

An Analysis of Home Environment Quality with Acute of URI (Upper Respiratory Tract Infection) Incident on Toddler Ages in Mayor Umar Damanik Health Center, 2018

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Abstract

According to Riskesdas data in 2013, the prevalence of URI (Upper Respiratory Tract Infection) in Indonesia was 25.0% and the period prevalence of URI in North Sumatra was 19.9%. Data from the Tanjung Balai Health Office reported that 902 people were suffering from URI in 2016. Based on the monthly report of P2 URI, most found in the Major Umar Damanik Health Center, namely 1,404 cases and 518 cases of URI found in infants. Important factors that can increase the occurrence of URI are the physical condition of the house (natural lighting, ventilation area, humidity in the house, air pollution in the house, and occupancy density). The results of Riskesdas in 2013 stated that according to occupancy density, there were 13.4% of houses with a residential density of more than or equal to 8m² per person (solid). In the Major Umar Damanik Health Center, Tanjung Balai City, February-April 2018, the incidence of URI in infants was 518 cases (43.16%). So it is important to study as an effort to analyze the quality of home sanitation with the incidence of URI in infants in the working area of the Major Umar Damanik Health Center in Tanjung Balai City in 2018. The study was designed using a cross-sectional approach in 69 respondents. There is a relationship between occupancy density, ventilation area, air pollution, humidity, temperature, natural lighting, with the incidence of URI in infants in the Puskesmas Mayor Umar Damanik working area of Tanjung Balai City in 2018. Air pollution in the home is the most dominant factor affecting the incidence of URI in infants in the work area of the Public Health Center of Major Umar Damanik, Tanjung Balai City in 2018. Its recommended that the community improve their knowledge of the requirements of the home environment according to Permenkes RI No. 1077 / MENKES / PER / V / 2011 and apply it.

Keywords: URI (Upper Respiratory Tract Infection), toddlers, environment, home, sanitation

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Background Study

The incidence of environment-based diseases such as URI (Upper Respiratory Tract Infection) is still a public health problem in Indonesia, especially on children aged 1-5 years and it is a cause of child mortality in developing countries (Ludyaningrum, 2017) (Luhukay, Mariana & Puspita, 2018) (Sylvia, 2006) (Hartono, 2012) (Asriati, 2012) (Gapar, 2015) (Irianto, 2004) (Muttaqin, 2008) (Widoyono, 2011).

Based on data from the World Health Organization (WHO) that cases of URI (2.6%) occur in developed countries and (97.4%) occur in developing countries. The incidence of URI in developed countries with the most cases occurred in America with an incidence of 0.10%, and for developing countries, the most cases occurred in South Asia (0.36%) and Africa (0.33%) (WHO, 2012).

Based on data from the Republic of Indonesia Health Profile in 2011, it was stated that URI was included in the list of the top 10 inpatient diseases in hospitals in 2010, with a total of 17,918 cases of URI as well as the greatest number of visits in the list of the top 10 outpatient diseases in hospitals in 2010, with a new case of (67.2%). (Ministry of Health RI, 2012). The prevalence period of URI in Indonesia is 25.0% and the period prevalence of URI in North Sumatra is 19.9% (Ministry of Health, 2013) (MOH, 2007) (MOH, 2010) (MOH, 2013) (DG, 2012) (Ministry of Health, 2007) (Ministry of Health, 2011), (Ministry of Health, 2012), (Ministry of Health, 2013).

A study in Bandung concluded that poor air environment conditions were the main factor causing URI in the Bandung City of Cicadas. There is a relationship between environmental conditions on the incidence of URI in children under five in the study location where a bad environment is greater causing the incidence of URI in children under five (Wardhani, 2010) (Ratnani, 2008) (Sukamawa, 2006) (Sartika, 2012).

Data from the Tanjung Balai Health Office reported that 902 people were suffering from URI in 2016. Based on the monthly report of P2 URI, most found in the Major Umar Damanik Health Center, namely 1,404 cases and 518 cases of URI found in infants. This figure is very high compared to Kapias Health Center Crocodile Island in Tanjung Balai City which reported 230 cases of URI incidence in the population aged over five years from 8,147 population and Kuala Kaplas Being HealthCenter which only found 17 cases of URI from 10,243 total population. URI is also the first sequence of the ten biggest diseases in Puskesmas Mayor Umar Damanik, Tanjung Balai City. Based on preliminary observations made in the area of Major Umar Damanik Public Health Center, Tanjung Balai City, there were many densely populated settlements. As well as less organized and coincide with each other between houses. This condition is certainly very influential on the quality of home sanitation in the region, as air circulation in the house becomes disrupted, the natural lighting of the house is also disrupted (sunlight blocked into the house), and the humidity in the house becomes high.

Methodology of Study

This study used Analytic Observational with Cross-Sectional design (Arikunto, 2010) (Notoatmodjo, 2012) (Nursalam, 2003) (Sugiyono, 2010). The study took in Work Area of Mayor Umar Damanik Health Center, Tanjung Balai on February 2018. The population of this study is all toddler ages in Mayor Umar Damanik Health Center. To collect the data the used purposive sampling technique (found 69 of toddler ages as a sample of study), with interviewed their mother or family of the toddler (Dahlan, 2012) (Hastono, 2007).

Result

Analysis of Univariate Test

Table 1 Analysis of Home Environment Quality

Variable	f	%
Ventilation		
Not eligible	44	63,8
Eligible	25	36,2
Densely Populated		
Not eligible	58	84,1
Eligible	11	15,9
Air Pollution in Home		
A Source of Pollution	40	58,0
Free of Pollution	29	42,0
Humidity		
Not eligible	38	55,1
Eligible	31	44,9
Temperature		
Not eligible	41	59,4
Eligible	28	40,6
Natural Lighting		
Not Eligible	40	58,0
Eligible	29	42,0

On the table above showed that the quality of home-environment is bad because of 63,8% which have not eligible ventilation and 84,1% have not eligible densely populated. Besides, as many as 58% of the population have a source of pollution, as many 55,1% which have bad humidity, as many 59,4% of bad temperature, and as many 58,0% have bad lighting.

Analysis of Bivariate Test

This analysis to comprehend the influence between the dependent variable (URI on toddler Ages) with Independent Variable (Ventilation, Densely populated, humidity, Air pollution, lighting, and temperature). This analysis using the chi-square test with p-value 0,05 (CI 95%), and if the p-value 0,05, it can be concluded there is an influence between independent variable with the dependent variable.

Table 2 Analysis of Correlation between Home Ventilation with URI Incident on Toddler Ages

Independent Variable	Dependent Variable (URI on Toddler Ages)		Total Value		p-	
	Yes		No			
	n	%	n	%	n	%
ventilation						

Not Eligible	36	81,8	8	18,2	44	100	0,047
Eligible	15	60	10	40	25	100	

Table 3 Analysis of Correlation between Densely Populated with URI Incident on Toddler Ages

<i>Independent Variable</i>	<i>Dependent Variable (URI on Toddler Ages)</i>				<i>Total Value</i>		<i>p-</i>
	<i>Yes</i>		<i>No</i>				
	<i>N</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	
	Density of Residence						
Not Eligible	47	81,0	11	19,0	58	100	0,002
Eligible	4	36.4	7	63.6	11	100	

Table 4 Analysis of Correlation between Humidity with URI Incidents on Toddler Ages

Independent Variable	Dependent Variable (URI on Toddler Ages)				Total Value		p-
	Yes		No				
	N	%	n	%	n	%	
Humidity							
Not Eligible	29	76,3	9	23,7	38	100	0,015
Eligible	22	71,0	9	29,0	31	100	

Table 5 Analysis of Correlation between Air Pollution with URI Incident on Toddler Ages

Independent Variable	Dependent Variable (URI on Toddler Ages)				Total Value		p-
	Yes		No				
	N	%	n	%	n	%	
Air Pollution							
A source of Pollution	32	80,0	8	20,0	40	100	0,046
Free Pollution	19	65,5	10	34,5	29	100	

Table 6. Analysis of Correlation between Natural Lighting with URI Incident on Toddler Ages

Independent Variable	Dependent Variable (ISPA pada Balita)				Total Value		p-
	Yes		No				
	n	%	n	%	n	%	
Natural Lighting							
Not Eligible	31	77,5	9	22,5	40	100	0,026

Eligible	20	62,0	9	31,0	29	100
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Table 7. Analysis of Correlation between Home Temperature with URI Incident on Toddler Ages

Variable <i>independent</i>	Variable <i>dependent</i> (URI on Toddler Ages)				Total Value		p-
	Yes		No				
	n	%	n	%	n	%	
Home Temperature							
Not Eligible	28	68,3	13	31,7	41	100	0,008
Eligible	23	82,1	5	17,9	28	100	
Multivariate Test							

Table 9 Analysis of Logistic Regression with Double Prediction Model, the Quality of Home Environment with URI Incident on Toddler Ages in Work Areas of Mayor Umar Damanik Health Center, Tanjung Balai in 2018

No	Variable	B	Std.Error	df	Sig	Exp (B)
1	Ventilation	1,031	0,828	1	0,101	0,357
2	Residence	1,716	0,743	1	0,021	0,180
3	Humidity	0,459	0,648	1	0,478	1,582
5	Air Pollution in Home	0,609	0,646	1	0,345	1,839
6	Natural Lighting	0,736	0,653	1	0,260	0,479
7	Temperature	0,579	0,687	1	0,399	1,785
8	Constant	0,444	1,025	1	0,665	1,560

From the analysis multivariate in the quality of home-environment with URI incident on toddler ages in Work Areas of Mayor Umar Damanik Health Center, Tanjung Balai in 2018 found that the highest EXP (B) which significant is air pollution represented with 1,839. In conclusion, air pollution in toddlers' home can be influenced as many 1,839 times on URI Incident on toddler ages in Work Areas of Mayor Umar Damanik Health Center.

Discussion

The correlation between ventilation with URI Incidents on toddler ages in Work Area of Mayor Umar Damanik Health Center, Tanjung Balai.

Based on the analysis above found that the p-value 0,047 which is less than 0,05, so that there is a significant correlation between ventilation and URI Incident on toddler ages. Whereas one room without good ventilation system will bring up bad condition for health such as less of oxygen and it will increase the CO₂, a room smells moldy, and other (Azrul, 1996).

The correlation between densely populated with URI Incidents on toddler ages in Work Area of Mayor Umar Damanik Health Center, Tanjung Balai

Based on the analysis with chi-square test found that the populated has related with URI Incident on toddler ages because of the result of p-value (0,002) less than 0,05. A similar study in Lapulu District (2014) found that Densely populated has a risk of 3,596 in suffer of URI than a toddler who lived in tenuous population (Yusuf, 2016). Besides, densely populated will causing the URI incident and will spread by the air (Slamet, 2002) (Goel *et al.*, 2012).

The correlation between Humidity with URI Incidents on toddler ages in Work Area of Mayor Umar Damanik Health Center, Tanjung Balai

This analysis shows that p-value (0,015) less than 0,05, it means there is a significant correlation between humidity with URI Incident on toddler ages. Based on the study in the lapulu district found that 58 (65,9%) of respondents who have bad humidity, and 37 (42%) of them are Sufferers of URI. The result of chi-square test X^2 amount (5,868) > χ^2 table (3,841) and $p=0,015 < \alpha=0,05$, so that H_0 rejected. It can conclude there is a significant correlation between humidity with URI incident in Lapulu District (Yusuf, 2016) (Suma'mur, 1995 in Ristanti 2013).

The correlation between Air Pollution with URI Incidents on toddler ages in Work Area of Mayor Umar Damanik Health Center, Tanjung Balai

Based on the analysis with chi-square test shows that p-value (0,046) less than 0,05, it means there is a significant correlation between air pollution with URI Incidents on toddler ages in Work Area of Mayor Umar Damanik Health Center, Tanjung Balai, 2018. According to Permenkes RI No. 1077/Menkes/Per/V/2011 stated that air pollution is a state of the presence of one or more pollutants in a house which due to its concentration can risk causing health problems for residents of the house. The air in the house (indoor air pollution), especially the house is very dangerous for health.

The correlation between Natural Lighting with URI Incidents on toddler ages in Work Area of Mayor Umar Damanik Health Center, Tanjung Balai

The results of chi-square analysis found p-Value 0.026 smaller than 0.05, meaning that there was a significant relationship between natural lighting and URI incidence in infants in the Major Umar Damanik Health Center work area Tanjung Balai City in 2018. The results of statistical tests at the alpha significance level of 0.05 obtained: (1) there was a significant relationship between the physical condition of the house and the incidence of URI (Value = 0.016), (2) there was no significant relationship between density occupancy with the incidence of ARI (Value = 0.331), (3) there is a significant relationship between sources of air pollution in the home with the incidence of ARI (Value = 0.018) (Yuslinda, 2017).

The correlation between Temperature with URI Incidents on toddler ages in Work Area of Mayor Umar Damanik Health Center, Tanjung Balai

The results of chi-square home temperature analysis with the incidence of ARI in infants in the Major Umar Damanik Health Center working area of Tanjung Balai City was found to be p-Value 0.008 smaller than 0.05, meaning that there was a significant correlation between house temperature and the incidence of ARI in infants in the Major Umar Damanik Puskesmas working area. Tanjung Balai City in 2018. This is in line with research that shows that the incidence of ARI in people occupying a house with a temperature that does not qualify is 1 in 1 person (100%), while those occupying a house with a temperature that meets the requirements are 65 of 96 people (67.7%) suffered from ARI (Gapaar, 2015) (Ahmad and Sulistyorini, 2005)

Conclusion

Based on the analysis with univariate, bivariate, and multivariate test found there is a correlation between the density of residence, ventilation width, air pollution, humidity, temperature, and light, with URI Incidents on toddler ages in Work Areas of Mayor Umar Damanik Health Center, Tanjung Balai, 2018. Besides, air pollution is the most factor to influence URI Incident.

Suggest

It is suggested to the community to distribute brochures to posyandu cadres, and posyandu cadres are trained to understand environmental health issues. Not only that, the Puskesmas is also expected to conduct counseling, guidance, and supervision of the community in an effort to overcome URI risk factors and for further researchers are expected to be able to use more relevant indicators to measure the quality of the home environment and examine other factors causing ARI in infants, reviewing family behavior in the prevention of ARI, examines the role of local government in allocating environmental sanitation assistance funds.

Reference

- Arikunto, S. (2010). *Prosedur Penelitian*. Edisi Revisi IX. Jakarta: rineka Cipta.
- Asriati, Zamrud, Dewi, F, (2012). *Analisis Faktor Risiko Kejadian Infeksi Saluran Pernapasan Akut pada Anak Balita.*, Kendari: FK UHO
- Dahlan, S. (2012). *Statistik Untuk Kedokteran dan Kesehatan*. Edisi 5. Jakarta: Salemba Medika.
- Depkes RI. (2007) *Pedoman Teknis Penilaian Rumah Sehat*. Jakarta: Ditjen P2PLh
- Depkes RI. (2010). *Pneumonia Penyebab Kematian Utama Balita*. Jakarta: Kemenkes RI
- Depkes RI. (2013). *Pedoman Pengendalian Infeksi Saluran Pernapasan Akut*. Jakarta: Direktorat Jenderal Pengendalian Penyakit dan Penyehatan Lingkungan Kementerian Kesehatan RI.
- Ditjen PP dan PL. (2012). *Pedoman Pengendalian Infeksi Saluran Pernapasan Akut*. Jakarta: Kemenkes RI.
- Gapar. 2015. Hubungan Kualitas Sanitasi Rumah Dengan Kejadian Penyakit Infeksi Saluran Pernapasan Akut (ISPA) Di Wilayah Kerja Puskesmas Iv Denpasar Selatan Kota Denpasar. *Ecotroph (2) : 41-45*.
- Hartono. (2012). *Gangguan Pernafasan Pada Anak : ISPA*. Yogyakarta : Nuha Medika.
- Hastono, Sabri. (2007). *Statistik Kesehatan*. Jakarta: Raja Grafindo Persada.
- Irianto, Koes. (2014). *Ilmu Kesehatan Anak*. Bandung: Alfabeta.
- Kemenkes.(2007). *Riset Kesehatan Dasar (RISKESDAS) 2007*. Jakarta: Kementerian Kesehatan RI.
- Kementerian Kesehatan RI. (2011). *Pedoman Pengendalian ISPA*. Jakarta: Kementerian Kesehatan RI.
- Kemenkes.(2012). *Profil Kesehatan RI 2011*. Jakarta: Kementerian Kesehatan RI.
- Kemenkes. (2013). *Riset Kesehatan Dasar (RISKESDAS)*. 2013. Jakarta: Kementerian Kesehatan RI
- Lamsidi A. (2003) . Hubungan kondisi kesehatan lingkungan pemondokan dengan kejadian ISPA di Pondok Pesantren Sabilal Muhtadin Desa Jaya Karet Kecamatan Mentaya Hilir Selatan Provinsi Kalimantan Tengah. Skripsi. Semarang: Pascasarjana, UNDIP.
- Ludyaningrum, R. (2017). Driving Behavior and mileage with the Incidence of ISPA in Students UNAIR Surabaya. *Jurnal Berkala Epidemiologi*, 4(3), 371. doi: 10.20473/jbe.v4i3.2016.371-383
- Luhukay, J., Mariana, D., & Puspita, D. (2018). Peran Keluarga Dalam Penanganan Anak dengan Penyakit ISPA Di RSUD Piru. *Jurnal Keperawatan Muhammadiyah*, 3(1). doi: 10.30651/jkm.v3i1.1469
- Marlani, L., Sorimuda,. S, Rasmaliah. (2014). *Faktor-Faktor yang Berhubungan dengan Kejadian Infeksi Saluran Pernafasan Akut (ISPA) pada Anak Balita di Puskesmas Panyabunga Jjae Kabupaten Mandailing Natal tahun 2014*.Skripsi. Medan: Universitas Sumatera Utara

- Muttaqin, A. (2008). Buku Ajar Asuhan Keperawatan Klien Dengan Gangguan Sistem Imunologi. Jakarta : Salemba Medika.
- Notoatmodjo. (2012). *Metode Penelitian Kesehatan*. Jakarta: Rineka Cipta
- Nursalam. (2003). *Konsep dan Penerapan Metodologi Penelitian Ilmu Keperawatan*. Jakarta : FKUI.
- Ratnani, D.R. (2008). Teknik Pengendalian Pencemaran Udara Yang Diakibatkan Oleh Partikel. *UNWAHAS Momentum*. Vol. 4, No.2, Oktober (2008).
- Rudan, I. *et.al*. 2008. *Epidemiology and etiology of childhood pneumonia*. Bulletin of the World Health Organization (2008)
- Salsila, Deni.A. (2012). Hubungan Kondisi Rumah Dengan Frekuensi Kejadian Infeksi d Saluran Pernafasan Atas (ISPA) di Rt 01 Dan Rt 08 Kelurahan Olak Kemang Tahun (2012). *The Jambi Medical Journal*. No.1 Vol. Januari (201).
- Sartika, Dewi, M.H, Onny.S, Nur.E. (2012). Faktor Lingkungan Rumah dan Praktik Hidup Orangtua yang Berhubungan dengan Kejadian Pneumonia pada Anak Balita di Kabupaten Kubu Raya Tahun (2011). *UNDIP Jurnal Kesehatan Lingkungan Indonesia*. Vol. 11 No. 2, Oktober (2012).
- Slamet, Juli S. (2002). Kesehatan Lingkungan. Yogyakarta: Gajah Mada University Press.
- Sugiyono. (2010). Metode penelitian kesehatan. Bandung: Alfabeta
- Sukamawa, Ana, A, Lilis, S, Soedjadjad, K. (2006). Determinan Sanitasi Rumah dan Sosial Ekonomi Keluarga Terhadap Kejadian ISPA pada Anak Balita serta Manajemen Penaggulangannya di Puskesmas. *Jurnal Kesling*. Vol. 3, No.1, Juli (2006), 49-58.
- Sylvia A. (2006). Patofisiologi Edisi 6. Jakarta: EGC
- Wardhani, E. *et.al*. (2010). Hubungan Faktor Lingkungan, Sosial-ekonomi, dan Pengetahuan Ibu dengan Kejadian Infeksi Saluran Pernapasan Akut (ISPA) pada Balita di Kelurahan Cicadas Kota Bandung. Seminar Sains dan Teknologi-III Lembaga Penelitian Universitas Lampung, 18-19 Oktober 2010.
- WHO. (2012). Infeksi Saluran Pernapasan Akut (ISPA) yang Cenderung Menjadi Pandemi dan Pandemi, Pencegahan dan Pengendalian di Fasilitas Pelayanan Kesehatan. Jenewa: World Health Organization (WHO).
- Widoyono. (2011). Penyakit Tropis. Jakarta : Erlangga
- World Health Organization. (2007). Pencegahan dan Pengendalian Infeksi Saluran Pernapasan Akut (ISPA) yang Cenderung Menjadi Pandemi dan Pandemi di Fasilitas Pelayanan Kesehatan. Jenewa: WHO
- World Health Organization. (2007). Pencegahan dan Pengendalian Infeksi Saluran Pernapasan Akut (ISPA) yang Cenderung Menjadi Pandemi dan Pandemi di Fasilitas Pelayanan Kesehatan Pedoman Interim WHO. Jenewa : WHO
- Yuslinda. (2017). Hubungan Kondisi Lingkungan Dalam Rumah Dengan Kejadian Penyakit Infeksi Saluran pernafasan Akut (Ispa) Pada Masyarakat Di Kelurahan Ranomeeto Kecamatan Ranomeeto Tahun 2017. *JIMKESMAS* Vol.2, No.6 (2017)
- Yusuf. (2016). Hubungan Lingkungan Rumah dengan Kejadian Infeksi Saluran Pernapasan Akut (ISPA) Pada Masyarakat Pesisir Kelurahan Lapulu Kecamatan Abeli Tahun 2014. *Volume 3 Nomor 2 Bulan April 2016 E-ISSN:2443-0218*