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Streamline population strategies to control COVID 19 outbreak in a high risk district of Sri Lanka- Success story of Kalutara district

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Abstract

Kalutara became second only to Colombo district, which is the capital of country and which consistently reported the highest number of confirmed cases of COVID 19 throughout the earlier period of COVID 19 spread in Sri Lanka. Strategies to be implemented were on 13.03.2020 at the time of 7 COVID-19 cases were reported as imported cases to Kalutara district. Thereafter, shifting of type of cases occurred from imported cases to local resident cases in a short period of time. Strategies need to differ with countries' situation of case loads. Strategic preparedness and response plan was usually being tailored according to the country epidemiological statistics and resource settings. Proper and timely application of epidemiological measures to control population based epidemics by developing a practical approach and a proactive response plan is challenging but does appear to provide significant realistic benefits.

Keywords: COVID 19; Kalutara; Epidemics;

1. Introduction

COVID 19 pandemic has emerged in the Kalutara district of Sri Lanka as a local epidemic of public health importance, as well as a public health emergency. Kalutara became second only to Colombo district, which is the capital of country and which consistently reported the highest number of confirmed cases of COVID 19 throughout the earlier period of COVID 19 spread in the country (1, 2). It had been observed that the context of socio-cultural factors, high population densities in some villages, abnormally high number of families in one household and high numbers of family members in one family may contribute to the fast spread of the disease in particular areas in Kalutara district.

Kalutara is one of the largest and highly populated districts with tourist-attracting coastal areas in Sri Lanka. It is about 40 km from capital of the country, Colombo. Based on the annual report of Department of Census and statistics in 2012, the total population of Kalutara district was 1,221,948 in area of 65,610 square kilometers(3). Though District has 17 administrative areas, Beruwala Urban Council area, which is densely populated, accommodates 34,256 population in an area of 5.18 square km, with an average of 3-5 families and 10-15 family members in one household.

Social stigma in the context of health is the negative association between a person or group of people who share certain characteristics and a specific disease. In an outbreak, this may mean people are labelled, stereotyped, discriminated against, treated separately, and/or experience loss of status because of a perceived link with a disease (4). The current COVID-19 outbreak has provoked social stigma and discriminatory behaviors against people of certain ethnic backgrounds as well as anyone perceived to have been in contact with the virus.

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2. Justification

Population strategies differ with the local context, epidemiology of the COVID 19 and characteristics of the population as a whole (5, 6). We address the strategic gap by the approach of utilizing standard demographic and epidemiological principles to cater to the designated population to control the spread of the disease in Kalutara. We focus on Kalutara, because it was among the first districts to report a sudden rise of COVID 19 patients in a very short period of time. This paper makes three important contributions. They are timely decision on initiation to detect asymptomatic cases early, implementing applicable strategies to local settings and importance of optimal coordination of curative and preventive sectors to act simultaneously.

3. Strategies planned

Strategies to be implemented were on 13.03.2020 at the time of 7 COVID-19 cases were reported as imported cases to Kalutara district. Thereafter, shifting of type of cases occurred from imported cases to local resident cases in a short period of time. Strategies need to differ with countries' situation of case loads. Strategic preparedness and response plan was usually being tailored according to the country epidemiological statistics and resource settings. There are 4 different stages in every pandemic response plan and 10 stages of every outbreak investigations (7–9).

In pandemics, four stages of pandemic are: 1. No cases reported 2. Sporadic cases 3. Clusters of cases 4. Community transmission.

In first two stages, measures should be continuing with screening for cases, quarantining and travel bans depending on epidemiological case indicators of other countries (9–11).

But in the third stage, contact tracing should be intensified on top of other two measures, of what Singapore conducted to control by catching the chain of cases like what we have been doing for Leprosy in Sri Lanka (12, 13).

But, social isolation and social distancing, by declaring curfew and region-wise locking down to reduce social mixing would be the last resort(14), when countries are experiencing community transmission stage, in which mostly, patients are being presented to local General Practitioners and local health institutes. These plans can be tailored to the individual countries according to the experts' opinions at national level amalgamated with the experience of field level officers. Our country is still in the third stage of the response plan, and measures taken so far appear to be adequate.

4. Strategies implemented

First seven cases were reported in Kalutara and subsequently we had to keep quarantining and continue regular supervision of 68 foreigners in tourist hotels, 450 local residents in five administrative areas and one homeless returnee from Italy in an elderly home.

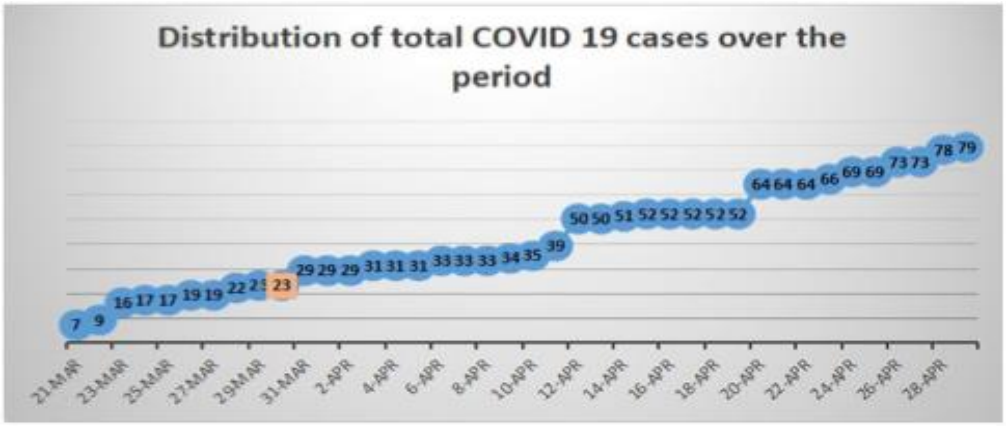

Figure 1 Distribution of total COVID 19 cases over the period

Up to 29.04.2020 from 21.03.2020, we have reported 79 COVID 19 confirmed cases and the following figure 1 showed, its distribution over the period. Patient number 23 in orange colour explained about the patient, who was suspected to

be the contagious person for 21 confirmed COVID 19 patients and first two rises of the curve which depicts sudden rise of patients 39 to 50 and patients 52 to 64, showed below.

From first seven cases, a sudden rise of cases was reported in Kalutara in the next two weeks and one administrative area named Beruwala, within the period of one week, showed a gradual increase from 46% to 72% out of total cases in Kalutara district between end of March and early April 2020. Therefore, at district level meeting, we planned the following strategies to be implemented immediately to reduce the case loads and control the outbreak in the Beruwala area.

- Facilitate all foreigners (68) under quarantine in tourist hotels of Kalutara district to fly back home.
- Obtain inter-sectoral support at District level meetings, where district level politicians, state officers, Police, SL Army were participated.
- Built up a strong health team representing both curative and preventive sectors to combat against the pandemic.
- Utilized the existing District General Hospital, Kalutara with minimum and quick modifications, as a designated hospital for COVID-19 patients to cater to all admissions of the district.
- Since this outbreak of COVID-19 had spread in a highly populated Muslim community area, explained the trend, scenarios and repercussions to Beruwala community leaders to solicit their support.
- Early initiative on Community screening to detect asymptomatic contagious COVID 19 cases, which invariably reduce the symptomatic caseload and prevent probable delayed presentation to designated hospital of district.
- Following having 4 positive asymptomatic cases of COVID 19 by community screening in 14 random samples taken from 219 first line close contacts of "patient 23" reported on 29.03.2020, all 219 individuals were dispositioned to a quarantine centre in Punani, Batticaloa.
- Establish another COVID 19 designated hospital by transforming existing base hospital near Beruwala Urban Council area. We trained staff to take samples for PCR test, supplied personal protective equipment and modified the hospital infrastructure to receive COVID- 19 patients for triage.
- Conduct 10 community screening programmes till found none and continue the programmes in sentinel areas.
- Maintain district COVID 19 Statistics, regular descriptive and inferential analyses every four days , mapping of COVID-19 cases in Kalutara district and continuing surveillance
- Reporting all data at District level coordinating committee meetings, National centre of epidemiology and to Presidential Task Force to control COVID-19 in Sri Lanka.
- Promote donations and budgeting for logistics, infrastructure, test kits and instruments needed for screening at community level.

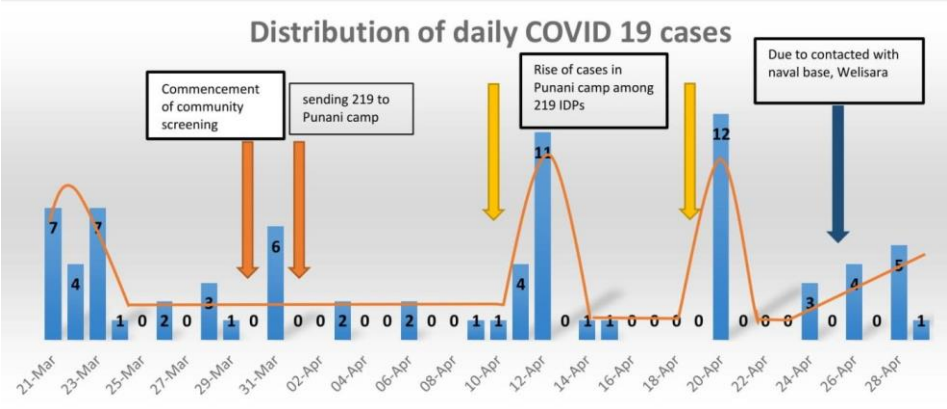

Figure 2 Distribution of daily COVID 19 cases with different population strategies

The following figure 2 showed the time and case load, where we initiated our population strategies to control COVID-19 in Kalutara district. Initiation of community screening and as a result, sending 219 highly suspicious people for COVID 19, out of Kalutara district to quarantine centre, supports to have continuous and stable low case reporting for 21 days in district and undoubtedly, two peaks of cases at quarantine centre, Punani accommodated only our internally displaced persons (IDPs) explained the appropriateness of the decision

Figure 2 and figure 3 show, how its effect decelerated the rise in hospital and in the community. Finally, no cases have been reported for the last 21 days from Beruwala high risk area.

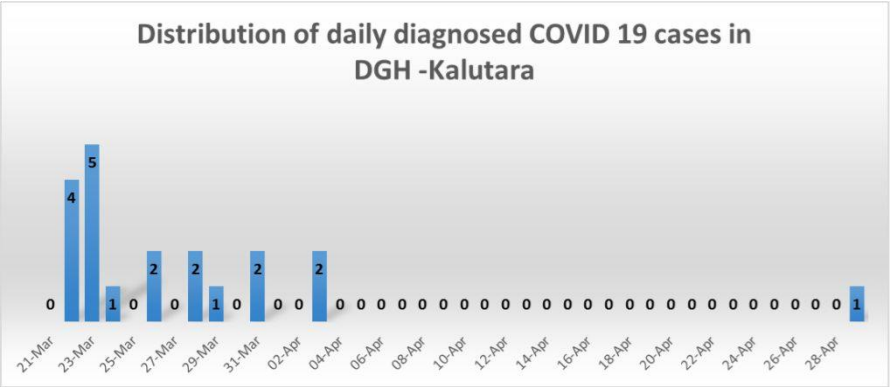

Figure 3 Distribution of daily diagnosed COVID 19 cases in District General hospital, Kalutara

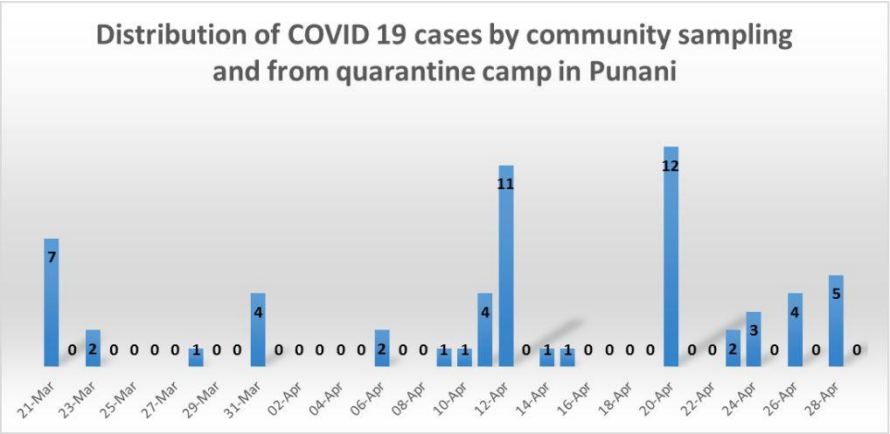

Figure 4 Distribution of COVID 19 cases by community screening and from quarantine camp in Punani

5. Conclusion

Proper and timely application of epidemiological measures to control population based epidemics by developing a practical approach and a proactive response plan is challenging but does appear to provide significant realistic benefits. Benefits observed in this response plan were the early identification and isolation and maintaining of COVID-19 at controllable levels in the district.

Compliance with ethical standards

Acknowledgments

District General Hospital-Kalutara, Base hospital-Beruwala, Regional Director of Health services-Kalutara, National Institute of Health Sciences-Kalutara, District Secretary's office-Kalutara.

Disclosure of conflict of interest

None

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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