

# Evaluation of delays in diagnosis and treatment of childhood malignancies in Bangladesh

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## Abstract

**Introduction:** Malignancy is one of the leading causes of morbidity and mortality worldwide. According to GLOBOCAN 2012, an estimated 14.1 million new cancer cases and 8.2 million cancer-related deaths occurred in 2012. It is estimated that childhood malignancies are 0.5–4.6% of total malignancies. However, from the point of view of potential year lost due to childhood malignancies, it is more important than adult. **Materials and Methods:** To find out the probable components for the delay in diagnosis and treatment of childhood malignancies in Bangladesh, cross-sectional observational study was done at the National Institute of Cancer Research and Hospital, Dhaka, Bangladesh, from January 2014 to June 2014. **Results:** A total of 171 patients were included in the study. They were divided into four age groups. The mean age was 8.422 years with standard deviation  $\pm$  5.381 years and their age ranged from 2 months to 18 years. In aggregate, about 70% of the cases had to wait for more than 90 days for the treatment. About 15% had to wait for 31–60 days. Negligible percentage of patients got treatment before 30 days. Among the three components of delay, patients delay was influenced by age of the child, economic status of the family, parental education, and awareness of the parents about malignancy. **Conclusion:** More than one-third of the pediatric patients had to wait three months or more for treatment to start for various reasons. By raising awareness among the stake holders this problem can be minimized. Further studies are recommended to explore the other factors which might cause delayed referral.

**Key words:** Bangladesh, childhood malignancies, delays in diagnosis

## Introduction

Malignancy is one of the leading causes of morbidity and mortality worldwide. In 2012, 14.1 million new cancer cases occurred globally and childhood cancer was 0.5–4.6% of total malignancies.<sup>[1]</sup> According to the registry of Pediatric Oncology Department of National Institute of Cancer Research and Hospital (NICRH), 1440 new cases of childhood malignancies attended the department during January 2008 to December 2013. Early diagnosis of childhood malignancies is often difficult because of nonspecific symptom in most cases. Diagnosis delays prevent timely treatment and cause unnecessary complications. Long delays in diagnosis had negative effect on prognosis.<sup>[2,3]</sup> Causes of delays can be grouped into three categories: patient and/or parent delay, diagnosis and/or doctor delay, and treatment delay.

## Materials and Methods

This was a cross-sectional study conducted on diagnosed cancer patients aged  $\leq$ 18 years of both genders at NICRH. A total of 171 patients were enrolled in the study. The protocol was approved by the Institute's Ethics Committee. Informed written consents were obtained from each guardian before data collection. Data were collected by face-to-face interviews of the guardians using a pretested questionnaire. The first prescription was collected as evidence of 1<sup>st</sup> contact with physician to calculate patient delay. Data were then checked, entered, and analyzed using SPSS for Windows (IBM SPSS Statistics for Windows, version 17.0, Armonk, NY: IBM Corp). Qualitative data were analyzed using  $\chi^2$  test and continuous data by *t*-test.  $P \leq 0.05$  was considered statistically significant at 95% confidence level.

## Results

The mean age was 8.42 (standard deviation  $\pm$  5.381) years. Most of the patients (122/171) were male. In 53.8% cases, patients delay was  $<$ 30 days. In more than half of the cases, doctors' delay

was  $<$ 30 days. In more than two-third of the cases, treatment delay was  $<$ 30 days. In aggregate, more than 70% of the cases had to wait for more than 90 days for the treatment [Figure 1].

On average, the girls had to wait more days to consult a doctor than the boys (99.4 vs. 94.7 days) [Table 1]. Children  $<$ 2 years of age had to wait less than older children ( $P < 0.002$ ) [Table 1]. Illiterate or less educated father failed to produce their children timely before physician than more educated father ( $P < 0.001$ ). Unlike father's education, mother educational status was not associated with the patient delay. Those parents who heard about the childhood malignancy beforehand were more prompt to bring their children to the doctor than those who were unaware about such disease ( $P = 0.008$ ). Those parents who knew that malignancy is curable made less delay to bring their children to the doctor than those who did not know; however, this was not statistically significant. Those who earn comparatively more

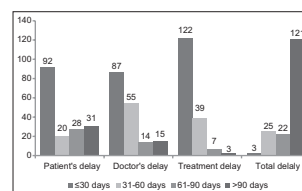


Figure 1: Delay in the treatment caused by patients

Table 1: Patient delay by gender and age group

Category	Mean ( $\pm$ SD) delay	<i>t</i>	<i>P</i>
Gender			
Male ( <i>n</i> =122)	94.62 (106.18)	-0.251	0.799 (NS)
Female ( <i>n</i> =49)	99.39 (110.48)		
Age group (years)			
$\leq$ 2 ( <i>n</i> =28)	120.79 (92.62)	-3.198	0.002
$>$ 2 ( <i>n</i> =143)	188.97 (145.57)		

NS=Not significant, SD=Standard deviation

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**Table 2: Association between patient delay and related variables**

Variables	Patient delay		$\chi^2$	P
	Yes	No		
Father's education				
Primary or below	35	8	28.631	<0.001
Above primary	44	84		
Mother's education				
Primary or below	61	75	0.484	0.570
Above primary	18	17		
Ever heard about childhood malignancy				
Yes	14	33	7.023	0.008
No	65	59		
Malignancy is curable				
Yes	34	46	0.827	0.363
No	45	46		
High family income	79	92	-2.599*	0.010

\*t-value

money a month took their children to a physician more early than the families with lesser income ( $P < 0.05$ ) [Table 2].

## Discussion

Lack of health insurance system, guardians' perceptions of illness, misinterpretation of early symptoms, poor access to health care facilities, and competing other responsibilities are the causes of patient delay. Delay is usually a relative term. Considering our present socioeconomic situation, we considered 30 days as a cutoff point as delays in the different stages. In our study, children <2 years of age had to wait less than older children which was statistically significant. Younger children may experience malignancy with more identifiable signs at onset than older children. It is consistent with the study that showed association between age and delay.<sup>[4]</sup> On average, the female child had to wait more days to consult a doctor than the boy. Statistically significant difference was noted between the families regarding monthly income. Previous knowledge on childhood malignancy influences the patient delay. Those parents who heard about the childhood malignancy beforehand were more prompt to seek treatment for their child. The influence of increased parent knowledge and awareness of the child's disease on timely diagnosis is also supported by the finding of a negative association between father's education and

diagnosis delay. These findings are supported by the study.<sup>[5]</sup> Other studies showed no advantage with higher education of parents.<sup>[6,7]</sup> About 70% of the cases had to wait for more than 3 months for the treatment. In our study, delays were influenced by the child's age, family's socioeconomic status, father's education, and knowledge about childhood malignancies. Awareness about childhood malignancy in the society and in the healthcare provider can solve this problem.

Our study has some limitations. It was a small sized single-center study. Another limitation was accuracy of the information of initial onset of symptoms, and exact time of appearance of first symptoms depends on the memory of the parents. Thus, recall bias was a problem.

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## Conflicts of interest

There are no conflicts of interest.

## References

1. Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, et al. GLOBOCAN 2012 v 1.0, Cancer Incidence and Mortality Worldwide: IARC Cancer Base No. 11. Lyon, France: International Agency for Research on Cancer; 2013. Available from: <http://www.globocan.iarc.fr>. [Last accessed on 2014 Jun 17].
2. Ramesh PM, Marwaha RK, Anish TS. Childhood cancer in developing society: A roadmap of health care. *Indian J Med Paediatr Oncol* 2011;32:30-3.
3. Dang-Tan T, Franco EL. Diagnosis delays in childhood cancer: A review. *Cancer* 2007;110:703-13.
4. Haimi M, Peretz Nahum M, Ben Arush MW. Delay in diagnosis of children with cancer: A retrospective study of 315 children. *Pediatr Hematol Oncol* 2004;21:37-48.
5. Fajardo-Gutiérrez A, Sandoval-Mex AM, Mejía-Arangurú JM, Rendón-Macías ME, Martínez-García Mdel C. Clinical and social factors that affect the time to diagnosis of Mexican children with cancer. *Med Pediatr Oncol* 2002;39:25-31.
6. Brown BJ, Ajayi SO, Ogun OA, Oladokun RE. Factors influencing time to diagnosis of childhood cancer in Ibadan, Nigeria. *Afr Health Sci* 2009;9:247-53.
7. Stefan DC, Siemonsma F. Delay and causes of delay in the diagnosis of childhood cancer in Africa. *Pediatr Blood Cancer* 2011;56:80-5.