Morbidity Profile and Seasonal Variations of Communicable Diseases among Hospitalized Patient in a Teaching Hospital Solapur (Maharashtra), India

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Abstract

Objective: The objective of this study was to determine the morbidity profile of communicable diseases patients being admitted at the teaching hospital and the seasonal trend of diseases. Materials and Methods: The study was done retrospectively using secondary data, over a period of 1 year from April 1st 2014 to March 31st 2015, at the medical record section of Government teaching hospital, Solapur, Maharashtra, India. The study was aimed to study the pattern of communicable diseases among hospitalized patients. The data were collected from the communicable disease register maintained at medical record section under the department of community medicine and the diagnosis was classified into acute diarrheal diseases, dengue fever, hepatitis, typhoid, malaria, measles, diphtheria, meningitis, swine flu and tetanus. Results: A total of 1410 patients of communicable diseases had been admitted in hospital, which included 774 males and 636 females. It was observed that, ADDs constituted about more than one third burden of the communicable diseases followed by dengue fever. While tetanus was least recorded. Significant gender differences were evident in the prevalence of hepatitis, typhoid, malaria, meningitis and measles. Most of the diseases were observed to have a seasonal variation, with the ADDs and dengue fever peaking in the monsoon and winter months respectively. Conclusion: on the basis of these finding it can be concluded that most common Inpatient communicable diseases are ADDs and dengue fever whereas least is tetanus. The knowledge of the burden of the diseases would assist the health administrators in judicious allocation of the resources.

Keywords: *Communicable diseases, Hospitalized patients, seasonal variation*

I. INTRODUCTION

Communicable disease is an illness due to specific infectious agent or its toxic products capable of being directly or indirectly transmitted from man to man, animal to animal or from the environment (through air, dust, soil, water, food, etc) to man or animal. [1] Although disease patterns change constantly, communicable diseases remain the leading cause of morbidity and mortality in least and less developed countries, like India. Despite decades of economic growth and development in countries that belong to the World Health Organization (WHO) South-East Asia region most countries in this region still have a high burden of communicable diseases. This raises some urgent concerns. Despite policies and interventions to prevent and control communicable diseases, most countries have failed to eradicate vaccine preventable diseases. [2] A constant watch on the changing pattern of the diseases provides us an opportunity for timely intervention as well as monitor the progress of the ongoing disease control programs and helps in optimizing the allocation of the limited resources. The success of a surveillance program depends on the "Recognition" of the diseases, the timeliness and completeness of the "Reporting," and the effectiveness of feedback "Response."[3] Emerging infections like H1N1 (2015) often take a heavy toll of life and by rapidly spreading across borders are responsible for much concern and panic. Present study aims at studying existing disease burdens for communicable diseases and patterns of seasonal variations in a tertiary care institution reflecting the disease burden in the community. The objectives of the study were to:

1. To study the morbidity patterns of communicable diseases of the patients being admitted at the teaching hospital.
2. Find out the seasonal distribution of the communicable diseases.

II. MATERIALS AND METHODS

A. Study Design

The study was carried out at a tertiary care hospital attached to Government Medical College, Solapur, Maharashtra, India. The retrospective hospital record based study was carried out over a one year period of April 1st 2014 to March 31st 2015. Data obtained from medical record section, department of community medicine, Government medical college and hospital, Solapur, Maharashtra with the aim of achieving the above-stated objectives.

B. Tools used and Methods of Data Collection

The data were collected from the communicable diseases register maintained at medical record section and the diagnosis was classified into Acute diarrheal diseases (ADDs), Hepatitis, Malaria, Dengue fever, Measles, Diphtheria, Tetanus, Swine flu, Meningitis and Chickenpox .

patients of communicable diseases were 1410 in which 774 males and 636 females.

C. Statistical Analysis

The data were entered and analyzed using the Microsoft Excel and EPI info version 6. The total number of the patients suffering from the different communicable diseases and their percentages in the different months and according to the gender was calculated. Discrete data were analyzed using Pearson's Chi-square test to see the significance of the observed differences between the males and females. *P* values <0.05 were considered significant. Line graphs were drawn to depict a comparative account of the seasonal variation of different diseases, which included most frequently diagnosed communicable diseases.

III. RESULTS

It was observed that acute diarrhoeal diseases (39.3%) were the most commonly diagnosed diseases followed by dengue fever (13%), hepatitis (12%), meningitis (10.4%), malaria (10.1%), measles (4.7%), swine flu (3.6%), typhoid (2.8%), diphtheria (2.5%), chickenpox (1.1%) and tetanus (0.2%) in decreasing order. ADDs were found to be the major contributors to the morbidity more than one third followed by dengue fever and least one was tetanus.

Significant differences in the distribution of certain diseases were observed between males and females. Among the communicable diseases there was a preponderance of hepatitis (24.7% vs. 19.6%), typhoid (6.5% vs. 3.8%), malaria (44.1% vs. 43.5%), meningitis (81.7% vs. 63.9 %) and measles (77.8% vs. 35.5%) in males, whereas acute diarrhoeal diseases (76.6% vs. 68.8 %), dengue fever (56.5% vs. 55.9%), swine flu (36.1% vs. 18.3%) and diphtheria

Sample size and period of study

Data were collected from medical record section regarding all admitted patients of communicable diseases during the period of 1 year from 1st April 2014 to 31st March 2015 for which the patient sought treatment at the present institute. A total Indoor

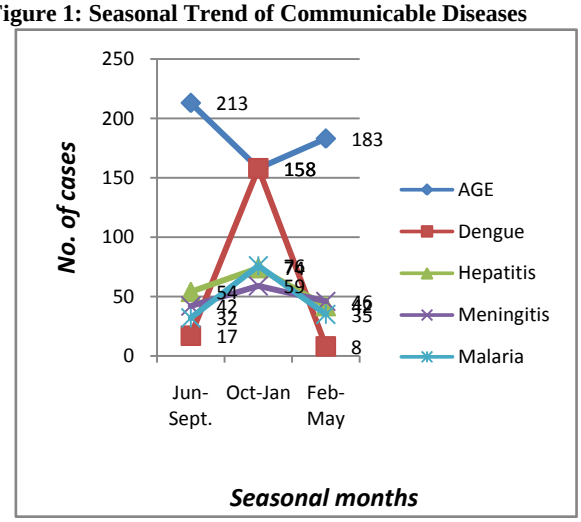
(64.5% vs. 22.2%) were more commonly reported in females [Table 1].

Table 1: Distribution of Communicable Diseases in the Admitted Patients

Category of morbidity	Diseases	Male *n* (%)	Female *n* (%)	X^2 value	P value	Total
	ADDs	273 (68.8)	281 (76.6)	5.82	0.001	554 (72.5)
Water borne	Hepatitis	98 (24.7)	72 (19.6)	2.83	0.04	170 (22.3)
	Typhoid	26 (6.5)	14 (3.8)	2.87	0.04	40 (5.2)
		397 (52.0)	367 (48.0)			764
	Dengue fever	100 (55.9)	83 (56.5)	0.01	0.45	183 (56.1)
Vector borne	Malaria	79 (44.1)	64 (43.5)			147 (43.9)
		179(54.9)	147 (45.1)			326
	Measles	56 (77.8)	11 (35.5)	17.05	0.001	67 (65.0)
Immunizable	Diptheria	16 (22.2)	20 (64.5)			36 (35.0)
		72 (69.9)	31 (30.1)			103*
Other infectious diseases	Meningitis	94 (81.7)	53 (63.9)	8.06	0.002	147 (74.2)
	Swine flu	21 (18.3)	30 (36.1)			51 (25.8)
		115 (58.1)	83 (41.9)			198
	* chikenpox and tetanus was not included.					

The plot for the seasonal variation of the five common communicable diseases revealed an increase in the number of cases suffering from acute diarrhoeal diseases in the months of June to September i.e. monsoon season. A similar upsurge of the dengue fever, malaria and hepatitis was observed in the months of October to January i.e. winter season [Figure 1].

Figure 1: Seasonal Trend of Communicable Diseases



IV. DISCUSSION

The results of the present study indicate that acute diarrheal diseases and dengue fever were the most commonly diagnosed communicable diseases and tetanus was scarcely found .Studies conducted in India, Republic of Korea, Saudi Arabia, and Nepal have found a similar pattern of diseases, with the most common illnesses being acute diarrheal diseases .[4-7] and tetanus prevalence 3% in Malaysia. [8]

Our results differed from those, Shanker *et al*. found that ARI was the commonest illness for which treatment was sought (12.6%), followed by wounds and wound infection (10.1%), APD (7.4%),and diarrhea/dysentery (6.6%). [9] Weekly reports of listed communicable diseases from various departments and centers of Government Medical College, Chandigarh, involved in clinical care and laboratory diagnosis, revealed that out of 14,082 cases of various communicable diseases, 9166 (64.62%) were of ARIs, 3586 (25.78%) of acute diarrheal diseases (ADDs), and 576 (4.10%) were of pulmonary tuberculosis. [10] Cohort study in school of Ratchaburi, Thailand showed that for dengue infection no gender difference. [11]

The variations in the frequency of the occurrence of the various diseases could be attributed to the differences in the environmental and the host factors in the different geographic areas.

About more than one third disease burden in the admitted patients of communicable diseases at tertiary hospital due to the ADDs followed by dengue fever. The high prevalence of communicable diseases conforms to the situation of a developing country where communicable diseases propagate in the environment milieu of malnutrition, poverty, infection, and other social factors. The three big infectious diseases, HIV/AIDS, TB, and malaria, claimed 5.7 million lives worldwide in 2001. [12]

The lower percentage of the immunizable and vector-borne diseases is a good sign and gives us an indication of the successful implementation of the various programs for the control of the diseases. On the other hand, the relatively more number of the cases of water-borne communicable diseases and other infectious diseases is a matter of concern and necessitates the implementation of specific programs with a focus on the important diseases contributing to increased morbidity.

Seasonal variation of the diseases, a subject of much epidemiological interest, has been studied for centuries. Temperature, humidity, ultraviolet radiation (UVR), flora, and fauna all change with seasons, and consequently cause a change in the frequency of occurrence of various diseases. The maximum burden of all the diseases as well as communicable diseases e.g. diarrheal diseases in the present study was found in the monsoon months of June to September. This is different from the observation made at Government Medical College, Chandigarh, which revealed that the overall reporting of communicable diseases was significantly more during winter and summer compared to the monsoon season. [10]

The reason for the observed upsurge of the diseases could be probably the transition phase of the season from summer to rainy which makes the adjustment of the host to the changed weather difficult, thus increasing his/her susceptibility. It also makes the conditions favourable for the breeding of the vectors and the survival of the agents of the diseases. The seasonal variation corresponding to the seasonal increase in the population of vectors for transmission of the diseases was authenticated by the upsurge of the water-borne diseases such as diarrheal diseases and hepatitis in the rainy season. Similarly, other diseases such meningitis was also reported to have a seasonal variation among the inpatients of tertiary hospital. Similar observations regarding the existence of a seasonal pattern of dengue fever was found in study done in Faisalabad, Pakistan during 2012. [13]

A study conducted in Government Medical College, Chandigarh, differ for seasonal variation as found in our study, with most cases of ADDs (38.89%) and pulmonary tuberculosis (4.68%) in summer, and typhoid (1.57%) and viral hepatitis (1.23%) in the monsoon season. [10] A larger study population observed over a longer period of time would provide us a clearer picture, and such data on the seasonality of the diseases would assist in the planning and implementation of control measures.

V. LIMITATIONS

Data collected was secondary data and Respiratory infections were excluded. Although patients in this study comprised a sizable proportion of cases from Solapur and adjoining districts, the finding of this study need to be carefully extrapolated, and cannot be generalized to a large population being record based study. This is one of limitation of our study. We also need to study the seasonal variation of the diseases over a longer period of time spanning over years to draw a precise statement regarding the consistency of the seasonal variation. Nevertheless, the findings of the study are helpful to the health planners for the judicious allocation of the limited resources and further exploration of the association of the factors with the occurrence of the diseases for the achievement of the optimal health of the people.

VI. CONCLUSIONS

On the basis of the finding of this study, it was concluded that most common communicable disease in hospitalized patient was ADDs followed by dengue fever. Peak of ADDs and Dengue fever was observed in monsoon and winter respectively. Many diseases have a seasonal variation and the burden of these diseases could be reduced if we take measures to detect the changes in their trend through the implementation of surveillance programs. Control of the communicable diseases may entail measures for enhancing the socioeconomic development along with specific health measures like immunization for a sustained effect.

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