



Key Factors Associated with Nursing Care Intensity for Nursing Service Management in a Psychiatric Hospital: A Cross-Sectional Study Approach

Milkhatun^{1*}, Yudhi Fajar Saputra², Alfi Ari Fakhur Rizal¹, Ni Wayan Wiwin Asthiningsih¹, Rusni Masnina¹, Maridi M Dirdjo¹

¹ Faculty of Nursing, Universitas Muhammadiyah Kalimantan Timur, Samarinda, East Kalimantan, Indonesia

² Faculty of Engineering and Informatics, Universitas Widy Gama Mahakam, Samarinda, East Kalimantan, Indonesia

ARTICLE INFO

Article Type:
Research

Article History:
Received: 08 February 2026
Accepted: 29 June 2026
Published: 30 June 2026

***Corresponding author**
Email: mil668@umkt.ac.id

ORIGINAL ARTICLE

ABSTRACT

Nursing care intensity is an important indicator of nursing service quality and patient safety. However, in many clinical settings, nursing workload and care demand assessments are still largely based on medical diagnoses rather than psychosocial and cognitive conditions that may better reflect patients' actual nursing needs. This study examined the association between patient-related factors across four domains (health history and genetic factors, emotional and cognitive functioning, self-concept, and social-interpersonal relationships) and nursing care intensity levels. A cross-sectional study was conducted at RSJD Atma Husada Mahakam Samarinda, Indonesia, using data from 491 patients collected through a standardized nursing care intensity assessment instrument based on the NANDA–NIC–NOC framework. Nursing care intensity was categorized into low, moderate, and high levels, with most patients classified in the moderate category. Associations between variables and nursing care intensity were analyzed using Chi-square tests, and the strength of associations was evaluated using Cramer's V and Phi coefficient to identify key associated factors. The result showed that most psychosocial, emotional, cognitive, and social variables showed significant associations with nursing care intensity. The strongest associations were observed for self-esteem ($V = 0.487$), socialization in the community ($V = 0.408$), emotion ($V = 0.405$), perception ($V = 0.290$), and intelligence ($V = 0.280$). In contrast, genetic factors and medical diagnosis showed no significant association with nursing care intensity. Nursing care intensity is more strongly associated with psychosocial and cognitive factors than by traditional medical indicators. These findings highlight key associated factors identified through bivariate analysis and suggest that integrating these domains into routine nursing assessments may support evidence-based staffing allocation, reduce missed nursing care, and improve nursing service quality.

Keywords: Nursing Care, Nursing Management, Nursing Service, Cramer's V, Nursing Practice.

ABSTRAK

Intensitas asuhan keperawatan merupakan indikator penting dalam kualitas pelayanan keperawatan dan keselamatan pasien. Namun, di banyak lingkungan klinis, penilaian beban kerja perawat dan kebutuhan asuhan masih sebagian besar didasarkan pada diagnosis medis, bukan pada kondisi psikososial dan kognitif yang lebih mencerminkan kebutuhan keperawatan pasien secara nyata. Penelitian bertujuan menganalisis faktor-faktor yang berkaitan pada empat domain (riwayat kesehatan, faktor genetik, fungsi emosional dan kognitif, konsep diri, serta hubungan sosial-interpersonal) dengan tingkat intensitas asuhan keperawatan. Penelitian menggunakan desain *cross-sectional* yang dilaksanakan di RSJD Atma Husada Mahakam Samarinda, melibatkan 491 pasien yang dikumpulkan menggunakan instrumen penilaian intensitas asuhan keperawatan terstandar berdasarkan kerangka NANDA–NIC–NOC. Intensitas asuhan keperawatan dikategorikan menjadi tingkat rendah, sedang, dan tinggi, dengan sebagian besar pasien berada pada kategori sedang. Hubungan antara variabel penelitian dan intensitas asuhan keperawatan dianalisis menggunakan uji Chi-square, sedangkan kekuatan hubungan dievaluasi menggunakan koefisien Cramer's V dan Phi untuk mengidentifikasi faktor-faktor yang paling berhubungan. Hasil penelitian menunjukkan bahwa sebagian besar variabel psikososial, emosional, kognitif, dan sosial memiliki hubungan yang signifikan dengan intensitas asuhan keperawatan. Hubungan terkuat ditemukan pada harga diri (*self-esteem*) ($V = 0,487$), sosialisasi di masyarakat ($V = 0,408$), emosi ($V = 0,405$), persepsi ($V = 0,290$), dan inteligensi ($V = 0,280$). Sebaliknya, faktor genetik dan diagnosis medis tidak menunjukkan hubungan yang signifikan dengan intensitas asuhan keperawatan. Intensitas asuhan keperawatan lebih erat berhubungan dengan faktor psikososial dan kognitif dibandingkan dengan indikator medis tradisional.

Kata kunci: Asuhan Keperawatan, Manajemen Keperawatan, Pelayanan Keperawatan, Cramer's V, Praktik Keperawatan.

INTRODUCTION

Nursing service quality is a fundamental component of healthcare systems and plays a critical role in ensuring patient safety, effective clinical interventions, and positive care experiences. The World Health Organization (World Health Organization, 2020, 2025) identifies nursing care quality as a key indicator of healthcare performance, given nurses' central involvement across almost all stages of patient care. Nursing service quality is reflected not only in the accuracy of clinical actions but also in the appropriateness and consistency of nursing attention provided in response to patients' actual care needs (American Nurses Association, 2023).

In clinical practice, increasing patient complexity and imbalanced nursing workloads often limit the delivery of optimal nursing attention. Numerous studies have reported that such conditions contribute to higher rates of missed nursing care, which is defined as delayed, partially completed, or omitted nursing activities, and have been consistently associated with reduced service quality and increased clinical risk (Abere et al., 2024; Liu et al., 2026; Maghsoud et al., 2022; Nantsupawat et al., 2022). The mismatch between patients' required level of nursing attention and the attention actually delivered has therefore emerged as a critical issue in contemporary nursing management, highlighting the need for more objective and systematic measurement approaches (Alibrandi et al., 2023).

To address this issue, healthcare institutions have increasingly adopted the concept of nursing care intensity, which refers to the level of nursing attention, supervision, interaction, and support required by patients within a specific period (Welton, 2017). Nursing care intensity measurement systems have been shown to assist nurses and nursing managers in allocating resources, balancing workloads, and determining safe and effective nurse–patient ratios (Reguin-Hartman, 2025). This concept has gained growing relevance in response to rising demands for adaptive and responsive nursing services that can accommodate wide variations in patient needs.

Previous studies indicate that nursing care intensity is influenced by multiple factors, including emotional status, cognitive functioning, psychosocial conditions, self-care ability, self-concept, family support, and social relationships (Aiken et al., 2024; Li et al., 2023). When these needs are not accurately identified, the consequences include imbalanced nursing workloads, increased nurse fatigue, and deterioration in service quality (Tubbs-Cooley et al., 2019). Consequently, analyzing factors that contribute to nursing care intensity is essential as part of broader strategies aimed at strengthening nursing service quality management.

As globally, previous studies have demonstrated that nursing care intensity is increasingly used as a workload measurement tool in various healthcare systems, particularly in Europe and North America, to support staffing decisions and improve care quality (Dall'Ora et al., 2022; Junttila et al., 2016), these models emphasize patient-centered assessment by incorporating functional status, psychosocial conditions, and care complexity, rather than relying solely on medical diagnoses. This international evidence highlights the importance of comprehensive nursing assessment frameworks in optimizing nursing workforce management and ensuring patient safety.

Despite growing attention to this issue, notable research gaps remain. First, most studies on nursing service quality have focused on nurse workload, patient satisfaction, or organizational factors, while relatively few have examined nursing care intensity as a measurable indicator of service quality. Second, prior studies investigating factors related to nursing attention have largely relied on descriptive or simple correlational analyses (Dewi F. M et al., 2022), limiting the depth of insight into dominant contributing factors. Inferential statistical approaches, such as Chi-square analysis and regression-based methods, offer greater potential to identify key factors associated with nursing care intensity. Third, there is a scarcity of research that integrates nursing care intensity assessment within an evidence-based nursing management framework to support managerial decision-making.

Therefore, this study aims to identify factors associated with levels of nursing care intensity based on the three standard categories of the NANDA–NIC–NOC framework. NANDA (North American Nursing Diagnosis Association) focuses on identifying patient problems through nursing diagnoses (Herdman, Kamitsuru, & Lopes, 2021), NIC (Nursing Interventions Classification) outlines appropriate nursing actions (Howard et al., 2018), and NOC (Nursing Outcomes Classification) defines expected patient outcomes (Moorhead et al., 2023). Specifically, the study

examines the associations between patient-related factors and categories of nursing care intensity using Chi-square analysis as a bivariate approach and evaluates the strength of these associations using Cramer's V and the Phi coefficient.

RESEARCH METHODS

A cross-sectional analytical study was conducted to examine determinants of nursing care intensity levels based on patient-related conditions within a single time period. The study was designed and reported according to the STROBE guidelines for cross-sectional research and follows common methodological practice in nursing service and nursing management studies (Flanagan & Beck, 2024).

Data collection was conducted between November and December 2025 at RSJD Atma Husada Mahakam Samarinda, Indonesia. Total sampling was applied, in which all patients who underwent nursing care intensity assessment during the study period were considered eligible. Inclusion criteria were patients who received a complete nursing care intensity assessment using the hospital's standardized instrument based on the NANDA–NIC–NOC framework and had complete data across all variables. Patients with incomplete assessments or missing data were excluded. A total of 491 patients met the criteria and were included in the final analysis.

Nursing care intensity was assessed using a hospital-standardized Nursing Care Intensity Assessment Instrument developed under the NANDA (Nursing Diagnoses), NIC (Nursing Interventions), and NOC (Nursing Outcomes) framework. This instrument was routinely used by trained nurses in the daily clinical practice of the hospital, supporting its content validity and practical reliability. Although formal psychometric testing was not conducted within this study, the instrument reflects real-world clinical assessment and ensures ecological validity in measuring nursing care intensity. The dependent variable was nursing care intensity, classified into three levels (low, moderate, and high), representing increasing needs for nursing attention, supervision, and support. Independent variables were conceptualized as key factors and grouped into four domains: (1) Health History and Genetic Factors (genetic factors, medical history, medical diagnosis), (2) Mental and Emotional Domain (neatness impression, cooperative impression, anxious impression, confusion impression, contact, awareness, emotion, intelligence, perception), (3) Self-Care and Self-Concept Domain (partial care, self-image, identity, self-ideal, self-esteem), and (4) Social and Interpersonal Relationships Domain (socialization in family, close person, socialization in community, distress in relationships). All variables were measured categorically.

Statistical analyses were performed using RStudio. Descriptive statistics were summarized using frequencies and percentages. Bivariate associations between independent variables and nursing care intensity were examined using the Chi-square test with a two-tailed significance level of $p < 0.05$. The strength of associations was evaluated using the Phi coefficient for 2×2 tables and Cramer's V for tables with more than two categories. Effect size interpretation followed Cohen's criteria (2013), where 0.10 indicates weak, 0.30 moderate, and ≥ 0.50 strong associations. No imputation was performed because the dataset contained complete observations.

Ethical approval was obtained from the Research Ethics Committee of STIKES Mutiara Mahakam (Approval No. 44/KEP-K-STIKES-MM/X/2025). The study followed the approved protocol and complied with international ethical standards, including the World Health Organization (WHO) guidelines (2011) and the Council for International Organizations of Medical Sciences (CIOMS) guidelines (2016).

RESULTS

The results constitute the main part of the scientific article, containing the outcomes of data analysis and hypothesis testing. They may be presented using tables or graphs to clarify the findings verbally.

A total of 491 patients were included in the analysis, for the genetic factor variable, most participants had no documented genetic factors (85.1%), and most patients have a history of illness (56.0%) in the history variable. For the neatness impression variable, approximately half of the patients were assessed as neatly groomed (50.5%) and have cooperative (82.7%) than bad cooperative in the cooperative variable, the majority demonstrated stable contact (85.3%)

and good awareness (86.4%). However, a substantial proportion exhibited emotional instability (85.5%) in the emotion variable. Regarding cognitive functioning at the intelligence variable, most patients had moderate intelligence (56.2%). Perception variable states perception disturbances, indicating the presence of both auditory and visual sensory abnormalities were predominantly classified as combined audiotonic and visual disturbances (62.3%). In partial care variable, nearly half of the participants were able to perform self-care independently (48.1%), while abnormalities in the self-esteem variable were prevalent (58.0%). In the socialize in community variable, more than half experienced difficulties in community socialization (60.9%). The close person variable refers to the primary source of social support, including family members such as parents, spouse, children, and other relatives, indicating the role of interpersonal relationships in patient care needs, among them, stated that they did not know who their closest friends (23.0%). With respect to nursing care intensity, the majority were classified as requiring high nursing care intensity (77.0%), followed by moderate (19.8%) and low levels (3.3%).

As shown in Table 1, the Chi-square test revealed that several variables were significantly associated with nursing care intensity levels. Overall, variables within the psychological, emotional, cognitive, and social domains demonstrated stronger associations than those related to medical history and genetic factors.

Table 1. Descriptive statistics of nursing care intensity levels and related variables to patient conditions as factors associated.

Variabel	Frequency (n)	Percentage (%)	χ^2	p-value
Genetic factor			1.319	0.857
Nothing	418	85.13		
Unknown	9	1.83		
Yes	64	13.04		
History			6.961	0.031*
Nothing	216	44.00		
Have	275	56.00		
Neatness impression			7.988	0.018*
Less natty	243	49.50		
Natty	248	50.50		
Cooperative impression			4.507	0.114
Less Cooperative	85	17.31		
Cooperative	406	82.69		
Anxious impression			2.561	0.305
anxious	65	13.24		
Normal	426	86.76		
Confusion impression			3.535	0.182
Confused	84	17.11		
Normal	407	82.89		
Contact			6.511	0.335
Active	419	85.33		
Passive	24	4.89		
Verbal	19	3.87		
Visual	29	5.91		
Awareness			4.118	0.637
Bad attention	16	3.27		
Bad orientation	33	6.72		
Good	424	86.64		
Poor	18	3.67		
Emotion			80.633	<0.001***
Unstable	420	85.54		
Stable	71	14.46		
Intelligence			76.875	<0.001***

Bad	160	32.59		
Moderate	276	56.21		
Good	55	11.20		
Perception			82.394	<0.001***
Audiotonic	34	6.92		
Visual	18	3.67		
Visual and audiotonic	306	62.32		
Unknown	15	30.55		
Normal	118	24.03		
Partial care			3.279	0.512
Assisted	67	13.65		
Directed	188	38.29		
Self-care	236	48.06		
Self-image			33.626	<0.001***
Abnormal	105	21.38		
Normal	386	78.62		
Identity			21.776	<0.001***
Abnormal	108	22.00		
Normal	383	78.00		
Socialize in family			21.160	<0.001***
Abnormal	112	22.81		
Normal	379	77.19		
Self-ideal			28.384	<0.001***
Abnormal	106	21.59		
Normal	385	78.41		
Self-esteem			116.560	<0.001***
Low	285	58.04		
Good	206	41.96		
Close person			37.486	0.012*
Brother	45	9.17		
Child	25	5.09		
Family	82	16.70		
Father	21	4.28		
Grand Mother	2	0.41		
Husband	39	7.94		
Mother	79	16.09		
Parents	66	13.44		
Wife	19	3.87		
Unknown	113	23.01		
Socialize in Community			81.670	<0.001***
Have problem	299	60.90		
No problem	192	39.10		
Distress in relationship			27.658	<0.001***
Difficult	138	28.10		
Easy	353	71.90		
Medical diagnosis			1.536	0.992
Hebephrenic	31	6.31		
Paranoid	208	42.36		
Residual	6	1.22		
Simple	3	0.61		
Undifferentiated	243	49.50		

Notes: *p* values were obtained using Pearson's Chi-square test.

Significance level: **p* < 0.05 (); ***p* < 0.01 (); ****p* < 0.001 ().

Table 1 presents, the health history and genetic domain, genetic factors showed no significant association with nursing care intensity ($\chi^2 = 1.32$, $p = 0.857$), whereas medical history was significantly related, although with a modest effect ($\chi^2 = 6.96$, $df = 2$, $p = 0.031$). Within the appearance and initial response domain, neatness impression was significantly associated with nursing care intensity ($\chi^2 = 7.99$, $df = 2$, $p = 0.018$), suggesting that external appearance may serve as an early indicator of nursing care needs. In contrast, cooperative, anxious, and confusion impressions were not significantly related. The cognitive and emotional domain exhibited the strongest associations. Emotion showed the highest level of significance ($\chi^2 = 80.63$, $p < 0.001$), followed by intelligence ($\chi^2 = 76.88$, $p < 0.001$) and perception ($\chi^2 = 82.39$, $p < 0.001$). These findings indicate that emotional stability and cognitive functioning are critical determinants of nursing care intensity. In the self-concept domain, self-image, identity, and self-ideal were all significantly associated with nursing care intensity ($p < 0.001$), reflecting the relevance of patients' internal self-perceptions in shaping care demands. Similarly, in the social and interpersonal domain, socialization within the family, presence of a close person, community socialization, and relationship distress demonstrated significant associations, with community socialization showing particularly strong significance ($\chi^2 = 81.67$, $p < 0.001$). Conversely, medical diagnosis was not significantly associated with nursing care intensity ($\chi^2 = 1.54$, $p = 0.992$), suggesting limited explanatory value in this context.

Regarding strength of associations between factors associated and nursing care intensity, Table 2 provides an overview of effect size analyses using Cramer's V and Phi coefficients were conducted to assess the strength of associations between related variables to patient conditions as factors associated and nursing care intensity.

Table 2. Strength of associations between factors associated and nursing care intensity.

Variabel	Rows × Columns	p-value	Cramer's V
Genetic factor	2 × 3	0.856	0.037
History	3 × 3	0.030*	0.119
Neatness impression	2 × 3	0.018*	0.127
Cooperative impression	2 × 3	0.114	0.096
Anxious impression	2 × 3	0.305	0.072
Confusion impression	2 × 3	0.182	0.085
contact	3 × 3	0.335	0.081
Awareness	2 × 3	0.637	0.065
Emotion	2 × 3	<0.001***	0.405
Intelligence	2 × 3	<0.001***	0.280
Perception	2 × 3	<0.001***	0.290
Partial care	3 × 3	0.513	0.058
Self-image	2 × 3	<0.001***	0.262
Identity	2 × 3	<0.001***	0.211
Socialize in family	2 × 3	<0.001***	0.208
Self ideal	2 × 3	<0.001***	0.240
Self esteem	2 × 3	<0.001***	0.487
Close person	2 × 3	0.012*	0.195
Socialize in community	≥ 3 × 3	<0.001***	0.408
Distress in relationship	2 × 3	<0.001***	0.237
Medical diagnosis	≥ 3 × 3	0.992	0.040

Notes: p-values were obtained using Pearson's Chi-square test.

Significance level: * $p < 0.05$ (); ** $p < 0.05$ (); *** $p < 0.001$ ().

Variables related to medical history and genetics demonstrated weak associations, with genetic factors ($V = 0.037$) and medical diagnosis ($V = 0.040$) contributing minimally to variations in nursing care intensity, while perception ($V = 0.290$) and intelligence ($V = 0.280$) showed

moderate associations. Moderate associations were also observed for self-image ($V = 0.262$) and self-ideal ($V = 0.240$). In contrast, the cognitive and emotional domain showed moderate to strong associations. Emotion ($V = 0.405$) and community socialization ($V = 0.408$) emerged as strong factors associated. Notably, self-esteem demonstrated the strongest association overall ($V = 0.487$), indicating that patients' self-perception plays a pivotal role in determining nursing care intensity.

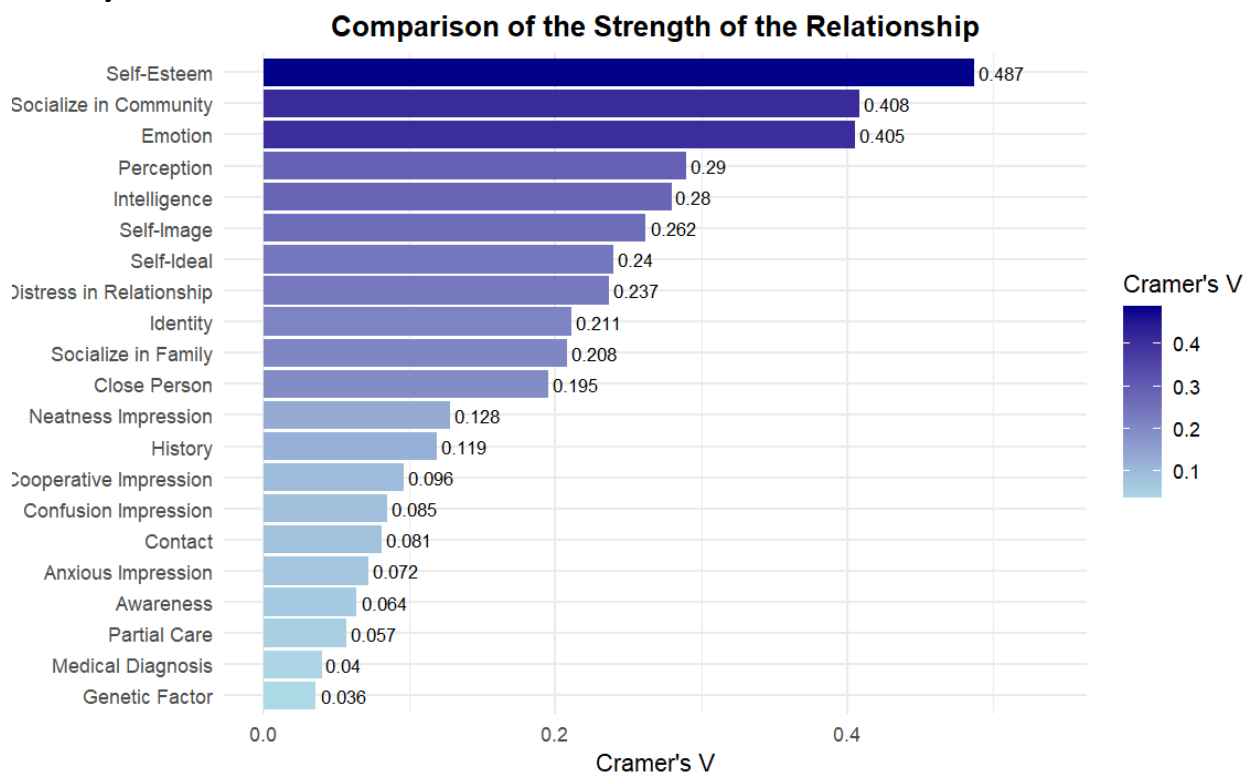


Figure 1. Comparison of the strength of association between variables using Cramer's V.

Figure 1 provides visual representations of the relative strength of these associations, illustrating consistent patterns across domains. Collectively, these results underscore that psychosocial, emotional, and cognitive factors are more influential determinants of nursing care intensity than traditional medical indicators.

DISCUSSION

This study provides an empirical evidence that nursing care intensity is predominantly shaped by psychosocial, emotional, cognitive, and interpersonal patient factors, rather than by traditional biomedical indicators such as medical diagnosis or genetic background. Using Chi-square analysis complemented by effect size estimation, the findings consistently demonstrate that variables reflecting patients' emotional stability, cognitive functioning, self-concept, and social interaction capacity are the key factors associated with nursing care intensity. These findings reinforce the growing recognition that nursing workload and care demands are multidimensional phenomena that extend beyond diagnostic categories.

The significant associations observed between emotional functioning and nursing care intensity are particularly noteworthy. Emotional instability emerged as among the variables showing relatively strong associations, with a large effect size, indicating that patients experiencing emotional tend to require higher levels of nursing supervision, therapeutic communication, and emotional support. This finding aligns with prior studies showing that emotional distress increases patient dependency and nursing workload due to heightened safety concerns, behavioral monitoring needs, and increased nurse–patient interaction time (Ball et al., 2018; Griffiths et al., 2018). From a nursing management perspective, emotional status should therefore be recognized as a central acuity indicator when allocating nursing resources.

Closely related to emotional functioning, cognitive variables such as perception and intelligence also demonstrated moderate to strong associations with nursing care intensity.

Patients with impaired perception or reduced cognitive capacity often require repeated explanations, assistance with decision-making, and continuous observation to prevent adverse events. Previous research has consistently shown that cognitive impairment is associated with increased nursing workload and higher rates of care omission when staffing levels are insufficient (Aiken et al., 2021; Twigg et al., 2021). These findings underscore the importance of incorporating cognitive assessment results into nursing staffing models, rather than relying solely on physical dependency or diagnosis-based classifications.

An important contribution of this study lies in highlighting the role of self-concept variables, particularly self-esteem, self-image, and self-ideal, in determining nursing care intensity. Self-esteem demonstrated the strongest effect size among all factors associated, suggesting that patients' internal perceptions of self-worth are an important factor associated with care needs. Low self-esteem has been associated with decreased coping ability, increased emotional vulnerability, and greater reliance on external support, all of which intensify nursing care requirements (Liu et al., 2018; McAllister & McKinnon, 2009). This finding supports nursing theories that emphasize the interrelationship between psychological well-being and care dependency, reinforcing the need for holistic assessments that address patients' internal experiences.

From a theoretical standpoint, these findings are consistent with Roy's Adaptation Model, which conceptualizes health as an adaptive process influenced by physiological, psychological, and social stimuli (Roy et al., 2009). When patients exhibit ineffective adaptive responses, manifested as emotional instability, impaired self-concept, or social withdrawal, nursing interventions must intensify to support adaptation and restore balance. Thus, nursing care intensity reflects not merely physical care needs but also the degree of adaptive support required across multiple domains.

The social and interpersonal domain also emerged as a significant determinant of nursing care intensity, particularly difficulties in community socialization. Patients who struggle to engage in broader social environments often require structured interactions, behavioral guidance, and continuous supervision within healthcare settings. This finding aligns with prior evidence demonstrating that social functioning deficits increase care complexity and nursing workload (Duffield et al., 2014; Lake et al., 2016). Importantly, social functioning should not be viewed as a peripheral factor but as a core element influencing daily nursing care demands.

In contrast, medical diagnosis, health history, and genetic factors showed minimal or no association with nursing care intensity. These findings challenge conventional staffing and workload allocation models that prioritize diagnostic categories as the primary determinant of nursing workload. While medical diagnosis remains essential for clinical decision-making, it appears insufficient for capturing the complexity of nursing care demands. Similar conclusions have been reported in international studies, which indicate that diagnosis-based staffing systems often fail to reflect actual nursing workload and may contribute to imbalanced care delivery (Twigg et al., 2021; Welton & Harper, 2016).

From a nursing service management perspective, the findings have significant implications. Nursing care intensity in this study was largely driven by the need for emotional support, cognitive assistance, reinforcement of self-concept, and facilitation of social functioning. When these needs are not adequately assessed, nurses may experience hidden workload burdens that are not reflected in staffing plans, increasing the risk of fatigue, burnout, and missed nursing care (Ball et al., 2018; Lake et al., 2016). Incorporating psychosocial and cognitive indicators into routine nursing assessments may therefore improve workload equity and enhance service quality.

The results also highlight the potential role of nursing care intensity assessment as a quality indicator. By systematically measuring care intensity, nursing managers can identify gaps between patient needs and available resources, enabling proactive adjustments to staffing, skill mix, and shift allocation. Previous studies have shown that misalignment between care demand and nursing capacity is associated with adverse patient outcomes, reduced patient satisfaction, and increased nurse turnover (Aiken et al., 2021; Duffield et al., 2014). This study has several strengths, including the use of a standardized assessment instrument grounded in the NANDA–NIC–NOC framework, a relatively large sample size, comprehensive bivariate and effect size analyses, and domain-based visualization of findings. However, several limitations should be

acknowledged. First, the cross-sectional design limits causal inference. Second, the study was conducted in a single mental health hospital, which may restrict generalizability, although the observed patterns are consistent with international literature. Third, the categorical nature of the variables precluded more advanced predictive modeling in this article.

Future research are recommended to apply multivariable approaches by extend these findings by employing ordinal logistic regression to identify independent predictors and control for potential confounding variables or explainable machine learning approaches to identify dominant predictors of nursing care intensity and to assess model performance using indicators such as ROC–AUC. Longitudinal studies would also provide valuable insights into how nursing care intensity evolves over time and how changes in psychosocial functioning influence care demands.

In summary, this study reinforces the view that nursing care intensity is primarily driven by psychosocial, emotional, cognitive, and social factors, rather than by traditional biomedical indicators. These findings provide an empirical foundation for nursing service management to enhance care quality, optimize workload distribution, and improve patient safety through structured, holistic, and evidence-based approaches to nursing care allocation.

CONCLUSION

This study demonstrates that nursing care intensity is primarily determined by psychosocial, emotional, cognitive, and social factors, rather than by traditional medical indicators such as diagnosis or genetic background. The findings highlight that patients' emotional stability, cognitive functioning, self-concept, and social interaction capacity play a central role in shaping nursing care demands. These results underscore the importance of adopting a needs-based and patient-centered approach to nursing service management, in which staffing decisions and workload allocation are guided by comprehensive assessments of patients' psychosocial and cognitive needs. By integrating nursing care intensity assessment into routine management practices, healthcare organizations may enhance care quality, promote patient safety, and support evidence-based decision-making in nursing services. To support practical implementation, nursing managers may apply these findings to develop more adaptive workload distribution systems that better reflect actual patient care demands.

REFERENCES

- Abere, Y., Biresaw, H., Misganaw, M., Netsere, B., & Adal, O. (2024). Missed nursing care and its associated factors in public hospitals of Bahir Dar City, Northwest Ethiopia: a cross-sectional study. *BMJ Open*, 14(4), e081647. <https://doi.org/10.1136/bmjopen-2023-081647>
- Aiken, L. H., Sermeus, W., McKee, M., Lasater, K. B., Sloane, D., Pogue, C. A., Kohnen, D., Dello, S., Maier, C. B. B., Drennan, J., & others. (2024). Physician and nurse well-being, patient safety and recommendations for interventions: cross-sectional survey in hospitals in six European countries. *BMJ Open*, 14(2), e079931. <https://doi.org/10.1136/bmjopen-2023-079931>
- Aiken, L. H., Sloane, D. M., Ball, J., Bruyneel, L., Rafferty, A. M., & Griffiths, P. (2021). Patient satisfaction with hospital care and nurses in England: an observational study. *BMJ Open*, 8(1), e019189. <https://doi.org/10.1136/bmjopen-2017-019189>
- Alibrandi, A., Gitto, L., Limosani, M., & Mustica, P. F. (2023). Patient satisfaction and quality of hospital care. *Evaluation and Program Planning*, 97, 102251. <https://doi.org/https://doi.org/10.1016/j.evalprogplan.2023.102251>
- American Nurses Association. (2023). *What Is Evidence-Based Practice in Nursing?*. American Nurses Association. Retrieved from <https://www.nursingworld.org/content-hub/resources/workplace/evidence-based-practice-in-nursing/>
- Ball, J. E., Bruyneel, L., Aiken, L. H., Sermeus, W., Sloane, D. M., Rafferty, A. M., Lindqvist, R., Tishelman, C., Griffiths, P., Consortium, R., & others. (2018). Post-operative mortality, missed care and nurse staffing in nine countries: A cross-sectional study. *International Journal of Nursing Studies*, 78, 10–15. <https://doi.org/10.1016/j.ijnurstu.2017.08.004>
- Council for International Organizations of Medical Sciences. (2016). *International Ethical Guidelines for Health-related Research Involving Humans*. Geneva: Council for International Organizations of Medical Sciences.

- Dall'Ora, C., Saville, C., Rubbo, B., Turner, L., Jones, J., & Griffiths, P. (2022). Nurse staffing levels and patient outcomes: a systematic review of longitudinal studies. *International Journal of Nursing Studies*, 134, 104311. <https://doi.org/10.1016/j.ijnurstu.2022.104311>
- Dewi F. M., Putra K. R., & Wardhani V. (2022). The Relationship Between Nurse Workload and Missed Nursing Care in The Inpatient Room. *JMMR (Jurnal Medicoeticolegal dan Manajemen Rumah Sakit)*, 11(2), 124–132. <https://doi.org/10.18196/jmmr.v11i2.14708>
- Duffield, C. M., Roche, M. A., Homer, C., Buchan, J., & Dimitrelis, S. (2014). A comparative review of nurse turnover rates and costs across countries. *Journal of Advanced Nursing*, 70(12), 2703–2712. <https://doi.org/10.1111/jan.12483>
- Flanagan, J., & Beck, C. T. (2024). *Polit & Beck's nursing research: Generating and assessing evidence for nursing practice*. Lippincott Williams & Wilkins.
- Griffiths, P., Recio-Saucedo, A., Dall'Ora, C., Briggs, J., Maruotti, A., Meredith, P., Smith, G. B., Ball, J., & Group, M. C. S. (2018). The association between nurse staffing and omissions in nursing care: A systematic review. *Journal of Advanced Nursing*, 74(7), 1474–1487. <https://doi.org/10.1111/jan.13564>
- Herdman, H., Kamitsuru, S., & Lopes, C.T. (2021). *NANDA International Nursing Diagnoses: Definitions and Classification 2021-2023* (12th ed.). New York: Thieme Medical Publisher. <https://doi.org/10.1055/b000000515>
- Howard, B., Bulechek, G., Dochterman, J., & Wagner, C. (2018). *Nursing Interventions Classification (NIC)*, 7th. Elsevier.
- Junttila, J. K., Koivu, A., Fagerström, L., Haatainen, K., & Nykänen, P. (2016). Hospital mortality and optimality of nursing workload: A study on the predictive validity of the RAFELA Nursing Intensity and Staffing system. *International Journal of Nursing Studies*, 60, 46–53. <https://doi.org/10.1016/j.ijnurstu.2016.03.008>
- Lake, E. T., Germack, H. D., & Viscardi, M. K. (2016). Missed nursing care is linked to patient satisfaction: a cross-sectional study of US hospitals. *BMJ Quality & Safety*, 25(7), 535-43. <http://doi:10.1136/bmjqs-2015-003961>
- Li, M., Wang, Y., Du, M., Wang, H., Liu, Y., Richardson, B. N., & Bai, J. (2023). Working Hours Associated with the Quality of Nursing Care, Missed Nursing Care, and Nursing Practice Environment in China: A Multicenter Cross-Sectional Study. *Journal of Nursing Management*, 2023(1), 8863759. <https://doi:10.1155/2023/8863759>
- Liu, Q., Lu, Y., Zhai, S., Dai, C., Kan, C., & Chen, C. (2026). Workflow Interruptions, Perceived Workload and Missed Nursing: Their Impact on Nurses' Health Status—A Structural Equation Model. *Journal of Advanced Nursing*, 82(1), 311–320. <https://doi:10.1111/jan.16855>
- Liu, W., Zhao, S., Shi, L., Zhang, Z., Liu, X., Li, L. I., Duan, X., Li, G., Lou, F., Jia, X., & others. (2018). Workplace violence, job satisfaction, burnout, perceived organisational support and their effects on turnover intention among Chinese nurses in tertiary hospitals: a cross-sectional study. *BMJ Open*, 8(6), e019525. <https://doi: 10.1136/bmjopen-2017-019525>
- Maghsoud, F., Rezaei, M., Asgarian, F. S., & Rassouli, M. (2022). Workload and quality of nursing care: the mediating role of implicit rationing of nursing care, job satisfaction and emotional exhaustion by using structural equations modeling approach. *BMC Nursing*, 21(1), 273. <https://doi: 10.1186/s12912-022-01055-1>
- McAllister, M., & McKinnon, J. (2009). The importance of teaching and learning resilience in the health disciplines: a critical review of the literature. *Nurse Education Today*, 29(4), 371–379. <https://doi: 10.1016/j.nedt.2008.10.011>
- Moorhead, S., Swanson, E., & Johnson, M. (2023). *Nursing outcomes classification (NOC)-E-book: nursing outcomes classification (NOC)-E-Book*. Elsevier Health Sciences
- Nantsupawat, A., Poghosyan, L., Wichaikhum, O.-A., Kunaviktikul, W., Fang, Y., Kueakomoldej, S., Thienthong, H., & Turale, S. (2022). Nurse staffing, missed care, quality of care and adverse events: A cross-sectional study. *Journal of Nursing Management*, 30(2), 447–454. <https://doi: 10.1111/jonm.13501>
- Organization, W. H., & others. (2011). *Standards and operational guidance for ethics review of health-related research with human participants*. World Health Organization.
- Reguin-Hartman, K. L. (2025). Improving assessment of workload for medical-surgical nurses: Revisions to a nurse workload tool. *Advancing Medical-Surgical Nursing*, 1(1), 100002.

- Roy, C., Whetsell, M., & Frederickson, K. (2009). The Roy Adaptation Model and Research: Global Perspective. *Nursing Science Quarterly*, 22(3), 209–211. <https://doi.org/10.1177/0894318409338692>
- Tubbs-Cooley, H. L., Mara, C. A., Carle, A. C., Mark, B. A., & Pickler, R. H. (2019). Association of nurse workload with missed nursing care in the neonatal intensive care unit. *JAMA Pediatrics*, 173(1), 44–51. <https://doi: 10.1001/jamapediatrics.2018.3619>.
- Twigg, D. E., Whitehead, L., Doleman, G., & El-Zaemey, S. (2021). The impact of nurse staffing methodologies on nurse and patient outcomes: A systematic review. *Journal of Advanced Nursing*, 77(12), 4599–4611. <https://doi: 10.1111/jan.14909>.
- Welton, J. M., & Harper, E. M. (2016). Measuring nursing care value. *Nursing Economic\$,* 34(1), 7-14.
- Welton, J. M. (2017). Measuring patient acuity: implications for nurse staffing and assignment. *JONA: The Journal of Nursing Administration*, 47(10), 471.
- World Health Organization. (2020). *Quality health services: a planning guide*. World Health Organization.
- World Health Organization. (2025). *Fact sheet: Quality health services*. World Health Organization. Retrieved from <https://www.who.int/news-room/fact-sheets/detail/quality-health-services>