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Determinants of Health Worker Performance in a Primary Health Center: The Roles of Reinforcement, Competence, and Workload in Tarakan City, Indonesia

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ABSTRACT

Background: Health worker performance in primary health care (PHC) is central to service quality and responsiveness, but is shaped by individual capability and work conditions. Objective: To examine associations of reinforcement, competence, and workload with performance at Karang Rejo Primary Health Center (Puskesmas), Tarakan, Indonesia. Methods: A cross-sectional survey included 107 health workers selected by simple random sampling from 146 staff. Reinforcement (feedback and recognition), competence (knowledge, skills, and attitudes), workload (demands relative to time, staffing, and resources), and performance (task execution, timeliness, quality, and procedural adherence) were measured using a structured questionnaire and categorized into ordered levels (poor–moderate–good; workload: light–moderate–heavy). Ordinal regression tested predictor–outcome associations. Results: Good reinforcement and competence were reported by 53.3% and 54.2% of respondents, respectively; 47.7% reported light workload. Performance was almost evenly distributed between good (49.5%) and moderate (48.6%). In ordinal regression, reinforcement ($p = 0.016$), competence ($p = 0.007$), and workload ($p = 0.016$) were each significantly associated with performance. Conclusions: These cross-sectional findings indicate that competence, reinforcement, and workload are priority levers for performance improvement. Facility leaders should combine supportive supervision and recognition, continuous competence development, and routine workload review to shift moderate performance toward good, and sustain safe, efficient service delivery.

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INTRODUCTION

Primary Health Care (PHC) is widely recognized as the most effective and equitable pathway to achieve universal health coverage and the Sustainable Development Goals because it emphasizes first-contact care, continuity, coordination, and a whole-of-community approach (World Health Organization [WHO] & United Nations Children's Fund [UNICEF], 2018). In Indonesia, the primary health center (Puskesmas) is mandated to provide comprehensive community-oriented services and to coordinate primary care programs; its governance and service scope are defined through national regulation, including Permenkes No. 19 Tahun 2024 on the organization of Puskesmas (Kementerian Kesehatan Republik Indonesia, 2024). Consequently, the performance of Puskesmas staff becomes a central factor in how well PHC goals are translated into day-to-day service delivery.

Within primary health care (PHC) settings, health workers' performance is a critical lever for improving service quality, patient experience, and overall system responsiveness—outcomes that are central to achieving universal health coverage (UHC) and the Sustainable Development Goals. High-performing PHC teams are consistently associated with better continuity, comprehensiveness, and coordination of care, which in turn shape patient-perceived quality and trust in services (WHO & UNICEF, 2018). From a quality-of-care perspective, performance influences not only technical quality (e.g., adherence to clinical standards) but also interpersonal quality (e.g., respectful communication), both of which are core elements of service quality frameworks (Donabedian, 1988; Institute of Medicine, 2001). Evidence syntheses further show that patient experience is not merely a "soft" outcome; it is linked to service utilization, adherence, and clinical effectiveness, making performance improvement a practical pathway to strengthening PHC outcomes (Doyle et al., 2013). In parallel, system responsiveness—often discussed in terms of dignity, prompt attention, autonomy, and communication—depends heavily on frontline workforce behavior and facility-level work processes (World Health Organization, 2000).

Global policy discussions consistently position the health and care workforce as central to health system performance and resilience, particularly for strengthening primary care delivery and ensuring equitable access (World Health Organization, 2024). This emphasis reflects the recognition that workforce performance is a proximate driver of service readiness, quality improvement capacity, and system adaptability under shocks (World Health Organization, 2016). Notably, the push for resilient PHC has highlighted that workforce investments (training, supportive supervision, retention, and fair work conditions) are not optional add-ons but core system functions that enable sustained performance at scale (World Health Organization, 2016; WHO & UNICEF, 2018).

Yet, sustained performance improvement at the facility level remains challenging because performance is multidimensional and reflects the interaction of individual capability and motivation with work design, available resources, and demand pressures. Contemporary performance theory distinguishes task performance from contextual and adaptive performance, implying that "good performance" in PHC extends beyond completing clinical tasks to include teamwork, initiative, and adaptive behaviors in resource-constrained environments (Campbell et al., 1993). From a work-system lens, competence (capability) and reinforcement (motivational and behavioral contingencies) operate within an organizational context where workload and competing program demands can erode attention, increase fatigue, and constrain discretionary effort. This aligns with established organizational frameworks suggesting that performance is shaped by (1) ability (knowledge and skills), (2) motivation (intrinsic and extrinsic drivers), and (3) opportunity/work design (resources, autonomy, and supportive structures) (Appelbaum et al., 2000; Deci & Ryan, 2000). In addition, the Job Demands–Resources (JD–R) framework explains why high workload and chronic demand pressure can undermine performance through strain pathways, while job resources—such as supportive supervision, feedback, recognition, and adequate tools—support motivation and sustained performance (Bakker & Demerouti, 2017). Taken together, these perspectives underscore why facility-level performance improvement requires interventions that jointly target competence development, reinforcement mechanisms, and workload/work design rather than relying on single-factor solutions (Bakker & Demerouti, 2017; World Health Organization, 2016).

In this study, "performance" is conceptualized as individual work performance in a health-care context, encompassing task performance (delivery of core clinical and administrative duties), contextual performance (collaboration, communication, and extra-role support), and adaptive performance (adjusting to changing demands), while minimizing counterproductive behaviors (Koopmans et al., 2014; Krijgsheld et al., 2022). Operationally, we focus on health workers' effectiveness in completing essential service tasks and meeting quality expectations in routine PHC practice, consistent with the multidimensional conceptualization of job performance in healthcare settings.

To explain variation in performance, we draw on Job Demands–Resources (JD–R) theory, which posits that job demands (aspects of work requiring sustained effort) can deplete energy and impair functioning, whereas job resources (aspects that support goal attainment, reduce demands, or stimulate learning) promote motivation and performance (Bakker & Demerouti, 2017; Bakker et al., 2023; Demerouti et al., 2001). In PHC facilities, reinforcement and competence can be treated as resources that strengthen motivation and capability, while workload represents a demand that can trigger strain and reduce effective functioning when it exceeds available capacity.

Reinforcement refers to managerial and organizational practices that strengthen desired behaviors through feedback, recognition, supervision, and—where applicable—material or nonmaterial incentives. Behavioral theory and organizational evidence indicate that contingent positive reinforcement and social recognition can produce meaningful improvements in task performance (Skinner, 1953; Stajkovic & Luthans, 2003). In health-care settings, interventions that combine supportive supervision, feedback, and on-the-job support are frequently used to improve primary care worker performance, although effects can vary across contexts and implementation designs (Vasan et al., 2017). Reviews of performance-based incentives also suggest heterogeneous impacts, underscoring the importance of specifying how reinforcement is operationalized and delivered (Lin et al., 2022).

Competence reflects the integration of knowledge, technical skills, and professional behaviors required to deliver safe and effective services. Health workforce frameworks emphasize competency-based development as essential for quality care and system strengthening, particularly when service demands evolve and resources are constrained (Frenk et al., 2010; Frank et al., 2010). In the Puskesmas context, competence is expected to enhance performance by improving clinical decision-making, increasing procedural accuracy, reducing rework and errors, and enabling more efficient coordination across programs and disciplines.

Workload represents the volume, pace, and complexity of work demands relative to available time, staffing, competencies, and material resources. In primary care, "workload" is rarely limited to patient volume alone; it also includes case-mix complexity, multitasking across clinical and administrative roles, coordination with programs and reporting requirements, and the growing documentation and information-processing burden that accompanies routine service delivery. When documentation and administrative tasks expand without commensurate staffing or workflow redesign, health workers experience "hidden workload" that competes directly with clinical time, compresses visit processes, and can shift effort away from patient-centered tasks and quality improvement activities (Nguyen et al., 2021; Wang et al., 2024). In operational terms, workload pressure is often expressed as time pressure—health workers must complete necessary clinical and non-clinical tasks within fixed schedules—an issue repeatedly linked to workplace stressors and downstream outcomes in primary care environments (Prasad et al., 2020).

From a theoretical perspective, the Job Demands–Resources (JD–R) framework explains why excessive workload can undermine performance: when demands (e.g., high patient flow, interruptions, time pressure, and administrative load) chronically exceed available resources (e.g., staffing, autonomy, supportive supervision, and functional systems), a strain pathway is activated that increases fatigue, emotional exhaustion, and cognitive overload—reducing the consistency and quality of task execution (Bakker & Demerouti, 2017; Demerouti et al., 2001). Under sustained time pressure, clinicians may rely more on heuristic (fast, intuitive) decision strategies rather than guideline-structured approaches, with empirical evidence showing that increased time pressure can reduce adherence to guideline-recommended history taking, examination, and counseling behaviors in primary care tasks (Tsiga et al., 2013). In practice, this means that when workload chronically

exceeds capacity, health workers may triage or reprioritize tasks—protecting urgent clinical actions while delaying, shortening, or omitting other elements (e.g., preventive counseling, complete documentation, or follow-up planning)—which can gradually erode service completeness and perceived quality.

From a workforce-planning standpoint, the WHO Workload Indicators of Staffing Need (WISN) approach formalizes this capacity–demand problem by translating observed service activities into staffing requirements using activity standards. WISN's core premise is that safe and effective service delivery is more feasible when staffing levels and skill mix are aligned with actual workload patterns rather than relying only on crude population ratios, because misalignment can create persistent overload and unstable performance at the facility level (World Health Organization, 2023). Conceptually, this is consistent with a quality-and-performance view of primary care: workload is not merely an individual challenge, but a systems-design variable that can be modified through staffing, task distribution, workflow redesign, and supportive management practices.

Despite a growing international literature on performance determinants, empirical evidence from Indonesian PHC facilities—particularly outside major metropolitan areas—remains limited regarding the relative importance of reinforcement, competence, and workload when examined simultaneously within an explicit conceptual framework. This gap matters because facility leaders need actionable evidence about which modifiable work factors are most strongly linked to performance to prioritize interventions and allocate limited resources effectively. Notably, Indonesian evidence syntheses on community- and primary-care workforces highlight recurrent patterns of role expansion, broad activity portfolios, and perceived overburden, alongside system factors such as supervision, incentives, and enabling resources—suggesting that workload interacts with capability-building and reinforcement structures rather than operating in isolation (Nida et al., 2024). Therefore, examining workload together with competence (capability to perform tasks) and reinforcement (organizational cues and consequences that sustain desired behaviors) using a coherent model can strengthen the study's contribution by moving beyond "lists of factors" toward an integrated explanation of performance in real-world PHC settings.

Therefore, this study examines the associations between reinforcement, competence, and workload (predictors) and health workers' performance (outcome) at Karang Rejo Primary Health Center, Tarakan City. Based on the JD–R framework, we hypothesize that (H1) reinforcement is positively associated with performance, (H2) competence is positively associated with performance, and (H3) workload is negatively associated with performance. By testing these hypotheses in a real-world PHC setting, this study contributes to evidence-informed Puskesmas management by clarifying which modifiable work factors are most strongly linked to performance, thereby informing targeted interventions to strengthen service delivery and workforce effectiveness.

METHODS

Study Design and Setting

This analytical quantitative study used a cross-sectional design to examine the associations between reinforcement, competence, and workload (predictors) and health workers' performance (outcome) at Karang Rejo Primary Health Center (Puskesmas Karang Rejo) in Tarakan, Indonesia. The study population comprised all health workers registered at Karang Rejo Primary Health Center (N = 146). The sampling frame was the official staff roster. A total of 107 respondents were selected using simple random sampling and invited to participate. Participants were included if they provided informed consent and returned questionnaires that could be fully scored for the main study variables. Respondent characteristics relevant to interpretation (e.g., age group, sex, education level, professional role, and length of service) were recorded to describe the workforce context and to support assessment of potential confounding.

Variables and Operational Definitions

The dependent variable was health workers' performance, operationalized as the level of work performance in delivering primary care services (e.g., execution of core duties, service quality and timeliness, and adherence to procedural standards) and analyzed as an ordered outcome. The independent variables were: reinforcement, defined as perceived supervisory and organizational reinforcement that supports and strengthens desired work behaviors (e.g., structured feedback, recognition, and supportive supervision); competence, defined as the capability to perform job tasks encompassing relevant knowledge, skills, and professional attitudes; and workload, defined as perceived work demands relative to time, staffing, and available resources, consistent with the demand/strain pathway in Job Demands–Resources theory (Bakker & Demerouti, 2017). From a workforce-planning perspective, workload alignment is also conceptually consistent with the staffing–workload balance emphasized by World Health Organization through WISN guidance (World Health Organization, 2023).

Instruments, Scoring, and Categorization

Data were collected using a structured self-administered questionnaire consisting of two parts: (1) respondent characteristics and (2) multi-item measures of reinforcement, competence, workload, and performance. Each construct was scored by summing item responses so that higher total scores reflected higher levels of the construct. To support interpretability for facility management and to align with an ordinal modeling strategy, composite scores were categorized into ordered levels: reinforcement, competence, and performance were classified as poor, moderate, and good, while workload was classified as light, moderate, and heavy.

Instrument Development, Adaptation, and Pilot Testing

Questionnaire items were developed and/or adapted from relevant literature and measurement frameworks, then contextualized to the primary care setting via expert review by public health and primary care management professionals to ensure construct coverage and practical relevance. A forward–backward translation and reconciliation procedure was applied, followed by cognitive debriefing with a small group of health workers to confirm clarity and cultural appropriateness (Beaton et al., 2000). A pilot test was conducted to evaluate item readability, completion time, and preliminary measurement performance prior to the main data collection.

Validity and Reliability Procedures

Content validity was assessed during expert review to confirm that each item adequately represented the intended construct domain. Item-level validity was evaluated using pre-specified criteria (e.g., corrected item–total correlations), and items not meeting criteria were revised or removed. Internal consistency reliability for each scale was examined using Cronbach′s alpha (Cronbach, 1951).

Data Collection Procedure and Ethics

Data collection was conducted at the health center during routine working days. Trained research staff provided standardized instructions and emphasized voluntary participation. Participants completed the questionnaire privately and returned it in sealed envelopes to reduce social desirability and protect confidentiality. The study involved minimal risk and used survey data only. Participants received an information sheet and provided informed consent prior to participation. Confidentiality was maintained by removing personal identifiers and restricting data access to the research team. Ethical review status should be explicitly stated (approved/exempt/waived), including the reviewing body and reference number where applicable.

Statistical Analysis

Descriptive statistics summarized respondent characteristics and the distribution of reinforcement, competence, workload, and performance categories. The main inferential analysis used ordinal logistic regression under the proportional odds (cumulative logit) framework to estimate the association of reinforcement, competence, and workload with ordered performance levels (Agresti, 2010; Hosmer et al., 2013). Statistical significance was assessed using two-sided tests with $\alpha = 0.05$. Analyses were conducted using SPSS Version 25.

RESULTS OF STUDY

Table 1 shows that most health workers at Karang Rejo Community Health Center reported favorable conditions across the main study variables. Reinforcement and competence were predominantly rated as good (53.3% and 54.2%, respectively), with only a small minority in the poor category (3.7% and 1.9%), indicating that supportive workplace cues and perceived capability were generally adequate. Workload was distributed almost evenly between light (47.7%) and moderate (46.7%), while heavy workload was relatively uncommon (5.6%), suggesting that demand pressures were present for many staff but extreme overload was limited to a small subgroup. Performance was split nearly equally between good (49.5%) and moderate (48.6%), with very few respondents classified as poor (1.9%). Taken together, these patterns imply that the most actionable improvement opportunity is not correcting widespread low competence or weak reinforcement, but rather shifting a large proportion of moderate performance toward good performance–potentially through more consistent reinforcement practices and workload management for staff experiencing moderate-to-heavy demand.

Table 1. Frequency Distribution of Reinforcement, Competence, Workload, and Performance Among Health Workers at Karang Rejo Community Health Center, Tarakan City (N = 107)

Variable	Category	Frequency	Percentage (%)
Reinforcement	Good	57	53.3
	Moderate	46	43.0
	Poor	4	3.7
Competence	Good	58	54.2
	Moderate	47	43.9
	Poor	2	1.9
Workload	Light	51	47.7
	Moderate	50	46.7
	Heavy	6	5.6
Performance	Good	53	49.5
	Moderate	52	48.6
	Poor	2	1.9

Based on the results of the ordinal regression analysis (table 2), the p-value obtained was 0.016, which is lower than the significance level of 0.05 (p-value = 0.016 < 0.05). Therefore, the alternative hypothesis (H1) was accepted. This finding indicates that, partially, reinforcement has a statistically significant effect on the performance of health workers at Karang Rejo Community Health Center, Tarakan City. The results suggest that better implementation of reinforcement is associated with improved health worker performance.

The ordinal regression analysis showed a p-value of 0.007, which is below the significance threshold of 0.05 (p-value = 0.007 < 0.05). Accordingly, the null hypothesis (H0) was rejected and the alternative hypothesis (H1) was accepted. This finding provides evidence that competence has a significant partial effect on the performance of health workers at Karang Rejo Community Health Center, Tarakan City. In other words, improvements in health worker competence directly contribute to enhanced performance.

Based on the ordinal regression analysis, a p-value of 0.016 was obtained, which is less than 0.05 (p-value = 0.016 < 0.05). Thus, the null hypothesis (H0) was rejected and the alternative hypothesis (H1) was accepted. This indicates that, partially, workload has a significant effect on the performance of health workers at Karang Rejo Community Health Center, Tarakan City. The findings suggest that variations in workload levels are directly associated with health worker performance.

Table 2. Results of Ordinal Regression Analysis on Determinant Factors Influencing Health Worker Performance

No	Variable	Sig. (p-value)
1	Reinforcement	0.016
2	Competence	0.007
3	Workload	0.016

DISCUSSION

This study examined determinants of health worker performance in a primary care setting and found that reinforcement, competence, and workload were each significantly associated with performance in the ordinal regression model (reinforcement p = 0.016; competence p = 0.007; workload p = 0.016). Descriptively, most respondents reported good reinforcement (53.3%) and good competence (54.2%), nearly half reported light workload (47.7%), and performance was largely distributed between good (49.5%) and moderate (48.6%) categories. These patterns suggest that, within this facility context, performance differences are meaningfully tied to both capability (competence) and work conditions/management practices (reinforcement and workload).

Reinforcement is theoretically linked to performance because it strengthens desired work behaviors through feedback, recognition, and consequences that increase the likelihood of repeated high-quality task execution. In behavioral terms, reinforcement shapes work habits via learning mechanisms and sustained contingencies (Skinner, 1953), and meta-analytic organizational evidence indicates that reinforcement-based behavioral management is associated with improved task performance (Stajkovic & Luthans, 2003). In primary care, reinforcement often occurs through supportive supervision, recognition, clear performance expectations, and timely feedback–elements repeatedly emphasized as performance-improvement levers in low- and middle-income settings (Vasan et al., 2017).

The cross-tabulation pattern in this study is consistent with that mechanism: respondents reporting good reinforcement were more often in the good performance category (42.1%) compared with moderate reinforcement (34.6%), supporting the view that reinforcement helps translate daily effort into higher observable performance. Recent literature similarly suggests that structured incentives and recognition can improve performance-related outcomes among health workers, although the effectiveness varies by design, fairness, and alignment with intrinsic motivation (Lin et al., 2022). From a systems perspective, reinforcement can be seen as part of "high-performance work practices" that enhance role clarity, commitment, and discretionary effort, thereby improving service delivery consistency (Appelbaum et al., 2000; Deci & Ryan, 2000).

Competence is a proximal determinant of performance because it reflects the knowledge, skills, and judgment needed to deliver safe and effective care under routine constraints. Competency-based approaches emphasize that performance depends not only on "knowing," but also on applying skills consistently across clinical and organizational demands (Frank et al., 2010; Frenk et al., 2010). In this study, competence also showed the smallest p-value in the multivariable model (p = 0.007), indicating a robust association within the available evidence. Descriptively, respondents with good competence were frequently categorized with good performance (45.8%), consistent with the view that capability is a key driver of reliable task execution in primary care.

This finding aligns with broader healthcare performance literature in which competence is central to individual work performance (Koopmans et al., 2014) and is repeatedly identified as a critical determinant of healthcare job performance across roles and settings (Krijgsheld et al., 2022). Contextually, competence may matter even more in primary care because workers must manage diverse case mixes, multitask across programs, and make rapid decisions–conditions that amplify the performance returns of strong clinical reasoning and procedural skill.

Workload can undermine performance when job demands exceed available time, staffing, and system support–producing fatigue, cognitive overload, and shortcuts that reduce guideline adherence and service completeness. The Job Demands–Resources (JD–R) framework explains this "strain pathway," in which chronic demands (e.g., high patient flow, interruptions, time pressure, administrative load) deplete energy and attentional resources needed for consistent performance (Demerouti et al., 2001; Bakker & Demerouti, 2017; Bakker et al., 2023). Empirical evidence supports this mechanism: under time pressure, clinicians may reduce adherence to guideline-recommended behaviors in primary care tasks (Tsiga et al., 2013), and documentation/time pressure has been linked to constrained clinical processes (Prasad et al., 2020).

In this study, workload was statistically significant in the full model (p = 0.016). However, interpretation should be sensitive to the local distribution: most respondents reported light-to-moderate workload, while the heavy category was relatively small, which can limit precision and mask nonlinear relationships. Differences from other studies (where workload shows stronger negative effects) may reflect variations in staffing adequacy, task distribution, supervision, and administrative burden. In Indonesia, evidence syntheses emphasize that role expansion and broad activity portfolios can elevate perceived workload and interact with supervision and enabling resources (Nida et al., 2024), suggesting that workload effects may depend on whether reinforcement and competence-building structures buffer demand pressures.

While the statistical significance patterns support the conclusion that reinforcement, competence, and workload are relevant predictors, discussion of "importance" should be anchored in odds ratios and 95% confidence intervals, which quantify the magnitude and precision of associations in ordinal regression (Agresti, 2010). The current results section reports significance tests, but clearer interpretability–and stronger alignment with best practice–requires presenting and interpreting OR/CI for each predictor level, alongside model diagnostics (e.g., proportional odds/parallel lines test) so readers can assess whether predictors meaningfully shift the odds of being in higher performance categories.

This study contributes facility-level evidence from Tarakan City on how reinforcement, competence, and workload relate to performance when examined simultaneously in a primary health care context. The practical novelty lies in triangulating (a) descriptive distributions of modifiable work factors, (b) cross-tabulation patterns consistent with directional mechanisms, and (c) a multivariable ordinal model identifying that these factors remain relevant even when considered together. This is valuable for primary care leadership because improvement strategies often fail when they target only one lever (e.g., training) without addressing work design (workload) and motivational infrastructure (reinforcement).

Limitations

Several limitations should temper causal interpretation and generalizability. First, the cross-sectional design prevents establishing temporality; associations may reflect reverse causation (e.g., higher performers receiving more recognition). Second, reliance on self-report measures increases risk of common method bias and social desirability effects, potentially inflating associations between predictors and performance. Third, categorizing continuous/ordinal experiences into "good/moderate/poor" or "light/moderate/heavy" can reduce information, weaken statistical power, and create threshold effects that depend on chosen cut-points. Fourth, generalizability is limited because the study is facility-specific and may not represent other primary care centers with different staffing, leadership practices, or patient volume. Finally, to support stronger inference, the model should explicitly report effect sizes (OR/CI), proportional odds testing, and potential confounding controls (e.g., profession, tenure, age); absence of these elements limits interpretability and robustness assessment (Agresti, 2010; von Elm et al., 2007).

Implications for practice and prioritization

Given that all three predictors were significant in the multivariable model, improvement strategies should be multi-component. Practically, facility leaders should prioritize interventions based on the largest ORs (once reported), but the present evidence already supports three actionable pathways: (1) strengthen reinforcement systems through routine supportive supervision, timely feedback, and fair recognition; (2) invest in competency development tied to primary care task demands and observed performance gaps; and (3) manage workload through staffing and workflow redesign, including evidence-informed staffing tools such as WHO's WISN approach to align service demands with staffing requirements (World Health Organization, 2023). These recommendations align with workforce strategy emphasizing that performance improvement requires both capability development and enabling work environments (World Health Organization, 2016; World Health Organization, 2024).

CONCLUSIONS AND RECOMMENDATION

This study provides facility-level evidence from Karang Rejo Primary Health Center, Tarakan City, that health workers' performance is significantly associated with three modifiable determinants: reinforcement, competence, and workload. In the ordinal regression model, each determinant showed a statistically significant relationship with performance, indicating that performance differences within the facility are not explained by a single factor but reflect the combined roles of managerial practices (reinforcement), workforce capability (competence), and work demands (workload).

From a practical perspective, the findings imply three priority pathways for strengthening performance in primary care. First, facility leadership should institutionalize structured reinforcement through routine supportive supervision, timely feedback, transparent recognition, and fair reward mechanisms to sustain desirable work behaviors and service discipline. Second, managers should prioritize competence strengthening via continuous professional development, coaching, and periodic competency assessment to ensure that knowledge and skills translate into consistent task execution and adaptive performance. Third, performance improvement should be paired with workload management, including periodic workload analysis, task redistribution, workflow redesign, and administrative simplification, because lighter/manageable workload patterns were linked with better performance categories and may help reduce fatigue-related decrements in quality.

DECLARATION

Funding
Not applicable.

Conflicts of interest
The authors declare no conflict of interest.

Ethics approval and consent to participate
This study did not require formal ethical clearance because it was an observational study with minimal risk and did not involve any medical intervention. Data collection was conducted through questionnaires administered to health workers after obtaining informed consent. All participants were informed about the purpose of the study, and their participation was entirely voluntary. Confidentiality and anonymity of the respondents were strictly maintained, and all data were used solely for academic and research purposes.

Consent for publication
Not applicable.

Availability of data and materials
The datasets generated and analyzed during the current study are not publicly available due to confidentiality considerations but are available from the corresponding author on reasonable request.

Artificial Intelligence-Assisted Technology
Not applicable.

Authors' contributions:
Sri Wahyu Ekowati was responsible for developing the research idea and study design, conducting the data collection, performing the initial data analysis, and preparing the first draft of the manuscript. **Byba Melda Suhita** contributed to the analytical process, assisted in interpreting the study findings, and provided substantial revisions to strengthen the scientific content of the manuscript. **Prima Dewi Kusumawati** contributed to the literature synthesis, interpretation and contextualization of the findings, and refinement of the manuscript for clarity and coherence. All authors reviewed the manuscript, contributed to its final revision, and approved the version submitted for publication.

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ADDITIONAL INFORMATION

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