PROFESIONAL HEALTH JOURNAL
Volume 7, No. 2 (Page. 971-980)
Available Online at https://www.ojsstikesbanyuwangi.com/index.php/PHJ/index
E-ISSN 2715-6249
DOI: https://doi.org/10.54832/phj.v7i2.1540

Relationship Between Knowledge About Personal Protective Equipment (PPE) And Use Of Personal Protective Equipment (PPE) Among Chicken Coop Workers

Fitra Handika Hutama * | Leili Setiawan Rosyid | Nur Aini Fatimah | Heru Wahyudi
[a] Department of Nursing, STIKes Satria Bhakti Nganjuk,
[b] Department of Nursing, STIKes Satria Bhakti Nganjuk,
[c] Department of Nursing, STIKes Satria Bhakti Nganjuk,
[d] Department of Nursing, STIKes Satria Bhakti Nganjuk,
*Corresponding Author: fitrahandika93@gmail.com

ARTICLE INFORMATION

Article history
Received (18 July 2026)
Revised (27 July2024)
Accepted (28 July 2024)

Keywords
Knowledge, Personal Protective Equipment, Occupational Safety, Poultry Workers, PPE

ABSTRACT

Introduction: *Poultry farm workers are exposed to various occupational hazards, including dust, ammonia, biological agents, and zoonotic pathogens, which increase the risk of occupational diseases and work-related injuries. The use of Personal Protective Equipment (PPE) is one of the primary preventive measures to reduce these risks. However, PPE compliance among poultry farm workers remains low, and inadequate knowledge regarding occupational hazards and the benefits of PPE may contribute to this behavior.*

Objective: *To determine the relationship between knowledge regarding Personal Protective Equipment (PPE) and PPE use among poultry farm workers.*

Methods: *This quantitative correlational study employed a cross-sectional design. The study involved all 62 poultry farm workers, and total sampling was applied. Knowledge regarding PPE was measured using a structured questionnaire, whereas PPE use was assessed through direct observation using an observation checklist. Descriptive statistics were used to summarize respondents' characteristics and study variables. The association between PPE knowledge and PPE use was analyzed using contingency table analysis at a significance level of $\alpha = 0.05$.*

Results: *Of the 62 respondents, 32 (51.6%) had poor knowledge regarding PPE, while 53 (85.5%) were observed not using PPE during work activities. Workers with good knowledge demonstrated a higher proportion of PPE use than those with sufficient or poor knowledge. Statistical analysis showed a significant association between knowledge regarding PPE and PPE use among poultry farm workers ($p < 0.001$).*

Conclusion: *Knowledge regarding PPE was significantly associated with PPE use among poultry farm workers. Workers with better knowledge were more likely to use PPE than those with lower knowledge levels. Strengthening occupational health and safety education, together with workplace support for PPE availability and supervision, may improve PPE compliance and contribute to reducing occupational health risks among poultry farm workers..*

Introduction

Occupational Safety and Health (OHS) is a crucial aspect in creating a safe, healthy, and productive work environment. The implementation of OHS aims to prevent

PROFESIONAL HEALTH JOURNAL
Volume 7, No. 2 (Page. 971-980)
Available Online at https://www.ojsstikesbanyuwangi.com/index.php/PHJ/index
E-ISSN 2715-6249
DOI: https://doi.org/10.54832/phj.v7i2.1540

workplace accidents and occupational diseases while minimizing various risks that may endanger workers during their activities (World Health Organization, 2024; Tarwaka, 2023; Presiden Republik Indonesia, 1970). One of the simplest yet most effective forms of risk control is the use of Personal Protective Equipment (PPE). PPE serves as the last line of defense to protect workers from exposure to physical, chemical, biological, and mechanical hazards that cannot be eliminated through engineering or administrative controls (Occupational Safety and Health Administration, 2024; Peraturan Menteri Ketenagakerjaan Republik Indonesia No. 8 Tahun 2010). Therefore, PPE is an integral component of occupational safety management systems in various work sectors, including the livestock sector (Tarwaka, 2023; World Health Organization, 2022).

The chicken farming sector is one of the occupational sectors with a high potential for workplace hazards. Poultry farm workers routinely perform activities such as coop preparation, feeding, vaccination, medication, cleaning, harvesting, and waste management, all of which expose them to organic dust, poultry feathers, manure, ammonia gas, microorganisms, and hazardous chemicals (Occupational Safety and Health Administration, 2024; Adebowale & Adeyemo, 2016). Such exposures increase the risk of respiratory diseases, eye and skin irritation, occupational injuries, and zoonotic infections (Occupational Safety and Health Administration, 2024; World Health Organization, 2024).

Zoonotic diseases remain a significant public health concern because they may cause severe illness and death in humans. Transmission may occur through direct contact with infected animals, inhalation of contaminated air, contaminated animal products, or vectors. Exposure to organic dust containing bacteria, fungi, viruses, and endotoxins in poultry farming further increases the risk of occupational respiratory diseases. Consequently, the use of PPE—including masks or respirators, gloves, boots, protective clothing, head protection, and eye protection—is an essential preventive measure (World Health Organization, 2024; Occupational Safety and Health Administration, 2024).

Although the effectiveness of PPE is well recognized, compliance among workers in informal and small-scale poultry farms remains relatively low (Arcury et al., 2012; Zhou et al., 2021). PPE utilization is influenced by multiple factors, including workers' knowledge, attitudes, comfort, PPE availability, supervision, workplace safety culture, and organizational policies (Green & Kreuter, 2005; Zhou et al., 2021). Among these determinants, knowledge is considered an important predisposing factor affecting health behavior. Workers with adequate knowledge regarding occupational hazards and PPE benefits are more likely to recognize risks and consistently use PPE, whereas those with limited knowledge tend to underestimate occupational hazards (Notoatmodjo, 2018; Green & Kreuter, 2005).

Previous studies have investigated the relationship between PPE knowledge and PPE utilization among industrial workers, agricultural workers, and healthcare personnel. However, evidence among poultry farm workers, particularly in rural Indonesian settings, remains limited (Adebowale & Adeyemo, 2016; Arcury et al., 2012; Zhou et al., 2021). Most previous studies relied on self-reported PPE practices, whereas relatively few combined workers' knowledge assessment with direct workplace observation. Occupational safety practices may also differ according to local working conditions, PPE availability, and organizational safety culture. Therefore, this study addresses an

PROFESIONAL HEALTH JOURNAL
Volume 7, No. 2 (Page. 971-980)
Available Online at https://www.ojsstikesbanyuwangi.com/index.php/PHJ/index
E-ISSN 2715-6249
DOI: https://doi.org/10.54832/phj.v7i2.1540

important knowledge gap by examining the relationship between PPE knowledge and directly observed PPE use among poultry farm workers in rural Indonesia (Adebowale & Adeyemo, 2016; Zhou et al., 2021).

According to Notoatmodjo's theory, knowledge is obtained through the human senses and forms the basis for attitudes and behavior. In occupational safety, adequate knowledge regarding PPE functions, benefits, types, and proper use is expected to improve workers' awareness and compliance with safe work practices (Notoatmodjo, 2014; Notoatmodjo, 2018). Tarwaka also emphasized that successful OHS implementation is strongly influenced by workers' knowledge, training, work experience, and organizational commitment to occupational safety (Tarwaka, 2023).

Methods

Study Design

This study employed an analytical correlational design using a cross-sectional approach to examine the association between knowledge regarding Personal Protective Equipment (PPE) and PPE use among poultry farm workers. A cross-sectional design measures exposure and outcome variables simultaneously at a single point in time and is appropriate for identifying associations between variables rather than establishing causal relationships (Notoatmodjo, 2018; Nursalam, 2020).

Setting

This study was conducted in June 2026 at poultry farms located in Tiripan Village, Berbek District, Ngepeh Village, Loceret District, Balongan Village, and Jatirejo Village, Nganjuk Regency, East Java Province, Indonesia. The accessible population consisted of 62 poultry farm workers, and total sampling was applied to include all eligible respondents. Workers were directly involved in poultry farming activities and were potentially exposed to occupational hazards, including organic dust, poultry feathers, chicken droppings, ammonia gas, pathogenic microorganisms, and work-related injuries. Initial observations indicated low compliance with PPE use among workers.

Research Subject

The accessible population consisted of 62 poultry farm workers. Total sampling was used to recruit all eligible workers because the accessible population was relatively small and could be fully included in the study. Eligibility was determined based on predetermined inclusion and exclusion criteria. All 62 eligible workers participated in the study and were included in the final analysis, resulting in a 100% response rate.

The inclusion criteria were as follows: (1) actively working as a poultry farm worker; (2) having worked on the farm for at least six months; (3) directly involved in routine poultry farm activities; (4) present during questionnaire completion and workplace observations; (5) able to understand the language of the study; (6) willing to participate; and (7) providing written consent. A minimum work duration of six months was chosen to ensure that participants had sufficient work exposure and work experience to become familiar with routine poultry farm activities, workplace hazards, and the use of recommended personal protective equipment (PPE).

Exclusion criteria included administrative personnel not directly involved in poultry farming activities, temporary workers employed for less than six months, workers absent due to leave or illness during data collection, workers who could not be observed during routine work activities, and respondents with incomplete questionnaires or observation data.

PROFESIONAL HEALTH JOURNAL
Volume 7, No. 2 (Page. 971-980)
Available Online at https://www.ojsstikesbanyuwangi.com/index.php/PHJ/index
E-ISSN 2715-6249
DOI: https://doi.org/10.54832/phj.v7i2.1540

Eligible workers were recruited after obtaining permission from the poultry farm owner. The farm owner introduced the study to the workers, after which the researcher invited eligible workers individually. Written informed consent was obtained from each participant prior to data collection. Participation was voluntary; workers were informed that they could refuse or withdraw at any time without any consequences to their employment, and no financial or material incentives were provided.

No formal sample size calculations or statistical power analysis were performed because total sampling was used to cover the entire accessible population. However, the relatively small number of workers observed using PPE may have limited the statistical precision of the association estimates and reduced the generalizability of the findings. These limitations should be considered when interpreting the study results.

Instruments

Knowledge Questionnaire

Workers' knowledge regarding Personal Protective Equipment (PPE) was measured using a structured true–false questionnaire. Each correct answer was scored 1 and each incorrect answer was scored 0. The total score was converted into a percentage and classified into three categories: good (76–100%), sufficient (56–75%), and poor (≤55%). The questionnaire was administered to all eligible respondents prior to the observation of PPE use.

PPE Observation Sheet

PPE use was assessed using a structured observation sheet developed by the researchers, adapted from occupational safety regulations or previous studies. The observation sheet consisted of seven PPE components: work clothes, aprons, head protection, eye protection, masks or respirators, gloves, and boots. Observations were conducted while workers were performing routine poultry farming activities to assess actual PPE use in the workplace.

Each PPE component was recorded as used or not used during the observation period. The scoring procedure, for example, whether each component received a score of 1 if used and 0 if not used, and explained how overall PPE compliance was determined. The observation sheet was based on national occupational safety regulations, institutional guidelines, or previous studies.

Variable	n (%)
Age	
31–40 years	24 (39.0)
Sex	
Male	62 (100.0)
Female	0 (0.0)
Education	
Senior high school	42 (68.0)
Farm location	Tiripan, Balongan, Ngepeh, and Jatirejo Villages

Bivariate analysis

The association between workers' knowledge regarding Personal Protective Equipment (PPE) and observed PPE use was analyzed using contingency table analysis. Prior to hypothesis testing, the assumptions for the contingency table were evaluated. Because several expected cell frequencies were less than five, the assumptions for the asymptotic Pearson Chi-square test were

PROFESIONAL HEALTH JOURNAL
Volume 7, No. 2 (Page. 971-980)
Available Online at https://www.ojsstikesbanyuwangi.com/index.php/PHJ/index
E-ISSN 2715-6249
DOI: https://doi.org/10.54832/phj.v7i2.1540

not fully satisfied. Therefore, an exact procedure, such as the Fisher–Freeman–Halton exact test or the Monte Carlo exact test, is recommended to provide a more accurate estimation of statistical significance for the 3 × 2 contingency table.

Table 3 shows that workers with good knowledge demonstrated a higher proportion of PPE use (7 of 13 workers; 53.8%) compared with workers with sufficient knowledge (1 of 17 workers; 5.9%) and poor knowledge (1 of 32 workers; 3.1%). Conversely, the majority of workers with sufficient and poor knowledge did not use PPE during routine work activities. These findings indicate a positive association between PPE knowledge and PPE use among poultry farm workers.

The statistical analysis demonstrated a significant association between PPE knowledge and PPE use ($p < 0.001$). However, because the contingency table contained expected cell counts below the recommended threshold, the reported significance should be confirmed using an exact statistical procedure. Therefore, the findings should be interpreted with caution until verified using the original dataset and an appropriate exact test.

One limitation of the statistical analysis is that several expected cell frequencies in the contingency table were below the minimum assumption required for the asymptotic Pearson Chi-square test. Consequently, future analyses should apply an exact statistical procedure, such as the Fisher–Freeman–Halton exact test or the Monte Carlo exact test, to obtain more robust estimates of statistical significance.

Effect size

In addition to the p-value, the strength and practical significance of the association between PPE knowledge and PPE use were evaluated using an effect size measure. The Contingency Coefficient or Cramer's V was used to describe the magnitude of the association, while the association estimate was expressed as a prevalence ratio (PR) or odds ratio (OR) with a 95% confidence interval (CI), where appropriate. Reporting effect size alongside statistical significance provides a more comprehensive interpretation of the relationship between workers' knowledge and PPE use.

Confounding

The observed association between PPE knowledge and PPE use should be interpreted with caution because the analysis was based on a crude bivariate comparison. Several factors that may influence both workers' knowledge and PPE use, including educational level, occupational health and safety (OHS) training, work experience, job type, PPE availability, workplace supervision, and farm safety policies, were not evaluated in the present study. Consequently, the observed association may have been affected by residual confounding. Furthermore, only nine workers were observed using PPE, resulting in a relatively small outcome group. Under these conditions, multivariable logistic regression could produce unstable estimates and imprecise confidence intervals. Therefore, adjustment for potential confounding variables was not performed, and the findings should be interpreted as preliminary evidence of an association rather than an independent effect. Future studies with larger sample sizes should include relevant occupational and organizational variables and apply multivariable analytical approaches to better control for confounding.

Statistical reporting

Statistical analyses were performed using IBM SPSS Statistics version 22. Descriptive statistics were used to summarize the characteristics of the respondents and the distribution of study variables. The association between PPE knowledge and PPE use was evaluated using contingency table analysis. Before hypothesis testing, contingency table assumptions were assessed by examining expected cell frequencies. Because several expected cell counts were below five, an exact statistical procedure, such as the Fisher–Freeman–Halton exact test or the Monte Carlo exact test, is recommended for the final analysis. Statistical significance was determined at $p < 0.05$. In addition to statistical significance, the strength of the association should be reported

PROFESIONAL HEALTH JOURNAL
Volume 7, No. 2 (Page. 971-980)
Available Online at https://www.ojsstikesbanyuwangi.com/index.php/PHJ/index
E-ISSN 2715-6249
DOI: https://doi.org/10.54832/phj.v7i2.1540

using an appropriate effect size (e.g., Cramer's V or Contingency Coefficient) together with the corresponding 95% confidence interval, where applicable.

Ethical Consideration

Ethical approval for this study was obtained from the Health Research Ethics Committee Permission to conduct the study was also obtained from the owners or managers of the participating poultry farms before recruitment of respondents. Each eligible worker received an explanation regarding the objectives, procedures, potential benefits, and minimal risks of the study before providing written informed consent. Participation was entirely voluntary, and respondents were informed that they could refuse to participate or withdraw from the study at any time without any consequences for their employment or relationship with the farm management. Farm owners or supervisors were not involved in obtaining informed consent or influencing workers' decisions to participate.

Individual PPE observations and questionnaire responses were treated as confidential. Personal identifiers were removed from the research database, and all data were coded and stored securely with access limited to the research team. Individual findings were not disclosed to farm owners or employers, and only aggregated results were reported to protect participants' privacy.

Results

1. Characteristics of Knowledge about PPE
   The results showed that of the 62 respondents, 32 (51.6%) had inadequate knowledge regarding PPE. Seventeen (27.4%) had adequate knowledge, while only 13 (21.0%) had good knowledge. These results indicate that more than half of workers still have a poor understanding of the importance of using PPE while working.

   Table 1. Distribution of Knowledge about PPE

Knowledge	n	%
Good	13	21,0
Enough	17	27,4
Not enough	32	51,6
Total	**62**	**100**

2. Use of PPE
   Most respondents did not use complete PPE while working. Of the 62 respondents, 53 (85.5%) did not use PPE, while only 9 (14.5%) used PPE as required.

   Table 2. Use of PPE

Use of PPE	n	%
Use	9	14,5
Do not use	53	85,5
Total	**62**	**100**

3. Relationship between Knowledge and Use of PPE
   Cross-tabulation analysis showed that respondents with good knowledge used more PPE than those with sufficient or insufficient knowledge. Conversely, respondents with insufficient knowledge were predominantly workers who did not use PPE.

   Table 3. Relationship between Knowledge and Use of PPE

PROFESIONAL HEALTH JOURNAL
Volume 7, No. 2 (Page. 971-980)
Available Online at https://www.ojsstikesbanyuwangi.com/index.php/PHJ/index
E-ISSN 2715-6249
DOI: https://doi.org/10.54832/phj.v7i2.1540

Knowledge	Use	Do not use	Total
Good	7	6	13
Enough	1	16	17
Not enough	1	31	32
Total	**9**	**53**	**62**

Variable	χ^2	df	Statistical test	p-value	Interpretation
Knowledge of PPE vs PPE use	— *	— *	Fisher–Freeman–Halton exact test**	< **0.001**	Significant association

The results of the Coefficient Contingency test showed a p-value of 0.000 (α = 0.05), indicating a significant relationship between knowledge of PPE and PPE use among chicken coop workers. Therefore, the research hypothesis was accepted.

Discussion

The present study demonstrated a statistically significant association between workers' knowledge of Personal Protective Equipment (PPE) and PPE use among poultry farm workers ($p < 0.001$). Workers with good knowledge showed substantially higher PPE utilization than those with sufficient or poor knowledge. More than half of workers with good knowledge used PPE during work activities (53.8%), whereas PPE use was observed in only 5.9% of workers with sufficient knowledge and 3.1% of workers with poor knowledge. These findings indicate that workers who possess better knowledge regarding occupational hazards and the protective function of PPE are more likely to comply with PPE use during poultry farming activities. These findings are consistent with previous studies reporting that occupational safety knowledge is an important determinant of PPE compliance among agricultural and poultry workers (Adebowale & Adeyemo, 2016; Arcury et al., 2012; Zhou et al., 2021).

The observed relationship can be explained using health behavior theory. According to Notoatmodjo (2014), knowledge is obtained through the process of sensing and serves as the cognitive basis for attitude formation and behavioral change. Individuals with adequate knowledge are more likely to recognize health risks and adopt preventive behaviors. Likewise, the Health Belief Model, as described by Green and Kreuter (2005), explains that protective behavior is influenced by perceived susceptibility, perceived severity, perceived benefits, and perceived barriers. Workers who understand occupational hazards associated with poultry farming—including exposure to dust, ammonia, microorganisms, and zoonotic pathogens—are more likely to perceive the benefits of PPE and consistently use it. Furthermore, Tarwaka (2023) emphasized that successful implementation of occupational safety programs depends not only on regulations but also on workers' knowledge, training, organizational commitment, and safety culture.

PROFESIONAL HEALTH JOURNAL
Volume 7, No. 2 (Page. 971-980)
Available Online at https://www.ojsstikesbanyuwangi.com/index.php/PHJ/index
E-ISSN 2715-6249
DOI: https://doi.org/10.54832/phj.v7i2.1540

From the researchers' perspective, knowledge is an essential prerequisite for safe work behavior; however, knowledge alone is insufficient to ensure consistent PPE compliance. In this study, six workers with good knowledge were still observed not using PPE, while two workers with lower knowledge levels used PPE. These findings suggest that other factors, including PPE availability, comfort, supervision, workload, employer commitment, workplace safety culture, and organizational policies, may also influence PPE utilization. Therefore, educational interventions should be accompanied by adequate PPE provision, continuous supervision, enforcement of workplace safety regulations, and organizational support to achieve sustainable improvements in PPE compliance. This interpretation is supported by previous studies highlighting the importance of workplace safety climate and organizational commitment in promoting PPE use (Arcury et al., 2012; Tarwaka, 2023; Zhou et al., 2021).

Several limitations should be considered when interpreting the findings of this study. First, the cross-sectional design does not permit causal inference between knowledge and PPE use because exposure and outcome were measured simultaneously. Second, the analysis was limited to bivariate analysis without adjustment for potential confounding variables such as educational level, occupational safety training, work experience, PPE availability, supervision, and workplace safety policies. Third, the relatively small number of workers using PPE limited the feasibility of multivariable statistical analysis. Finally, respondents were clustered within the same poultry farms, and clustering effects were not considered in the statistical analysis. Therefore, future studies should include larger sample sizes and apply multivariable and cluster-adjusted analytical approaches to obtain more robust estimates of the relationship between knowledge and PPE use (Nursalam, 2020; Notoatmodjo, 2018).

This study demonstrates that most poultry farm workers had inadequate knowledge regarding Personal Protective Equipment (PPE), and the majority did not use PPE during work activities. A statistically significant relationship was identified between knowledge regarding PPE and PPE use among poultry farm workers. These findings indicate that better knowledge is associated with higher compliance with PPE use. Therefore, improving workers' knowledge through occupational health education, Occupational Safety and Health (OHS) training, adequate PPE provision, implementation of standard operating procedures (SOPs), and regular supervision is expected to improve PPE compliance and reduce the risk of occupational accidents and diseases (Tarwaka, 2023; Occupational Safety and Health Administration, 2024; World Health Organization, 2022).

Conclusion

This study shows that most chicken farm workers have insufficient knowledge regarding Personal Protective Equipment (PPE), and the majority do not use PPE while working. Statistical analysis using the Coefficient Contingency test revealed a significant relationship between knowledge about PPE and PPE use among chicken farm workers ($p = 0.000$). Therefore, the better workers' knowledge about PPE, the more likely they are to use it while working.

Improving knowledge through occupational health education, Occupational Safety and Health (OHS) training, providing adequate PPE, developing standard operating procedures (SOPs), and regularly monitoring PPE use is expected to improve worker compliance with PPE use and reduce the risk of accidents and occupational diseases.

PROFESIONAL HEALTH JOURNAL
Volume 7, No. 2 (Page. 971-980)
Available Online at https://www.ojsstikesbanyuwangi.com/index.php/PHJ/index
E-ISSN 2715-6249
DOI: https://doi.org/10.54832/phj.v7i2.1540

Ethics approval and consent to participate

This research was conducted in accordance with ethical research principles, including respect for respondent rights, confidentiality, fairness, and the principle of benefit. All respondents were provided with an explanation of the research objectives and provided informed consent prior to data collection.

Acknowledgments

The author expresses his gratitude to God Almighty for His grace and blessings, enabling this research to be successfully completed. He expresses his deepest appreciation and gratitude to all parties who provided support, assistance, and contributions throughout the research process and the preparation of this scientific article.

The author would like to thank the chicken farm owners in Tiripan, Balongan, Ngepeh, and Jatirejo villages for granting permission and facilitating the research. He also thanks all chicken farm workers who volunteered to be respondents and actively participated during the data collection process, ensuring the successful completion of this research.

He also thanks all lecturers, educational staff, fellow students, and all parties who provided assistance, motivation, and support, both directly and indirectly, during the research and preparation of this article.

The author declares that this research received no specific funding from government agencies, private institutions, or non-profit organizations. Furthermore, he declares that there are no conflicts of interest that could have influenced the conduct of the research or the preparation of this article. Finally, the author hopes that the results of this study can provide benefits for the development of science, especially in the field of Occupational Safety and Health (K3), as well as being a reference for further researchers and material for consideration in increasing compliance with the use of Personal Protective Equipment (PPE) among workers in the livestock sector.

References

Adebowale, O. O., & Adeyemo, O. K. (2016). Assessment of workplace health and safety measures among poultry workers in a Southwestern State of Nigeria. Italian Journal of Occupational and Environmental Hygiene, 7(2), 74–81.

Arcury, T. A., Grzywacz, J. G., Anderson, A. M., Mora, D. C., & Quandt, S. A. (2012). Personal protective equipment and work safety climate among Latino poultry processing workers in Western North Carolina, USA. International Journal of Occupational and Environmental Health, 18(4), 306–316.

Budiman, & Riyanto, A. (2013). Kapita Selekta Kuesioner Pengetahuan dan Sikap dalam Penelitian Kesehatan. Salemba Medika.

Green, L. W., & Kreuter, M. W. (2005). Health Program Planning: An Educational and Ecological Approach (4th ed.). McGraw-Hill.

Kementerian Kesehatan Republik Indonesia. (2023). Profil Kesehatan Indonesia 2023. Kementerian Kesehatan Republik Indonesia.

Mamik. (2015). Metodologi Penelitian Kesehatan. Zifatama Publisher.

Notoatmodjo, S. (2014). Ilmu Perilaku Kesehatan. Rineka Cipta.

Notoatmodjo, S. (2018). Metodologi Penelitian Kesehatan. Rineka Cipta.

PROFESIONAL HEALTH JOURNAL
Volume 7, No. 2 (Page. 971-980)
Available Online at https://www.ojsstikesbanyuwangi.com/index.php/PHJ/index
E-ISSN 2715-6249
DOI: https://doi.org/10.54832/phj.v7i2.1540

Notoatmodjo, S. (2018). Promosi Kesehatan dan Perilaku Kesehatan. Rineka Cipta.
Nursalam. (2020). Metodologi Penelitian Ilmu Keperawatan: Pendekatan Praktis (5th ed.). Salemba Medika.
Occupational Safety and Health Administration. (2024). Personal Protective Equipment. U.S. Department of Labor.
Occupational Safety and Health Administration. (2024). Avian Influenza: Control and Prevention. U.S. Department of Labor.
Occupational Safety and Health Administration. (2024). Poultry Processing: Overview. U.S. Department of Labor.
Occupational Safety and Health Administration. (2024). Poultry Processing Industry eTool. U.S. Department of Labor.
Peraturan Menteri Ketenagakerjaan Republik Indonesia Nomor 8 Tahun 2010 tentang Alat Pelindung Diri.
Presiden Republik Indonesia. (1970). Undang-Undang Nomor 1 Tahun 1970 tentang Keselamatan Kerja.
Tarwaka. (2023). Keselamatan dan Kesehatan Kerja: Manajemen dan Implementasi K3 di Tempat Kerja. Harapan Press.
World Health Organization. (2022). Healthy Workplaces: A Model for Action. World Health Organization.
World Health Organization. (2024). Occupational Health. World Health Organization.
Yusuf, M., Oesman, T. I., & Wicaksono, N. A. (2020). Pemberdayaan karyawan dalam penerapan keselamatan dan kesehatan kerja berbasis Fault Tree Analysis. Jurnal Ergonomi Indonesia, 6(1), 52–60.
Zhou, L., Zhang, Y., Li, X., & Wang, H. (2021). Factors associated with personal protective equipment use among agricultural workers: A systematic review. International Journal of Environmental Research and Public Health, 18(15), 1–18.