. Data were collected through questionnaires, in-depth interviews, observations, and document reviews. Quantitative data were analyzed using chi-square tests and logistic regression, with statistical significance set at p < 0.05. The results showed that the majority of respondents were aged 30–42 years (52.8%), female (77.4%), held a diploma degree (81.1%), had ≥5 years of work experience (84.9%), and had low empathy levels (56.6%). There were significant associations between age (p=0.043), education level (p=0.042), organizational support (p=0.005), workload (p=0.003), work stress (p=0.045), and work motivation (p=0.023) with empathy levels. Meanwhile, gender, length of service, and seminar/training attendance were not significantly associated with empathy. Multivariate analysis revealed that organizational support, workload, and work stress were the key factors associated with empathy, with organizational support emerging as the most dominant factor (p=0.004). Qualitative data supported these findings, indicating that high workload, lack of organizational support, and performance pressure were major barriers to demonstrating empathy toward patients. In conclusion, laboratory staff empathy is influenced by age, education, organizational support, workload, job stress, and work motivation, with organizational support being the most dominant factor.

Keywords: *Organizational Support; Empathy; Laboratory Staff and Service Quality.*

I. INTRODUCTION

Hospitals are required to deliver healthcare services that meet standards of quality, safety, and patient-centered care. As an integral part of hospital operations, clinical laboratories significantly contribute to medical decision-making, with studies showing that laboratory results influence up to 70% of diagnoses and treatment plans. Thus, the performance of laboratory personnel does not merely determine analytical accuracy but also indirectly shapes patient safety and overall clinical outcomes (Etukudoh & Obeta, 2021; Hepburn et al., 2021; Retnoningrum, 2021).Although the technical aspects of laboratory work are often emphasized, non-technical elements such as interpersonal communication and empathy are increasingly recognized as crucial for comprehensive healthcare delivery (Suraying et al., 2025; Uppal et al., 2019). Empathy is defined as the capacity to understand the feelings, perspectives, experiences of others, and to communicate this understanding appropriately (Hojat et al., 2023). In healthcare, empathy has been linked to improved patient trust, satisfaction, treatment adherence, and even reduced malpractice claims (Sorenson et al., 2016; Stoyanova et al., 2022). Notably, empathy also serves as a protective factor against occupational burnout among healthcare workers(Thirioux et al., 2016).However, discussions on empathy predominantly focus on physicians and nurses, overlooking its importance in laboratory settings (Nastiti et al., 2023). Laboratory staff often have direct contact with patients during specimen collection and indirectly impact patient care through the timeliness and accuracy of test results. A study highlighted that laboratory staff under chronic stress were more prone to errors, which could endanger patient outcomes (Kumareswaran et al., 2023).

Despite this, empathy among laboratory professionals remains an underexplored area, with few interventions targeting their emotional engagement. Recent literature emphasizes that even indirect care providers, such as laboratory technicians require emotional intelligence and empathy to maintain accuracy under pressure, handle high workloads and support the clinical team effectively (Nastiti et al., 2023). Empathetic laboratory staff are more likely to show commitment, minimize errors, and engage meaningfully in collaborative healthcare systems (Retnoningrum, 2021).Multiple factors may influence empathy levels among laboratory staff. Organizational support is a critical determinant; employees who perceive fair treatment, appreciation, and supportive leader are more likely to exhibit empathy in their work (Wu et al., 2024). Conversely, lack of support can foster emotional detachment, compromising patient-centered care (Bizri & Hamieh, 2022). Workload and stress also plays essential roles, as high work demands and psychological strain can deplete cognitive and emotional resources needed for empathic engagement (Elayyan et al., 2018; Karimi & Abdollahi, 2019). Moreover, individual factors such as educational background and intrinsic motivation have been linked to variations in empathy, where higher education may enhance perspective-taking abilities and motivation may sustain empathetic behavior even under pressure (Ferguson et al., 2020; Sommerlad et al., 2021).Moreover, empathy is not fixed; it can be enhanced through targeted interventions such as training, reflective practice, and simulation-based education.

Studies conducted between 2015 and 2025 demonstrate the effectiveness of empathy training in improving both perspective-taking and compassionate care components among health professionals, including those in diagnostic services (Can Gür & Yılmaz, 2024; Malakcioglu, 2022).At the Central Laboratory Installation of M. Djamil Hospital Padang, the high volume of complex examinations pose significant demands on laboratory staff. Preliminary observations indicated that heavy workloads, organizational challenges, and the primary focus on technical tasks might suppress empathetic attitudes. A study conducted at the same hospital found that empathy was the strongest variable associated with patient satisfaction, where patients who perceived empathy from laboratory staff were 2.31 times more likely to report being satisfied with the services provided. The study also highlighted that empathy demonstrated by laboratory staff from the patient registration to the completion of examinations, including communication, explanations, and attentiveness was generally still inadequate, indicating a pressing need to enhance empathetic practices in laboratory settings (Desywar, 2017).Given these multifactorial influences, it is essential to explore what determines empathy in laboratory staff, particularly within high-volume, referral-level hospital settings. This study aims to analyze factor associated with empathy among staff at the Central Laboratory Installation of M. Djamil Hospital Padang.

II. METHODS

This study employed a mixed-methods design using a concurrent embedded strategy. The primary strand was quantitative, embedded with qualitative data to provide complementary insights and triangulate findings. The study was conducted at the Central Laboratory Installation of M. Djamil Hospital Padang. The target population consisted of all laboratory staff working at this installation, totaling 93 personnel. For the quantitative component, a consecutive sampling technique was applied to recruit 53 laboratory staff who met the inclusion criteria and consented to participate. For the qualitative component, in-depth interviews were conducted with selected laboratory staff, supervisors, and organizational stakeholders, chosen purposively to capture diverse perspectives related to empathy, organizational support, workload, and stress.Quantitative data were collected through structured questionnaires administered directly to respondents. Empathy was assessed using the Jefferson Scale of Empathy - Health Professional Version (JSE-HP), adapted and validated for Indonesian healthcare settings. Questionnaires measuring organizational support, job stress, and workload were adopted from prior validated studies and had undergone validity and reliability testing using Pearson correlation analysis.

The workload variable was measured using the NASA-TLX method, which is used to analyze the mental workload experienced by personnel who must perform multiple tasks in their job. Data were processed and analyzed using SPSS Bivariate associations between independent variables (age, gender, education, Working period, organizational support, workload, work stress, motivation, training) and empathy

levels were tested using the Chi-square test, with p-values <0.05 considered statistically significant. Variables with p-values <0,25 were further analyzed using binary logistic regression to identify dominant predictors of empathy after controlling for confounders. Qualitative data were obtained through in-depth interviews, observation and documents review and its were analyzed thematicallyThis study was approved by the Research Ethics Committee of M. Djamil Hospital Padang. Written informed consent was obtained from all participants before data collection. Confidentiality and anonymity were ensured throughout the study process.

III. RESULT AND DISCUSSION

Characteristics of Respondents

A total of 53 laboratory staff participated in this study. Most respondents were female (77.4%) and aged between 30–42 years (52.8%). The majority held a D3-level education (81.1%) and had more than 5 years of work experience (84.9%). (See Table 1).

Table 1. Characteristics of Respondents

Variable	n	%
Age		
30-42 years	28	52.8
42-55 years	25	47.2
Gender		
Male	12	22.7
Female	41	77.4
Education Level		
D4/S1	10	18.9
D3	43	81.1
Working period		
< 5 Tahun	8	15.1
≥ 5 Tahun	45	84.9

Empathy was measured using the Jefferson Scale of Empathy. The analysis showed that 56.6% of staff were categorized as having low empathy, while 43.4% had high empathy (Table 2).

Table 2. Empathy Level Respondens

Variable	n	%
Empathy Level		
High	23	43.4
Low	30	56.6

Chi-square analysis was performed to explore associations between each independent variable and empathy levels. The results are detailed in Table 3.

Table 3. Factors Assosiated With Empathy Level

Variable	High Empathy n (%)	Low Empathy n (%)	p-value
Age			0.043
30–42 years	16 (57.1%)	12 (42.9%)	
42–55 years	7 (28.0%)	18 (72.0%)	
Gender			0.952
Male	5 (41.7%)	7 (58.3%)	
Female	18 (43.9%)	23 (56.1%)	
Education			0.042
D3	16 (37.2%)	27 (62.8%)	
D4/S1	7 (70.0%)	3 (30.0%)	
Working period			0.272
<5 years	2 (25.0%)	6 (75.0%)	
≥5 years	21 (46.7%)	24 (53.3%)	
Organizational Support			0.005
Good	18 (72.0%)	7 (28.0%)	
Poor	5 (18.5%)	22 (81.5%)	

Variable	High Empathy n (%)	Low Empathy n (%)	p-value
Workload			0.003
Medium	17 (73.9%)	6 (26.1%)	
Heavy	6 (20.7%)	23 (79.3%)	
Work Stress			0.045
Low	15 (65.2%)	8 (34.8%)	
Medium-High	8 (27.6%)	21 (72.4%)	
Motivation			0.023
High	15 (65.2%)	8 (34.8%)	
Low	8 (27.6%)	21 (72.4%)	
Training/Seminar			1.000
Attended	2 (50.0%)	2 (50.0%)	
Not Attended	21 (43.8%)	28 56.2%)	

Based on Table 3, the result is obtained there was a significant relationship between age and empathy (p=0.043). Education level also showed a significant relationship (p=0.042) Organizational support showed highly significant (p=0.005). Workload significantly associated with empathy (p=0.003). Work stress also significant (p=0.045). Motivation was significantly linked to empathy (p=0.023). Meanwhile, gender (p=0.952), Working period (p=0.272), and participation in training/seminars (p=1.000) were not significantly associated with empathy.

Six variables were included as candidates for logistic regression analysis. Age, education, organizational support, workload, work stress, and motivation met this criterion. Multivariate analysis automatically eliminated variables with the highest p-values at each step. Age, educational level and motivation were removed ini first until third step. The analysis concluded at the fourth step, leaving organizational support, workload, and job stress as the remaining variables. As detailed in Table 4.

Table 4. Multivariate Analysis of Factors Influencing Empathy

Variable	p-value	OR	95% CI OR
Organizational Support	0.004	8.66	2.02 – 37.21
Workload	0.020	7.92	1.39 – 45.20
Work Stress	0.012	21.20	1.97 – 228.33

Based on table 4, The final model identified organizational support, workload, and work stress as significant factors associated with empathy. Organizational support was the strongest predictor, with staff perceiving good organizational support being 8.6 times more likely to have high empathy (p=0.004),

Qualitative Results

Triangulation was performed across three qualitative data sourcesin-depth interviews, field observations, and document reviews, aligned with quantitative survey results shown in Table 5.

Table 5. Triangulation Analysis of Factors Influencing Empathy

Theme	Quantitative Data	Triangulation Analysis
Empathy	56.6% staff had low empathy	The staff have demonstrated empathy toward patients, despite the challenges they face, and evaluations have also been carried out by the management.
Organizational Support	Significant predictor (OR=8.66)	Organizational support has been experienced by the staff in the form of training programs, although not all staff have participated. The organization has also provided other types of support, such as promoting the PEDULI aspects, selecting a 'Hero of the Month,' and conducting performance evaluations
Workload	Heavy workload linked to low empathy (p=0.003)	The heavy workload affects the staff's empathy, causing them to focus more on performing tasks. Based on the workload analysis, there is still a shortage of laboratory analysts and administrative staff
Work Stress	Significant impact on empathy (p=0.045)	Some laboratory staff continue to experience work-related stress, which leads to reduced motivation. Nevertheless, the Human Resources department and the head of the laboratory installation have implemented policies such as employee counseling to address this issue.

Theme	Quantitative Data	Triangulation Analysis
Motivation	Higher motivation linked to high empathy (p=0.023)	Staff work motivation remains inconsistent, with rewards identified as a factor influencing their empathy. Management has introduced a system of rewards and consequences to address this.
Training	No significant link (p=1.000)	Training specifically related to empathy care has not yet been provided; however, some laboratory staff have participated in workshops on excellent service

Based on table 5, Qualitative revealed limited recognition, laboratory staff experience work-related stress, high workloads and performance pressure as key barriers, while motivated staff described personal satisfaction from reward and some laboratory staff have participated in workshops on excellent service.

Discussion

This study found that 56.6% of laboratory staff at the Central Laboratory Installation of M. Djamil Hospital Padang demonstrated low levels of empathy. These findings indicate that empathy in laboratory contexts, although crucial, may not always be prioritized due to a heavy technical focus. This is consistent with previous studies that found that nurses working in high-workload hospital environments also exhibited relatively low empathy levels, potentially affecting patient care quality (Pontón et al., 2023).This study assessed empathy among laboratory staff based on three key components of the Jefferson Scale of Empathy: perspective taking, compassionate care, and standing in the patient's shoes (Hojat et al., 2023). Perspective taking was evident in how staff sought to understand patient emotions, such as anxiety during blood draws or concerns while awaiting results. Qualitative findings revealed staff often explained procedures simply to reduce fear an expression of cognitive empathy. However, challenges arose from patients' emotional states requiring extra self-control and the fluctuating moods of the staff. This supports Hojat et al.'s assertion that effective empathy demands robust emotional regulation to avoid personal emotional entanglement (Hojat et al., 2023) . Thus, hospitals should not only manage workload but also offer psychosocial support to help staff handle stress and maintain emotional stability.Compassionate care, reflecting a sincere desire to assist patients, was demonstrated by staff attempting to build trust through friendly interactions, helping patients feel calmer and more assured.

This aligns with studies highlighting that empathy training emphasizing warmth and nonverbal communication improves patient perceptions (Can Gür & Yılmaz, 2024). In contrast, standing in the patient's shoes, or fully imagining oneself in the patient's situation, was less apparent. Staff reported feeling pressured to prioritize rapid task completion due to heavy service demands, leaving little time for emotional reassurance echoing findings that high workload environments limit affective empathy despite good intentions (Wu et al., 2024).This study assessed organizational support as the extent to which staff perceived the organization valued their contributions and cared about their needs. Findings showed that 54.7% still held poor perceptions, indicating that laboratory staff at M. Djamil Hospital generally viewed organizational support as inadequate. Organizational support emerged as the most significant predictor of empathy in this study, with staff perceiving strong organizational support being 8.6 times more likely to have high empathy. This aligns with literature suggesting that organizational climates fostering respect, fairness, and recognition positively impact emotional competencies such as empathy (Elayyan et al., 2018). Qualitative result findings supported this, showing that laboratory staff felt a lack of appreciation and primarily received feedback only when errors occurred, which weakened their motivation to engage empathetically. Similar dynamics studies were describe which noted that supportive leadership is critical to sustaining empathy under pressure (Wu et al., 2024).Workload was another significant factor, with staff facing manageable workloads being nearly 7,9 times more likely to demonstrate higher empathy.

Excessive workload is widely documented to diminish empathy by taxing cognitive and emotional resources needed for perspective-taking (Ferri et al., 2015). A study on Indonesian healthcare workers similarly found that high workloads negatively correlated with empathy, suggesting that sustained pressure reduces the capacity to be emotionally present in patient-centered care (Nastiti et al., 2023). Qualitative result findings that laboratory staff perceived their heavy workloadprimarily due to high patient volumesas a major factor diminishing their capacity for empathy, compelling them to focus on technical tasks over

emotional engagement with patients.Understaffed healthcare settings, workload pressures may be alleviated by providing technical support, enhancing communication, and improving workplace ergonomics, all of which can indirectly sustain empathy by reducing operational strain (Nuamah & Mehta, 2020).Work stress was found to have the largest odds ratio, where staff experiencing lower stress levels were 21 times more likely to be empathetic. Stress disrupts attention, narrows focus to task completion, and can impair the emotional availability required for empathy (Karimi & Abdollahi, 2019; Rodríguez-Nogueira et al., 2022).

A high level of empathy can help prevent the onset of occupational stress, whereas emerging stress may reduce the likelihood of empathetic interactions with patients. Thus, it is essential for healthcare workers, including laboratory staff, to continuously strengthen their empathetic abilities to maintain both psychological well-being and quality patient care. Qualitative findings also revealed that staff perceived stress primarily stemmed from heavy workloads and a demanding work environment. To cope, some laboratory personnel utilized available staff counseling services. However, effective stress reduction should not rely solely on individual efforts. Organizational leaders play a crucial role by implementing structured stress management and fostering adaptive coping strategies, as recommended in occupational health literature. This is consistent with previous research emphasizing that supportive management and proactive stress interventions are key to maintaining both employee well-being and empathetic service delivery (Ferri et al., 2015; Kumareswaran et al., 2023). Motivation was also significantly associated with empathy in bivariate analysis. Consistent with the study which found that both intrinsic drives and rewards could encourage healthcare workers to show empathy (Ferguson et al., 2020). Qualitative insights revealed that staff were more inclined to empathize when they anticipated rewards, such as performance-based incentives or positive acknowledgment.

However, variability in personal motivation, as observed in this study, indicates the importance of consistently reinforcing emotional engagement through both financial and social rewards. Higher education levels (D4/S1) were associated with better empathy in bivariate analysis. Studied in a systematic review concluded that education enhances empathy through improved cognitive perspective-taking skills (Sommerlad et al., 2021). However, education and motivation did not remain significant in multivariate models, suggesting that in this setting, organizational and workload factors exert a stronger influence.Interestingly, this study found no significant relationship between participation in seminars or workshops and empathy levels, likely because most available training at the hospital only covered general service excellence without specific empathy modules. By contrast, recent intervention studies demonstrated that structured Empathy Care Training (ECT) could significantly increase empathy scores, particularly in compassionate care and perspective-taking dimensions (Can Gür & Yılmaz, 2024; Mirzaei Maghsud et al., 2020). This highlights an opportunity for the hospital to implement targeted empathy workshops to complement its existing training portfolio.

IV. CONCLUSION

This study highlights that empathy among laboratory staff at the Central Laboratory Installation of M. Djamil Hospital Padang is relatively low. Bivariate analysis identified age, education level, organizational support, workload, work stress, and motivation significantly associated with empathy. Multivariate analysis identified organizational support, workload, and work stress as significant factors associated with empathy and organizational support as the dominant factor influencing empathy levels. Qualitative findings show the empathy of laboratory staff is not only influenced by individual and organizational factors, but also influenced by direct experience in dealing with high workload, stress, and support felt from the hospital. Hospital management should foster a more supportive, adjusting staffing ratios,r egular stress management workshops, and develop and integrate structured empathy training programs specifically tailored for laboratory contexts.

V. ACKNOWLEDGMENTS

This research work was supported by lecture of Faculty Medicine of Andalas University and M. Djamil Hospital Padang especially Central Laboratory Installation.

REFERENCES

[1] Bizri, R. M., & Hamieh, F. (2022). Beyond the "give back" equation: The influence of perceived organizational justice and support on extra-role behaviors. ***International Journal of Organizational Analysis,*** *28*(9). https://doi.org/10.1108/IJOA-07-2019-1838

[2] Can Gür, G., & Yılmaz, E. (2024). Mindfulness-based empathy training supported by Obese Simulation Suit: Randomized Controlled Trial. *Current Psychology*, *43*(21), 19532-19547. https://doi.org/10.1007/s12144-024-05719-w

[3] Desywar. (2017). *Hubungan Dimensi Mutu Layanan Dengan Kepuasan Pasien Di Laboratorium Sentral Rsup Dr. M.Djamil Padang* Universitas Andalas]. Padang.

[4] Elayyan, M., Rankin, J., & Chaarani, M. (2018). Factors affecting empathetic patient care behaviour among medical doctors and nurses: an integrative literature review. ***East Mediterr Health J*** *24*(3), 122-128. https://pubmed.ncbi.nlm.nih.gov/29908027/

[5] Etukudoh, N. S., & Obeta, U. M. (2021). Patients'(clients) satisfaction with medical laboratory services contributes to health and quality improvement. In *Healthcare Access*. IntechOpen. DOI: 10.5772/intechopen.99290

[6] Ferguson, A. M., Cameron, C. D., & Inzlicht, M. (2020). Motivational effects on empathic choices. ***Journal of Experimental Social Psychology,*** *90*(22), 104010-104018. https://doi.org/10.1016/j.jesp.2020.104010

[7] Ferri, P., Guerra, E., Marcheselli, L., Cunico, L., & Di Lorenzo, R. (2015). Empathy and burnout: an analytic cross-sectional study among nurses and nursing students. *Acta Bio-Medica de L'ateneo Parmense*, *86*(2), 104-115. https://pubmed.ncbi.nlm.nih.gov/26629665/

[8] Hepburn, S., Jankute, M., Cornes, M. P., Rios, N. R., Stretton, A., & Costelloe, S. J. (2021). Survey of patient perception of pre-analytical requirements for blood testing in the UK and RoI. *Ann Clin Biochem*, *58*(2), 132-140. https://doi.org/10.1177/0004563220982325

[9] Hojat, M., Maio, V., Pohl, C. A., & Gonnella, J. S. (2023). Clinical empathy: definition, measurement, correlates, group differences, erosion, enhancement, and healthcare outcomes. *Discover Health Systems*, *2*(1), 1-17. https://doi.org/10.1007/s44250-023-00020-2

[10] Karimi, F. Z., & Abdollahi, M. (2019). Factors affecting empathy with patient among healthcare provider students: a structural equation modeling study. ***Indian Journal of Critical Care Medicine,*** *23*(9), 396-399. https://doi.org/10.5005/jp-journals-10071-23232

[11] Kumareswaran, S., Muhadi, S. U., Sathasivam, J., & Thurairasu, V. (2023). Prevalence of occupational stress and workload among laboratory staff. ***International Journal of Public Health,*** *12*(3), 1014-1020. http://doi.org/10.11591/ijphs.v12i3.23053

[12] Malakcioglu, C. (2022). Empathy Assessment Scale. *North Clin Istanb*, *9*(4), 358-366. https://doi.org/10.14744/nci.2022.55649

[13] Mirzaei Maghsud, A., Abazari, F., Miri, S., & Sadat Nematollahi, M. (2020). The effectiveness of empathy training on the empathy skills of nurses working in intensive care units. ***Journal of Research in Nursing,*** *25*(8), 722-731. https://doi.org/10.1177/1744987120902827

[14] Nastiti, Harin, T. F., & Putra, K. R. (2023). *Hubungan antara Beban Kerja dengan Tingkat Empati pada Perawat di Ruang Rawat Inap RS Lavalette Kota Malang* Universitas Brawijaya].

[15] Nuamah, J. K., & Mehta, R. K. (2020). Design for stress, fatigue, and workload management. *Design for health*, *3*(1), 201-226. https://doi.org/10.1016/B978-0-12-816427-3.00011-7

[16] Pontón, Y. D., Narváez, V. P. D., Andrade, B. M., Terán, J. J. L., Reyes-Reyes, A., & Calzadilla-Núñez, A. (2023). Working nurses' empathy with patients in public hospitals. *Revista Latino-Americana de Enfermagem*, *31*(23), 3968-3972. https://doi.org/10.1590/1518-8345.6591.3969

[17] Retnoningrum, D. (2021). *Manajemen Laboratorium Klinik Seri VII (Improving the Quality of Laboratory Management in Daily Practice)*. Universitas Diponegoro.

[18] Rodríguez-Nogueira, Ó., Leirós-Rodríguez, R., Pinto-Carral, A., Álvarez-Álvarez, M. J., Fernández-Martínez, E., & Moreno-Poyato, A. R. (2022). The relationship between burnout and empathy in physiotherapists: a cross-sectional study. *Annals of Medicine*, *54*(1), 933-940. https://doi.org/10.1177/1744987120902827

[19] Sommerlad, A., Huntley, J., Livingston, G., Rankin, K. P., & Fancourt, D. (2021). Empathy and its associations with age and sociodemographic characteristics in a large UK population sample. *PloS one*, *16*(9). https://doi.org/10.1371/journal.pone.0257557

[20] Sorenson, C., Bolick, B., Wright, K., & Hamilton, R. (2016). Understanding Compassion Fatigue in Healthcare Providers: A Review of Current Literature. ***Journal of Nursing Scholarship,*** *48*(5), 456-465. https://pubmed.ncbi.nlm.nih.gov/27351469/

[21] Stoyanova, S., Mihaylova, T., Dimitrov, T., & Koychev, A. (2022). Empathy in Healthcare Professionals during the Coronavirus Pandemic. *34*(3), 547-556. https://doi.org/10.24869/psyd.2022.547

[22] Suraying, S., Jufriyanto, M., Hafidah, L., Amir, F., & Suprayitno, E. (2025). Komunikasi Terapeutik Petugas Kesehatan Berhubungan dengan Kepuasan Pasien. ***Wiraraja Medika: Jurnal Kesehatan,*** *15*(1), 35-42. https://doi.org/10.24929/fik.v15i1.3983

[23] Thirioux, B., Birault, F., & Jaafari, N. (2016). Empathy Is a Protective Factor of Burnout in Physicians: New Neuro-Phenomenological Hypotheses Regarding Empathy and Sympathy in Care Relationship. *Frontiers in Psychology*, *7*(3), 1-11. https://doi.org/10.3389/fpsyg.2016.00763

[24] Uppal, N., Uppal, V., Kukreja, S., & Sharma, A. (2019). A study of patient perception for biochemistry laboratory services in a tertiary care hospital – A qualitative study. ***International Journal of Clinical Biochemistry and Research***, *6*(1), 95-98. https://doi.org/10.18231/2394-6377.2019.0024

[25] Wu, J., Dou, J., Wang, D., Wang, L., Chen, F., Lu, G., Sun, L., & Liu, J. (2024). The empathy and stress mindset of healthcare workers: the chain mediating roles of self-disclosure and social support. *Frontiers in Psychiatry*, *15*(1). https://www.frontiersin.org/journals/psychiatry/articles/10.3389/fpsyt.2024.1399167