

WORK ABILITY AND OCCUPATIONAL FACTORS AMONG SHIFT NURSES IN LAHORE, PAKISTAN

Amina Naseer^{*1}, Sharoon Haroon², Asma Rani³, Laiba Umar⁴, Saima Sikandar⁵,
Muhammad Talha⁶

^{*1}Charge Nurse, Punjab Institute of Cardiology, Lahore, Pakistan

²Registered Nurse, Shoukat Khanum Cancer Memorial Hospital and Research Center, Lahore, Pakistan

³Assistant Nursing Instructor, College of Nursing and DHQ Hospital, Narowal, Pakistan

^{4,5,6}Staff Nurse, PKLI Hospital, Lahore, Pakistan

^{*1}aminanaseervti@gmail.com

DOI: <https://doi.org/10.5281/zenodo.17617685>

Keywords

Work Ability, Job Satisfaction, Shift Work, Registered Nurses, Occupational Health, Work Ability Index

Article History

Received: 11 September 2025

Accepted: 21 October 2025

Published: 04 November 2025

Copyright @Author

Corresponding Author: *
Amina Naseer

Abstract

Background: In Pakistan's healthcare system, nurses form the backbone of hospital-based patient care and often face demanding working conditions, particularly under shift-based schedules. In Punjab, heavy workloads, staff shortages, and inconsistent rest cycles contribute to occupational strain, affecting both job satisfaction and work performance. Despite the significance of these issues, limited research has examined the relationship between shift work, job satisfaction, and work ability among nurses in tertiary hospitals. This study aimed to assess work ability levels and identify occupational factors influencing the work ability of shift-working nurses in Lahore, Pakistan.

Methods: A cross-sectional descriptive study was conducted among 160 registered nurses working 8- and 12-hour rotating and fixed shifts at Sir Ganga Ram Hospital, Mayo Hospital, and Services Hospital, Lahore. Data were collected using the Work Ability Index (WAI) and the Mueller/McCloskey Satisfaction Scale (MMSS) to measure job satisfaction. Statistical analyses included descriptive and correlation to explore associations between demographic, occupational, and satisfaction-related variables and work ability.

Results: Work ability was significantly lower among nurses who were older, had longer work experience, and worked 12-hour rotating shifts ($p < .05$), while job satisfaction showed a moderate positive correlation with work ability ($r = .347$, $p < .01$). Additionally, shift type and living place were significantly associated ($p < .05$), indicating that nurses commuting from other cities were more likely to work extended shifts.

Conclusion: The study concludes that both demographic and occupational factors, particularly extended shift schedules and lower job satisfaction, significantly reduce nurses' work ability, underscoring the need for improved shift management and supportive workplace practices.

INTRODUCTION

Work ability is a multidimensional concept that reflects an individual's capacity to meet the physical and psychological demands of work, influenced by health status, functional capacities, and workplace conditions. Originating from the Finnish Institute of Occupational Health, the Work Ability Index (WAI) has become a globally recognized framework for assessing workers' functional ability in relation to job demands (Ilmarinen & Tuomi, 2004; Tuomi et al., 1998). Research underscores that maintaining high work ability is essential for sustaining productivity, promoting workers' well-being, and preventing early exit from the labor force—particularly in physically and emotionally demanding professions such as nursing (Ilmarinen, 2009).

Nurses working in shift systems face complex occupational challenges that can negatively affect their work ability. Extensive evidence highlights that shift schedules disrupt circadian rhythms, impair sleep quality, and increase fatigue, which collectively reduce physical and cognitive functioning (Blachowicz & Letizia, 2006; Estryn-Béhar & Van der Heijden, 2012). Shift work is also associated with gastrointestinal complaints, work–family imbalance, and long-term health risks, all of which reduce workers' capacity to cope with job demands (Saberri & Moravveji, 2010; West et al., 2009). Systematic reviews confirm that both individual factors (e.g., age, health status) and work-related exposures (e.g., workload, shift timing) significantly influence workers' WAI scores (van den Berg et al., 2009).

In nursing settings, particularly in low- and middle-income countries, shift work challenges are intensified due to high patient loads, inadequate staffing, and limited organizational support. Studies show that day and shift-working nurses differ significantly in their work ability, with night and rotating shift nurses reporting lower WAI scores because of disrupted biological rhythms and increased occupational stress (Camerino et al., 2008). In Pakistan, where nursing shortages and demanding workloads are common, exploring the work ability of shift nurses is critical for improving workforce sustainability, retention, and quality of patient care. Understanding how occupational

factors shape work ability among shift nurses in Lahore is therefore essential for designing targeted interventions and strengthening hospital workforce policies.

1. Materials and Methods

2.1 Research Design and Sample

A cross-sectional descriptive study was conducted among 160 registered nurses working 8- and 12-hour rotating and fixed shifts at Sir Ganga Ram Hospital, Mayo Hospital, and Services Hospital, Lahore. Eligible participants were registered nurses with at least one year of clinical experience, excluding nurse managers or supervisors due to differing roles. A convenience sampling approach was used, and data were collected from nurses available during various shift hours to ensure equal participation opportunities.

2.2 Measures

Data were collected through a demographic sheet covering age, gender, marital status, education, experience, department, and shift type. Two validated instruments were used:

- Work Ability Index (WAI) to assess nurses' physical, mental, and social capacity to meet job demands.
 - Mueller/McCloskey Satisfaction Scale (MMSS) to measure job satisfaction across domains such as scheduling, rewards, co-worker relationships, and professional opportunities.
- Both instruments have strong reliability and validity, and have been widely used in nursing and occupational health research.

2.3 Data Collection Procedure

Nurses were approached during different shifts, informed about the study purpose, and assured of voluntary participation, anonymity, and confidentiality. After written consent, participants received questionnaires (demographic form, WAI, MMSS) in sealed envelopes, completed them onsite, and returned them to the research team.

2.4 Data Analysis

Data were analyzed using SPSS (Version 25). Descriptive statistics summarized sample

characteristics. Pearson correlations assessed relationships between work ability and job satisfaction, while independent t-tests compared

outcomes across shift types. Results were interpreted with caution due to sample size limitations.

2. Results

Table 1. Descriptive Characteristics of Nurse Participants (n = 160)

Participants' Characteristics	Frequency (%)	M (SD)	Range
Age (years)	—	29.2 (5.2)	22–46
Work Experience (years)	—	6.01 (4.3)	1–26
Marital Status			
Single	73 (45.6%)	—	—
Married/Other	87 (54.4%)	—	—
Educational Level			
Diploma	18 (11.3%)	—	—
BSN	117 (73.1%)	—	—
Post RN BSN	25 (15.6%)	—	—
Presence of Children in Home			
Yes	64 (40.0%)	—	—
No	96 (60.0%)	—	—
Working Shift			
8-hour shift	102 (63.8%)	—	—
12-hour shift	58 (36.2%)	—	—
Work Setting			
Emergency	14 (8.8%)	—	—
Pediatrics	28 (17.5%)	—	—
Maternity/Delivery	21 (13.1%)	—	—
Medical/Surgical Ward	34 (21.3%)	—	—
Operation/Recovery	16 (10.0%)	—	—
Intensive Care Units	41 (25.6%)	—	—
Outpatient/Other	6 (3.7%)	—	—
Living Place			
Same city as workplace	68 (42.5%)	—	—
Other city	92 (57.5%)	—	—

Table 1 presents the demographic and occupational characteristics of 160 registered nurses working in major teaching hospitals of Lahore. Participants had an average age of 29.2 years and an average work experience of 6 years. More than half were married, and the majority held a BSN degree, followed by Post RN BSN and Diploma qualifications. Most nurses did not have children at home and predominantly worked 8-hour shifts. Nurses were distributed

across various clinical units, with the highest representation from intensive care units, medical-surgical wards, and pediatric departments. Over half of the participants commuted from cities other than their workplace, indicating notable travel demands.

Table 2. Scheffé Post-Hoc Test Comparing Work Ability Across Shift Types (n = 160)

(I) Work Shift	(J) Work Shift	Mean Difference (I-J)	Std. Error	p-value
Fixed 8-hour	Rotating 8-hour	-0.99321	1.14044	.859
Fixed 8-hour	Fixed 12-hour	3.26099	1.62645	.261
Fixed 8-hour	Rotating 12-hour	3.98172*	1.34622	.034
Rotating 8-hour	Fixed 12-hour	4.25420*	1.31716	.016
Rotating 8-hour	Rotating 12-hour	4.97493*	0.94968	.000
Fixed 12-hour	Rotating 12-hour	0.72073	1.49887	.972

*Significant at $p < .05$

The results show that 12-hour rotating shift nurses had significantly lower work ability scores when compared to those working fixed 8-hour, fixed 12-hour, and rotating 8-hour shifts ($p < .05$). This aligns with Table 1, where most nurses worked 8-hour shifts, and supports the study's purpose by demonstrating that extended and rotating shift schedules are associated with reduced work ability among nurses in Lahore. These findings emphasize the occupational burden linked to prolonged and irregular shift patterns.

Table 3. Pearson Correlation Coefficients Between Demographic Variables, Work Ability (WAI), Job Satisfaction (MMSS), and Work Shift (n = 160)

Variable	WAI Total Score	MMSS Total Score	Work Shift
Age	-0.370**	-0.307**	-0.309**
Work Experience (years)	-0.313**	-0.190**	-0.315**
Marital Status	-0.141**	-0.061	-0.166**
Educational Level (Diploma, BSN, Post RN BSN)	0.028	0.023	-0.020
Work Shift (8 hr / 12 hr)	-0.255**	-0.025	0.264**
Work Setting	0.070	0.104	-0.009
Living Place (same city/other city)	0.054	-0.087	0.121*
Work Ability (WAI)	1	0.347**	0.074
Job Satisfaction (MMSS)	0.347**	1	-0.002

**Correlation significant at $p < .01$

*Correlation significant at $p < .05$

Table 3 presents the correlation patterns between demographic factors, work ability, job satisfaction, and shift type among 160 nurses. Work ability showed significant negative correlations with age, work experience, marital status, and 12-hour shift schedules, indicating that older, more experienced, and married nurses, as well as those working longer shifts, tended to have lower work ability. Job satisfaction demonstrated a moderate positive association with work ability, suggesting that higher satisfaction contributes to better functional capacity. Shift type was also significantly correlated with age, experience, and living place, revealing that nurses commuting from other cities and those with longer tenure were more

likely to work 12-hour shifts. Overall, the findings highlight that both demographic and occupational factors play a meaningful role in shaping nurses' work ability and satisfaction levels.

3. Discussion

The negative associations found between work ability, age, work experience, and 12-hour shifts are consistent with international evidence showing that prolonged and irregular shift schedules place significant strain on nurses' physical and psychological resources. Research confirms that shift work contributes to circadian disruption, fatigue, and increased psychosocial stress, which collectively reduce performance and functional capacity over time (Elovainio et al., 2010; Silva et

al., 2012). Similar declines in work ability among older and more experienced nurses have been reported in Taiwan, where accumulated workload and age-related changes further exacerbate the burden of demanding clinical environments (Chiu et al., 2007). These patterns reinforce the importance of considering age and tenure when designing staffing models and scheduling policies. The moderate positive association between work ability and job satisfaction aligns with literature showing that supportive work environments strengthen both psychological well-being and professional functioning among nurses. Studies from Jordan demonstrate that higher job satisfaction is linked to lower burnout, stronger organizational commitment, and better retention outcomes (Hamaideh, 2011; Raddaha et al., 2012). Similarly, the original developers of the MMSS emphasize that satisfaction with professional opportunities, co-worker support, and scheduling flexibility improves morale and engagement, contributing to greater work effectiveness (Mueller & McCloskey, 1990). Therefore, the current findings suggest that enhancing satisfaction—particularly through manageable workloads, supportive supervision, and fair scheduling—may enhance overall work ability.

The association between shift type, living place, and reduced work ability also reflects structural challenges within nursing systems in lower-middle-income settings. Nurses commuting from other cities often face extended travel times and reduced rest, which can intensify fatigue and diminish their capacity to cope with demanding shifts, as similarly observed in emergency care and hospital-based studies worldwide (Ruitenburg et al., 2012; Santos et al., 2012). Furthermore, evidence from Jordan highlights that organizational conditions, including staffing shortages and limited support, adversely influence nurses' satisfaction and commitment, ultimately affecting functional performance (Saleh et al., 2014). Together, these findings underscore the interconnected nature of occupational demands, personal circumstances, and satisfaction levels in shaping work ability, emphasizing the need for system-level reforms in scheduling, staffing, and workplace support.

4. Conclusion

The findings of this study demonstrate that nurses' work ability is substantially influenced by both demographic and occupational factors, with older age, longer work experience, and 12-hour rotating shifts emerging as significant contributors to reduced functional capacity. The strong positive association between job satisfaction and work ability further highlights the importance of supportive work environments, manageable workloads, and fair scheduling practices. Additionally, nurses commuting from other cities and those working in demanding clinical units face added strain, reinforcing the need for organizational strategies that address fatigue, staffing adequacy, and shift management. Overall, the results underscore the necessity of targeted interventions aimed at improving work conditions, enhancing job satisfaction, and optimizing shift schedules to sustain the health, performance, and long-term retention of nursing staff.

References

- Blachowicz, E., & Letizia, M. (2006). The challenges of shift work. *Medsurg Nursing*, 15(5), 274–280.
- Camerino, D., Conway, P. M., Sartori, S., et al. (2008). Factors affecting work ability in day and shift-working nurses. *Chronobiology International*, 25(2), 425–442. <https://doi.org/10.1080/07420520802118236>.
- Chiu, M. C., Wang, M. J., Lu, C. W., Pan, S. M., Kumashiro, M., & Ilmarinen, J. (2007). Evaluating work ability and quality of life for clinical nurses in Taiwan. *Nursing Outlook*, 55(6), 318–326. <https://doi.org/10.1016/j.outlook.2007.07.002>
- Elovainio, M., Kuusio, H., Aalto, A. M., Sinervo, T., & Heponiemi, T. (2010). Insecurity and shiftwork as characteristics of negative work environment: Psychosocial and behavioural mediators. *Journal of Advanced Nursing*, 66(5), 1080–1091. <https://doi.org/10.1111/j.1365-2648.2010.05265.x>

- Estryn-Béhar, M., & Van der Heijden, B. I. (2012). Effects of extended work shifts on employee fatigue, health, satisfaction, work/family balance, and patient safety. *Work*, 41(Suppl 1), 4283-4290.
- Hamaideh, S. H. (2011). Burnout, social support, and job satisfaction among Jordanian mental health nurses. *Issues in Mental Health Nursing*, 32(4), 234-242. <https://doi.org/10.3109/01612840.2010.546494>
- Hasselhorn, H., Tackenberg, P., & Muller, B. (2003). In H. Hasselhorn, P. Tackenberg, & B. Muller (Eds.), *Working conditions and intention to leave profession among nursing staff in Europe* (pp. 115-124). Nurses Early Exit Study.
- Ilmarinen, J. (2009). Work ability—A comprehensive concept for occupational health research and prevention. *Scandinavian Journal of Work, Environment & Health*, 35(1), 1-5. <https://doi.org/10.5271/sjweh.1304>
- Ilmarinen, J., & Tuomi, K. (2004). Past, present and future of work ability. In J. Ilmarinen & S. Lehtinen (Eds.), *People and Work* (pp. 1-25). Finnish Institute of Occupational Health.
- Mueller, C. W., & McCloskey, J. C. (1990). Nurses' job satisfaction: A proposed measure. *Nursing Research*, 39(2), 113-117. <https://doi.org/10.1097/00006199-199003000-00014>
- Raddaha, A., Ab, A., Jafar, A., et al. (2012). Jordanian nurses' job satisfaction and intention to quit. *Leadership in Health Services*, 25(3), 216-231. <https://doi.org/10.1108/17511871211247651>
- Ruitenburg, M. M., Frings-Dresen, M. H., & Sluiter, J. K. (2012). The prevalence of common mental disorders among hospital physicians and their association with self-reported work ability: A cross-sectional study. *BMC Health Services Research*, 12, 292. <https://doi.org/10.1186/1472-6963-12-292>
- Saberi, H. R., & Moravveji, A. R. (2010). Gastrointestinal complaints in shift-working and day-working nurses in Iran. *Journal of Circadian Rhythms*, 8, Article 9. <https://doi.org/10.1186/1740-3391-8-9>
- Saleh, M., Darwado, A., & Al-Hussami, M. (2014). Organizational commitment and work satisfaction among Jordanian nurses: A comparative study. *Life Science Journal*, 11(2), 31-36.
- Santos, Y., Porto, F., Marques, L., Tomaz, A., Toledo, R., & Lucena, N. (2012). Assessment of work ability of health professionals in the mobile emergency unit. *Work*, 41(Suppl 1), 778-782.
- Silva, A., Marqueze, E., Rotenberg, L., Fischer, F., & Moreno, C. (2012). Shift workers in electrical systems control rooms: Job satisfaction and work ability. *Sleep Science*, 5(2), 49-55.
- Tuomi, K., Ilmarinen, J., Jahkola, A., Katajarinne, L., & Tulkki, A. (1998). Work Ability Index. Finnish Institute of Occupational Health.
- van den Berg, T. I., Elders, L. A., de Zwart, B. C., & Burdorf, A. (2009). The effects of work-related and individual factors on the Work Ability Index: A systematic review. *Occupational and Environmental Medicine*, 66(4), 211-220. <https://doi.org/10.1136/oem.2008.039883>
- West, S., Boughton, M., & Byrnes, M. (2009). Juggling multiple temporalities: The shift work story of mid-life nurses. *Journal of Nursing Management*, 17(1), 110-119. <https://doi.org/10.1111/j.1365-2834.2008.00920.x>