VOLUME-9, ISSUE-4, APRIL -2020 • PRINT ISSN No. 2277 - 8160 • DOI : 10.36106/gjra

Original Research Paper

Ayurveda

QUALITY OF LIFE OF CHILDREN WITH HEMOPHILIA AS COMPARED TO THEIR HEALTHY SIBLINGS

Shanessa Budiarty	Department of Child Health, Medical School, Universitas Sumatera Utara, Medan, Indonesia
Selvi Nafianti	Department of Child Health, Medical School, Universitas Sumatera Utara, Medan, Indonesia
Sri Sofyani	Department of Child Health, Medical School, Universitas Sumatera Utara, Medan, Indonesia

ABSTRACT Hemophilia is an X-linked recessive disorder caused by deficiency coagulation factor VIII or IX with bleeding manifestation. The impact of hemophilia on the quality of life (QoL) of hemophilic children and their healthy siblings is not well known. A cross-sectional study conducted among children with hemophilia and their healthy siblings aged 5 to 18 years old attended the Pediatric Hematology-Oncology outpatient clinic at Haji Adam Malik Hospital, Medan, from October to December 2019. The PedsQLTM4.0 questionnaire was utilized to assess the QoL of the children. Children with hemophilia have lower QoL than their healthy siblings ($p<0.001$). However, adolescents had a lower QoL than the childhood hemophilia ($p<0.001$). Emotional, social and school functions were impaired QoL in the adolescent hemophilia.

KEYWORDS : hemophilia, PedsQL, quality of life

INTRODUCTION

Hemophilia is an X-linked recessive disorder caused by deficiency coagulation factor VIII (hemophilia A) or IX (hemophilia B) which usually manifested in males.1 The annual report of the World Federation Hemophilia (WFH) in 2017 showed that Indonesia had 1.787 patients of hemophilia A and 267 patients of hemophilia B.2 Based on the latest Riset Kesehatan Dasar (Riskesdas) data released by the Health Research and Development Agency of the Ministry of Health of the Republic of Indonesia in 2007, the national prevalence of hemophilia was 0.7%.3 The Indonesian Hemophilia Society Association reported that as of June 2012, the number of registered patients had reached 1.410 people.4 These figure do not correspond to Indonesia's population of around 200 million people which should be estimated there are 20.000 patients with hemophilia.

The prevalence of hemophilia is classified low but still a world health problem because it is the most common coagulation with bleeding manifestation.5 Bleeding manifestation can occur spontaneously or trauma and impact the quality of life (QoL). Many factors that cause decreased QoL in children with hemophilia such as the severity of hemophilia, limited physical activity, mobility restriction, joint pain, and coagulation factor therapy.6 Declining QoL includes physical, psychosocial aspects, decreased self-perception, lower academic performance in school compared to healthy children.7,8

Hemophilia is a chronic disease that not only impacts children's QoL but also family like their parents and healthy siblings.9 Siblings have important family bond, same genetic heritage, cultural environment, childhood experiences, emotionally and physically closest, and spending more time with each other.10 However, healthy siblings of children with chronic disease are often described as forgotten family members and indirectly affect their QoL.11A study in the UK about the experiences of healthy siblings who grew up with children with severe hemophilia that healthy siblings feel a lack of parental attention, negative social emotions and carrier status anxiety.12

METHODS

Study Design

This was a cross-sectional study conducted among children with hemophilia and their healthy siblings aged 5 to 18 years old age who attend the Pediatric Hematology-Oncology outpatient clinic at Haji Adam Malik Hospital, Medan, from October to December 2019. The exclusion criteria were children with intelectual disability and other chronic disease.

Classification of hemophilia severity

The severity of hemophilia is classified on the baseline level of factor VIII or factor IX. Severe hemophilia is characterized as spontaneous bleeding with the level of factors VIII or IX <1%, moderate hemophilia have factors level of 1-5% and usually require mild trauma to induce bleeding. Patients with mild hemophilia have levels >5% and frequently require significant trauma to cause bleeding.

PedsQLTM 4.0 questionnaire

PedsQLTM 4.0 generic questionnaire consist of 4 functioning are physical (8 items), emotional (5 items), social (5 items), and school (5 items). The questionnaire was translated into the Indonesia language. This was administered to children in the 5-7, 8-12, and 13-18 years. The instructions ask how much of a problem each item has been during the past 1 month. Each item responses are measured on a five point rating scale which is 0 (never a problem), 1 (almost never a problem), 2 (sometimes a problem), 3 (often a problem), 4 (almost always a problem). Each scale transformed to a score ranging from 0-100 which higher scores indicate better QoL.

Statistical analysis

Statistical analysis were performed using Statistical Package for Social Science (SPSS) version 23.0. The Mann-Whitney test to describe the difference in QoL between children with hemophilia and healthy siblings. The significance level and the confidence interval used were $P<0.05$ and 95%, respectively

RESULT

The general characteristics of subjects are presented in Table 1. Thirty six children with hemophilia and 36 healthy siblings in this study who were aged between 5 and 18 years with an average age of 10.5 years and 11.6 years, which the most common age was 8-12 years old. The nutritional status in group children with hemophilia was mild malnutrition, which is 16 children (44.4%). More than half of the healthy siblings were well nourished, which is 26 children (72.2%), respectively.

Table 1 General characteristics of subjects

Characteristics	Children with hemophilia (n=36)	Healthy siblings (n=36)
Age(years),Mean (SD)	10.5 (3.7)	11.6 (3.5)
5-7	10	3
8-12	17	20
13-18	9	13
Nutritional status (n,%)	15 (41.7)	26 (72.2)
Well nourished	16 (44.4)	9 (25.0)
Mild malnurition	5 (13.9)	1 (2.8)
Overweight		

Table 2 shows that The most common age at onset of easily bleeding was ≥ 2 years old (55.6%). The most types of hemophilia is hemophilia A (86.1%) and the most severity of hemophilia is mild hemophilia. Routine therapy consentrate factor VIII or IX once a week was 30.6% of children.

Table 3 shows that there were significant differences in quality of life between group of children with hemophilia and healthy siblings (p value < 0.001). The physical function showed the lowest median scores and this concluded that physical function was the most impaired function in children with hemophilia.

Quality of life of childhood hemophilia as compared to adolescent hemophilia are showed in table 4.The age group is divided into two groups : childhood (5-11 years) and adolescent group (12-18 years). Statistically using the Mann-Whitney test showed that significant difference quality of life between group childhood and adolescent hemophilia which is emotional, social and school functions were impair function quality of life in adolescent group (p<0.05)

Table 2 Characteristics of children with hemophilia

Characteristics	Children with hemophilia (n=36)
Age at onset of easily bleeding (n,%)	16 (44.4)
< 2 years old	20 (55.6)
≥ 2 years old	
Type of hemophilia (n,%)	31 (86.1)
Hemophilia A	5 (13.9)
Hemophilia B	
Severity of hemophilia (n,%)	18 (50.0)
Mild	11 (30.6)
Moderate	7 (19.4)
Severe	
Weekly routine factor concentrate treatment (n,%)	11 (30.6)
Yes	25 (69.4)
No	

Table 3 QoL of children with hemophilia as compared to their healthy siblings

QoL (PedsQL4.0)	Hemophilic children Median	Healthy siblings Median	p value*
Physical	75 (50-94)	94 (85-100)	<0.001
Emotional	80 (65-100)	90 (80-100)	<0.001
Social	83 (50-100)	94 (85-100)	<0.001
School	78 (50-95)	94 (85-100)	<0.001

*Mann-Whitney test

Table 4 QoL of chiildhood and adolescent hemophilia

QoL (PedsQL4.0)	Childhood hemophilia Median	Adolescent hemophilia Median	p value
Physical	81 (53-94)	69 (50-81)	0.266
Emotional	88 (65-100)	70 (65-85)	0.002
Social	90 (55-100)	70 (50-90)	0.001
School	80 (50-95)	73 (50-90)	0.025

DISCUSSION

Hemophilia is a bleeding disorder that mainly found in men caused by a deficiency of factor VIII (hemophilia A) or IX (hemophilia B) and is associated with bleeding manifestations.1,13 Manifestation of bleeding both spontaneously and trauma can affect the QoL of children with hemophilia. It is can caused by the severity of hemophilia, limited physical activity, pain due to joint bleeding, and coagulation factor therapy.6The influence of hemophilia on the QoL of children with hemophilia, healthy siblings and parents has been done in previous studies.12,14-17

Children with hemophilia in this study mostly had mild malnutrition and only 5 children had overweight. Study by Abdulaziz JS, et al also found that most children with hemophilia had well nourished with limited physical activity.18 Some previous studies mentioned that one of the concern co-morbidity of children with hemophilia is obesity or overweight.19,20 Obesity or overweight can cause limited joint movement, especially joint in the lower extremities, osteoporosis, cardiovascular disease such as ischemic heart disease and have an impact on QoL.21

Characteristics of children with hemophilia describe the most common age at onset of easily bleeding and the age at first diagnosis of hemophilia was 2 years old in this study. This is not in accordance with the report of the CDC (Centers for Disease Control and Prevention) in the United States, where most children diagnosis of hemophilia at a very early age. Children with mild hemophilia were diagnosed at an average age of 36 months, moderate hemophilia at 8 months and severe hemophilia at 1 month of age.22This is possible because of the limitation of early diagnosis in infants and children in health care centers, especially in developing countries like Indonesia. Infants and children under 2 years of age are less active in moving than children over 2 years may also be one of the reasons that the age of children over 2 years is the age most often diagnosed.

Studies about QoL of children with hemophilia began in some countries using special questionnaires for hemophilia. Study in China conducted the QoL of children with hemophilia using CHO-KLAT (Canadian Hemophilia Outcomes Kids Life Assessment Tool) questionnaire. QoL in children with hemophilia showed decrease especially after monitoring for 4 years. Declining QoL is affected by the degree of hemophilia, frequent bleeding, activity restrictions, financial burden and medication.23 Another study conducted in Afghanistan in 2018 using the Haemo-QoL questionnaire. The most impaired QoL in children with hemophilia are the family and sport domains.24

In this study, an assessment of the QoL of children with hemophilia as compared to their healthy siblings using the PedsQLTM 4.0 questionnaire. The results showed that physical, school functions were significantly lower in children with cancer than in the healthy sibling group. A study by Manikandasamy V, et al found that physical, school, family and sports functions were impaired QoL in children with hemophilia.15Another study by Neuner B, et al showed that there was no significantly difference QoL between children with hereditary bleeding disorder and healthy siblings and peers. The probable clinical significant impairment in self-worth in children with hereditary bledding disorder compared to their healthy friends may nevertheless indicate a need for psychological support and for improvement of self-esteem.25

Adolescent hemophilia (12-18 years old) had a more

impaired QoL than the childhood hemophilia (5-11 years old) especially emotional, social and school functions in this study. The difference in QoL between adolescent and childhood hemophilia can be explained that adolescent is a transition from children to adulthood, where adolescents are characterized by egocentricity that they are the center of attention of everyone. Changes that occur in adolecents such as self-identity, biological, psychological, social, cognitive, relationship with family and peers that will affect adolescent perceptions about QoL.26,27

Ravens-Sieberer U, et al found that children aged 8-11 years show a better QoL in the physical and psychological domain than adolescents aged 12-18 years old.28Other study by Espaldon AMD, et al assessing the QoL of children with hemophilia using Haemo-QoL questionnaire showed that groups of children aged 4-7 years have impaired QoL in family domain, while the 8-16 years age is more impaired in the sports and school domain.34Our study was not in line with study conducted by Mousavi SH, et al stating that adolescents have a better QoL than children.24

CONCLUSIONS

Children with hemophilia have lower QoL than their healthy siblings. To be aware, physical function is markedly compromised in childhood hemophilia while emotional, social and school functions are greatly impaired in adolescent hemophilia.

REFERENCES:

[1] Scott JP, Flood VH. Hereditary clotting factor deficiencies (bleeding disorder). In: Kliegman MR, Stanton BF, St Geme JW, Schor NF, editors. Nelson textbook of pediatrics. 20th Edition. Saunders Elsevier; 2015. p.2384-89
[2] World Federation of Hemophilia. Report on the annual global survey. 2017
[3] Badan Penelitian dan Pengembangan Kesehatan Kementerian Kesehatan RI. Riset Kesehatan Dasar 2007. Bakti Husada; 2007. p.118-19
[4] Indonesian Hemophilia Society. Profil himpunan masyarakat hemofilia Indonesia. [Updated 2019 March 20]. Available from : www.hemophilia.or.id.
[5] Smith J, Smith OP. Hemophilia A and B. In: Arceci RJ, Hann IM, Smith OP, editors. Pediatric Hematology. 3rd Edition. Massachusetts: Blackwell Publishing; 2006. p.585-97
[6] Monahan PE, Baker JR, Riskie B, Soucie JM. Physical functioning in boys with hemophilia in the U.S. Am J Prev Med. 2011; 41:S360-8
[7] Trzepacz AM, Vannatta K, Davies WH, Stehbens JA, Noll RB. Social, emotional, and behavioral functioning of children with hemophilia. J DevBehavPediatr. 2003;24:225-32
[8] Shapiro AD, Donfield SM, Lynn HS, Cool VA, Stehbens JA, Hunsbergert SL, et al. Defining the impact of hemophilia: the academic achievement in children with hemophilia study. PEDIATRICS. 2001; 108:1-6
[9] Cassis FR, Querol F, Forsyth A, Iorio A, HERO International Advisory Board. Psychosocial aspects of hemophilia:a systematic review of methodologies nd findings. Hemophilia. 2012; 18:e101-14
[10] Dunn J, Mc Guire S. Sibling and peer relationship in childhood. J Child Pscyhol Psychiatry. 1992; 33:67-105
[11] Sidhu R, Passmore A, Baker D. The effectiveness of a peer support camp for siblings of children with cancer. Pediatr Blood Cancer. 2006;47:580-8
[12] Tregidgo C, Elander J. The invisible child: Sibling experiences of growing up with a brother with severe haemophilia- An interpretative phenomenological analysis. Haemophilia. 2019; 25:84-91
[13] Acharya S, Sarangi SN. Disorders of coagulation. In: Lanzkowsky P, editors. Manual of pediatric hematology and oncology. 6th Edition. Massachusetts: Elsevier; 2016. p.279-332
[14] Ghanizadeh A., Baligh-Jahromi P. Depression, anxiety and suicidal behaviour in children and adolescent with hemophilia. Hemophilia. 2009; 15:528-32
[15] Manikandasamy V, Arumugasamy S, Mathevan G. Impact of hemophilia on quality of life of affected children and their parents, a hospital based cross sectional study. Int J Contemp Pediatr. 2017; 4:1620-1625
[16] Bagheri S, Beheshtipoor N, Rambod M, Karimi M, Zare N, Hashemi F. The quality of life of children with hemophilia in Shiraz, Iran. IJCBNM. 2013;1(2):110-120
17] Wiedebusch S, Pollmann H, Siegmund B, Muthny FA. Quality of life, psychosocial strains and coping in parents of children with hemophilia. Haemophilia. 2008; 14:1014-
[18] Abdulaziz JS, Hassan MK. Nutritional status of children and adolescents with haemophilia in Basra, Iraq. Haemophilia. 2019; 00:1-8
[19] Young G. New challenges in hemophilia: long-term outcomes and complications. Hematology Am Soc Hematol Educ Program. 2012; 1:362-8
[20] Hofstede FG, Fijnvandraat K, Plug I, Kamphuisen PW, Rosendaal FR, Peters M. Obesity: a new disaster for haemophilic patients? A nationwide survey. Haemophilia. 2008; 14:1035-8
[21] Wong TE, Majumdar S, Adams E, Bergman S, Damiano ML, Deutsche J, et al. Overweight and obesity in hemophilia : A systematic review of the literature. Am J Prev Med. 2011; 41:369-75
[22] Centers for Disease Control and Prevention. Data and Statistics on Hemophilia. 2017. [Updated 2019 December 19]. Available from: www.cdc.gov.
[23] Zhang H, Huang J, Kong X, Ma G, Fang Y. Health related quality of life in children with haemophilia in China: a 4 year follow up prospective cohort study. BMC. 2019; 17:28
[24] Mousavi SH, Dayer MS, Pourhaji F, Delshad MH, Namin SA. Determinants of quality of life in children and adolescents with hemophilia in Kabul, Afghanistan. Arch Iran Med. 2019; 22:384-89
[25] Neuner B, Mackensen S, Holzhauer S, Funk S, Klamroth R, Kurnik K, et al. Health related quality of life in children and adolescents with hereditary bleeding disorders and in children and adolescents with stroke: cross sectional comparison to siblings and peers. Biomed Res Int. 2016; 1-8
[26] Holland-Hall C, Burstein GR. Adolescent development. In: Kliegman RM, editors. Nelson Textbook of Pediatrics. 20th edition. Philadelphia: Elsevier; 2016. p.926-31
[27] Gaspar T, De Matos MG, Ribeiro JLP, Leal I, Costa P, Erhart M, et al. Quality of life: Differences related to gender, age, socio economic status and health status in Portuguese teens. J Child Adolesc psychol. 2010; 1:87-103
[28] Ravens-Sieberer U, Auquier P, Erhart M, Gosch A, Rajmil L, Bruil J, et al. The KIDSCREEN-27 quality of life measure for children and adolescents: psychometric results from a cross-cultural survey in 13 European countries. Qual Life Res. 2007; 16:1347-56