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# Occupational Health and Safety, Training, and Teamwork for Hospital Medical Performance

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### For information

### Abstract

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**Keyword;**  
Health and Safety,  
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**Objective:** This study aims to investigate the relationships between Occupational Health and Safety (OHS), Training, Teamwork, and medical personnel performance in hospital settings.

**Method:** Data were collected from medical personnel in various hospitals, and multiple regression analysis was employed to examine the associations between OHS, Training, Teamwork, and medical personnel performance. Additionally, multicollinearity tests and Normal P-Plot Regression Standardized Residual analysis were conducted to ensure the reliability of the findings.

**Findings:** The results indicate significant positive relationships between OHS, Training, Teamwork, and medical personnel performance. Specifically, conducive OHS environments, effective training programs, and collaborative teamwork dynamics were found to enhance medical personnel performance significantly.

**Novelty:** This study contributes to the existing literature by providing empirical evidence of the importance of OHS, Training, and Teamwork in improving medical personnel performance. The findings underscore the critical role of these factors in optimizing healthcare delivery and patient outcomes.

**Research Implications:** The findings suggest that healthcare organizations should prioritize creating safe and healthy work environments, investing in comprehensive training programs, and fostering effective teamwork practices to enhance medical personnel performance. These implications have significant implications for improving operational efficiency and patient care quality in healthcare settings.

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## 1. Introduction

The era of globalization requires Indonesian health workers to improve quality and professionalism by carrying out services according to professional standards (Etukakpan et al., 2023). Hospitals, as key elements in healthcare delivery and open-system organizations that interact with their environment, must provide quality resources to achieve dynamic balance and provide optimal services (Abdalkareem et al., 2021). The success of a hospital largely depends on the quality of its human resources, who are considered a valuable asset and investment, especially if they are skilled

(Mousa et al., 2019). The success of the service cannot be separated from the factors of nursing services or quality nursing care (Abdullah et al., 2021). To achieve international professional standards, health workers must continuously engage in continuing education, have high clinical competence, follow professional ethics, communicate effectively, and have management and leadership skills (Mlambo et al., 2021). The use of the latest technology, a focus on patient safety, multidisciplinary collaboration, and participation in research and development are also critical to

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delivering high-quality healthcare in this era of globalization (Liu et al., 2021; Micco et al., 2022).

One of the current issues that has become the focus of attention is the management of Occupational Health and Safety (OHS) in hospitals. In accordance with the OHS guidelines by the Ministry of Health (2006) and Law No 23 of 1992 on health, OHS efforts must be organized in all workplaces, including hospitals that have health hazards for employees and patients. However, the implementation of OHS is often not optimal, and this raises various problems that need to be addressed immediately.

In the context of Occupational Health and Safety (OHS) management in hospitals, related theories and concepts have a very important role (Fan et al., 2020). Theories that support the understanding and implementation of OHS include various approaches, ranging from risk management theory to organizational behavior theory. One of the relevant theories is Risk Management theory, which emphasizes the importance of identifying, evaluating, and controlling risks in the work environment (Saeidi et al., 2019). By applying this theory, hospitals can identify potential hazards and develop strategies to reduce or eliminate those risks, thereby improving safety for medical personnel and patients. In addition, Organizational Behavior theory also has great relevance, especially in understanding the factors that influence individual and group behavior in organizations (Joosen et al., 2019). With a better understanding of motivation, perception, and communication patterns, hospital management can design more effective interventions to increase awareness and adherence to OHS practices in the workplace (Shahbaz & Sajjad, 2021). By applying these theories holistically, hospitals can strengthen their OHS systems and create a safer and healthier work environment for all parties involved (Karanikas et al., 2020).

In this context, the importance of training for medical personnel in OHS becomes clear. Training, as highlighted by Febriawan Ardi Nugroho (2014), has long-term benefits in shaping greater responsibility for medical personnel and improving their performance. Training not only improves practical skills, but also forms awareness of the importance of maintaining safety and health in the work environment. However, there are still challenges in organizing equitable and effective

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training for all medical personnel in hospitals. Some of these challenges may include limited access to resources for training, gaps in understanding of the importance of OHS, and logistical and time constraints often faced by busy medical staff. Therefore, greater efforts are needed from the hospital management and continuous support from various related parties to ensure that OHS training can be evenly and sustainably organized for all medical staff. Therefore, the need for deeper research on the implementation of OHS in hospitals is becoming increasingly important (Hale, 2019). Previous research, as described by Silva & Amaral (2019), has identified problems in OHS management and the performance of medical personnel in hospitals. However, there are differences in results and gaps that need to be further explored to develop more effective strategies to address these challenges. The urgency to conduct new and more in-depth research is all the more pressing given the changing dynamics of the work environment and the complexity of implementing OHS practices in hospitals. By gaining a more comprehensive understanding through new research, it is expected that innovative and effective solutions will emerge to improve OHS implementation and enhance occupational safety and health for medical personnel and patients (Dini et al., 2018; Farokhzadian et al., 2018).

The purpose of this study is to investigate in more depth the main challenges in the implementation of OSH in hospitals, analyze the factors affecting OSH performance, and formulate recommendations to improve OSH practices in the hospital environment. It is expected that the results of this study will make important contributions both theoretically and practically in improving occupational safety and health in hospitals, as well as providing significant social benefits in the protection of medical personnel and patients.

## 2. Critical Review

In the study of human resource management (HRM) and occupational health, there are a series of concepts and theories that underlie the practices carried out in various organizations, including hospitals. The concept of HRM, as expressed Chams & García-Blandón (2019), highlights the importance of policies and practices that focus on the human

aspect or human resources in management. The main objective of HRM is to enable organizations to obtain and retain qualified and highly motivated employees, and to increase their capacity and contribution (Ozkeser, 2019).

Furthermore, occupational health is an important focus in efforts to maintain employee well-being in the work environment. The concept of occupational health, as explained by Abdin et al. (2018), Varianou-Mikellidou et al. (2019), highlights the physical and psychological risks that can occur due to an unhealthy work environment. Attention to employee health is important for companies, especially those with high accident rates, as expressed (Duryan et al., 2020).

In addition to health, occupational safety is also an aspect that should not be ignored in the work environment. Occupational safety, according to Kumar (2021), is a human right that must be protected and respected by the government and community members. The focus on work safety involves preventing accidents, fires, explosion hazards, and ensuring the protection of employees from various risks in the work environment.

Occupational health and safety programs are an important tool in maintaining safe and healthy working conditions. This program covers various aspects, from accident prevention to protecting employees from physical and psychological hazards (Badri et al., 2018). The importance of training for employees is also highlighted in this context, as training can improve employees' knowledge, skills and attitudes in performing their duties better (Sendawula et al., 2018).

Kerja tim juga memegang peranan penting dalam mencapai tujuan organisasi. Definisi kerja tim oleh Scarnati (2001) dan Tracy (2006) menekankan pentingnya kolaborasi dan komunikasi antar anggota tim untuk mencapai hasil yang luar biasa. Dalam konteks kinerja, setiap individu memiliki potensi yang dapat diekspresikan melalui perilaku nyata yang menghasilkan kontribusi bagi organisasi, sebagaimana diungkapkan (Sendawula et al., 2018). Terakhir, penilaian kinerja menjadi alat penting dalam mengukur prestasi kerja karyawan. Dengan penilaian yang obyektif, manajer dapat memberikan umpan balik yang memungkinkan karyawan memperbaiki kinerja mereka, serta merencanakan

pengembangan karier dan pelatihan yang sesuai, seperti yang dijelaskan (Sendawula et al., 2018). Dari pemahaman konsep-konsep tersebut, hipotesis kritis yang diajukan adalah bahwa implementasi yang efektif dari manajemen sumber daya manusia, kesehatan kerja, keselamatan kerja, program pelatihan, kerja tim, dan penilaian kinerja akan berkontribusi positif terhadap kinerja organisasi, termasuk dalam konteks rumah sakit. Dalam menguji hipotesis ini, perlu dilakukan penelitian yang mendalam untuk mengevaluasi praktik-praktik terkait di berbagai rumah sakit dan mengidentifikasi strategi yang paling efektif dalam meningkatkan kesejahteraan karyawan dan kinerja organisasi secara keseluruhan.

Kerangka konseptual merupakan rangkuman mengenai relasi antara variabel-variabel yang disusun berdasarkan berbagai teori yang telah dikemukakan. Teori-teori tersebut kemudian dianalisis secara teliti dan sistematis untuk menghasilkan gambaran menyeluruh tentang hubungan antar variabel yang menjadi fokus penelitian. Hasil analisis ini digunakan sebagai dasar untuk merumuskan hipotesis yang akan diuji. Pada penelitian ini, fokusnya adalah mengidentifikasi variabel yang berpengaruh terhadap Kesehatan dan Keselamatan Kerja, Pelatihan, dan Kerja Tim, sementara variabel yang terpengaruh adalah kinerja tenaga medis di lingkungan rumah sakit.

### 3. Method Innovation

This research was conducted in Demak, Indonesia. Population and sample selection are important components in research to collect data from the variables under study. Population is a generalization area consisting of objects / subjects that have certain qualities and characteristics set by researchers to study and then draw conclusions (Sugiyono, 2014). The population of this study consisted of 300 (three hundred) medical personnel at the Demak Regional General Hospital.

Sampling is the process of selecting a subset of the population with particular characteristics. When dealing with a large population, constraints such as limited funds, manpower, and time make it impractical to study every element, necessitating the use of sampling. The findings from the sample are then generalized to the entire population, underscoring the importance of ensuring the sample is truly representative. In this study, purposive

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sampling technique was utilized, wherein samples are chosen based on specific considerations. In this case, the respondents were selected from Demak, Indonesia, specifically targeting medical staff members. The sample selection criteria were aligned with these considerations, as they directly influenced the variables under investigation (Castro et al., 2020). The determination of the sample size was based on a known population size, calculated using Slovin's Formula (Madjid et al., 2020).

$$n = \frac{N}{1+Ne^2} \quad (1)$$

Where:

$n$  = Sample Size

$N$  = Population Size

$e^2$  = Tolerance level for sampling error, squared (set at 10% for maximum tolerable error)

Based on the available data, the sample size for this study was calculated as follows:

$$n = \frac{300}{1+300(0.1)^2} = 75 \quad (2)$$

This research adopted a quantitative approach using a survey research method, which involves sampling from a population and utilizing a questionnaire as the primary data collection tool (Ngozi et al., 2018). Quantitative research methods are grounded in positivism philosophy and are used to examine specific populations or samples. The sampling technique generally involves random selection, and data collection utilizes research instruments, with data analysis being quantitative/statistical to test predetermined hypotheses (Guan et al., 2021).

Data collection can be conducted using primary and secondary data sources. Primary data refers to information obtained firsthand by the researcher related to the variables of interest for the study's specific purposes. Secondary data, on the other hand, refers to information collected from existing sources (V & A N, 2022). In this study, data collection techniques included both primary and secondary data sources (Hatfield, 2021).

Primary data were collected directly from the source by administering questionnaires to the research respondents, who were medical staff members at DemAK Regional General Hospital Batam. Secondary data were obtained from hospital records or documentation, information from relevant journals or literature related to the research topic,

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through literature review, and internet sources (Rahmayanti et al., 2021).

#### 4. Innovation Result and Discussion

Rumah sakit tersebut menegaskan dedikasinya untuk menyediakan pelayanan yang optimal bagi seluruh komunitas, termasuk kelompok-kelompok sosial yang sering kali terpinggirkan, seperti suku laut dan individu dari daerah terpencil. Mereka juga melayani kelompok-kelompok yang berisiko tinggi, seperti penghuni kompleks WTS, pekerja kasar, dan buruh industri. Dalam menghadapi evolusi kebutuhan masyarakat terhadap layanan kesehatan yang lebih baik, pada 8 Oktober 1993, Meskipun bertransformasi menjadi rumah sakit, mereka tetap setia pada tujuan awal mereka dan berkomitmen untuk terus meningkatkan peran mereka dalam upaya meningkatkan kesehatan masyarakat. Rumah Sakit juga aktif dalam menyelenggarakan Pusat Penelitian serta program-program pencegahan penyakit menular seperti HIV/AIDS dan Hepatitis B, menjalin kemitraan dengan berbagai instansi baik di dalam maupun di luar negeri.

Seksi keperawatan memiliki tanggung jawab yang luas dalam mengoordinasikan, mengawasi, dan memastikan kelancaran pelayanan keperawatan di berbagai unit, termasuk rawat inap, rawat jalan, dan rawat khusus. Mereka dipimpin oleh seorang kepala seksi yang bertanggung jawab langsung kepada Direktur. Di bawah kepemimpinan ini, terdapat tiga koordinator yang bertanggung jawab atas bidang spesifik. Pertama, Koordinator Asuhan Keperawatan bertugas untuk mengembangkan dan memastikan kualitas asuhan keperawatan. Kedua, Koordinator Logistik Keperawatan bertanggung jawab atas pengadaan dan pengelolaan sarana keperawatan di berbagai instalasi, serta berkewajiban untuk melaporkan kondisi logistik secara berkala kepada seksi keperawatan. Terakhir, Koordinator SDM Keperawatan fokus pada peningkatan pengetahuan, keterampilan, etika, dan mutu perawat. Melalui kerja sama dan koordinasi antara ketiga koordinator ini, seksi keperawatan bertujuan untuk meningkatkan standar pelayanan keperawatan secara keseluruhan.

Seksi pelayanan medis bertanggung jawab atas pengaturan dan koordinasi semua kebutuhan pelayanan medis dan penunjang medis, termasuk pemantauan fasilitas, kegiatan medis, dan pengawasan pasien. Seorang kepala seksi memimpin seksi ini dan bertanggung jawab kepada Direktur.

Seksi ini terdiri dari tiga koordinator. Pertama, Koordinator Penunjang Medis bertugas melayani dan mengkoordinasikan kebutuhan berbagai instalasi, seperti rawat inap, gawat darurat, pemeliharaan fasilitas, rehabilitasi medik, farmasi, dan gizi. Kedua, Koordinator P 5 mengawasi penerimaan, pemulangan pasien, serta tugas terkait pelayanan pasien lainnya. Melalui koordinasi antara kepala seksi dan koordinator, seksi pelayanan medis berupaya memastikan pelayanan medis yang efisien dan berkualitas.

The results of the respondents' answers to the teamwork variables, as depicted in Table 1, offer insightful data regarding team dynamics and cooperation within the studied group. For Item 1, the highest response was "SS" (Strongly Agree) at 31%, followed by "S" (Agree) at 25%, indicating a generally positive perception of teamwork. However, 16% of respondents chose "TS" (Disagree), suggesting a notable minority of dissatisfaction that warrants further investigation. For Item 2, "S" (Agree) garnered the highest response at 35%, with "SS" (Strongly Agree) close behind at 31%. This distribution suggests that most respondents have a favorable view of teamwork, although the 13% who selected "TS" (Disagree) indicates room for improvement in team dynamics. Item 3 showed a slightly more distributed pattern, with 28% choosing "S" (Agree) and 27% choosing "SS" (Strongly Agree). Interestingly, 29% of respondents were neutral, and 16% chose "TS" (Disagree), highlighting a more divided perception of teamwork efficacy.

The findings reveal a general trend towards positive perceptions of teamwork among the respondents, but also highlight areas of concern, particularly for those who disagreed with the statements. The presence of neutral and negative responses suggests variability in the teamwork experience, which could be influenced by factors such as individual roles, team composition, or organizational culture. Future research should explore these factors in greater detail to develop targeted interventions aimed at enhancing teamwork effectiveness. This analysis is crucial for developing a robust understanding of team dynamics and fostering a more cohesive and productive work environment.

The analysis of respondents' answers to the performance variable, as detailed in Table 2,

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indicates the validity of the items used in the study. Each item's correlation coefficient (R Count) is compared against the critical value (R Critical) of 0.2303. All items exceed this threshold, indicating that they are valid measures of the performance variable. Item 2 has the highest R Count at 0.633, suggesting it is the most robust indicator of performance. This is followed closely by Item 15 with an R Count of 0.566 and Item 3 with 0.555. These high correlations reflect strong agreement among respondents, confirming that these items are reliable indicators of the performance variable. Even the items with lower R Counts, such as Item 12 (0.322) and Item 10 (0.345), still surpass the critical value, supporting their acceptance as valid measures. The consistency across all items underscores the reliability of the questionnaire. These results highlight that the 15-item questionnaire is a comprehensive and effective tool for assessing performance. The significant correlations indicate that each item contributes meaningfully to the overall measure of the performance variable. Future research should explore why some items exhibit stronger correlations than others. This understanding can help refine the questionnaire to enhance its precision and applicability. Additionally, investigating the contextual factors influencing these responses could provide deeper insights into performance dynamics within the studied setting. In conclusion, the validation of all 15 items in this study confirms the questionnaire's effectiveness as a reliable measure of performance. This validation provides a solid foundation for future research and practical application in performance assessment.

The results of the performance validity test, as shown in Table 3, indicate that all variables have acceptable levels of internal consistency, as evidenced by their Cronbach's alpha coefficients. Specifically, the K3 variable has a Cronbach's alpha of 0.690, which, while the lowest, still meets the threshold for acceptance. The Training variable shows a strong reliability with a Cronbach's alpha of 0.864, indicating high internal consistency. Teamwork, with the highest Cronbach's alpha of 0.940, demonstrates excellent reliability, suggesting that the items consistently measure the intended construct. The Performance variable also shows good reliability with a Cronbach's alpha of 0.773. These results confirm that the instruments used to measure these variables are reliable and suitable for

assessing the respective constructs, ensuring the robustness of the study's findings.

Table 4 presents the results of the multicollinearity test, showcasing the tolerance and variance inflation factor (VIF) for each variable in the model. Tolerance values exceeding 0.1 and VIF values below 10 are generally considered acceptable, indicating minimal multicollinearity concerns. In this study, all variables demonstrate adequate tolerance levels, ranging from 0.743 to 0.951, suggesting that each predictor variable contributes unique information to the model. Similarly, the VIF values, ranging from 1.012 to 1.347, confirm the absence of significant multicollinearity issues. These findings indicate that the variables included in the model exhibit independence from one another, validating the reliability of the regression analysis results and supporting the robustness of the study's conclusions.

The multicollinearity test results, as demonstrated in Table 4, indicate that the predictor variables K3, Training, and Teamwork exhibit acceptable levels of tolerance and variance inflation factor (VIF). Tolerance values above 0.1 and VIF values below 10 are indicative of minimal multicollinearity concerns, affirming the independence of these variables within the regression model. This implies that each predictor variable contributes unique information to the model without being excessively influenced by other variables. Such independence strengthens the reliability of the regression analysis and underscores the robustness of the study's conclusions. Moreover, the Normal P-Plot Regression Standardized Residual analysis confirms the adherence of the regression model to the assumption of normality. The spread of data points around the diagonal line suggests that the residuals follow a normal distribution, further validating the reliability of the regression analysis results.

Subsequently, the hypothesis testing results provide significant insights into the relationships under investigation. Firstly, regarding the influence of Occupational Health and Safety (OHS) on medical personnel performance, the statistical analysis reveals a positive and significant effect (Cao et al., 2021; Segbenya & Yeboah, 2022; Yang & Maresova, 2020). This implies that a conducive OHS environment positively impacts the performance of medical personnel, aligning with

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existing literature emphasizing the importance of workplace safety and health in enhancing employee productivity and well-being (Flynn et al., 2018; Loh et al., 2020).

Secondly, the impact of Training on medical personnel performance is also found to be positive and significant (Sendawula et al., 2018). This underscores the pivotal role of training programs in equipping medical staff with the necessary skills and knowledge, ultimately enhancing their performance levels (Fakoya et al., 2023; Lee et al., 2021). Such findings resonate with prior research highlighting the value of continuous training and professional development initiatives in healthcare settings (Medendorp et al., 2021; Olson et al., 2019; Pinzone et al., 2019).

Lastly, the examination of the influence of Teamwork on medical personnel performance reveals a positive and significant relationship (Jamshed & Majeed, 2019; Lyubovnikova et al., 2018). This emphasizes the criticality of effective teamwork dynamics in promoting better performance outcomes among medical staff (Kolbe & Boos, 2019; Zajac et al., 2021). Collaborative work environments foster enhanced communication, coordination, and mutual support, all of which are essential for delivering high-quality patient care (Matzke et al., 2021; Simons et al., 2022).

In conclusion, the findings of this study contribute to the existing body of knowledge by providing empirical evidence of the significant relationships between OHS, Training, Teamwork, and medical personnel performance (Shaikh et al., 2023). These insights underscore the importance of fostering supportive work environments, investing in training and development programs, and promoting effective teamwork practices to optimize medical personnel performance and ultimately improve healthcare delivery. Such implications have far-reaching implications for healthcare organizations striving to enhance operational efficiency and patient outcomes (Eftekhar Ardebili et al., 2021).

## 5. Conclusion

From the above discussion, it can be concluded that the results of the analysis show a significant relationship between the factors of work environment, training, teamwork, and medical staff performance. This finding underscores the



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importance of creating a safe and healthy work environment, providing quality training, and encouraging effective teamwork in improving medical staff performance. The implications of these findings provide impetus for healthcare organizations to invest resources in improving

working conditions, employee development, and promotion of teamwork to optimize healthcare services and patient outcomes.

## 6. Table and Image

**Table 1.** Description of Respondents' Answers to Teamwork Variables

Question	Data Score					
	SS	S	N	TS	STS	
1	22	20	22	11	0	75
Item 1	31%	25%	28%	16%	0%	100 %
2	23	15	27	10	0	75
Item 2	31%	21%	35%	13%	0%	100 %
3	20	20	11	13	0	75
Item 3	27%	28%	29%	16%	0%	100 %

Data processed by author 2024

**Table 2.** Performance Validity Test Item-Total Statistics

Item Question	R Count	R Critical	Description
Item 1	0,543	0,2303	accepted
Item 2	0,633	0,2303	accepted
Item 3	0,555	0,2303	accepted
Item 4	0,547	0,2303	accepted
Item 5	0,476	0,2303	accepted
Item 6	0,522	0,2303	accepted
Item 7	0,371	0,2303	accepted
Item 8	0,421	0,2303	accepted
Item 9	0,463	0,2303	accepted
Item 10	0,345	0,2303	accepted
Item 11	0,421	0,2303	accepted
Item 12	0,322	0,2303	accepted
Item 13	0,543	0,2303	accepted
Item 14	0,534	0,2303	accepted
Item 15	0,566	0,2303	accepted

Data processed by author 2024

**Table 3.** Reliability Test

Variabel	Cronbach's $\alpha$	Description
K3	0,690	accepted
Training	0,864	accepted
Teamwork	0,940	accepted
Performance	0,773	accepted

Data processed by author 2024

**Table 4.** Multicollinearity Test (Coefficientsa)

Model	Tolerance	VIF
K3	0,951	1,012
Training	0,755	1,347
Teamwork	0,743	1,345

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## Feedback and suggestions

To improve patient care, it is important to pay attention to the welfare of nurses in order to avoid mistakes that can harm both patients and nurses themselves. Hospitals have a responsibility to provide a safe and healthy working environment for nurses, which in turn will improve the quality of care provided. Nurses need to consider six goals to improve patient safety, which also impacts the overall standard of nursing care.

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