

# The rising incidence of cancer – a sociological study in Kuttanad, Kerala

Nayanan C.C, Research Scholar, Department of Sociology & Social work, Annamalai University,  
[nayanance@gmail.com](mailto:nayanance@gmail.com),

Dr. N. Sukumaran, Assistant Professor, Department of Sociology,  
Rani Anna Collage for Women, Thirunelveli.

## Abstract

According to media reports, the specter of cancer is gripping Kuttanad, a water-logged rice bowl in central Kerala that is home to about 1.8 million people and where roughly 15,000 tonnes of chemical fertilizers, 500 tonnes of insecticides and 50 tonnes of fungicides are used annually at a cost of about Rs 6 crores. Local doctors, farmers and sundry organizations have demanded that a thorough scientific study be undertaken to assess the incidence of cancer in the area. And doctors confirm that 499 patients have received treatment at the radiotherapy department of the Alappuzha Medical College Hospital between January and May 2018, against 355 during the same period last year and 300 the year before, mostly from the Kuttanad belt. Health workers need to ensure that the residents of this area are more aware about the various cancer screening programs and the healthy lifestyle changes, which can prevent cancers. The economic burden of cancer in the area is also very high. The incidence of a particular cancer may be low in an area, but its impact on the economic burden might be high. There should be additional funds should be allocated in the budget for drug and disposables support for poor patients; promote setting up of super specialty hospitals in all states by reducing cost of land, electricity, water and taxes, furniture, equipment, drugs and disposables; and promote emergence of new health institutions and ensure high-quality care at affordable cost.

**Key words:** *Chemical fertilizers, cancer, water pollution, pesticide usage.*

## Introduction

According to media reports, the specter of cancer is gripping Kuttanad, a water-logged rice bowl in central Kerala that is home to about 1.8 million people and where roughly 15,000 tonnes of chemical fertilizers, 500 tonnes of insecticides and 50 tonnes of fungicides are used annually at a cost of about Rs 6 crores. Local doctors, farmers and sundry organizations have demanded that a thorough scientific study be undertaken to assess the incidence of cancer in the area. And doctors confirm that 499 patients have received treatment at the radiotherapy department of the Alappuzha Medical College Hospital between January and May 2018, against 355 during the same period last year and 300 the year before, mostly from the Kuttanad belt. Highest numbers of cases have been reported from Pulinkunnu panchayath. Report on the survey, conducted in August last by the Department of Community Medicine of the Alappuzha Medical College, the Regional Prevention of Epidemic and Infectious Diseases (PEID) Cell and the State Disease Control and Monitoring Cell (SDCMC), found that, 8,091 people from 1,809 houses in the seven wards of Kainakary panchayat, found that 91 deaths, making up for 27 per cent of the total 334 deaths in the seven wards from July 2004 to July 2009, were due to cancer. So for the last 10 years the number of reported cases is in an alarming rate.

## Statement of the problem

Present study entitled as “*The rising incidence of cancer – a sociological study in Kuttanad*” intended to look into various problems put forward by the over use of pesticides in Kuttanad, mainly the sever problems which affect the health of people of Kuttanadu. It is because of the continuing non-availability of pure drinking water and lack of measures to control lifestyle diseases, apart from confirming an above average prevalence of cancer. Interestingly, the survey says it could not confirm media reports that there was an association between cancer deaths/prevalence and pesticide pollution in drinking water, more so because cancer was multi-factorial. However, it quotes various studies to point out that use of fertilizers and pesticides were 50-75 per cent more in Kuttanad than other regions and it also points out that over 50 per cent of chemicals used in Kuttanad were highly toxic. Survey conducted by Kerala Agricultural University has recommended regular reviewing of cancer cases here with primary health centres to register and review the cases every month; focused cancer control measures; screening of specific cancers and training for women on breast self examination; spreading of awareness; ensuring palliative care to terminally ill. Experts who spoke at a seminar titled ‘Environmental degradation and cancer in Kuttanad’ here recently, observed that soil in some parts of the region was extremely acidic. There was also high concentration of chromium, cadmium, iron, and aluminium in water and soil. The concentration of iron and aluminium has also reached dangerous levels,” said, B. Smitha of the Centre for Pest Management, Mancompu. Many have attributed the indiscriminate use of pesticides and chemical fertilizers for the rise in cancer cases in the region. The seminar was organised jointly by the Literary Workers Cooperative Society, Press Club, and Kuttanad Heritage Centre.

## Scope of the study

Present study comes under the area of Sociology of Health and, it can explore the sociological aspects of the impact of the over use of pesticides. There are lot of studies are available, in the field of agriculture and Medical science, and are not dealing with social dimension of the problem; so present study might be the first one in Kuttanadu to analyse the health problem in a sociological frame work.

## Objectives of the Study

- To study the intensity of the spread of cancer in Kuttanad
- Factors responsible for the spread of cancer in Kuttanad
- To analyse the pesticide use practice as well as the type of pesticides sprayed in Kuttanad
- To study the psycho social problems of cancer patients in Kuttanad
- Suggest measures to prevent pesticide poisoning

## Hypothesis

There is relationship between pesticide use practices and causes of cancer

## Methodology

Unit of study – selected cancer patients constitute the unit of study

Sampling method – from Pulinkunnu Gramapanchayth 73 cases were reported in the year of 2018, and for the present study 1/3 of 73 were selected by simple random sampling. So the number of respondents will be 24.

## Findings of the study

### *Intensity of the spread of cancer in Kuttanad*

Name of Panchayath	No. cancer patients
Veliyanad	40
Kavalam	40
Pulincunnu	73
Neelamperoor	57
Muttar	36
Ramankari	40
Total	286

Veliyanad Community Health Centre Chief Medical Officer S. Anil Kumar said there was an above-average prevalence of cancer in Kuttanad. According to the latest figures released by the Health Department, the number of cancer patients in six grama panchayats under the Veliyanad block was 286 as listed in the table above and, “the average incidence rate in Veliyanad block has increased and it is more than double the national average of 120 cases per one lakh population,” Mr. Kumar said. (Hindu, Jan 2018)

### *Factors responsible for the spread of cancer in Kuttanad*

Pesticide spraying was carried out by most of the respondents as a secondary occupation in addition to other wage earning jobs in the rice fields of Pulinkunnu. The respondents selected for the present study constitute farmers, agricultural labourers, fishermen, house wives and manual labourers comes under the age group of 34 to 74. Pesticide spraying was reported as the primary occupation by majority of respondents that is 14, 12 of them had been carrying out the pesticide spraying job for more than 30 years while only 2 of the respondents were in the job for 20-25 years. A considerable proportion reported that they work for more than 4 hours a day during the season and 3 acres (300 cents/121 ares) in a day. With regard to the agricultural labourers, all of them are women (6), used to spend 7-8 hours per day in the field. 2 of them are fishermen and 1 manual labourer and 1 another is a housewife.

The factors responsible for the spread of cancer in Kuttanad especially in Pulinkunnu panchayth seems the same. *The Hindu, Jan 2018* reports as, Experts who spoke at a seminar titled ‘Environmental degradation and cancer in Kuttanad’ here recently, observed that soil in some parts of the region was extremely acidic. There was also high concentration of chromium, cadmium, iron, and aluminium in water and soil. All the respondents are of the opinion that, pesticides are poisonous; and have adverse effects on human health. The response given by the respondents in terms of poisonous behaviour and affecting human health was consistent with other studies. This incongruence between knowledge, practice and morbidity has however been noted by several studies and are thought to be intricately linked to the risk perceptions and even to socio psychological underpinnings of health belief among the respondents. Studies have been inconclusive about why high knowledge does not translate itself into good practices, but the thinking has been on the lines of health belief models where a personal experience of an adverse event is likely to positively influence perception and even personal protective behaviour. They also highlight the need to understand the determinants of such individual behaviour to develop effective risk communication strategies.

Direct inhaling at the time of spraying of pesticides, direct contact with the pesticide applied leaves of plants, inhaling of poisonous air, improper disposal of leftover solution into water and land, washing of hands, clothes containers and sprayers in streams and water also lead to poisoning of water bodies and land at the same time. Most of the applicants and agricultural labourers responded that, the smell of pesticides remains in their sweat and/or urine for a few days following spraying. Majority of respondents reported as they ate, drank and smoked at workplace which makes them very likely to be exposed to pesticides through hands. It was reported that following use of 2,4-D, the smell would persist in the hands for a few days. To get rid of the smell, they paste table salt all over the body or take bath after some time. Another common practice noted was the wiping of sweat from the forehead while spraying during which increases the dermal contact to the chemicals. All these unhealthy practices lead to acute pesticide poisoning and result in severe health problems and occurrence of cancer too.

### ***Pesticide use practice by respondents***

***Pesticide use behaviour and potential health risks among pesticide applicators in Kuttanad area, Jasmine Jomichen, 2014*** states that, It was interesting to note that the colloquial name by which they referred to the pesticides in general was 'visham' (poison) or 'marunnu' (drug). The perception underlying is that it was a poison for the pests and a medicine for the plant. Similar 'duality in perception' regarding pesticides has been reported among Filipino farmers and even conclude that such perception can adversely affect their risk perception and preventive behaviour. Majority of by the respondents are of the same opinion about an extremely harmful practice of pesticide application, using cocktail by mixing two or more pesticides. All the respondents are of the opinion that, they are practicing traditional way of spraying by holding the sprayers on their back, and could be manual or power operated. And sometimes spillage of chemicals also happens due to the blockage in the nozzle of sprayers, it leads to direct contact of chemicals with skin.

### **Type of pesticides used**

Majority of the respondents are of the opinion that, they were not aware about their scientific names, compounds or harmful nature too. Without knowing their compounds applicators mix up with other pesticides to make cocktails and sometimes this new solution will be most dangerous for health. Good number of respondents used wooden sticks for mixing purpose remaining used their bare hands and only negligible numbers used gloves while mixing. The most often used pesticide (70 %) as reported by the applicators was 2, 4-D (2,4-Dichlorophenoxyacetic acid), Monocrotophos and Methyl parathion (organophosphorous insecticides) and Paraquat dichloride (bipyridylum herbicide) which has been banned and restricted respectively for rice crop. Most of the respondents reported that, Class Ib pesticides which are highly hazardous in nature, followed by the Class Ia (extremely hazardous), Class II (moderately hazardous) and Class III (slightly hazardous).

Source of knowledge about spraying explains that, majority of the respondents are of the opinion that, they did not attend any training programmes they are traditionally farmers and experimenting with their own knowledge, some others gathered information from pesticide sellers only limited number of farmers are properly trained by government agriculture department on proper spraying techniques and related facts.

**Personal Protective Behaviour** - The adoption of proper safety measures such as goggles, apron, hat, mask or rubber gloves were used by a nominal number of respondents. Mask was not preferred by many as they reported having breathing difficulty or discomfort during hot and humid climate when wearing mask.

All these unhealthy practices by farmers and agricultural labourers (20, 83%) resulted in morbidity due to cancer and rest of the respondents (4, 17%) were turned into victims due to these unhealthy practices by the cultivators.

### *Socio-economic problems of respondents*

Most common types of cancer found within the respondents are pancreas cancer, followed by breast cancer, leukemia, and cancer in lung, stomach and uterine. The remaining 14.5% had cancers of other sites such as brain, and skin.

*Economics of Cancer Care: A Community-based cross sectional study in Kerala, Dr. Vidya Jha, 2019* found that, the incidence of cancer cases in Kerala is increasing day by day. Although the treatment of cancer has shown remarkable advances, it has come with increasing costs. The cost of cancer treatment is associated with expenditures on cancer prevention, screening and treatment services, time and effort spent by patients and their families, lost productivity due to cancer-related disability; and premature death due to cancer. Expenses for cancer care are extremely high. The extent of the resulting economic burden is determined by different factors, including family income, socioeconomic status, insurance status, and stage of disease.

*Karunya Health Scheme* was launched in 2012, to provide health insurance coverage for the under privileged sections of the society at a nominal premium charge. Benefits of Karunya health scheme functions similar to that of a critical illness can avail treatment for health ailments such as cancer, the government offers treatment benefits up to 2 lakhs. For certain cases of extreme illnesses, the treatment benefits can be increased up to 3 lakhs. Another Health Insurance scheme for the poor is *Rashtreeya Swasthya Bheema Yojana*, centrally sponsored scheme for the workers in unorganized sector as well as applicants from BPL families. The objective of RSBY is to provide protection to BPL households from financial inabilities arising out of health shocks that involve hospitalization. Present study found that, 98% of the respondents approached government medical college Alappuzha for medical consultation; Kerala is well known for the implementation of National health policies and Health Insurance scheme and other health assistance programmes. Respondents who attained support from Department of Health government of Kerala reported they are satisfied with the health assistance programmes.

Most of the respondents faced lot of constraints with regard to nonmedical factors, such as, travel expense, expenditure incurred for special food, food and travel expenses for bystanders, and loss of income due to morbidity. 20 out of 24 respondents left their traditional means of income, due to their ill health (14 were traditional farmers and 6 were agricultural labourers). From the present study, it is found that, 83.3% had left their job it constitute 27.3% of the total population, it will be a serious threat to Kuttanad as well as Alappuzha too. 58.6% of respondents were leaders of the family their illness will adversely affect the daily affairs of family, and when the women (6/24 for present study, 16% or 1 in six) had to go away from their income. Another serious problem found that, when a man or woman who is a leader of main source of income for the family forced to leave their job due to ill-health will affect the education of their children, health and food availability to their home. And it is found that, 83.3% respondent family has to face financial problems due to nonmedical reasons.

### **Measures to prevent pesticide poisoning**

From the findings of the study we can agree with the following preventive measures proposed by *Pesticide use behaviour and potential health risks among pesticide applicators in Kuttanad area, Jasmine Jomichen, 2014*

- Regular surveillance and monitoring required addressing occupational exposure to pesticides and associated health effects among agricultural workers
- Periodic training programs for safe use of pesticides conventionally targeted at farmers need to



include pesticide applicators and agriculture labourers.

- The monthly meetings of padashekharas could be platforms to disseminate and discuss the recommended standards of use of pesticides and importance of Personal Protective Measures.
- Subsidising and designing Personal Protective Measures to suit the tropical climate should be encouraged.
- Collective effort to gather empty pesticides containers and safe disposal could be initiated
- Strict enforcement of environmental regulations related to pesticide use and community monitoring to ensure sustainability
- Special attention needs to be paid to the low perception of risk among agriculture works; further research on the risk perception of pesticide use among agriculture workers is required to understand and manage the issue better.

## Conclusion

Prevalence of acute pesticide poisoning among pesticide applicators due to pesticide poisoning exists among the pesticide applicators; as well as allied labourers, and residents in Kuttanad area. Majority of the cancer cases reported from Kuttanad is because of poisoning of land, water and air with pesticides as well as the patient belongs to the category of agriculture and allied labourers. Farmers are not aware about the impact of pesticide on health and personal protective measures. Unsafe storage and disposal practices threatening the ecosystem were found among the applicators. Health workers need to ensure that the residents of this area are more aware about the various cancer screening programs and the healthy lifestyle changes, which can prevent cancers. The economic burden of cancer in the area is also very high. The incidence of a particular cancer may be low in an area, but its impact on the economic burden might be high. There should be additional funds should be allocated in the budget for drug and disposables support for poor patients; promote setting up of super specialty hospitals in all states by reducing cost of land, electricity, water and taxes, furniture, equipment, drugs and disposables; and promote emergence of new health institutions and ensure high-quality care at affordable cost.

## References

1. Frumkin H, editor. Environmental health: from global to local. 2nd ed. Wiley: San Francisco; 2010.p 1221.
2. Bhardwaj T, Sharma JP. Impact of pesticides application in agricultural industry: an Indian scenario. Int J Agric Food Sci Technol 2013;4:817–22.
3. Joshi M. Pesticide consumption scenario. Perils of pesticide. Foundation books; 2011. p29-42.
4. Pesticide use behaviour and potential health risks among pesticide applicators in kuttanad area, Jasmine Jomichen, 2014
5. Economics of Cancer Cancer Care: A Community-based cross sectional study in Kerala, Dr. Vidya Jha, 2019
6. The Hindu, Jan 2018