*International Journal of Health Sciences and Research*
*Vol.12; Issue: 8; August 2022*
*Website: www.ijhsr.org*
*Original Research Article* *ISSN: 2249-9571*

# Description of Work Accident and Occupational Safety and Health Activities of Paint Manufacturing Industry PTSU, in West Java 2016-2017

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**DOI: https://doi.org/10.52403/ijhsr.20220837**

## ABSTRACT

Occupational Safety and Health aims to protect workers' safety for achieving optimal work productivity. The effort is intended to provide workers with health and safety coverage by minimizing the potential of workplace accidents, hazard control in the workplace, health promotion, treatment, and rehabilitation. The purpose of this research is to obtain the description of illness due to work accidents on workers who work in paint manufacturing industry. The design of this research used a quantitative approach method to obtain the description of health and safety at paint manufacturing industry, in West java. Of 44 Respondents from Paint Manufacturing Industry PTSU, 25% of workers had work accidents while working, and the most occurred work accidents were bruises (6%), other accidents (6%), fall (2%), or torn wound (2%). 45% of respondents had occupational diseases, and the often diseases are respiratory disease (17.9%), other diseases (15.6%), and bone disease (11%).

***Keywords:*** *OSH, work accident, disease due to work*

## INTRODUCTION

Occupational Health and Safety (OSH) is a multidisciplinary science with objective to maintain and improve environmental conditions, safety, and health of workers and as well as protect workers against the risk of danger and prevent further consequences of accident for workers [1]. OSH can be interpreted as science and application to prevent the possibility of accidents and diseases caused by workers and the work environment [2].

The purpose of OSH is to create a healthy and productive workforce. OSH has the main objective of advancing and developing the industrialization process, especially in realizing the welfare of the workers [3]. Health problems are complex problems and involve various aspects of life. According to data from the International Labor Organization (ILO) in Aditama et al., 1.1 million deaths occur annually due to work-related illnesses or accidents. The Minister of Manpower and Transmigration states that the level of accidents in the world of work is decreasing. In 2006 the number of work accidents reached 95 thousand cases and in 2007 decreased to 65 thousand cases. Companies have also been asked to gradually cultivate a culture of maximum occupational safety and health [4].

The causes of accidents can be divided into unsafe conditions and unsafe actions. Unsafe conditions here are if the implementation of worker activities in the work environment should comply with the rules of the Hygiene industry, which regulates safe and healthy workplace conditions. If the workplace does not follow the rules of occupational health and safety that have been determined, there will be unsafe conditions [5]. This unsafe act can be

caused by inability or inability and unwillingness.

Various accidents in the industry are caused by four factors, namely unsafe tools and materials, unsafe working conditions, the behavior of the workers themselves, for example, such as being negligent or careless, underestimating, not carrying out procedures (fixed procedures) or being undisciplined, and the fourth factor is an element of supervision that does not provide correct procedures or weak supervision [6].

Occupational diseases, are diseases caused by occupational factors or acquired when working [4]. In the company, there are two categories of illnesses, workers suffer general illnesses and occupational diseases. Everyone may suffer common diseases, whether working, still in school, or unemployed. The most common diseases are infectious, viral, bacterial, and parasitic.

Constitution number 23 of 2003 concerning Health, Article 23 states that Occupational Health and Safety (OSH) efforts must be carried out in all workplaces, especially workplaces that have health risks, are susceptible to disease, or have at least ten employees. If we look at the contents of the article, it is clear that the workplace is included in the criteria for a workplace with various hazards that can cause health problems, not only for workers but also for patients and visitors to the workplace [7]. Therefore, the workplace manager should implement OSH efforts in the workplace.

OSH is an effort to protect the safety of workers from achieving optimal work productivity. These efforts are intended to provide health and safety guarantees for workers by minimizing the potential for work accidents, controlling hazards in the workplace, health promotion, treatment, and rehabilitation [8]. The occurrence of accidents in the workplace is usually more significant than that of workers in other industries. Cases often occur in needle sticks, sprains, back pain, scratches/cuts, burns, infectious diseases, and others [7].

Section of Human Services and Health (US Department of Health and Human Service) in 1990 in the United States stated that the high risk in the workplace is in the following sections; central supply, nutrition installation (food service), housekeeping, laundry, maintenance engineering, office area, print shops, patient care area, laboratory, and operating room (surgical services). According to Danggur Konradus said that the implementation of the occupational safety and health program is one form of effort to create a safe, healthy workplace free from environmental pollution so that it can reduce and or be free from work accidents (zero accidents) and there are no health problems for workers. , family, community, and the surrounding environment [2].

The implementation of OSH is an effort to create a workplace that is safe, healthy, and free from hazards and environmental pollution to reduce and or be free from Occupational Diseases and Work Accidents, which can then increase effectiveness, work efficiency, and work productivity. From the ILO (International Labor Organization) records, every day, there are work accidents that result in approximately 6000 fatalities, while in Indonesia, for every 100,000 workers, there are 29 fatalities due to work accidents [9]. This figure shows that there is still a high level of work accidents that generally occur worldwide, especially in Indonesia.

Indonesia's OSH achievements so far have not been encouraging, and the ILO survey results state that based on the level of competitiveness due to OSH factors, Indonesia's OSH achievements are ranked 98th out of 100 countries. The number of work accidents and occupational diseases in Indonesia is still high. The increase in work accident cases can be seen from the data provided by PT Jamsostek. Namely, in 2007, there were 83,714 work accidents. In 2008 there were 94,736 cases. In 2009, there were 96,314 cases, and in 2010, there were 98,711 cases. In 2011, there were 99,491 cases or an average of 414 cases of work accidents per day. In general, accidents are caused by two things, unsafe acts, and

unsafe conditions. Furthermore, 80% of accidents in Indonesia are caused by unsafe action [10].

Based on the Domino theory developed by Frank E Bird, classifying the causes of work accidents into direct causes and fundamental factors. A direct cause of an accident is a trigger that directly causes an accident. The direct cause is just a symptom that something is not right in the organization that is driving the occurrence of unsafe conditions. The existence of a direct cause must be evaluated more deeply to find out the fundamental factors that contribute to the occurrence of accidents. Meanwhile, indirect causes are factors that contribute to the occurrence of the accident [4].

Work accidents on health workers and non-health workers in Indonesia have not been well recorded. It shows an increasing trend if we study the number of work accidents in several developed countries (from observations). The causative factors that influence the incident are the lack of awareness of workers and the quality and skills of workers who do not meet the standards. Few workers underestimate work risk, so they do not use personal protective equipment (PPE) even though they are provided [11].

The workplace is a complex health facility. Work accidents have enormous potential because the service time is 24 hours a day and requires many human resources. The Occupational Safety Health and Environment (OSHE) program aims to protect employees, leaders, and the public from the possibility of accidents and occupational diseases, to ensure that the tools and materials used in the activation process can be used and utilized correctly, efficient, and productive. OSHE's efforts have a huge role in increasing productivity, especially in preventing all forms of losses due to accidents. The biggest problem causing accidents is the human factor due to lack of knowledge and skills, lack of awareness from the directors and employees themselves to implement OSH laws and regulations, and there are still many directors who consider OSHRS efforts as a waste of money, as well as many employees who consider it trivial or indifferent. Indifferent in fulfilling work SOPs. Another cause is environmental conditions such as machines, equipment, aircraft, etc.

Management of waste and workplace waste is part of environmental sanitation efforts aimed at protecting the public from the dangers of environmental pollution originating from waste or workplace waste [3; 4; 5]. RI Government Regulation No. 19/1994 stipulates that waste resulting from hospital and laboratory activities is included in the list of B3 waste from specific sources with the waste code D227 [1]. Following Permenkes No. 986 Menkes/Per/XI/1992, dated November 14, 1992, concerning requirements for health in the workplace environment, including; sanitation of buildings and rooms including lighting, air conditioning, and noise control, sanitation of food and beverages, sanitation of water including its quality, waste management, sanitation of public washing places including washing of linen, insect and rat control, sterilization or disinfection, radiation protection, and environmental health education [12].

The safety and health of employees are the concern of the management of Paint Manufacturing Industry (PMI) PTSU provides excellent service to employees, among others, by providing PPE in the form of gloves, masks, and ear muffs (earmuffs) that nurses must wear to prevent accidents or diseases caused by work. However, company staff still have accidents while doing their jobs.

Referring to the description above, the researcher is interested in researching the description of work accidents in the workplace in the work environment of a company that allows researchers to see OSH activities in the company. So the researchers formulated the research problem, namely "how is the description of occupational accidents in the Paint Manufacturing Section and the Occupational Safety and Health organization at PMI PTSU, in West

java?" intending to know the description of diseases due to work accidents in workers who work at PMI PTSU.

## LITERATURE REVIEW

An occupational disease is a disease that has a specific cause or a strong association with work and generally consists of one causative agent. There must be a causal relationship between the disease process and hazards in the workplace. Work environment factors are very influential and play a role as a cause of Occupational Diseases. Examples include silica dust and silicosis, lead vapor, and lead poisoning. However, the cause of the occurrence is also due to human error.

In contrast to occupational diseases, occupational diseases are very broad. According to the WHO Committee of Experts, Occupational Diseases are "diseases with multifactorial causes, with a high probability of being related to work and workplace conditions. Workplace exposure aggravates, accelerates the occurrence, and causes disease recurrence [13].

The workplace is a health service institution for the community with its characteristics that are influenced by the development of health science, technological advances, and the socio-economic life of the community, which is still able to improve services that are more qualified and affordable by the community in order to realize the highest degree of health.

A workplace is a building or health facility that requires special attention regarding security, safety, health, comfort, and convenience [14]. According to Constitution of the Republic of Indonesia, Number 44 of 2009 concerning the Workplace [15], Article 3 states that the arrangement of the organization of the workplace aims to a) facilitate public access to health services; b) provide protection for the safety of patients, the community, the workplace environment and human resources at the workplace; and c) Improve the quality and maintain workplace service standards.

About 98 percent of accidents are caused by unsafe acts. Therefore, the key to preventing accidents is to eliminate unsafe acts as the cause of accidents [16]. Heinrich is one of the well-known theories that explain the occurrence of work accidents. Heinrich's Domino Theory has five causes of accidents: heredity, human error, safe attitudes and conditions, accidents, and injuries [17]. According to Heinrich, eliminating unsafe attitudes and conditions is key to preventing work accidents (third card). Following the domino effect analogy, if the third card is no longer there if the first and second cards fall, this will not cause all cards to fall. There is a gap or distance from the second card to the fourth card. If the second card falls, this will not bring down the fourth card. In the end, accidents (fourth card) and impact losses (fifth card) can be prevented. It is recorded that the enormous contribution to the cause of work accidents is derived from unsafe attitudes and conditions [18]. Therefore, to reduce workplace accidents and their risks, prevention can be done by minimizing unsafe actions and conditions in the workplace by a) regulating working conditions following laws and regulations; b) standardization related to safety requirements, such as the installation of safety signs; c) supervision so that regulations are complied with; d) Safety related training for employees; e) reports on work accidents, including types of work accidents, number of work accidents, losses due to work accidents, and so on; f) reward program for employee achievement in minimizing work accidents; g) insurance; and h) create an OHS program at the company level.

OSH is a philosophy as a thought and effort to ensure the integrity and perfection of the physical and spiritual workforce and humans in general, their work and culture towards a prosperous and prosperous society [19; 20]. At the same time, scientific understanding is a science and its application to prevent the possibility of accidents and occupational diseases.

OSH cannot be separated from the production process, both services and industry. The development of Indonesia's after independence led to an increasing intensity of work which also resulted in an increased risk of accidents in the work environment. It also results in higher demands for preventing accidents of various forms and types. In line with that, with the development progress carried out, Constitution No. 14 of 1969 concerning the principles of labor was drafted, which was subsequently amended to become Constitution No. 12 of 2003 concerning the workforce [22; 23].

Article 86 of Constitution No. 13 of 2003 states that every worker or laborer has the right to obtain protection for occupational safety and health, morals and decency, and treatment following the dignity and values of religion [22; 24]. To anticipate these problems, laws, and regulations in occupational safety and health were issued as a substitute for the previous regulation, namely Constitution No. 406 of 1910, which was considered inadequate in dealing with existing progress and developments [23]. The regulation is Constitution No. 1 of 1970 concerning work safety, whose scope includes all work environments, whether on land, on the ground, on the surface of the water, in water, or in the air, which are within the Republic of Indonesia jurisdiction [21; 22].

The law also regulates work safety requirements starting from planning, manufacturing, transporting, distributing, trading, installing, using, using, maintaining, and storing materials, technical products, and production apparatus that contain and can cause accident hazards [22]. Although many regulations have been issued, in their implementation, there are still many shortcomings and weaknesses due to the limited supervision personnel, OHS human resources, and existing facilities. Therefore, efforts are still needed to empower OSH institutions in the community and increase socialization and cooperation with social partners to assist the implementation of OSH norm monitoring so that it runs well [22].

Accidents do not just happen, and accidents happen because of wrong actions or unsafe conditions. Negligence as a cause of accidents is a distinct value of safety techniques. A saying expresses negligent acts such as failing to see or walking to reach something far up a ladder. It shows a better safe way to eliminate negligence conditions and improve the safety awareness of every factory employee.

Among the unsafe conditions are lighting, ventilation that introduces dust and gas, dangerous layouts placed close to workers, inadequate machine guards, damaged equipment, insufficient protective equipment, such as helmets, and poor warehouses. Among the unsafe actions, one of them is training as failure to use safety equipment, operating machine guards without the supervisor's permission, using full speed, increasing power, and others. From the analysis results, most accidents usually occur because they are negligent or in unsafe working conditions, not just one. Safety can be implemented as early as possible, but workers should be trained using safety equipment for maximum effectiveness.

Case studies show that only a small proportion of workers in an industry have a large number of accidents [25]. Workers in the industry say it is a propensity for accidents. To measure the likelihood of accidents must use data from situations that show an equivalent level of risk. Likewise, the training provided to workers should be analyzed, for someone in a training class on accident tendencies may know little. Another unanswered question is whether there is a significant relationship between the propensity for a minor accident or one of the major accidents. The approach that a manager often takes for one of the factors of accidents to workers is not to pay their wages. However, if many factories do the above, it will cause a decrease in average income, and not paying workers' wages will make workers lazy to do their jobs and

continue to endanger themselves or other workers. It is possible that the random occurrence of an accident can create different accident factors.

The performance of each health and non-health worker results from three components of occupational health: work capacity, workload, and work environment, which can be an additional burden on workers. If the three components are in harmony, an optimal degree of occupational health and increased productivity can be achieved. On the other hand, a mismatch can cause occupational health problems in the form of illness or work-related accidents, which will ultimately reduce work productivity.

PMI PTSU is a company that produces paint (wall paint, ships, and aircraft) and election ink. This company involves a 4-part unit (Administration, Production, Warehouse, and Marketing). Each section consists of several work units. Such as in the Administration section, there are financial and corporate units, while in the production section, there are units: preparation of raw materials, production, coloring, technicians, and quality control. The company has received ISO 9001, 14001, and OHSAS 18001 certificates and an award as a green industry from the Ministry of BUMN and the Ministry of Industry of the Republic of Indonesia.

## RESEARCH METHOD

This study uses a quantitative and qualitative approach. A quantitative method is a method that uses a sampling system from a population and uses a structured questionnaire as a data collection tool. A qualitative approach is used to identify problems or to get a picture of the situation and ongoing activities. This approach is used to determine the description of occupational health and safety at Paint Manufacturing Industry (PMI) PTSU. The source of data in this study is data obtained directly from the field, namely from PMI PTSU obtained from respondents through questionnaires, interviews, and observations, as well as data obtained from companies that can be seen in company documentation and reference books, and information. Others were related to research. Based on the population definition, this study's population is all PMI PTSU employees. The number of samples taken was at least 30% of the total number of employees. The data collected will be analyzed descriptively to describe the disease caused by occupational accidents in workers using quantitative analysis. The purpose of quantitative analysis is to interpret data in numbers and is used as a statistical tool to make it easier to estimate the raw data obtained.

## RESULT AND DISCUSSION

Within one week of collection from 3-8 June 2018. Of all PMI PTSU employees, there are 60 permanent staff and dozens of non-permanent honorary staff. Data collection is only carried out on permanent employees. Of the 60 permanent employees, 45 people filled out the questionnaire voluntarily. Of the 45 employees who filled out the questionnaire, when it was edited and entered in the data entry program using EPI DATA (EP INFO), only 44 employees filled it out completely. So further data analysis was carried out on 44 employees. The results are as shown in the table below:

**Table 1. Employee Characteristics of PMI PTSU**

| Variable | Minimum | Maximum | Average |
|---|---|---|---|
| Age | 20 | 54 | 35.1 |
| Years of service | 0 | 32 | 9.3 |

**Table 2. Gender of PMI PTSU employees**

| Variable | Category | Number | % |
|---|---|---|---|
| Gender | Male | 43 | 95.6 |
| | Female | 2 | 4.4 |
| Total | | 45 | 100 |

The table above shows that the employees are at least 20 years old and a full 54 years old, with an average age of 35 years. The most extended working period of employees is 32 years working and the newest 0 years (less than one year) working with an average of 9 years. The highest proportion who works in the company is men, as much as 95.6%. The maximum age of 54 indicates

that the retirement age to work at PMI PTSU will likely follow government regulations, namely 56 or 58. There are more male workers than female workers because PMI PTSU has more work units that require male workers.

The types of work accidents these employees have experienced can be seen in the table below.

**Table 3. Types of Work Accidents in Employees Who Have Experienced Work Accidents**

| Type of Work Accident | N | % |
|---|---|---|
| Bruises | 3 | 6,7 |
| Fall down | 1 | 2,2 |
| Burnt | 1 | 2,2 |
| Cut off | 0 | 0,0 |
| Stab wound | 0 | 0,0 |
| Open Wound | 1 | 2,2 |
| Fracture | 0 | 0,0 |
| Other Work Accidents | 3 | 6,7 |
| Total | 9 | 11,1 |

The table above shows that the most accidents among 44 employees (6.7%) were bruises and other accidents (exposed to xylene) the second most accidents and falls and burns. The work accident mentioned above is average because PMI PTSU is a company that produces paints. The types of accidents in each type of company will be different because the hazards in the company are also different. In plantation companies, for example, accidents are falls, pinched, cuts, and broken bones. Meanwhile, in garbage car companies, the accidents that often occur are scratches, stabs, falls, and broken bones.

**Table 4. Types of Occupational Diseases at PMI PTSU Company**

| Variable | Total | % |
|---|---|---|
| Breathing Pain | 8 | 17,8 |
| Gastrointestinal Pain | 0 | 0,0 |
| Urinary Pain | 0 | 0,0 |
| Muscle ache | 5 | 11,1 |
| Bone Pain | 5 | 11,1 |
| Other Pain | 7 | 15,6 |
| Total | 25 | 56,8 |

The table above shows that the most common occupational diseases suffered by employees are respiratory tract diseases (17.8%) and other diseases (15.6%), followed by muscle and bone diseases. Other diseases suffered are systemic diseases that affect almost all systems, such as diabetes mellitus, typhoid, burns, and fever. The occupational diseases experienced by the employees above illustrate that for employees who produce paints that involve chemicals, the respiratory disease will be the most common because many chemicals will cause respiratory problems such as xylene and other paint-making chemicals. There is also the possibility of causing kidney or urinary tract abnormalities. However, in this study, employees did not routinely examine kidney function. In waste car workers, the most common disease is a skin disease, followed by respiratory disease [3].

The work environment at PMI PTSU in this study is determined by several variables such as the existence of a policy on OSH, the existence of a OSH unit, the presence of PPE (Personal Protective Equipment), and compliance with occupational health, attention to work safety. An overview of the company's working environment can be seen in the table below.

**Table 5. Description of Employee Knowledge of OHS Conditions at PMI PTSU**

| Variable | N | % |
|---|---|---|
| There is an OHS Policy | 44 | 100,0 |
| There are OSH units | 44 | 100,0 |
| There is PPE | 44 | 100,0 |
| Employees always comply with company regulations regarding work safety | 43 | 97,7 |
| At work, employees always use personal protective equipment | 44 | 100,0 |
| At work, employees always pay attention to work safety | 44 | 100,0 |

From the table above, it was found that all employees (100%) of PMI PTSU said that in their company, there was a policy on OHS, there was an OHS unit formed in the company, and the company provided PPE tools. OSH regulations in the company.

Employees' knowledge of personal protective equipment can also be described. The types of PPE that employees can say are as follows:

**Table 6. PPE mentioned by PMI PTSU employees**

| Variable | N | % |
|---|---|---|
| Mask | 24 | 53,3 |
| Headgear | 1 | 2,2 |
| Helmet, Lab Coat | 1 | 2,2 |
| Lab coat | 1 | 2,2 |
| Glasses | 3 | 6,7 |
| Glasses, Gloves | 1 | 2,2 |
| Glasses, Rubber Gloves | 1 | 2,2 |
| Gloves | 11 | 24,4 |
| Gloves, Glasses | 1 | 2,2 |
| Safety shoes | 1 | 2,2 |
| Total | 45 | 100,0 |

From the table above, the most common types of PPE are masks, 53.3% (24 people) and second gloves, 24.4% (11 people), so not all employees know the personal protective equipment in a company.

The description of employees' work behavior at PMI PTSU is illustrated by the attitude of employees towards regulations and the existence of OSH facilities in the company. From this study, the following attitude is obtained:

**Table 7. Employee Attitudes towards OHS Facilities at PMI PTSU Company**

| Variable | Category | Total | % |
|---|---|---|---|
| The company always provides work protection such as helmets, boots, gloves, and masks (Personal Protective Equipment / PPE), which can prevent me from work accidents. | Neutral | 2 | 4,4 |
| | Agree | 18 | 40,0 |
| | Strongly agree | 24 | 53,3 |
| | Total | 44 | 97,8 |
| All work equipment is in good condition and fit for use. | Disagree | 2 | 4,4 |
| | Neutral | 6 | 13,3 |
| | Agree | 23 | 51,1 |
| | Strongly agree | 13 | 28,9 |
| | Total | 44 | 97,8 |
| All dangerous parts of the equipment have been marked. | Neutral | 3 | 6,7 |
| | Agree | 29 | 64,4 |
| | Strongly agree | 12 | 26,7 |
| | Total | 44 | 97,8 |
| The company provides education and training for every employee to act safely in completing work. | Neutral | 3 | 6,7 |
| | Agree | 27 | 60,0 |
| | Strongly agree | 14 | 31,1 |
| | Total | 44 | 97,8 |
| The company provides medicines for first aid in a work accident. | Disagree | 1 | 2,2 |
| | Neutral | 5 | 11,1 |
| | Agree | 21 | 46,7 |
| | Strongly agree | 17 | 37,8 |
| | Total | 44 | 97,8 |

From the table above, the attitude of PMI PTSU employees in general (more than 60%) has a positive attitude (agree or strongly agree) towards the existence of OSH facilities in the company. Only a few employees (6-20%) are neutral or disagree with the existence of OHS facilities.

Below the authors divide the age groups into 2, under 35 years, and above 35 years.

**Table 8. Number of Work Accidents by Age Group**

| Characteristics of Respondents | | Never had an accident | |
|---|---|---|---|
| | | Yes | No |
| Age group | < 35 Years | 3 | 20 |
| | >=35 Years | 8 | 13 |

It can be seen in the table above that the age group above 35 years has more work accidents than the age group under 35 years. A total of 8 workers experienced work accidents in the age group above 35 years, and three experienced work accidents in the age group below 35 years.

## CONCLUSION

From the results of a study conducted at PMI PTSU regarding the description of health and occupational diseases in its workers, the following results were obtained: a) The incidence of work accidents was more common in workers aged more than 35 years, not following the theory of human factors in the Three Main Factors The theory that workers over the age of 30 are more careful and more aware of the dangers than younger workers,

according to Malaya S.P. Hasibuan; b) PMI PTSU already has a policy and OSH unit in providing occupational health services in the company, and c) PMI PTSU already has an OHS unit with its organization and has conducted several training activities to prevent work accidents in the company. In order to reduce the number of accidents and occupational diseases at PMI PTSU, it is necessary to do the following: a) Conduct regular occupational safety and health evaluations; b) The activity of the OSH unit is further enhanced continuously to have work safety activities every day, and c) Having a special clinic for workers for accident and health services for its workers.

**Acknowledgement:** None

**Conflict of Interest:** None

**Source of Funding:** None

**Ethical Approval:** Approved

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How to cite this article: Yunita R.M.B Sitompul, Vidi Posdo A. Simarmata. Description of work accident and occupational safety and health activities of paint manufacturing industry PTSU, in West java 2016-2017. *Int J Health Sci Res.* 2022; 12(8):280-289.
DOI: *https://doi.org/10.52403/ijhsr.20220837*

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