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Review and Meta-analysis

Oral Cancer Control in Kerala, India: A Comprehensive Analysis of Policy Documents from 1988 to 2020

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Kerala, India, has been a pioneer in cancer control efforts at the state level. This study conducted a comprehensive review of cancer control policy documents in Kerala from 1988 to 2020 to analyze the structure and function of oral cancer control within the broader cancer control framework. A systematic search of PubMed, government websites, and institutional libraries identified 18 relevant documents. Two cancer-specific policy documents and two health policy documents were included for analysis. The review employed a checklist to evaluate the documents' content and strategies. The reviewed documents outlined a pragmatic approach to cancer control in a low-resource setting. The concept of the 'Kerala Cancer Care Grid' emerged as an innovative strategy to address geographical disparities in access to care. The documents emphasized interdepartmental coordination and partnerships with the private sector and community organizations.

Introduction

Non-communicable diseases including cancer are responsible for more than two third of deaths in the world. The majority of these deaths occur in low and middle-income countries [1]. The burden of cancer is increasing in the developing world which demands priority public health response [2, 3]. Cancer is responsible for nine percent of total deaths in India as per the 2018 non-communicable disease country profile published by the World Health Organisation [4]. In the year 2020, India reported the highest number of oral cancer incidence and mortality in the world [5]. Cancer is reported and diagnosed in late stages in most of the developing countries which results in poor disease outcomes [6]. The public expenditure on cancer in developing countries like India remains well below that of high-income countries [7]. Moreover, out-of-pocket expenditure constitutes an important portion of the total cancer-related costs in India [7]. These observations indicate that affordable cancer care remains elusive for most people in India. Health is a state subject in India, the state governments plan and implement their health care programs [8]. The central government provides policy guidance, and assistance in health care [8]. The National Cancer Control Program (NCCP) in India was launched in 1975 and revised in 1984 and 2005 [9] to guide the central and state governments in cancer prevention and control. The government of Kerala was the first state in India to come out with a comprehensive plan for cancer control based on NCCP [10]. The Kerala model of development is illustrated as a sustainable model for health care and human development [11]. Policy responses and priorities for cancer control changed during the last three decades globally [12]. The objective of the present study was to identify the structure and function of cancer control in Kerala, India with specific reference to oral cancer.

Methodology

A document review was conducted to identify the structure and function of cancer control in the state of Kerala, India. Before data collection, a checklist was prepared and obtained approval from the Institutional Ethics Committee. All health-related Kerala government portals and institutional websites were searched electronically. The websites searched include dhs.kerala.gov.in, www.kerala. gov.in, in, and The catalogs of medical libraries of the two comprehensive cancer care centers in the state were searched for cancer-related policy documents. Personal inquiries with experts in the field of preventive oncology were also carried out. A systematic search was done in PubMed using the keywords “Health Policy”, “Cancer”, “Oral cancer”, “Guiding document” and “Kerala”. After these exercises, eighteen documents were identified and four documents were included in the review. Only those documents that mention cancer prevention or early diagnosis were included in the review (Figure 1).

Figure 1. Flow Chart Depicting the Document Selection Process.

The following documents were included in the review:

1) Ten-year action plan for cancer control in Kerala (year: 1988). 2) Draft Kerala Health Policy (Year: 2013). 3) Kerala Cancer Control Strategy 2018-2030 (Year: 2018).

4) Kerala Health policy (Year: 2019). The following policy documents were excluded as they did not contain cancer prevention or early diagnosis. They include the Old age policy 2006, the Pain and palliative care policy 2008, the Women’s Policy 2009, the Kerala liquor policy 2011, the Draft Kerala labor policy 2011 and 2017, Youth Policy 2012, and the Kerala state labor policy 2017. The included documents were reviewed using the Document Review Checklist.

Results

Stated goals and objectives

The objective of the ten-year action plan document was to implement the national cancer control program in Kerala. The main objectives of the national cancer control program were the primary prevention of cancer, especially tobacco-related cancers, early diagnosis and treatment of cancer of the uterine cervix, and lastly distribution and extension of services through Regional Cancer Centres, Medical and Dental colleges. The stated goal of the cancer control strategy document of 2018 was to reduce the burden of common cancers and enhance the quality of life of cancer patients in Kerala through the Kerala Cancer Grid and Universal Health Coverage. The draft health policy of 2013 was prepared to guide the government in achieving the targets set under the 12^{th} five-year plan. The 12^{th} plan envisages achieving universal health coverage for all citizens. Health policy 2019 was prepared with the long-term objective of establishing a universal, free, and comprehensive healthcare system. It aims to strengthen the primary health centers and also to modernize the public health system.

Key institutions/organizations/departments involved in cancer control /oral cancer control

Key institutions found mentioned in the “Ten-year action plan document of 1988” were the Regional Cancer Centre (RCC), the Directorate of Medical Education (DME), the Directorate of Health Services (DHS), and radiotherapy departments in the government medical colleges [13] (Figure 2).

Figure 2.Structure and Function of Cancer Control in Kerala as per the ‘Ten-year Action Plan for Cancer Control

in Kerala-1988'.

Except for one, no private hospitals were mentioned in that document. This shows a clear dependence on the government sector for cancer care in the late twentieth century. Ironically, the 2018 Kerala cancer control strategy document was prepared with inputs from practitioners of various private and government institutions and the document highlighted the need for collaborating with private institutions for addressing the State's cancer care needs [14]. Currently, the Kerala state has three Comprehensive Cancer Care Centres in the government sector, namely, Malabar Cancer Centre (MCC) in northern Kerala, Cochin Cancer Centre and Research Centre (CCRC) in central Kerala, and Regional Cancer Centre (RCC) in Southern Kerala [14]. Moreover, Oncology wings in selected government medical colleges were strengthened as Tertiary Cancer Centres (TCC). The cancer policy documents proposed similar mechanisms for coordinating cancer control activities at State and District levels. They suggested the formation of a State Cancer Control Board(SCCB) and District Cancer Control Committees (DCCC) to oversee the implementation of cancer control strategies in the state [13, 14]. Apart from these institutions and committees, policy documents also considered the community as a key stakeholder in cancer prevention. The Ten-Year Action Plan [13] advocated for the participation of the general community in implementing the recommendations of the NCCP. This was suggested as a strategy to ensure public acceptance of cancer prevention programs [13]. The Kerala Cancer Control Strategy also suggested community participation for reducing risk factor prevalence and improving cancer literacy in the community [14]. The 2013 draft health policy [15] and 2019 health policy [16] documents did not mention the key players involved in cancer control.

Functions/ responsibilities of different actors involved in the cancer control/oral cancer control

The Ten-year action plan document of 1988 specifically described the functions and responsibilities of different players involved in the cancer control program. The three core service providers involved in the program were RCC, the Directorate of Medical Education (DME), and the Directorate of Health Services (DHS) [13]. The DHS and DME were assigned to program implementation, whereas RCC provided technical support for the program. Appropriation and allotting of funds to the participating institutions was the responsibility of the State Cancer Control Advisory Board of Kerala. The utilization of these funds was entrusted to district-level committees [13]. As per the 2018 Kerala Cancer Control Strategy, the SCCB is responsible for operationalizing the different elements of the strategic plan. It also has to mobilize the necessary resources [14]. Unlike the action plan document of 1988, the 2018 Kerala Cancer Control Strategy document entrusted all the cancer control and prevention activities in the state to Kerala Cancer Care Grid [14]. The KCCG is proposed as a network of healthcare institutions under DHS, DME, and private management [14]. The KCCG member institutions will be categorized according to their cancer care facilities and capacities [14]. All the healthcare facilities in the state will be categorized into four levels based on their facilities and capacities to provide cancer care and early diagnosis. Level 1 consists of basic cancer prevention units (Primary Health Centres and Community Health Centres) and level 4 consists of Comprehensive Cancer Care Centres (RCC, MCC, CCRC). Private hospitals will be accommodated at the appropriate level based on their facilities. The Kerala Cancer Care Grid put forth a novel concept of equitable distribution of cancer care services with the participation of private institutions. The cancer care grid will also address the geographical inequality in accessing healthcare [14]. This unique model, if implemented successfully, will revolutionize cancer detection and treatment in Kerala. The proposed Kerala Cancer Care Grid is a network of healthcare institutions whose control is vested in different government directorates and private bodies. Thus the formation of the grid itself is a challenge. So a strong administrative and political will is necessary for the formation and operationalization of the Grid (Figure 3).

Figure 3. Structure and Function of Cancer Control in Kerala as per the Kerala Cancer Care Grid.

The 2013 draft health policy of Kerala proposed to set up early cancer detection facilities and follow-up chemotherapy facilities at district hospitals [15]. The 2019 Kerala health policy also proposed to decentralize cancer treatment facilities to district hospitals [16].

Referral guidelines and diagnostic protocols

Appropriate referral guidelines are necessary for speedy diagnosis and treatment. The 1988 Action Plan provided referral guidance for those cancers detected by a trained health worker [13]. According to the document, when a health worker comes across a person with suspected symptoms of Cancer during screening, should refer to the PHC medical officer, and subsequently, the PHC medical officer should refer them if they are confirmed with some suspicious symptoms to the respective district early cancer detection centers. However, the document failed to recognize the need for referral of precancerous oral lesions and the procedures to ensure proper follow-up and management of those lesions. The documents also ignored the need for initiating tobacco and alcohol cessation programs in medical, and dental colleges, and other secondary and tertiary care centers.

The Cancer Control Strategy document of 2018 [14] explicitly recognized the absence of a proper referral system for cancer care in the state. The document proposed training primary care providers and doctors of all systems of medicine in identifying early warning signs and symptoms of cancer and also for appropriate referral. The document suggested establishing a referral pathway for cancer through the proposed Kerala Cancer Control Grid. The comprehensive cancer care centers (RCC, MCC, and CCRC) were entrusted to prepare the referral guidelines. The following excerpts from the 2018 cancer control strategy document indicate the need for health workers' training for the identification of signs and symptoms of cancer [14].

"As Cancer is still considered to be a highly specialized condition and primary care physicians don't seem to be confident in dealing with these conditions".

For the successful implementation of any referral system, the general public should be familiar with the referral process. One of the objectives of the draft health policy of 2013 was to develop referral networks managed by primary care providers [15]. The 2019 health policy advocates for implementing a strict referral system for accessing sub-district and district hospitals and medical college hospitals [16]. The document further suggested developing protocols and guidelines for implementing referral systems in health services. All four reviewed documents are recommended for implementing a referral system. If properly implemented, Referral guidelines will reduce the burden on tertiary care institutions and will ensure judicious and optimal use of existing cancer care facilities at various levels of the health care system. The suspected cancer referral pathway in the United Kingdom ensures referral to a specialist within two weeks if the symptoms reported by the patients conform with the NICE guidelines [17, 18]. In England, Such guidelines were in practice since 1999 for each of the different cancer types including oral cancer [18]. A similar time-bound referral mechanism should be considered in KCCG. Capacity-building training and sensitization programs for health workers including doctors and infrastructure augmentation should precede implementation of cancer referral guidelines.

Discussion on Early Diagnosis of Cancer

The 1988 Action Plan document proposed to promote the early detection of common cancers like oral cancer that can be detected through a simple physical examination[13]. It suggested educational and legislative measures to promote early detection. Recognizing the inadequacy of manpower in the existing health system to manage cancer screening activities, the document proposed training a large group of community volunteers and health workers on early cancer detection [13].

“No Government, however rich, will be able to mobilize a sufficient number of doctors for early detection”. “Any program aimed at inducting doctors for early cancer detection can be quite expensive and rather wasteful as experience has demonstrated that the ordinary health worker can perform this activity equally well, of course in specific sites”.

The above excerpt suggests training community volunteers in cancer detection, especially oral cancer [13]. Community-based detection programs need a backup of diagnostic infrastructure. Without such facilities, the program would fail. The document further suggested establishing dedicated early cancer detection centers with separate staff and infrastructure [13] across Kerala. The 2018 Cancer Strategy document proposed to establish facilities for the early detection of common cancers in PHCs, CHCs, and Taluk hospitals [14]. The document has given due importance to improving the cancer-related knowledge of health professionals and the general population. It recommended in-service training for primary care practitioners for early detection of cancers. It proposed to include early detection and diagnosis of cancer in the Medical curriculum and cancer health education in the school curriculum [14]. Public health education campaigns were also planned to promote self-examination of the oral cavity [14]. The 2018 cancer strategy document highlighted that oral cancer is amenable to early detection due to the presence of precancerous lesions. The document made it clear that the focus of our cancer control activities should be early diagnosis and not population-based cancer screening [14]. The document further notes that

“At present, Kerala should focus on early diagnosis and not on population-based screening, which is resource-intensive and current infrastructure including qualified manpower is inadequate to meet the demands of an organized screening program” [14].

The 2013 draft health policy document proposed to enhance the dental treatment facility at district hospitals by providing oral cancer detection facilities [15]. The 2019 health policy document also noted the importance of early diagnosis in mortality reduction but did not elaborate on the strategies for achieving the same [16]. It recognized the necessity of early detection of breast cancer and cervical cancer but didn’t mention oral cancer [16].

Stated goals, objectives, and strategies for oral cancer control

The stated objectives of the 1988 Action Plan document related to oral cancer control include generating awareness about tobacco and cancer in the community, training people in early cancer detection activities, setting up dedicated and accessible cancer diagnostic services, and incorporating cancer detection, diagnosis, and treatment in the medical curriculum [13]. The first two objectives can be achieved through community-level interventions whereas the rest of them need provider and system-level interventions. The following activities were suggested in the 1988 Action Plan for oral cancer control. They include the preparation of awareness materials on early symptoms and self-examination, proper enforcement of tobacco control laws, and the establishment of early cancer detection centers [13]. The 2018 Cancer strategy document puts integrated cancer prevention through people’s participation and strengthening of the healthcare delivery system as its objectives [14]. The targets specific to oral cancer to be achieved before 2030 include Reduction of the incidence of oral cancer to less than 15%, Improve 5-year oral cancer survival to 60%, More than 55% of oral cancer should be diagnosed early, More than 80% of the population should be aware of warning signs of cancer, and More than 90% of oral cancer patients should complete their treatment within a year from the date of diagnosis [14]. Though the document advocates for early diagnosis, the period to be considered “early” is not defined in the document. The 2013 health policy document suggests the decentralization of cancer care by equipping secondary- level institutions with health services [15].

Resources allocated –infrastructure and man power-for cancer control

The Action Plan of 1988 and the Cancer Strategy of 2018 suggested utilizing the existing infrastructure of the health service department for implementing primary and secondary prevention programs[13]. The Action Plan of 1988 allocated 76.4% of the total program expenditure for strengthening the cancer treatment facilities in medical colleges [13]. The directorate of health service, which coordinates the early cancer detection program was given 7.2% of the total program expenditure [13]. It clearly shows that the 1988 Action Plan had allocated nearly three fourth of its proposed budget for strengthening the oncology units in Medical colleges. The lower share of funds for early diagnosis activities can be justified as the establishment of adequate treatment and diagnostic facilities is a prerequisite for initiating any screening / early detection program [19].

The 2018 cancer strategy document did not elaborate on the financial aspect of executing the strategy. Both the cancer policy documents had tasked the state Cancer Control Boards to raise the necessary resources for executing these strategies. Governments over the past 30 years had invested in developing cancer treatment facilities in the public sector. Despite this, many districts in Kerala did not have any tertiary cancer care centers. So the 2018 Kerala Cancer Control Strategy document rightly discusses the inequity in the distribution of cancer diagnostic and treatment facilities in Kerala [14]. The document suggested forecasting the human resource and infrastructural requirements for the state and creating sufficient manpower for cancer care. Through the Kerala Cancer Care Grid, a lot of cancer care activities like early detection, diagnosis, management of early lesions, follow-ups, palliative treatments, etc. can be entrusted to primary and secondary care institutions. This will relieve the burden on comprehensive cancer care institutions. The document suggests increasing the post-graduate seats in oncology-related specialties and super specialties [14]. The 2019 health policy document also suggested increasing specialty and super specialty seats in medical colleges [16].

Context of discussion on oral cancer

In all the reviewed documents, oral cancer is discussed mainly in the context of early detection. Other contexts for discussion on oral cancer include discussions on common cancers, cancer incidence in males, training health workers in cancer screening and early detection, health education, and discussion about risk factors like tobacco and alcohol use.

The 2018 cancer strategy document says “Primary care practitioners in public services will be reoriented by in-service training initiatives to provide oral visual inspection among symptomatic people and in users of tobacco or alcohol or both and refer those with suspicious lesions to facilitate early diagnosis and prompt treatment of oral cancers” [14]. The draft health policy of 2013 discusses oral cancer in the section about “oral health” [15]. The 2019 health policy document did not mention oral cancer [16].

Extent of participation

The ten-year action plan of 1988 entrusted the Directorate of medical education with cancer therapy-related activities and the Directorate of health services with early detection activities [13]. The regional cancer center was instructed to provide training and other technical support for the program. These three agencies had to work in close coordination for the implementation of the Action plan [13]. The cancer control strategy document of 2018 focuses on the proposed Kerala Cancer Care Grid and District cancer control committees for the implementation of its strategies. The document specified the extent of participation of every institution in the Grid [14]. For that purpose, all participating institutions were categorized into four levels based on the extent of the oncological services they provide. Level one is Basic Cancer Prevention Unit and level four is the Comprehensive Cancer Care Centres. Both government and private institutions were included [14].

In conclusion, policy responses and priorities for cancer control changed during the last three decades globally. The focus has shifted to early diagnosis in developing countries for the optimal

use of available resources. The cancer control strategies outlined in the reviewed documents presented a pragmatic vision for cancer control in low-resource settings. It recognized interdepartmental coordination and partnership with private sector institutions and community organizations as crucial for achieving comprehensive cancer control. The proposed Kerala Cancer Care Grid is a unique concept to address the geographical inequality in access to cancer care. It set specific targets for risk reduction and early diagnosis of common cancers including oral cavity cancers. Successful operationalization of the Kerala Cancer Care Grid will result in equitable, accessible, and affordable cancer care for all citizens in the state and the same can be replicated in other States and countries. In the reviewed documents, oral cancer was discussed mainly in the context of early detection, health education, and capacity building at the primary care level.

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Conflicts of interest

There are no conflict of interest

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