

Model of Maternal and Child Health (MCH) Surveillance System on Women Workers to Save the First 1000 Days of Life

Model Sistem Surveilans Kesehatan Ibu dan Anak (KIA) pada Pekerja Wanita untuk Menyelamatkan 1000 Hari Pertama Kehidupann

Putri Ayuni Alayyannur¹, Tri Martiana¹, Shoim Hidayat¹, Normala Ibrahim²

¹Department of Occupational Safety and Health, Faculty of Public Health, Universitas Airlangga
Campus C Mulyorejo, Surabaya, East Java 60115 Indonesia

²Department of Psychiatry, Faculty of Health Medicine and Health Sciences, Universiti Putra Malaysia
43400 UPM Serdang, Selangor, Malaysia

ABSTRACT

Introduction: There are risk of physical, chemical, biological, ergonomic, and psychosocial hazards in workplace which may pose harm to women and their fetuses, especially if it is related to chemical hazards. Chemicals and radiation at workplace may increase the incidence of congenital anomalies, infant morbidity and mortality as well as recurrent abortion. The purpose of this study was to compile MCH surveillance. **Method:** A qualitative study design was used and a case study was conducted on three manufacturing companies in Sidoarjo District from August to October 2017. Thirty respondents from each company were selected using accidental sampling. Socio demographic and job-related data were obtained from the respondents. The variables of this research were personnel that were given training about public health center, data types, data instruments, data collection, data processing, data analysis, information dissemination, and comprehensive MCH information. **Result:** The MCH surveillance system for women workers in order to save the first 1000 days of life consisted of inputs, processes, and outputs. Inputs included worker factors, company factors, surveillance staff factors, data types and data instruments. The surveillance process consisted of several processes including data collection, data processing, data analysis, and information dissemination. Output in this service model was comprehensive maternal and child health information that can be applied in company. **Conclusion:** MCH surveillance model consists of input, process, and output. Every industry has unique characteristic which is not found in other type of industry.

Keywords: child, health, maternal, surveillance

ABSTRAK

Pendahuluan: Ada risiko bahaya fisik, kimia, biologis, ergonomis, dan psikososial di tempat kerja yang dapat membahayakan perempuan dan janinnya, terutama jika terkait dengan bahaya kimia. Bahan kimia dan radiasi di tempat kerja dapat meningkatkan kejadian anomali kongenital, morbiditas dan mortalitas bayi dan aborsi berulang. Tujuan dari penelitian ini adalah untuk menyusun surveilans KIA. **Metode:** Desain penelitian kualitatif digunakan dan studi kasus dilakukan pada tiga perusahaan manufaktur di Kabupaten Sidoarjo dari Agustus hingga Oktober 2017. Tiga puluh responden dari masing-masing perusahaan dipilih menggunakan accidental sampling. Data demografis sosial dan terkait pekerjaan diperoleh dari responden. Variabel penelitian ini adalah personil yang diberikan pelatihan oleh pusat kesehatan masyarakat, tipe data, instrumen data, pengumpulan data, pemrosesan data, analisis data, penyebaran informasi, dan informasi KIA yang komprehensif. **Hasil:** Sistem pengawasan KIA untuk pekerja perempuan untuk menyelamatkan 1000 hari pertama kehidupan yang terdiri dari input, proses, dan output. Input meliputi faktor pekerja, faktor perusahaan, faktor staf pengawasan, tipe data dan instrumen data. Proses pengawasan terdiri dari beberapa proses termasuk pengumpulan data, pemrosesan data, analisis data, dan penyebaran informasi. Keluaran dalam model layanan ini adalah informasi kesehatan ibu dan anak yang komprehensif yang dapat diterapkan di perusahaan. **Simpulan:** Model pengawasan KIA terdiri dari input, proses, dan output. Setiap industri memiliki karakteristik unik yang tidak ditemukan pada jenis industri lainnya.

Kata kunci: anak-anak, ibu, sehat, surveilans

Corresponding Author:

Putri Ayuni Alayyannur

Email : putri.a.a@fkm.unair.ac.id

Telephone : +6281331068808

INTRODUCTION

Occupational health and safety risks to workers from work environments include diseases due to occupational relationship, occupational diseases, communicable and non-communicable diseases, and workplace accidents (International Labour Organization, 2013). Health hazards arise when workers come into contact with something that can cause harm or damage to the body in either short or long term. Short-term potential health and safety problems occur on workers include fatigue, work stress, and decreased health status or the emergence of factors that cause health or safety problems. Long-term health risks include lifestyle changes, circadian rhythm disorders, increased risk of metabolic and cardiovascular syndrome (International Labour Organization, 2013). In other perspective, female workers have bigger responsibilities in addition to their main profession that is their responsibilities as a mother. The results of Sakernas 2011 indicated that the percentage of working women were 35.83% from total productive age workforce (15-64 years) (Minarto et al., 2018).

Female workers at reproductive age have a responsibility in the success of the first thousand days of a child's life. This should be considered by the workplace whether it is a workplace that produces products or services. The first 1,000 days of life are related to the success of the state in achieving the targets of the Sustainable Development Goals (SDGs) (Minarto et al., 2018).

The first thousand days of a child's life starts from the time of conception to 2 year olds child. The 1,000 days of life is the most critical time to improve children's physical and cognitive development. Nutritional status of pregnant women and nursing mothers, health status, and good nutritional intake are important factors for the growth, physical and cognitive development of children, reducing the risk of illness in infants and mothers. Pregnant women with malnutrition will lead to impaired fetal growth, a major cause of stunting and increase the risk of obesity and degenerative diseases in adult (Rahmawati et al., 2016).

Occupational health and safety are also the rights and obligations of female workers. Female workers have unique challenges that only occur when they are pregnant and breastfeeding. The unique challenges are about nutritional challenge experienced during the pregnancy phase which is the nutritional status of a female worker before

pregnancy which greatly determines the early development of the placenta and embryo. Maternal weight at conception, whether underweight or overweight can lead to a risky pregnancy and adverse impact on the child's health in the future. Nutritional needs will increase in the phase of pregnancy, especially energy, protein, and some vitamins and minerals, thereby mothers should pay attention to the quality and quantity of food consumed (Minarto et al., 2018).

There are physical, chemical, biological, ergonomic, and psychosocial risks of hazards in a workplace. Those hazards, chemical hazards in particular, are harmful to female workers and their fetuses. This is because there are chemicals and radiation that can cause the occurrence of disability in infants born, low birth weight, fetal death, and the incidence of recurrent abortion (Minarto et al., 2018). If the company can prevent it, then the risk of occurrence of these things due to hazards in the workplace can be minimized.

Female workers have unconsciously made natural neglect of their babies and children. The child is left at home because the mother is working to improve the economic condition of the family. This situation is typical to urban migrants who do not think too much about their nutritional status (Kusuma and Raharjo, 2016).

Based on data from Basic Research of Health (Rikesdas) 2010, in Indonesia only 15.3% baby received exclusive breastfeeding. The main reason of this problem is cultural and knowledge of maternal, family, and community which is still low (Minister of Health of the Republic of Indonesia, 2010). Based on the data from the Health Office of Sidoarjo in 2016, the number of exclusively breast-fed infants was still low. In Sidoarjo, among 5,602 infants examined, only 54.7% of them received exclusive breastfeeding (Ayu, 2016). Leaving children to work is the main reason to not give exclusive breastfeeding to babies and replace it with formula milk. In addition to the unavailability of facilities for breastfeeding mothers in the company, this situation will only get worse.

As a follow up to the number of exclusively breast-fed infants problem in Sidoarjo in 2016, Regional Regulation No. 1 of 2016 on Nutrition and Exclusive Breastfeeding was issued (Rahmawati et al., 2016). With the existence of this rule, it is expected that all elements including companies in Sidoarjo can support exclusive breastfeeding and

nutrition improvement to save the first 1000 days of life.

The number of pregnancy women with anemia (Hb<11) in Sidoarjo is bigger than target. The realization is 36% but the target is only 30%. The number of pregnancy women with lack of chronic energy is high but all this group has already given assistance by the government (District Health Office of Sidoarjo, 2016).

It is necessary to provide assistance from public health center to the female workers from before the pregnancy to the first thousand days of a child's life due to many risks that will be experienced by the workers in those times. Assistance is given to determine the health condition of workers and health of the fetus (infant). Therefore, a study was conducted to develop a model of the Maternal and Child Health surveillance system on female workers to save the First 1000 Days of Life.

METHOD

Based on its data collection, this research was conducted through observation, since the data was collected from observations and no treatment was given to the research subjects during the course of the research. The design of this study was qualitative method. This method was used in this study to obtain MCH surveillance system model.

This research was a case study research conducted in three manufacturing companies with the proportion of female workers larger than male workers in Sidoarjo. Data collection was carried out in August-October 2017. Research activities were done for five months from July – November 2017.

The data were collected with interviews using guided interviews pertaining to worker factors, company factors, surveillance personnel factors, type of data, data processing, data analysis, and information dissemination. Interview results were recorded and written into interview results transcripts.

Respondents in this study were 5 representative of female workers from each company, representative of company management, representative from Public health center in Waru Sub-District, representative from Labor offices in Sidoarjo District, representative from Labor offices in East Java Province, and representative from Health offices in East Java Provinces. The numbers of respondents were 30 people.

The variables of this research were worker factors, company factors, surveillance staff factors, data types, data instruments, data collection, data processing, data analysis, information dissemination, and comprehensive MCH information. Worker factors consisted of weight, height, body mass index (BMI), duration of work, age, history of menstruation, history of pregnancy, history of miscarriage, history of pain, and work shifts. Company factors consisted of night shifts policy, maternity leave policy, breastfeeding and pregnancy facilities, and health insurance. Surveillance personal factors consists of personnel that were given training by the public health center.

There were 3 steps of this research. First, we asked the female workers about this problems. Second, we asked the manager or supervisor of each company about this problem. Third, we asked representatives from all of them and the representatives of government to solve this problem.

This study was approved by Universitas Airlangga, Faculty of Public Health Ethics Committee. No. 526-KEPK-2017.

RESULTS

Maternal and child health (MCH) surveillance systems for female workers in order to save the first 1,000 days of life have the same components as other surveillance systems consisting of inputs, processes, and outputs.

The input include elements that are essential in a surveillance system, such as worker factors, company factors, surveillance personnel factors, type of data and data instruments.

Worker factors include weight, height, body mass index (BMI), duration of work, age, history of menstruation, history of pregnancy, history of miscarriage, history of pain, and work shifts.

“A person's BMI affects the baby's birth weight, whether to give birth to LBW or not.” (ES, 46 years old)

“The longer you work, the longer you are exposed, Sir, so it affects the fetus and the pregnancy.” (SA, 49 years old)

“It is worrying for the mothers to be given night shifts. Thereby, if it is possible, the company should

free the mothers from night shifts during pregnancy and breast-feeding.” (CD, 51 years old)

“Mothers’ pain also has an effect on fetal safety, such as the effect of anemia to baby’s birth weight, kidney disease, diabetes and some others.” (AR, 50 years old)

Company factors include night shifts policy, maternity leave policy, breastfeeding and pregnancy facilities, and health insurance.

“It is worrying for the mothers to be given night shifts. Thereby, if possible, the company should free the mothers from night shifts during pregnancy and breast-feeding.” (CD, 51 years old)

“How long is typical maternity leave in the company? Maternity leave is given before and after childbirth. Before childbirth is given so that the mother can rest and prepare for her delivery well.” (RA, 40 years old)

“Is there any breastfeeding facilities in the company? It is important to provide a convenience of breasts pumping to mothers.” (EM, 50 years old)

“Social security administrator membership both in health or employment is still low and the company must include this to ensure the mothers and children are healthy.” (FM, 42 years old)

Surveillance personnel factors include personnel that were given training by public health center to carry out maternal and child health surveillance properly.

“Surveillance personnel must have proper training, whether it is from public health center or the company’s personnel.” (SA, 49 years old)

“Surveillance personnel could be provided by the company and they should have proper training before because the data is in company’s possession.” (FM, 42 years old)

The trainer could be from the public health center conducting occupational health post since they are the ones who know the company’s condition.” (CD, 51 years old)

The type of data collected based on indicators to be observed that have been established were the applicable maternal and child health theory, existing technical guidelines and guidance regarding maternal and child health, and the results of research on maternal and child health that have been done to obtain desired information. The type of data required also considered the preparedness of the officer in the measurement or data collection.

The maternal and child health data collection instruments were prepared by community health center officers based on input from the Health Office and the company to fit the situation in the company. Instruments can be a list of registers and forms.

“Yes, it should be arranged together so that no health information is overlooked.” (FM, 42 years)

“It can be an existing form or register list but tailored to the company. It does not have to be the same between companies because the workforce is different.” (ES, 46 years old)

“It could also be a collaboration of companies and community health center to develop instruments.” (AR, 50 years old)

Surveillance processes consist of data collection data processing, data analysis process and information dissemination.

The data collection process was carried out actively, in other words, the implementing surveillance officers came to the data source and recorded the data resulting from the examination or measurement. The data collected were primary data, the officers conducted the interview and the direct measurement to the selected sample from the population. The frequency of data collection was done once a year, regardless of data collected in the previous year even with the same respondents. The data must be entered immediately after being collected using a data collection tool in the form of a register list and a one-sheeted form.

The processing of surveillance data can be done by manually recapitulating the data that has been collected using computer with Microsoft Excel software, then grouping according to variable of person (age, sex), place (company area), and time (year), and given health and maternal factors. Data processing was done by confirming the empty data to the examiners, and confirming to the filling of data that is not uniform. After confirmation was made,



Figure 1. Model of Maternal and Child Health Surveillance

improvements in the form of addition, subtraction, or data change that has been collected were made.

Dissemination of information was presented in the form of reports conveyed in stages by executor of the program in the company and public health center provided reports to the relevant parties in the company and public health center. The contents of the report were reports on activity outcomes covering the scope of program objectives and information on maternal and child health issues.

Output in this service model was comprehensive maternal and child health information that can be applied in company. This was done so that the health of female workers who plan pregnancy, are pregnant and the breastfeeding are ensured to save the first thousand days of life. The model of maternal and child health surveillance in figure 1.

DISCUSSION

The adequacy of the number and competence of human resources is important. To carry out optimal surveillance, it takes a minimum number of personnel and competence according to national indicator that is 1 expert epidemiologist (Magister/S2), 2 experts or skilled epidemiologists (Bachelor/S1), and 1 general practitioner (Minister of Health of the Republic of Indonesia, 2003). Therefore, most of the existing surveillance officers were from public health center officers and some workers were from companies that meet the requirements of these competencies.

Existing health workers in the workplace, in addition to the duty to conduct maternal and

child health surveillance, health workers in the workplace were also required to provide education to improve the knowledge of workers. One of them provided education on exclusive breastfeeding and breastfeeding management especially in female workers. The role of health workers is also crucial in supporting exclusive breastfeeding programs for workers and supporting pregnant and breastfeeding workers for breastfeeding management and exclusive breastfeeding (Septiani, Budi and Karbito, 2017). Not all health workers provide information about the importance of exclusive breastfeeding to the mothers. This certainly has an impact on the failure of exclusive breastfeeding practices (Wendiranti, Subagio, and Wijayanti, 2017).

The types of data and instruments of mother and child health gathering depend on the guidelines that have been made. Guidelines for conducting surveillance activities are indispensable as a basis for guidance on the implementation and application of maternal and child health surveillance in companies that work with public health center. The guidelines can be in the form of Standard Operational Procedures (SOP) that are applied in internal company. Some of the objectives of SOPs are to understand clearly the roles and functions within the organization, to clarify the work flow, authority and responsibilities of relevant officers or employees, and to maintain consistency and improve performance within the organization. Further, that one of the benefits with the SOP is to provide efficiency (Muhammad, Santoso and Zainudin, 2017).

The implementing human resources that act as the program implementers (inspecting officer) and the surveillance officer make the data collection done directly by the surveillance officers to the data source that is female workers in the company. This facilitates the implementation of data collection. Ease of data collection is also supported by the competence of human resources who play the role of collecting data, the availability of adequate supporting facilities and the socialization before the implementation of activities. Competent human resources are necessary to interpret the measurement and laboratory results as the definition of the disease or abnormality observed which is a risk factor that impairs the health of the mother and child. The aspects of data collection, which are to define the observed disease definition, were agreement on certain physical and laboratory phenomena to establish the presence of certain diseases in a person to be recorded as the patient, then to establish

the monitored disease variables in the form of risk factors (Wendiranti, Subagio, and Wijayanti, 2017).

The primary data regarding maternal and child health surveillance were collected by conducting interviews and measurements on female workers. The primary data collection was done by the program implementer and must be collected by visiting the data source which was the targeted female workers and has been established in program planning. The aspect in collecting data was determining the method of data collection including data source (including primary, secondary, and tertiary data) and the amount of data source (including population data and sample data) (Wendiranti, Subagio, and Wijayanti, 2017).

Data processing was done by manually recapitulating the data that has been collected by using computer with Microsoft Excel software. Data grouping was done based on time, person, and place. Data collected from various sources are usually still raw data, thus, conclusion cannot be drawn yet (Wendiranti, Subagio, and Wijayanti, 2017). Therefore, the data needs to be processed by compiling a summary of data by creating a tabulation of data, the use of graphs and mapping, and the use of statistics.

Data analysis was done descriptively in the form of narration. The analysis with descriptive epidemiological method was done to get a picture of the distribution of disease or health problems and factors that affect them according to time, place and people (Minister of Health of the Republic of Indonesia, 2014). The results of data analysis descriptively done can only provide an overview of the problem since the analytical analysis has not been done. The results of the analysis will provide direction in determining the magnitude of the problem (Minister of Health of the Republic of Indonesia, 2014).

Dissemination of information was presented in the form of reports conveyed in stages by the executor of the program in the company and main community health center provide reports to the relevant parties in the company and public health center.

Dissemination of information can be submitted in the form of bulletins, circular, periodical reports, meeting forums, including scientific publications (Muhammad, Santoso and Zainudin, 2017).

This model only focuses in manufacturing industry because we conducted this research only in the manufacturing industry, not in other types of

industries that the dangers and risks existed in that industry could be different from the industries we went to. The difference in the presence of hazards and risks in the workplace will also make the health of pregnant female workers and their unborn children different. It includes the large amount of chemicals used in one industry with other industries, this can be detrimental to health. This could have caused the surveillance attributes that were also different.

CONCLUSION

The conclusion is MCH surveillance consists of three parts, those are input, process, and output. Every industry has unique characteristic which is not found in other type of industry so this models only focuses in manufacturing industry.

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