Journal of Integrated System (JIS)
Vol. 9 No. 1 Juni 2026: 48-58
e-ISSN: 2621-7104

Received: 27 April 2026
Accepted: 19 June 2026
https://doi.org/10.28932/jis.v9i1.15336

Student Wellbeing in Industrial Engineering: Analyzing the Spirituality-Burnout Nexus

Twin Yoshua R. Destyanto[1,2,3]*, Adhi Anindyajati[1], Indah Sepwina Putri[1], Twin Hosea W. Kristyanto[4,5]

[1]Departement of Industrial Engineering, Faculty of Industrial Technology, Universitas Atma Jaya Yogyakarta, Yogyakarta, Indonesia
[2]Fakultas Teologi, STT Bethel Indonesia Jakarta, Jakarta, Indonesia
[3]Research Fellow, Bulacan State University, Malolos City, Bulacan, Philippines
[4]Program Studi Geologi, FMIPA, Universitas Indonesia, Depok, Indonesia
[5]Program Studi S3 Teknik Geologi, Fakultas Teknik Geologi, Universitas Padjadjaran, Sumedang, Indonesia
*Corresponding author: twin.destyanto@uajy.ac.id

Abstract

Recent shifts in higher education have prompted many universities to adopt new instructional environments, notably hybrid learning models. However, researchers have identified that navigating these hybrid systems can induce significant stress among students. Given that internal personal resources, particularly spirituality, are recognized as vital coping mechanisms for academic stress in highly religious societies, they have significant potential to buffer these negative impacts. Consequently, this study aimed to explore the spiritual experiences of Industrial Engineering students and investigate their correlation with burnout levels within a hybrid learning framework. An online survey was administered to 98 undergraduate students in the Industrial Engineering Department at Universitas Atma Jaya Yogyakarta between February and March 2022. Reliability analysis using Cronbach's alpha confirmed the internal consistency of the survey instruments for this cohort. A MANOVA revealed significant differences in the Spiritual Index between gender groups and significant variations in burnout levels across academic years. Correlation analyses revealed a significant negative association specifically between spiritual levels and the loss of academic efficacy ($r = -0.264$; p-value $< .05$). While general negative trends were also observed with overall burnout, emotional exhaustion, and cynicism, these particular correlations were not statistically significant. The findings suggest that strong spiritual experiences can foster greater life satisfaction, mitigating burnout. Overall, the students exhibited moderate levels of burnout during their hybrid learning experience. It can be concluded that a robust sense of spirituality may help bolster self-esteem and serve as a protective factor against burnout in hybrid educational settings. These findings imply that higher education institutions should proactively integrate student wellness programs that accommodate spiritual and social experiences to effectively mitigate the risk of burnout during hybrid learning transitions.

Keywords: academic efficacy, burnout, hybrid learning system, Industrial Engineering, spirituality

1. Introduction

Driven by rapid advancements and shifting educational needs in Indonesia (Sain, Aziz and Agoi, 2024; Hidayat *et al.*, 2025), engineering higher education is increasingly transitioning to hybrid learning models. In this dynamic era, educational institutions are required to implement hybrid strategies carefully tailored to their students' specific characteristics. Several universities have adopted systems that seamlessly integrate online and on-site instruction Maddukelleng *et al.*, 2023; Nugraha *et al.*, 2023). Organizing this hybrid approach requires comprehensive adjustments; these include not only upgrading equipment, classroom, or laboratory facilities, and supporting technologies, but also addressing students' mental readiness to adapt to these new learning habits (Bashir *et al.*, 2021; Singh *et al.*, 2022).

Unlike purely online or traditional face-to-face education, recent studies specifically examining hybrid learning models indicate that the constant context-switching between digital platforms and physical environments imposes an additional cognitive load on students (Carruana Martín, Alario-Hoyos and

How to Cite:
Destyanto, T.Y.R. *et al.* (2026) 'Student wellbeing in Industrial Engineering: analyzing the spirituality-burnout nexus', *Journal of Integrated System*, 9(1), pp. 48–58. Available at: https://doi.org/10.28932/jis.v9i1.15336.

Delgado Kloos, 2023; Yadi *et al.*, 2025). This unique 'hybrid fatigue' requires continuous adjustment in learning strategies and social engagement, significantly exacerbating the risk of emotional exhaustion and academic burnout if not properly managed.

Building on the need for mental readiness, it is crucial to recognize that students from different regions require distinct adaptation phases when a new learning system is implemented. Historically, abrupt shifts in educational delivery, such as widespread transitions to purely online learning, have been shown to expose students to mental health issues like depression, anxiety, and learning burnout (March-Amengual *et al.*, 2022; Destyanto and Halim, 2024). The current shift toward hybrid learning presents similar risks. Out-of-town students, for example, must manage the logistical stress of relocating and adjusting to new surroundings, as well as the social challenge of interacting with peers in person rather than through a screen. This adaptation is especially demanding for Industrial Engineering students, whose curriculum integrates theoretical courses with intensive laboratory work (Pratama and Destyanto, 2023), requiring direct collaboration with newly introduced classmates. The requirements differ significantly from other engineering disciplines.

While many engineering fields focus primarily on isolated computational models or physical mechanics, the Industrial Engineering curriculum is fundamentally rooted in human-centered system optimization and complex human-machine interactions. Consequently, the shift to a hybrid model presents an acute challenge; these students must abruptly adapt to fragmented digital environments while still attempting to master practical competencies that heavily rely on direct physical observation. Tasks such as assessing physical and cognitive workloads, evaluating ergonomic designs, and executing collaborative manufacturing simulations become highly disjointed. This constant context-switching between abstract mathematical modeling online and intensive, human-centric laboratory applications on-site impose an exceptionally high cognitive demand, making them uniquely vulnerable to rapid exhaustion and burnout.

Preliminary observations during the initial implementation of this hybrid system indicated that students have begun exhibiting clear signs of exhaustion. Many students reported experiencing overwhelming cognitive workload and physical fatigue from constantly transitioning between online modules and rigorous on-site practicums. Furthermore, faculty members noted early signs of academic efficacy decline, such as decreased active participation and emotional disengagement during group evaluations. The combined pressure of these transitional hurdles and the rigorous nature of higher education can easily lead to student burnout. Because these shifting habits can trigger stress responses associated with depressive symptoms, it is essential to proactively plan coping strategies to manage the mental health impacts of hybrid learning and its inherent disruptions.

Maintaining the students' mental health by applying certain coping strategies can help students facing learning burnout (Mheidly, Fares and Fares, 2020). Indonesia is one of the most religious countries in the world (Djalante *et al.*, 2020; Destyanto *et al.*, 2022), enables its citizens, including the Industrial Engineering students in Indonesia, to have an auto-coping system called spiritual experiences (Salaree *et al.*, 2014). Although the students may face certain difficulties that trigger them to have learning burnout, the spiritual experience is trusted to help them cope with those effects (Frederick, Dunbar and Thai, 2017). Therefore, understanding how spirituality experiences affect burnout stages becomes significant during hybrid learning implementation, as it relates to how the curriculum should be designed.

1.1 Burnout Among Engineering Students

The term 'burnout' refers to the failure of people to tire despite high demands on their resources, energy, and strength, rather than their mental capacity (Freudenberger, 1974; Halim and Destyanto, 2025). Burnout among university students is increasingly a focus due to the mental health issues associated with it (Paloş, Maricuţoiu and Costea, 2019; Marôco *et al.*, 2020). Engineering students experience

significantly elevated levels of burnout symptoms, including anxiety and clinical depression, when compared to their peers in Business Management and Social Education programs (Pratama and Destyanto, 2023; Reyes-de-Cózar, Merino-Cajaraville and Salguero-Pazos, 2023). Higher academic achievement can help students in the engineering department cope with exhaustion incidents, but at the same time, the rigorous academic workload inherent in engineering programs significantly increases their vulnerability to various forms of exhaustion (Velasco, 2019). Moreover, following government regulations to implement hybrid learning to anticipate learning loss has increased students' stress levels due to the adaptation effort (Smith *et al.*, 2022).

The Maslach Burnout Inventory-Student Survey (MBI-SS) remains the predominant instrument for measuring burnout among student populations (Maslach and Jackson, 1981; Kwan, 2022). This phenomenon is generally analyzed through three distinct facets: emotional exhaustion, cynicism (depersonalization), and reduced academic efficacy (Schaufeli *et al.*, 2002; Salmela-Aro and Read, 2017). When students feel chronically overburdened and depleted by their academic workload, they often develop cynicism as a negative coping mechanism. This cynical attitude is typically characterized by unengaged, impersonal interactions with classmates during shared tasks. Meanwhile, the academic efficacy component measures the extent to which students recognize and value their own academic accomplishments.

1.2 Spirituality and Academic Journey

Spirituality, though there is no rigid definition, is commonly understood as the relationship between a person and a greater reality that gives him or her meaning in life. It could be expressed religiously, like prayer, or in a secular one, like meditation or art (Peteet and Balboni, 2013, p. 280; Kumar, 2015, p. 142; Damsma Bakker, van Leeuwen and Roodbol, 2018, p. e106). Others said that spirituality is more focused on the essence of life and giving essence to live, not only defined as kinds of faith or spiritual practices (Panzini *et al.*, 2017, p. 264). Several dimensions are covered by spirituality. Such as identity, relatedness, hope, and reliance, the purpose of life, transcendence, spiritual experience, inner peace, unifying interconnectedness, and inside resources, and so on (Peteet and Balboni, 2013; Wachholtz and Rogoff, 2013; Kumar, 2015). Despite its broad meaning, someone's spirituality cannot be examined. Many instruments, both qualitative and quantitative, can be used to measure someone's spirituality. For example, the Spirituality Measurement Scale (SMS), developed by Makkar and Singh, uses five dimensions of spirituality (Makkar and Singh, 2021) or a qualitative non-single-dimensional spirituality measurement that was developed by Demmrich and Hubber, which has already been applied to secular individuals in Switzerland (Demmrich and Huber, 2019). Daily Spiritual Experiences (DSE) scales are also widely used as a means of measuring spiritual levels, such as the 16-item scale by Underwood (Wachholtz and Rogoff, 2013) and the 19-item one by McCauley *et al*. (2008).

Spirituality is mentioned as one factor supporting students' academic achievement in their pursuit of a degree. Spirituality is claimed to help students manage their campus life effectively. Having good grades in spirituality also helps students to cope with the learning difficulties and stress during the academic journey (Rehman *et al.*, 2013; Yadav and Khanna, 2014). Spiritual practices are also claimed to be a protective system for the students from the risk of burnout (Wachholtz and Rogoff, 2013). For academic professionals, spirituality was also found to lessen burnout levels (Kumar, 2015). Based on those facts and findings, spirituality plays an important role in supporting students' academic journey, especially in coping with burnout.

To address the critical need for coping strategies mentioned previously, the ongoing development of hybrid learning within the Industrial Engineering Department must be accompanied by mechanisms that safeguard student well-being. While institutional support is vital, students' personal spiritual experiences hold significant potential to help them navigate these disruptive educational changes. While the relationship between spirituality and burnout has been widely documented in other disciplines, particularly among medical and healthcare students, its application to engineering disciplines remains

underexamined. Industrial Engineering students face a distinctly different set of stressors, as their curriculum strictly integrates demanding theoretical coursework with intensive, hands-on laboratory sessions. Nevertheless, to the best of our knowledge, no existing research has investigated the relationship between spirituality and burnout levels specifically among Industrial Engineering students. This specific urgency was visibly evident in the Industrial Engineering Department at Universitas Atma Jaya Yogyakarta, where faculty observed a sharp rise in academic fatigue as a predominantly out-of-town student body struggled to simultaneously manage the logistical stress of relocation and the rigorous cognitive demands of new hybrid laboratory schedules. Consequently, this study aims to explore the spirituality-burnout nexus, defined here as the complex, interconnected dynamic where spiritual experiences potentially buffer the adverse effects of academic stressors, among Industrial Engineering students as they adapt to hybrid learning environments. To guide this exploration and align with the planned statistical analyses, this study proposes the following hypotheses; H1: There are significant differences in students' spiritual experiences and their specific burnout levels based on their demographic characteristics (gender, academic cohort, enrolled program, and origin city); H2: There is a significant correlation between students' spiritual experiences and their specific burnout dimensions (emotional exhaustion, academic efficacy loss, and cynicism). By examining the nexus, this research seeks to provide a deeper understanding of the role spirituality plays in mitigating academic burnout. Ultimately, these insights can help establish comprehensive educational strategies that proactively support student well-being in Industrial Engineering programs.

2. Methods

2.1 Participants

The study cohort consisted of 94 undergraduate students majoring in Industrial Engineering at Universitas Atma Jaya Yogyakarta. The sample included 53 female and 41 male participants with an average age of 20.56 years (SD = 1.32). Participants were selected using convenience sampling. Recruitment was conducted by distributing invitation letters via the official campus email to all active students while the department was using a hybrid instructional model. A total of 94 individuals responded and provided consent. This sample size of 94 is considered adequate for the planned statistical analyses, meeting the minimum requirements for MANOVA and Pearson's correlation and providing sufficient statistical power. These students were 24.5% freshmen, 34.0% sophomores, 23.4% juniors, and 18.1% seniors at that time.

2.2 Instrument

The survey instrument designed for this research was divided into three distinct parts. The initial section gathered demographic information, specifically collecting data on the participants' academic cohort (batch year), birth year, program enrollment type (regular versus international), gender, religious affiliation, and home province. The following section consisted of a Bahasa Indonesia translation of 19-DSE-related questions, constructed based on McCauley *et al*. (2008). The DSE questions were grouped into seven categories, consisting of (1) closeness to God (six questions), (2) thankful feeling (two questions), (3) surrounding supports (two questions), (4) reliance and trust in God (five questions), (5) feeling of peace (two questions), (6) compassion (one question), and (7) guidance (one question). Finally, the third section of the questionnaire contained questions related to burnout levels. The questions were translated from MBI-SS (Maslach and Jackson, 1981; Kumar, 2015; Velasco, 2019; Kwan, 2022) and consisted of 6 questions related to emotional exhaustion, 4 questions related to academic efficacy loss, and 2 questions related to cynicism (12 questions total). Responses to both the spirituality and burnout instruments were recorded on a 5-point Likert scale, ranging from 1 (never) to 5 (always).

2.3 Statistical Analysis

Instrument reliability was assessed using Cronbach's alpha before further analysis. We performed basic descriptive statistical analyses, including means, standard deviations (SD), and proportions for each interest variable. Furthermore, potential variances across demographic categories, specifically gender,

academic year, enrolled program, and hometown, were assessed utilizing Multivariate Analysis of Variance (MANOVA). To determine the statistical relationship between students' spiritual experiences and their levels of burnout, Pearson's correlation coefficient was applied. The analyses were carried out using a statistical package named Minitab 20. The validity of the instruments was established by using widely recognized, previously validated scales. Burnout was measured using the MBI-SS (Anggraini and Chusairi, 2022; Budiman *et al.*, 2024) and spirituality 19-DSE (Lianawati *et al.*, 2025; Suharsono and Fatimah, 2025), which have demonstrated strong construct validity in previous higher education studies. To ensure contextual relevance and face validity for Indonesian students, the questionnaire was adopted from Bahasa Indonesia version.

2.4 Data Collection

Demographic information was gathered to establish a baseline profile of the respondents, categorized by gender, academic cohort, enrolled program, and hometown. To determine the Spirituality Index (SI), the mean scores across all Daily Spiritual Experience (DSE) components were computed from the relevant survey section. Similarly, a composite burnout level was derived by averaging the burnout instrument's overall responses. Mean scores for each specific burnout sub-category were also calculated independently. A comprehensive summary of the participants' baseline characteristics is presented in Table 1.

Table 1. Data Demographic of Participants

Characteristics	Number	Percentage (%)
Sample size	94	100
Age		
Mean ± SD (years)	20.36 ± 1.17	
Sex		
Female	53	56.4
Male	41	43.6
Grade		
Freshmen	23	
Sophomore	32	
Junior	22	
Senior	17	
Program		
Regular	81	92.6
International	7	7.4
Origin City		
In-city	17	18.1
Out-city	77	81.9

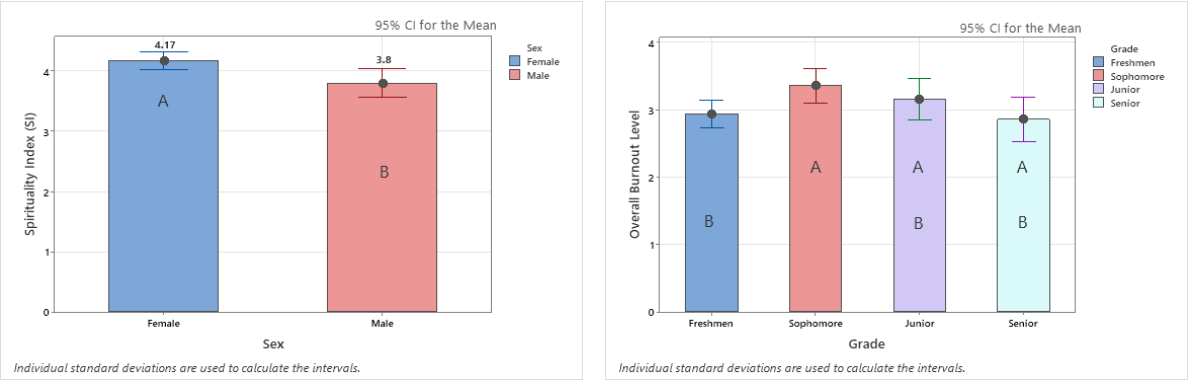
3. Results and Discussion

3.1 Reliability and Group Comparisons

Reliability analysis yielded Cronbach's alpha values of 0.96 and 0.75 for the spirituality and burnout instruments, respectively, indicating excellent and good internal consistency. The descriptive statistics revealed that the cohort experienced a high level of spirituality (average of 4.01) and a moderate degree of overall burnout (average of 3.17). A closer examination of the specific burnout dimensions indicated that students exhibited moderate emotional exhaustion with an average score of 3.12. Furthermore, both reductions in academic efficacy and cynicism were recorded within the low-to-moderate range, averaging 2.88 and 2.63, respectively.

A Multivariate Analysis of Variance (MANOVA) revealed that female students exhibited a significantly higher mean Spirituality Index (SI) than their male counterparts (p-*value* < .01). This higher SI observed among female students aligns with established sociological and psychological theories regarding gender differences in religious and spiritual engagement. This variance is frequently attributed to gender socialization processes, wherein females are culturally encouraged to be more emotionally expressive, nurturing, and reliant on communal or spiritual support networks as primary coping mechanisms during stressful transitions, whereas male students may lean toward problem-focused, autonomous coping

strategies. Conversely, gender did not significantly impact overall burnout, emotional exhaustion, loss of academic efficacy, or cynicism (*p-value* > .05). When analyzing academic cohorts, a significant variance in overall burnout levels was observed across different grade years (*p-value* < .05), although the other measured variables remained unaffected by this demographic factor. Furthermore, the analysis indicated no significant statistical differences based on the students' enrolled program or city of origin. Comprehensive descriptive statistics, including the means and standard deviations for both the SI and burnout components across all demographic groups, are detailed in Table 2. Visual representations of the significant variations, specifically SI by gender and overall burnout by academic year, are provided in **Error! Reference source not found.** (a) and **Error! Reference source not found.** (b), respectively.



(a) (b)

Figure 1. (a) SI comparison based on sex type; (b) overall burnout level based on year grad.

3.2 Correlation Analysis

We examined the correlation table for each variable of interest to determine whether there are any correlations between spiritual level and burnout level, emotional exhaustion, academic efficacy loss, and cynicism. Spiritual level was negatively associated with all the variables, including overall burnout level (r = -0.131; *p-value* >.05), emotional exhaustion (r=-0.148; *p-value* >.05), academy efficacy loss (r = -0.264; *p-value* <.05), and cynicism (r=-0.165; *p-value* >.05). The results are also shown in Figure 1 indicate that an increase in students' spirituality index may reduce burnout. Specifically, these analysis results show that the spirituality of the students has a meaningful correlation to the academic efficacy loss, and this correlation can be described in Figure 1 (c) below. The lower academic efficacy loss could be a good predictor of a low burnout level indicator (Galbraith and Merrill, 2015).

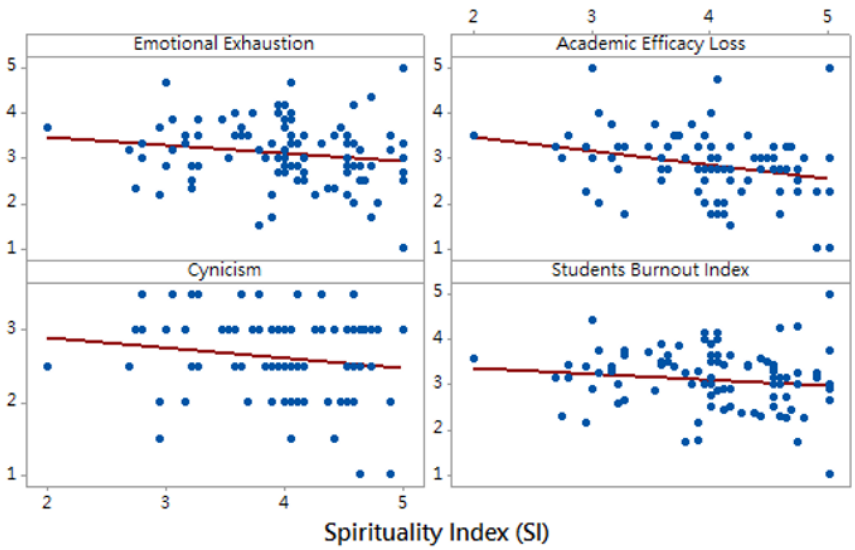


Figure 2. (c) Relationship between SI and all burnout level components

3.3 Role of Spirituality on Burnout Prevention

In this study, burnout and spirituality showed a relatively low correlation, as also reported in other studies (Wachholtz and Rogoff, 2013; Kumar, 2015; Akbari and Hossaini, 2018; Estupiñan and Kibble, 2018). With increased spiritual experience, the burnout level showed a slight tendency to decrease, as shown in Figure 1(c) above. Given the negative correlation between spirituality and burnout, spiritual practices may help manage burnout. The reason for this correlation is that spirituality can serve as a protective barrier against burnout (Wachholtz and Rogoff, 2013). It also provides inner strength to overcome demanding workload and uncertainty (Kumar, 2015). In general, strong spiritual resources or experiences can lead to higher life satisfaction, thereby reducing burnout. Burnout can be mitigated by encouraging students to level up their spiritual practice (e.g., weekly worship, daily devotions, or church cell group meetings). The impact of burnout could be reduced by sharing the burden among believers and seeking early counseling from a spiritual leader in their religious community.

Among the burnout categories, academic efficacy showed noticeable interaction with spirituality. In this regard, a sense of spirituality may help in increasing self-esteem, better well-being, and job satisfaction, as well as reducing stress (McCauley *et al.*, 2008; Rehman *et al.*, 2013; Zhang *et al.*, 2019). Spirituality correlates strongly with efficacy, aiding self-confidence for achieving better academic performance (Estupiñan and Kibble, 2018). The relation between spirituality and burnout could also be mediated through emotion regulation (Akbari and Hossaini, 2018).

Table 2. Spirituality and burnout components comparisons based on participants' characteristics

Characteristics	SI	Burnout			
		Overall	Emotional exhaustion	Academy efficacy loss	Cynicism
Sex					
Female (53)	4.17 ± 0.51**	3.05 ± 0.68	3.06 ± 0.74	2.92 ± 0.71	2.56 ± 0.56
Male (41)	3.8 ± 0.76**	3.21 ± 0.64	3.26 ± 0.68	2.82 ± 0.72	2.72 ± 0.54
Grade					
Freshmen (23)	4.10 ± 0.53	2.94 ± 0.48*	2.91 ± 0.5	2.83 ± 0.70	2.5 ± 0.45
Sophomore (32)	3.95 ± 0.72	3.34 ± 0.70*	3.39 ± 0.76	2.90 ± 0.72	2.63 ± 0.64
Junior (22)	4.10 ± 0.62	3.16 ± 0.70*	3.15 ± 0.75	3.01 ± 0.76	2.89 ± 0.38
Senior (17)	3.87 ± 0.74	2.86 ± 0.65*	2.90 ± 0.71	2.71 ± 0.66	2.47 ± 0.62
Program					
Regular (87)	3.97 ± 0.55	3.20 ± 0.69	3.26 ± 0.73	2.54 ± 0.57	2.57 ± 0.54
International (7)	4.01 ± 0.67	3.11 ± 0.66	3.12 ± 0.71	2.90 ± 0.72	2.63 ± 0.56
Origin City					
In-city (17)	3.83 ± 0.74	3.19 ±0.73	3.19 ± 0.78	2.69 ± 0.60	2.62 ± 0.45
Out-city (77)	4.05 ± 0.63	3.10 ± 0.65	3.11 ± 0.70	2.92 ± 0.73	2.63 ± 0.58

* Indicates p-value <.05; ** indicates p-value < .01

3.4 Burnout Levels in the Hybrid Learning System

The cohort in this research demonstrated moderate burnout levels while navigating the hybrid instructional model. This outcome suggests either that the students successfully managed their personal well-being or that the specific hybrid methodologies implemented were well-suited to their academic needs. Previous literature on higher education has consistently identified comparable moderate levels of burnout across various academic environments and instructional shifts (Wachholtz and Rogoff, 2013; Kumar, 2015; Velasco, 2019). Therefore, the degree of exhaustion observed among these participants aligns with typical university experiences. To further alleviate this stress, promoting student well-being through initiatives such as extracurricular programs and social engagement is a viable mitigation strategy (Estupiñan and Kibble, 2018). When combined with intrinsic motivation and academic interest, these wellness practices are highly effective in reducing burnout symptoms (Obregon *et al.*, 2020). While the observed correlation between spiritual experiences and burnout does not establish a direct causal link—and the underlying mechanisms require further investigation—fostering an environment that nurtures spiritual growth may serve as a proactive measure against academic fatigue. Future research should consider employing controlled experimental designs to definitively map the causal dynamics between spirituality and student burnout.

4. Conclusion

According to this study's findings, the spirituality-burnout nexus is evident, where spirituality serves as a protective barrier, helping individuals cope with the complex stressors of hybrid learning. Among all the burnout categories, academic efficacy exhibited a significant interaction with spirituality. It can be concluded that strong spiritual resources and experiences can increase self-esteem and reduce stress and burnout. A significant correlation was also found between spirituality and efficacy, which can promote self-confidence and improve academic performance. This research found that students in the Department of Industrial Engineering at Universitas Atma Jaya Yogyakarta experienced mid-level burnout during the hybrid learning process. This information may indicate either the student's ability to maintain their well-being or the suitability of the applied learning method for the hybrid learning system. Likely, the burnout level experienced by the participating student is not uncommon. Another finding is that the correlation between spirituality and burnout does not imply causality, and the exact mechanism underlying this relationship remains unclear. Therefore, while it cannot be definitively concluded that spiritual activities will entirely overcome burnout, the negative correlation suggests that a strong spiritual foundation may serve as a potential protective factor. As a supplementary approach to mental health support, the campus could consider facilitating extracurricular activities and social gathering events that nurture spiritual well-being. The campus can consider facilitating extracurricular activities and social gathering events to support spiritual well-being and help students anticipate burnout (Finnerty *et al.*, 2021; Winstone *et al.*, 2022). The students can also be encouraged to engage in spiritual practices that can elevate their spiritual index, e.g., by participating in spiritual activities, maintaining a high-quality prayer life, and engaging in charity.

In short, our study offered useful insights into the correlation between students' spirituality experiences and burnout levels in campus life during hybrid learning. This study may serve as a reference for future research on student burnout in the new normal era and its relationship with spirituality. Additionally, the causal relationship between spirituality and burnout can be investigated using a designed experiment. Further study can provide an in-depth examination of each participant's spiritual practices, with analysis from a broader perspective. The findings imply that higher education institutions should proactively integrate student wellness programs that accommodate spiritual and social experiences to effectively mitigate the risk of burnout during hybrid learning transitions

Acknowledgements

We would like to express our gratitude to Irene A. Sombolayuk, Jan S. Santoso, Glorian S. Pratama, and Heryanto Hibono, members of the Data Visualization course, for providing the questionnaires.

References

Akbari, M. and Hossaini, S.M. (2018) 'The relationship of spiritual health with quality of life, mental health, and burnout: the mediating role of emotional regulation', *Iranian Journal of Psychiatry*, 13(1), p. 22.

Anggraini, D.P. and Chusairi, A. (2022) 'Pengaruh academic self-efficacy dan student engagement terhadap academic burnout mahasiswa dalam pembelajaran daring', *Journal of Community Mental Health and Public Policy*, 4(2), pp. 79–94. Available at: https://doi.org/10.51602/CMHP.V4I2.70.

Bashir, A. *et al.* (2021) 'Post-COVID-19 adaptations: the shifts towards online learning, hybrid course delivery and the implications for biosciences courses in the higher education setting', *Frontiers in Education*, 6, p. 711619. Available at: https://doi.org/10.3389/FEDUC.2021.711619/TEXT.

Budiman, M.R. *et al.* (2024) 'Prevalensi burnout dan faktor yang berasosiasi dengan burnout pada mahasiswa kedokteran UNPAS: penelitian potong lintang', *Innovative: Journal of Social Science Research*, 4(3), pp. 11469–11482.

Carruana Martín, A., Alario-Hoyos, C. and Delgado Kloos, C. (2023) 'A study of student and teacher challenges in smart synchronous hybrid learning environments', *Sustainability*, 15(15), p. 11694. Available at: https://doi.org/10.3390/SU151511694.

Damsma Bakker, A., van Leeuwen, R.R. and Roodbol, P.F. (2018) 'The spirituality of children with chronic conditions: a qualitative meta-synthesis', *Journal of Pediatric Nursing*, 43, pp. e106–e113. Available at: https://doi.org/10.1016/J.PEDN.2018.08.003.

Demmrich, S. and Huber, S. (2019) 'Multidimensionality of spirituality: a qualitative study among secular individuals', *Religions*, 10(11), p. 613. Available at: https://doi.org/10.3390/REL10110613.

Destyanto, T.Y.R. *et al.* (2022) 'Civil society and civil Islam implementation on inter-religious tolerance in Indonesia: a phenomenological study', in *Proceedings of the 2nd International Conference on Social Science, Humanity and Public Health (ICOSHIP 2021)*. Atlantis Press, pp. 11–15. Available at: https://doi.org/10.2991/assehr.k.220207.002.

Destyanto, T.Y.R. and Halim, L. (2024) 'Workaholism as positive reinforcement for educators working engagement in higher education', *Jurnal Psikologi Udayana*, 11(1), pp. 440–448.

Djalante, R. *et al.* (2020) 'Review and analysis of current responses to COVID-19 in Indonesia: period of January to March 2020', *Progress in Disaster Science*, 6, p. 100091. Available at: https://doi.org/10.1016/J.PDISAS.2020.100091.

Estupiñan, B. and Kibble, J. (2018) 'The relationship between spirituality and burnout in the lives of medical students', *Medical Science Educator*, 28(1), pp. 37–44.

Finnerty, R. *et al.* (2021) 'Extra-curricular activities and well-being: results from a survey of undergraduate university students during COVID-19 lockdown restrictions', *Frontiers in Psychology*, 12, p. 647402. Available at: https://doi.org/10.3389/FPSYG.2021.647402/TEXT.

Frederick, T.V., Dunbar, S. and Thai, Y. (2017) 'Burnout in Christian perspective', *Pastoral Psychology*, 67(3), pp. 267–276. Available at: https://doi.org/10.1007/S11089-017-0799-4.

Freudenberger, H.J. (1974) 'Staff burn-out', *Journal of Social Issues*, 30(1), pp. 159–165.

Galbraith, C.S. and Merrill, G.B. (2015) 'Academic performance and burnout: an efficient frontier analysis of resource use efficiency among employed university students', *Journal of Further and Higher Education*, 39(2), pp. 255–277.

Halim, L. and Destyanto, T.Y.R. (2025) 'Burnout for social sustainability indicator in higher education: a review and case-study', *Journal of Integrated System*, 8(2), pp. 189–204. Available at: https://doi.org/10.28932/JIS.V8I2.14127.

Hidayat, M.T. *et al.* (2025) 'Evolution of the education curriculum in Indonesia', *Journal of Innovation in Educational and Cultural Research*, 6(2), pp. 381–395. Available at: https://doi.org/10.46843/JIECR.V6I2.1312.

Kumar, S. (2015) 'Influence of spirituality on burnout and job satisfaction: a study of academic professionals in Oman', *South Asian Journal of Management*, 22(3), p. 137.

Kwan, J. (2022) 'Academic burnout, resilience level, and campus connectedness among undergraduate students during the COVID-19 pandemic: evidence from Singapore', *Journal of Applied Learning and Teaching*, 5(Sp. Iss. 1).

Lianawati *et al.* (2025) 'Analysis of the spirituality construct in measuring student self-resilience', *Bisma The Journal of Counseling*, 9(2), pp. 280–289. Available at: https://doi.org/10.23887/bisma.v9i2.94098.

Maddukelleng, M. *et al.* (2023) 'Hybrid learning innovation: challenges for developing teachers skills in Indonesia', *Al Qalam: Jurnal Ilmiah Keagamaan dan Kemasyarakatan*, 17(2), pp. 842–854. Available at: https://doi.org/10.35931/AQ.V17I2.1959.

Makkar, S. and Singh, A.K. (2021) 'Development of a spirituality measurement scale', *Current Psychology*, 40(3), pp. 1490–1497. Available at: https://doi.org/10.1007/S12144-018-0081-7/FIGURES/1.

March-Amengual, J.M. *et al.* (2022) 'Psychological distress, burnout, and academic performance in first year college students', *International Journal of Environmental Research and Public Health*, 19(6), p. 3356. Available at: https://doi.org/10.3390/IJERPH19063356.

Marôco, J. *et al.* (2020) 'Predictors of academic efficacy and dropout intention in university students: can engagement suppress burnout?', *PLOS ONE*, 15(10), p. e0239816. Available at: https://doi.org/10.1371/JOURNAL.PONE.0239816.

Maslach, C. and Jackson, S.E. (1981) 'The measurement of experienced burnout', *Journal of Organizational Behavior*, 2(2), pp. 99–113.

McCauley, J. *et al.* (2008) 'Daily spiritual experiences of older adults with and without arthritis and the relationship to health outcomes', *Arthritis Care & Research*, 59(1), pp. 122–128. Available at: https://doi.org/10.1002/ART.23246.

Mheidly, N., Fares, M.Y. and Fares, J. (2020) 'Coping with stress and burnout associated with telecommunication and online learning', *Frontiers in Public Health*, 8, p. 672. Available at: https://doi.org/10.3389/FPUBH.2020.574969/BIBTEX.

Nugraha, D. *et al.* (2023) 'Hybrid learning as alternative approach to improve Indonesian medical students' attitude towards clinical skills during COVID-19 pandemic', *Korean Journal of Medical Education*, 35(4), p. 377. Available at: https://doi.org/10.3946.

Obregon, M. *et al.* (2020) 'Assessment of burnout in medical students using the Maslach Burnout Inventory-Student Survey: a cross-sectional data analysis', *BMC Medical Education*, 20(1), pp. 1–10.

Paloș, R., Maricuţoiu, L.P. and Costea, I. (2019) 'Relations between academic performance, student engagement and student burnout: a cross-lagged analysis of a two-wave study', *Studies in Educational Evaluation*, 60, pp. 199–204.

Panzini, R.G. *et al.* (2017) 'Quality of life and spirituality', Journal of Mental Health, 29(3), pp. 263–282. Available at: https://doi.org/10.1080/09540261.2017.1285553.

Peteet, J.R. and Balboni, M.J. (2013) 'Spirituality and religion in oncology', *CA: A Cancer Journal for Clinicians*, 63(4), pp. 280–289. Available at: https://doi.org/10.3322/CAAC.21187.

Pratama, J.B. and Destyanto, T.Y.R. (2023) 'Study engagement impact on burnout prevention in Industrial Engineering students: a cross-national study', in *Proceedings of the International Conference on Industrial Engineering and Operations Management*, pp. 2414–2423.

Rehman, R. *et al.* (2013) 'Health and spirituality "walk along" in wellness journey of medical students', *Journal of Pakistan Medical Association*, 63(4), pp. 495–500.

Reyes-de-Cózar, S., Merino-Cajaraville, A. and Salguero-Pazos, M.R. (2023) 'Avoiding academic burnout: academic factors that enhance university student engagement', *Behavioral Sciences*, 13(12), p. 989. Available at: https://doi.org/10.3390/BS13120989.

Sain, Z.H., Aziz, A.L. and Agoi, M.A. (2024) 'Navigating educational challenges in Indonesia: policy recommendations for future success', *Journal of Digital Learning and Distance Education*, 3(4), pp. 1038–1046. Available at: https://doi.org/10.56778/JDLDE.V3I4.339.

Salaree, M.M. *et al.* (2014) 'Coping strategies used by Iranian nurses to deal with burnout: a qualitative research', *Global Journal of Health Science*, 6(6), p. 273. Available at: https://doi.org/10.5539/GJHS.V6N6P273.

Salmela-Aro, K. and Read, S. (2017) 'Study engagement and burnout profiles among Finnish higher education students', *Burnout Research*, 7, pp. 21–28.

Schaufeli, W.B. *et al.* (2002) 'Burnout and engagement in university students: a cross-national study', *Journal of Cross-Cultural Psychology*, 33(5), pp. 464–481.

Singh, J. *et al.* (2022) 'Online, hybrid, and face-to-face learning through the eyes of faculty, students, administrators, and instructional designers: lessons learned and directions for the post-vaccine and post-pandemic/COVID-19 world', *Journal of Educational Technology Systems*, 50(3), pp. 301–326. Available at: https://doi.org/10.1177/00472395211063754.

Smith, A. *et al.* (2022) 'Development of burnout in physical therapist students and associated factors: a study during COVID-19', *Journal of Physical Therapy Education*, pp. 10–1097.

Suharsono, Y. and Fatimah, S. (2025) 'Validation of the Daily Spiritual Experience Scale (DSES) in the context of Indonesian Muslims', *KnE Social Sciences*, 10(7), pp. 231–244. Available at: https://doi.org/10.18502/KSS.V10I7.18330.

Velasco, J.C. (2019) 'Millennials in the university: an inquiry on burnout among Filipino university students', *Pertanika Journal of Social Sciences & Humanities*, 27(2).

Wachholtz, A. and Rogoff, M. (2013) 'The relationship between spirituality and burnout among medical students', *Journal of Contemporary Medical Education*, 1(2), p. 83. Available at: https://doi.org/10.5455/JCME.20130104060612.

Winstone, N. *et al.* (2022) 'Who stands to benefit? Wellbeing, belonging and challenges to equity in engagement in extra-curricular activities at university', *Active Learning in Higher Education*, 23(2), pp. 81–96. Available at: https://doi.org/10.1177/1469787420908209.

Yadav, R. and Khanna, A. (2014) 'Impact of spirituality on stress: with the special reference of engineering students of Indian Institute of Technology', *Research on Humanities and Social Sciences*, 4(25), pp. 29–35.

Yadi, Y.H. *et al.* (2025) 'Analysis of mental workload during exams in hybrid learning in the new normal era post-pandemic', *Journal Industrial Servicess*, 11(1), pp. 95–102.

Zhang, Y.U. *et al.* (2019) 'Relationship between burnout and intention to leave amongst clinical nurses: the role of spiritual climate', *Journal of Nursing Management*, 27(6), pp. 1285–1293.