



DELAY IN INITIATION OF CANCER TREATMENT AMONG RURAL POPULATION: AN INDIAN SCENARIO

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Abstract

The study is about level of delays during the early diagnosis as well as initiating the cancer treatment in rural areas of country and its impact. Unhealthy diet and poor lifestyle may cause cancer and increases the chances to get many chronic diseases. There are three levels of delay between the initial diagnosis and treatment gets started. Late treatment initiation could increase the staging of disease and have poor after treatment results. It is evident that the various reasons behind the delay, such are lack of awareness, financial problems, travelling problem, accompanying problem, etc.

Key Words: Cancer, Level of delay, Rural Area, Initiation.

Introduction:

Cancer stands second in causing mortality worldwide after cardiovascular diseases.^{1,2} About 9.6 million deaths out of total world death was caused due to cancer in 2018.³ According to Indian Council for Medical Research (ICMR) 2016, India had nearly around 1.4 million of cancer patients.⁴ According to GLOBOCAN 2018, there were 11, 57,294 new cancer cases diagnosed in India. Among them, 7, 84,821 were died till now due to cancer and 22, 58,208 people are living with cancer. Most common cancers, such as breast, oral, cervical, and gastric and lung cancers are prevalent in India.⁵ Cancer incidence, mortality and disability adjusted life years (DALYs) has increased from 1990 in India. The incidence of cancer case increased from 548,000 in 2012 to 1,069,000 in 2016. The rate of mortality was increased from 112.8% and DALYs was



increased from 90.9% from 2012 to 2016. A large proportion of cancer incidence was found in Kerala, Mizoram, Haryana, Delhi, Karnataka, Goa, Himachal Pradesh, Uttarakhand and Assam.²

Lifestyle of an individual e.g. tobacco, alcohol consumption, poor dietary pattern and lack of physical activities are considered as risk factors for developing cancer among people. Tobacco use either in chewing or smoking will be responsible for about 40%-50% of all cancers in men and about 20% of cancer in women. Poor dietary patterns, such as excessive consumption of red chillies and spices, red meat consumption, fried food, alcohol use etc. will account for about 10%-20% of cancer.⁶ Unhealthy diet pattern also includes the consumption of 'junk food', such as candy, bakery goods, ice cream, salty snacks and soft drink, which contains less or no nutritional value but lots of calories, salt, and fats.⁷ An unhealthy diet is one of the major risk factors in causing chronic diseases, including cardio-vascular diseases, cancer, diabetes, hypertension and other conditions associated to obesity or over weight.⁸

There is a decrease in physical activities with urbanization, increasing sedentary nature of work, changing means of transportation and the adoption of opulent life style.^{6,9} Obesity (BMI of $\geq 30\text{kg/m}^2$) or overweight can increase the risk of cancer like non-hodgkin's lymphoma, leukaemia, multiple myeloma, renal cancer, colon cancer, rectum, breast (post-menopausal women) cancer etc. The obesity is responsible for 8% cancers in both male and female (male account 10% & female 6% out of total). Between 35%-50% of cancer cases can be reduced through controlling these potential modifiable factors.¹⁰ World Health Organization (2018) has recommended to adopt healthy dietary pattern including: eating more fruit, vegetables, legumes, nuts and grains; lessen the amount of salt, sugars, fat and whole purpose flour (Maida); and engage in regular physical activity.⁹

National Cancer Registry Programme has started to study magnitude and pattern of cancer in 1981. Most of registries are functioning and focusing in urban areas. The actual rate of cancer is underreported in rural areas of India. Hence, it is difficult to determine the actual trend of cancer in India.^{2, 11, 12} The paucity of adequate data on cancer and complex pathogenesis of disease bring more complexity in determining the pattern of cancer among rural people.¹¹ About 70% of Indian population resides in rural area, yet around 95% health facilities are found in urban areas. The incidence of cancer cases and mortality rate vary in urban and rural areas. As compared to urban areas, incidence of cancer cases is low in rural areas, yet mortality rate is high in rural areas. Changing life style, urbanization of rural area, prevalence of alcohol and drug intake etc. are some of the reasons for increasing the number of cancer patients in rural area.¹³ Dietary patterns like imbalanced diet, red meat consumption, charcoal cooking, intake of ghee etc. along with less



physical activities in rural area increase the risk of cancer among rural people.¹¹ Stomach cancer among men and cervical cancer among women are more likely to find in rural area due to infection.^{5,14}

The primary level delay, secondary level delay and tertiary level delay in starting the treatment is observed in the various studies. Lack of awareness, inadequate health infrastructure, availability of quacks, CAM (Complementary Alternative Medicine), prevalence of alternate system, distance from rural area to tertiary care centre (TCC) in urban area and financial constraints play a critical role in the diagnosis and initiation of cancer treatment among rural people.^{13,15}

More than 70% of cancer patients are diagnosed in advanced stage which affects the positive outcome of treatment on cancer patients.¹⁶ Some curable cancers become incurable due to the unavailability of appropriate health infrastructures and trained healthcare professionals for diagnosis and treatment in rural areas.¹³ There are a need of adequate health care system in rural area, availability of trained healthcare professionals and strong political will to reduce the period of delay for initiating cancer treatment among rural people.^{15,16} Cancer incidence, morbidity and mortality can be reduced through timely screening, diagnosis, treatment and palliative care.¹⁷

Review Method: The study is based on secondary data related with delay in cancer diagnosis, its factors and consequences. Researchers searched Google, predominately Google Scholar, Pub Med, Research Gate, Wiley Online Library and Elsevier with key words related to topic like Cancer, health care, delay, rural, burden, recommendation and statistics were used to review literature on the level of delay, magnitude of cancer and solution to reduce the period of delay. The related studies from the period of year 2000 onward were retrieved. Retrieved studies, which were relevant for research objectives and written in the English language.

Aim of study: The aim of study was to review factors influencing and consequences related to delay in the initiation for the treatment of cancer among rural dwellers of India.

Findings and discussions of the study: The findings encompassed four sections such are as follows: A) The first section deals with the meaning of primary, secondary and tertiary delay among rural cancer patients. B) In the second section, factors are discussed that are responsible for delays in the treatment of cancer patients in the rural areas. C) The third section deals with the consequences of delay in the initiation of treatment for cancer. D) The fourth section recommended the measurements to reduce the period of delay and improve the outcome of cancer treatment.



A) Level of delay in initiation of cancer treatment: The delay in initiation of cancer treatment is observed at various levels i.e. Primary Level, Secondary Level and Tertiary Level. The primary delay may be defined as the delay between onset of symptom observed by patient and the first consultation to the medical practitioner. The secondary delay is defined as the delay between first consultation to the medical practitioner and place where the cancer is initially diagnosed. The third level of delay is tertiary level delay which is defined as the delay between place of cancer initially diagnosed and the first initiation in cancer treatment or the treatment gets started.¹⁸

The delay has been further divided into two categories, such as Patient Delay and Health Care System Delay. Patient level delay may define as the time gap > 3 months between first symptom observed and first consultation to the medical professional. The socio-economic and socio-cultural factor plays the major role in delay at the patient's level and there are also, symptomatology experience, ethnic origin, beliefs or perceptions that affect the attitude of patients represent important causal factors of patient level delay.¹⁹ Social demographic variables of patient, such as age, gender, caste, class, place of residence etc. influence the patient level delay in the treatment of cancer. Along with social demographic factors, lack of awareness, ignorance, lack of time, family related problems, unavailability of anyone to take for treatment and fear from cancer disease are patient's factors which are responsible for primary delay and sometime secondary delay.¹⁸

The health care system delay may be refers to access limitations like, lack of good health care centres in locality, no availability of specialized or tertiary health care facilities and lack of adequate screening facilities; inherent problems of an established health care system, like disease management, problems in obtaining or scheduling diagnostic investigations; and communication gap between patients and physicians.¹⁹ In the study of Dwivedi et al. (2012), 67.7% newly registered cancer patients came from urban areas. About 73.5% of cancer patients came to tertiary healthcare in advance stage. Factors related with healthcare system, like mis-diagnostic, improper diagnostic and symptomatic treatment were influencing the secondary level of delay. Some factors in the field of health, such as, inadequate treatment facilities, lack of referral network etc, play a critical role in the tertiary level of delay.¹⁸

B) Factor influencing delay in initiation of cancer treatment: There are the various factors influencing the delay in starting the treatment, such as social-cultural elements, lack of education, lack of financial support, lack of awareness about cancer symptoms, etc are responsible.²⁰ It is observed that doctors and other healthcare professionals are more likely



preferred to work in urban areas. There are some prominent characteristics of rural areas, such as poor fiscal governance, inadequate health infrastructure, shortage of trained facilities, caste and class based inequalities, uneven regional development and non-accessibility to health care service that are playing a critical role in early diagnosis and initiation of cancer treatment.²¹

The cancer patients diagnosed with advanced stage are more likely to have poor outcome during treatment. In the context of poor health care facilities in rural area, cancer patients have to migrate into cities or urban areas for cancer related treatment where tertiary health care facilities are available. They confront different issues other than treatment such as making arrangement for stay and food, travelling cost, loss in job or business of cancer patient as well as accompanying attendant.¹³ The accessibility and affordability in the context of healthcare are poor in rural area as the cancer treatment is very expensive and out of pocket for affected individual and their families.^{22, 23}

The total annual economic cost spends on cancer treatment in 2010 was estimated at approximately US\$ 1.16 trillion.^{3, 24} It is evident that around 18 % of cancer survival has delayed their treatment after 'being diagnosed' due to 'financial barriers'. It was estimated that average costs spend on cancer treatment in 2015 had increased between Rs. 4 Lakhs to Rs. 6 Lakhs (on lung cancer up to Rs. 4.6 Lakhs, oral cancer Rs. 4.3 Lakhs, breast cancer Rs. 6 Lakhs and cervical cancer Rs. 5 Lakhs).²⁵ It was also reported that the average cost rose from the year 2000 to 2015 said by Naresh Parmar, CEO, Karnataka region, Apollo Hospitals. The treatment cost also increased 'due to expensive infrastructure, new technology-based investigation costs and newer drugs'.²⁶ Health insurance coverage is not functioning in a good manner. Among insured people, only one fifth is able to receive full amount from health insurance.^{22, 23}

There is a lack of awareness among rural people about government scheme, such as Ayushman Bharat Scheme, Central Government Health Scheme (CGHS), Prime Minister's National Relief Fund (PMNRF), National Cancer Relief Fund and other related schemes.^{22, 23} Hence, they have to depend on 'distress money', such as borrowing money on heavy interest, selling and mortgage assets (living and non-living), and contribution from friends and relatives to finance cancer treatment and healthcare payment.²⁷ Migration for cancer related treatment to urban areas puts the financial burden among rural cancer survivors, increases the burden of tertiary care centres and limits the use of healthcare infrastructure, which further delays in the investigations and treatment. Sometime financial constraints lead to non-compliance of cancer treatment among rural patients.¹³



C) Consequences of delay in cancer treatment initiation: Delaying in initiating the cancer treatment and not adhering the prescribe therapies will cause poor outcome that will further leads to poor quality of life, physical pain and inactivity, disability, change in BMI, psychological pain or trauma and deaths.²⁸ Rural regions have fewer health care facilities related with cancer treatment along with extreme poverty and poor literacy rate among rural people.¹² It is significant that the cancer patients with poor outcome are more likely to discourage other rural people to take the treatment of cancer. This will also ‘lead to vicious cycle’ of poor outcome in the context of cancer treatment and changing post treatment lifestyle.¹³

In 2015, a study was conducted in India, it was observed that the survival rate of patients diagnosed with cervix cancer was very low, nearly about 50 % of studied female was died in first two years and around 30% were alive after 5 years of survival. It was observed that the lack of health care facilities, supportive technologies, trained professionals, financial resources and other social or family support acted as factors behind the poor survival rate among cervical cancer patients in low-resource settings.²⁹

In the study of Tiara Cristina et al. (2017), low education level among 64.9% breast cancer women influenced the delay in treatment. The delay in diagnosis and treatment directly affected the health of cancer survivals. There was a need of early detection, identification of risk factor and timely treatments. The sample consisted of 82 women who diagnosed with breast cancer in Parana, Southern Brazil. The average time for diagnosis was 102.5 ± 165.5 days. The treatment was delayed for 63.4% of the participants. The average time of delay in treatment was 87.3 ± 65.5 days. Low education level among 64.9% breast cancer women influenced the delay in treatment. The delay in diagnosis and treatment directly affected the health of cancer survivals. There was a requirement of early detection, identification of risk factor and timely treatments.³⁰

In 2018, there were more than 18 million new cancer cases diagnosed out of which nearly 5 million cases of breast, cervical, colorectal, and oral cancers that could have been detected sooner and treated more effectively. Early detection, screening, and diagnosis have been proven to significant improvement in patient survival rates and quality of life, as well as the effective reduction in the cost and complexity of cancer treatment. However, barriers to achieving higher rates of early cancer detection need to be addressed at the individual, health system, and governmental level to significantly reduce the personal and financial burden of cancer worldwide.³¹ The delay in diagnosis and treatment will play a vital role in poor survival of cancer patients in India.⁶



D) Recommendations for reducing the period of delay: Early screening and diagnosis, trained health care professionals, follow-up practices during treatment and post-treatment, well tracked referral pathways, community level awareness, availability of health care management and palliative care can prevent the poor outcome of cancer treatment effectively.^{1,6,11,13,15} Early detection of disease, tobacco and alcohol control during and after treatment, health education and cost effective procedure like visual inspection, physical examination, necessary and cheap investigations (blood investigations, histopathology, cytology, mammography and X-ray imaging) should be recommended and adopted, which can be resulted highly reduction in the delay of initiating cancer treatment among rural population.³²

Primary prevention or awareness programmes on cancer which may include cancer related symptoms, anti-tobacco and alcohol campaign, importance of healthy diet and physical activity, pre-diagnostic tests, government financial assistance schemes, and awareness related to stigma associated with cancer treatment and its impacts should be initiated at the grass root level. The Knowledge, Attitude and Practice (KAP) pattern, screening programme, change in tobacco use and referral system will reduce the delay in diagnosis and treatment. Lack of diagnostic facilities in rural areas is responsible for late presentation of cases. Hence, there is a requirement of multi-disciplinary approach to provide treatment at each regional cancer centre in India. The distance has to cover by the patients for taking cancer related treatment, is need to be identified which may resulted to form the policies that further helps in the reduction of unnecessary cost and time consumed.⁶ It is suggested to make cancer treatment accessible and affordable to all irrespective of any gender, age, class, caste and so on, so that cancer treatment can be started as early as possible.³³ The timely treatment initiated could improve the survival rate and also decrease the chance of spread cancer among people. The physicians recommended the early diagnosis and treatment initiation can increase the chances of survival.³⁴ It is highly misinterpreted that the cancer is a communicable disease in rural areas. It is required to educate the dweller of rural areas about the development of cancer, symptoms, types, diagnosis, treatment, which might reduce the stigma associated with the spread of cancer and its treatment. Beside educating the healthcare professionals of rural areas, it is also important to educate the general public in getting diagnosis and treatment of cancer.¹⁵ It is also recommended that the effective network of cancer registries should be establish for obtaining required data on trend and magnitude of cancer in India at every level, whether it is rural or urban.⁶

Conclusion: There are three levels of delay, primary, secondary and tertiary level delay. The delay in diagnosis and initiating the treatment has different results, e.g. Stage I & II patients



become Stage III & IV patients after delay. In the advance stage it is very difficult to provide curable treatment, only palliative treatment can be provided.

It is concluded that if time gap between first symptom developed and treatment initiated is reduced the result would be better. There are many problems like, awareness of symptoms, initial screening, timely referrals, travelling etc. are the main reasons behind delay.

To eliminate delay, the community level work must be initiated e.g. to educate the rural dwellers about symptoms of cancer, treatment for cancer, financial assistance schemes, as well as the stigma associated for better results. Cancer can be cure if it's screened out at initial stage.

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