

Profile of communicable diseases reported under integrated disease surveillance programme from a teaching hospital

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ABSTRACT

Background: Integrated disease surveillance programme (IDSP) maintains laboratory-based disease surveillance system for epidemic prone diseases in our country. This study was undertaken to analyze the epidemiological profile and seasonal variations of various communicable diseases reported to IDSP over a 5-year period from 2014 to 2018 from our institute. **Methods:** All laboratory confirmed communicable diseases reported under IDSP over a 5-year period were analyzed for their distribution with respect to epidemiological variables, geographical distribution, and seasonal variation. **Statistical Analysis:** Data was entered in MS excel sheet and the results expressed as percentages. **Results:** A total of 3,602 communicable diseases were reported under IDSP during the time period from January 2014 to December 2018. Dengue continues to be the most common reported disease over the years followed by Scrub typhus which had an outbreak in 2018. Furthermore, adult males in the productive age group of 21–30 years are commonly affected by almost all communicable diseases. Seasonal variation was noted in communicable diseases with highest number of cases in the rainy season of October to December in Puducherry as well as a peak in January and June. **Conclusions:** The pattern of communicable diseases that have been diagnosed and reported will prove to be useful in planning appropriate preventive and containment measures in the near future as well as in creating awareness in the community.

Keywords: Communicable diseases, dengue, IDSP, Puducherry

Introduction

Surveillance and reporting of communicable diseases is the key component to combat and control diseases and prevent epidemics of these diseases.^[1] Seasonal variation of communicable diseases varies from country to country, between different regions and also over time. There are changes in the affected age groups across different diseases over different time periods.^[2-6]

It is an essential responsibility of all hospitals to send timely and reliable information to the concerned health authorities.^[7] India

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has launched Integrated Disease Surveillance Programme (IDSP) as one of the major National programme under National health mission for all states and union territory. The objective of the programme is to strengthen and maintain laboratory-based disease surveillance system for epidemic prone diseases.^[1] IDSP is a combination of active and passive systems that use a single infrastructure to gather information about multiple communicable diseases.

Some of the common diseases reported are: dengue fever, scrub typhus, malaria, and enteric fever. Analysis of the pattern of diseases occurrence and reporting at the Institute level will be useful for a better understanding of the seasonal variation.

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Hence, this study was undertaken to find the various laboratory confirmed communicable diseases reported to IDSP from our Institute.

Methods

This retrospective descriptive study was conducted in the Microbiology department of a tertiary care center hospital during the period from May to June 2019.

All laboratory confirmed communicable diseases reported under IDSP from January 2014 till December 2018 were analyzed.

The diseases included were:

Dengue/DHF/DSS, Chikungunya, Japanese Encephalitis, Meningococcal meningitis, Enteric fever, Diphtheria, Cholera, Shigella dysentery, Viral Hepatitis A, Viral Hepatitis E, Leptospirosis, and Malaria.

Ethical considerations

Prior to commencement of the study, written permission was obtained from the Head of Department of Microbiology to access the data regarding the weekly/daily IDSP reports submitted to the State government authority. After ethical clearance from Institutional Ethics Committee, analysis of the data was carried out to describe the number of various communicable diseases and their distribution with respect to age, gender, geographical distribution (district wise location), and seasonal variation. In order to maintain confidentiality only the epidemiological data was collected without mentioning the names or house address of the patients. Ethics approval obtained on 7th May 2019.

Statistical considerations

Data was entered in MS excel sheet and the results expressed as percentage with epidemiological profile.

Results

A total of 3,602 communicable diseases were reported under IDSP from our institute during the time period from January 2014 to December 2018.

Total of 3,602 diseases laboratory confirmed cases reported included dengue, Scrub typhus, enteric fever, malaria

(both *Plasmodium vivax* and *P. falciparum*), Shigellosis, chikungunya, and few cases of hepatitis E, leptospirosis, and one case of cholera.

Dengue cases constituted 70.6% of all reported diseases, followed by scrub typhus (20%) and enteric fever. Highest numbers of dengue cases were reported in 2017. Scrub typhus cases peaked in 2018. [Table 1].

Overall male to female ratio for all reported diseases was 1.7:1

63.4% (2285/3602) of all reported diseases were in males and 36.6% (1317) in female patients. Chikungunya cases were reported in 2 males and 2 female patients.

There was one male patient with cholera and another male patient with laboratory confirmed leptospirosis.

Males were more affected by all diseases except scrub typhus (M: F 0.9:1)

Age-wise distribution

Majority of the cases (26.4%) belonged to the age group of 21–30 years followed by age group of 31–40 years (22.4%) [Table 2].

14.7% (531/3602) cases were below 10 years of age. For cases of scrub typhus the predominantly affected age group was 0–10 years (189/722) which constituted 26.1% of total cases of scrub typhus with one case of a new born male.

Seasonal and yearly variation

Seasonal variation in number of diseases reported was noticed particularly for dengue and scrub typhus.

The highest numbers of cases of dengue were reported in 2017 (1293). The month of October had the maximum number of dengue cases reported yearly followed by November and September [Table 3, Figure 1]. The observed dengue seropositivity percentage showed an increase with increase in the monthly rainfall. The increased seropositivity was also shown with fall in temperature.

The maximum cases were reported in 2018 (173/722). The cases of scrub typhus were maximum in the months of November, December, and January in all years (343/722) [Figure 2].

Table 1: Showing year wise distribution of most commonly reported communicable diseases

Year	Dengue	Scrub	Enteric	P.vivax	P.falciparum	Shigella	Hepatitis A	Chikungunya	Cholera + Others*	Total
2014	470	112	44	14	6	6	1	1	1*	655
2015	311	173	19	13		2		1		519
2016	192	127	75	18	4	2		1	1*	420
2017	1293	137	25	35	2	3	6	1	1*	1503
2018	280	173	17	26	4	2	2		1	505
Total	2546	722	180	106	16	15	9	4	1 + 3*	
%	70.6%	20%	4.9%	2.9%	0.44%	0.41%	0.2%			

Table 2: Showing age distribution of diseases

Age in Years	Dengue	Scrub	Enteric	Malaria	Shigella	Hepatitis A	Total (+others)
0-10	315	189	12	7	4	4	531 (14.7%)
11-20	210	77	43	8	1	2	342 (9.4%)
21-30	756	71	65	52	3	2	951 (26.4%)
31-40	600	143	31	28	3	1	807 (22.4%)
41-50	324	102	20	19	-	-	465 (12.9%)
51-60	104	72	5	3	2	-	189 (5.2%)
61-70	201	41	4	5	2	-	254 (7%)
71-80	34	21	-	-	-	-	55 (1.5%)
81-90	2	6	-	-	-	-	8 (0.22%)
Total	2546	722	180	122	15	9	

Table 3: Showing Dengue seasonal and yearly variation

	2014	2015	2016	2017	2018	No. of cases (%)
January	18	24	24	6	10	82 (3.2%)
February	14	19	13	6	5	57 (2.2%)
March	9	5	7	11	3	35 (1.3%)
April	0	10	5	20	4	39 (1.5%)
May	3	1	4	14	1	23 (0.9%)
June	5	10	3	17	1	36 (1.4%)
July	15	9	7	40	11	82 (3.2%)
August	18	19	14	106	12	169 (6.6%)
September	118	53	35	289	12	507 (19.9%)
October	122	58	36	491	62	769 (30.2%)
November	100	73	40	222	103	538 (21.1%)
December	48	30	4	71	56	209 (8.2%)
	470	311	192	1293	280	2546

With reference to enteric fever cases, the month of June had the maximum reported 26/180 followed by February [Figure 3].

With regards to other reported diseases namely malaria, hepatitis A, hepatitis E, chikungunya, leptospirosis, and cholera, there was no marked monthly/seasonal variation in the cases reported although malaria cases were seen to be higher in the month of October each year.(13/122)

Distribution of cases reported from Puducherry is shown in Table 4.

No case of falciparum malaria was reported from Puducherry.

Dengue cases contributed to the maximum of the diseases reported, with total of 563 seropositive cases [Table 4]

Cases of diseases from residents of neighboring districts in Tamil Nadu were reported. These districts included Villupuram (670 cases-18.6%), Cuddalore (441 cases-12.2%) and Chidambaram (181 cases-5%).

Dengue was the most common disease reported from these districts.

Discussion

The main purpose of reporting communicable diseases is to prevent the spread of the disease, epidemics, death, or

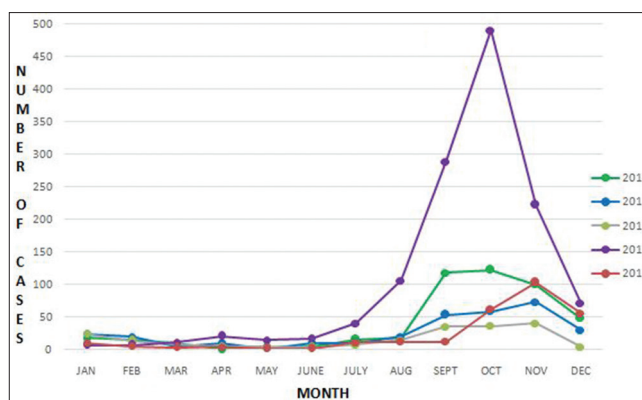


Figure 1: Showing seasonal/monthly variation of dengue cases

disability resulting from the disease. The best communicable disease reporting and surveillance system should provide rapid identification, timely response, and information on the incidence and prevalence of disease.^[1,6] The IDPS in India is serving this purpose.

In the present retrospective study, a total of 3,602 communicable diseases which were confirmed by laboratory findings were reported under IDSP in a 5-year time period from 2014 to 2018. The common diseases reported in this time period were dengue, scrub typhus, typhoid, malaria and shigellosis. Other diseases reported were chikungunya, hepatitis A and E, leptospirosis, and one case of cholera.

Dengue cases were the maximum reported constituting 70.6% of the cases followed by scrub typhus (20%) and enteric fever (4.9%). Urbanization, water stagnation, construction projects, and indiscriminate disposal of articles like tyres, containers, cups, etc., create the condition for mosquito breeding and thereby spread of dengue and other vector borne diseases.

Gopalakrishnan in their study on notifiable diseases from Kancheepuram district also reported dengue to be the commonest reported disease.^[4] Manjula *et al.* analyzed data from Central Kerala regarding surveillance of communicable diseases and found that dengue continues to be a major public health problem. They postulated that urbanization and increased construction provide vector breeding sites in their State.^[8]

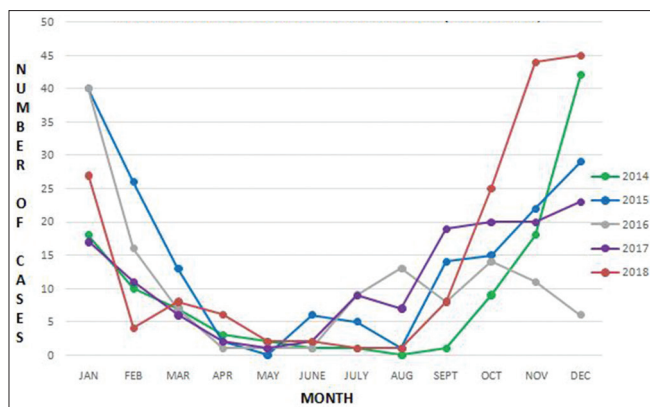


Figure 2: Seasonal/monthly variation of scrub typhus cases

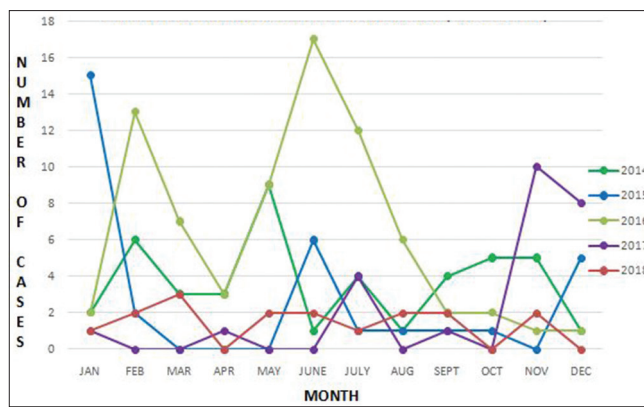


Figure 3: Seasonal/monthly variation of enteric fever cases

Table 4: Showing number of reported diseases from Puducherry

Year	Dengue	Malaria	Typhoid	Shigella
2014	42	4	21	1
2015	85	2	5	1
2016	32	-	6	48
2017	334	7	4	2
2018	70	8	9	2
Total	563 (78.4%)	21 (2.9%)	45 (6.2%)	54 (7.5%)

A male preponderance was noted in our study with 63.4% patients being male. The M: F ratio was 1.7: 1 which is similar to other studies on notifiable diseases in India.^[3,4] This may be due to the fact that more males were engaged in outdoor activities making them susceptible to communicable diseases.^[3]

The majority of cases in this study belonged to the adult age group of 21–30 years similar to other reports of communicable diseases. This is the productive age group economically and because they travel because of work or education, they may be more prone to communicable diseases.^[4,9] The extremes of ages are less commonly affected except for cases of scrub typhus which involved the age group of less than 10 years. Therefore, scrub typhus should be considered as one of the differential diagnosis in a child with acute undifferentiated febrile illness.^[10]

Seasonal variation was noticed for diseases particularly dengue, scrub typhus, and malaria which peaked in the rainy season (October to December) and colder months of January. Typhoid cases peaked in summer as did cases of Bacillary dysentery. This is concordant with other studies.^[3,4,8,10]

The reasons for such seasonal variation include environmental factors like scarcity of water leading to poor hygiene in summer months and vector breeding in rainy seasons as well as host factors in winter months.^[10]

The predominant cases reported from Puducherry were of dengue cases. The number of Shigella and typhoid cases suggest a need for better hygiene especially during summer months. The student

population who eat from restaurants are particularly prone. No case of Plasmodium Falciparum malaria was reported from Puducherry.

The rest of the population belonged to districts in Tamil Nadu which are the catchment area of our tertiary care center.

No case of diphtheria was reported from our institute in the past 5 years which shows that the vaccination coverage was good.

There was also only one case of cholera confirmed.

This profile of communicable diseases reported would help in increasing the index of clinical suspicion among patients with fever reporting to primary health care setting and the need for appropriate laboratory investigations to confirm the diagnosis. It also raises community health awareness and contributes to effective, timely management of disease outbreaks.

Summary

1. The present retrospective study was conducted with the objectives to enlist the laboratory confirmed communicable diseases reported from a tertiary care hospital in South India during a five year period from January 2014 to December 2018 and to describe the epidemiological profile and seasonal variation of these diseases.
2. A total of 3,602 communicable diseases were reported under IDSP during this period.
3. Dengue cases were the maximum reported constituting 70.6% of the cases followed by scrub typhus (20%) and enteric fever (4.9%).
4. A male preponderance was noted in our study with 63.4% patients being male. The M: F ratio was 1.7: 1
5. The majority of cases of communicable diseases belonged to the adult age group of 21 to 30 years.
6. Seasonal variation was noticed for diseases particularly dengue, scrub typhus and malaria which peaked in the rainy season (October to December) and colder months of January.
7. No case of diphtheria was reported in the five years included in the study.
8. The majority of cases from Puducherry were dengue cases which showed a peak in 2017.

Conclusion

Profile of communicable diseases reported under IDSP from our Institute for 5 years showed that dengue continues to be the most common reported disease over the years followed by scrub typhus which had an outbreak in 2018. Furthermore, males and adults in the productive age group of 21–30 years are commonly affected by almost all communicable diseases.

Seasonal variation was noted in communicable diseases with highest number of cases in the rainy season of October to December in Puducherry as well as a peak in January and June.

The pattern of communicable diseases that have been diagnosed and reported over 5 years by this Institute will prove to be useful in planning appropriate preventive and containment measures in the near future as well as in creating awareness in the community.

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Conflicts of interest

There are no conflicts of interest.

References

1. [https://www.nhp.gov.in/integrated-disease-surveillance-program-\(idsp\)_pg](https://www.nhp.gov.in/integrated-disease-surveillance-program-(idsp)_pg).
2. Zhang X, Hou F, Li X, Zhou L, Liu Y, Zhang T. Study of surveillance data for class B notifiable diseases in China from 2005 to 2014. *Int J Infect Dis* 2016;48:7-13.
3. Asaithambi A, Alagappan U, Ragavendran S, Ganesan V, Saraswathi, Lalithambigai, *et al*. A study on notifiable diseases reported in a tertiary care hospital. *Int J Community Med Public Health* 2017;4:1656-60.
4. Revathi R, Gopalakrishnan S. Study of notifiable infectious diseases reported to a tertiary care hospital in Kancheepuram district of Tamil Nadu. *Nat J Res Com Med* 2014;3:1-6.
5. Moradi G, Asadi H, Gouya M, Nabavi M, Norouzinejad A, Karimi M, *et al*. The communicable diseases surveillance system in Iran: Challenges and opportunities. *Arch Iran Med* 2019;22:361-8.
6. Mandja BM, Bompangue D, Handschumacher P, Gonzalez JP, Salem G, Muyembe JJ, *et al*. The score of integrated disease surveillance and response adequacy (SIA): A pragmatic score for comparing weekly reported diseases based on a systematic review. *BMC Public Health* 2019;19:624.
7. Dehcheshmeh NF, Arab M, Foroushani AR, Farzianpour F. Survey of communicable diseases surveillance system in hospitals of Iran: A qualitative approach. *Glob J Health Sci* 2016;8:44-57.
8. Manjula VD, Bhaskar A, Sobha A. Surveillance of communicable disease from a tertiary care teaching hospital of central Kerala, India. *Int J Med Public Health* 2015;5:317-21.
9. Rose W. Scrub typhus in children. *Curr Med Issues* 2017;15:90-4.
10. Kalyani D, Shankar K. Assessment and seasonal variations of communicable diseases: 3 year study. *Int J Res Med Sci* 2016;4:1186-92.