Morbidity Profile and Seasonal Trend in Indoor Patients in a Tertiary Care Hospital, Chandrapur

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ABSTRACT

Introduction: Morbidity pattern shows the magnitude of the disease and time trends that highlight demographic differences and thus assists in establishment of the priorities. This survey was conducted to study a morbidity pattern and their seasonal variation in indoor patients.

Methodology: Retrospective study was done over a period of 1 year. 31679 patients were included using universal sampling method. Data was collected from medical record department and diagnosis was made as per international classification of diseases 10(ICD 10). Data was analyzed.

Results: out of the total 31679 patients, 66.43% were females. Seasonal trend analysis shows peak in admission in monsoon season. 81% admitted patients were from Chandrapur district while 17% were from outside Chandrapur. Present study shows that 10101 (31.89%) patients were admitted under chapter XV followed by chapter I constituted 15.04%. cataract was the most common morbidity (10%) of total patients having female preponderance (54.52%) followed by anaemia and Acute gastroenteritis (8.47%) and (4.51%) with female preponderance (66.32%), (58.49%) respectively.

Conclusion: Cataract, anaemia and AGE are leading cause of morbidity.

Key words: morbidity, seasonal, indoor, ICD 10, Cataract, Anaemia.

INTRODUCTION

Improving health around the world today is an important social objective, which has obvious direct payoffs in terms of longer and better lives for millions. There is also a growing consensus that improving health can have equally large indirect payoffs through accelerating economic growth. From the time of Alma Ata declaration to the achievement of "Millennium development goals", lot of planning, effort and public expenditure have been devoted to improve the health of the people, both in rural and urban areas in India. Further, the availability and accessibility of medical care has also improved substantially across the country[1].

Health policies of a country are a key factor in determining the health status of a population and for evidence based formulation of health policies, health statistics is of crucial importance[2].

India is one of the many developing countries, which have high levels of morbidity[1]. India is facing a dual burden of communicable and non-communicable diseases where nutrition and other life style factors play important roles[3]. Further, by constantly altering his environment or ecosystem by such activities as urbanization, industrialization, deforestation, land reclamation, construction of irrigation canals and dams, man has created new health problems for himself [4]. India has made significant progress in improving the health conditions of its population. There has been a general

decrease in mortality leading to significant gains in life expectancy. The level and prevalent pattern of morbidity in the country show that India has entered into the fourth stage of health transition[5].

A comprehensive analysis of morbidity pattern and seasonal variation of diseases in a region or a health care setting provides an efficient tool for the health planners for the formulation of poli-cies. It also helps administrators in efficient use of scarce resources available. A constant watch on the changing pattern of the diseases provides us an opportunity for timely intervention as well as to monitor the progress of the ongoing disease control programs and helps in optimizing the allocation of the limited re-sources[6].

The present study aims at determining the morbidity pattern in terms of age and sex and to assess the seasonal variation in morbidity.

METHODOLOGY

A retrospective hospital record based study was carried out at a tertiary care hospital attached to Government Medical College, Chandrapur over a period of 1 year from April 2016 to March 2017. Data was collected in the form of age, sex and morbidity from Medical record department. Universal sampling method was used to enroll all the registered patients. During the study period, a total of 31679 patients were registered for the study. Diagnosis was categorized as per International classification of Disease (ICD) 10 classification of 2010[7]. Data was retrieved to observe the pattern of admissions and seasonal trends for the period of 2016-2017. In-complete entries were not included in the study. Appropriate statistical tests were applied and all statistical calculations were performed by using spss 16 version. Institutional Ethics Committee approval was obtained.

RESULTS

Table 1 shows that Admissions appear to increase in September 2016 and March 2017. Seasonal trend analysis shows an apparent dip in admissions in winter season (October to Jan) and peak in admission in monsoon season (July to Sept.) whereas Admission rate for various illnesses appears to be high in females as compare to males in each month and this difference is found to be significant (p < 0.0000001). Out of the total 31679 patients, 66.43% were females and 33.57% were males.

Table 1: Seasonal trend of admitted patients

Months	Male	Female	Total
Apr-16	997 (36.93)	1703 (63.07)	2700
May-16	1024 (41.58)	1439 (58.42)	2463
Jun-16	770 (28.39)	1942 (71.61)	2712
Jul-16	1184 (42.20)	1622 (57.80)	2806
Aug-16	1208 (41.14)	1728 (58.86)	2936
Sep-16	1247 (38.70)	1975 (61.30)	3222
Oct-16	852 (32.10)	1802 (67.90)	2654
Nov-16	311 (15.15)	1742 (84.85)	2053
Dec-16	791 (33.08)	1600 (66.92)	2391
Jan-17	223 (10.30)	1943 (89.70)	2166
Feb-17	818 (35.49)	1487 (64.51)	2305
Mar-17	1534 (46.90)	1737 (53.10)	3271
Total	10959 (34.59)	20720 (65.41)	31679

Table 2: Chapter-wise distribution of Indoor patients

Chapter	Male	Female	0-5 yr	6-14 yr	15-30 yr	31-45 yr	46-60 yr	61-100 yr	Total
I	1820 (38.19)	2946 (61.81)	384 (8.06)	273 (5.73)	1460 (30.63)	1228 (25.77)	737 (15.46)	684 (14.35)	4766
II	34 (28.57)	85 (71.43)	2 (1.68)	3 (2.52)	30 (25.21)	40 (33.61)	28 (23.53)	16 (13.45)	119
III	865 (32.60)	1788 (67.40)	299 (11.27)	257 (9.69)	1018 (38.37)	551 (20.77)	286 (10.78)	242 (9.12)	2653
IV	306 (52.04)	282 (47.96)	12 (2.04)	16 (2.72)	144 (24.49)	206 (35.03)	117 (19.90)	93 (15.82)	588
V	157 (50.81)	152 (49.19)	4 (1.29)	8 (2.59)	164 (53.07)	81 (26.21)	40 (12.94)	12 (3.88)	309
VI	205 (51.90)	190 (48.10)	53 (13.42)	33 (8.35)	136 (34.43)	87 (22.03)	51 (12.91)	35 (8.86)	395
VII	1438 (48.13)	1550 (51.87)	5 (0.17)	6 (0.20)	91 (3.05)	362 (12.12)	857 (28.68)	1667 (55.79)	2988
VIII	2 (15.38)	11 (84.62)	1(7.69)	0 (0)	7 (53.85)	3 (23.08)	0 (0)	2 (15.38)	13
IX	731 (51.55)	687 (48.45)	20 (1.41)	31(2.19)	303 (21.37)	347 (24.47)	352 (24.82)	365 (25.74)	1418
X	409 (43.74)	526 (56.26)	175 (18.72)	36 (3.85)	187 (20)	175 (18.72)	156 (16.68)	206 (22.03)	935
XI	1170 (62.23)	710 (37.77)	49 (2.61)	121(6.44)	613 (32.61)	493 (26.22)	372 (19.79)	232 (12.34)	1880
XII	156 (56.12)	122 (43.88)	22 (7.91)	17 (6.12)	76 (27.34)	68 (24.46)	51 (18.35)	44 (15.83)	278
XIII	133 (53.63)	115 (46.37)	1(0.40)	4 (1.61)	57 (22.98)	75 (30.24)	61 (24.60)	50 (20.16)	248
XIV	695 (64.71)	379 (35.29)	39 (3.63)	51 (4.75)	331 (30.82)	298 (27.75)	184 (17.13)	171 (15.92)	1074
XV	0 (0)	10101 (100)	0 (0)	0 (0)	8316 (82.33)	1785 (17.67)	0 (0)	0 (0)	10101
XVI	2 (18.18)	9 (81.82)	1 (9.09)	0 (0)	5 (45.45)	2 (18.18)	2 (18.18)	1 (9.09)	11
XVII	2 (40)	3 (60)	2 (40)	1(20)	1 (20)	1 (20)	0 (0)	0 (0)	5
XVIII	12 (38.71)	19 (61.29)	2 (6.45)	1 (3.23)	8 (25.81)	7 (22.58)	7 (22.58)	6 (19.35	31
XIX	1230 (58.16)	885 (41.84)	27 (1.28)	63 (2.98)	829 (39.20)	632 (29.88)	340 (16.08)	224 (10.59)	2115
XX	1267 (72.32)	485 (27.68)	16 (0.91)	46 (2.63)	730 (41.67)	568 (32.42)	248 (14.16)	144 (8.22)	1752
Total	10634 (33.57)	21045 (66.43)	1114 (3.52)	967 (3.05)	14506 (45.79)	7009 (22.13)	3889 (12.28)	4194 (13.24)	31679

Table 3: Chapter wise most common morbidity

Chapter	Most common morbidity
I	AGE (4.52), Viral fever (2.29), PTB (1.00)
II	Ca Breast (0.09), Ca oral cavity (0.05), Ca Cx (0.04)
III	Anaemia (8.47)
IV	Diabetes mellitus (0.94)
V	Schizophrenic psychosis (0.52)
VI	Epilepsy (0.99)
VII	Cataract (9.99)
VIII	Diseases of ear and mastoid process (0.03)
IX	Hypertensive heart disease (1.52)
X	Bronchitis (1.83)
XI	Diseases of digestive system (3.55), Hernia of abdominal cavity (1.33)
XII	Diseases of skin and subcutaneous tissue (0.98)
XIII	Diseases of musculoskeletal system and connective tissue (0.74)
XIV	Urinary calculus (1.42)
XV	LSCS (8.23)
XVI	Birth trauma (0.02)
XVII	Congenital anomalies of heart, cleft lip and palate (0.003)
XVIII	Unspecified signs and symptoms (0.05)
XIX	Poisoning (2.65)
XX	Motor vehicle traffic accident (2.85)

Table 4: Most common causes of Morbidity (n=31679)

Primary Diagnosis	Total	Gender		Age wise Distribution of patients (Years)					
		Male	Female	0-5	6-14	15-30	31-45	46-60	>60
Acute gastroenteritis	1431	594 (41.5)	837 (58.5)	126 (8.8)	84 (5.9)	490 (34.2)	395 (27.6)	190 (13.3)	146 (10.2)
Bronchitis	580	276 (47.6)	304 (52.4)	83 (5.8)	17 (2.9)	103 (17.8)	116 (20)	109 (18.8)	152 (26.2)
Anaemia	2684	904 (33.68)	1780 (66.3)	299 (11.1)	281 (10.5)	1031 (38.4)	558 (20.8)	292 (10.8)	223 (8.3)
Diseases of Digestive Tract	1125	603 (53.6)	522 (46.4)	14 (1.2)	69 (6.1)	406 (36.1)	301 (26.8)	213 (18.9)	122 (10.8)
Cataract	3166	1440 (45.5)	1726(54.5)	0 (0)	0 (0)	0 (0)	69 (2.2)	1165 (36.8)	1932(61.0)
Road Traffic Accidents	903	735 (81.4)	168 (18.6)	9 (0.1)	22 (2.4)	404 (44.7)	283 (31.3)	125 (13.8)	60 (6.6)
Poisoning	839	569 (67.8)	270 (32.2)	6 (0.7)	12 (1.4)	404 (48.1)	261 (31.1)	117 (13.9)	39 (4.6)

Out of the all, 81% admitted patients were from chandrapur district while 17% were from outside chandrapur and 2 % were not specified their address in detail showing being a tertiary care hospital, caters their services in significant proportion to patients who are from outside Chandrapur.

Table 2 illustrates A total of 31679 patients were admitted to tertiary care hospital during April 2016 to March 2017 were studied for the analysis of morbidity pattern. Table 1 shows that 10101 (31.89%) patients were admitted under chapter XV i.e. Pregnancy, childbirth and puerperium while certain infectious and parasitic diseases (chapter I) constituted 4766 (15.04%) patients, diseases of eye and adnexa (Chapter VII) 2988 (9.43%), Diseases of the blood and blood forming organs and certain disorders involving the immune mechanism (chapter III) 2653 (8.37%), Injury, poisoning and certain other consequences of external causes (chapter XIX) 2115 (6.67%), Diseases of the digestive system (chapter XI) 1880 (5.93%). The overall admission rate was seen more in females 21045 (66.43%) than in males 10634 (33.57%). Amongst these injuries, poisoning and certain other consequences of external causes, External causes of morbidity and mor-

tality, Diseases of the genitourinary system etc were found to be more in males than females.

Age-wise distribution of the data shows that nearly half i.e. 14506 (45.79%) patients were in 15-30 yrs of age group followed by 31-45 yrs of age i.e.7009 (22.13%). 10101 (46.95%) patients out of 21515 patients of reproductive age group (15-45 yrs) were belonged to chapter V i.e. Pregnancy, childbirth and puerperium. 1667 (39.75%) Patients > 60 yrs of age shows higher admission rate under chapter VII i.e. diseases of eye and adnexa whereas in paediatric age group i.e.<14 yrs of age, most common admission is seen under chapter I i.e. certain infectious and parasitic diseases (31.57%) followed by chapter III i.e. Diseases of the blood and blood forming organs and certain disorders involving the immune mechanism (26.72%).

Table 3 depicts that Cataract (9.99%) was the most common morbidity. Acute gastroenteritis (4.52%), viral fever (2.29%), pulmonary tuberculosis (1.00%) were the most common infectious and parasitic diseases (chapter I). Anemia (8.47%) was the most common diseases of blood and blood forming organs and certain disorders involving the immune mechanism (chapter III).

Table 4 illustrates that cataract was the most common morbidity accounting for 10% of total patients having female preponderance (54.52%) with highest burden in >60 years age group (61.02%). Anemia was the second most common morbidity (8.47%) with female preponderance (66.32%) and highest burden in reproductive age group (59.20%). Acute gastroenteritis was the third most common morbidity (4.51%) with female preponderance (58.49%) and highest burden in reproductive age group.

DISCUSSION

R Kumari et al[8] conducted a study in Kanpur district India (2008) in which they found that most of the diseases were observed to have a seasonal variation, with the communicable and infectious diseases peaking in the monsoon months. M. Garfield et al[9] conducted a study in UK in which Seasonal analysis showed there to be a clear winter peak in admission rates, which starts in October and ends in January, followed by a large decrease in February. There is also a smaller summer peak in the June to August period that seems to be getting larger. R Khan et al[10] conducted a study in India to find out the seasonal trend for cardiovascular disease admissions. The highest number of patients were admitted during winter (n=2839, 33.9%) and lowest during summer (n=1648, 19.7%). Phan Minh Trang et al[11] in their study found summer season indicated the highest relative risk (RR1.24, confidence interval (CI) 1.1 1.39) of hospital admission for mental disorders, with a peak in these cases in June (RR1.46, CI1.19 1.7). Bikila D et al[12] conducted a study in which out of a total of 471 (6%) sputum smear positive cases among a total of 7, 870, the highest cases 205 (2.6%) were reported during summer season. Deepak Chopra et al[2] in their study observed that according to seasonal trend analysis Admissions appear to increase in August and decrease in February every year.

R Khan et al[10] conducted a study in India to find out the seasonal trend for cardiovascular disease admissions .A total of 8371 patients were admitted over the study period (5909 male and 2462 female; M/F ratio - 2.4:1). Bikila D et al[12] conducted a study in which out of a total of 471 (6%) sputum smear positive cases among a total of 7, 870, 266 (3.4%) cases were reported among females. Deepak Chopra et al[2] in their morbidity study observed that 33.51 % were female admissions. Anthony A et al[13] in his study found that diabetes confers a greater increase in risk of hospital admission for AMI in women relative to men. R Kumari et al[8] conducted a study in Kanpur district India (2008) .A total of 6838 patients had been treated , which included 2707 males and 4131 females

Derek DeLia et al[14] conducted a study in New Jersey to identify region wise patients flow in hospital in which they found that population-based rates of ED(emergency department) use vary by region . Throughout the study period, the Northeast and the South had the highest rates of ED use per 1,000 residents. The Central West and Northwest had the lowest. Rong Fu et al[15] in their study Urban respondents had higher hospital admissions than rural respondents. M Bolan et al[16] in their study of Ireland observed that high mortality and hospital admission rates among rural population.

The Ministry of Health & Family Welfare, Government of India (2005)[17] shows that the leading causes of morbidity in India were injuries (16.7%), maternal and perinatal conditions (11.6%), cardiovascular diseases (10.0%), mental illness (8.5%), diarrheal diseases (8.2%), childhood diseases (5.4%), cancers (3.4%), tuberculosis (2.8%), HIV/AIDS (2.1%), malaria and other vector borne diseases (1.6%), COPD and asthma (1.5%), refractive errors (1.4%) and diabetes (0.7%). The WHO report "The Global Burden of Disease: 2004 update in 2008[18] in which revealed the leading causes of morbidity to be lower respiratory tract infections (6.2%), Diarrheal diseases (4.8%), unipolar depressive disorders (4.3%), Ischemic heart disease (4.1%), HIV/AIDS (3.8%), cerebro-vascular disease (3.1%), prematurity and low birth weight (2.9%), birth asphyxia and birth trauma (2.7%), road traffic accidents (2.7%), neonatal infections (2.7%), tuberculosis (2.2%), malaria (2.2%), chronic obstructive pulmonary disease (2.0%), refractive errors (1.8%), hearing loss adult onset (1.8%), congenital anomalies (1.7%), alcohol use disorders (1.6), violence (1.4%), diabetes mellitus (1.3%), self-inflicted injuries (1.3%). Most of the findings of our study are in concurrence with the MoHFW report & WHO report. In a study conducted by Adebusoye et al[19] in 2009 amongst elderly patients presenting at a primary care clinic in Nigeria found the most prevalent morbidities to be hypertension (40.0%), cataracts (39.4%) and osteoarthritis (26.8%). The prevalence of anemia in that study was 8.0% (females = 11.2%, males = 2.6%), and it was significantly associated with gender (p = 0.001). In a study done by Prakash R et al[20] in Udaipur in elderly (60 years and above) in 2004, it was found that 70% elderly were suffering from one or other ophthalmic problems followed by 48% with hypertension, 42% had psycho-social problems, 36% were suffering from respiratory disease and the others were living with musculoskeletal (14.6%), nervous system (8.67%), ENT (8%) and GIT (4.7%) diseases.

Our study revealed the prevalence of anemia to be 8.47% which is similar to above study & hypertension to be 1.52%. Such high prevalence of NCD like hypertension in other studies may be due to that

the studies being done in elderly subjects. Another study by Sabde et al[21] in 2008 studied the morbidity pattern in street sweepers in Nagpur and found that the important morbidities detected were anemia (20.5%), hypertension (9.5%), upper respiratory tract infections (7.3%), chronic bronchitis (5.9%), refractive error (3.7%), pterygium (2.9%), acute atopic conjunctivitis (2.6%) and bronchial asthma (1.8%). A rapid appraisal of morbidity pattern of four villages in Dehradun by Bansal R et al[22] in 2000 revealed that COPD/Asthma and ARI were ranked as first and second health problems in males.

CONCLUSION

In our study, peak of admission was noted in monsoon season and overall morbid condition was found most commonly in females. It was observed that most common morbidity found was certain infectious and parasitic diseases (ICD 10 Chapter I). Cataract was found as the most common morbidity amongst all followed by anaemia and AGE. 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 and screening programs.

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