PUBLIC HEALTH SURVEILLANCE OF INFECTIONS AND BEHAVIOURAL RISK FACTORS LIKE POOR SANITATION IN A CHANGING ENVIRONMENT

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ABSTRACT

BACKGROUND

Public health surveillance is a continuous, systematic collection, analysis and interpretation of health-related data needed for the planning, implementation and evaluation of public health practice. The major objective of the study is to analyse the rate of infections of the people in Mullanginavilai Panchayat during their behavioural risk factors like poor sanitation.

MATERIALS AND METHODS

A two-month descriptive study was carried out among the 50 residents in Mullanginavilai village in Karungal, Kanyakumari district, Tamilnadu, India. The Socioeconomic status (Age, Sex, Occupation, Income); Health status (Acute disease, Chronic disease); and Drainage facilities has been obtained.

RESULTS

The socio-economic and health survey of the community showed that 28% of the population have no job at all and 24% among them are economically poor class. 24% of the respondents have chronic disease. Anaemia was highly prevalent and severe with 38% severe anaemia, was strongly concentrated in children and undergone treatment. Infection with malaria parasite was the next highly prevalent, which was about 16%. Other amoebic dysentery and skin infection is milder about 12%. In the community, 50% of the people had the habit of taking anti-helminthic drugs for every 6 months. Others were not particularly children.

CONCLUSION

The study showed significantly high level of contamination of soil and water due to parasites. This might be a reason for infections among the neighbouring community people.

KEYWORDS

Mullanginavilai Village, Health Surveillance, Anaemia, Malaria Parasite, Amoebic Dysentery, Anti-Helminthic Drugs.

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BACKGROUND

Public health surveillance is the continuous, systematic collection, analysis and interpretation of health-related data needed for the planning, implementation and evaluation of public health practice.⁽¹⁾ Such surveillance can serve as an early warning system for impending public health

emergencies; document the impact of an intervention or track progress towards specified goals; and monitor and clarify the epidemiology of health problems, to allow priorities to be set and to inform public health policy and strategies.⁽²⁾

The health care needs of the world's population are likely to undergo dramatic changes due to the ongoing demographic transition. Non-communicable diseases (NCDs) such as diabetes, cancer, depression and heart disease are rapidly replacing infectious diseases and malnutrition as the leading causes of disability and premature death. Eighty percent of total deaths due to non-communicable diseases occur in the low income countries.⁽³⁾ Men and women are equally affected. Cancer, cardiovascular diseases (CVD) and diabetes are becoming of serious concern, accounting for 52 percent of deaths and 38 percent of disease burden in the WHO South-East Asia Region (SEAR). With the current trends

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the top five causes of disability adjusted life years (DALYs) lost in 2020 are likely to be ischaemic heart disease, unipolar major depression, road traffic injuries, cerebrovascular diseases and chronic obstructive lung disease.⁽⁴⁾ It has been estimated that a 2 percent reduction in chronic diseases death rates per year globally could result in saving about 36 million premature deaths by the year 2015.⁽⁵⁾

While mortality due to communicable diseases is decreasing and that for non-communicable diseases is rising at a very rapid pace.⁽⁶⁾ The health policy makers are faced with the burden of providing resources for the control and prevention of both the existing communicable diseases and the increasing number of non-communicable diseases. This becomes difficult since the programmes for prevention and control of communicable diseases drain the meagre resources.⁽⁷⁾ It is therefore not surprising that India has faced a serious handicap while planning and initiating programmes and activities to combat non-communicable diseases including cardiovascular diseases.⁽⁸⁾

Helminths or worm infestations refer to worms that live as parasites in the human body and are a fundamental cause of disease associated with health and nutrition problems beyond gastrointestinal tract disturbances.⁽⁹⁾

Globally, over 3.5 billion people are infected with intestinal worms, of which 1.47 billion are with roundworm, 1.3 billion people with hookworm and 1.05 billion with whipworm.

School children aged 5 - 15 years suffer the highest infection rate and worm burden that attributes to poor sanitation and hygiene.⁽¹⁰⁾ About 400 million school-age children are infected with roundworm, whipworm and hookworm worldwide, a large proportion of who are found in the East-Asia region.⁽¹¹⁾

Parasites consume nutrients from children they infect, thus retarding their physical development. They destroy tissues and organs, cause abdominal pain, diarrhoea, intestinal obstruction, anaemia, ulcers and other health problems.⁽¹²⁾

All of these consequences of infection can slow cognitive development and thus impair learning. De-worming school children by anthelmintic drug treatment is a curative approach for expelling the heavy worm load. However, drug therapy alone is only a short-term measure of reducing worm infection and reinfection is frequent.⁽¹³⁾ Control measures through improved sanitation, hygiene and de-worming are needed to prevent infection and re-infection.⁽¹⁴⁾

UNICEF has supported many governments in this (and other) region to assist in the provision of water supply and sanitary facilities and intensive hygiene education in many schools through the Water, Environment and Sanitation (WES) Programme.⁽¹⁵⁾

The UNICEF supported school sanitation and hygiene education (SSHE) programme, and other programmes could effectively enhance behaviour change in children to break the routes of worm transmission and other water-borne diseases.⁽¹⁶⁾

The major objective of the study is to analyse the rate of infections of the people in Mullanginavilai Panchayat during their behavioural risk factors like poor sanitation.

MATERIALS AND METHODS

Study Population

A descriptive study was carried out in Mullanginavilai village in Karungal, Tamilnadu, India. Mullanginavilai is the smaller

village and is located just off the south coast of mainland Nagercoil. Mullanginavilai is almost entirely rural and the population survives on daily wages like farming, construction works etc.

The staple foods are fish, vegetables and rice. Meat and chicken is eaten rarely and large fishes are relatively expensive. Small fish, legumes and vegetables are eaten more commonly.

Data Collection

Data was collected by providing questionnaire scripting of state-added questions. The core portion of the questionnaire takes an average of 15 to 20 minutes to conduct for each individual.

In August – September 2015, a detailed health survey was conducted among the 50 residents in the village. The socioeconomic status (Age, Sex, Occupation, Income); Health status (Acute disease, Chronic disease); and Drainage facilities has been obtained. The obtained result was to be tabulated, analysed and discussed with available scientific literature.

RESULTS

An investigation on the prevalent of health effects among different sources of the dumping yard and surroundings were conducted. A survey on the socio-economy and health of the neighbouring community was also conducted.

The socio-economic and health survey of the community showed that 28% of the population have no job at all and 24% among them are economically poor class. 24% of the respondents have chronic disease.

The population in this study were mainly children about 56% followed by adults and old age which was about 32% and 12% respectively. The sex ratio is 19: 31 (Male: Female) out of 50. The detailed results of the socio-economic parameters were shown in Table 1.

Anaemia was highly prevalent and severe with 38% severe anaemia strongly concentrated on children and undergone treatment. Infection with malaria parasite was the next highly prevalent which was about 16%, other amoebic dysentery and skin infection is milder about 12%. In the community 50% of the people had the habit of taking anti-helminthic drugs for every 6 months, others were not particularly children. The results are tabulated in Table 2.

Most of the residents around the dumping yard are victimised with unending problem such as mosquito/ fly menace, contaminations of well by wasted (by birds) and of foul smell (Table 2).

Social	Parameter	Number	Percentage
Sex Wise	Male	19	38
	Female	31	62
Age Wise	0-15	28	56
	15-50	16	32
	51-75	6	12
Occupation	No job	14	28
	Coolie	8	16
	Business		
	Student	28	56
Economic Status	Poor	12	24
	Moderate	32	64
	Rich	6	12

Table 1. Socio-Economic Parameter

		Number	Percentage
Acute Diseases (During the Past One Year)	Skin infections	6	12
	Allergy	7	14
	Breathing problem	4	8
	Fever (malaria)	8	16
	Diarrhoea	6	12
Chronic Disease	Anaemia	19	38
	Cancer	0	
Deworming	Diabetic	12	24
	Every 6 months	25	50
Sanitation	Near to toilet- Yes	32	64
Open Well	No	18	36
Drinking Water (Boiling)	Yes	36	72
Problems Posed by Dumping Yard	Mosquito/ fly menace	39	78
	Foul smell	41	82
	Contamination by well by wastes (by birds)	22	44

Table 2. Health Status and Sanitation

Chart 1 and 2. Showing Health Status and Sanitation

DISCUSSION

Population growth and economic development have brought increasing amounts of solid waste and the quantity is increasing day by day. The disposal of waste in open landfill is the easiest method, but it results in a series of adverse health effects to the interacting community including fringe area people.

The leachate from landfill deteriorates the quantity of the drinking water in the near vicinity. The relation between several vector-borne diseases and waste dumping site are well established. However, studies on the possible role of dumping yard in the propagations of pathogen are least explored. The present study has exposed the severity of the situation, especially of parasitic threat.⁽¹⁷⁾

A total of eight (36%) people have open wells near dumping yard, and there was a 44% chance the well was contaminated with the wastes. Several reports are available in agreement with present finding.

Although, it is generally believed that the rates of other diseases will decrease following improvements in water and sanitation. There have been no systematic reviews of this. The health impact of water and sanitation interventions of the disease: ascariasis (*Ascaris lumbricoides*), diarrhoeal diseases (including measures of nutritional status and child survival), dracunculiasis (*Dracunculus medinensis*), hookworm infection (*Ancylostoma duodenale* and *Necator americanus*), Schistosomiasis (*Schistosoma haematobium* and *S. mansoni*).

They are widespread in developing countries or because they constitute serious problems where they exist or both. All developing countries are affected by diarrhoeal diseases and ascariasis. The other four diseases are somewhat more restricted in their range; although, they are all prevalent in some developing countries except dracunculiasis, which only occurs in parts of Africa and Asia.⁽¹⁸⁾

These diseases also illustrate the variety of mechanisms through which improved water and sanitation can promote health. Four basic aspects were considered: Sanitation (i.e. human excreta disposal), water quality, personal hygiene and domestic hygiene.⁽¹⁹⁾

Personal hygiene refers to water used for cleaning the body including water for the face, hands and eyes; domestic hygiene refers to water used to keep the home clean (e.g. food, utensils and floors).

Each disease is affected by one or more of these interventions. For example- providing safe, potable sources of drinking water will probably prevent transmission of dracunculiasis, while using larger quantities of water for personal hygiene will probably interrupt the spread of trachoma. The incidence, prevalence and/or severity of all these diseases are reduced by water and sanitation interventions.⁽²⁰⁾

Anthelmintic treatment can be aimed at particular occupational or age groups that are thought to represent those most at risk of acquiring heavy infection and subsequently developing severe morbidity. This is, for instance, the basis for school-based health programmes aimed at deworming children of STHs and schistosomiasis.⁽²¹⁾

In this target population, treatment is administered to all individuals regardless of whether or not they are patently infected. In areas of substantial endemicity and according to infection prevalence thresholds, community (mass) treatment is recommended. Other strategies include mass screen and treat (targeting selective treatment to those with patent and detectable infection at the point of screening) or treating individual cases in clinical as opposed to community settings.⁽²²⁾

CONCLUSION

The study showed significantly high level of contamination of soil and water due to parasites. This might be a reason for infections among the neighbouring community people.

The long-term control and elimination of these helminth diseases will also depend on improved control tools such as more effective anthelmintics and/ or vaccines, control of vectors, intermediate hosts or reservoirs, improved diagnostics and surveillance tools, sanitation, hygiene, socio-economic improvement and environmental sustainability of the interventions. If they become available, antiparasitic vaccines could have a major impact on sustained control of helminth diseases and could be combined with MDA to provide complementary approaches that may improve control and reduce selection for drug resistance.

Vector control, where applicable, practical and cost effective remains a useful addition to chemotherapy-based intervention that can lead to marked reductions in transmission and reinfection rates. Efforts to integrate various MDA programmes may bring at first logistical challenges, but in the long-term benefits to the overall impact of intervention strategies.

Though, the study is limited with small sample size and short span of study period, the data is significant, both from academic and public points of view.

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