Child Health Problems in Agricultural Setting

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Abstract

Besuki Residency well known at agricultural field. Child and infant mortality in this area is high. Child health problems of agricultural-oriented at Besuki Residency no one has research yet. This research uses quantitative methods that are retrospectives that include child health problems since 2017 until 2018. Quantitative method is used to collect data on patient characteristics (gender, disease, nursing problems, and age criteria) and illness to the children's disease based on agricultural that arise due to activities or agricultural climate. The sample included 807 children at seven hospital scattered in several residency areas using quota sampling technic. Data analysis uses confirmatory factor analyze (CFA), with parameter data estimation uses analysis of moment structures. The result of p-values for health problems to gender = 0.033 (p<0.05), health problems to disease = 0.008 (p<0.05), health problems to nursing problems = 0.000 (p<0.05), health problems to age criteria = 0.000 (p<0.05). Fit model value indicates that the model is perfect fit. Child health problems, especially such as pneumonia, diarrhea, and malaria in the agricultural area with an agricultural perspective in the Besuki Residency can affect gender, disease, nursing problems, and age criteria. So that these health problems require specific health interventions or programs according to the characteristics of gender, disease, nursing problems, and age criteria. The nurse should have a mapping of nursing problems and special agriculture-oriented interventions.

Keywords: Age criteria, agricultural, child, disease, gender, health problems, nursing problems.

Introduction

Children are unique individuals whose most periods of life are growing and developing. One of indicator in determining the health status of children is the Infant Mortality Rate (IMR) and Toddler Mortality Rate (TMR). In Indonesia from 1990-2005 there was a lot of progress in reducing IMR and TMR but in the last decade there has been a slowdown, especially has to be juxtaposed with ASEAN, Indonesia is still lagging behind (UNICEF, 2012).

Health problems such as pneumonia, diarrhoea and malaria are still the main causes of child mortality globally. Many children die less than five years of age due to preventable diseases. Whereas in the child's life cycle, the first month of a child's life or the neonatal period is the most dangerous period for children, where most of the causes can be prevented (UNICEF, 2013). Therefor, a preventive effort is needed in mitigating it. One effort to reduce child morbidity and mortality is to perform health maintenance where the initial action that can be taken is to map children's health problems of agricultural-oriented.

Each year, pneumonia causes about 700,000 to 900,000 child deaths worldwide (Troeger et al., 2017). In 2016, the incidence of pneumonia was 13-16% of all deaths in children under 5 years (Troeger et al., 2017). In 2015, the worldwide death burden from pneumonia in several countries: Afghanistan, Angola, Bangladesh, Chad, China, Democratic Republic of the Congo, Ethiopia, India, Indonesia, Niger, Nigeria, Pakistan, Somalia, Sudan and Tanzania reached 70% of all pneumonia deaths worldwide (WHO, 2018). In 2011, as many as 1–3 million cases of pneumonia were fatal, and 81% of these deaths occurred within the first 24 months of life. Child mortality from pneumonia decreases rapidly with age, from about 67% of all deaths at 6 months to 14% at 18 months, and reaching 6% between the ages of 30 and 54 months. The incidence decreased gradually with increasing age, namely around 39% at 6 months, 22% at 18 months, 19% at 30 months, 13% at 42 months, and 7% at 54 months (Walker et al., 2013).

The implementation of integrated management of under-five sick children (IMCI) has been shown to reduce pediatric morbidity and improve the quality of health services provided to children (Ahmed et al., 2010). The results illustrate that there is suboptimal adherence to the guidelines in various settings (Baiden et al., 2011; Irimu et al., 2012). It is in the context of pneumonia surveillance that the management of pneumonia in children less than 5 years of age in Mozambique, a low-income country with a high mortality rate for children less than 5 years of age and a high burden of disease and death from pneumonia and malaria (Acacioa et al., 2015).

Diarrhoea is a major killer of children under five years of age (Walker et al., 2013; Santosham et al., 2010; Pahwa et al., 2010). According to UNICEF (2016a), in 2015 as much as 9% of all deaths were in children under five years of age. This means that more than 1400 children die every day, or about 530,000 children every year from diarrhoea. In 2013 in India diarrhoea caused more than 130,000 child deaths (UNICEF, 2016b). About a quarter of all diarrheal deaths worldwide are in children under the age of five (Liu et al., 2015). Most of the deaths from diarrhoea result from loss of fluids and excess electrolytes that lead to dehydration. Death due to diarrhoea can be avoided with simple medications such as oral rehydration solutions and other fluids available at home, continuous feeding during episodes of diarrhoea and breastfeeding. This treatment is recognized in reducing child mortality and morbidity (Dutta et al., 2016).

So we need a preventive effort to overcome it. One of the efforts to reduce child morbidity and mortality is by carrying out health care where the initial action that can be taken is mapping children's health problems.

Method

This research uses quantitative methods that are retrospectives that include child health problems since 2017 until 2018. Quantitative method is used to collect data on patient characteristics and illness to the children's disease based on agricultural that arise due to activities or agricultural climate.

The population of the research was inclusion criteria includes pediatric patients who have been treated with major nursing problems from several children diseases based on agricultural in seven hospital in all the Besuki Residency include there are three hospital agricultural, and the others are local hospital that near from agricultural region. The sample includes secondary data derived from medic record data (n = 807). The sampling technique uses quota sampling.

Data analysis uses confirmatory factor analyze (CFA), with parameter data estimation uses analysis of moment structures (AMOS versi 21) (Byme, 2013). CFA is an approach used to analyze measurement models. The analysis is intended to reveal how well the measurement indicators measure a latent concept (construct), so as to get a good model.

The CFA test aims to find out how well the measurement indicators measure a latent concept (construct) such as gender, disease, nursing problems, and age criteria and to find out the fit value of the model in Chi-squared, p-value, root mean square error of approximation (RMSEA), and comparative fit index (CFI).

Take from the research ethic committee faculty of dentistry Universitas Jember with number: 503/UN25.8/KEPK/DL/2019 and take informed consent from respondent.

The research instrument uses a medical record to determine health problems such as gender, disease, nursing problems, and age criteria. Data collection techniques include filling in the format of disease number data (table 1).

Table 1 Data of Children Disease Based on Agricultural

Item	Disease
Components of children's disease based on agricultural	
Respiratory disease	Asthma, pneumonia, Airways Respiration Infection (ARI)
Gastrointestinal disease	Diarrhoea, profus vomiting
Skin disease	Dermatitis atopic, scabies, eczema ex herpes simplex / Atopic dermatitis, scabies, eczema ex herpes simplex
Toxicology	Premature babies, babies with congenital disorders, cancer (brain cancer, acute lymphocytic leukemia, and non-Hodgkin lymphoma), zoonosis (filariasis)
Tropical Disease	Thypoid, Dengue Fever, Malaria, Pertussis, Dhyphteri
Growth and development	
Child Characteristics	
Age	
Gender	
Adress	

Table 1 shows that the data on diseases suffered by children in the agricultural area. Most of the diseases that affect children include respiratory diseases, gastrointestinal diseases, skin diseases, poisoning and tropical diseases.

Results

Health problems (X1) are measured through 4 aspects of indicators, namely gender (X1.1), disease (X1.2), nursing problems (X1.3), and age criteria (X1.4). Descriptive analysis results can be seen in table 2.

Table 2 Characteristics of Respondents by Gender, Disease, Nursing Problems, and Children's Age Criteria

Characteristic	f	%
Gender		
Man	438	54.3

|		
Woman	369	45.7
Disease		
UTI	47	5.8
ARI	363	45.0
Diarrhea	136	16.9
Convulsions	116	14.4
Typhoid	16	2.0
DHF	36	4.5
Blood disorders	35	4.3
Other infections	37	4.6
Congenital disorders	8	1.0
TBC	7	0.9
Another malignancy case	2	0.2
Morbilli	4	0.5
Nursing problem		
Hypertension	378	46.8
Lack of Fluid Volume	61	7.6
The Ineffectiveness of Breathing Pattern	56	6.9
The Ineffectiveness of Clearance air ways	134	16.6
Ineffective Thermoregulation	10	1.2
Constipation	4	0.5
Diarrhea	17	2.1
Comfort Disorders	24	3.0
Risk of injury	9	1.1
Activity intolerance	2	0.2
Acute Pain	64	7.9
Ineffectiveness of Tissue Perfusion	25	3.1
Skin Integrity Damage	1	0.1
Aspiration Risk	1	0.1
Potential Complications of Anemia	1	0.1
Nutrition Needs Less Than Body Needs	16	2.0
Excess fluid	4	0.5
Age Fluid		
Neonatus	13	1.6
Infant	143	17.7
Toddler	280	34.7
Preschool	161	20.0
School	152	18.8
Teenaer	58	7.2
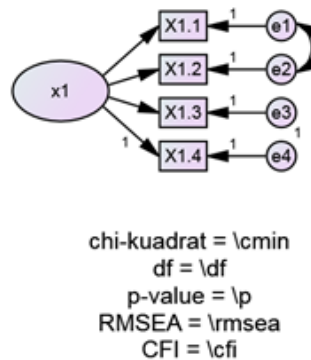
Figure 1 Hypothesis Model: Confirmatory Factor Analyze: Children Health Problems based on agricultural in Besuki Residency
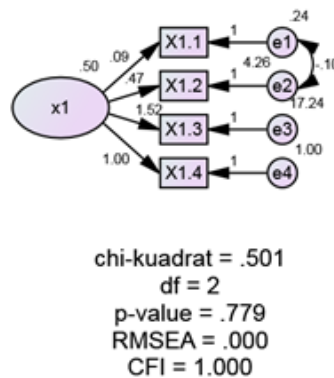

Figure 2 Confirmatory Factor Analyze: Children Health Problems based on Agrocultural in Besuki Residency

Table 2 shows that the sex is mostly male, the disease caused is mostly ARI, the nursing problem that often arises is mostly hypertension, the age criterion is mostly toddlers.

The variable and each indicator are shown in Figure 1.

In figure 2 shows that the estimated significance of the parameters produced by the character of health problems (X1) to gender (X1.1) = 0.089.

Estimation of health problems (X1) to disease (X1.2) = 0.472. Estimation of health problems (X1) to nursing problems (X1.3) = 1.525. Estimated health problems (X1) to age criteria (X1.4) = 1.000.

Estimation of Parameter Significance

Table 3 Estimation of the Significance of Gender Parameter, Disease, Nursing Problem, and Age Criteria

Variables	Estimate	p-value
Health Problems (X1) ----> Gender (X1.1)	0.089	0.033
Health Problems (X1) ----> Disease (X1.2)	0.472	0.008
Health Problems (X1) ----> Nursing Problems (X1.3)	1.525	0.000
Health Problems (X1) ----> Age Criteria (X1.4)	1.000	0.000

Fit Model Value

Table 4 Fit Model Value on Chi-square, p-Value, Root Mean Square Error of Approximation (RMSEA), and Comparative Fit Index (CFI)

Model	Value
Default Model:	
Chi-square	0.501
P-Value	0.779
RMSEA	0.000
CFI	1.000

Table 3 shows that the result of p-values for health problems (X1) to gender (X1.1) amounted to 0.033 this values <0.05, then gender (X1.1) is expressed a significant as measure construct of health problems (X1). P-value generated for health problems (X1) to disease (X1.2) amounted to 0.008 this value <0.05, then disease (X1.2) is expressed significant as measure construct of health problems (X1). P-value generated for health problems (X1) to nursing problems (X1.3) amounted to 0.000 this value <0.05, then nursing problems (X1.3) are expressed significant as measure construct of health problems (X1). P-value generated for health problems (X1) to age criteria (X1.4) amounted to 0.000 this value <0.05, then age criteria (X1.4) are stated a significant as measure construct of health problems (X1).

Fit Model Value

Table 4 shows that the Chi-square fit index value generated is 0.501, because it approaches 0 the more fit, it means that the model is fit. The index value of fit p-value generated is 0.779, because α = 0.05, then fit, it means that the model is fit. RMSEA index fit value generated is 0.000, because ≤ 0.05, then fit, it indicates that the model is fit. CFI fit index value generated is 1,000, because> 0.90 then fit, it indicates that the model is perfect fit.

Discussion

Health Problems Effect to Gender

The results of this study show that children hospitalized during 2017-2018 were male by 54.3%, greater than girls (45.7%). This result is the same as the results of a study in Ethiopia which showed higher morbidity in boys (12.2%) than girls (11.1%). However, different results were shown in a study in Northern Ethiopia which showed the prevalence of morbidity between boys and girls was the same, namely 50%. Gender have significant results as a measure of the construct of health problems. This study showed that ARI had the highest rate from the others diseases. The results showed that gender influences ARI rate because hormones 17 gamma-estradiol. It can help stabilization of body and increase immunity if there are inflammation mediator agent such as TNF, IL-2, IL-4, IL-6, IL-8 and IFN-gamma. The mediator usable to fight infection. Male Child with his testosterone hormones delay production of the agent (Iskandar et al., 2015).

Health Problems Effect to Disease

Throughout 2017–2018 the number of children in the Besuki Agriculture area who had to be hospitalized due to ARI was 45%. This result is higher than the number of children with ARI in India (41.6%) (Savitha & Gopalakrishnan, 2018), Northern Ethiopia (27.3%) (Dagne et al., 2020).

ARI often attacks children under five years of age who experience an average of three to six episodes of events per year. More than 12 million children reported experiencing ARI hospitalization globally in 2010. ARI is classified into upper respiratory tract infection (URI) and lower respiratory tract infection (LRI). URI attacks the upper airway covering the nose to the vocal cords on the larynx, including the paranasal sinuses and middle ear. Whereas LRI attacks the lower

airways starting from the trachea, bronchi to bronchioles and alveoli (Nair et al., 2013).

Many large-scale changes in environmental and demographic conditions increase the risk of infectious disease. This risk is increasing due to increasing antibiotic resistance, the use and abuse of antibiotics can increase the process of emergence and spread of pathogenic bacteria in humans (WHO, 2013). In children who experience problems with nutrition due to lack of nutrients eaten can also increase the risk of experiencing diarrhea and respiratory disease (WHO, 2013). Factors such as mothers with complications of childbirth, children who are not breastfed can put them at risk of malnutrition (Rahayuwati et al., 2019).

Health Problems Effect to Nursing problems

Nursing Problems have significant results as a measure of the construct of health problems. The results showed hyperthermia is a nursing problem that most often occurs in children with all diseases, especially ARI. Hyperthermia is an increase of core body temperature that occurs due to infection. Pro inflammatory cytokines interleukin 1 (IL-1), interleukin 6 (IL-6) and tumor necrosis factor alpha (TNF) act as endogenous pyrogens that stimulate a child who has a fever if infected. Every increase of body temperature of one degree Celsius will increase carbohydrate metabolism 10-15% so that an increase of temperature effects to the increase in glucose and oxygen needs..

Health Problems Effect to age criteria

The age of the child has significant results as a measure of the construct of children's health problems in the Besuki Residency. The age of children under 5 years most often experience health problems both ARI or other diseases due to the influence of the immune system. The immune system is the body's defence against organisms which is the result of collaboration from a series of cells, tissues, proteins and organs. As a child ages, the immune system also develops (Simon et al., 2015).

This is the reason why children under five years are vulnerable to infection or illness. This is in line with the results of research that where an increase in the percentage of CD4 + and CD8 + memory cells as children ages. That's why, if a child under five years is in direct contact with someone who has symptoms of respiratory disease can significantly increase the risk of children experiencing ARI, so child under five years need to be kept away from people who have coughs or other symptoms of the disease to prevent child under five years from becoming infected with the disease. Providing supplementary food and health promotion of nutritional status can improve health (Fitriani, Setya, & Nurdiana, 2020).

Conclusion

Child health problems, especially such as pneumonia, diarrhea, and malaria in the agricultural area with an agricultural perspective in the Besuki Residency can affect gender, disease, nursing problems, and age criteria. So that these health problems require specific health interventions or programs according to the characteristics of gender, disease, nursing problems, and age criteria. The nurse should have a mapping of nursing problems and special agriculture-oriented interventions.

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