

# Factors Associated with Delay in Treatment of Cancer

Charan Amogh Raj KR<sup>1</sup>, Manikanta KV<sup>2</sup>, Sudhir<sup>3</sup>, Harish BR<sup>4</sup>

<sup>1</sup> Mandya institute of medical sciences, Mandya, India

<sup>2</sup> Mandya institute of medical sciences, Mandya, India

<sup>3</sup> Mandya institute of medical sciences, Mandya, India

<sup>4</sup> Mandya institute of medical sciences, Mandya, India

## ABSTRACT

**Introduction:** This is a cross sectional study conducted on cancer patients who presented at the peripheral cancer center, Mandya Institute of Medical Sciences, Mandya with an objective to find out the possible factors influencing the delay in treatment of cancer.

**Method:** Each day the patients coming for radiotherapy treatment were selected, based on the inclusion criteria for the study and an informed consent was taken before collecting the data. Data was collected by questionnaire method and was entered in an excel sheet and analyzed.

**Result:** The result revealed that 65% of the patients belonged to the age group 50-69 and that the delay in treatment significantly increased with increase in age, 80% of the patients were not aware and their median delay was about 60 days, 59% of the patients neglected the symptoms and their median delay was about 60 days, and 5 percent of them took self-treatment and their median delay was 60 days.

**Conclusion:** This study, revealed that 4 important factors, all of which belonged to the patient, were responsible for the significant delay in the treatment. The 4 factors were age of the patient, awareness about the symptom, neglecting the symptom and history of self-treatment.

**Key words:** Cancer, Delay, Neglect, Aware, Treatment

## INTRODUCTION

“Cancer” is the second leading cause of deaths worldwide and accounts for 13 percent of total global deaths.<sup>1</sup> One of the main reasons for this is delay in diagnosis or initiation of treatment at advanced stage.<sup>2</sup> It is a nightmare haunting people since ages. It not only causes death, but also causes immense mental disturbance and emotional instability which are more painful to bear.<sup>3</sup> Even though there are much advancement in diagnosis and treatment for cancer, it still stands as a huge threat to the mankind. A recent review indicates more work is needed to reduce delay in diagnosis of cancer.<sup>4</sup>

The prevalence of cancer initially was in developed

nations but now has increased in the developing countries as well<sup>5</sup> In India the number of cancer cases is increasing at an alarming rate, and so is the death toll due to it.<sup>6</sup> All this is due to poor availability of prevention, diagnosis and treatment of the disease throughout the country. The delay in treatment for cancer is one of the most important of factors influencing the morbidity and mortality statistics in our country.

It is well known that cancers detected at advanced stages have a higher mortality rate than those that

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**Correspondence:** Dr. Sudhir (Email: dheergowda@yahoo.co.in)

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are localized and present earlier.<sup>7</sup> In our nation the present focus is on “how to cure cancer completely”, “how to increase the lifespan of individual” but lost among these is the most important factor that is the delay in the treatment for cancer which is the prime factor that is to be addressed. All these put together can bring down the death toll by 60% in our country.<sup>8</sup>

Accurate diagnosis and prompt treatment on one side can save many patients but addressing the delay in treatment for cancer on the other side can save innumerable patients who suffer from cancer. A cancer treated earlier has a very good prognosis than the one which is treated once it is in its advanced stage. The treatment delay is strongly linked with poorer overall survival of the cancer patients.<sup>9</sup> Hence, the topic being the need of the hour explains its importance as to why it is an important study.

## METHODOLOGY

This is a cross sectional descriptive study on cancer patients, set in a peripheral cancer center Mandya Institute of Medical Sciences, Mandya. According to the previous records and statistics, on an average 8-9 cancer patients received radiotherapy every day in the hospital. With such an inflow of patients, interviewing 3-4 patients per day for 5 days a week would cover 15-20 patients a week and would take about 1½-2 months to finish 100 patients. Hence considering the study period of 3 months, 100 was chosen as the sample size for the study.

An inclusion and exclusion criteria were formed to filter the patients. All the cancer patients aged 18 and above who gave an informed consent for the study were selected. Those patients who were seriously ill or debilitated at the time of interview were excluded from the study.

The data was collected for 5 days a week after obtaining the written informed consent either between 9am to 12 noon or between 3pm to 4pm. Each day around 3 to 4 patient's data were collected. Data collection was done from 15<sup>th</sup> November 2019 to 20<sup>th</sup> February 2020. Each patient was interviewed for about 15 to 20 minutes.

Those patients who were illiterate, the consent was obtained by taking their thumb impression in presence of a witness. Socio-demographic and clinical data was collected by using pretested and semi structured questionnaire developed for the study.

The economic status was classified according to the 2019 BG Prasad classification.<sup>10</sup> Considering the costs of travel, medications and investigations at a government hospital, an average was made and compared with the per capita income of the patient to check their affordability to the treatment. Those who had a per capita income below the average which was calculated, they were considered as the ones with economical problem.

All the data was entered in excel worksheet and statistical analysis was carried out with EPI info software. The tests of significance used were Mann Whitney U test and Kruskal Wallis test to assess relationship between various factors and possible delay in treatment.

## RESULTS

A total of 100 patients were included in this study comprising of 48 males and 52 females of which males showed a comparatively longer delay of 20 days. The delay considered here is the median delay in days. As shown in table I, 65% of the patients fell in the age group of 50-69 years but the maximum delay of 60 days was shown by 14% of them who aged more than 70 years. 84% of the patients were from rural areas and their delay of 20 days was more than twice as compared to their urban counterparts which was 7.5 days.

Surprisingly, the most educated, showed the maximum delay in this study. The socio-economic status revealed that 70% of the patients belonged to class I and had delay of 45 days. The delay kept on decreasing with increasing socio-economic status. 80% of the unaware patients showed a fourfold delay of 60 days as compared to 15 days as shown by the 20% who were aware of the symptoms. 41% of the patients who neglected the symptoms had a delay of 60 days, 43% of the patients with economic problems had a delay of 30 days, 5% of the patients who self-treated themselves showed a 60-day delay as compared to 15 days of those who did not take any self-treatment.

Only 2% of the patients did not have an accompanying person and showed a higher delay. Amongst all these factors, 4 factors showed significant delay with a p-value <0.05 after running the tests. These are “Age, Awareness of the Symptom, Neglecting the Symptom and Self Treatment.”

As shown in table II, factors such as wrong diagnosis, referral to a higher centre and availability of doctor did not affect the patient. Whereas 41% of those who were not affordable for the scans, 20% who took symptomatic treatment and 8% who experienced a lack of equipment suffered a marginally higher delay as compared to the otherwise.

None of the factors here showed a significant delay after running the tests, as all of them had a p-value >0.05.

As shown in table III, factors like fear of cancer, consulting for a second opinion, and neglecting even after diagnosis did not affect the course of the treatment or did not cause any delay, but 44% who were unaffordable and 9% who were very far from the hospital had a twofold delay as compared to their counterparts. Here also, no factor caused any significant delay as all of them had a p-value >0.05.

**Table I: Factors associated with the delay in treatment of cancer after the onset of symptom and before seeking medical advice**

Factor	Number	Median Delay (In Days)	IQR (IQ3-IQ1) (In Days)	p-value
<b>Sex</b>				
Male	48	20	60-4	0.47
Female	52	15	60-7	
<b>Age (In Years)</b>				
30-49	21	7	25-4	0.032
50-69	65	20	90-7	
≥70	14	60	90-2	
<b>Residence</b>				
Rural	84	20	60-7	0.435
Urban	16	7.5	82.5-1.25	
<b>Education Level</b>				
Illiterate	70	30	90-7	0.122
Primary School	12	8.5	27-1.25	
High School	16	11	30-7	
P.U.C	2	52.5	-	
<b>Socio-economic status*</b>				
Class I	16	45	112.5-8.75	0.082
Class II	64	20	60-7	
Class III	12	10	48.75-2	
Class IV	8	8	26.25-1	
<b>Awareness of the symptom</b>				
Yes	20	15	120-22.5	0.003
No	80	60	30-3	
<b>Neglecting the symptom</b>				
Yes	41	60	120-30	0
No	59	7	20-2	
<b>Economic problems</b>				
Yes	43	30	60-7	0.154
No	57	14	60-2	
<b>Self treatment</b>				
Yes	5	60	296.25-37.50	0.042
No	95	15	60-5	
<b>Absence of accompanying person</b>				
Yes	2	25	-	0.747
No	98	15	60-6.5	

\*According To BG Prasad Classification, Test of significance used is Mann Whitney U test and Kruskal Wallis test

**Table II: Factors associated with the delay in treatment of cancer after seeking medical attention and before confirmed diagnosis:**

Factor	Number	Median delay (In Days)	IQR (IQ3-IQ1) (In Days)	p-value
<b>Availability of doctor</b>				
Available	97	7	60-7	0.39
Not available	3	2	-	
<b>Affordability for scans</b>				
Yes	59	7	60-2	0.149
No	41	10	75-7	
<b>Wrong diagnosis</b>				
Yes	8	7	30-7	0.553
No	92	7	60-7	
<b>Symptomatic treatment</b>				
Yes	20	10.5	30-5	0.217
No	80	7	60-5	
<b>Referral to higher centers</b>				
Yes	25	7	90-7	0.648
No	75	7	60-4.5	
<b>Lack of equipment</b>				
Yes	8	10	17.5-4.5	0.29
No	92	7	60-7	

Test of significance used is Mann Whitney U test and Kruskal Wallis test

**Table III:** Factors associated with the delay in treatment of cancer after the individual is diagnosed with cancer:

Factor	Number	Median delay (In Days)	IQR (IQ3-IQ1) (In Days)	p-value
<b>Delay due to distance from hospital:</b>				
Yes	9	30	105-30	0.109
No	91	15	60-7	
<b>Fear of cancer:</b>				
Yes	28	17.5	82.5-7.75	0.602
No	72	20	60-3	
<b>Second opinion:</b>				
Yes	15	7	45-17.5	0.155
No	85	7	60-4	
<b>Affordability of treatment:</b>				
Yes	56	14.5	60-2.25	0.208
No	44	30	60-7	
<b>Neglect after diagnosis:</b>				
Yes	8	15	52.5-7	0.848
No	92	20	60-5.50	

Test of significance used is Mann Whitney U test and Kruskal Wallis test

## DISCUSSION

This study aimed to find out the factors influencing the delay in the treatment of cancer. Accordingly, around 21 factors were listed as shown above in the three tables. The possible factors that delayed the treatment were arbitrarily put into 3 categories, namely 1) After the onset of the symptom and before seeking medical attention, 2) After seeking medical attention and before confirmed diagnosis, and 3) After the individual is diagnosed with cancer.

Under the first category, it shows that males are having a higher delay, which might be because of the fact that males, being the working force of the family couldn't make enough time for the hospital visit. This was the most common answer obtained during the interview. Also, most studies show that there is a gender difference regarding health care seeking behavior, women being more likely to visit a primary care physician, and it has been hypothesized that men are more reluctant than women to consult their general practitioners (GPs) when they experience potentially cancer-related symptoms.<sup>11,12</sup> Age, awareness of the symptom, education and self-treatment are interlinked. 79% of them belonged to age 50 years and above and 80% of them were not aware of the symptoms. This can be because of their minimal knowledge regarding the issue and this is where the education levels come into play. 70% of the patients were illiterate and so were not aware that their symptoms were problems and therefore have delayed their approach to the health center for their treatment. Surprisingly, 2 patients who had pre-university education, had a 52.5-day delay. This was due to their ignorance and self-treatment as told by them. This result is due to a smaller sample size. On excluding this delay, we infer that the better educated ones, showed lesser delay in seeking their treatment. 5% of them have taken self-treatment and their delay is nearly fourfold as compared to those who did not take self-treatment. This is because of the temporary resolution of the symptoms; these pa-

tients prolonged their course of the disease without seeking healthcare.

The area of residence, socio-economic status and economic problems go hand in hand. 84% of the patients were from rural areas and 80% of the patients had a lower income and so belonged to classes I and II of the BG Prasad classification. These patients showed a higher delay. This can be attributed to the fact that most of them were daily wage workers in agricultural set-up and hence couldn't meet all the expenses. Since maximum patients were hailing from a radius of 50-60 km from the hospital, the bus fares accordingly, were taken into consideration and costs of routine investigations and basic daily needs for the stay at hospital were considered to calculate an average and then this average was compared to the per capita income of the patient. If it was less than the average, then they were considered to have economic issues. Though 80% of them were on the lower end of the economic scale, only 43% of them complained of economic issues. On enquiry, it was found that many of them sought financial helps, from the people they knew and so did not face any economic issues. 41% of the patients neglected the symptoms due to culmination of many reasons like, education, economic problems etc. They have shown a delay of 60 days which is nearly, more than 8 times that of those who did not neglect which was 7 days. Also 2% of them complained of absence of an accompanying person and had a marginal increase in their delay.

Table II shows that the patients who took symptomatic treatment, the patients who complained of lack of equipment and unaffordability of scans showed a slight increase in the delay of the treatment. Symptomatic treatment as explained above will temporarily better the patient and so will delay the process of treatment, lack of equipment will push the patients to search for a better set up, which means higher costs and so will have caused the delay. Unaffordability of scans totally depends on the income of the patient.

Whereas the patients who complained of lack of availability of doctor, the patients who were wrongly diagnoses and the patients who were referred to higher centers were not affected the treatment course. This can be due to the proximity of higher center, which is Kidwai, Bengaluru. This being a government body, charges nominally and so the patients who were affordable could easily reach there in time and get the treatment they deserved.

Table III shows that farther the residence, more the delay due to commuting problems. Also, the patients who couldn't bear the expenses of surgeries, chemo and radiotherapies also had a higher delay.

Patients who feared cancer, who consulted for a second opinion and those who neglected their symptoms after a confirmed diagnosis did not show any excess delay according to this study. This might be due to a smaller sample size and so these factors cannot be ignored, as on a larger scale these might show their actual impact.

A similar study was done in All India Institute of Medical Sciences, Delhi by Dr. Alok Kumar Diwedi and team. The results they obtained were as follows, the lack of awareness in 54.6% of the patients was the most common of the factors causing the delay. Economic factors in 12.4% of them was also an important factor. Fear of cancer was seen only in 3.5% of the patients and 9% reported absence of accompanying person. More than 22% of the patients took 2<sup>nd</sup> opinion before initiation of the treatment. The medical factors included doctors making wrong diagnosis in about 27.5% of the patients and history of symptomatic treatment in more than 50% of them.<sup>13</sup>

Comparing to the above study our study has got similar results such as lack of awareness about the symptom in about 80% of the patients. Affordability for scans and treatment also has delayed the treatment in the patients but it was not significant according to our study. Other factors such as fear of cancer, absence of accompanying person, seeking 2<sup>nd</sup> opinion, history of wrong diagnosis and symptomatic treatment have not delayed the treatment to a great extent in our study. Another important factor found out was neglecting the symptom even though the patient was aware of the symptom. About 59% of patients neglected the symptom and their median delay was 60 days. Also, another new factor that showed some significance is history of self-treatment, which was seen in only 5% of the patients but caused a median delay of 60 days.

These differences in the percentage of patients and delay between the two studies might be due to the socio-demographic differences between the patients of 2 different areas. Also, the insignificant result obtained of a few factors which are known to cause possible delay such as economic status might be due to the smaller sample size of this study. And moreover, the study being done in a government set up most of the facilities here are nominal and there are

different schemes that the patients avail to get the treatment done for lower costs.

## CONCLUSION

On a whole, this study has brought out 4 main important factors that are significantly delaying the treatment of cancer which were, age of the patient, awareness of the symptom, neglecting the symptom and self-treatment. As all these significant factors were from the patients end in this study, and so there is the need for the health care professionals to impart the knowledge regarding the possible factors, the most common symptoms of the most prevalent cancers in the area, to the people especially the older ones, in any way either by bringing awareness, enacting street plays and giving live examples so that people will realize the importance of earlier presentation to the health care provider. Also, since many cancers run through the families, when patients are educated, we can also ask them to look out for similar symptoms in the people of their family and so can spread the knowledge amongst them. People also must be made aware of the facilities available in the government set up and that it is nominal to avail these benefits. This will in a way help in tackling the issue of delayed treatment of cancer.

**Contribution made towards increasing the state of knowledge in the subject:** If a reduction in deaths from cancer is to be achieved, a greater understanding of the reasons for late and delayed diagnosis in patients with potential cancer symptoms is required. This is a significant challenge, especially for primary care, which is usually the patient's first contact with the health services.<sup>14</sup> Hence, this study bringing the 4 important causes of delay to light, helps in addressing the issues to improve the quality of health care and to bring down the statistics of cancer related deaths in the peripheral settings like Mandya. Also, this study talks about the other imminent causes which have the potential to delay the treatment of cancer.

**Indication of scope for future work:** This study having a sample size of 100 might not have brought out all the factors affecting the delay. So, there is a huge scope for future work on this topic. This study covered only the patients from in and around Mandya district whereas there are other places facing different kinds of issues which have to be found out by such studies. With a larger sample size and larger area of patients covered, many other factors with significant effect on delay can be brought out to light. Therefore, there are need of studies on different types of cancer to provide clear picture of delays so that results can be generalized.<sup>15</sup> With these data, the factors affecting delay the most can be made out, the ways to combat it can be worked out as soon as possible and actions can be taken that will reduce any possible delay of treatment.

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