

Occupational Diseases in Female Workers in the Industrial World, Indonesia: Hazard Types and Exposure Mechanisms – Literature Review

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ABSTRACT

Background: Occupational diseases are diseases caused by work and the work environment. Specifically gender, women have a double burden, namely domestic work in the household and the burden of being a breadwinner who works outside the home, women are also faced with reproductive tasks, namely pregnancy, childbirth and breastfeeding, and bioanatomically women have physical strength different from men, so that women are specifically more vulnerable to health risks due to their work, both physically, mental and social. This research will review the types and mechanisms of the spread of Occupational Diseases (OD) in female workers in the industrial world. **Methods:** The writing of this research was carried out using the *Literature Review* method which is a literature review method in which scientific articles are selected by researchers related to the research topic. **Results:** According to the results of the study, the specific risk of occupational diseases in the female worker community is pregnancy and childbirth disorders, Anemia and Sexually Transmitted Disease (STD), while other accompanying diseases are Pulmonary Obstruction Disease, Tinea pedis, Neurotoxic Symptoms, Noise Induced Hearing Loss (NIHL), Low Back Pain (LBP), MSDs, and Work Stress. **Conclusion:** Every female worker has a susceptibility to occupational diseases according to the conditions and work environment experienced. The industry must pay attention to programs to improve occupational health by making anticipatory efforts so that occupational diseases do not become a life threat to female workers.

Key words: Occupational Disease, Female Worker, Industry, Hazard.

INTRODUCTION

Occupational health is an aspect that needs to be considered because everyone chooses to work as a source of livelihood for the necessities of life. It is understood that work can cause health problems or illness.¹

In the current world of work, there is a continuous increase in the number of workers in line with the socioeconomic needs of the community. Similarly, for female workers, which increases every year². Globally, Women make up more than 50% of the workforce in more than 80 countries³. In the United States, women account for 46.8% of the labor force, which will continue to increase. In Indonesia, the number of female workers reaches 48 million people (36% of the total number of workers) and will continue to increase from year to year⁴.

The increase in terms of positive aspects is that there is more and more labor. The increase in labor if viewed from a positive aspect, that there is more and more labor absorption to support productivity and improve the economy, but from a negative point of view workers in general have not received good attention about the status of their occupational safety and health. Pre-workers are faced with potential *occupational hazards* that can have an impact on the risk of exposure to occupational diseases. Occupational diseases are diseases caused by work and the work environment. In Presidential Regulation No. 7 of 2019 concerning

Occupational Diseases, it is stated that the grouping of Occupational Diseases is diseases caused by worker activity (physical, chemical, biological factors), target organ systems (respiratory, skin diseases, mental and behavioral disorders, muscle and skeletal disorders), occupational cancer, other specific diseases (scientific evidence and appropriate methods)⁵

Specifically gender, women have a double burden, namely domestic work in the household and the burden of being a breadwinner who works outside the home, women are also faced with reproductive tasks, namely pregnancy, childbirth and breastfeeding, and bioanatomically women have physical strength different from men, so that women are specifically more vulnerable to health risks due to their work, both physically, mental and social, especially if the work is in the business and industrial world, especially in the informal sector which is an *undershelf population* (a population that is less noticed) with a low level of education for female workers.⁶

This research will review the types and mechanisms of the spread of Occupational Diseases (OD) in female workers in the industrial world. The results of this study can provide recommendations for scientific information as a determinant of program policies related to the maintenance and improvement of health quality in female workers.

METHODS

The writing of this research was carried out using the *Literature Review* method which is a literature

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review method in which scientific articles are selected by researchers related to the research topic. The source of the literature review comes from the online journal data base which provides journal articles both internationally and nationally. In addition, the literature review is also sourced from the World Health Organization Report (World Health Organization), International Labour Organisation (ILO), Occupational Safety and Health Administration (OSHA), National Health Report, Thesis and Dissertation tailored to the topic in this study. Publications in the last 10 years have been researched using keywords: "Occupational Diseases", "Women Workers" "Hazard" and "Industrial World". The research stage uses a *screening* process consisting of three steps. *The first screening* is done by sorting journals by keywords. *The second screening* is carried out using a *review* of the title and abstract. *The third screening* stage is carried out using background *reviews*, results and article discussions. Data processing is carried out to generate information from the data obtained by recording data to be summarized in the form of a table of search results. Then compile the results and discussion of the data obtained, after which summarize the conclusions.

RESULT

Figure 1 shows the flow chart of the literature search strategy and the review process follows the prism flowchart rules. Ten articles that meet the inclusion criteria at the title-abstract reading stage that have been identified and evaluated.

DISCUSSION

Table 1 shows the various types of ODs experienced by various female workers who work in different types of industries in Indonesia, starting from diseases that attack the respiratory, musculoskeletal, hematologic, innervation systems / organs to the reproductive system. Occupational Disease is a disease that is artificial or man made disease. Based on OSHA (Occupational Safety & Health Administration) Occupational Diseases are some abnormal conditions or disorders caused by work caused by exposure to workplace environmental factors related to workers. The specifics of the disease based on the prognosis depend on the severity of the disease in accordance with the value of the exposure experienced.¹⁸

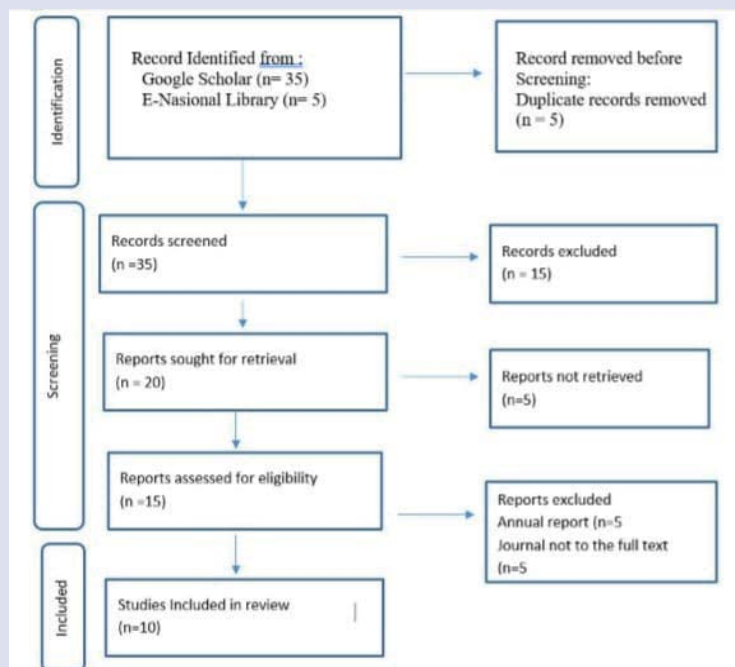


Figure 1. The flow chart of the literature search strategy and the review process follows the prism flowchart rules.

Table 1. Results of Identification of Cases of Occupational Diseases in Female Workers in the Indonesian Industrial World.

No	Author (Year)	Method	Industry	Occupational Diseases
1	(Alfabet Yunita, et al, 2017) ⁷	Explanatory research using cross sectional study	Industry Furniture Pt. Ebako Nusantara Semarang	Pulmonary Obstruction Disorder
2	(Imantika Efriyan, 2020) ⁸	Prospective study	PT Great Giant Pineapple (GGP)	Disorders Pregnancy and Childbirth
3	(Heru Laksono, et al,2020) ⁹	Survey Deskriptif	Fish Processing Women Workers Settlement, Bengkulu City	Tinea Pedis
4	(Andarini, et al 2019)	Quallitatif	South Sumatra Rubber Factory	Excessive Workload and Work Stress
5	Siti Harwanty, et al, 2018) ¹⁰	Analitik Observasional	Home Industry Sokaraja, Banyumas Regency	Low Back Pain (LBP)
6	(Hanry Junianto, 2014) ¹¹	Cross-Sectional	Nightlife Industry, Manado City	Noice Induce Hearing Loss (NIHL)
7	(Fitriana Yuliawati Lokollo, 2009) ¹²	Case Study	Nightlife Industry, Semarang City	Sexuall Transmitted Disease (STD)
8	(Surya Zulphi, et al 2021) ¹³	Quallitatif	Women's Traditional Gold Panners in Kuantan Singingi Regency, Riau Province	Musculoskeletal Disorder (MsDs)
9	(Moch Sahri, et al, 2022) ¹⁴	Analitic Observasional	Printing Industry XYZ	Neurotoxic Symptoms
10	(Marice Sihombing, Woro Riyadina, 2009) ¹⁵	Analitic Observasional	Industrial Estate Pulo Gadung Jakarta	Anemia

Table 2. Results of Hazard Type Identification and Mechanism of Occupational Disease Exposure in Female Workers in the Indonesian Industrial World.

No	Author (Year)	Industry	Occupational Disease	Hazard Types	Exposure Mechanisms
1	(Alfabet Yunita, <i>et al</i> , 2017) ¹⁶	Industry Furniture Pt. Ebako Nusantara Semarang	Pulmonary Obstruction Disorder	Physical Hazard sourced from solid aerosol particulates, the result of wood processing in the form of dust	Wood dust is respirable dust that can enter the respiratory tract and can reach the alveoli. Workers can experience a decrease in the value of Forced Volume Capacity (FVC) and Forced Expiratory Volume
2	(Imantika Efriyan, 2020) ⁸	PT Great Giant Pineapple (GGP)	Disorders of Pregnancy and Childbirth	Chemical Hazard in the form of pineapple products from industry, Psychosocial Hazard in the form of organizing work where working hours are not reduced in pregnant female workers	Pineapple contains the enzyme bromelain is proteolytic which can break down proteins in the body. The substance can also trigger contractions, so it has the potential to cause bleeding. Company working hours that are not adjusted to pregnant conditions will cause stress and work fatigue problems that can reduce pregnancy health
3	(Heru Laksono, <i>et al</i> , 2020) ⁹	Fish Processing Women Workers Settlement, Bengkulu City	Tinea Pedis	Biological Hazard derived from the fungus <i>Trichophyton rubrum</i>	The fungal infectious disease Tinea Pedis is often found in the skin area of the soles of the feet and between the toes. people who often work in wet places or people who every day have to wear closed shoes for a long time, increased humidity due to sweat, causing increased exposure to the fungus <i>Trichophyton rubrum</i>
4	(Andarini, <i>et al</i> 2019) ¹⁷	Rubber Factory, South Sumatera	Excessive Workload and Work Stress	Psychosocial Hazard derived from work procedures as well as stress and misconduct management	Hazards in organizing work can come from the nature of the work, the way of working and the production process that involves machine / manual handling activities, setting schedules / shifting which can cause inner conflicts in the work environment, which can then experience stress due to work.
5	Siti Harwanty, <i>et al</i> , 2018) ¹⁰	Home Industry Sokaraja, Banyumas Regency	Low Back Pain (LBP)	Ergonomic Hazard sourced from Job Monotony and Repetition as well as manual handling activities	When working in a static sitting position for more than 4 hours the lower back muscles will experience stretching. When the muscles stretch too long, it will cause inflammation which will cause muscle spasms and trigger the onset of pain
6	(Hanry Junianto, 2014) ¹¹	Nightlife Industry, Manado City	Noice Induce Hearing Loss (NIHL)	Physical Hazard sourced from noise	The decrease in hearing sensitivity, in the audiometric configuration between 3000-6000 Hz, known as Noice Induce Hearing Loss (NIHL) is caused by prolonged exposure to noise and gradually affects the reduction of auditory functions, such as in workers in nightlife venues working in noisy sound environments.
7	(Fitriana Yuliawati Lokollo, 2009) ¹²	Nightlife Industry, Semarang City	Sexuall Transmitted Disease (STD)	Biological Hazard, Reproductive Hazard sourced from pathogenic microorganisms that cause infectious diseases that attack the female reproductive system / tract	Infections caused by Chlamydia, Treponema Pallidum, Neisseria GO, Trichomoniasis, HPV, are the causative agents of Sexuall Transmitted Disease transmitted through unsafe sex. This can happen if female workers in nightlife venues have involvement in sexual transactions
8	(Surya Zulphi, <i>et al</i> 2021) ¹³	Women's Traditional Gold Panners in Kuantan Singingi Regency, Riau Province	Musculoskeletal Disorder (MsDs)	Ergonomic hazards and Physically Hazard derived from workloads and working environment conditions that are not ergonomic, in addition to the physical condition of women who do not have more muscle strength than men	Disorders of the musculoskeletal system that are caused or aggravated by interactions in the work environment. The components involved in the complaint are muscles, tendons, skeleton, cartilage, blood vessels, ligaments and nerves. work activities that increase the risk of MSDs such as Manual Material Handling (MMH) namely lifting, lowering, push/pull, twisting, carrying, holding.
9	(Moch Sahri, <i>et al</i> , 2022) ¹⁴	Printing Industry XYZ	Neurotoxic Symptoms	Chemical Hazard sourced from chemical contaminants from solvent vapors from materials used in the printing process	The results of XYZ printing production are books, banners, calendars, pamphlets, posters, and others. The production process is not separated from the materials used such as ink, glue, plate cleaners, and solvents that contain harmful chemicals. The print production process is carried out in a room that does not have sufficient ventilation, so that workers have the risk of inhaling chemical vapors that can affect their health, one of which is neurotoxic complaints
10	(Marice Sihombing, Woro Riyadina, 2009) ¹⁵	Industrial Estate Pulo Gadung Jakarta	Anemia	Biological Hazards derived from the fulfillment of worker nutrition	Female workers had a total of 32.1% experiencing an anemic condition associated with nutritional intake. Women experience a menstrual cycle every month, increasing their risk of anemia

The types of industries that exist in Indonesia show a diversity of characteristics and the nature of work that can have an impact on Occupational Diseases. Factors that help determine exposure to disease-causing agents are the types of potential hazards found in the work environment. According to the results of the study in table 1 above, the specific risk of occupational diseases in the female worker community is pregnancy and childbirth disorders, Anemia and Sexually Transmitted Disease (STD), while other accompanying diseases are Pulmonary Obstruction Disease, Tinea pedis, Neurotoxic Symptoms, NIHL, LBP, MSDs, and Work Stress. Female workers are susceptible to occupational diseases according to the conditions and work environment experienced. Women in gender specifics have physical, bioanatomical differences compared to men, as well as psychological status, double burden on work, and reproductive specifications. For this reason, women place themselves at a specific risk of occupational diseases. When remembering that work in the industrial sector is not only dominated by male workers, but women have also done work that is usually only done by men^{19,20}

Table 2 shows the type of hazard and the mechanism of exposure to the incidence of occupational diseases in female workers in the industrial sector in Indonesia. Hazards associated with work consist of physical, chemical, biological, ergonomic and psychosocial. Physical hazards are derived from the physical conditions of the work environment such as vibration, radiation, temperature, humidity, lighting and air pressure. Chemical hazards come from a variety of pollutants, irritants, contaminants in the form of gases, vapors, solid and liquid aerosols. Hazard biology consists of microbiology such as bacteria, viruses, fungi, protozoa and ectoparasites as well as macrobiology sourced from plants / plants / food and animals. Hazard ergonomics are associated with postural conditions when working such as awkward position, repetition, job monotony, material handling procedures. Meanwhile, psychosocial hazards are related to psychological and social conditions as an effect of work such as organizing work as well as company standards and policies.

Each type of hazard has an impact or consequence on occupational health that is in line with the process of handling disease. In the review of the research above, it has also been stated the mechanism of exposure where the agent causing the disease enters through the ingested, digested and skin contact pathways. Work-related disease can be diagnosed by an Occupational Specialist as a referral at an advanced referral health facility namely a Hospital. This is stated in the Consensus on the Management of Occupational Diseases in Indonesia in collaboration with several multidisciplinary medical sciences and professions. Disease severity adjusted to target organ and exposure toxicity.²¹

CONCLUSION

The conclusion that can be drawn from this study is that every female worker has a susceptibility to occupational diseases according to the conditions and work environment experienced. Women are gender-specific in terms of physical, bioanatomical differences compared to men, as well as psychological status, double burden on work, and reproductive specifications. For this reason, women place themselves at a specific risk of occupational diseases.²²⁻²⁴ According to this study, the specific risks of occupational diseases in the female worker community are pregnancy and Pelvic disorders, Anemia, Sexually Transmitted Disease (STD), and other diseases such as Pulmonary Obstruction Disease, Tinea pedis, Neurotoxic symptoms, NIHL, LBP, MSDs, and Work Stress

Recommendations that can be given to the industry to pay attention to the program of improving the health and safety of work of female workers by implementing a control system through an anticipatory program so that all forms of hazards and risks found at work sites can

be prevented so that occupational diseases do not become problems that threaten the lives of female workers.

JOURNALISM ETHICS CONSIDERATIONS

Ethical issues (Including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc.) have been completely observed by the authors.

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CONFLICTS OF INTEREST

The authors declare that there is no conflicts of interest.

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