KARISMAVIT Health Journal (KHJ)
Research Article
Vol. 1 No. 1 March, 2026
e-ISSN: xxxxxx

Demographic Factors and Healthcare Worker Performance: A Cross-Sectional Study in Primary Healthcare

Windi Angriani[1], Niluh Desy Purnamasari[1], Fitriani[1*]
[1]Departments of Public Health, Indonesia Jaya College of Health Science, Indonesia

*Corresponding author: fitridafer91@gmail.com

Article History

Received: January 21,2026
Revised: February 10, 2026
Accepted: March 7, 2026

DOI:

ABSTRACT

Introduction: Healthcare worker performance plays an important role in determining the quality and effectiveness of healthcare services. Understanding the factors associated with officer performance is essential for improving workforce productivity and healthcare service delivery, particularly in primary healthcare settings.
Objectives: This study aimed to analyze the association between respondent characteristics (gender, age, education level, and employment status) and officer performance.
Methods: An analytical cross-sectional study was conducted among 50 healthcare officers working at the Baliase Community Health Center, Sigi Regency in Indonesia in 2025. Total sampling was applied to include all eligible respondents. Data were collected using a structured questionnaire consisting of respondent characteristics and performance assessment. Descriptive analysis was performed using frequencies and percentages. The association between respondent characteristics and officer performance was analyzed using the chi-square test with a significance level of $p < 0.05$
Results: The majority of respondents were female (88.0%) and aged below 30 years (56.0%). Almost all respondents had higher education (98.0%), and employment status was equally distributed between civil servants and contract staff (50.0% each). Chi-square analysis showed that gender ($p = 0.368$), education level ($p = 1.000$), employment status ($p = 0.567$), and age ($p = 0.577$) were not significantly associated with officer performance.
Conclusion: Respondent characteristics were not significantly associated with officer performance. These findings suggest that organizational and workplace factors may play a more important role in influencing healthcare worker performance than demographic characteristics.

Keywords: Healthcare Worker, Performance, Demographic Characteristics, Primary Healthcare.

Publisher:
CV. Karismavit
Baitul Makmur Street, Palu City,
Central Sulawesi, Indonesia
Email: admin@karismavit.id

INTRODUCTION

Healthcare worker performance is a critical determinant of healthcare quality and patient safety. Effective health services depend on competent and productive healthcare workers who are able to deliver consistent and high-quality care across different service settings. The quality of healthcare delivery is strongly influenced by the ability of health personnel to perform their duties effectively and efficiently, particularly in primary healthcare facilities where resources are often limited. Poor performance among healthcare workers may reduce service effectiveness, increase the risk of medical errors, and negatively influence patient outcomes and satisfaction. Improving workforce performance has therefore become a priority in global health system strengthening programs and human resource development strategies. Previous studies have emphasized that workforce productivity is closely related to service quality and organizational effectiveness in healthcare institutions (1–3). Healthcare systems with well-performing personnel tend to

demonstrate better service coverage and improved patient outcomes. Evidence indicates that workforce burnout and professionalism directly influence care quality (4), while large-scale international studies have demonstrated that staffing adequacy and workforce education levels are significantly associated with reduced hospital mortality and improved patient safety (5).

Healthcare worker performance is influenced by a combination of individual characteristics, organizational environment, and psychosocial conditions. Organizational support, leadership effectiveness, and workplace environment have consistently been identified as important determinants of staff performance and productivity in healthcare settings (1,6,7). Supportive supervision, effective teamwork, and adequate staffing levels have been shown to improve employee motivation and service outcomes (8–10). In addition, occupational stress and unfavorable workplace conditions may reduce productivity and negatively affect healthcare service quality (11,12). Healthcare workers who experience high levels of job stress or low organizational support tend to demonstrate lower levels of performance and job satisfaction (12,13). Leadership practices and organizational culture also play important roles in maintaining workforce motivation and performance stability (14). These findings suggest that healthcare worker performance is a multidimensional concept that involves both individual capacity and organizational support systems. Therefore, evaluating the determinants of performance requires consideration of demographic and occupational factors alongside organizational influences.

Demographic characteristics such as age, gender, education level, and employment status are frequently examined as potential determinants of healthcare worker performance. Sociodemographic characteristics may influence professional competence, motivation, and work productivity among healthcare personnel (2,15). Education level is often associated with improved knowledge, technical skills, and clinical decision-making ability among health workers (16,17). Healthcare workers with higher educational attainment are generally expected to demonstrate better professional competence and service delivery performance (17). Nevertheless, empirical findings regarding the relationship between demographic characteristics and healthcare worker performance remain inconsistent (1,18). Age is often associated with professional experience and clinical judgment, whereas younger healthcare workers may demonstrate greater adaptability and technological competence (15). However, several studies have reported no significant association between age and healthcare worker performance (4,19). Similarly, gender differences have not consistently been associated with variations in work productivity or service quality (20). These inconsistencies indicate that demographic characteristics alone may not sufficiently explain variations in healthcare worker performance.

Employment status is another factor that may influence healthcare worker performance because differences in job security and organizational commitment may affect work motivation and productivity. Permanent employees generally have higher job security and institutional attachment, whereas contract staff may experience greater job uncertainty and lower organizational commitment (21). Despite these theoretical differences, several studies have suggested that employment status may not significantly influence performance when employees operate within similar organizational systems and working conditions (22,23). Performance outcomes may remain comparable when supervision systems, workloads, and organizational expectations are equivalent across employment categories (23). Evidence regarding the influence of demographic characteristics on healthcare worker performance remains limited, particularly in primary healthcare settings in developing countries where workforce conditions differ substantially from those in high-income settings. Understanding the relationship between demographic characteristics and healthcare worker performance is therefore important for designing effective workforce management strategies. Therefore, this study aimed to analyze the association between respondent characteristics (gender, age, education level, and employment status) and officer performance using chi-square analysis.

METHODS

Study Design and Setting

This study employed an analytical cross-sectional design to examine the association between respondent characteristics and officer performance. The study was conducted at the Baliase Community Health Center, Sigi Regency in Indonesia in April to July 2025. The cross-sectional design was selected because it allows the simultaneous measurement of independent and dependent variables within a defined population and is widely used in health workforce research to identify factors associated with employee performance.

Study Population and Sample

The study population consisted of healthcare officers working at the selected healthcare facility during the study period. Eligible respondents included officers who were actively working and willing to participate in the study. Respondents who were absent during data collection or had incomplete questionnaire responses were excluded from the analysis. A total sampling technique was applied, in which all eligible officers were included as respondents. The final sample consisted of 50 respondents.

Variables and Measurements

The dependent variable in this study was officer performance, which was categorized into good performance and poor performance based on the total performance score obtained from a structured questionnaire. The questionnaire consisted of several performance indicators related to work responsibility, service quality, and task completion. Performance scores were classified into good and poor categories using predetermined cutoff values. The independent variables included respondent characteristics: 1) Gender, categorized as male and female; 2) Age, categorized into <30 years, 30–40 years, and >40 years; 3) Education level,

categorized as higher education and vocational school; 3) Employment status, categorized as civil servant and contract staff. Respondent characteristics were obtained through a structured questionnaire completed by the respondents.

Data Collection Procedures

Data were collected using a structured questionnaire administered directly to respondents. The questionnaire consisted of two sections: respondent characteristics and performance assessment. Respondents completed the questionnaire independently after receiving an explanation about the study objectives and procedures. All completed questionnaires were checked to ensure completeness before data entry.

Data Analysis

Data were analyzed using statistical software. Descriptive analysis was performed to describe respondent characteristics using frequencies and percentages. Bivariate analysis was conducted using the chi-square test to determine the association between respondent characteristics (gender, age, education level, and employment status) and officer performance.

RESULTS

A total of 50 respondents participated in this study (**Table 1**). The majority of respondents were female (88.0%), while males accounted for 12.0% of the total sample. More than half of the respondents were aged below 30 years (56.0%), followed by those aged 30–40 years (36.0%) and above 40 years (8.0%). Almost all respondents had a higher education background (98.0%), whereas only 2.0% had vocational education. The distribution of employment status was equal between civil servants and contract staff, each representing 50.0% of respondents.

Table 1. Characteristics of Respondents (n = 50)

Variables	Categories	n	%
Gender	Female	44	88.0
	Male	6	12.0
Age	<30 years	28	56.0
	30–40 years	18	36.0
	>40 years	4	8.0
Education Level	Higher Education	49	98.0
	Vocational School	1	2.0
Employment Status	Civil Servant	25	50.0
	Contract Staff	25	50.0

Source: Primary Data

Table 2. Association Between Respondent Characteristics and Officer Performance

Variables	Categories	Poor Performance n (%)	Good Performance n (%)	Total	p-value
Gender	Male	1 (4.8)	5 (17.2)	6	0.368
	Female	20 (95.2)	24 (82.8)	44	
Education Level	Vocational School	0 (0.0)	1 (3.4)	1	1.000
	Higher Education	21 (100)	28 (96.6)	49	
Employment Status	Civil Servant	9 (42.9)	16 (55.2)	25	0.567
	Contract Staff	12 (57.1)	13 (44.8)	25	
Age	<30 years	13 (61.9)	14 (48.3)	27	0.577
	30–40 years	7 (33.3)	12 (41.4)	19	
	>40 years	1 (4.8)	3 (10.3)	4	

Source: Primary Data

Chi-square analysis (**Table 2**) was performed to determine the association between respondent characteristics and officer performance. Gender was not significantly associated with officer performance (p = 0.368). Female respondents represented the majority in both poor performance (95.2%) and good performance groups (82.8%). Education level was also not significantly associated with officer performance (p = 1.000). Nearly all respondents had higher education in both performance categories. Employment status showed no significant association with officer performance (p = 0.567). Civil servants accounted for 55.2% of respondents with good performance and 42.9% of respondents with poor performance. Age category was not significantly associated with officer performance (p = 0.577). Respondents aged below 30 years represented the largest proportion in both poor performance (61.9%) and good performance groups (48.3%). Overall, none of the respondent characteristics were significantly associated with officer performance.

DISCUSSION

This study examined the association between respondent characteristics (gender, age, education level, and employment status) and healthcare worker performance in primary healthcare facilities. The findings indicate that none of the examined demographic variables demonstrated a statistically significant association with performance outcomes. These results suggest that workforce performance may be shaped more strongly by organizational and systemic determinants than by individual sociodemographic attributes.

Gender was not significantly associated with performance. This finding is consistent with previous research indicating that productivity and quality of care are primarily influenced by competence, work environment, and institutional systems rather than biological sex differences (1,20). While gender disparities may influence career progression or leadership representation, routine clinical performance tends to remain comparable when healthcare workers operate within standardized protocols and equivalent supervision systems (18). In structured primary healthcare environments, performance measurement is often competency-based, which may reduce gender-related variation.

Age also did not show a significant relationship with performance. Although older healthcare workers may possess greater clinical experience and professional judgment, younger personnel often demonstrate stronger adaptability to technological innovation and updated clinical guidelines (15). These complementary strengths may neutralize potential age-based performance gaps. Similar findings have been reported in previous healthcare workforce studies showing inconsistent associations between age and job performance (4,19). This reinforces the argument that performance stability in healthcare settings depends more on continuous professional development and supportive institutional systems than on chronological age alone.

Education level, theoretically linked to improved knowledge and technical competence (16,17), was likewise not significantly associated with performance in this study. While higher educational attainment may enhance analytical and decision-making capacity, standardized service delivery protocols in primary healthcare facilities may minimize variability in observable performance. Moreover, structured supervision and ongoing training programs can mitigate competency differences among staff with varying educational backgrounds. Evidence from workforce performance literature indicates that formal qualifications do not always directly translate into measurable improvements in job productivity without adequate organizational reinforcement (7,22).

Employment status (permanent versus contract) was similarly unrelated to performance outcomes. Although permanent employment is often associated with stronger job security and organizational commitment (21), empirical evidence suggests that performance differences diminish when supervision, workload distribution, and evaluation systems are standardized across employment categories (23,24). Motivation and retention are influenced not only by contractual status but also by recognition systems, leadership practices, and work climate (7). These findings support the broader human resource management perspective that organizational culture and management quality exert greater influence on performance than employment classification alone.

Collectively, the findings emphasize that healthcare worker performance is a multidimensional construct embedded within complex organizational systems. Contemporary human resource for health frameworks highlight leadership quality, teamwork effectiveness, supervision strategies, and workload balance as primary determinants of workforce productivity (8,13,14,25–27). When these structural components function effectively, demographic differences may have minimal impact on performance variability. This systems-oriented interpretation aligns with global health workforce strengthening strategies that prioritize institutional capacity building over purely individual-level interventions.

The absence of significant associations between demographic characteristics and performance carries important policy implications. First, workforce management strategies in primary healthcare should prioritize strengthening organizational systems rather than focusing recruitment policies solely on demographic profiles. Investment in supportive supervision models, structured performance appraisal systems, and continuous professional development may yield greater returns in service quality improvement.

Second, policymakers should enhance leadership development programs at the facility level. Collective and transformational leadership approaches have been shown to foster high-quality care cultures and improve staff engagement (14). Strengthening managerial competencies among primary healthcare leaders may therefore contribute substantially to performance optimization.

Third, institutionalizing equitable workload distribution and clear clinical protocols may help maintain consistent performance across diverse staff groups. Evidence suggests that adequate staffing patterns and positive practice environments significantly influence service quality and workforce stability (5,13,28). Integrating workforce planning with quality assurance systems could reduce performance disparities and enhance patient outcomes.

Finally, performance improvement initiatives should adopt a systems-based approach consistent with global human resource for health recommendations (3,26). Rather than targeting demographic subgroups, policies should focus on strengthening governance, accountability mechanisms, supportive supervision, and team-based care models. Such structural interventions are more likely to produce sustainable improvements in healthcare service delivery.

This study employed a cross-sectional design, limiting causal inference between respondent characteristics and performance. Additionally, performance assessment may be influenced by institutional evaluation mechanisms and reporting bias. Future longitudinal research is recommended to explore the interaction between demographic characteristics, organizational climate, job satisfaction, and leadership style. Mixed-method approaches may further clarify contextual mechanisms influencing workforce productivity in primary healthcare settings.

CONCLUSION

This study revealed that characteristics such as gender, age, education, and employment status did not significantly impact the performance of healthcare workers in primary care facilities. This suggests that demographic factors alone are unlikely to determine workforce effectiveness. Instead, elements related to the organization and work environment, such as leadership quality, supervision, teamwork, and the overall workplace atmosphere, appear to be more influential in shaping employee productivity and the quality of care provided. Therefore, strategies aimed at improving healthcare worker performance should prioritize improving organizational structures, offering ongoing professional development, and encouraging supportive management practices in primary care settings.

ACKNOWLEDGEMENTS

The authors sincerely appreciate the Baliase Community Health Center for allowing them to carry out this research. They are also grateful to all the respondents who willingly took part in the study and contributed essential information that greatly supported the research.

AUTHORS' CONTRIBUTIONS

WA was responsible for the conceptualization and design of the study, development of the research methodology, data analysis, and preparation of the original manuscript draft. NDP contributed to study supervision, methodological refinement, and critical review and revision of the manuscript for important intellectual content. F participated in data collection, data management, verification of research findings, approved the final version of the manuscript, and agreed to be accountable for all aspects of the work.

DECLARATIONS

1. **Funding**

   This study did not receive any specific funding from public, commercial, or non-profit organizations.

2. **Use of Artificial Intelligence (AI)**

   The authors used artificial intelligence (AI) tools only to assist with language improvement and manuscript editing. All aspects of the study, including the research design, data analysis, interpretation of results, and conclusions, were conducted by the authors. The authors take full responsibility for the content of this manuscript.

3. **Conflict of Interest**

   The authors declare that they have no conflicts of interest related to this study.

BIBLIOGRAPHY

1. Yáñez-Araque B, Gómez-Cantarino S, Gutiérrez-Broncano S, López-Ruiz VR. Examining the Determinants of Healthcare Workers' Performance: A Configurational Analysis during COVID-19 Times. Int J Environ Res Public Health. 2021;18(11):5671. doi:10.3390/ijerph18115671.
2. Njororai F, Ganu D, Nyaranga KC, Wilberforce C. Role of Socio-Demographic and Environmental Determinants on Performance of Community Health Workers in Western Kenya. Int J Environ Res Public Health. 2021;18(21):11707. doi:10.3390/ijerph182111707.
3. Dieleman M, Harnmeijer J. Improving Health Worker Performance: In Search of Promising Practices [Internet]. 2006. Available from: https://research.vu.nl/en/publications/improving-health-worker-performance-in-search-of-promising-practi/.
4. Khullar D. Burnout, Professionalism, and The Quality of US Health Care. JAMA Health Forum. 2023;4. doi:10.1001/jamahealthforum.2023.0024.
5. Aiken LH, Sloane DM, Bruyneel L. Nurse Staffing and Education and Hospital Mortality in Nine European Countries. The Lancet. 2014;383(9931):1824–30. doi:10.1016/S0140-6736(13)62631-8.
6. Liu D, Wang H, Zhang W. Sociodemographic Characteristics, Occupational Characteristics, Motivational Factors, and Job Satisfaction Among Primary Health Service Practitioners. BMC Prim Care. 2025;26:24. doi:10.1186/s12875-025-02714-3.
7. Franco LM, Bennett S, Kanfer R, Stubblebine P. Determinants and Consequences of Health Worker Motivation in Hospitals in Jordan and Georgia. Soc Sci Med. 2004;58(2):343–55. doi:10.1016/s0277-9536(03)00203-x.
8. Kok MC, Broerse JEW, Theobald S, Ormel H, Dieleman M, Taegtmeyer M. Performance of Community Health Workers: Situating Their Intermediary Position Within Complex Adaptive Health Systems. Hum Resour Health. 2017;15:59. doi:10.1186/s12960-017-0234-z.
9. Reeves S, Harris R. Interprofessional Teamwork in Health and Social Care: Key Tensions and Future Possibilities. Berlin: De Gruyter; 2016.
10. Duffield C, Roche M, Diers D, Catling C, Blay N. Staffing, Skill Mix and The Model of Care. J Clin Nurs. 2010;19:2242–51. doi:10.1111/j.1365-2702.2010.03225.x.

11. Deng J, Guo Y, Ma T. How Job Stress Influences Job Performance among Chinese Healthcare Workers: A Cross-Sectional Study. Environ Health Prev Med. 2019;24:2. doi:10.1186/s12199-018-0758-4.
12. Lu H, While AE, Barriball KL. Job Satisfaction among Nurses: A Literature Review. Int J Nurs Stud. 2005;42(2):211–27. doi:10.1016/j.ijnurstu.2004.09.003.
13. Van Bogaert P, Clarke S, Willems R, Mondelaers M. Nurse Practice Environment, Workload, Burnout, Job Outcomes, and Quality of Care in Psychiatric Hospitals. J Adv Nurs. 2013;69(7):1515–24. doi:10.1111/jan.12010.
14. West MA, Lyubovnikova J, Eckert R, Denis J. Collective Leadership for Cultures of High Quality Health Care. J Organ Eff People Perform. 2014;1(3):240–60. doi:10.1108/JOEPP-07-2014-0039.
15. He Z, Cheng Z, Fu H. Factors Associated with The Competencies of Public Health Workers in Township Hospitals. Int J Environ Res Public Health. 2015;12(11):14244–59. doi:10.3390/ijerph121114244.
16. Kim YK, Yoon JH, Lee W. Differences in The Performance of Health Officers at The Workplace According to Their Qualifications. Ann Occup Environ Med. 2018;30:35. doi:10.1186/s40557-018-0246-8.
17. Leggat SG. Effective Healthcare Teams Require Effective Team Members: Defining Teamwork Competencies. BMC Health Serv Res. 2007;7:17. doi:10.1186/1472-6963-7-17.
18. Lin WQ, Wu J, Yuan LX. Workplace Violence and Job Performance among Community Healthcare Workers in China. Int J Environ Res Public Health. 2015;12(11):14872–86. doi:10.3390/ijerph121114872.
19. Mosadeghrad AM. Factors Influencing Healthcare Service Quality. Int J Health Policy Manag. 2014;3(2):77–89. doi:10.15171/ijhpm.2014.65.
20. Newman MA. Career Advancement: Does Gender Make a Difference? Am Rev Public Adm. 1993;23(4):361–84. doi:10.1177/027507409302300404.
21. Benach J, Vives A, Amable M. Precarious Employment: Understanding an Emerging Social Determinant of Health. Annu Rev Public Health. 2014;35:229–53. doi:10.1146/annurev-publhealth-032013-182500.
22. Salim TG. Determinants of Employee Performance. Int J Nurs Health Serv. 2021;4:505. doi:10.35654/ijnhs.v4i6.505.
23. Jafar M, Shoukat A. Factors Affecting Performance of Healthcare Workers During COVID-19 in Pakistan. Space Cult India. 2020;8:62–73. doi:10.20896/saci.v8i2.1059.
24. Willis-Shattuck M, Bidwell P, Thomas S. Motivation and Retention of Health Workers in Developing Countries: A Systematic Review. BMC Health Serv Res. 2008;8:247. doi:10.1186/1472-6963-8-247.
25. Rowe SY, Ross-Degnan D, Peters DH. The Effectiveness of Supervision Strategies to Improve Health Care Provider Practices In Low- and Middle-Income Countries. Hum Resour Health. 2022;20:1. doi:10.1186/s12960-021-00683-z.
26. Perry HB, Zulliger R, Rogers MM. Community Health Workers in Low-, Middle-, and High-Income Countries. Annu Rev Public Health. 2014;35:399–421. doi:10.1146/annurev-publhealth-032013-182354.
27. Saragih RS, Kartasurya MI, Surjoputro A, Iswanti DI. Determinants of Excellent Service Performance in Nurses: A Cross-Sectional Study. J Nurs Pract. 2025;8(3):525–33. doi:10.30994/jnp.v8i3.627.
28. Dall'Ora C, Griffiths P, Ball J, Simon M, Aiken LH. Association of 12 h Shifts and Nurses' Job Satisfaction, Burnout and Intention to Leave. BMJ Open. 2015;5(9):e008331. doi:10.1136/bmjopen-2015-008331.