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# **Relationship between hospitalization stress and changes in sleep patterns in children aged 3-6 years in the Al-Fajar Room of Haji Hospital, Makassar**

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**Abstract**--Hospitalization is a crisis situation for children, when they are sick and treated in the hospital, they must adapt to the hospital environment. Based on the latest data from WHO in 2015, around 77,423 children worldwide experience several problems due to hospitalization. The purpose of this research was to determine the relationship between hospitalization stress and changes in sleep patterns in children aged 3-6 years at Haji Hospital, Makassar. The type of research is an analytic observational with a cross-sectional approach. The population was hospitalized children aged 3-6 years in the Al-Fajar Room/Child Care Room at Haji Hospital of Makassar, and the sample size was 45 children using accidental sampling. Data collection used observation sheets and analyzed using the Chi-Square test. The results showed that from 30 respondents experienced hospitalization stress, 16.7% did not experience a change in sleep patterns, and 83.3% experienced changes in sleep patterns. While the respondents who did not experience hospitalization stress were 15 respondents, where 53.3% did not experience changes in sleep patterns, and 46.7% experienced changes in sleep patterns. The results of statistical tests with Chi-square obtained a value of = 0.015,

so there is a relationship between hospitalization stress and changes in sleep patterns in children aged 3-6 years at Haji Hospital, Makassar. We can conclude a relationship between hospitalization stress and changes in sleep patterns in children aged 3-6 years at Haji Hospital, Makassar. It is expected that parents are involved directly with their children in the care and treatment to minimize stress during hospitalization.

**Keywords**---Hospitalization Stress, Changes in Children Sleep Patterns.

## **Introduction**

Hospitalization is a crisis for children, when they are sick and treated in the hospital, they must adapt to the hospital environment. The children may experience anxiety and stress during the treatment affecting the child's sleep patterns.

The impact of hospitalization on sleep patterns according to Cooke in Rudolph (2003) stated that long-term hospitalization can lead to changes in emotional and intellectual development. Hospitalization causes anxiety and stress in all ages, including children. Patients will feel comfortable during treatment through the support of family social care, a minimal care environment, a caring attitude, and therapeutic communication that accelerates the healing process (Tewuh, 2013). Children are at risk for health problems during hospitalization, such as immune response and immune defenses. The common problems are respiratory infections, fever, and diarrhea (Amelia, 2014).

When the children are brought to the hospital, it is a challenge and a scary thing and can have a traumatic effect on them. However, for hospitalized children, play can be a slightly different function. Playing can reduce stress, increase self-confidence and facilitate children's communication (Bayuti, 2018).

Sleep patterns are a common area of change in sleep patterns depending on the physiological, psychological, and physical environment of the client because room noise and work patterns of service providers often increase the client's sleep problems due to hospitalization (Potter & Perry, 2010). Sleep pattern disorders in children are caused by several environmental disease factors affecting a person's sleep needs. The high activity requires more sleep to maintain a balance of energy and psychological stress. Psychological conditions can occur due to mental stress. Based on the latest data from WHO in 2015, around 77,423 children worldwide experience several problems due to hospitalization such as fear, worry, and anxiety as well as offensive, stress, angry, aggressive, suspicious, and sensitive. Sick children are a complex problem in Indonesia. Indonesia is a country with 27 children deaths per 1000 live births. (UNICEF, 2015).

Based on the Indonesian Child Profile Data 2018, hospitalized children in 2017 were 79,626 million people, while in 2018, it was 79,552 million people, so from the data above, the most were 79,626 million people in 2017. The Ministry of

Health of the Republic of Indonesia (2018) stated that when children aged 3-6 years enter school, they need 11-13 hours of sleep, including naps. If the children experience hospitalization stress, there is a change in sleep patterns. The problems faced are insomnia due to medication and environmental conditions different from home conditions. A pre-survey was conducted in February on 12 hospitalized children with sleep problems due to caused by known diseases and environmental factors.

Research by Azhari & Afriani(2018) at Dr. AK Gani Hospital in Palembang obtained significant results based on the results  $p$ -value = 0.047, concluded that there was a relationship between hospitalization anxiety and changes in sleep patterns in preschool-aged children. Research by Mariani (2019) in Mayjend HM Ryacudu Hospital found the relationship between physical illness and sleep patterns in children, and there was a relationship between environment and sleep patterns in children.

Research by Susilowati & Sutini (2018) at Harapan Kita Hospital in Jakarta showed that there was a significant relationship between hospitalization and the length of sleep for toddlers, where the  $p$ -value < 0.05 (0.000). Research by Syafriani & Kurniawan(2018) showed a relationship between family roles and anxiety due to hospitalization in preschool-age children where  $p$ -value = 0.012 <  $\alpha$  = 0.05. Based on the research results, there is a significant relationship between the role of the family and anxiety due to hospitalization in preschool children.

Based on data obtained in the Al-Fajar room of Haji Hospital about the number of hospitalized children for the last three months from June 1 to August 30, 2019, as many as 367 people. Based on the number of pediatric patients aged 3-6 years from April to November 2019, there were 230. Based on the description above, the researcher aimed to conduct a research entitled "The Relationship of Hospitalization Stress with Changes in Sleep Patterns in Children at Haji Hospital, Makassar".

## **Method and Material**

The type of research used in this research was an analytic observational with a cross-sectional approach that aimed to determine the relationship between hospitalization stress and changes in sleep patterns in children in the Al-Fajar room of Haji Hospital, Makassar.

### **Location and Time of Research**

#### 1. Research Location

This research was carried out in the Al-Fajar Room/Child Care Room at Haji Hospital, Makassar.

#### 2. Research Duration

This research was conducted from December 20, 2019, to January 20, 2020.

### **Population and Sample**

#### 1. Population

The population was children aged 3-6 years who underwent treatment in the Al-Fajar Room/Child Care Room at Haji Hospital, Makassar. The data from January to November 2019, as many as 230 people.

#### 2. Sample

The sample was 45 pediatric patients aged 3-6 years who underwent treatment in the Al-Fajar room of Haji Hospital, Makassar

### **Data collection**

#### 1. Source of data

##### a. Primary Data

Primary data was data obtained by researchers directly from individuals through the results of filling out a questionnaire.

##### b. Secondary data

Secondary data was data obtained from other parties such as institutions or agencies. The secondary data in this research was the data of inpatients in the pediatric of Haji hospital, Makassar.

#### 2. Data Collection Procedure

The data collection procedure in this research was interview and questionnaire techniques. Interviews are a method of collecting data by interviewing respondents.

### **Result**

Based on the research conducted in the Al-Fajar Room of Haji Hospital OF Makassar from December 20, 2019, to January 20, 2020. The population was children aged 3-6 years who underwent treatment in the Al-Fajar Room/Child Care Room at Haji Makassar Hospital. Data for the age of 3-6 years from January to November 2019 is 230 people. The number of samples was 45 children using accidental sampling. Data was collected using observation sheets and then analyzed the univariate and bivariate analyses.

Univariate analysis to determine the distribution of respondents' demographic data includes distribution of respondents based on mother's age, mother's education, mother's occupation, children's age, children's gender, hospitalization stress, and changes in sleep patterns. Meanwhile, bivariate analysis was carried out on two variables, namely the independent variable and the dependent variable. The bivariate analysis includes the relationship between hospitalization stress and changes in sleep patterns in children aged 3-6 years. The data obtained are presented in the form of narratives and tables. The level of significance in this research is 95% ( $\alpha=0,05$ ). The data obtained, processed, and analyzed using SPSS and presented in tabular form as follows:

### Characteristics of Respondents

**Table 3**  
**Characteristics of Respondents in the Al-Fajar Room at Haji Hospital of Makassar in 2019**

<b>Characteristics of Respondents</b>	<b>N</b>	<b>%</b>
<b>Children Age</b>		
3-4 years	26	57,8
5-6 years	19	42,2
<b>Children Gender</b>		
Boy	26	57,8
Girl	19	42,2
<b>Total</b>	<b>45</b>	<b>100,0</b>

*Source: Primary Data*

Table 3 above shows that from 45 respondents, most children aged between 3 - and four years was 26 respondents (57.8%) and 5-6 years with 19 respondents (42.2%). The gender of most children was boys, as many as 26 respondents (57.8%), and girls were 19 respondents (42.2%).

### Mother's Characteristics

**Table 4**  
**Characteristics of Mothers in the Al-Fajar Room at Haji Hospital of Makassar in 2019**

<b>Mother Characteristics</b>	<b>N</b>	<b>%</b>
<b>Age</b>		
17-25 years	4	8,9
26-35 years	27	60,0
36-45 years	13	28,9
46-55 years	1	2,2
<b>Education</b>		
elementary school	6	13,3
junior high school	5	11,1
senior High School	20	44,4
DIII	1	2,2
Bachelor	13	28,9
<b>Occupation</b>		
House Wife	33	73,3
civil servant	5	11,1
Private employees	1	2,2
entrepreneur	6	13,3
<b>Total</b>	<b>45</b>	<b>100,0</b>

*Source: Primary Data*

Table 4 above shows that from 45 respondents, the most mother's age was 26-35 years, as many as 27 respondents (60.0%), and the least was 46-55 years old with one respondent (2.2%). The highest mother's education was Senior High School with 20 respondents (44.4%), and the least was DIII with one respondent (2.2%).

The most occupation of mothers was housewife, as many as 33 respondents (73.3%), and the least was private employees with one respondent (2.2%).

### Univariate Analysis

**Tabel 5**  
**Characteristics of Variable in the Al-Fajar Room at Haji Hospital of Makassar in 2019**

Variable	N	%
<b>Hospitalization Stress</b>		
Stress	30	66,7
Not stress	15	33,3
<b>Changes in Sleep Pattern</b>		
Not change	13	28,9
Changed	32	71,1

Source: Primary Data

Table 5 shows that from 45 respondents, there were 30 respondents (66.7%) who experienced hospitalization stress and 15 respondents (33.3%) who did not. For variable changes in sleep patterns, there were 13 respondents (28.9%) who did not experience changes and 32 respondents (71.1%) who did.

### Bivariate Analysis

**Table 6**  
**The Relationship Between Hospitalization Stress and Changes in Sleep Patterns in Children Aged 3-6 Years in the Al-Fajar Room of Haji Hospital, Makassar in 2019**

Hospitalization Stress	Changes in Sleep Pattern				Total		Value of $\rho$
	Not change		Changed		N	%	
	n	%	n	%			
Stress	5	16,7	25	83,3	30	100,0	$\rho=0,015$
Not stress	8	53,3	7	46,7	15	100,0	
Total	13	28,9	32	71,1	45	100,0	

Source: Primary Data

Table 6 shows that of 30 children who experienced stress from hospitalization, the most that experienced changes in sleep patterns were 25 respondents (83.3%). Meanwhile, of the 15 children who did not experience hospitalization stress, the majority did not experience changes in sleep patterns were eight respondents (53.3%). The results of statistical tests with Chi-square obtained a value of  $\rho = 0.015$ . Because of  $\alpha (0.05)$ , then the hypothesis is accepted. Thus there is a relationship between hospitalization stress and changes in sleep patterns in children aged 3-6 years in the Al-Fajar room of Haji Hospital, Makassar

## **Discussion**

### **Hospitalization stress in children aged 3-6 years**

The results of this research showed that most respondents experienced hospitalization stress, as many as 30 respondents (66.7%). The children want to be with their parents along with hospitalization and cry when their parents leave them, cry when the nurse is coming, and the nurse will do the treatment. Besides that, there were 15 respondents (33.3%) who did not experience hospitalization stress, because the children did not feel afraid, did not try to get out of bed, and was not bothered by the presence of health workers. According to the researcher's assumptions, hospitalization of pre-school age children causes stress during treatment. It is influenced by many factors, such as officers (nurses, doctors, and other health workers), the new environment, and the family accompanying them during treatment.

The research results are in line with Poernomo & Sukoco (2016), who stated that most children were experiencing hospitalization stress during treatment. It is because children did not have any idea of how they are treated in hospitals, children are unfamiliar with the environment in the hospital, children cry and feel scared when they see nurses come to give treatment, and they are afraid of pain. It is evidenced by the reaction of children during hospitalization to respond to stress such as being hospitalized, regressive, experiencing loss of control related to physical limitations, loss of routine, dependence, and fear of injury or pain in the body.

According to Priyoto (2014), hospitalization stress is the individual's response to stressful situations, change, adjustment, unfamiliar caregivers, and loss of independence. Hospitalized Children feel uncomfortable with the environment, separated from parents, loss of control or limitation of activities, injuries, body aches, and fear of pain. Some of the factors that affect the hospitalization of children are parenting and arguing, unrealistic fantasies and anxiety about darkness, monsters, murder, and wild animals starting with strangers, impaired social contact if visitors are not allowed, pain and complications of surgery or illness, and fear of disability or die.

### **Changes in sleep patterns in children aged 3-6 years**

The results showed that most children experienced changes in sleep patterns, as many as 32 respondents (71.1%). It is caused by the duration of the children's sleep being different before and during treatment, not sleeping well, sometimes waking up, and does not feel refreshed when he wakes up. In this research, there were also 13 respondents (28.9%) who did not experience changes in sleep patterns because the children's sleep duration does not change during treatment, feel good and refreshed when they wake up because the children have begun to adapt to the new environment, so it is easier to get good quality sleep.

According to the researcher's assumptions, changes in sleep patterns are often experienced by hospitalized children, especially for those who have just entered the hospital, because of new environmental changes experienced by children. So,

parent's role are necessary to maintain good quality sleep. Maintaining good quality sleep is essential for health as well as healing. Sick children often need more sleep and rest to optimize their normal body functions.

The research results are in line with research by Mariani (2019), who stated that most of the children's sleep patterns were disturbed during hospitalization. It is influenced by several factors, including physical illness, the new environment, fatigue during treatment, lifestyle, and emotional stress.

According to Wahyuni (2016), changes in sleep patterns are the most significant impact on hospitalized children. During hospitalization, children will be stressed because the environment is unfamiliar to them. Stress experienced by children causes many reactions such as illness or personal problems such as feeling apart from the home environment, loss of affection, body image disorder, then will act regressively such as loss of control, displacement, aggression (rejection), withdrawal, protest behavior, also sensitive and passive like refusing to eat and so on.

### **The relationship between hospitalization stress and changes in sleep patterns in children aged 3-6 years**

The results of this research showed a relationship between hospitalization stress and changes in sleep patterns in children aged 3-6 years with a value of  $\rho=0,015 < \alpha=0,05$  because respondents who did not experience hospitalization stress were more likely not to experience changes in sleep patterns. On the other hand, respondents who experienced hospitalization stress were more likely to experience changes in sleep patterns.

During hospitalization, a person may experience sleep disorders due to anxiety. When someone is anxious, it increases the sympathetic nervous system and causes sleep disturbance. Anxiety can make people feel more stressed and frustrated when they can't sleep. Anxiety people will try hard to sleep because anxiety can increase blood norepinephrine through the sympathetic nervous system. This substance will reduce the level of NREM and REM (Wahyuni, 2016). According to the researcher's assumptions, there is a relationship between hospitalization stress and changes in sleep patterns in children aged 3-6 years. So it can be concluded that the higher the hospitalization stress experienced by children, the higher the risk of changes in sleep patterns. Sleep is essential for hospitalized children, so the role of parents and health workers is necessary for helping children reduce hospitalization stress because low hospitalization stress will help children to achieve good sleep quality.

Someone who experiences stress such as feeling worried about unclear problems, feeling tired, waking up feeling sick, and palpitations will cause decreased sleep quality. Stress, depression, and anxiety often interfere with sleep to whom has problems, and may find it difficult to relax. Anxiety increases norepinephrine in the blood, which stimulates the sympathetic nervous system. These changes lead to a decrease in stage IV (Dahroni, et al., 2017).

Five respondents experienced hospitalization stress but did not experience changes in sleep patterns. It can be influenced by the age of the children, most of them were 3-4 years old. A research by Zahara (2013), stated that sleep patterns are related to age. As age increases, the more factors affecting sleep patterns, the more likely to experience sleep disorders.

This research also found 7 respondents who did not experience the stress of hospitalization but experienced changes in sleep patterns. It can be influenced by the gender of the children, which is mostly boys. Research by Thiedke (2016), stated that preschool-age boys tend to be more prone to sleep disturbances than preschool-age girls. It is because preschoolers tend to have slower maturation in the central nervous system. Impressions in the central nervous system that may occur in preschool-age children make boys more sensitive to emotional stimuli because of stressors for the monophasic sleep cycle.

The results of this research are in line with research by Agustyaningsih (2017), who stated that there was a significant relationship between hospitalization stress and changes in sleep patterns of preschool-aged children at RSKIA PKU Muhammadiyah Kotagede Yogyakarta, where the higher the hospitalization stress experienced, the sleep patterns of preschool-aged patients tended to change. The higher the cortisol produced, the higher the disturbances in the hippocampal and neocortical systems. This disorder causes memory consolidation to become chaotic so that the REM sleep phase becomes longer.

The research by Azhari & Afriani (2018) found a relationship between hospitalization anxiety and changes in sleep patterns in preschool-aged children. Hospitalized children are anxious because they feel they have lost a safe environment, affectionate, and fun. Children also have to leave the familiar home environment, games, and playmates. As a result, children feel nervous and restless, even at bedtime.

Research by Yuniawati & Khodijah(2013) found a relationship between hospitalization stress and sleep patterns of preschool children. The results of this research are different from the research by Mariani (2019), who stated that the emotional stress factor was not related to the sleep patterns of hospitalized children. Most stress occurs in infants between mid-6-30 months to the preschool age range of 3 to 6 years. Toddlers or children cannot communicate using sufficient language and have a limited understanding of reality. As a result, when children feel apart from their mothers, they will feel insecurity, sleeplessness, and anxiety.

## **Conclusion**

1. Most children aged 3-6 years in the Al-Fajar room of the Haji Hospital experienced hospitalization stress as many as 30 respondents (66.7%).
2. Most of the children aged 3-6 years in the Al-Fajar room of the Haji Hospital experienced a change in their sleep pattern as many as 32 respondents (71.1%).

3. There is a relationship between hospitalization stress and changes in sleep patterns in children aged 3-6 years in the Al-Fajar room of Haji Hospital with a value of  $p=0.015$ .

### Recommendation

1. It is expected that parents can be directly involved in children care by being near them, thereby minimizing stress during hospitalization.
2. Nurses are expected to carry out therapeutic communication with children's parents to help reduce stress effectively and improve sleep patterns.
3. It is expected that the hospital, especially the children's room, will provide good nursing care to pediatric patients such as friendly human resources (HR), professional actions, a calm and attractive environment, cleanliness of the room, proper beds, and parents involved. So that the children's sleep pattern can be fulfilled
4. It is hoped that further researchers can expand this research by taking more samples with other factors affecting children's sleep patterns besides anxiety levels such as physical illness, drugs, environment, fatigue, food and calorie intake, motivation or any developing research by comparing sleep patterns of children.

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