Original Article

Study of Aetiological Factors in Delay of Cancer Diagnosis and Treatment

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ABSTRACT

Introduction: *Cancer is one of the leading causes of death worldwide. One of the most important factors responsible for this high mortality rate in cancer patient is delay in presentation. Already, numerous factors of such delays have been attributed in previous studies. We have little research-based data regarding these issues.* ***Objective:*** *To assess the factors associated with delay in cancer diagnosis and treatment.* ***Methods and Materials:*** *This descriptive cross-sectional study was conducted in the Department of Radiotherapy, Sher-E-Bangla Medical College Hospital, Barishal, Bangladesh from March 2022 to July 2023. In total 32 diagnosed cancer patients with delay time ≥ 3 months, willing to participate were enrolled by purposive sampling technique. Data analysis was done by using the MS Office program.* ***Results:*** *In analyzing the causative factors, we observed that in 69%, 63% and 50% of patients, the causes were financial, lack of knowledge and use of alternative medicine respectively which was alarming. On the other hand, in 41%, 31%, 22%, 16% and 6% of cases, causes were misdiagnosis, fear or psychological, non-cooperative family, no medical facility and conveyance problem*

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respectively which was also noticeable. Females had 7.5 times higher odds of delay and literate individuals had 0.7 times lower odds of delay. ***Conclusion:*** *Most common causative*

factors for the various types of delays in the management of cancer patients are 'financial inabilities', 'lack of knowledge' and the 'tendencies of using alternative medicine'. The delay could also be associated with being female and having lower levels of literacy.

Keywords: *Factors, Delay, Cancer Diagnosis.*

INTRODUCTION

Cancer is one of the leading causes of death in developed and developing countries. International Agency for Research on Cancer has estimated 19.3 million new cancer cases and almost 10 million cancer deaths worldwide. Cancer ranks as one of the leading causes of death and an important barrier to increasing life expectancy in every country of the world [1]. Some new research indicated that based on recent trends, cancer may surpass CVD (cardiovascular disease) as the leading cause of premature death (30-70 years) in most countries over this century [2]. In Bangladesh, a survey reported by the National Bureau of Statistics showed, of all reported deaths about 14 percent were due to heart disease and 10.4 percent due to heart attack and cancer alone claimed about 8 percent, ranking 3rd most common cause of death [3]. Because of advancement in cancer treatment the overall mortality rates for cancer patients have maintained a declining rate of more than 1% per year for the past ten years, as certain types of cancers have high cure rates if diagnosed early and treated adequately [4]. One of the important causes of high mortality in cancer is delay in presentation. Meta-analyses have found evidence supporting a continuous association between delay and mortality or local control. A four-week delay in treatment is associated with an increase in mortality across all common forms of cancer treatment, with longer delays being increasingly detrimental [5]. Delays in cancer diagnosis and treatment may occur at various stages. It may be due to patient delay, not seeking medical care or may be due to a diagnostic delay that is unable to evaluate accordingly or a treatment delay meaning not initiating specific treatment in time. Numerous factors have been attributed in previous studies of different countries causing these delays, for example- financial, psychological, use of alternative medicine (Homeopathy/ Ayurvedic), non-cooperative family members, misdiagnosis by a health care worker, unavailability of medical facility, conveyance problem, lack of knowledge/ awareness, religious, social, etc. [6,7] There is pessimism and stigma about cancer still prevailing in the society. Any delay in detection or treatment is considered to be an important factor for prognosis. Even a four-week delay of cancer treatment is associated with increased mortality [8]. For example, breast cancer is an important health concern in many countries, and delay of diagnosis and initiation of treatment is likely to result in tumor progression and a worse prognosis [9]. There are many reasons for women in Bangladesh why they do not seek treatment for breast lump. Women not knowing where to find help when they discover a breast lump. Modern treatment options are not available in the communities. Women also report fear of rejection by their friends and families if they are diagnosed with breast cancer [10]. Public awareness campaigns may play a pivotal role in highlighting the significance of recognizing early signs and symptoms,

as well as the importance of regular screenings. Equipping healthcare providers with the skills to swiftly identify potential cases and make timely referrals is essential. Simultaneously, efforts in research, policy refinement, and active patient participation are critical in collectively mitigating delays and improving overall cancer care. The objective of this current study was to assess the factors associated with delay in cancer diagnosis and treatment.

OBJECTIVE

To assess the factors associated with delay in cancer diagnosis and treatment.

METHODS & MATERIALS

This descriptive cross-sectional study was conducted in the Department of Radiotherapy (Clinical Oncology), Sher E Bangla Medical College and Hospital, Barishal, Bangladesh from March 2022 to July 2023. In total 32 patients with histopathologically or cytologically diagnosed as cancer patients were enrolled in this study as the study subjects. A purposive sampling technique was used in sample selection. The study was approved by the ethical committee of the mentioned hospital. Properly written consent was taken from all the participants before data collection. There are types of delay in diagnosis and treatment of cancer, "Patient delay"- this covers the period from the first onset of symptoms to first medical consultation and "Treatment delay" -which covers from the first consultation to definite treatment. "Total delay" is the summation of patient and treatment delay. As per the inclusion criteria of this study, patients with histopathologically or cytologically diagnosed cancer, with diagnostic delay time more than or equal to 3 months who are willing to participate from any sex or age group were enrolled in this study as study subjects. On the other hand, according to the exclusion criteria of this study, patients with a history of previous cancer or relapse cases, cases with a mental disorder, pregnant or lactating women, and patients with serious concomitant medical illness including severe cardiac disease, uncontrolled diabetes mellitus, and renal diseases patients were excluded. All the demographic and clinical information of the participants was recorded. All the data were processed and analyzed by using the MS Office program.

RESULT

In this study, the heights number of participants (59%) were from 35-64 years, 28% were from >64 years and 13% were from 18-34 years age groups (**Table I)**.

Table I: Distribution of participants as per age (N=32)

Age in years	n	%
18-34	4	13%
35-64	19	59%
>64	9	28%

Among the total participants, 53% were male whereas the rest 47% were female. So, male participants were dominating in number and the male-female ratio of the participants was 1.1:1 (**Figure 1)**.

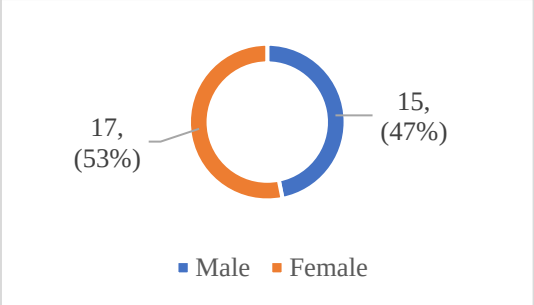

Figure 1: Distribution of participants as per gender (N=32)

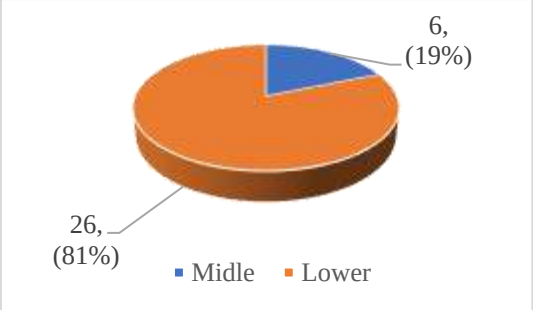

Figure 2: Distribution of participants as per the economic status (N=32)

Among the total participants, near about half of the patients (47%) were Illiterate, 44% were primary level completed, 3% were SSC completed and the rest 6% were HSC completed (**Table II**).

Table II: Distribution of participants as per education (N=32)

Education	n	%
Illiterate	15	47%
Primary	14	44%
SSC	1	3%
HSC	2	6%

The majority of the participants were from lower-class families based on their socio-economic condition. The rest of the participants (19%) were from middle-class families (**Figure 2**).

In the current study, as per the distribution of occupation status, we observed that 44% of patients were housewives, 25% were farmers which was noticeable (**Table III**).

Table III: Distribution of participants as per occupation (N=32)

Occupation	n	%
Housewife	14	44%
Farmer	8	25%
Business	1	3%
service holder	4	13%
Others	5	16%

In analyzing the histological findings, we found that more than 50% of patients were with adenocarcinoma or squamous cell carcinoma. Besides this, more than 5% were with duct cell small cells and NHL (**Table IV**).

Table IV: Distribution of participants as per the histological findings (N=32)

Histology	n	%
Adenocarcinoma	9	28%
Squamous cell carcinoma	8	25%
Duct cell carcinoma	5	16%
Small cell carcinoma	3	9%
NHL	2	6%

Lobular cell carcinoma	1	3%
Hodgkin's lymphoma	1	3%
Adenoid cystic carcinoma	1	3%
Adenosquamous carcinoma	1	3%
MPNST	1	3%

We observed that half of the patients (50%) presented in stage IV (**Table V)**.

Table V: Distribution of participants as per the stages of cancer (N=32)

Stage	n	%
II	1	3%
III	15	47%
IV	16	50%

As per the distribution of delays of the participants, we found that in near about three-fourths of patients (72%) 'Patient delay' was found for ≤6 months whereas it was found 7-12 and > 12 months in 9% and 19% cases respectively (**Table VI)**.

Table VI: Distribution of participants as per patient delay (N=32)

Month	n	%
≤6	23	72%
7-12	3	9%
>12	6	19%

As per the distribution of 'treatment delay' of the participants, we found that in the majority of the patients (91%) was found ≤6 months whereas it was 7-12 months and > 12 months in 6% and 3% cases respectively (**Table VII)**.

Table VII: Distribution of participants as per treatment delay (N=32)

Month	n	%
≤6	29	91%
7-12	2	6%
>12	1	3%

As per the distribution of 'total delay' of the participants, we found that in 47% of cases, it was for >12 months whereas it was found for 7-12 and ≤ 6 months in 13% and 41% cases respectively (**Table VIII)**.

Table VIII: Distribution of participants as per total delay (N=32)

Month	n	%
≤6	13	41%
7-12	4	13%
>12	15	47%

In analyzing the causative factors of the delays in cancer management among the participants we observed that in 69%, 63% and 50% of cases, the causes were financial, lack of knowledge and using , fear or psychological, non-cooperative family, lack of proper medical facilities alternative medicine respectively which was alarming. On the other hand, in 41%, 31%, 22%, 16% and 6% of cases, the causes were misdiagnosis and conveyance problem respectively which was also noticeable (**Figure 3)**.

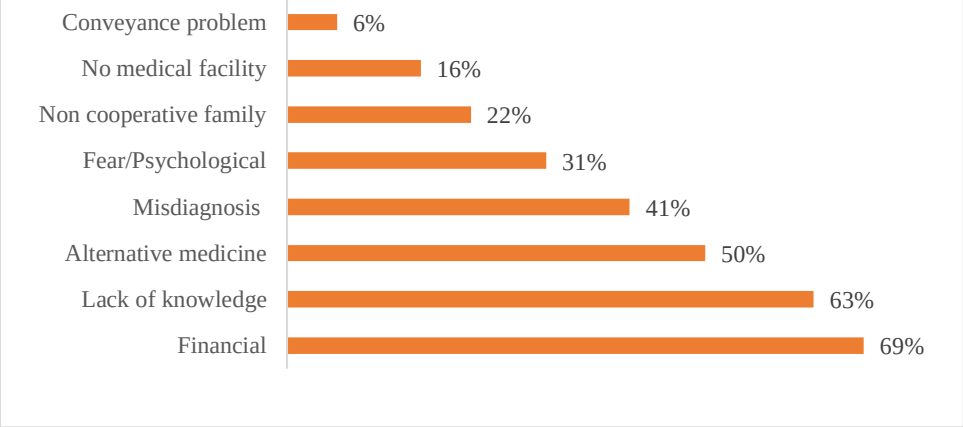

Figure 3: Factors for patient, treatment and total delay in cancer management (N=32)

This risk assessment examined total delays in cancer diagnosis and treatment within a sample of 32 individuals, focusing on gender and educational status. The data showed that females had a higher risk of experiencing delays (0.88) compared to males (0.47), with females having 7.5 times higher odds of delay. Additionally, literate individuals exhibited a lower risk of delays (0.41) compared to illiterate individuals (0.73), with literate individuals having 0.7 times lower odds of delay. These findings underscored the significance of gender and education as factors that influenced delays in cancer diagnosis, highlighting the importance of targeted interventions to ensure timely care **(Table IX)**.

Table IX: Risk assessment on total delay regarding gender and educational status (N=32)

Characteristics	Group	Delayed period (Month)	Total	Risk	Odds

		<6	≥6			
		n	n			
Gender	Male	7	8	15	0.47	0.88
	Female	15	2	17	0.88	7.5
Educational Status	Literate	7	10	17	0.41	0.7
	Illiterate	11	4	15	0.73	2.75

DISCUSSION

This study aimed to assess the factors associated with delay in cancer diagnosis and treatment. In our study, we observed that the highest number of participants (59%) were from the 35-64 years age group. Among total our participants, near about half of the patients (47%) were Illiterate, 44% were primary, 3% were SSC and 6% were HSC. A study was conducted By Fajardo-Gutierrez et al. [11] in Mexico, where children with cancer whose parents had the lowest level of educational status had longer delays in their diagnosis than did the children whose parents had the highest level of education. In Nigeria, the higher-educated parents did not seem to provide any advantage in delayed diagnosis, as reported by James et al. [12]. Among our total participants, the majority were from lower-class families based on their socio-economic condition. The rest of the participants (19%) were from middle-class families. Coping strategies as well as help-seeking behaviors seem to be associated with personal as well as the socioeconomic characteristics of patients [13-15]. In the current study, as per the distribution of occupation status, we observed that 44% of patients were housewives, and 25% were farmers. As per the distribution of 'patient delay' among the participants, we found that in near about three-fourths of patients (72%) 'patient delay' was found for ≤6 months whereas it was found 7-12 and > 12 months in 9% and 19% cases respectively. Finally, as per the distribution of 'total delay' of the participants, we found that in 47% of cases, the 'total delay' was for >12 months whereas it was found in 7-12 and ≤ 6 months in 13% and 41% cases respectively. Globally, a few studies have investigated the factors associated with delayed diagnosis in cancer patients especially in children [16-18]. Dang-Tan et al. [19] found that factors associated with diagnosis delays varied across several studies and reported the age, type of cancer, level of education, presenting symptoms and some others. In analyzing the causes of patient, treatment and total delay in cancer management among our participants we observed that in 69%, 63% and 50% of cases, the causes were financial, lack of knowledge and alternative medicine respectively which was alarming. Any delay in the detection procedure or treatment is considered to be a very important factor in the prognosis of cancer [20]. Samur et al. [21] reported lower educational levels, lower income, lack of access to the healthcare system, poor healthcare utilization habits, self-care behavior, and lack of knowledge of cancer's presenting symptoms were associated with delay. Another study conducted by Facione et al. [9] in Denmark looking into the impact of the patient as well as doctor delay reported that prognosis was inferior in the presence of

patient delay but superior in doctor's delay.

LIMITATION OF THE STUDY

This was a single-centered study with small-sized samples. Moreover, the study was conducted over a very short period. So, the findings of this study may not reflect the exact scenario of the whole country.

CONCLUSION & RECOMMENDATION

As per the findings of this current study, we can conclude that for the 'patient delay', 'treatment delay and 'total delay' in the management of cancer patients 'financial inabilities', 'lack of knowledge' and the 'tendencies of using alternative medicine' among such patients are the most potential causative factors. Besides these misdiagnoses, fear or psychological cause, non-cooperative family, the lack of medical facilities and conveyance problems are some fewer potential factors for such delays. Being female and lacking literacy skills continue to be potential factors contributing to delays. For getting more specific results, we would like to recommend conducting similar studies in several places with larger-sized samples.

CONFLICT OF INTEREST

None declared.

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