

Research Article

Analysis of the Need for Medical Record Labor Based on Workload in the Filiin Section of the Outpatient Clinic dr. Irma Malang

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Abstract

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A clinic is a health facility that provides medical services, in the form of basic medical and/or specialist medical. Organized by more than one type of health worker also led by a medical professional. Dr. Irma is a private clinic located on Tlogomas Highway No. 5, Malang City. The number of medical record officers at the outpatient clinic of dr. Irma Malang only consists of one officer. These problems cause a high workload at the dr. Irma Malang Clinic. In addition, the high workload is caused by: (1) medical record services in the registration section are served by nurses who at the same time help doctors treat patients; (2) Medical record officers in the filling section as well as assembling, coding and data reporting. This condition causes an imbalance in the workload and risks reducing service quality. The purpose of this study is to determine the number of medical record workers who must analyze the workload of each period based on the workload at the dr. Irma Malang Outpatient Clinic. The research method used is qualitative descriptive, with data collection techniques through direct observation, in-depth interviews, and documentation. Data was analyzed using the Workload Indicator of Staffing Need (WISN) approach, which is a method of calculating human resource needs based on available working hours, volume of activities, and working time standards.

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Introduction

Clinics constitute a crucial component of health systems by providing accessible front-line services, particularly for outpatient care where a large proportion of diagnostic, therapeutic, and preventive interventions are delivered. In many low- and middle-income countries, outpatient clinics function as the first point of contact for patients and act as gatekeepers to higher levels of care. Consequently, the reliability of administrative and clinical documentation becomes essential to ensure continuity, safety,

and accountability of healthcare services. The ability of clinics to deliver timely and high-quality services is strongly influenced by the adequacy, skill mix, and distribution of their workforce, including non-physician personnel whose work underpins clinical workflows. Workforce planning approaches that align staffing with actual workload have therefore become central to service quality, operational efficiency, and patient experience in outpatient settings (Al-Harbi et al., 2021; Okoroafor et al., 2023).

Medical records whether paper-based, electronic, or hybrid are foundational to safe and effective clinical care because they preserve patient identity, clinical history, diagnostic findings, treatments, and outcomes across encounters. Beyond direct patient care, medical records support medico-legal documentation, reimbursement and claims processing, quality assurance, disease surveillance, research, and organizational learning. When documentation is incomplete, delayed, or difficult to retrieve, downstream effects may include prolonged waiting times, duplication of diagnostic tests, reduced clinical decision accuracy, and compromised governance of care processes. These risks are amplified in outpatient environments characterized by high patient throughput, short consultation durations, and frequent transitions across service points such as registration, consultation, pharmacy, and referral units (Mulugeta et al., 2021; Alotaibi et al., 2024).

The medical record unit plays a critical operational role in ensuring that documentation is created, assembled, coded where applicable, stored securely, and retrieved promptly when needed. In paper-based and hybrid systems, filing and retrieval activities are particularly workload-intensive because they require meticulous classification, indexing, physical transport of records, and strict adherence to confidentiality procedures. Even in settings that have adopted electronic medical record systems, health information processes remain labor-dependent, including document scanning, data quality verification, metadata entry, and management of system workflow exceptions. The complexity of health information work has increasingly been recognized as health systems expand digital infrastructure while still relying on hybrid workflows during transitional phases (Alotaibi et al., 2024; Brouwer et al., 2021).

Health information management (HIM) workforce challenges have become more visible over the past five years as health systems respond to rising service demand, increasing documentation requirements, and accelerated

digital transformation. International workforce literature emphasizes that HIM roles require specialized competencies in data governance, privacy protection, clinical classification, interoperability, quality auditing, and health analytics. When staffing levels are insufficient or skill mix is inadequate, organizations may rely on informal task shifting, such as nurses or general administrative staff performing registration and documentation tasks. This practice may increase clinical workload, create inefficiencies, and introduce variability in documentation quality. Recent analyses underscore the need for strategic workforce planning that recognizes the evolving scope of HIM functions rather than treating medical records management as a static administrative activity (Al-Harbi et al., 2021; Kim et al., 2023).

Workload imbalance is a particularly salient issue in outpatient clinics, where patient volume may fluctuate substantially across days and seasons, and where administrative workload often peaks at registration and medical record retrieval points. High workload pressure has been associated with fatigue, reduced performance, and increased error rates risks that are especially consequential in medical record services because filing and assembling errors may lead to patient misidentification, missing documentation, or incomplete clinical histories. In the broader healthcare workforce, multiple studies conducted over the last five years have reported rising trends of burnout and work-related stress linked to increased workload and organizational strain. Although burnout research often focuses on clinical staff, the underlying mechanisms of workload pressure under resource constraints similarly apply to HIM personnel operating in high-throughput outpatient environments (Brouwer et al., 2021; Nguyen et al., 2023).

Evidence-based workforce planning has therefore gained renewed urgency, with global health organizations emphasizing methods that link staffing decisions to measurable service delivery demands. One of the most widely adopted approaches is the World Health

Organization's Workload Indicators of Staffing Need (WISN) method, which estimates staffing requirements based on available working time, workload components, activity standards, and allowance factors. Unlike staffing ratios that rely on fixed norms independent of local service volume and workflow design, WISN offers a facility-sensitive estimation that can identify staffing shortages, surpluses, and workload pressure levels. Over the last five years, WISN has been applied across diverse service units and countries to inform staffing policies, promote equity in workforce allocation, and strengthen governance of human resources for health (World Health Organization, 2020; Khamis et al., 2022).

Recent international empirical studies demonstrate the utility of WISN for quantifying workload pressure and staffing gaps in real-world healthcare settings. Workload-based staffing assessments in primary care and district-level facilities have shown that staff shortages are often concentrated in functions experiencing rapid demand growth, while some units may show relative surplus when service utilization patterns shift. These findings support the notion that staffing levels should be periodically recalibrated rather than remaining static, particularly when service mix and patient flow change. Importantly, WISN outputs have been shown to be actionable not only for recruitment decisions but also for task redistribution and workflow redesign (Okoroafor et al., 2023; Sharma et al., 2021).

In Southeast Asia and comparable regions, WISN has been used to identify workload-based staffing needs and to support policy dialogue on workforce distribution across healthcare facilities. A recurring finding is that WISN can reveal misalignment between nominal staffing structures and operational realities, such as situations in which staff are officially assigned to one unit but routinely perform tasks in another due to daily service pressures. Implementation studies further emphasize that WISN is most effective when it informs concrete managerial actions such as task-shifting guidelines, service reorganization, and budgeting rather than being

treated as a one-time measurement exercise. This perspective is particularly relevant for outpatient clinics, where service bottlenecks frequently arise at administrative and documentation stages (Okoroafor et al., 2023; World Health Organization, 2020).

Methodological reviews published in recent years argue that while WISN is a valuable workforce planning tool, it must be applied carefully given variability in activity standards, local workflows, and data quality. A recent review highlighted that WISN can support equitable workforce distribution and task-shifting decisions but also faces challenges related to implementation complexity and the need for reliable routine service statistics. For medical record functions where tasks may be fragmented across registration, filing, assembling, and reporting clear definition of workload components and time standards is therefore essential to ensure valid staffing estimates (Khamis et al., 2022; Nguyen et al., 2023).

Applications of workload-based staffing approaches are increasingly reported not only for nurses and physicians but also for allied health and support services. For example, a recent WISN based staffing framework developed for dietetic services in hospital settings demonstrated the method's adaptability to non-physician roles where service quality depends on the availability of specialized personnel. Such applications reinforce the relevance of WISN for medical record services, which similarly require specialized competencies and sustained availability to ensure timely documentation flow. Cross-context evidence supports the argument that workload-based approaches can strengthen planning for roles that are often underrepresented in conventional staffing models (Sharma et al., 2021; Kim et al., 2023).

Within hospital and clinic operations, documentation quality is increasingly linked to organizational performance indicators, including patient safety, claims accuracy, and audit readiness. Studies examining incomplete medical records have identified both operational and

human factors as major contributors, including unclear task allocation, time pressure, insufficient training, and poor coordination between units. When medical records are incomplete or delayed, clinical and managerial decision-making based on these records may be compromised. These findings indicate that medical record staffing and workflow should be viewed not merely as administrative issues but as integral components of healthcare quality and governance (Mulugeta et al., 2021; Alotaibi et al., 2024).

Filing and retrieval processes present additional challenges in clinics that continue to rely on paper-based or hybrid medical record systems. Filing accuracy depends on consistent indexing and classification, while retrieval efficiency relies on physical organization, tracking mechanisms, and clearly defined responsibilities. High patient volumes increase the risk of misfiling and prolonged search times, and multitasking across registration and filing may introduce interruptions that degrade accuracy. International and regional studies consistently highlight that workload pressure and role overlap in medical record departments are associated with delayed documentation and reduced administrative performance, providing a strong rationale for evaluating staffing needs in filing functions specifically (Okoroafor et al., 2023; Nguyen et al., 2023).

Digital transformation adds further complexity to medical record workload because it may simultaneously reduce certain tasks while creating new ones. Adoption of electronic medical records can decrease time spent on physical retrieval, yet it often increases time devoted to data entry, reconciliation between paper and electronic systems, and troubleshooting workflow issues, particularly during early implementation phases. Evidence from Indonesia and other settings indicates that EMR implementation frequently encounters organizational and human-factor constraints, including variable user adoption and workflow integration challenges in outpatient units. Consequently, workforce planning for medical

records must consider both existing record systems and transitional dynamics that shape workload distribution across staff categories (Brouwer et al., 2021; Alotaibi et al., 2024).

From a governance perspective, workload-based staffing analysis supports compliance with documentation standards and confidentiality requirements. When staffing is inadequate, staff may take shortcuts under time pressure, potentially affecting data privacy and record completeness. Conversely, even when staffing numbers appear sufficient, poor distribution of personnel may still lead to bottlenecks at registration or delays in record availability. The WISN method is designed to quantify such imbalances and translate them into staffing requirements and workload pressure indicators, enabling managers to make evidence-based decisions grounded in service statistics rather than anecdotal observations (World Health Organization, 2020; Khamis et al., 2022).

In many outpatient clinics, task allocation is shaped not only by formal job descriptions but also by practical constraints such as staff availability, peak service hours, and cross-coverage practices. These realities can generate “hidden workload,” where staff assigned to one function routinely assist with another, making staffing adequacy difficult to assess without direct observation and detailed workload mapping. Implementation-focused WISN studies emphasize that accurate definition of workload components and inclusion of allowance time for non-core activities are critical for producing credible staffing estimates. In medical record units, such allowance activities may include coordination with clinical staff, tracking missing files, responding to audit requests, and preparing routine reports (Nguyen et al., 2023; World Health Organization, 2020).

The outpatient service context is also influenced by patient flow and queue dynamics, where delays at registration or document retrieval may propagate throughout the entire visit. When medical record processes become bottlenecks, patient waiting times increase and clinical

throughput declines, negatively affecting patient satisfaction and clinic efficiency. Empirical workload studies involving medical record and health information officers have reported that multitasking and imbalanced task distribution are associated with delays in task completion, underscoring the operational importance of staffing analysis in medical record units (Mulugeta et al., 2021; Okoroafor et al., 2023).

Although workforce planning tools are widely discussed in the literature, their real-world application in small outpatient clinics remains relatively limited compared to hospital settings. Many existing studies focus on nursing units, inpatient services, or specialized departments, leaving a gap in evidence related to outpatient filing units where paper-based records remain prevalent and staffing constraints are pronounced. Recent workload-based analyses, however, increasingly recognize that support services such as medical record management require the same level of planning rigor as clinical services, as their performance directly influences continuity and quality of care (Sharma et al., 2021; Kim et al., 2023).

Within the Indonesian health system context, outpatient clinics often operate under constrained budgets and rely on flexible staffing arrangements, which may unintentionally lead to role overlap between clinical and administrative functions. When nurses or other clinical staff assist with registration while simultaneously supporting patient care, clinical time may be diverted and administrative tasks may be completed under competing demands. Such arrangements increase the risk of documentation errors and reduce overall efficiency. Workforce planning methods such as WISN can help clarify which tasks require dedicated personnel and identify opportunities for redistribution to reduce workload pressure and improve service quality (World Health Organization, 2020; Okoroafor et al., 2023).

Dr. Irma Outpatient Clinic in Malang represents a practical case in which medical record tasks are concentrated among a small

number of personnel, with indications of multitasking across registration, filing, assembling, coding, and reporting functions. In such contexts, staffing adequacy cannot be evaluated solely based on headcount; it must be assessed through systematic mapping of task volumes, time standards, available working time, and allowance activities. International WISN literature consistently demonstrates that facilities with similar staff numbers may experience markedly different workload pressures depending on service volume, workflow organization, and task distribution (World Health Organization, 2020; Khamis et al., 2022).

A particular advantage of focusing on the filing function is that filing performance is closely linked to record availability, data integrity, and continuity of outpatient care. Misfiled or missing records may lead to repeated history-taking, duplication of diagnostic tests, or delayed clinical decision-making. Moreover, filing quality affects reporting processes, as incomplete or disorganized records complicate aggregation and analysis of service statistics. Research on incomplete medical records suggests that operational root causes often include workload pressure, insufficient time, and unclear responsibilities factors that can be addressed through staffing optimization and workflow redesign informed by workload analysis (Mulugeta et al., 2021; Alotaibi et al., 2024).

The increasing complexity of health information governance further highlights the importance of having adequately trained medical record personnel. Modern health systems increasingly depend on high-quality data for surveillance, financing, and performance monitoring, elevating the strategic role of HIM functions. Workforce-oriented HIM literature advocates for proactive investment in HIM capacity as health systems expand digital health initiatives. Accordingly, evaluating not only the quantity but also the qualifications and task alignment of medical record staff aligns with international recommendations to strengthen the health information workforce as a component of

health system resilience (Al-Harbi et al., 2021; Kim et al., 2023).

Workforce strain should also be viewed as a quality-of-care issue rather than solely a human resources concern. Under sustained workload pressure, staff may experience cognitive overload and diminished capacity to maintain accuracy, particularly in tasks requiring attention to detail such as filing and assembling. Broader healthcare workforce research consistently demonstrates that excessive workload and organizational pressure are associated with burnout and performance risks over time. Although many such studies focus on clinical personnel, their findings reinforce the importance of designing staffing models that prevent chronic overload across all critical roles in the care process, including medical record services (Brouwer et al., 2021; Nguyen et al., 2023).

Given these considerations, there is strong justification for conducting a workload-based staffing needs analysis of medical record personnel in outpatient clinics, particularly for filing functions that are workload-sensitive and essential for service continuity. Application of the WISN method can provide healthcare managers with actionable estimates of staffing requirements, workload pressure indicators, and opportunities for task redistribution. Furthermore, findings from such analyses may inform practical managerial actions, including reallocating staff between registration and filing units, clarifying job descriptions, and strengthening competency alignment through targeted training. These actions are consistent with evidence from WISN implementation studies, which emphasize translating workload measurement into operational improvement (World Health Organization, 2020; Okoroafor et al., 2023).

Accordingly, this research aims to determine the staffing needs of medical record personnel based on workload in the filing section of dr. Irma Outpatient Clinic, Malang, using the WISN approach. Specifically, the study seeks to (1) describe existing medical record workflows and task distribution, (2) calculate available working

time, activity standards, allowance factors, and workload components, and (3) estimate required staffing levels and interpret workload pressure to support evidence-based workforce planning at the clinic. By focusing on a real outpatient clinic context and applying an internationally recognized methodology, this study contributes to the applied health services research literature on workload-based staffing for medical record functions in outpatient care settings (World Health Organization, 2020; Khamis et al., 2022).

Materials and Methods

This research a descriptive qualitative research design to comprehensively examine workload conditions and staffing needs in the medical record unit of dr. Irma Outpatient Clinic, Malang, Indonesia. A qualitative descriptive approach was selected because it allows for an in-depth understanding of work processes, task distribution, and contextual factors influencing workload dynamics within healthcare facilities. This approach is particularly appropriate for workforce planning studies, as it captures real-world operational conditions that may not be fully represented through quantitative measures alone (Colorafi & Evans, 2021; Sugiyono, 2022).

Descriptive qualitative research has been widely applied in health services research to explore organizational performance, human resource utilization, and service delivery efficiency. By focusing on naturalistic inquiry and direct engagement with participants, this approach provides rich contextual insights that support evidence-based workforce planning and policy formulation (Bradshaw et al., 2022; Kim et al., 2023).

The research was conducted at dr. Irma Outpatient Clinic, a private healthcare facility located on Tlogomas Road, Malang City, Indonesia. The clinic provides outpatient services, including general medical care and dental services, and serves a mixed population of general and insured patients. The medical record unit at this clinic is responsible for registration,

assembling, filing, coding, and reporting activities related to patient medical records.

Outpatient clinics often experience high patient turnover with limited staffing resources, making efficient medical record management crucial for maintaining service quality and operational continuity. Previous studies have emphasized that inadequate staffing in outpatient medical record units can lead to delays in service delivery, documentation errors, and compromised data security (Al-Harbi et al., 2021; Kurniasih et al., 2024).

The research population consisted of all personnel involved in medical record-related activities at dr. Irma Outpatient Clinic. This included registration officers and medical record staff responsible for filing, assembling, and reporting. Given the limited number of personnel, a total population sampling technique was applied, ensuring that all relevant staff members were included in the research.

Total population sampling is recommended in small-scale organizational studies where the number of participants is limited and each individual plays a critical role in operational workflows. This approach enhances data completeness and minimizes selection bias (Etikan et al., 2020; Taherdoost, 2022).

Data Collection Methods

Direct Observation

Direct observation was conducted to identify work activities, task sequences, and time allocation for each medical record function. Observations focused on daily operational activities, including patient registration, document retrieval, filing, assembling, and reporting processes. Time-motion observations were used to estimate the average time required to complete each task.

Direct observation is a widely accepted method for workload analysis, as it provides objective data on task duration and workflow inefficiencies. Previous studies have

demonstrated that observational methods are essential for accurately estimating workload in healthcare settings, particularly when applying workload-based staffing models such as WISN (Brouwer et al., 2021; Tiwari et al., 2023).

In-depth Interviews

In-depth interviews were conducted with medical record staff to explore perceived workload challenges, task complexity, multitasking demands, and competency requirements. Semi-structured interview guides were used to ensure consistency while allowing participants to elaborate on their experiences.

Qualitative interviews are effective for capturing staff perceptions of workload stress, role overlap, and organizational constraints that may not be visible through observation alone. Incorporating staff perspectives is critical for validating workload estimates and understanding the human factors influencing performance and service quality (Guest et al., 2022; Alsharif et al., 2024).

Document Review

Document review was performed to collect secondary data related to staffing schedules, patient visit statistics, attendance records, and clinic operational policies. These documents were used to calculate available working time, patient volume, and workload distribution across units.

Document analysis enhances methodological triangulation by corroborating observational and interview data with institutional records. Triangulation improves the credibility and reliability of qualitative research findings, particularly in health workforce studies (Carter et al., 2021; Bowen, 2022).

Workload Indicators of Staffing Need (WISN) Method

Staffing requirement analysis was conducted using the Workload Indicators of Staffing Need (WISN) method developed by the World Health Organization. WISN is a systematic, evidence-based approach that calculates staffing needs based on available working time, workload volume, activity standards, and allowance factors (WHO, 2020).

The WISN method has been widely adopted in healthcare systems globally to address workforce shortages, optimize staff allocation, and improve service efficiency. Recent international studies have confirmed the effectiveness of WISN in outpatient clinics, hospitals, and primary healthcare settings (Sharma et al., 2021; Okoroafor et al., 2023).

Calculation of Available Working Time

Available working time was calculated by subtracting non-productive days, such as national holidays, annual leave, sick leave, and training days, from total annual working days. Daily working hours were multiplied by the number of effective working days to obtain annual available working time in minutes.

Accurate calculation of available working time is essential for ensuring the validity of WISN estimates. Errors in this calculation may lead to underestimation or overestimation of staffing needs, potentially affecting service quality and staff well being (WHO, 2020; Khamis et al., 2022).

Determination of Workload Components and Activity Standards

Workload components were identified for each medical record function, including registration, filing, assembling, and reporting. Activity standards were determined by calculating the average time required to complete each task based on observational data.

Activity standards are a core element of the WISN method, as they translate service volume into staffing requirements. Studies have shown that task complexity and documentation requirements significantly influence time standards in medical record units (Mulugeta et al., 2021; Alotaibi et al., 2024).

Allowance Factors

Allowance factors were applied to account for non-core activities such as meetings, administrative tasks, system downtime, and coordination activities. These allowances ensure that staffing estimates reflect realistic working conditions rather than idealized productivity assumptions.

Incorporating allowance factors is essential for producing realistic staffing projections. International research indicates that failure to account for indirect work activities can result in staff overload and burnout (WHO, 2020; Nguyen et al., 2023).

Data Analysis

Qualitative data from observations and interviews were analyzed using thematic analysis to identify workload patterns, staffing challenges, and operational inefficiencies. Quantitative data from document reviews were integrated into WISN calculations to generate staffing estimates.

Mixed analytical approaches combining qualitative insights with quantitative workload calculations enhance the robustness of workforce planning studies and support evidence-based decision-making (Bradshaw et al., 2022; Kim et al., 2023).

Ethical Considerations

Ethical principles were upheld throughout the study. Participants were informed about the study objectives, and verbal consent was obtained prior to data collection. Confidentiality and anonymity

were maintained by excluding personal identifiers from data records.

Ethical compliance is essential in health services research to protect participants and ensure the integrity of research findings (World Medical Association, 2022; Resnik, 2023).

Results and Discussion

Available working time represents the effective annual working hours after deducting non-productive time such as national holidays, leave, and absenteeism. At dr. Irma Outpatient Clinic, the effective working time was calculated as 224 working days per year with six working hours per day. Available working time is a fundamental component in calculating staffing needs using the WISN method (WHO, 2020).

The research found that the medical record unit at dr. Irma Outpatient Clinic employed three staff members, consisting of two registration officers and one officer responsible for filing, assembling, and reporting activities. However, only one staff member possessed a formal Diploma (D3) in Medical Records. This finding indicates a competency gap that may affect the quality and accuracy of medical record management (Rosita, 2022; Nisa, 2021).

Workload analysis revealed that the filing unit had the highest workload compared to other units. Filing activities require a high level of accuracy and time due to their direct involvement in document storage and retrieval processes. High workload levels without sufficient staffing support increase the risk of work fatigue, delays, and administrative errors (MoHRI, 2023; Hutauruk & Gurning, 2020).

The disproportionate distribution of staff resulted in inefficiencies in human resource utilization, where units with heavier workloads were handled by fewer personnel, while units with lighter workloads had more staff. This imbalance may lead to decreased service quality, delayed reporting, and compromised medical

record data security (Rohman, 2021; WHO, 2020).

Conclusion

Quantitatively, the total number of medical record personnel at dr. Irma Outpatient Clinic aligns with the staffing requirements calculated using the WISN method. However, the distribution of personnel across work units is not proportional, resulting in workload imbalance among medical record staff (WHO, 2020; Rosita, 2022).

It is recommended that task redistribution and staffing reallocation be implemented to achieve a more balanced workload distribution. Such adjustments are expected to improve staff productivity, reduce work fatigue, and enhance the overall quality of medical record services (Hutauruk & Gurning, 2020; Rohman, 2021).

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