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Description of Home Conditions Based on Healthy Home Standards for Toddlers with Acuate Respiratory Tract Infections (ARI)

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Kondisi rumah sehat berdasarkan standar rumah sehat pada balita dengan ISPA. Penelitian ini menggunakan desain deskriptif observasi. Sampel penelitian adalah 67 responden yang diambil berdasarkan kriteria inklusi, yaitu orang tua balita yang didiagnosa ISPA menggunakan teknik *accidental sampling.* Kuesioner yang digunakan adalah penilaian rumah sehat. Analisis yang digunakan adalah analisis data univariat. Terdapat 62,7% responden berusia dewasa awal (26-35 tahun), sebanyak 47,8% anak berusia toddler (12-59 bulan), sebanyak 50,7% anak berjenis kelamin laki-laki**.** Dari 67 responden terdapat 59,7% rumah responden yang memenuhi syarat rumah sehat dan 40,3% rumah responden tidak memenuhi syarat rumah sehat, pada komponen rumah 88,1% luas ventilasi permanen <10% luas lantai rumah, 56,7% rumah responden tidak memiliki lubang asap dapur, pada sarana sanitasi pembuangan limbah 100% dialirkan ke selokan terbuka, dan perilaku penghuni 92,5% kadang-kadang membuka jendela kamar dan 91% kadang-kadang jendela ruang keluarga, serta 95,5% kadang-kadang membersihkan halaman rumah. Kesimpulannya, kondisi rumah sebagian sudah memenuhi syarat rumah sehat dan masih terdapat rumah yang tidak memenuhi syarat rumah sehat, dengan mayoritas komponen rumah, sarana sanitasi, dan perilaku penghuni didapatkan yang baik.

Description of Home Conditions Based on Healthy Home Standards for Toddlers with Acuate Respiratory Tract Infections (ARI)

Healthy home conditions based on healthy home standards for toddlers with ARI. This study used a descriptive observational design. The study sample consisted of 67 respondents selected based on inclusion criteria, namely parents of toddlers diagnosed with ARI using the *accidental sampling* technique. The questionnaire used was a healthy home assessment. The analysis used was univariate data analysis. There were 62.7% of respondents in early adulthood (26-35 years old), 47.8% of toddlers (12-59 months old), and 50.7% of male children**.** Of the 67 respondents, 59.7% of respondents' homes met the healthy home criteria and 40.3% of respondents' homes did not meet the healthy home criteria. In terms of housing components, 88.1% had permanent ventilation <10% of the floor area of the house, 56.7% of respondents' homes did not have a kitchen smoke vent, In terms of sanitation facilities, 100% of waste was discharged into open gutters, and in terms of resident behavior, 92.5% sometimes opened their bedroom windows and 91% sometimes opened their living room windows, while 95.5% sometimes cleaned their yards. In conclusion, some of the houses met the requirements for healthy housing, while others did not. The majority of the houses, sanitation facilities, and residents' behavior were found to be good.

Introduction

Acute Respiratory Tract Infection (ARI) is a condition that affects the upper and lower respiratory tract such as the pleura, sinus tissue, as well as the middle ear cavity, this disease occurs for 14 days, so it is classified as an acute infectious disease (Talk) *et al.*, 2022). ISPA lasts up to 14 days and spreads through various channels, including blood, sneezing, saliva, and respiratory air containing germs. Early symptoms of ISPA include a mild cold, cough, fever, sneezing, sore throat, headache, vomiting and loss of appetite (Budianto, 2020).

According to the data *World Health Organization* (WHO) explained that ISPA is the leading cause of death worldwide, accounting for 120 million cases and 1.4 million deaths every year. According to the results of Riskesdas in 2018, there was an increase in the incidence of ISPA in toddlers, accounting for around 20%-30% of the overall mortality rate for toddlers. In 2019, data obtained from the Health Profile of the Ministry of Health noted that the prevalence of ISPA in children under five in Indonesia reached 3.55% of a total of 7,639,507 cases (Fadila & Siyam, 2022). Based on data from the Pekanbaru City Health Office in 2023, the total number of children infected with ISPA is 7,503. From this data, t he work area of the Umban Sari Health Center occupies the highest level in ISPA cases in toddlers as many as 603.

A healthy home must have three health aspects: the house (walls, floors, ceilings, windows of the living room, windows of the room, ventilation, lighting, and kitchen chimneys), sanitation facilities (clean water facilities, wastewater disposal facilities, garbage disposal facilities and latrines), and the behavior of residents (opening the windows of the living room, windows of the room, throwing feces of babies and toddlers into the latrines, cleaning the yard and throwing garbage in its place) (Aldo *et al.*, 2019). Housing and settlements are part of a single system that includes development, housing management, residential area management, maintenance, prevention, and improvement of the quality of settlements and housing that are less suitable (Sri) *et al*., 2020). Humans can nourish settlements, one of which is by maintaining the cleanliness of the river. Industrial and household waste is not directly dumped into the river, until the river becomes clean and no longer a source of disease (Soendjoto & Dharmono, 2016).

According to the epidemiological triangle model, the emergence of diseases is caused by an imbalance between hosts *(host)*, disease seeds *(agent)* and the environment *(environment)* (Febriyani *et al.* 2020). A healthy house is defined as a house that meets health requirements,

meaning it has good construction, such as walls, ceilings, windows, ventilation, flooring, and other components. A healthy house also has a source of clean water, healthy latrines, a place to dispose of garbage, a place to dispose of wastewater, and the right level of house density (Hanantatur *et al.,* 2020). Permenkes RI No. 1077/MENKES/PER/V/2011 emphasizes the importance of lighting and ventilation in preventing environment-based diseases such as ISPA.

Previous studies have identified a relationship between home physical sanitation (ventilation, lighting, density, and others) and the incidence of ISPA in toddlers, as conducted by Lestari et al. (2022) in Makassar. However, most studies have not specifically examined the environmental context of wetlands such as those in Pekanbaru, which are vulnerable to flooding, high humidity, and pollution due to human activities and peatland fires. The relationship between the condition of the house according to the standard of a healthy house and the incidence of ISPA in the context of wetland areas, which have unique characteristics such as permanent waterlogging, high occupancy density, and exposure to smoke from land burning.

Forest fires can result in air pollution, both outdoors and indoors. One of the results of forest burning is smoke (Handayani & Mahkota, 2020). Smoke from forest and land fires contains various components in the form of particles and gases that can irritate the respiratory tract. Exposure to this smoke can cause inflammation of the airways, with symptoms such as colds, sore throats, coughs, and increased body temperature (Honorable *et al.*, 2021).

This study identified the physical, sanitation, and behavioral conditions of the residents of the house in cases of toddlers with ISPA in wetland areas, especially the work area of the Umban Sari Health Center. This region is a representation of densely populated areas and close to rivers, which are particularly susceptible to environmentally-based diseases. The purpose of this study is to describe the condition of the house based on healthy housing standards for toddlers who experience ISPA in the working area of the Umban Sari Health Center, Pekanbaru.

Method

This study uses a quantitative research method with an observational descriptive research design. The research design was used to see an overview of the condition of the house based on the standard of healthy houses in ISPA toddlers in the Pekanbaru wetland area. The population in this study is all toddlers who suffer from ISPA in the work area of the Umban Sari

Health Center as many as 249 toddlers in September, November, and December 2023. The number of samples in this study amounted to 67 parents of toddlers who had children under five who were diagnosed with ISPA using accidental sampling techniques. This study used a healthy home assessment questionnaire consisting of 6 questions to identify the characteristics of respondents and 17 questions to identify aspects of healthy home assessment. The data analysis used in the research in this study is univariate data analysis, namely in the form of frequency and percentage.

Research Results

Table 1. Frequency Distribution of Respondent Characteristics

Yes	Characteristics of Respondents	Frequency (f)	Presentase (%)
1.	Age of respondents		
	a. Late teens	8	11,9
	b. Early adulthood	42	62,7
	c. Middle Adult	17	25,4
2.	Work		
	a. Work	9	13,5
	b. Not working	58	86,6
3.	Final education		
	a. Elementary (SD,SMP/MTS)	6	9
	b. Secondary (SMA/SMK)	54	80,6
	c. Height (D3/S1)	7	10,4
4.	Number of house occupants		
	a. 3 orang	6	9
	b. 4 orang	18	26,9
	c. 5 orang	24	35,8
	d. 6 orang	14	20,9
	e. 7 orang	5	7,5
	Characteristics of toddlers		
1.	Age		
	a. Baby	13	19,4
	b. Toddler	32	47,8
	c. Prasekolah	22	32,8
2.	Gender		
	a. Man	34	50,7
	b. Woman	33	49,3
	Total	67	100

Based on the table above, some of the respondents aged early adulthood (26-35 years) amounted to 42 respondents (62.7%). The majority of respondents did not work amounting to 58 respondents (86.6%). The majority of the last education of respondents who graduated from high school/vocational school amounted to 54 respondents (80.6%). And some of the number of residents of respondents' houses with a frequency of 5 residents amounted to 24 respondents (35.8%). The average age of toddlers (12-35 months) amounted to 32 children (47.8%). Some of the sexes were 34 boys (50.7%).

Table 1. Frequency Distribution of Assessment Aspects

No	Assessment aspects	Frequency (f)	Percentage (%)
A	**Components of the house**		
1.	Langit-las		
	a. None	24	35,8
	b. Available, dirty, difficult to clean, and prone to accidents	7	10,4
	c. Available, clean, and not prone to accidents	36	53,7
2.	Wall		
	a. Not a wall	0	0
	b. Semi permanen	56	83,6
	c. Permanent	11	16,4
3	Floor		
	a. Soil	0	0
	b. Bamboo planks/ weaves close to the ground/ stucco that cracks and dusts	25	37,3
	c. Plastered/tile/ceramic/ board(stilt house	42	62,7
4.	Bedroom windows		
	a. None	0	0
	b. Ada	67	100
5.	Living room windows		
	a. None	0	0
	b. Ada	67	100

No	Assessment aspects	Frequency (f)	Percentage (%)
6.	Ventilation		
	a. None	1	1,5
	b. There is a permanent ventilation area <10% of the floor area	59	88,1
	c. There is a ventilation area >10% of the floor area	7	10,4
7.	Kitchen chimney		
	a. None	38	56,7
	b. There are kitchen ventilation holes <10% of the kitchen floor area	26	38,8
	c. There are ventilation holes >10% of the kitchen floor area	3	4,5
8.	Lighting		
	a. Not bright	0	0
	b. Lack of light	22	32,8
	c. Light and non-glare	45	67,2

Based on the frequency distribution table of the assessment aspect, in the components of the house such as the ceiling, respondents had a clean ceiling and were not prone to accidents as many as 36 respondents (53.7%). The majority of the walls of the semi-permanent respondents' houses amounted to 56 respondents (83.6%). Some of the floors of the respondents' houses, namely plastered/tile/ceramic/board (stilt houses), amounted to 42 respondents (62.7%). All respondents had bedroom windows and living room windows. The majority of the respondents' house ventilation <10% of the floor area of the house amounted to 59 respondents (88.1%). Some respondents did not have a kitchen smoke pit, totaling 38 respondents (56.7%). Some of the respondents had bright lighting and did not glare as many as 45 respondents (67.2%).

B	Sanitation facilities	Frequency (f)	Percentage (%)
1.	Clean water facilities (SGL/SPT/PP/KU/PAH)		
	a. None	0	0
	b. There are, not my own and do not meet health requirements	14	20,9
	c. Exist, own and not meet health requirements	15	22,4
	d. There are, not my own and meet health requirements	0	0
	e. There is, own	38	56,7
2.	Toilet (sewage disposal facility)		
	a. None	0	0
	b. There is, not a goose neck, no cap, channeled into the river/pond	0	0
	c. There is, not a gooseneck, there is a lid	0	0
	d. There is, not a gooseneck, there is a lid, a septic tank	0	0
	e. Ada, gooseneck, septic tank	67	100
3.	Wastewater Disposal Facilities (SPAL)		
	a. None	0	0
	b. There are, permeated but polluting the power source	0	0
	c. There is, drained into an open sewer	67	100
	d. It is diffused and does not pollute the water source	0	0
	e. There is, drained into a closed sewer	0	0
4.	Garbage disposal facilities (garbage cans)		
	a. None	0	0
	b. There is, it is not waterproof and there is no lid	26	38,8
	c. There is, waterproof and unsealed	41	61,2
	d. There is, waterproof and enclosed	0	0

Based on the frequency distribution table of the assessment aspect, in sanitation facilities such as clean water facilities, some of the respondents with clean water facilities were 38 respondents (56.7%). All toilets of the respondent's house use goose necks and septic tanks. All respondent waste disposal facilities are drained in open sewers. Some of the respondents' waste disposal facilities were waterproof and uncovered, totaling 41 respondents (61.2%).

C	Resident behavior	Frequency (f)	Percentage (%)
1.	Opening a room window		
	a. Never	0	0
	b. Sometimes	62	92,5
	c. Every day	5	7,5
2.	Opening the window of the living room		
	a. Never	0	0
	b. Sometimes	61	91
	c. Every day	6	9
3.	Cleaning the yard		
	a. Never	0	0
	b. Sometimes	64	95,5
	c. Every day	3	4,5
4.	Throwing baby and toddler feces into the toilet		
	a. Dumped into rivers/gardens/ponds/carelessly	24	35,8
	b. Sometimes to the latrine	27	40,3
	c. Every day to the toilet	16	23,9
5.	Throwing garbage in the trash can		
	a. Dumped into rivers/gardens/ponds/carelessly	56	83,6
	b. Sometimes to the trash can	11	16,4
	c. Every day to the trash	0	0

Based on the frequency distribution table of the assessment aspect, in resident behavior such as the habit of opening the window of the respondent's room, sometimes there were 62 respondents (92.5%). The majority of respondents opened the window of the living room,

sometimes as many as 61 respondents (91%). The majority of respondents sometimes clean the yard of the house totaling 64 respondents (95.5%). Some respondents sometimes throw baby and toddler feces into the toilet, totaling 27 respondents (40.3%). The majority of respondents sometimes throw garbage in the garbage can, totaling 56 respondents (83.6%).

Table 3. Frequency Distribution of Assessment Results

No	Total assessment results	Frequency (f)	Percentage (%)
1.	Not eligible for a healthy home	27	40,3
2.	Meet the requirements of a healthy home	40	59,7
	Total	67	100

The results of the assessment that have been carried out on 67 respondents as many as 27 respondent houses do not meet the requirements for healthy housing (40.3%) and 40 respondent houses meet the requirements for healthy housing (59.7%).

Discussion

1. Respondent Characteristics

Based on the results of the research carried out by the researcher, it was found that most parents of toddlers aged 26-35 years amounted to 42 respondents. The increasing age of a person affects their ability to grasp and their mindset, so that the knowledge they gain also increases (Zara, 2021). Then the majority of children aged 12-35 months amounted to 32 respondents. According to Misnadiarly in Sari & Ardianti, (2017) the incidence of ISPA in infants and toddlers tends to show more severe clinical symptoms. This happens because ISPA at this age is the first infectious event and their natural immunity has not been optimally developed. More men than women are diagnosed with ISPA. According to Suhandayani in Sari & Ardianti (2017), boys are at higher risk of developing ISPA than girls, because boys tend to play outside the house more often until they are exposed to outside air more often than girls who usually play more indoors. Most of the respondents did not work, namely 58 respondents. The respondents that the researchers found were mothers of ISPA children under five, because women often spend more time at home, so they become close and sensitive to the needs of children. This also gives them more opportunities to take their children to the health center if the child is sick and for working mothers, time constraints are often an obstacle to bringing sick toddlers to health

facilities (Zara, 2021). Most of the parents of toddlers are in the middle category of education (SMA/SMK). Factors related to the incidence of ISPA disease include maternal knowledge of health and hygiene, maternal knowledge of maintaining a healthy environment, and information about diseases and their causes obtained from health counseling, these relate to the case of ARI. Lack of family knowledge can cause it to occur in toddlers, one of the reasons why ISPA often occurs in toddlers due to lack of family knowledge (Putri *et al.,* 2022)**.** The number of residents of the respondent's house amounted to 5 residents of 24 houses. Homes with high occupant density can result in unhealthy air circulation. The large number of occupants can affect the oxygen levels in the house, which has the potential to increase the number of disease-causing microorganisms, especially those that are transmitted through the respiratory tract. This makes residents, especially toddlers, more vulnerable to health problems (Hardianti & Wahyuni 2021).

2. Overview of Healthy Homes

   a. Components of the house

   The aspect of house components such as the ceiling was obtained as a result of the research that 53.7% was clean and not prone to accidents, some respondents did not have a ceiling in the house which could cause a buildup of dirt such as cobwebs as well as dust clumps, this can be a container for breeding diseases such as viruses and bacteria that cause ISPA (Hanafi *et al.,* 2023). Dust from the roof of the house can be inhaled and seal in the respiratory tract and trigger oedema which causes narrowing of the respiratory system (Then *et al.,* 2020).

   The walls of the respondent's house were obtained as a result of 83.6% of the research was semi-permanent, the walls of the respondent's houses were made of plastered stones and boards, houses that had non-tight walls, for example made of board, wood, and bamboo, were able to increase the risk of ISPA. This is caused by the night wind that enters directly into the house, which can carry harmful particles and pathogens (Leky *et al.,* 2022). Air quality can be determined from the type of wall, board or plywood walls will increase the humidity of the room, so that it will be a medium for the growth and proliferation of microorganisms (Rafaditya, *et al.,* 2021).

   The floor of the respondent's house was found to have mostly used ceramics and boards, the type of ceramic floor is considered good because the floor becomes easier to clean and

reduces the risk of humidity in the room. (Rafaditya *et al.,* 2021). Floors made of cracked and non-waterproof cement can easily get dusty and damp, unclean floor conditions can also cause ISPA, because dusty floors are a good place for germs that cause disease (Leky *et al.,* 2022). All respondents had bedroom windows and living room windows.

In this study, it was obtained that the ventilation area <10% of the floor area is 88.1%, the ventilation condition is <10% of the floor area, some of the respondents' vents are covered by cloth or mesh with the reason that mosquitoes do not enter the house through ventilation. Ventilation that is <10% of the area can result in not enough fresh air entering the house and even dirty air is not expelled optimally. In addition, it results in an increase in air humidity in the house which can be a place for the growth of disease-causing bacteria (Leky *et al.*, 2022). Houses with poorly ventilated ventilation can experience three main impacts, namely lack of oxygen, increased CO2 concentration, and the buildup of toxic organic matter in the room, this condition can threaten the health and comfort of residents (Aristatia *et al*., 2021).

Based on the research, it was found that 56.7% of respondents' houses did not have kitchen smoke holes so that their houses were stuffy because the kitchen smoke was steaming. If the smoke pits are inadequate, the concentration of pollutants in the house continues to increase which affects human health so that it can cause disease (Saparina & Intan, 2021). Some houses are able to use doors or windows in the kitchen as an air exchange channel (Mustari, 2021). Utilizing holes in the kitchen wall such as cracks in the walls made of boards and tiles made of bricks or plaster, you can use the existing ventilation in other rooms to ensure good air circulation in the kitchen (Coli *et al.,* 2023).

The results of the study were obtained that 67.2% of houses had bright lighting conditions that were also not glare, usually the respondent's children read or did assignments in the living room, the researcher measured the light in the living room with a lighting standard of >100 lux of bright while <100 lux included less bright lighting, the researcher measured the lighting during the day, the lighting during the day was said to be good because there was a sufficient amount of sunlight entering the house. A healthy home requires optimal lighting, which is not lacking and not excessive. The lack of natural light in the home can result in discomfort for the occupants. In addition, these conditions also create an environment that supports the growth of disease seeds, including ISPA. Therefore, it is

important to ensure that the house has enough light to stay comfortable and healthy (Ernawati *et al.*, 2022). If too much lighting can also cause health problems in vision (Simbolon & Wulandari, 2023).

b. Sanitation facilities

Based on the results of the study, 56.7% of houses have their own clean water facilities and meet health requirements. According to the Regulation of the Minister of Health of the Republic of Indonesia No. 416/MENKES/PER/IX/1990 concerning Clean Water Quality Requirements, water that meets health requirements is clear, tasteless, colorless, odorless, does not contain germs and harmful substances (Simanjuntak *et al.*, 2021). Some respondents have their own clean water facilities but do not meet health requirements, the water used is yellow and slightly oily, so some respondents use gallons of water for cooking. The increase in deadly or harmful infectious diseases spreads through polluted water (Damanik, 2021).

Based on the results of the study, 100% of respondents used gooseneck latrines and septic tanks. Healthy toilets are used to dispose of and collect human feces such as goose necks and also have septic tanks to prevent the spread of diseases (Kurniawati & Abiyyah, 2021). Having healthy latrines also needs to be considered with the availability of sufficient clean water so as not to cause problems for the community (Uswatun *et al.*, 2022).

Based on the results of the research obtained by 100% of respondents who drain wastewater in open sewers, wastewater that comes from households includes used bath water, used to wash clothes, furniture, foodstuffs and others. Wastewater that is flooded in the yard of houses and sewers can cause the environment to be unhealthy, causing environmental pollution that can become a breeding ground for diseases. Therefore, wastewater drains are better drained in closed sewers, so they can reduce odor pollution and the chemicals contained in them (Firdausyah *et al.*, 2021).

Based on the results of the study, 61.2% of respondents disposed of garbage in watertight and uncovered places such as plastic drum garbage cans, some respondents threw garbage in places that were not waterproof and uncovered so that water was stagnant in the garbage cans such as in cardboard or plastic. A good garbage can has a lid and is separated between wet and dry waste, the material is not difficult to clean and is not affordable for animals such as cats. mice, and flies. Waterproof garbage cans are also needed so that wet garbage is not

scattered and invites flies (Firdausyah *et al.,* 2021). Certain gases derived from the decay of microorganism waste produced by poor waste management are able to disturb the aesthetics and even the freshness of the air of the community environment (Harun *et al.,* 2021).

c. Resident behavior

Based on the results of the study, 92.5% of respondents' behavior in opening the window of the room was opened sometimes, because during the day the family was rarely in the room, and the habit of opening the window of the living room was 91% of the respondents' behavior sometimes in opening the window of the living room. Closed windows interfere with air circulation, so dirty air is trapped in the house and if inhaled can cause breathing problems, closed windows also reduce lighting, so it can increase humidity and can become a breeding ground for bacteria (Leky *et al.,* 2022).

Based on the results of the research obtained by 95.5%, sometimes respondents clean the yard, which causes the yard to become dusty if inhaled by toddlers or other family members. This dust sticks to the respiratory tract, reducing the elasticity of the lungs and making it difficult for toddlers to breathe. Therefore, respondents must often clean their homes so that they are not dusty and do not become a breeding ground for bacteria (Kartini *et al.,* 2020).

According to the results of the study, the habit of throwing baby or toddler feces into the toilet was obtained by 40.3% sometimes to the latrines, some respondents threw them in the river and in the backyard, because babies generally use diapers, stools that are thrown carelessly can pollute the soil and clean water (Sinum, 2021).

Based on the results of the study, 83.6% of respondents sometimes throw garbage in the garbage can, some respondents collect garbage in plastic and dispose of it on the roadside or riverbank. Some respondents burn their own waste, so open burning produces gases such as carbon dioxide and monoxide. These gases can trigger inflammation in the lungs and increase the risk of developing ISPA (Hidayat *et al.,* 2023).

Conclusion

The results of the study found that the age of the parents of the children who experienced the most ISPA in the middle adult group (26-35 years), the majority of mothers whose children

experienced ISPA did not work, the most education graduated from high school/Sederjat, the age of the children who experienced the most ISPA in the Toodler group (12-59 months), the gender of the children who experienced the most ISPA was male.

Based on the condition of some of the houses have met the requirements of a healthy house and there are still houses that do not meet the requirements of a healthy house, with the majority of house components, sanitation facilities, and resident behavior getting good results.

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