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Prevalence, Parental Knowledge, and Factors Associated with Delayed Treatment of Testicular Hydrocele in Toddlers at Wagir Community Health Center

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Introduction. Testicular hydrocele is a genitourinary defect that can occur in males, either due to a lymphatic infection or congenital cause. Congenital testicular hydrocele is rarely reported in epidemiological data, both nationally and internationally. Additionally, if a hydrocele does not resolve naturally, it must be treated after the age of 1 year to prevent complications. This study aims to identify the incidence of congenital testicular hydrocele in several toddler health posts within the working area of the Wagir Community Health Centre, Malang Regency, East Java, Indonesia, assess parental knowledge, and analyze factors associated with delayed treatment.

Methods. This descriptive and observational analytic study involved 248 male toddlers in 11 villages in Wagir, Malang Regency, East Java, Indonesia, utilizing questionnaires and physical examinations. Data was obtained passively through screening of villagers who came to the study site. Analysis was then conducted using the SPSS software by Pearson's Chi-Square and Binary Logistic Regression.

Results. From a total of 248 children, 4.44% were found with testicular hydrocele, with 1.21% cases experiencing delayed treatment. Poor knowledge about this condition was found in 81.82% of the sample. No relationship was found significant between the sociodemographic factors and health factors analyzed and the delay in hydrocele treatment (GLM, Wald Chi-Square, $p = 1.000 > 0.05$).

Conclusion. The incidence rate of testicular hydroceles in toddlers under five years old at the integrative service post within the working area of Wagir Health Center of Malang Regency was 4.44%, of which 1.21% of cases experienced delays in treatment. Parents' knowledge of the incidence of testicular hydroceles in toddlers under five years old is still lacking. There was no significant relationship between the factors analyzed and the delay in testicular hydroceles management.

Keywords: delay in treatment, epidemiology, sociodemographic factors, testicular hydrocele

Introduction

Testicular hydrocele is a genitourinary defect found in males. The condition is characterized by the abnormal accumulation of fluid between the parietal and visceral layers of the tunica vaginalis in the scrotum or along the length of the spermatic cord [1]. The classification of testicular hydroceles also varies and differs according to respective references [2-4]. Risk factors of testicular hydroceles are found increased in certain fundamental conditions such as premature infants, the usage of gestational progestin, low birth weight, and obstruction due to traumas [2]. However, testicular hydroceles will generally regress on their own within 1 year of age because of the fluid that will be absorbed and the ducts that will be closed naturally.

If spontaneous closure does not occur, surgical therapy can be carried out on children after the age of 1 year1. It is to be noted that untreated testicular hydroceles in male above the age of 1 year can lead to complications such as infertility, sexual dysfunction, and hernia [3,5]

Nevertheless, epidemiological data on testicular hydroceles in toddlers in Indonesia have not been established. As far as it is concerned, epidemiological data has only been obtained from

the accumulation of medical records at Dr. Saiful Anwar General Hospital in Malang. Based on the findings from 2012-2021, 58 cases of testicular hydroceles were screened, which accounted for 6% of the total congenital genitourinary disorders.

Data that is still relatively limited and the broadness of the community in Malang Regency can result in an accumulation of future problems if not addressed carefully. Screening related to testicular hydroceles has also never been carried out and there is no data that can be used as a current reference or tabulation. In addition, it was found that factors that can make the community aware of testicular hydrocele are important [6]. Therefore, this study aims to collect and analyze information on the prevalence, parental knowledge, and factors in the sociodemographic and health scope related to delays in handling testicular hydroceles.

Materials and Method

Research Design

This research is a descriptive and observational analytical study with a cross-sectional approach and a pre-test research design in the form of a questionnaire without control group. The questionnaire was distributed interactively through a real work participation across integrated service posts within the working area of Wagir Health Center, accompanied by screening of the number of incidents that will be carried out after filling out the questionnaire through a physical examination. The community will then be educated after questionnaires were filled out and physical examinations on toddlers were executed.

The dependent variable in this study is the delay in treating testicular hydroceles. The independent variables in this study were parental knowledge (measured from the total correct score of the questionnaire), family history, parental education history, income level, insurance ownership, coverage of health facilities, and antenatal care (ANC) history.

Research Location and Time

The research was conducted at one point of integrated service post in 11 villages within the working area of Wagir Health Center, Malang Regency. The villages studied were Sumbersuko, Pandanlandung, Sukodadi, Parangargo, Petungsewu, Sitirejo, Dalisodo, Pandanrejo, Mendalanwangi, Sidorahayu, and Gondowangi. The research time was carried out in a span of 3 months on a schedule adjusted to the integrated service posts' schedule in June – August 2024.

Research Sample

The target population was all male toddlers in several integrated service posts within the working area of Wagir Health Center, Malang Regency, East Java, Indonesia. The research sample was the male toddlers who were examined, while the research respondent was parents who filled out the questionnaire. The total sampling method was used to collect samples from respondents with the following inclusion criteria: (1) respondents who agree to the informed consent and are willing to fill out the questionnaire, (2) the toddlers are under five years of age, (3) the respondents are citizens who live within the working area of the Wagir Health Center, Malang Regency, East Java, Indonesia. Respondents who had a history of mental health disorders were excluded from this study.

Research Instrument

Parents that meet the inclusion criteria were given a questionnaire that consisted of several sections: introduction, informed consent, and questionnaire, in the multiple choice questions. The questionnaire consists of 2 subsets with a total of 27 questions. The subset consisted of (1) respondents' data and (2) knowledge of the respondents' regarding testicular hydroceles. The questionnaire was adopted and modified from a valid and reliable study related to undescended testicles conducted in Saudi Arabia in November, 2022 [7]. Proper medical examination procedure to indicate the testicular hydrocele in toddlers was done afterwards.

Data Analysis

As the research data were categorical, data analysis was conducted using a non-parametric Pearson's chi-square (X^2) test, to analyze the relationship between independent variables and dependent variables. The test was then continued with binary logistic regression in Generalized Linear Model (GLM) to predict the predictive association of several independent variables to dependent variables in one model. The data was analyzed using the SPSS software version 23.0. The results were declared statistically significant if the significance level of the p value < 0.05 [8].

Result

Research Samples' Characteristics

A total of 248 research respondents were given a questionnaire, 11 cases had testicular hydroceles. Three cases were detected too late to be handled promptly (Table 1). Samples include toddlers ranging from 1 month (n=1), 2 months (n=1), 4 months (n=1), 7 months (n=2), 8 months (n=1), 10 months (n=2), 29 months (n=1), 48 months (n=1), and 51 months (n=1).

Table 1. Research samples' characteristics

Characteristics	Frequency (n)	Percentage (%)
Delay in Testicular Hydrocele Treatment		
Prompt	8	72.73
Late	3	27.27
Parental Knowledge		
Fine	2	18.18
Poor	9	81.82
Family History		
Affirmative	2	18.18
Negative	9	81.82
Parental Education History		
Never	0	0.00
Elementary	2	18.18
Junior High	3	27.27
Senior High	2	18.18
College	4	36.36
Income Level (compared to Minimum Wage)		
More/Equal	6	54.55
Less	5	45.45
Insurance Ownership		
Affirmative	7	63.64
Negative	4	36.36
Distance to Health Facilities		
Approachable	9	81.82
Unapproachable	2	18.18
Antenatal Care History		
Fine	8	72.73
Poor	3	27.27

Most respondents poorly understand testicular hydroceles (n=9), did not have a family history of suffering from testicular hydroceles (n=9), had the last education in college (n=4), had an income of/equal to minimum wage (n=6), had insurance (n=7), and stated that health facilities were approachable (n=9).

Data Analysis

Data analysis was carried out to test several factors related to the delay in treating testicular hydroceles. Data collected in this study did not meet the required number of data required to perform a Pearson's Chi-Square analysis. Thus, this study used Fisher's Exact Test value (except for the ordinal variable of parental education history, with a Chi-Square value of 0.720) (Table 2).

Among the 11 toddlers studied, the majority (72.73%) did not experience delays in testicular hydrocele treatment, while 27.27% cases did. A significant proportion of parents (81.82%) had poor knowledge about this condition. Most of the sample had no family history of testicular hydrocele (81.82%) and the majority had a good ANC history (72.73%).

Regarding socio-demographics, parental education levels varied, with the highest percentage at college level (36.36%). The majority of parents had an income level at or above the minimum wage (54.55%) and most had health insurance (63.64%). The majority (81.82%) had good accessibility to health facilities.

Delay is found more in respondents who lack or do not have a variable analyzed. Nevertheless, statistical analysis showed that there was no significant relationship between the variables analyzed and delays in treating testicular hydroceles. Furthermore, the seven independent variables were included into one model to see the significance collectively. Table 3 shows the results of data analysis using the Binary Logistic Regression Model, which was done after the Pearson chi-square.

Table 2. Fisher's exact test analysis

Characteristics	Delay in Testicular Hydrocele Treatment		Fisher's Exact Test Value
	Late	Prompt	
Parental Knowledge			
Fine	7	2	0.491
Poor	1	1	
Family History			
Affirmative	7	2	0.491
Negative	1	1	
Parental Education History			
Elementary	1	1	-
Junior High	2	1	
Senior High	2	0	
College	3	1	
Income Level (compared to Minimum Wage)			
More/Equal	5	1	0.545
Less	3	2	
Insurance Ownership			
Affirmative	2	2	0.491
Negative	6	1	
Distance to Health Facilities			
Approachable	8	1	0.055
Unapproachable	0	2	
Antenatal Care History			
Fine	1	7	0.152
Poor	2	1	

Based on the results presented in Table 3, a significance value of p value of 1,000 (p value > 0.05), was obtained on all parameters tested. This showed that there was no significant association between the factors tested collectively and the delay in handling testicular hydroceles. Based on the significance values (Sig.) in the binary logistic regression model, none of the independent variables tested (knowledge, family history, education, income, insurance, distance to health facilities, and ANC history) showed a statistically significant influence on the likelihood of delayed testicular hydrocele treatment.

In addition, the value range within the 95% Wald Confidence Interval presented includes a value of 0, further reinforcing the acceptance of null hypotheses. Wald Chi-Square also shows a number of 0.000 which means those variables can be excluded from the model and will not affect the final result studied.

This supports the fact that the Chi-Square analysis showed no significant relationships for individual factors. It is worth noting that the very wide confidence intervals and frequently "0.000" or "1.000" Wald Chi-Square values with "1.000" significance values suggest potential issues with the model (e.g., a very small sample size or data problems) which limit the ability to draw strong conclusions about the predictors.

Discussion

The Relationship of Sociodemographic Factors to the Delay in Treating Testicular Hydroceles

Sociodemographic factors are the individuals' characteristics in a society that affect the state of the population in various sectors [9]. The sociodemographic factors in this study include parental knowledge and education history, family history, and income level.

A study revealed that there was a significant relationship between the level of maternal nutritional knowledge and the incidence of malnutrition. Lack of knowledge about nutrition and inability to apply information were found to lead to nutritional status disorders in children under

Table 3. Results of data analysis of Binary Logistic Regression Model

Parameter	95% Wald Confidence Interval		Hypothesis Test	
	Lower	Upper	Wald Chi-Square	Sig.
(Intercept)	-237923.401	237878.268	.000	1.000
[Knowledge=0]	-311440.169	311530.4331.89	.000	1.000
[Knowledge=1]	.	.	.	.
[Family=0]	-220253.360	220253.360	.000	1.000
[Family=1]	.	.	.	.
[Education=1]	-342352.647	342442.911	.000	1.000
[Education=2]	-376109.105	376199.370	.000	1.000
[Education=3]	-179836.115	179836.115	.000	1.000
[Education=4]	.	.	.	.
[Income=0]	-142172.945	142172.945	.000	1.000
[Income=1]	.	.	.	.
[Distance=0]	-311530.433	311440.169	.000	1.000
[Distance=1]	.	.	.	.
[ANC=0]	-142218.078	142127.813	.000	1.000
[ANC=1]	.	.	.	.
(Scale)				

five years old and can shorten the delay in hydrocele management [10]. However, different results were found in this study. Despite the limited number of cases studied, other factors such as limited spare time, economic burden, community stigma, or even personal beliefs may result in the delay of hydrocele treatment among communities [11].

This study showed that parents' level of education does not significantly affect the delay in hydrocele medical treatment. This may be due to the limited specific information about testicular hydrocele that spread among communities. In addition, formal education is not always related to knowledge or awareness of access to specific health information [10]. However, other studies stated that parents with higher levels of education may help in preventive measures and recognition of health issues [12-13].

Family history of testicular hydrocele in this study also not significantly affects the feel of urgency in seeking medical treatment. Social stigma and personal beliefs may cause such delay [15]. In broader and better civilization settings, family history has been proven to increase parents' vigilance in detecting and treating similar conditions in their children [14].

This study also showed that the income level of parents in Wagir, Malang Regency, East Java, Indonesia, does not significantly affect the prompt decision to seek medical treatment for testicular hydrocele patients. Other non-financial challenges and different financial priority allocation within the community may contribute to this result [10]. Other studies with a broader range of subjects may show different results since individuals with better financial resources had better health and nutritional status since that might ease and fasten access to quality health services [13,16-17].

The Relationship of Insurance Ownership, Antenatal Care History, and Distance of Health Facilities to Delays in Handling Testicular Hydroceles

Insurance ownership, antenatal care history, and distance of health facilities among parents was not significantly correlated with delay in handling testicular hydrocele in Wagir, Malang Regency, East Java, Indonesia. A previous study conducted in Indonesia also stated that insurance ownership does not guarantee an increase in visits to health facilities due to other indirect costs related to medical treatment, such as transportation cost and other costs for patient's helper stay during medical hospitalization [18]. Limited knowledge and administrative understanding in using the insurance might also affect the behavior of the community.

A good history of ANC is expected to increase maternal knowledge and awareness about the child's health conditions, including testicular hydroceles. Meanwhile, the reach of easily accessible health facilities is expected to reduce delays. However, ANC examination may be better analyzed from the regularity of examinations, time, and appropriate interaction by health workers with pregnant women, instead of just by number of visits. Limited facilities in the closest healthcare centers may also contribute to the lack of medical treatment [19].

Even if several studies stated that distance or travel time may affect the seeking of medical treatment to healthcare services in rural and remote areas, analyzing travel time might be a better parameter [20-21]. Nevertheless, other problems faced by parents such as a lack of time, knowledge, or other pressing priorities, may prevent them from seeking immediate medical care.

Research Limitation

This study's limited time frame and location prevented it from capturing the actual number of cases across all service posts within the Wagir Health Center's area. The passive data collection method might also limit the data coverage for absent individuals with relevant conditions. Increasing the sample size could enhance data significance.

The research instrument was adapted from previous studies but was not independently validated or tested for reliability due to sample limitations. Additionally, other factors that were not studied may have affected the results. Finally, a different data collection approach might be considered for people in rural communities to improve the quality and reliability of the data.

Conclusion

The incidence rate of testicular hydroceles in toddlers under five years old at the integrative service post within the working area of Wagir Health Center of Malang Regency was 4.44%, of which 1.21% of cases experienced delays in treatment. Parents' knowledge of the incidence of testicular hydroceles in toddlers under five years old is still lacking. There was no significant relationship between sociodemographic, insurance ownership, antenatal care history, and distance of health facilities and the delay in testicular hydroceles treatment in the community at the integrative service post within the working area of Wagir Health Center, Malang Regency.

Ethical Clearance

Approval of this study was obtained from the Health Research Ethics Committee, Faculty of Medicine, Universitas Brawijaya, No. 121/EC/KEPK-S1-PD/05/2024.

Conflict of interest

The authors declare no conflict of interest.

References

[1] Rodjani A, Yudha HA, Santosa A, Daryanto B, Duarsa G, Situmorang G, et al. Panduan Tatalaksana Urologi Pediatrik Di Indonesia. In: Rodjani A, Wahyudi I, Renaldo J, editors. 4th ed. Jakarta Utara: Ikatan Ahli Urologi Indonesia (IAUI); 2022.

[2] Huzaifa M, Moreno M. Hydrocele. Florida: StatPearls Publishing; 2023

[3] Dagur G, Gandhi J, Suh Y, Weissbart S, Sheynkin Y, Smith N, et al. Classifying Hydroceles of the Pelvis and Groin: An Overview of Etiology, Secondary Complications, Evaluation, and Management. *Curr Urol*. 2017;10(1):1-14. doi: 10.1159/000447145

[4] Patoulias I, Koutsogiannis E, Panopoulos I, Michou P, Feidantsis T, Patoulias D. Hydrocele in Pediatric Population. *Acta Med*.

2020;63(2):57-62. doi: 10.14712/18059694.2020.17

[5] Billmeyer B, Emley T, Kumar P, Perlmutter A, Rao M, Swearingen R, et al. Hydroceles and Inguinal Hernia. Urologic Specialists of Northwest Indiana; 2021.

[6] Yonzon CL, Padmawati RS, Subedi RK, Paudel S, Ghimire A, Murhandarwati EH. Exploring determinants of hydrocele surgery coverage related to Lymphatic Filariasis in Nepal: An implementation research study. *PLoS One*. 2021 Feb 26;16(2):e0244664. doi: 10.1371/journal.pone.0244664

[7] Abdulrahman ST, Dahlawi M, Almalki MM, Bin LB, Baaqeel R, Aljabri H, et al. Knowledge Level of Undescended Testis in Saudi Arabia: Why Are We Facing Delayed Presentation? *Cureus*. 2023 Jul 20;15(7):e42226. doi:10.7759/cureus.42226

[8] Norberg R, Wilson A, Wyatt W. Generalized Linear Models for Insurance Data. Cambridge: Cambridge University Press; 2008.

[9] Rohma K (2016) Hubungan Antara Faktor Sosiodemografi dan Sikap dalam Menghadapi Kejadian Dismenorea Pada Remaja Putri Di SMA Negeri 1 Suboh Situbondo. Departemen Pendidikan Bidan, Fakultas Kedokteran, Universitas Airlangga, Indonesia.

[10] Rahma AC, Nadhiroh SR. Perbedaan Sosial Ekonomi dan Pengetahuan Gizi Ibu Balita Gizi Kurang dan Gizi Normal. *Media Gizi Indonesia*. 2016;11(1):55-60. Doi: 10.20473/mgi.v11i1.55-60

[11] Hutagalung A, Efendy I, Harahap J, Masyarakat FK, Kesehatan Helvetia I. Pengetahuan dan Stigma Sosial Memengaruhi Perilaku Pencarian Pengobatan Tuberkulosis. *Jurnal Keperawatan Priority*. 2022;5(2):77-84. doi: 10.34012/jukep.v5i2.2657

[12] Karunia NP, Dosen E, Kesehatan P, Mataram K, Kebidanan J. 4-Faktor Sosiodemografi, Medis Maternal, Status Gizi-Putu Karunia. *Media Bina Ilmiah*. 2014 Jul;8(4):24-32.

[13] Stiefel MC, Gordon NP, Wilson-Anumudu FJ, Arsen EL. Sociodemographic Determinants of Health and Well-Being Among Adults Residing in the Combined Kaiser Permanente Regions. *Perm J*. 2019;23:18-091. doi: 10.7812/TPP/18-091

[14] Claassen L, Henneman L, Janssens ACJ, Wijdenes-Pijl M, Qureshi N, Walter F, et al. Using family history information to promote healthy lifestyles and prevent diseases; A discussion of the evidence. *BMC Public Health*. 2010 May 13;10:248. doi:10.1186/1471-2458-10-248

[15] Madhavan S, Bullis E, Myers R, Zhou C, Cai E, Sharma A, et al. Awareness of family health history in a predominantly young adult population. *PLoS One*. 2019;14(10):e0224283. doi:10.1371/journal.pone.0224283

[16] Handini D, Ichsan B, Nirlawati DD. Hubungan Tingkat Pendapatan Keluarga Dengan Status Gizi Balita di Wilayah Kerja Puskesmas Kalijambe. *Biomedika*. 2013 Aug;5(2):7-10. doi: 10.23917/biomedika.v5i2.263

[17] Weech-Maldonado R, Miller MJ, Lord JC. The Relationships among Socio-Demographics, Perceived Health, and Happiness. *Appl Res Qual Life*. 2017;12(2):289-302. doi: 10.1007/s11482-017-9517-8

[18] Widayanti AW, Green JA, Heydon S, Norris P. Health-seeking behavior of people in Indonesia: A narrative review. *J Epidemiol Glob Health*. 2020;10(1):6-15. doi: 10.2991/jegh.k.200102.001

[19] Kusuma YS, Pal M, Babu B V. Health insurance: Awareness, utilization, and its determinants among the urban poor in Delhi, India. *J Epidemiol Glob Health*. 2018;8(1-2):69-76. doi: 10.2991/j.jegh.2018.09.004

[20] Kelly C, Hulme C, Farragher T, Clarke G. Are differences in travel time or distance to healthcare for adults in global north countries associated with an impact on health outcomes? A systematic review. *BMJ Open*. 2016 Nov 24;6(11):e013059. doi: 10.1136/bmjopen-2016-013059

[21] Mseke EP, Jessup B, Barnett T. Impact of distance and/or travel time on healthcare service access in rural and remote areas: A scoping review. *J Transp Health*. 2024;37(2024):101819. doi: 10.1016/j.jth.2024.101819