

# Missed Opportunities in Early Diagnosis of Head and Neck Cancer in Patients in Tamil Nadu – A Mixed Method Study

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## Abstract

**Background:** Evidence suggests that cancer-associated mortality and morbidity may be substantially reduced when diagnosed early and prompt treatment is initiated. Assessing the reasons for delays may assist in formulating strategies to enhance treatment outcomes that will benefit the community, health sector, and policymakers. This study aimed to assess the pathways and reasons for head and neck cancer (HNC) diagnostic delays in a South Indian setting. **Methodology:** The Exploratory Mixed Method analysis was conducted at the Government Royapettah Cancer Institute, Chennai, Tamil Nadu. The study included 172 patients with a confirmed diagnosis of the stage III to IV of HNC during their first diagnostic examination. Quantitative data were collected from 117 participants using a semi-structured questionnaire, and in-depth interviews were conducted to identify the reasons (qualitative data) for delays. The median delay (both primary and secondary) and the association of the delay with various factors were analyzed. **Results:** The median primary delay was 86 days, and the secondary delay was 23 days. There was a statistically significant ( $P < 0.05$ ) difference in the type of residence ( $P = 0.018$ ) and importance given to health ( $P = 0.057$ ) in primary delay. The secondary delay was associated with a family history of smoking/tobacco habits ( $P = 0.006$ ). **Conclusion:** Factors causing the delay are evadable and can be reduced by improving health literacy to enhance symptom appraisal and amalgamation of various levels of health care in screening and early diagnosis of HNC.

**Keywords:** Head and neck cancer, early diagnosis, mixed method study, oncology, primary delay, secondary delay, thematic analysis

## INTRODUCTION

Head and neck cancer (HNC) encompasses an agglomerate of heterogeneous diseases originating from the head and neck region, including the oral cavity, oropharynx, nasopharynx, hypopharynx, and larynx.<sup>[1]</sup> The key histological subgroup of HNC is head and neck squamous cell carcinoma (HNSCC), the sixth most common malignancy globally, with around 890,000 new cases and 450,000 deaths reported in 2018.<sup>[2]</sup> Several factors are attributed to the risk of developing HNSCC, among which cigarette smoking and excessive consumption of alcohol are pivotal due to their synergistic contribution in addition to infection with Epstein-Barr and human papillomavirus.<sup>[1,3]</sup> The World Health Organization (WHO) has estimated over four million oral and oropharyngeal cases by 2030.<sup>[4]</sup> Great advances have been made in the multimodal management of HNSCC; however, evidence suggests that the prognosis essentially depends on the stage at which the diagnosis is

made. HNC constitutes a relatively actively disseminating tumour group eliciting a median potential doubling time of six to seven days.<sup>[5]</sup> The duration between the detection of first symptom by the patient and its subsequent diagnosis has a strong impact on the patient's survival period. It is also reported that in India around 60-90% of cases are identified later in the disease progression.<sup>[6]</sup> The delay in diagnosis and initiation of treatment untowardly affects individuals' survival rate, recurrence rate, and quality of life. Hence, it is warranted to advance the diagnosis to reduce the morbidity of management and mortality to invoke an enhanced overall

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survival period of the patients. The WHO has commended the Comprehensive Cancer Control Program, whose key component is early and prompt diagnosis. However, early diagnosis faces certain hindrances due to the variations in the growth rate of different tumours and the sensitivity of the diagnostic techniques utilized.

Evidence from the literature postulates a negative implication of diagnostic delay on the progression rate of the disease, selection of treatment modalities, prognosis, and survival.<sup>[7-9]</sup> Such delays in cancer diagnosis manifest right through the diagnostic path: patient-related, primary care, or secondary care. Patient delays may befall when the patient fails to identify the symptoms at the onset.<sup>[10]</sup> Lack of awareness among the general public is the principal reason for such delayed presentation, especially when the symptoms are unusual.<sup>[11]</sup> A study has reported that too busy a schedule to visit the physician and fear are some of the barriers to seeking prompt help.<sup>[12]</sup> Primary care delays may occur during the identification and investigation processes and referral of suspicious symptoms to the concerned speciality.<sup>[10]</sup> Secondary care delays in hospitals may occur due to the delay in arriving at the final diagnosis of cases requiring several invasive procedures before initiation of treatment.<sup>[13]</sup>

Hence, the aim of the present study was to elucidate the factors for primary, secondary, and total diagnostic delay of HNC in its early detection to advocate strategies to manage and eliminate these factors and significantly improve treatment outcomes. This would eventually pave the way for the amalgamation of different levels of health care and awareness creation in screening and early diagnosis of HNC. By and large, this would prove beneficial to the community, the health sector and policymakers.

## METHODOLOGY

### Study design

The present study was performed by an exploratory mixed method analysis conducted in the government Royapettah Cancer Institute, a major state-owned hospital situated in Chennai, Tamil Nadu, India, between January 01, 2022, and March 31, 2022. The tertiary center accommodates and serves patients from all 38 districts of the State.

### Study population

Patients diagnosed with stage III and/or stage IV HNC during their first consultation or visit to the hospital were included in the study. They were more than 18 years of age and made to participate before the commencement of treatment. Patients in the first and second stages of HNC, relapsed cases with multiple malignancies, secondary metastasis in the head and neck region, patients in extremely fragile condition, and cases whose date of investigation and date of treatment initiation were missing in their case records were excluded from the study.

### The sample size for a quantitative approach

The samples were selected using the purposive sampling method. As per the Hospital Based Cancer Registry, 309 HNC cases were diagnosed and treated in the hospital. Among these, 119 patients presented with stage I and II HNC, and the remaining 190 presented with stage III or IV HNC. However, 18 patients, unfortunately, deceased before the initiation of the study. Hence, the total sample size was derived to be 172.

### The sample size for a qualitative approach

All 172 patients were aimed to be included in the in-depth interview (IDI). However, 55 patients have either undergone therapeutic management, were under radiotherapy, or presented with deterioration of their health condition. Hence, the sample size for the qualitative approach was brought to 117.

### Ethical consideration

This study was approved by the Scientific Research Council and Institutional Ethical Committee (ECMGR0309192) of The Tamil Nadu Dr. MGR Medical University, Guindy, and from the Institutional Ethics Committee of Kilpauk Medical College (740/2022).

### Data collection methodology

The patient's case sheet, structured questionnaire, and clinical records served as the source of quantitative data [Tables 1 and 2]. One hundred and seventeen patients were subjected to an in-depth interview, and the qualitative data were collected using the question guide consisting of open-ended questions. The questionnaire validity was determined employing content validity, assessed by experts in the department, research officers, and scientific and faculty members. The reliability of the questionnaire was assessed using the "test-retest" method with a time interval of 10 days. The correlation coefficient was found to be 1.0 and 0.976, which were greater than 0.07 and, thus, were appropriate for the current study.

### Procedure

#### Operational definition

Patient delay or primary delay was defined as the time interval between the patient's first awareness of symptoms suggestive of HNC and first contact with a healthcare provider. This usually occurs when the patient fails to recognize and act on suspicious cancer symptoms.<sup>[6,14]</sup> Health care delay was defined as the time interval between first contact with the health care provider and initiation of treatment specific for cancer.<sup>[15]</sup> This included 1) diagnostic delay, which was the time interval between first contact with the health care provider and confirmation of diagnosis through specific diagnostic investigations, and 2) treatment delay, which was the time interval between confirmation of diagnosis and initiation of treatment.

### Data analysis

The quantitative data were tabulated as mean and standard deviation. Statistical analysis was performed using Microsoft

**Table 1: Socio-demographic characteristics of and their association with the primary and secondary delay**

Factors	Variables	n	%	Primary Delay		Secondary delay	
				Median (days)	P	Median (days)	P
Age	<60 years	80	46	85	0.818	20	0.489
	>60 years	92	54	72		18	
Gender	Male	146	85	108	0.45	19	0.156
	Female	36	15	170		16	
Residence	Rural	95	55	108.5	0.018*	18	0.771
	Urban	77	45	76.5		19.5	
Stage	III	87	51	106	0.823	18	0.876
	IV	85	49	97		20	
Literacy	Degree	4	2	124.5	0.884	11.5	0.696
	High school	28	16	75.5		20.5	
	Incomplete high school	140	82	106		18	
Occupation	Professional	7	2	114	0.296	3	0.702
	Semi-professional	6	4	105		16	
	Skilled	48	28	145.5		20	
	Unskilled	97	56	93		20	
	Unemployed	14	8	93		20	
Marital status	Married	160	93	82	0.651	18	0.5380
	Deserted/separated/Unmarried	12	7	134		18	
Income	Upper class	3	3.1	87	0.629	16	0.460
	Upper middle class	33	20.7	78		16	
	Lower middle class	119	69	81		18	
	Lower class	17	7.2	87		16	

\*Significant P

**Table 2: Health-seeking behaviour and their association with the primary and secondary delay**

Factors	Variables	n	%	Primary delay		Secondary delay	
				Median (days)	P	Median (days)	P
Importance is given to health	Not important	100	58	114	0.057*	19	0.127
	Moderately important	50	29	86.5		17	
	Very important	22	13	60		21	
Health care seeking during early symptom manifestation	Yes	94	55	89	0.975	18	0.770
	No	78	45	105		20	
Reason for not approaching health care during early symptom manifestation	Money	11	14	109	0.405	20	0.488
	Distance	18	23	111	0.141	20.5	0.352
	Guilty	12	15	109.5	0.799	20	0.945
	Family responsibility	5	6	101.5	0.352	21	0.799
	Fear	33	42	108	0.945	20	0.462
Symptom presentation	Ulcer	38	22	80	0.156	20	0.526
	Pain	64	37	80	0.083	20	0.649
	Eating difficulty	36	21	89	0.702	20	0.712
	Lump	38	22	127	0.187	16	0.346
	Constitutional	33	19	79	0.894	18	0.5110
Number of health care visits before cancer diagnosis	One	70	41	72	0.667	22	0.234
	Two-three	90	52	109		20	
	More than three	12	7	88		15.50	
Cancer-specific diagnostic is done on the first visit	Yes	162	94	101	0.961	18	0.281
	No	10	6	103		27	
The utilization of VHN during illness	Yes	6	3	125	0.445	28	0.235
	No	166	97	98		18	
Family influence in the habit of smoking/tobacco/alcohol	Yes	79	46	112	0.074	21	0.006*
	No	93	54	72		16	

\*Significant P

SPSS-pc version 25.0. Mann-Whitney test was used to compare the social demographic characteristics with primary and secondary delay. All statistical tests were performed at a significance level of 5% ( $P < 0.05$ ). The time durations of the primary and secondary delays were non-normally distributed and analyzed using the median and interquartile range. With respect to qualitative data, applied thematic analysis of the transcribed in-depth interviews was done. Statements were the unit of analysis. The codes were constructed using both the inductive and detective methods. Identical codes were coated into categories and associated categories into themes. A few statements for each code are presented in the qualitative results.

## RESULTS

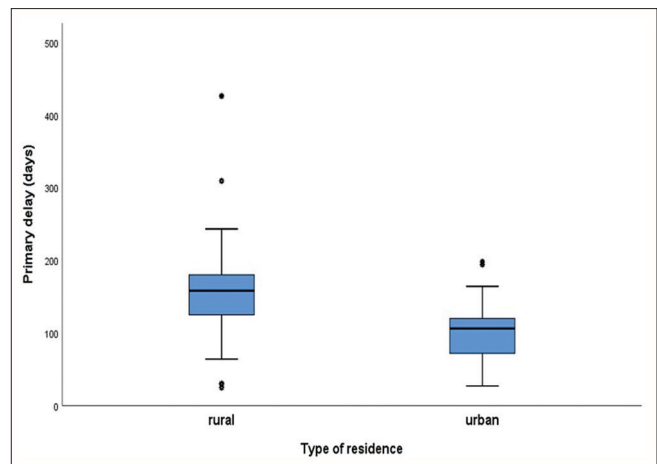
### Quantitative results

The quantitative survey was completed in 172 participants; their characteristics are shown in Table 1. Around 92 (54%) participants were below the age of 60 years and constituted of 146 (85%) males. Most of the participants belonged to the rural community, 95 (55%), and 97 (56%) were unskilled daily wage laborers. Most were in the lower middle-income group, 119 (69.4%), and high school dropouts were 140 (82%). Around 131 (75%) participants had the habit of consuming tobacco, alcohol, smoking, and beetle leaves. The oral cavity was the common site of malignancy with 103 participants (60%). The average duration of smoking, tobacco, beetle leaves/nuts, and alcohol history were 10.5 years (SD 13.08 years), 14.66 years (SD 12.9 years), 3.15 years (SD 9.4 years), and 9.27 years (SD 11.9 years), respectively.

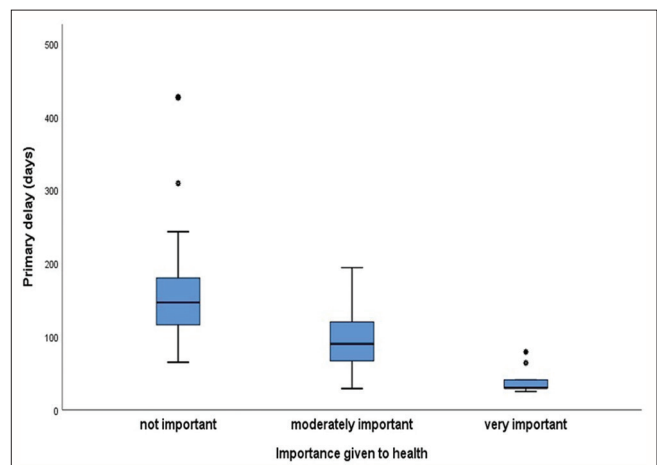
The various diagnostic delays and their association with socio-demographic characteristics are shown in Table 1. For all the 172 patients, the average primary delay was 117 days (median 86 days, SD 92 days, minimum 1 day, and maximum 427 days), and the secondary delay was 23 days (median 20 days, SD 18 days, minimum 0, maximum 160 days). Participants residing in rural areas were significantly associated with a primary delay in cancer diagnosis ( $P = 0.018$ ) [Figure 1]. However, there was no statistically significant difference in the duration of diagnostic delay between the strata distributed according to age, gender, economic status, tumor site, and stage.

The association between the diagnostic delay and the health-seeking behavior of the patients is summarized in Table 2. The importance given to the patient's health ( $P = 0.057$ ) [Figure 2] during the early presentation of the disease was associated with the entire range of the primary delay distribution. The secondary delay was significantly associated with a family history of smoking, alcohol, and tobacco habits ( $P = 0.006$ ) [Figure 3].

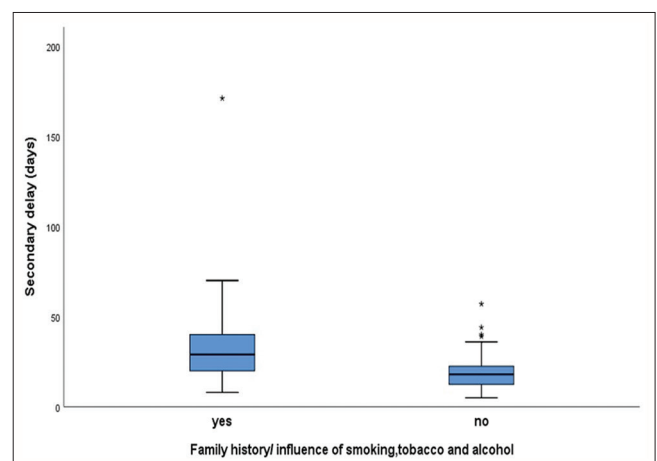
For qualitative data, the codes were coopted into three categories: (1) reasons in symptom appraisal; (2) reasons



**Figure 1:** Box Whisker's Plot representing the association of primary delay with the type of residence of the patients



**Figure 2:** Box Whisker's Plot represents the association of primary delay with the level of importance given to health by the patients



**Figure 3:** Box Whisker's plot representing the association of secondary delay with the family history and influence of smoking, tobacco usage, and alcohol

for the attitude of neglect; and (3) reasons for health care delay.



**Code 1. Reasons for symptom appraisal****Misunderstanding the symptoms/Incorrect perception of the disease**

The patient interprets the cancerous symptoms as minor troubles.

*"I work as a night duty watchman, doing odd daily jobs to keep myself awake. I smoke, eat tobacco, I get frequent ulcers gargling with hot water or medical shop tablet will resolve, but this time it became big and painful," a 52-year-old male at stage 3 left buccal carcinoma.*

**Low perceived seriousness**

Patients perceive early symptoms but approach health care only after overwhelming symptoms. Even when the pain started initially, most patients sought relief with over-the-counter drugs. In these cases, seeking medical care appears only when the pain becomes intolerable. *"My husband and I are daily wagers. If I go for treatment and admission, I have to put leave, then who will take care of my family? also, the swelling was painless for years, now, after all my daughters are married, they have forced me since the swelling got big suddenly and that was painting"* a 48-year-old female in stage 3 sarcoma of maxilla who had the longest primary delay of 427 days.

**Lack of education**

Few participants expressed regret in their lack of basic education, which in turn led to a lack of awareness about the disease.

*"I don't know to read and write; I didn't go to school, we don't know diseases like this exist; if I had known these would become dangerous, I would have come to the hospital,"* a 60-year male with stage 3 carcinoma glottis.

**Code 2. Reasons for the attitude of neglect****Denial**

Some patients mentioned that their parents or other family members were tobacco chewers and/or alcoholics who are still healthy; hence, they denied that they would suffer from such disease.

*"My father and relatives are chronic alcoholics and smokers; they never got any illness, we don't have this type of disease in our family so I thought the complaint would resolve, then slowly, I was not able to open my mouth, and the pain was worse"* a 35-year-old male stage 3 carcinoma hypopharynx.

**Family responsibilities**

Even after the suspicion of the disease, some participants delayed initiating therapy due to their extended obligations and duties toward children.

*"I am a widower; my wife died 4 years, I have two daughters, ages 22 and 25. When the ulcer started to form, I had a suspicion, so I took over jobs to earn money and arranged marriage to my daughters as soon as possible, but it took about six months, and then I consulted here"* a 53-year-old male working as a carpenter in stage 3 carcinoma larynx.

**Guilt**

Some participants who were not family-oriented did not provide any support to their own family, and expressed a feeling of guilt for their past activities, hesitating to approach in a time of sickness.

*"I used to beat my wife and didn't take care of the family, so I am staying on the roadside doing coolie jobs how will they take care of me now? No one will accompany me to the hospital,"* a 55-year-old male with stage 3 carcinoma tongue.

**Fear of therapy or disease**

Though some participants were suspicious about the complaints, the fear of therapy complications, and the community's misleading suggestions led to treatment delays.

*"When I got this ulcer, my co-workers said it might be cancerous and doctors would cut my lips and on keeping radiation, my face would become black, I thought I would look ugly, even one doctor told me I needed an operation, so I took treatment under traditional medicine, but the ulcer became big in size"* a 28-year-old male in stage 4 carcinoma lip with a primary delay of one year.

**Abandonment/neglected by family**

Six patients experienced abandonment and neglect from their family members, causing them difficulty in visiting a healthcare facility.

*"my sons don't take care of me. I live alone; I told them about my complaints they scolded me since I have tobacco/alcohol habits. I got this problem,"* said a 64-year-old male with stage 4 carcinoma tongue.

**Reasons for health care delay****Missed diagnosis**

Attributing the disease symptoms to other chronic health conditions, especially diabetes, by the healthcare provider.

*"After tooth extraction, I was not able to open my mouth for a long time. Whenever I approached the doctor, he said nothing to worry about; I approached PHC, a Private clinic all of them told me not to worry about it since I am diabetic and my ulcer will heal slowly"* a 53-year-old female (beetle nut chewer for 30 years stage 3 buccal mucosa who had the primary delay of eight months.

**Affordability**

Economic problem was observed to play a significant role in both primary and secondary delay.

*"I have to work daily to run the family as I have two small kids; I went to a private hospital they told me the charges were in lakhs, so I came to the hospital. Even here for current therapy, I have to pay 80k, so it took time to collect and borrow money for therapy,"* a 44-year male stage 3 carcinoma tongue.

*"We run a family on a tight budget, we have to pay rent and college fees, so I delayed going to take investigation since*

*I have to take leave from work; it will be difficult to run a family," a 49-year-old male in stage 3 carcinoma hypopharynx.*

### Distance and transportation difficulty

The rural community expressed a lack of adequate transport and excessive distance to reach Chennai for advanced investigations and therapy.

*"I have to walk five kilometres to reach any hospital nearby. We had to change two buses to go to the hospital; buses will come only in time so we don't go to the hospital much, so I didn't approach the doctor initially. After that, the pain started, and I lost weight," a 60-year-old male with stage 3 carcinoma salivary gland.*

### Stigma from society/community

Two patients expressed Stigma or the feeling of isolation from the community/society for transport purposes, contributing to the secondary delay. Even after diagnosing the disease, the patients faced difficulties in making follow-up visits.

*"My grandma had the ulcer and was infected by maggots; the smell is offensive. Even family members found it difficult to come near; we were not allowed to get in government buses due to the smell, and a private cab would cost two thousand rupees per day and unaffordable since we come from Kancheepuram" attender of 80-year-old female with stage 4 carcinoma right buccal mucosa.*

## DISCUSSION

The study showed that the average primary or patient delay was 86 days, significantly greater than the secondary or healthcare delay of 20 days. A similar study conducted in New Delhi has reported that the median primary and secondary delay of HNC was 46 and 56 days, respectively,<sup>[16]</sup> and in Maharashtra, the mean primary and secondary delay were 82 days and 58 days, respectively.<sup>[17]</sup> The secondary delay was significantly low when compared to other states of India. This reveals that the response of the health care system in Tamil Nadu is systematized and robust. However, the primary delay duration reflects poor awareness of the disease in the community. The lack of awareness could be attributed to the lower literacy rate, as 82% of the study participants have not completed high school. In addition, 56% of the patients were unskilled laborers. Moreover, more than half of the study population were from rural areas and showed a statistically significant median primary delay ( $P = 0.018$ ). Hence, most of the study participants may have had negligible or no access to proclamations regarding HNC, which has collectively thus resulted in less awareness. Low priority for the importance of health among the population may also be a key reason for their poor health awareness. Lack of awareness also may have led to low perceived seriousness, which in turn has led to the habit of over-the-counter medication during the initial stage of the disease. Our study results are in accordance with several other studies that also reported considerably higher primary delay than secondary delay.<sup>[18,19]</sup> Another study with participants with

better literacy rates and good health infrastructure reported similar primary and secondary delays.<sup>[20]</sup> All these data suggest that literacy rate is an important contributor to health-seeking behavior and, thus, prompt diagnosis.

The primary delay in the rural population was more when compared to the urban population. This may be due to the better accessibility to a tertiary healthcare facility among the urban population. In many parts of South India, access to tertiary care centers is hitherto challenging to the rural sector.<sup>[21]</sup> Also, a study conducted in India revealed shortages of specialists for cancer care in rural health centers.<sup>[22]</sup> The secondary delay was significantly associated with those who have a family member with the habit of smoking/tobacco chewing ( $P = 0.006$ ). These patients refute that these habits will cause cancer since most of their family members with habits are healthy.<sup>[23]</sup> Refusal to undergo cancer-specific diagnostic investigations such as biopsy, even when the physicians expressed concern during the initial stages, contributed to the delay. The secondary delay was very much less than the primary delay since the healthcare professionals already did cancer-specific diagnostic tests in 72% of the cases before the referral to the tertiary health center. This may be attributed to the availability of adequate Government/Private health centers and skilled physicians in Tamil Nadu.

The population's diminutive knowledge of oral cancer, its risk factors, and its specific characteristics predispose them to neglect the initial signs and symptoms. This consequently causes delays in the pursuit of specialized care. Failure to recognize symptoms due to misinterpretation of symptoms to normal bodily complaints has also been reported.<sup>[20,24]</sup> In this study, delay in symptom appraisal may be due to the low perceived seriousness, which may have been rooted in the lower literacy levels of the patients. A previous community-based multi-centric survey reported low awareness of HNC symptoms among patients, ranging between 4 and 22%.<sup>[25]</sup>

In this study, pain was the most important symptom that persuaded them to seek health care. The participants who are the sole breadwinners of the family with obligations and duties toward children caused them to disregard their symptoms and delay in initiating therapy. Another study on breast cancer subjects reported similar findings to that of the current study.<sup>[26]</sup> Fear of treatment effects, such as disfigurement of the face due to surgery and pain after radiotherapy, have also influenced the patients to explore alternatives like traditional medicines, contributing to a significant delay. A systematic review explored the role of fear intensity in the delay of treatment for cancer and myocardial infarction. It concluded that fear is an important contributor that should be considered while facilitating the patients for help-seeking.<sup>[27]</sup>

Lack of support from the family members, including spouses and children, also contributed to the delay. A previous report has suggested that caregivers' life was affected negatively due to the protracted responsibility, thus affecting their routine

activities.<sup>[28]</sup> The caregivers also encounter problems in their work life, family relationships, and financial problems, which may lead to the desolation of the patient.

Interpretative errors due to various cognitive biases, such as the framing bias, were acquired from clinical history, such as diabetes.<sup>[29]</sup> A previous Canadian study identified a lack of physician knowledge leading to provider delay, including inappropriate prescription of medication and lack of knowledge about the signs and symptoms of HNC.<sup>[30]</sup>

Though a minimum fee is charged for therapeutic procedures, the cost of other factors like loss of pay at work due to avail of leave, pay for transport, food and accommodation becomes a burden for the middle-class strata.<sup>[31,32]</sup>

Most cancer treatments in India are provided at tertiary care hospitals, as their treatment requires intensive management. The cost of diagnostic and treatment procedures is higher in private healthcare centers, which leads to delays in seeking healthcare. One-third of the rural population in this study felt that there is a lack of advanced therapeutic procedures in their district health centers, and they had to travel long hours to reach the tertiary centers. This is in accordance with the results of another study.<sup>[33]</sup>

### Limitations and future directions

The first limitation is recall bias. Patients were asked to recall their awareness of their symptoms and their contact with HCPS both of which can be influenced by inaccurate recall.

We attempted to mitigate that limitation by cross verifying the attenders and by referring the medical records of the patient. Patients-reported data concerning the duration of their symptoms are subjective and might have been underestimated. The data collection mainly focused on the cancer patients registered at Royapettah Cancer Hospital only, which caters to patients who, by and large, belong to low socio-economic status and exhibit poor literacy rates. Many other healthcare institutes registering cancer patients could have been included in this study so that this bias could have been eliminated. FDGs are usually conducted for qualitative research. But for this study, conducting FDG became difficult due to the fragile health status of the patients. Challenges at the facility level and provider knowledge of standards of cancer care could have been analyzed to acquire an in-depth understanding of the reasons for the delay. Further multi-centric epidemiological studies involving patients of different socio-economic backgrounds and cultural settings are warranted to ascertain their prognostic implications further.

### CONCLUSION

The study highlighted that a substantial proportion of the delay in cancer diagnosis occurred due to patient-centric reasons, which are evadable. However, there are complex, multifaceted influences involved in causing delays in diagnosis and initiation of treatment, especially among the rural community. Several cancer control initiatives are progressing in the country,

focusing on awareness generation on symptom appraisal, health-seeking behavior, clinical evaluation and diagnosis services, timely referrals, and prompt initiation of treatment. In addition, the general practitioners and the system-led factors also contribute to avoidable delays. Hence, it is equally important for the existing cancer intervention programs to cover the healthcare system of general practitioners, who are the initial point for formal help-seeking. It is also to be noted that cancer specialist hospitals are sparse in rural settings and limited to the public sector. Hence, the peripheral centers need to be strengthened to provide active screening facilities, and setting up adequate specialist hospitals for the public sector is paramount. This can, in turn, reduce undue diagnostic delay and improve cancer care for the community in need.

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Nil.

### Conflicts of interest

There are no conflicts of interest.

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