

High Awareness but Persistent Barriers to Fulfilling Health Workers' Rights through Comprehensive Periodic Health Check-Ups

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ABSTRACT

Regular health check-ups (Medical Check-Ups/MCUs) are essential for human resources (HR) working in Public Health Centers (Puskesmas), including medical personnel, health workers, and health support staff. Ensuring the health of these workers is not only fundamental to maintaining the quality of health services but also represents the fulfilment of every citizen's right to health. Routine employee health assessments enable health workers to perform their duties optimally while minimizing occupational risks inherent in clinical and community-based settings. The purpose of this study is to explore health workers' perspectives on the fulfilment of their health rights while working, and to identify barriers to implementing periodic health check-ups for health workers at Community Health Centers. This observational study employed a descriptive qualitative design and was conducted at Community Health Centers in Banggai Regency from May to October 2025. The study population consisted of health workers representing various professional categories at each participating health center, with a total of 75 respondents. Data were collected through in-depth interviews and structured questionnaires. Thematic analysis was used to interpret qualitative findings, while primary data on the implementation and perceived barriers to regular health check-ups were obtained through questionnaire responses. From 13 questionnaire items assessing health workers' perspectives on comprehensive regular health check-ups, 11 items received "agree" or "strongly agree" responses from more than 80% of participants. Most respondents disagreed or strongly disagreed with statements suggesting that comprehensive regular check-ups should be limited only to individuals who are already ill or to those aged over 40 years. These findings indicate a strong awareness among health workers regarding the importance of routine health assessments, regardless of age or current health status. In conclusion, the majority of respondents demonstrated a clear understanding of their right to regular health check-ups. This reflects a high level of concern among health workers regarding their health and well-being, particularly in relation to occupational risks. Strengthening policies and institutional support for periodic MCUs is therefore crucial to ensuring a healthy workforce and sustaining high-quality health service delivery.

Keywords: comprehensive periodical health check-up; health worker; human right

INTRODUCTION

Health workers play a central role in ensuring the continuity, safety, and quality of primary health services, even though the health sector itself is widely recognized as a workplace with substantial occupational hazards and complex risk exposures [1,2]. In their daily practice, health workers may encounter infectious agents, unsafe patient-handling situations, hazardous chemicals, ionizing and non-ionizing radiation, psychosocial stressors, workplace violence, ergonomic strain, and various forms of physical injury, all of which can negatively affect their physical, mental, and social well-being [3]. These risks accumulate over time and may lead to acute or chronic health problems if not adequately managed. Consequently, health workers are not only responsible for safeguarding the health of patients and communities but are also entitled to safe, supportive, and health-promoting working environments that protect them from occupational harm [4].

Ensuring the health and safety of health workers is essential for maintaining productivity, job satisfaction, workforce retention, and the overall quality and safety of healthcare services. Occupational illnesses and injuries can result in absenteeism, presenteeism, reduced work capacity, and increased healthcare costs for both workers and healthcare organizations. In the long term, inadequate occupational health protection may contribute to burnout, turnover, and declining service quality. Therefore, occupational health protection should be systematically integrated into healthcare management at national, regional, and facility levels to ensure that preventive, promotive, and curative measures are consistently implemented across all healthcare settings [5].

In Indonesia, healthcare facilities; including Community Health Centers (*Puskesmas*) are mandated to identify workplace hazards and implement occupational health and safety measures in accordance with the Regulation of the Minister of Health of the Republic of Indonesia Number 48 of 2016 concerning Occupational Safety and Health Standards in Offices [2]. These measures include health surveillance, risk assessment, and preventive interventions aimed at identifying health problems among workers before they progress into more serious conditions [6]. Comprehensive periodic health check-ups constitute a key component of this preventive approach because they provide baseline health information, detect occupational and non-occupational diseases at an early stage, and monitor changes in workers' health throughout their employment [7]. By integrating periodic examinations into routine occupational health programs, healthcare facilities can ensure that workers remain fit for duty and that emerging health risks are addressed promptly.

Periodic health check-ups differ fundamentally from examinations conducted only when workers experience symptoms or illness. Instead, they are intended for apparently healthy individuals and are performed at predetermined intervals to detect early signs of disease, identify risk factors, and prevent functional decline before it affects work performance [8]. This preventive function is particularly important for Community Health Center workers, who must maintain consistent service delivery while facing biological, ergonomic, physical, and psychosocial occupational exposures that may accumulate over time and compromise their health if not monitored adequately [9].

Despite the recognized importance of periodic health examinations, previous studies have shown that health workers' knowledge and positive perceptions do not always translate into consistent screening practices. Abadom and Otene reported that although health workers generally possessed good knowledge and positive perceptions of routine medical screening, 73.7% demonstrated poor screening practice. The study also found that examination costs were a major barrier and that many health workers underwent medical examinations only after experiencing illness, rather than as part of preventive care [10]. These findings highlight the gap between awareness and practice, suggesting that structural and financial barriers may hinder the uptake of periodic examinations even among knowledgeable health professionals.

Similar findings were observed among healthcare professionals in Addis Ababa, where only 35.3% had undertaken routine medical check-ups for common noncommunicable diseases [11]. The uptake of periodic examinations was associated with income, perceived health status, the presence of chronic disease, and the commitment of healthcare providers to delivering examination services. These results indicate that the implementation of periodic health examinations is influenced not only by individual awareness but also by financial capacity, service availability, and organizational support. Even when workers understand the importance of preventive examinations, they may be unable to participate due to cost constraints, limited access to services, or insufficient institutional encouragement.

Challenges may also persist after the initial examination has been conducted. A prospective cohort study among employees in Japan found that only 47.6% of workers who were advised to seek additional medical examination following an annual health check-up subsequently visited a medical institution. Workers who had a primary physician were more likely to comply with the recommendation, whereas those who perceived themselves as having a lower health risk were less likely to undertake further examination [12]. This finding demonstrates that an effective periodic health examination program requires not only initial screening but also risk communication, referral mechanisms, follow-up services, and continuing institutional support. Without these components, workers may not act on medical recommendations even when early signs of disease are detected.

A similar prospective cohort study in Japan further confirmed that only 47.6% of workers who received recommendations for additional medical examinations after annual health check-ups subsequently visited a medical institution [13]. Workers with a primary physician were more likely to comply, whereas those who perceived themselves as being at lower health risk were less likely to seek further examination. This reinforces the notion that periodic health examination programs require an effective follow-up system in addition to the initial screening process, and that workers' perceptions of risk strongly influence their compliance with medical advice.

Existing studies have therefore established that knowledge, perception, financial conditions, access to services, and organizational commitment influence the utilization of periodic health examinations [8,10,13]. However, most of these studies were conducted in tertiary hospitals or general workplace settings and primarily employed quantitative designs to measure screening practices and associated factors. These studies have not adequately explained how health workers in decentralized primary healthcare facilities perceive periodic health examinations as part of their health rights or how policy, budgeting, and institutional commitment interact in determining program implementation. As a result, the contextual dynamics of periodic health examination programs at the Community Health Center level remain insufficiently explored.

At the Community Health Center level in Indonesia, the existence of a national occupational health framework does not automatically guarantee routine implementation. Operational implementation may depend on local regulations, dedicated budgeting, institutional commitment, the availability of examination and referral services, and coordination between Community Health Centers and district health authorities [14]. Consequently, a gap may arise between the normative recognition of health workers' rights and the actual provision of periodic health examinations at the facility level. This gap may be further exacerbated by limited financial resources, competing program priorities, and insufficient managerial support for occupational health initiatives.

In the Indonesian context, the normative obligation to protect workers' health has been established through occupational health and safety regulations [2]. Nevertheless, the operational implementation of periodic health examinations at the Community Health Center level may depend on the availability of local policies, dedicated financing, institutional commitment, service arrangements, and coordination between Community Health Centers and district health authorities. The gap between regulatory recognition and implementation at the facility level requires further investigation, particularly from the perspective of health workers who are expected to participate in and benefit from periodic health examination programs. Understanding these perspectives is essential for identifying structural barriers and designing interventions that align with workers' needs and institutional capacities.

Banggai Regency has Community Health Centers staffed by health workers from diverse professional backgrounds who face varying occupational exposures and health risks. Despite this diversity, information concerning their perspectives on comprehensive periodic health check-ups and the institutional barriers affecting their implementation remains limited. Understanding these perspectives is important because positive awareness among health workers may not necessarily lead to consistent implementation when regulatory, financial, and organizational support is inadequate. Without such understanding, efforts to strengthen occupational health programs may fail to address the root causes of inconsistent implementation.

Therefore, this study aimed to explore health workers' perspectives on the fulfillment of their health rights through comprehensive periodic health check-ups and to identify the barriers to implementing such examinations in Community Health Centers in Banggai Regency. The novelty of this study lies in integrating health workers' perspectives with an analysis of policy, financing, and institutional barriers in the primary healthcare setting. This approach is expected to explain why strong awareness of periodic health examinations may coexist with inconsistent implementation at the Community Health Center level, thereby providing insights for strengthening occupational health policies and practices in decentralized healthcare systems.

METHODS

Research design

This study employed an observational, descriptive quantitative design using a cross-sectional approach. The design was selected to obtain a comprehensive snapshot of health workers' perspectives regarding comprehensive periodic health check-ups and to describe institutional conditions associated with their implementation at Community Health Centers in Banggai Regency. As a descriptive study, the primary aim was not to test hypotheses but to systematically document existing perceptions, practices, and institutional arrangements related to periodic health examinations. The cross-sectional nature of the study allowed data collection at a single point in time, enabling the researchers to capture prevailing attitudes and organizational conditions without manipulating the study environment. This design is widely used in public health research to assess knowledge, perceptions, and program implementation in real-world settings [8,10,13].

Study setting and period

The study was conducted in Community Health Centers (*Puskesmas*) located within Banggai Regency, a district with diverse geographical characteristics and varying levels of health service capacity. These Community Health Centers serve as the primary access points for public health services and are staffed by health workers from multiple professional backgrounds. The study is planned to be carried out from May to October 2025, a period that allows sufficient time for coordination, data collection, and verification across multiple facilities. Conducting the study within this timeframe also ensures that data reflect routine operational conditions rather than seasonal fluctuations in service delivery.

Population and sample

The study population consisted of health workers representing their respective professions in each participating Community Health Center, as well as program officers at the Banggai District Health Office who oversee occupational health and service management. The total number of respondents was 75 health workers. Respondents were recruited using purposive sampling, a technique appropriate for selecting individuals who possess specific characteristics relevant to the study objectives. The inclusion criteria were health workers who: 1) were actively employed at one of the selected Community Health Centers during the data-collection period; 2) had worked at the Community Health Center for at least one year, ensuring adequate exposure to workplace conditions; 3) were willing to participate in the study; and 4) provided written informed consent. This sampling approach ensured that respondents had sufficient experience and contextual knowledge to provide meaningful insights into periodic health examinations and institutional barriers.

Research instrument

The primary instrument used in this study was the Depression Anxiety Stress Scale (DASS-21), a widely utilized psychometric tool designed to measure three core dimensions of psychological distress: depression, anxiety, and stress. The DASS-21 has undergone extensive validation in various populations, including the Indonesian student population, demonstrating acceptable reliability, construct validity, and cultural applicability. Its use in this study is justified not only by its psychometric robustness but also by its practicality, as the shortened 21-item version reduces respondent burden while maintaining strong measurement properties. The instrument employs a four-point Likert scale ranging from 0 ("did not apply to me at all") to 3 ("applied to me very much or most of the time"), allowing respondents to indicate the extent to which each item reflects their experiences over the past week.

For the purposes of this study, only the stress subscale was utilized to assess the psychological burden potentially associated with occupational exposures and institutional conditions within Community Health Centers. The stress subscale includes items that capture symptoms such as difficulty relaxing, irritability, over-arousal, and persistent tension; symptoms that may be particularly relevant for health workers who routinely face high workloads, emotional demands, and organizational constraints. The decision to focus exclusively on the stress dimension reflects the study's emphasis on occupational strain rather than broader psychological disorders. The total stress score was categorized into five levels; normal, mild, moderate, severe, and extremely severe following established scoring guidelines that allow for standardized interpretation and facilitate comparison with other studies using the same instrument. These categories provide a nuanced understanding of the severity of stress experienced by respondents and help identify groups that may require targeted occupational health interventions.

In addition to the DASS-21, a structured questionnaire was used to collect primary data on the implementation and barriers to periodic health examinations. This questionnaire served as the main instrument for assessing respondents' understanding, perceptions, and attitudes toward comprehensive periodic health check-ups. It consisted of 13 statements carefully developed to capture multiple dimensions of perception relevant to preventive health behaviour. These statements were designed to assess normative beliefs (i.e., beliefs about what health workers think should be done), perceived benefits (e.g., early detection of disease, improved well-being), perceived risks (e.g., fear of diagnosis, concerns about confidentiality), and perceived institutional support (e.g., availability of services, managerial encouragement, policy clarity).

The inclusion of these domains reflects established behavioural theories such as the Health Belief Model and the Theory of Planned Behaviour, which posit that preventive health actions are influenced by individuals' perceptions of susceptibility, severity, benefits, barriers, and social norms. By incorporating these constructs, the questionnaire provides a comprehensive assessment of the cognitive and affective factors that shape health workers' acceptance of periodic examinations. The structured format also ensures consistency across respondents, facilitates quantitative analysis, and allows for the identification of patterns in perceptions that may inform policy development and programme implementation.

Together, the DASS-21 stress subscale and the structured questionnaire offer complementary insights: the former provides an indication of psychological strain potentially linked to occupational conditions, while the latter captures workers' perceptions of preventive health practices and institutional readiness. This combination of instruments strengthens the study's ability to describe both individual-level and organizational-level factors relevant to the implementation of periodic health examinations.

Data collection procedure

Data collection was conducted after formal permission had been obtained from the relevant authorities, including the Banggai District Health Office and the management of each participating Community Health Center. Eligible health workers were approached individually and informed about the study objectives, procedures, voluntary nature of participation, confidentiality safeguards, and their right to withdraw at any time without consequences. Written informed consent was obtained prior to participation.

Primary data on the implementation and barriers to periodic health examinations were collected using self-administered questionnaires. To complement these quantitative data, in-depth interviews were conducted to explore health workers' understanding and perspectives regarding their right to health while working. Interviews were conducted in private settings to ensure confidentiality and encourage open discussion. Secondary data were also collected, including information on health worker distribution, facility characteristics, and health budget allocations relevant to occupational health programs.

Data analysis

All collected data were entered, cleaned, and analyzed using IBM SPSS Statistics version 25. Respondents' demographic characteristics, including age and professional categories, were summarized using frequencies and percentages. Responses to each of the 13 questionnaire statements were analyzed descriptively. For each item, the number and percentage of respondents selecting "strongly disagree," "disagree," "neutral," "agree," and "strongly agree" were calculated.

For narrative interpretation, the "agree" and "strongly agree" categories were combined to describe positive agreement, while the "disagree" and "strongly disagree" categories were combined to describe disagreement. Neutral responses were reported separately to reflect ambivalence or uncertainty. No inferential statistical testing was performed because the purpose of the study was to provide a descriptive overview rather than to test associations or causal relationships.

Before analysis, the dataset was examined for completeness, coding errors, and duplicate entries. Any inconsistencies were corrected through cross-checking with the original questionnaires. The findings were presented in tables and figures to facilitate clear interpretation and comparison across items.

RESULTS

The characteristics of the respondents are illustrated in Figure 1. The study involved health workers from 14 different technical professional backgrounds, reflecting the multidisciplinary composition of Community Health Centers in Banggai Regency. These professional categories included nurses, midwives, sanitarians, nutritionists, dental nurses, laboratory analysts, pharmacists, health promotion officers, environmental health officers, administrative staff, and several other technical positions essential for primary healthcare operations. The respondents were distributed across three Community Health Centers, each representing different service catchment areas and operational capacities. Among these professional groups, nurses and midwives constituted the largest proportion of respondents, highlighting their dominant role in frontline service delivery and their substantial representation within the primary healthcare workforce.

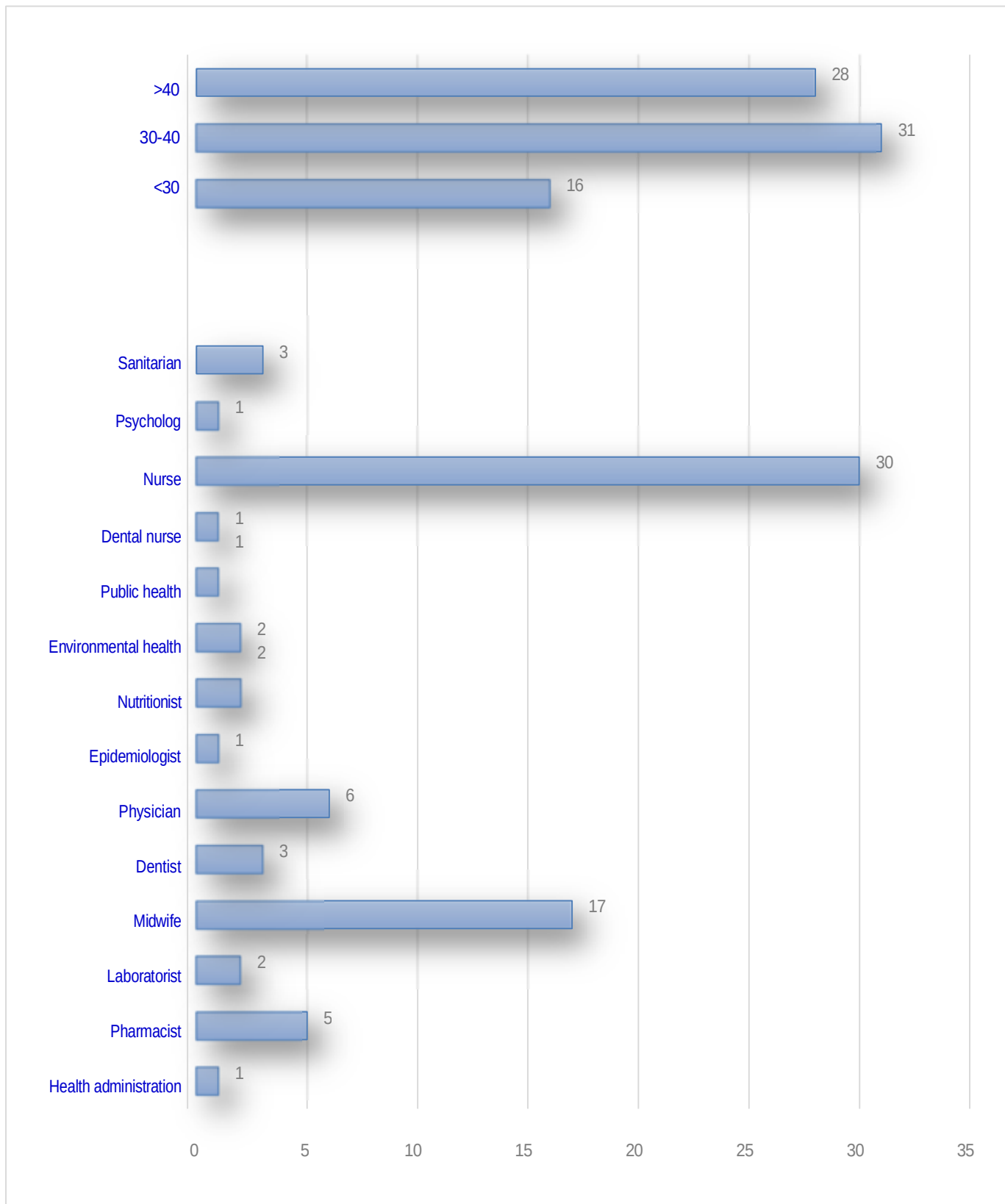


Figure 1. Distribution of respondents by age and type of health worker

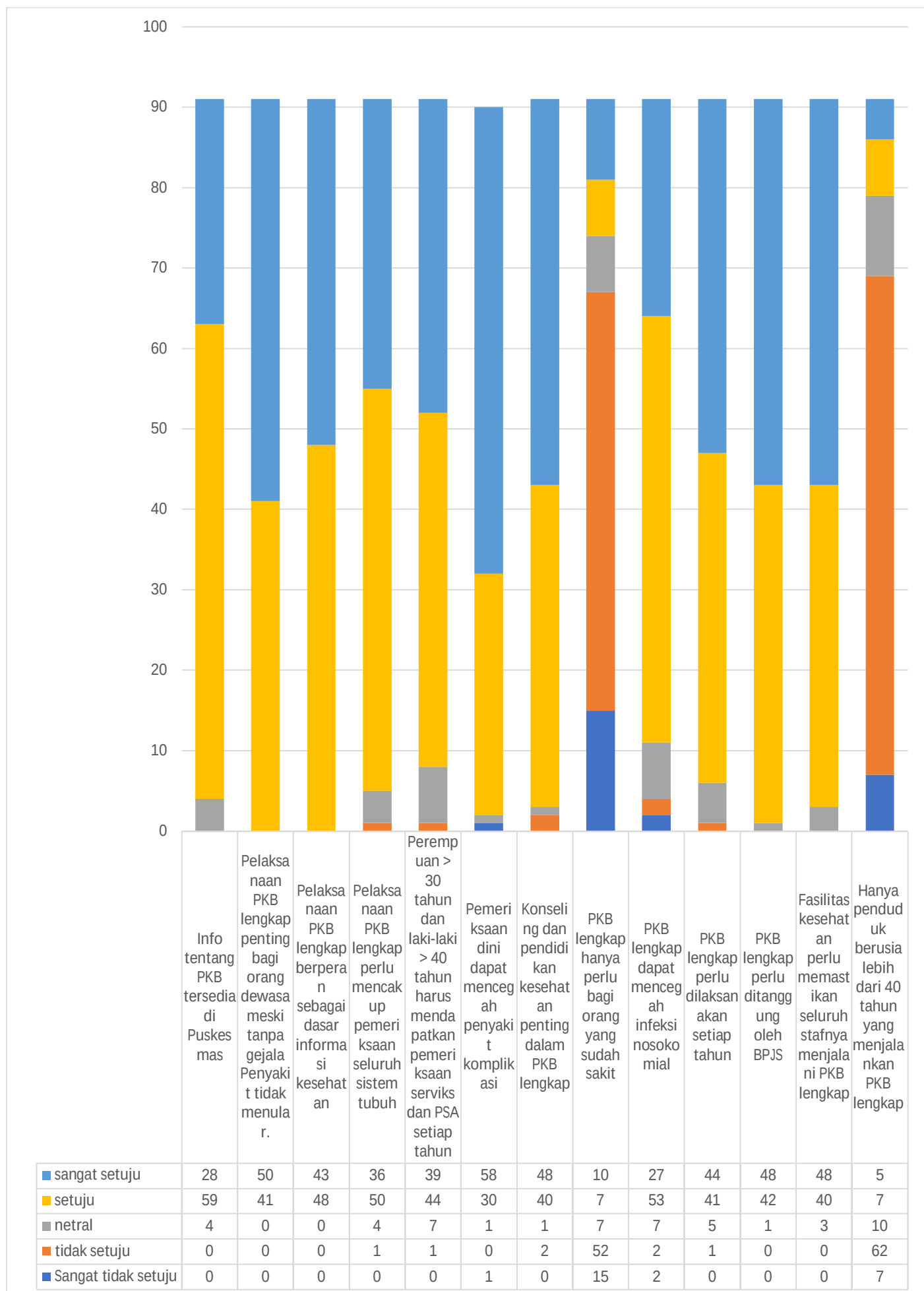


Figure 2. Respondents' attitudes toward comprehensive periodic health examinations (in Indonesian version)

In terms of age distribution, respondents represented a wide range of age groups, demonstrating the diversity of the workforce in terms of career stage and professional experience. The majority of respondents were between 30 and 40 years old (41.3%), an age group typically associated with stable professional roles, substantial work experience, and heightened awareness of occupational health risks. Other age groups were also represented, including younger workers in early career stages and older workers with long-standing service histories. This variation in age distribution provides a comprehensive overview of perspectives across different generational cohorts within the Community Health Center workforce.

Figure 2 presents the distribution of responses to the 13 questionnaire items assessing health workers' perspectives on comprehensive periodic health check-ups. The findings indicate a strong and consistent level of support for periodic health examinations. Out of the 13 statements, 11 items received "agree" or "strongly agree" responses from more than 80% of respondents, demonstrating a high level of positive perception toward the importance, relevance, and necessity of comprehensive regular health check-ups. This pattern suggests that health workers broadly recognize periodic examinations as an essential component of occupational health protection and as a mechanism for safeguarding their well-being while performing professional duties that involve various occupational risks.

The high level of agreement across most items also reflects a shared understanding among health workers that periodic health check-ups are not merely administrative requirements but are integral to maintaining optimal health status, preventing disease progression, and ensuring fitness for duty. Respondents expressed strong support for the idea that comprehensive examinations should be conducted regularly, should cover multiple dimensions of health, and should be accessible to all health workers regardless of their current health condition or job category.

Conversely, the majority of respondents disagreed or strongly disagreed with statements suggesting that comprehensive periodic health check-ups should be limited only to individuals who are already sick or only to those aged over 40 years. This pattern of disagreement indicates that health workers reject the notion of selective or conditional implementation of periodic examinations. Instead, they view comprehensive health check-ups as a universal right and necessity for all workers, regardless of age or the presence of symptoms. The strong disagreement with these restrictive statements underscores the respondents' belief that preventive health measures should be inclusive and proactive rather than reactive. These findings collectively demonstrate that health workers in Banggai Regency possess a high level of awareness regarding.

DISCUSSION

The present study showed that more than 80% of respondents agreed or strongly agreed with 11 of the 13 statements regarding comprehensive periodic health check-ups. This high proportion of agreement reflects not only a favourable perception but also a relatively uniform understanding among Community Health Center workers regarding the preventive and promotive nature of periodic health examinations. Most respondents also rejected the statements suggesting that periodic health examinations are intended only for individuals who are already ill or those aged over 40 years. Such rejection indicates that respondents do not perceive periodic examinations as curative or age-restricted interventions but rather as proactive measures designed to maintain optimal health status across all categories of workers. These findings collectively demonstrate a high level of awareness among Community Health Center workers regarding the preventive purpose of periodic health examinations. Respondents appeared to understand that periodic health check-ups should be conducted while workers are still apparently healthy and should not be restricted solely on the basis of age or the presence of symptoms. This perspective aligns with the principles of occupational health surveillance, which emphasize early detection, risk identification, and continuous monitoring of workers' health conditions.

Nevertheless, these results primarily reflect respondents' perceptions and attitudes and should not automatically be interpreted as evidence that periodic health examinations have been routinely implemented. Perceptions represent cognitive and affective components of behaviour, whereas implementation requires structural, managerial, and financial support. A high level of awareness does not necessarily translate into consistent practice, particularly when institutional arrangements are weak or when workers face barriers such as limited access to services, unclear policies, or insufficient organizational commitment. Therefore, while the findings demonstrate a strong foundation for programme acceptance, they do not provide direct evidence of actual examination coverage or adherence.

The high level of awareness found in this study is consistent with the findings of Abadom and Otene, who reported that health workers generally had adequate knowledge and positive perceptions regarding routine medical screening. However, their study also found that 73.7% of health workers demonstrated poor screening practices [10]. This discrepancy highlights a common phenomenon in preventive health behaviour: individuals may possess adequate knowledge and positive attitudes but still fail to engage in recommended practices. Similarly, Getahun et al. reported that only 35.3% of healthcare professionals in Addis Ababa underwent routine medical check-ups for common noncommunicable diseases within the recommended period, despite generally favourable attitudes toward such examinations [8]. These comparisons demonstrate an awareness-practice gap: health workers may recognize the importance of periodic examinations but may still fail to undergo them regularly.

Differences between the present study and previous studies may also be explained by differences in the outcomes measured. The present study primarily assessed perceptions and agreement with statements, whereas previous studies measured actual utilization of medical check-up services. Therefore, favourable perceptions should be understood as an important predisposing factor rather than a sufficient determinant of actual examination behaviour. Health beliefs, perceived susceptibility, perceived benefits, and perceived barriers may jointly influence whether positive intentions are translated into participation in health examinations [15]. The Health Belief Model suggests that individuals are more likely to engage in preventive behaviour when they perceive themselves to be at risk, believe that the behaviour will reduce the risk, and perceive few barriers to action. In the context of health workers, perceived occupational risks may increase motivation, but structural barriers may still hinder participation.

The study also identified institutional barriers to the implementation of periodic health examinations, particularly the absence of specific local regulations and the lack of dedicated budget allocations at the Community Health Center level. This finding is consistent with previous evidence showing that financial limitations, service availability, and organizational commitment influence the utilization of routine medical examinations among health workers [8,10]. A scoping review of community health programmes also showed that programme implementation is strongly affected by governance, financing, organizational capacity, workforce availability, and coordination among stakeholders [16]. In addition, healthcare budgeting requires clear priority setting, defined responsibilities, and alignment between programme objectives and available resources [17]. These findings indicate that the limited implementation of periodic health check-ups in Banggai Regency should not be attributed solely to insufficient motivation among health workers. Rather, the problem reflects structural barriers that prevent positive individual perceptions from being converted into routine organizational practice.

Without a clear policy mandate, designated funding, an implementation schedule, and accountable programme personnel, Community Health Center managers may have limited authority and capacity to organize periodic examinations consistently [18]. Policy clarity is essential because

it provides legal and administrative justification for allocating resources, coordinating services, and ensuring compliance. Budget allocation is equally important because periodic examinations require financial support for laboratory tests, clinical assessments, referral services, and follow-up mechanisms. In the absence of these structural supports, periodic examinations may remain aspirational rather than operational.

From an occupational health perspective, periodic health examinations constitute one component of a broader system for protecting workers from occupational hazards. Community Health Center workers may experience biological, ergonomic, chemical, physical, and psychosocial exposures; therefore, protecting their health is relevant not only to individual well-being but also to workforce continuity and the quality of services delivered to the community [19]. Indonesian occupational health regulations require workplaces to identify hazards, assess risks, and implement preventive and protective measures [20]. However, periodic examination packages should be evidence-based and adjusted to workers' age, sex, occupational exposure, medical history, and individual risk profile rather than applying the same extensive examination to every worker [21]. This risk-based approach can improve clinical relevance, reduce unnecessary examinations, and allow limited resources to be directed toward workers with greater occupational or health risks.

WHO and ILO also emphasize that occupational health and safety programmes for health workers should operate at national, subnational, and healthcare-facility levels and should include prevention, health surveillance, referral, record management, and programme evaluation [22]. Periodic examinations therefore represent only one element of a comprehensive occupational health system. Their effectiveness depends on integration with other components such as hazard control, vaccination programmes, ergonomic interventions, mental health support, and workplace safety training.

The practical implication of these findings is that the Banggai Regency Government and District Health Office should establish an operational policy specifically governing periodic health examinations for Community Health Center workers. The policy should clearly define the eligible workforce, examination frequency, minimum risk-based examination components, responsible service providers, financing mechanisms, confidentiality procedures, referral pathways, and monitoring indicators. Periodic health examinations should also be incorporated into annual occupational health and safety planning and budgeting at both the District Health Office and Community Health Center levels. Indicators should not be limited to the number of workers examined but should also include examination coverage, the proportion of abnormal findings receiving follow-up, completion of referrals, and implementation of workplace risk-control measures.

An effective programme must also provide continuity after the initial examination. Goto et al. found that only 47.6% of workers who received recommendations for additional medical visits after annual health examinations subsequently visited a healthcare institution [15]. Having a regular primary physician was associated with better adherence to follow-up recommendations. This finding suggests that the effectiveness of periodic examinations depends not only on conducting screening but also on ensuring that abnormal findings are appropriately communicated, referred, treated, and monitored. Each Community Health Center should therefore designate an occupational health coordinator or responsible team to arrange examinations, maintain confidential health records, communicate results, facilitate referrals, and monitor follow-up completion. Without such a mechanism, periodic examinations may become administrative activities that generate findings without producing meaningful improvements in workers' health [23].

These findings have broader implications for primary healthcare governance. Strong awareness among health workers represents an important foundation for programme implementation because workers are more likely to accept examinations when services become available [24]. However, awareness-building interventions alone are unlikely to resolve policy and financing barriers. An integrated strategy is required that combines worker education, regulatory support, dedicated budgeting, service availability, managerial accountability, and systematic follow-up. Periodic health examination data may subsequently be used in aggregated and anonymized form to identify common occupational health risks, plan preventive interventions, and evaluate the effectiveness of workplace health programmes. Individual medical information must remain confidential and should not be used to discriminate against workers or determine employment status without appropriate occupational-health assessment [25].

Strength of study

The primary instrument used in this study was the Depression Anxiety Stress Scale (DASS-21), a concise yet psychometrically robust tool designed to assess three major dimensions of psychological distress: depression, anxiety, and stress. The DASS-21 has been widely applied in diverse cultural and demographic contexts and has undergone validation in the Indonesian student population, demonstrating satisfactory reliability coefficients, factorial stability, and cultural adaptability. Its use in this study is supported by its efficiency, as the shortened 21-item version reduces respondent fatigue while preserving the psychometric strengths of the original 42-item scale. Each item is rated on a four-point Likert scale ranging from 0 to 3, allowing respondents to indicate the degree to which each statement applied to them over the preceding week. This scoring approach enables the instrument to capture subtle variations in psychological symptoms and provides a standardized method for quantifying stress levels.

For the purposes of this study, only the stress subscale was utilized to assess the psychological burden potentially associated with occupational exposures, workload pressures, and institutional conditions within Community Health Centers. The stress subscale includes items that measure symptoms such as persistent tension, difficulty relaxing, irritability, impatience, and heightened physiological arousal. These symptoms are particularly relevant in occupational health research, as health workers frequently encounter demanding work environments, emotional labour, and organizational constraints that may contribute to elevated stress levels. The decision to focus exclusively on the stress dimension reflects the study's emphasis on occupational strain rather than broader psychological disorders such as depression or anxiety. The total stress score was subsequently categorized into five levels; normal, mild, moderate, severe, and extremely severe based on established scoring guidelines. These categories facilitate interpretation, allow for the identification of individuals experiencing clinically significant stress, and enable comparisons with other studies employing the same instrument.

In addition to the DASS-21, a structured questionnaire was used to collect primary data on the implementation and barriers to periodic health examinations. This questionnaire served as the main instrument for assessing respondents' understanding, perceptions, and attitudes toward comprehensive periodic health check-ups. It consisted of 13 statements developed through a systematic process that considered theoretical frameworks, occupational health guidelines, and contextual relevance to Community Health Center operations. The statements were designed to capture multiple cognitive and affective domains that influence preventive health behaviour, including normative beliefs (i.e., beliefs about what health workers think should ideally be done), perceived benefits (such as early detection of disease, improved well-being, and enhanced occupational safety), perceived risks (including concerns about confidentiality, fear of diagnosis, or perceived inconvenience), and perceived institutional support (such as availability of services, managerial encouragement, policy clarity, and resource adequacy).

The inclusion of these domains aligns with established behavioural theories such as the Health Belief Model, the Theory of Planned Behaviour, and the PRECEDE-PROCEED framework. These theories posit that preventive health actions are shaped by individuals' perceptions of susceptibility, severity, benefits, barriers, social norms, and enabling factors. By incorporating these constructs, the questionnaire provides a comprehensive assessment of the psychological and organizational determinants that may influence health workers' acceptance and participation in periodic examinations. The structured format ensures consistency across respondents, facilitates quantitative analysis, and allows for the identification of patterns in perceptions that may inform policy development, programme design, and resource allocation.

Together, the DASS-21 stress subscale and the structured questionnaire offer complementary insights into the occupational health landscape within Community Health Centers. The DASS-21 provides an objective measure of psychological strain that may be associated with occupational exposures or institutional shortcomings, while the questionnaire captures workers' cognitive and affective orientations toward preventive health practices and organizational readiness. This combination of instruments strengthens the study's methodological rigor by enabling the simultaneous examination of individual-level psychological factors and organizational-level perceptions related to the implementation of periodic health examinations. The dual-instrument approach also enhances the study's capacity to identify potential mismatches between perceived needs, institutional support, and actual psychological burden, thereby offering a more holistic understanding of the challenges and opportunities for improving occupational health programmes.

Study limitation

This study has several limitations that should be carefully considered when interpreting the findings and assessing their applicability to broader contexts. First, its descriptive and cross-sectional nature prevents conclusions regarding causal relationships between health workers' perceptions, institutional barriers, and actual participation in periodic health examinations. Cross-sectional designs capture information at a single point in time, which limits the ability to determine temporal sequences or assess whether certain perceptions or institutional conditions precede, influence, or result from participation in periodic examinations. Consequently, although associations can be observed, the study cannot establish whether positive perceptions lead to increased participation, whether institutional barriers reduce participation, or whether participation itself shapes workers' perceptions. Longitudinal or mixed-methods designs would be required to explore these causal pathways more rigorously.

Second, the study included 75 respondents from three Community Health Centers, with nurses and midwives constituting a substantial proportion of the sample; consequently, the findings may not represent all Community Health Centers or all categories of health workers in Banggai Regency. The sample composition may have influenced the results because different professional groups; such as physicians, sanitarians, laboratory personnel, pharmacists, and administrative staff may have distinct occupational exposures, health risks, and perceptions of periodic health examinations. Furthermore, the inclusion of only three Community Health Centers limits the geographic and organizational diversity captured in the study. Variations in management practices, resource availability, local regulations, and service capacity across other Community Health Centers may result in different levels of awareness, attitudes, and perceived barriers. Therefore, the generalizability of the findings to the entire district or to other regions should be approached with caution.

Third, responses were based largely on self-reported perceptions and may have been affected by recall bias or social-desirability bias, particularly because health workers are professionally expected to understand preventive health practices. Self-reported data are inherently subjective and may not accurately reflect actual behaviours or experiences. Health workers may have provided responses that align with professional norms or expectations rather than their true perceptions or practices. Social-desirability bias may have led respondents to overstate their agreement with statements supporting preventive health measures or understate barriers and negative experiences. Recall bias may also have influenced responses, especially when respondents were asked to reflect on past experiences with periodic examinations or institutional support. These biases may have contributed to an overestimation of positive perceptions and an underestimation of challenges.

Fourth, the available analysis provides more information about attitudes than about the actual proportion of workers who underwent periodic examinations, the types of examinations received, clinical findings, referral completion, and health outcomes. Without objective data; such as examination records, laboratory results, referral documentation, and follow-up reports the study cannot determine the extent to which periodic examinations are being implemented, whether they are clinically appropriate, or whether they lead to meaningful improvements in workers' health. The absence of such data limits the ability to evaluate programme effectiveness, identify gaps in service delivery, or assess whether abnormal findings are appropriately managed. As a result, the study provides insight into perceptions but does not offer a comprehensive picture of the operational status or clinical impact of periodic health examinations.

Finally, institutional barriers such as the absence of regulations and dedicated budgets should be further verified through systematic review of policy documents, budget records, programme reports, and interviews with decision-makers. Perceptions of institutional barriers may not fully reflect actual policy conditions or financial allocations. A more robust assessment would require triangulation of data from multiple sources, including official documents, financial statements, and managerial perspectives. Such verification is essential to determine whether barriers are structural, procedural, or related to communication gaps between management and frontline workers. Understanding the precise nature of these barriers would enable more targeted policy interventions and resource planning.

Future studies should involve a larger number of Community Health Centers, combine worker surveys with document reviews and examination records, and evaluate whether the implementation of periodic examinations improves early disease detection, worker attendance, productivity, and continuity of healthcare services. Expanding the sample size and geographic coverage would enhance representativeness and allow comparisons across different organizational settings. Integrating quantitative data with qualitative insights from managers, policymakers, and service providers would provide a more comprehensive understanding of both individual and institutional determinants of periodic examination implementation. Additionally, linking examination data with workforce outcomes; such as absenteeism, occupational illness rates, and service continuity would help determine the practical value of periodic examinations and inform evidence-based policy development. Longitudinal studies could further assess whether improvements in examination coverage lead to sustained health benefits and organizational performance over time.

CONCLUSION

Health workers at Community Health Centers in Banggai Regency demonstrated a high level of awareness that comprehensive periodic health check-ups are a preventive measure and an essential part of their right to occupational health protection. They understood that these examinations should be conducted regularly for all health workers, not only for those who are ill or over 40 years of age. However, this positive perception has not been fully translated into routine implementation because of structural barriers, particularly the absence of specific local regulations, dedicated budget allocations, and clear institutional arrangements. Therefore, fulfilling health workers' right to periodic health examinations requires

operational policies, adequate financing, defined institutional responsibilities, and systematic implementation and follow-up mechanisms at the Community Health Center and district levels.

Ethical consideration, competing interest and source of funding

-This study was conducted in accordance with ethical principles for health research involving human participants. Ethical approval was obtained from the Research Ethics Committee of Poltekkes Kemenkes Palu with reference number 004344/KEPK POLTEKKES KEMENKES PALU/2025, as well as official research permission from the Investment and One-Stop Integrated Services Office (DPMTSP) of Banggai Regency with reference number 503/207/DPMTSP/IP/VII/2025. All respondents were informed about the purpose, procedures, potential benefits, and risks of the study prior to data collection. Participation was entirely voluntary, and informed consent was obtained from all participants before inclusion in the study. Confidentiality and anonymity of participants were strictly maintained throughout the research process by ensuring that no personal identifiers were disclosed in any report or publication. Data were used solely for academic and research purposes.

-The authors declare that there are no competing interests, whether financial or non-financial, that could have influenced the design, implementation, analysis, or reporting of this study. The research was conducted independently without any external influence that may compromise the objectivity of the findings.

-This research was supported by Politeknik Kesehatan Kementerian Kesehatan Palu as the main funding institution. The funding body had no role in the study design, data collection, analysis, interpretation of data, or in the writing of the manuscript. The research was carried out independently by the authors as part of an academic research collaboration.

REFERENCES

1. WHO. Occupational health: Health workers. Geneva: World Health Organization; 2022.
2. Kemenkes RI. Peraturan Menteri Kesehatan Republik Indonesia nomor 48 tahun 2016 tentang standar keselamatan dan kesehatan kerja perkantoran. Jakarta: Kementerian Kesehatan Republik Indonesia; 2016.
3. Rai R, El-Zaemey S, Dorji N, Rai BD, Fritschi L. Exposure to occupational hazards among health care workers in low- and middle-income countries: A scoping review. *Int J Environ Res Public Health* [Internet]. 2021 Mar 5;18(5):2603. Available from: <https://www.mdpi.com/1660-4601/18/5/2603>
4. Kavanagh MM, Radakrishnan A, Unnikrishnan V, Cometto G, Kane C, Friedman EA, et al. Laws for health and care worker protection and rights: A study of 182 countries. Sriram V, editor. *PLOS Glob Public Heal* [Internet]. 2024 Dec 9;4(12):e0003767. Available from: <https://dx.plos.org/10.1371/journal.pgph.0003767>
5. Shabani T, Jerie S, Shabani T. The impact of occupational safety and health programs on employee productivity and organisational performance in Zimbabwe. *Saf Extrem Environ*. 2023 Jul 24;5:1–12.
6. Fernández-del-Peral A, González-Caballero J, Pérez-Navarro Á, Ruiz-Olmedo M-A, Castillo-Córdoba J-P, Gallego-Peragón M-C, et al. Workers' satisfaction with health surveillance: Development and validation of a new scale. *Int J Nurs Stud Adv* [Internet]. 2025 Dec;9:100368. Available from: <https://linkinghub.elsevier.com/retrieve/pii/S2666142X2500075X>
7. Setyati R, Astuti A, Utami T, Adiwjaya S, Hasyim DM. The importance of early detection in disease management. *J World Futur Med Heal Nurs*. 2024 Feb 1;2:51–63.
8. Araujo GC, Ribeiro CB, Costa MCM, Evangelista MLP, Lima MF, De Paula MC, et al. Evidence-based periodic health examinations for adults: a practical guide. *Cureus* [Internet]. 2025 Mar 3;3(3). Available from: <https://www.cureus.com/articles/344597-evidence-based-periodic-health-examinations-for-adults-a-practical-guide>
9. Ferreira JN dos S, Medeiros RLSFM de, Bezerra YCP, Oliveira GS, De-Quental OB. Community health workers: working conditions and occupational health. *Rev Bras Med do Trab* [Internet]. 2021;19(04):437–44. Available from: <https://www.rbmt.org.br/details/1636/en-US/agente-comunitario-de-saude--condicoes-laborais-e-saude-do-trabalhador>
10. Tandry N, Arif MJ, Siregar Z, Rosiwa R. The legal protection for patients in medical practice and healthcare services. *Int J Law, Soc Sci Humanit* [Internet]. 2024 Nov 30;1(2):100–10. Available from: <https://journal.lps2h.com/ijlsh/article/view/155>
11. Araujo GC, Ribeiro CB, Costa MCM, Evangelista MLP, Lima MF, De Paula MC, et al. Evidence-based periodic health examinations for adults: a practical guide. *Cureus* [Internet]. 2025 Mar 3; Available from: <https://www.cureus.com/articles/344597-evidence-based-periodic-health-examinations-for-adults-a-practical-guide>
12. Shaukat N, Ali DM, Razzak J. Physical and mental health impacts of COVID-19 on healthcare workers: a scoping review. *Int J Emerg Med* [Internet]. 2020 Dec 20;13(1):40. Available from: <https://intjem.biomedcentral.com/articles/10.1186/s12245-020-00299-5>
13. Khatri RB, Endalamaw A, Erku D, Wolka E, Nigatu F, Zewdie A, et al. Enablers and barriers of community health programs for improved equity and universal coverage of primary health care services: A scoping review. *BMC Prim Care* [Internet]. 2024 Oct 29;25(1):385. Available from: <https://bmcfampract.biomedcentral.com/articles/10.1186/s12875-024-02629-5>
14. Mansura Feby Amanda, Mira Ayu. Tantangan tenaga kesehatan dalam mengelola risiko K3 di Puskesmas Blang Geulumpang. *J Ilmu Kedokt dan Kesehat Indones* [Internet]. 2025 May 20;5(2):12–6. Available from: <https://researchhub.id/index.php/jikki/article/view/5996>
15. Goto E, Ishikawa H, Okuhara T, Okada H, Tsunozumi A, Kagawa Y, et al. Factors associated with adherence to recommendations for medical visits following annual health checkups among Japanese employees: A prospective cohort study. *Prev Med Reports* [Internet]. 2024 Jan;37:102565. Available from: <https://linkinghub.elsevier.com/retrieve/pii/S2211335523004564>
16. Kirsten W. The evolution from occupational health to healthy workplaces. *Am J Lifestyle Med* [Internet]. 2024 Jan 8;18(1):64–74. Available from: <https://journals.sagepub.com/doi/10.1177/15598276221113509>
17. Cho M-K, Cho Y-H. Role of perception, health beliefs, and health knowledge in intentions to receive health checkups among young adults in Korea. *Int J Environ Res Public Health* [Internet]. 2022 Oct 24;19(21):13820. Available from: <https://www.mdpi.com/1660-4601/19/21/13820>
18. Breneol S, Curran JA, Marten R, Minocha K, Johnson C, Wong H, et al. Strategies to adapt and implement health system guidelines and recommendations: a scoping review. *Heal Res Policy Syst* [Internet]. 2022 Dec 15;20(1):64. Available from: <https://health-policy-systems.biomedcentral.com/articles/10.1186/s12961-022-00865-8>
19. Kocatepe V, Yildirim D, Türkmenoğlu A. Evaluation of occupational safety and influencing factors among nurses working in internal medicine clinics. *BMC Nurs* [Internet]. 2025 Nov 27;24(1):1517. Available from: <https://link.springer.com/10.1186/s12912-025-04153-y>
20. Tang N, Eisenberg JM, Meyer GS. The roles of government in improving health care quality and safety. *Jt Comm J Qual Saf* [Internet]. 2020

- Jan;30(1):47–55. Available from: <https://linkinghub.elsevier.com/retrieve/pii/S1549374104300067>
21. Getahun GK, Arega M, Keleb G, Shiferaw A, Bezabih D. Assessment of routine medical checkups for common noncommunicable diseases and associated factors among healthcare professionals in Addis Ababa, Ethiopia, in 2022 a cross-sectional study. *Ann Med Surg* [Internet]. 2023 May;85(5):1633–41. Available from: <https://journals.lww.com/10.1097/MS9.0000000000000558>
 22. Driscoll T, Turner MC, Villeneuve PJ, Scheepers PTJ, Schlünssen V, Cao B, et al. The WHO/ILO Joint Estimates approach to occupational risk factor and burden of disease estimation: providing actionable evidence with impact across sectors in countries. *Ann Work Expo Heal* [Internet]. 2025 Mar 15;69(3):337–43. Available from: <https://academic.oup.com/annweh/article/69/3/337/8005292>
 23. Abdul N, Posangi J, Doda D, Kristanto E, Sumampouw O. Implementasi sistem manajemen keselamatan dan kesehatan kerja di Puskesmas: Studi Kualitatif di Puskesmas Kotabunan, Indonesia. *J Promot Prev* [Internet]. 2026 Feb 28;9(1 SE-Articles). Available from: <https://journal.unpacti.ac.id/index.php/JPP/article/view/2581>
 24. Setiaasih R, Sunjaya DK, Sofiatin Y, Afriandi I, Hilfi L, Herawati DMD. Readiness of health posts for primary health care integration in Indonesia: a mixed-methods study. *BMC Public Health* [Internet]. 2025 Apr 16;25(1):1429. Available from: <https://bmcpublihealth.biomedcentral.com/articles/10.1186/s12889-025-22520-x>
 25. Yasin SM, Ismail N, Masngut MI, Abdullah NN, Yasin NE, Omar M, et al. Protocol of health screening related to occupational diseases in 100 000 workers in critical sectors: a cross-sectional study with worksite risk assessment. *BMJ Open* [Internet]. 2024 Aug 29;14(8):e083796. Available from: <https://bmjopen.bmj.com/lookup/doi/10.1136/bmjopen-2023-083796>