



Risk Factors and Eneuresis Determinants in Pre-School Children

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ABSTRACT

Children more than 4 years old should have a controllable bladder external sphincter so that the child no longer wet the bed. The causes of enuresis include slow inherited or deficient renal system, emotional disorders, namely the feeling of fear when the child has to go out of the room at night, diet or habitual patterns of giving water before bed, and others. The social and psychological impact of enuresis disrupts a child's life. The psychological and social adverse effects that persist due to bedwetting affect the quality of life of children as adults. The research objective to determine the factors that influence and determine the incidence of enuresis in preschool children in Metro City. Research method using quantitative research with cross-sectional design. The analysis used univariate, bivariate and multivariate, using logistic regression tests. RESEARCH RESULTS: The distribution of the frequency of enuresis was 22 (22.2%) of respondents, the most children aged ≥ 5 years were 61 (61.6%), the most sex was female, namely 52 (52.5%), there was a history of enuresis in the parents, namely 85 (85.9%), there was a history of siblings with enuresis, namely 79 (79.8%), lack of toilet training, namely 52 (52.5%), children who were not their constipation that is equal to 87 (87.9%), children who do not have sleep disorders amounted to 67 (67.7%). There is a relationship between age and the incidence of enuresis with a p-value of 0.003. There is a relationship between parental history and the incidence of enuresis with a p-value of 0.000. There are two variables that are statistically significant and interact with each other, namely age and history of enuresis in the parents. Community service activities are needed to socialize toilet training guides for parents and provide health education on enuresis management with acupressure and moxibustion therapy.

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Faktor Risiko dan Determinan Eneuresis pada Anak Prasekolah

ABSTRAK

Anak berusia lebih dari 4 tahun seharusnya sudah memiliki kondisi sfingter eksterna vesika urinaria yang mampu dikontrol, sehingga anak tidak lagi mengompol. Penyebab enuresis diantaranya faktor bawaan lambat atau sistem ginjal defisiensi, gangguan emosi yaitu perasaan takut ketika anak harus pergi keluar kamar pada malam hari, diet atau pola kebiasaan memberi air sebelum tidur, dan lainnya. Dampak secara sosial dan kejiwaan yang ditimbulkan akibat enuresis mengganggu kehidupan seorang anak. Pengaruh buruk secara psikologis dan sosial yang menetap akibat ngompol, mempengaruhi kualitas hidup anak saat dewasa. Tujuan penelitian untuk mengetahui faktor yang berpengaruh dan determinan terhadap kejadian enuresis pada anak prasekolah di Kota Metro. Metode penelitian menggunakan jenis penelitian kuantitatif dengan rancangan *cross sectional*. Analisis menggunakan univariat, bivariat dan multivariat, menggunakan uji *logistic regression*. Hasil penelitian menunjukkan Distribusi frekuensi enuresis yaitu sebanyak 22 (22,2%) responden, usia anak yang terbanyak yaitu anak usia ≥ 5 tahun yaitu sebanyak 61 (61,6%), jenis kelamin yang terbanyak perempuan yaitu sebesar 52 (52,5%), ada riwayat enuresis pada orang tua yaitu 85 (85,9%), ada riwayat saudara kandung dengan enuresis yaitu sebesar 79 (79,8%), *toilet training* kurang yaitu sebanyak 52 (52,5%), anak yang tidak ada konstipasi yaitu sebesar 87 (87,9%), anak yang tidak ada gangguan tidur yaitu sebesar 67 (67,7%). Ada hubungan antara usia dengan kejadian enuresis dengan *p value* 0,003. Ada hubungan riwayat orangtua dengan kejadian enuresis dengan *p value* 0,000. Terdapat dua variabel yang secara statistik signifikan berhubungan dan saling berinteraksi, yaitu usia dan riwayat

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eneuresis pada orangtua. Diperlukan kegiatan pengabdian masyarakat untuk mensosialisasikan bimbingan toilet training bagi orangtua dan memberikan pendidikan kesehatan tentang penatalaksanaan enuresis dengan terapi akupresur dan moksibusi.

INTRODUCTION

Eneuresis or bedwetting is the involuntary discharge of urine at night that occurs when the child is less than 5 years old and in control of the urination process it should have been achieved. (Caldwell, P. H., Deshpande, A. V., & Von Gontard, A. 2013). Most of children aged 3-5 years or preschool children have been able to go for a bowel movement and defecate on their own (Potter; Perry, 2009). However, there are several things that need to be considered during the development of preschool children, one of which is eneuresis (bed wetting). Eneuresis is continuous urinary incontinence after toilet training (1-3 years). Children who are more than 4 years old should have a controlled external bladder sphincter condition, so the child should no longer wet the bed (Suryani and Bad'iah, 2015).

The prevalence appears to be similar around the world, namely 8-20% for 5 year olds, 1.5-10% for 10 year olds, and 0.5-2% for adults, with 2.6% of children aged 7, 5 years old the bed wet two or more nights a week. (Caldwell, P. H., Deshpande, A. V., & Von Gontard, A. 2013). The prevalence of eneuresis in the United States shows that 5-7 million children have nocturnal eneuresis and about 15% -25% occur at 5 years of age. The increasing age, the prevalence of eneuresis decreases (Thiedke, 2003). According to The National Institutes of Health, nocturnal eneuresis is common in children aged 2-5 years with the genesis of 5 million children worldwide. According to ASEAN data, about 2 million children experience eneuresis which occurs at the age of around 2-4 years (Setiowati, W., 2018).

According to the National Household Health Survey, it is estimated that the number of children under five who control defecation and urination at preschool reaches 75 million children or about 30% of the 250 million population in Indonesia. However, there are still around 30% of 3 year olds and 10% of 6 year olds who are still afraid to go to the bathroom at night. According to the Child Development Institute Toilet Training it is reported that 10-25% of children aged 5 years, 10% of children aged 10 years, almost 2% of children aged 12-14 years and 1% of children aged 18 years still wet (Medicastore, 2008 in Elvira N, et al, 2015), whereas according to IDAI 2009, children generally stop bedwetting since the age of 2.5 years. In children aged 3 years, 75% of children are free to wet the bed day and night, 5 years of age, about 10-15% of children still wet the bed at least once a week, 10 years of age there are still around 7%, while at 15 years of age only about 1% of children still wet the bed.

There are several causes that can cause eneuresis including slow congenital or deficient renal system, emotional disturbances, namely the feeling of fear when the child has to go out of the room at night, diet or habitual patterns of giving water before bed, and are closely related to the lungs, spleen, kidney which results in bladder control dysfunction (Ang, 2017). Other experts also stated that urine volume, deficiency in the production of anti-diuretic hormone (anti-urinary hormone) disorders and psychological disorders can also cause eneuresis (Fatmawati; Mariyam, 2013). Soetjningsih and Ranuh (2017) mention factors that play a role in eneuresis, namely genetics, disorders of antidiuretic hormone production, disorders of nervous system maturation, urodynamics disorders, sleep disorders, and psychological disorders. Type-1 diabetes,

mental retardation, socio-culture, enlarged adenoids in obstructive sleep apnea syndrome (OASA), constipation, and anatomical abnormalities are risk factors for eneuresis (Pudjiastuti et al., 2013).

Isfaizah et al (2018) stated that there is a significant correlation between gender and age with the genesis of eneuresis in preschool children, which is more common in boys aged less than 5 years. Another study states that there is a correlation between eneuresis in children with a family history of eneuresis (Windiani and Soetjningsih, 2008), and there is a correlation between toilet training and eneuresis control in children aged 3-6 years (Yusuf, 2012).

The prevalence of eneuresis was recorded as 22.8% of 245 school-age children in South-eastern Nigeria, a higher prevalence in males (60%) than in females i.e. 39% with a higher genesis in low socioeconomic backgrounds and in children with a positive family history of bed-wetting at the relative first degree although not significant. There is a strong correlation between the prevalence of nocturnal eneuresis and socioeconomic background with a P value <0.05 (Manyike, P. C., Chinawa, J. M., Ubesie, A., Obu, H. A., Odetunde, O. I., & Chinawa, A. T. (2014).

The study of the prevalence of nocturnal eneuresis and its influence on quality of life in school-aged children showed that age, male sex, parental history, and history of siblings experiencing eneuresis were significant predictive factors for nocturnal eneuresis (Sarici et al., 2016).

The social and psychological impact caused by eneuresis really disturbs the life of a child. The psychological and social bad effects that persist due to bedwetting will affect the quality of life of children as adults. If ignored, this will affect the child. Usually children become insecure, embarrassed and disturbed social relations with friends. In addition, even though the clinical symptoms are mild, eneuresis can cause concern for parents, because this disorder affects children's self-confidence, interpersonal correlations, and school achievement (Soetjningsih; Ranuh, 2017).

Efforts that can be made to overcome eneuresis are pharmacological and non-pharmacological therapies, pharmacological therapy, among others, administering drugs for eneuresis, namely by using oxybutynin, imipramin, and desmopressin. Meanwhile, non-pharmacological therapy in eneuresis can be done in various ways, namely providing support and motivation, using an alarm system and acupressure and moxibustion therapy (Kyle; Susan, 2016).

The genesis of eneuresis is based on preliminary studies that have been carried out in several pre-schools in Metro City, in the pre-schools of Community Health Center in Tejo Agung there are 32 children (32%) out of 100 children, in the pre-schools in the Community Health Center in Iring Mulyo area 28 children (13%) of 216 children aged 3-6 years, 26.7% (60 children) of 270 children experienced eneuresis in the pre-schools of Lestari, 18.7% (28 children) of 150 children in the pre-schools of Al Muhsin North Metro undergo eneuresis. On this basis, a research was conducted on the risk factors and determinants of eneuresis in pre-school children in Metro City.

METHOD

Research participants

This research is an observational analytic study. The research design used a cross sectional. The research population was preschool children on pre-school in Metro City. The sample size is calculated based on the sampling formula using the Slovin formula (Tejada, J. J., & Punzalan, J. R. B., 2012) as follows:

$$n = N / (1 + N e^2) = n = 5674 / (1 + 5674 \times 0.01)$$

The minimum sample was obtained as many as 98.3 children rounded to 99 children. The minimum number of samples required is 99 children with the sampling technique using probability sampling, namely simple random sampling. The research was conducted on June-October 2020.

Research procedure

Primary data collection through interviews using a questionnaire and direct measurement of blood pressure, weight and height using available tools. For direct measurement, the researcher was assisted by several pre-schools teachers who had previously equated perceptions with the researcher so that the measurement results

between the researcher and the assisting party could produce the same data.

Instrument

This research use measuring instrument in the form of a check list. Data collection techniques in this research use a questionnaire that is filled in directly by the respondent. The questionnaire was used to determine the enuresis variable, age, gender, parental history, and history of siblings, socioeconomic, and toilet training).

Data analysis

The analysis was carried out in stages, namely: univariate, bivariate, multivariate analysis used logistic regression tests to determine the most dominant factors for the genesis of enuresis, namely age, gender, parental history, sibling history, socioeconomic background, and toilet training. The research was approved by the Health Research Ethics Committee of the Tanjungkarang Poltekkes No.284 / KEPK-TJK / VII / 2020

RESULTS AND DISCUSSION

Table 1
Distribution of Respondents Based on Independent and Dependent Variables

Variables	Categories	Total	Percentage (%)
Eneuresis	Eneuresis	22	22,22
	Not Eneuresis	77	77,8
Age	< 5 year	38	38,4
	≥ 5 year	61	61,6
Gender	Female	52	52,5
	Male	47	47,5
Parental History of Eneuresis	Exists	85	85,9
	Not Exists	14	14,1
Sibling's Eneuresis History	Exists	79	79,8
	Not Exists	20	20,2
Toilet Training	Exists	52	52,5
	Not Exists	47	47,5
Constipation	Exists	12	12,1
	Not Exists	87	87,9
sleep disorders	Exists	32	32,3
	Not Exists	67	67,7

Based on table 1, data obtained: The distribution of enuresis respondents was mostly non-enuresis, which was 77.85%, while the enuresis respondents were 22.2%. Most respondents were ≥ 5 years old, namely 61.6%, while <5 years old was 38.4%. Most of the sexes were female at 62.5%, while male was 47.5%. Most parents had a history of enuresis at 85.9%, while those without a history of enuresis were 14.1%. The highest number of enuresis siblings had a history of enuresis, namely 79.8%, while those without a history of enuresis were 20.2%. Most toilet training is lacking, amounting to 52.5%, while the good ones are 47.5%. There was no constipation, namely 87.9%, while those who had constipation were 12.1%. There were no sleep disturbances in pre-school children, namely 67.7%, while those with sleep disorders were 32.3%.

Based on table 2, it can be seen that the results of the analysis of the age variable, among 38 children aged <5 years, as many as 15 (15.2%) genesis enuresis, while of the 61 children aged ≥ 5 years there were 7 respondents (7.0%)

who had enuresis and 54 (54.5%) had no enuresis. From these results, it can be seen that the younger respondents experienced enuresis more than the older ones. The results of statistical tests obtained P value = 0.003, meaning that at α 5% it can be concluded that there is a significant correlation between age and enuresis. Analysis of the closeness of the correlation between the two variables obtained OR = 5.031 (95% CI: 1,812-13,970), meaning that respondents aged <5 years had 5.031 times the chance of enuresis compared to respondents aged ≥ 5 years.

The results of the analysis of gender variables, among the 52 respondents who were female, 14 (14.2%) had enuresis, while only 8 of the male respondents (8.1%) experienced enuresis. From these results, it can be seen that more female respondents experience enuresis than men. The results of statistical tests obtained p value = 0.347, which means that at α 5% it can be concluded that there is no significant correlation between gender and enuresis. Analysis of the closeness of the correlation between the two

variables obtained OR= 1.796 (95% CI: 1.812-13.970), 1.796 times than men. meaning that female respondents had a chance of enuresis

Table 2
Correlation between Age, Gender, Parental History of Enuresis, Sibling's Enuresis History, Toilet Training, Constipation and Sleep Disorders with Enuresis

Variables		Enuresis				Total	OR (95% CI)	p value	
		Enuresis		Not Enuresis					
		n	%	n	%				
Age	< 5 year	15	15,2	23	23,3	38	38,5	5,031 (1,812-13,970)	0,003
	≥ 5 year	7	7,0	54	54,5	61	61,5		
Gender	Female	14	14,2	38	38,3	52	52,5	1,796 (1,812-13,970)	0,347
	Male	8	8,1	39	39,4	47	47,5		
Parental History of Enuresis	Exists	9	9,1	5	5,0	14	14,1	9,969 (2,878-34,538)	0,000
	Not Exists	13	13,1	72	72,8	85	85,9		
Sibling's Enuresis History	Exists	7	7,1	13	13,2	20	20,2	0,435 (0,148-1,278)	0,216
	Not Exists	15	15,2	64	64,7	79	79,8		
Toilet Training	Exists	13	13,2	43	43,4	56	56,6	0,547 (0,209-1,432)	0,320
	Not Exists	9	9,1	34	34,3	43	43,4		
Constipation	Exists	1	1,0	11	11,1	12	12,1	0,286 (0,035-2,345)	0,388
	Not Exists	21	21,2	66	66,7	87	87,9		
sleep disorders	Exists	7	7,1	25	25,2	32	32,3	0,971 (0,351-2,681)	1,000
	Not Exists	15	15,1	52	52,6	67	67,7		

The results of the analysis between the history of enuresis in parents with enuresis, among the 14 respondents who had a history of enuresis in their parents, 9 (9.1%) had enuresis, while of the 85 respondents who had no history of enuresis in their parents, there were 13 respondents (13.1 %) who had enuresis. From these results, it can be seen that respondents who did not have a history of enuresis in their parents experienced more enuresis than those who had a history of enuresis in the parents. The results of statistical tests obtained p value = 0.000, meaning that at α 5% it can be concluded that there is a significant correlation between the history of enuresis in parents with enuresis. Analysis of the closeness of the correlation between the two variables obtained OR = 9.969 (95% CI: 2.878-34.538), meaning that respondents who had a history of enuresis in the parents had a chance of enuresis 9.969 times compared to no history of enuresis in the parents.

The results of the analysis between the history of enuresis in siblings with enuresis, among the 20 respondents who had a history of enuresis in siblings, 7 (7.1%) had enuresis, while of the 79 respondents there was no history of enuresis in siblings, there were 15 respondents (15, 2%) had enuresis. From these results, it can be seen that respondents who did not have a history of enuresis in their siblings had more enuresis than those who had a history of enuresis in their siblings. The results of statistical tests obtained p value = 0.435, meaning that at α 5% it can be concluded that there is no significant correlation between the history of enuresis in siblings with enuresis. Analysis of the closeness of the correlation between the two variables obtained OR = 0.435 (95% CI: 0.148-1.278), meaning that respondents who had a history of enuresis in siblings had a 0.435 times chance of enuresis compared to no history of enuresis in siblings.

The results of the analysis between toilet training and enuresis, among the 56 respondents who had less toilet training, 13 (13.2%) had enuresis, while only 9 respondents (9.1%) had enuresis. From these results in a presentation, there were more or less respondents who had toilet training who experienced enuresis than those who had good toilet

training. The results of statistical tests obtained p value = 0.320, meaning that at α 5% it can be concluded that there is no significant correlation with the percentage of enuresis among respondents whose toilet training is lacking in toilet training. Analysis of the closeness of the correlation between the two variables obtained OR = 0.547 (95% CI: 0.209-1.432), meaning that respondents who had toilet training were less likely to have enuresis 0.547 times compared to good toilet training.

The results of the analysis between constipation and enuresis, among 12 respondents who had constipation as much as 1 (1.0%) of respondents experienced enuresis, while of the respondents who were not constipated there were 21 respondents (21.2%) who experienced enuresis. From these results, by presentation, only 1 (1.0%) of respondents with constipation experienced enuresis compared to those who were not constipated. The results of statistical tests obtained p value = 0.388, meaning that at α 5% it can be concluded that there is no significant correlation between the percentage of enuresis between respondents who have constipation and those who are not constipated. Analysis of the closeness of the correlation between the two variables obtained OR = 0.286 (95% CI: 0.035-2.345), meaning that respondents with constipation had a 0.286 chance of enuresis than respondents who were not constipated.

The results of the analysis between sleep disturbances and enuresis, among 32 respondents who had sleep disorders, 7 (7.1%) of respondents experienced enuresis, while of the respondents who had sleep disorders there were 15 respondents (15.1%) who experienced enuresis. From these results in terms of presentation, respondents who were younger were less likely to experience enuresis than those without sleep disturbances. The results of statistical tests obtained p value = 1,000, meaning that at α 5% it can be concluded that there is no significant correlation between the percentage of enuresis between respondents who have sleep disorders and no sleep disorders. Analysis of the closeness of the correlation between the two variables obtained OR = 0.971 (95% CI: 0.351-2.681), meaning that

respondents with sleep disorders had a chance of enuresis 0.971 times compared to respondents without sleep disorders.

Table 3
Results of Bivariate Selection among Independent Variables Stage 3

Variables	B	Wald	OR	p value
Age * Parental History of Eneuresis	2,578	14,931	13,173 (3,562-48,713)	0,000
Age *Constipation	-2,310	9,513	0,000	0,999
Sibling's Eneuresis History *Constipation	22,786	0,000	0,000	0,999

From the overall analysis process that has been carried out, it can be concluded that from the seven independent variables that are thought to be related to enuresis, it turns out that there are two variables that are statistically significant and interact with enuresis, namely age and history of enuresis in parents. Such circumstances indicate that the correlation between the history of enuresis in parents with enuresis has a different effect for respondents aged <5 years and ≥ 5 years.

DISCUSSION

The frequency distribution of enuresis in preschool children in Metro City.

Based on the results of research conducted on 99 pre-school children in the Metro City area, it was found that 22 (22.2%) respondents experienced enuresis. This shows that pre-school children still experience bedwetting at night. The results of this research are in line with the theory put forward by Behrman and Vaughan (1992), that in general, children aged around 4 years experience wetting the bed around 20%, because pre-school children who are respondents in this research are 4 to 6 years old. The genesis of bedwetting at night (nocturnal enuresis) will decrease by 14-16% each year. Bedwetting is the involuntary excretion of urine from the bladder that is incompatible with the developmental status of the child. This can be a sign of abnormalities in the child's physiological development, urinary tract disease, or diseases of increased urine output, such as diabetes militus (Hambleten, 1995).

Teachers in Kindergarten as foster parents routinely at the beginning of the new school year tell parents to train and teach their children about toilet training. Toilet training is intended as an early preventive effort in the hope that the child does not wet the bed while studying in class. This is in accordance with the opinion of Rushton HG., (1992) which states that there are still children who wet the bed during the day (diurnal). Of all the genesis of enuresis, it was found that 80% were nocturnal enuresis and 20% were diurnal enuresis, and about 15% -20% of children who had nocturnal enuresis also had diurnal enuresis. Some of the factors that play a role in the occurrence of primary enuresis are genetic factors, impaired production of anti-diuretic hormones, disorders of nervous system maturation, urodynamic disorders, and sleep disorders. Factors that play a role in the occurrence of secondary enuresis, namely psychosocial stress, especially due to environmental factors, including the level of concern of family members to the genesis of enuresis.

The correlation between age in pre-school children and enuresis.

The age frequency distribution of respondents to preschool children who experienced enuresis was 61.6%, respondents aged ≥ 5 years, while children aged <5 years were 38.4%, while out of 38 respondents aged <5 years were 15 (39 , 5%) of respondents experienced enuresis, and as many as 23 (60.5%) of respondents did not experience enuresis. The results of statistical tests with chi square showed that there was a statistically significant correlation between age and the genesis of enuresis with a value of p = 0.03 (p value ≤ 0.05). Analysis of the closeness of the correlation between the two variables obtained OR = 5.031 (95% CI: 1,812-13,970) meaning that children aged <5 years had a chance of enuresis 5.031 times compared to children aged ≥ 5 years.

The results of this research are in line with research conducted by Isfaizah et al. (2018) using a case control research design, it was found that the genesis of enuresis in preschool children based on the age of children ≤ 5 years experienced more enuresis (62.9%) compared to children with age children > 5 years. Based on the results of this research, this research is in line with the results of the research of Isfaizah et al. (2018), which states that there is a significant correlation between children's age and the genesis of enuresis in preschoolers, where children aged ≤56 months have a higher enuresis rate than age. > 56 months, but at risk there was no strong influence between the age of the child and the incidence of enuresis (OR = 0.311).

Enuresis will be considered normal if it occurs in children under 3 years old, the older the child is, the better the child's ability to recognize the sensation of urinating. When the child is 3-6 years old, the child will experience an early age education stage, where there will be development in an emotional and psychological perspective. In the period of 3-6 years of age, physical development is relatively slower and persistent, the child's body systems should be mature and trained with the application of toilet training. This is certainly in line with the tradition carried out by teacher mothers in Kindergarten who ask their parents to do toilet training.

The correlation between gender with enuresis.

The distribution of respondents according to gender can be seen that the female respondents are 52.2%, while the male gender is 47.5%, while 14 of the 52 children are female (26.9%). experienced enuresis, and 38 (73.1%) respondents did not experience enuresis. The results of statistical tests using chi square showed that there was no statistically significant correlation between gender and enuresis with a p value = 0.347 (p value> 0.05). The difference can be seen

from the OR = 1.796 (95% CI: 0.676–4.770), meaning that girls have a chance of experiencing enuresis 1.796 times than boys.

This shows that the number of Kindergarten students who are boys is less than girls. The results of this research are not in line with the research conducted by Isfaizah, et al. (2018) using a case control research design, finding that the genesis of enuresis in preschool children is more common in boys (63.3%) compared to girls (38.2 %). The psychological independence and maturation of the reproductive organs in girls are faster than in boys, and will allow better discipline in urinating control in girls and minimize the occurrence of enuresis. The difference in the results of this research is possible because anatomically the urinary tract of boys is longer than that of girls, it can cause boys when stimulation of urination becomes slower in recognizing the sensation of urinating and will encourage boys to hold back pee until it is in place.

The correlation between parental history of enuresis with enuresis.

The distribution of respondents based on a history of enuresis in the parents showed that as many as 85.9% had a history of enuresis in the parents, while respondents who had no history of enuresis in the parents were 14.1%. Meanwhile, of the 14 respondents who had a history of enuresis in their parents, there were 9 (64.3%) respondents who had enuresis, and only 5 (35.7%) respondents did not experience enuresis. The statistical test results obtained p value = 0.000, which means that there is a statistical correlation between the history of enuresis in the parents and the genesis of enuresis. Analysis of the closeness of the correlation between the two variables obtained OR = 0.100 (95% CI: 0.02-0.348), meaning that children who had a history of parents who had enuresis had 0.1 times the chance of enuresis compared to children without a history of parents who had enuresis. The results of this study are in line with the research conducted by Windiani and Soetjiningsih (2008) which showed that the genesis of enuresis was related to a history of enuresis in the parents. If both parents have enuresis, then 77% of children will experience enuresis. If one parent has a history of enuresis, 44% of children will experience enuresis. Approximately 44% of children will experience enuresis if there is a history of enuresis in the mother, and 43% of children will experience enuresis if there is a history of enuresis in the father. In this study, it was found that the history of the father who had enuresis had significantly more enuresis with results of 5.3 and 23.3 times, respectively. Based on the results of this study and previous studies, it was shown that genetic factors influenced the genesis of enuresis in children.

The correlation between history of enuresis in siblings with enuresis.

Based on the results of the research, it was found that as many as 85.9% of respondents had a history of siblings with enuresis, while as many as 20.2% of respondents had no history of siblings with enuresis. The results of this research showed that the history of siblings with enuresis in preschool children in Metro City, most (79.8%) or as many as 79 respondents, had no history of siblings experiencing enuresis. A history of siblings experiencing enuresis is thought to be closely related to the genesis of enuresis. The

results showed that children with a history of siblings who experienced enuresis had a chance of experiencing enuresis as much as 15 (19.0%), while children without a history of siblings who experienced enuresis were as much as 8 (35.0%) experiencing enuresis. From these results, children with a history of siblings who experienced enuresis were more likely to have enuresis than children who did not. The statistical test results obtained p value = 0.216, meaning that at $\alpha = 5\%$ it can be concluded that there is no significant difference between the history of siblings experiencing enuresis and the genesis of enuresis. The big difference can be seen from the OR = 0.435 (95% CI: 0.148 - 1.278) meaning that children who have a history of siblings who have enuresis have a chance of experiencing enuresis 0.435 times compared to children who do not have a history of siblings with enuresis.

The results of this research are not in line with the theory and several studies that show the genesis of enuresis is related to the enuresis history of siblings. This is possible because there are other factors that influence it such as environmental factors, where the environment around the child's home or friends of the same age and games is not enuresis, or there could also be a high level of responsiveness to enuresis children so that the child tries his best not to bed wetting and embarrassment when bedwetting occurs.

The correlation between toilet training and enuresis

Based on the results of the research, it was found that as many as 52.5% of respondents with poor toilet training, namely, and as many as 47.5% of respondents with good toilet training. Toilet training is thought to be closely related to the genesis of enuresis. The statistical test results obtained p value = 0.320, meaning that at $\alpha = 5\%$ it can be concluded that there is no statistically significant correlation between toilet training and enuresis. The big difference can be seen from the value of OR = 0.547 (95% CI: 0.209 - 1.432) meaning that children with toilet training have less chance of experiencing enuresis 0.547 times compared to children with good toilet training.

The results of this research are not in line with the theory which states that toilet training is an attempt by parents to train children to be able to control defecation and urination, which can be started from the toddler age (1-3 years). Toilet training is important to train children's independence, instill good habits, especially about personal hygiene, and it is hoped that children can defecate and urinate without feeling afraid or anxious (Hidayat, 2008), so that there is no bedwetting.

The correlation between constipation with enuresis

Based on the results of the research, it was found that from 99 respondents there were 87 children (87.9%) who did not undergo constipation and only 12 respondents (12.1%). The statistical test results obtained p value 0.388, meaning that at $\alpha = 5\%$ it can be concluded that there is no statistically significant correlation between constipation and enuresis. The big difference can be seen from the OR = 0.286 (95% CI: 0.035-2.345). This means that children with constipation have a 0.286 chance of experiencing enuresis compared to children who are not constipated. The results of the research are not in line with the theory put forward by Windiani, I. G. A. T., & Soetjiningsih, S. (2016), that constipation is one of the causes of enuresis in children in addition to other factors.

This inequality condition is possible because there are other factors that are more dominant in influencing the occurrence of enuresis in preschoolers in Metro City. Other possible factors are genetic, hormonal, anatomical, urinary tract infections, psychological problems, small bladder capacity, sleep disturbances, developmental delays, and immaturity of central nervous system function (Windiani, I. G. A. T., & Soetjningsih, S., 2016). Another possibility is that there are relatively few children who experience constipation, namely only 12 children out of 99 respondents, and out of 12 children who experience constipation is relatively very small, namely only 1 child (8.33%) who experienced enuresis.

The correlation between sleep disorders and enuresis.

Based on the results of the research, it was found that from 99 respondents, 32 children (32.3%) experienced sleep disorders and most of them 67 children (67.7%) did not experience sleep disorders. The statistical test results obtained p value 1,000, meaning that at $\alpha = 5\%$ it can be concluded that there is no statistically significant correlation between constipation and enuresis. The big difference can be seen from the OR = 0.971 (95% CI: 0.351-2.681) meaning that children with sleep disorders have a chance of experiencing enuresis 0.971 compared to children without sleep disorders. The results of this research are not in line with the research conducted by Windiani and Soetjningsih (2008) that children with sleep disorders (deep sleep) OR: 8.53 (95% CI: 3.4-21.2; p = 0,000).

This condition is possible because only a small proportion of children who experience sleep disorders, namely only 32 children who experience sleep disorders from 99 respondents and of the 32 children who experience enuresis only 7 (7.1%), so it is possible that a larger sample size is needed to can be analyzed further. Perhaps because there are other more dominant causes such as genetic, hormonal, anatomical, urinary tract infections, psychological problems, small bladder capacity, sleep disturbances, developmental delays, and immaturity of the central nervous system function (Unal M, et.all., 2004). Regarding the results of this research, although there is no correlation between sleep disturbances and the genesis of enuresis, parents should pay attention to their children so that they do not experience disturbances during nighttime sleep. This is to anticipate the occurrence of enuresis in the future because after all sleep disturbances in children can cause bedwetting according to the research of Windiani and Soetjningsih (2008).

The most dominant factor in the genesis of enuresis

The results of the multivariate analysis carried out from the five independent variables on one dependent variable were that the five independent variables, namely the variables of the child's age, gender, parental history, sibling history and toilet training were included in the multivariate model candidate. At the initial stage of selection, the variable of the sibling history of enuresis did not meet the requirements so that it was excluded. The next test stage, the six independent variables, namely the variables of the child's age, gender, history of parents, siblings, toilet training, constipation and sleep disorders were included in the candidate model. The result is a multivariate model, sequentially, the variables associated significantly with enuresis, namely the variable history of enuresis in the

parents and the genesis of enuresis with a p value of 0.000, and the age of the children with the genesis of enuresis with a p value of 0.007.

Based on the results of the multivariate test, sequentially there are two variables that influence the occurrence of enuresis in preschoolers in Metro City, with the most dominant factor being the variable of a history of parents experiencing enuresis. The results of this study are in line with the theory which states that genetic factors have a major effect on offspring, where parents who have a history of bedwetting have the highest influence on the genesis of enuresis, supported by the age factor of the child.

The results of the interaction test of the 7 independent variables, there were 2 interaction variables on enuresis, namely the interaction of the child age variable with a history of enuresis parents against the genesis of enuresis. This is in accordance with the research of Windiani and Soetjningsih (2008) which states that the parental history of enuresis is very dominant in the genesis of enuresis. Although the toilet training variable is not included in the multivariate model, it statistically plays a role in the genesis of enuresis in preschool children where children who lack toilet training experience more enuresis than children who are good at toilet training ..

Based on the results of this research, it is expected that parents who have a history of bedwetting should try to minimize or reduce the genesis of enuresis in their children by always training children from the age of 1-3 years who have been taught about toilet training. This toilet training must be carried out continuously both during the day and at night, especially when the child is approaching going to bed. So that later when preschool-aged children are no longer wet to the bed, this also avoids feeling inferior or less confident when they grow up. Furthermore, the growth and development of children can proceed according to the age and stage of development of their children.

CONCLUSIONS AND SUGGESTIONS

The frequency distribution of enuresis in preschool children in Metro City is 22 (22.2%) respondents. The largest frequency distribution for children aged ≥ 5 years was 61 (61.6%). The distribution of frequency for the most gender was female, namely 52 (52.5%). The distribution of respondents with parental history of enuresis was 85 (85.9%). The frequency distribution of sibling history with enuresis was 79 (79.8%). The frequency distribution that has less toilet training is 52 (52.5%). The frequency distribution of children without constipation was 87 (87.9%). The frequency distribution of children without sleep disorders was 67 (67.7%). There is a correlation between age and the genesis of enuresis in pre-school children in Metro City, with a p value of 0.003. There is a correlation between parental history and the genesis of enuresis in pre-school children in Metro City, with a p value of 0.000. There are two variables that are statistically significant and interact with each other, namely age and history of enuresis in the parents.

Suggestions

1. It is expected that kindergarten teachers can socialize and teach parents of their students about toilet training

since their children are 1-3 years old. Students in kindergarten who undergo enuresis should be guided and taught to do toilet training with great patience until the child is no longer enuresis

2. The results of this research are expected to provide information and references for the development of lecture materials and can be used as reading material and library documentation that can be used as comparison material in preparing further research.
3. Conducting community service, both in the community such as community health service and in Pre-schools or kindergartens in order to socialize toilet training guidance for parents to be applied in daily life to their children, providing health education on enuresis management with therapy acupuncture and moxibustion.

Conflict of Interest Statement

The authors have no conflict of interest to declare.

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