# Health Care Utilization Pattern For Communicable And Non-Communicable Diseases In A Tertiary Care Health Facility In Chandigarh, India

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**Citation**

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**Abstract**

Objectives: (1) To study morbidity spectrum of communicable and non-communicable diseases in a tertiary care institution (2) To study health care delivery pattern in the health facility.
Study Design: Hospital-based cross-sectional study.
Methods: Information on patients attending the health facility under Integrated Diseases Surveillance Programme during 2006 was analysed using statistical tests including normal test of proportions and Kolomogrov -Smirnov two sample test.
Results: Burden of non-communicable diseases (61.2%) was significantly higher (P<0.05) as compared to communicable diseases (38.8%). Acute respiratory infection (ARI) was the most common (44.3%) reported communicable disease followed by pulmonary tuberculosis (23.3%) and acute diarrhoea (15.4%). In the non-communicable disease group, hypertension (29.8%) was the major disease burden followed by asthma (18.7%) and diabetes mellitus (DM) (16.7%). Hospitalisation rates for communicable and non-communicable diseases were obtained to be 28.6% and 21.4% respectively. Adjusted proportions of males suffering from ARI (P<0.03) and Typhoid (P<0.001) were found to be significantly higher as compared to those of females. Also, adjusted proportions of females were found to be significantly higher (P<0.001) for diseases like hypertension (63.2%), asthma (59.4%), diabetes (55.1%) and neurological diseases (61.0%) but significantly higher (P<0.01) for males for other non-communicable diseases. Distribution of diseases in the OPD and IPD showed significant variability (P<0.01). Paediatrics Department shared maximum (56.9%) burden of communicable diseases while Medicine Department shared maximum patient load (72.3%) of non-communicable diseases.
Conclusions: Improper distribution of patients in different departments of studied health facility is obtained also resulting in wastage of expert clinical skills and health facilities available. Remodelling of health care system is suggested for optimum distribution of patients inside health facility.

## INTRODUCTION

Non-communicable diseases are increasing world wide due to rapidly changing life style. Earlier burden of communicable diseases was much higher than non-communicable diseases. Changing scenario of disease burden in a community can best be studied on the basis of hospital data due to lack of reliable community-based data and some to some other difficulties experienced from the community. In the year 2001, chronic diseases contributed approximately 46% of the global burden of diseases [1]. This shift in the pattern of disease from communicable to non-communicable is occurring at a faster rate in developing countries than it did in the industrialized regions of the world half a century ago [2]. Projections nevertheless indicate that communicable diseases will still occupy a critically important position up to 2020 [3]. Sometimes chronic diseases are considered communicable at the risk factor level. Modern dietary patterns and physical activity patterns are risk behaviours that travel across countries and are transferable from one population to another like an infectious disease, affecting disease pattern globally [4].

The rapidity of the changes in developing countries is such that a double burden of disease may often co-exist which strains the existing resource poor health delivery system. Changing disease pattern and treatment seeking behaviour of patients demand restructuring / remodelling of existing health care system also. There seems to be an urgent need of effective utilization of specific clinics established in tertiary health care institutions. Geographical variation of diseases

must be taken as an opportunity to carry out continuous surveillance of different diseases in hospitals so that reliable and updated data are timely available for health administrators to plan, implement and evaluate disease control and prevention programme strategies. Present study aims at studying existing disease burdens for communicable and non-communicable diseases and patterns of health care delivery in a tertiary care institution reflecting the disease burden in the community

## METHODS

The study was conducted in Govt. Medical College and Hospital (GMCH) Chandigarh during 2005-06. Chandigarh, a Union Territory (UT) is also a capital of two states namely Haryana and Punjab. On the recommendations of National Apical Advisory Committee (NAAC), Government of India launched the National Surveillance Programme for Communicable Diseases (NSPCD) as a pilot project in the year 1997-98. A review of the NSPCD clearly demonstrated its benefits. This resulted in the year 2004; the launch of this later programme was aimed to cover the entire India in three phases. The first phase was already started in few states during for the year 2005. Chandigarh was covered in II phase. Data used in the present study were collected under in Integrated Disease Surveillance Programme (IDSP) Phase-II, under expert guidance of Nodal Officer, IDSP using format designed by Central Bureau of Health Intelligence (CBHI ) [5] . Statistical tests like normal test of proportions, Z-test and Kolomogrov – Smirnov, two sample tests were applied for analysing data using SPSS-12 Software.

## RESULTS

Annual morbidity pattern of communicable diseases in the studied institution in OPD and IPD and also by gender is shown in table-1. Acute respiratory infection (ARI) was the most common (44.3%) reported communicable disease followed by pulmonary tuberculosis (23.3%) and acute diarrhoea (15.4%). Among all 11353 annually reported cases of communicable diseases, 8106 (71.4%) cases were managed in the OPD set up and remaining 3247 (28.6%) needed hospitalisation. ARI contributed maximum proportion. (51.1%) among OPD cases. Among 3247 IPD cases, acute diarrhoea was the most common morbidity (34.2%) and ARI was the second most common reported morbidity (27.1%). All six cases of neonatal tetanus were included in IPD cases. Diseases like ARI, pulmonary tuberculosis, hepatitis, and syphilis were mostly managed in the OPD set up. Distributions of cases reported in OPD and IPD varied significantly (P<0.01) according to disease conditions as indicated by Kolomogrov – Smirnov two-sample test.

### Figure 1

Table 1: Morbidity Pattern Of Communicable Diseases

| Disease | Total | OPD | IPD | Male (M) | Female (F) | Adjusted % among diseases | | P-Value |
|---|---|---|---|---|---|---|---|---|
| | | | | | | M | F | |
| ARI | 5023 (44.2) (100.0) | 4142 (51.1) (82.5) | 881 (27.1) (17.5) | 2886 (44.0) (57.5) | 2137 (44.6) (42.5) | 51.2 | 48.8 | 0.03 |
| Pulmonary Tuberculosis | 2646 (23.3) (100.0) | 2386 (29.4) (90.2) | 260 (8.0) (9.8) | 1520 (23.2) (57.4) | 1126 (23.5) (42.6) | 51.2 | 48.2 | 0.06 |
| Acute Diarrhoea | 1750 (15.4) (100.0) | 640 (7.9) (36.6) | 1110 (34.2) (63.4) | 972 (14.8) (55.5) | 778 (16.2) (44.5) | 49.3 | 50.7 | 0.27 |
| Pneumonia | 619 (5.4) (100.0) | 179 (2.2) (28.9) | 440 (13.5) (61.1) | 406 (6.2) (65.6) | 312 (6.5) (34.4) | 50.3 | 49.7 | 0.43 |
| Hepatitis | 334 (2.9) (100.0) | 256 (3.2) (76.6) | 78 (2.4) (23.4) | 189 (2.9) (56.6) | 145 (3.0) (43.4) | 50.3 | 49.7 | 0.45 |
| Typhoid | 139 (1.2) (100.0) | 70 (0.9) (50.4) | 69 (2.1) (49.6) | 93 (1.4) (66.9) | 46 (1.0) (33.1) | 61.2 | 38.8 | <0.00 1 |
| Measles | 18 (0.16) (100.0) | 01 (0.01) (5.5) | 17 (0.5) (94.5) | 10 (0.17) (55.6) | 8 (0.2) (44.4) | 50.0 | 50.0 | 0.50 |
| Syphilis | 16 (0.14) (100.0) | 15 (0.2) (93.7) | 01 (0.03) (6.3) | 9 (0.2) (56.2) | 7 (0.2) (43.8) | 50.0 | 50.0 | 0.50 |
| Neonatal Tetanus | 06 (0.05) (100.0) | 0 | 06 (0.2) (100.0) | 4 (0.06) (66.7) | 2 (0.03) (33.3) | 57.1 | 42.9 | 0.35 |
| Others | 802 (7.1) (100.0) | 417 (5.1) (52.0) | 385 (11.8) (48.0) | 468 (7.1) (58.3) | 334 (7.0) (41.7) | 52.2 | 47.9 | 0.10 |
| Overall | 11353(100.0) (100.0) | 8106 (100.0) (71.4) | 3247 (100.0) (28.6) | 6557 (100.0) (57.8) | 4796 (100.0) (42.2) | 51.0 | 49.0 | <0.01 |

Males dominated females in the reported morbidity spectrum of all communicable diseases. There were 6557 (57.8%) males among all reported cases. ARI was the commonest morbid condition found in 44.0% males and 44.6% females followed by pulmonary tuberculosis found among 23.2% males and 23.5% females. Diseases patterns among males and females were also found significantly different (P<0.01). The observed variation in the distributions among males and females may also be due to difference in sex ratio. Therefore adjusted percentages of male and females within different disease groups were also calculated and compared. Adjusted proportions of males suffering from ARI (P<0.03) and Typhoid (P<0.001) were found to be significantly higher as compared to those of females. There was no significant (P> 0.10) difference between adjusted proportions of males and females for other diseases.

Morbidity pattern of non-communicable diseases for OPD and IPD and also for males and females is presented in Table -2. In the non-communicable disease group, hypertension (29.8%) was the major disease burden followed by asthma (18.7%) and diabetes mellitus (DM) (16.7%). A large percentage of non- communicable cases were managed in OPD (78.6%). Among all 17874 cases reported only 3820 (21.4%) needed hospitalisation. All diseases except cancer

were mostly managed in the OPD. About 97% of cancer cases needed hospitalisation. Large proportions of common mental disorders (98.2%) and asthma (97.9%) could be managed in the OPD set up only requiring no hospitalisation. Distribution of diseases in the OPD and IPD showed significant variability (P<0.01) as concluded by Kolomogrov – Smirnov two-sample test.

Observed distributions of males and females in different morbidity categories were also found to differ significantly (P<0.01) by this test. Females were found to be comparatively more sufferers of hypertension (57.2%), asthma (53.2%), neurological diseases (54.9%) and cancer (55.8%). Rest of the reported non-communicable diseases were found to be comparatively more prevalent among males than that of females. Proportions of females after adjustment for gender differences were found to be significantly higher (P<0.001) for diseases like hypertension (63.2%), asthma (59.4%), diabetes (55.1%) and neurological diseases (61.0%).

**Figure 2**

Table 2: Morbidity Pattern Of Non-Communicable Diseases

| Non-Communicable Diseases | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Disease | Total | OPD | IPD | Male (M) | Female (F) | Adjusted % among diseases | | P-Value |
| | | | | | | M | F | |
| Hypertension | 5329 (29.8) (100.0) | 4138 (29.4 (77.6) | 1191 (31.2) (22.4) | 2281 (24.1) (42.8) | 3048 (36.3) (57.2) | 36.8 | 63.2 | <0.001 |
| Asthma | 3340 (18.7) (100.0) | 3270 (23.3) (97.9) | 70 (1.8) (2.1) | 1564 (16.5) (46.8) | 1776 (21.1) (53.2) | 40.6 | 59.4 | <0.001 |
| Diabetes Mellitus (T-II) | 2979 (16.7) (100.0) | 1868 (13.3) (62.7) | 1111 (29.1) (37.3) | 1525 (16.1) (51.2) | 1454 (17.3) (48.8) | 44.9 | 55.1 | <0.001 |
| IHD | 2616 (14.6) (100.0) | 2061 (14.7) (78.8) | 555 (14.6) (21.2) | 1793 (18.9) (68.5) | 823 (9.8) (31.5) | 62.9 | 37.1 | <0.001 |
| Emphysema | 1103 (6.2) (100.0) | 1069 (7.6) (96.9) | 34 (0.9) (3.1) | 957 (10.1) (86.8) | 146 (1.7) (13.2) | 83.6 | 16.3 | <0.001 |
| CVA | 1082 (6.0) (100.0) | 552 (3.9) (51.0) | 530 (13.9) (49.0) | 670 (7.1) (61.9) | 412 (4.9) (38.1) | 55.8 | 44.2 | <0.001 |
| Neurological Disorders | 896 (5.0) (100.0) | 700 (5.0) (78.1) | 196 (5.1) (21.9) | 404 (4.3) (45.1) | 492 (5.9) (54.9) | 39.0 | 61.0 | <0.001 |
| Bronchitis | 226 (1.3) (100.0) | 192 (1.4) (84.9) | 34 (0.9) (15.1) | 132 (1.4) (58.4) | 94 (1.1) (41.6) | 52.2 | 47.8 | 0.26 |
| Common Mental Ds | 168 (1.1) (100.0) | 165 (1.2) (98.2) | 03 (0.1) (1.8) | 87 (0.9) (51.8) | 81 (0.9) (48.2) | 45.6 | 54.4 | 0.14 |
| Cancer | 77 (0.5) (100.0) | 02 (0.01) (2.6) | 75 (1.9) (97.4) | 34 (0.4) (44.2) | 43 (0.6) (55.8) | 48.2 | 61.8 | 0.10 |
| Snake Bite | 58 (0.3) (100.0) | 37 (0.2) (63.8) | 21 (0.5) (36.2) | 32 (0.3) (55.2) | 26 (0.3) (44.8) | 48.5 | 51.5 | 0.40 |
| Overall | 17874 (100.0) (100.0) | 14054 (100.0) (78.6) | 3820 (100.0) (21.4) | 9479 (100.0) (53.0) | 8395 (100.0) (47.0) | 46.7 | 53.3 | 0.001 |

Adjusted proportions of males suffering from IHD (62.9%), emphysema (83.6%) and CVA (55.8%) were found to be significantly higher (P<0.001).

Among 3247 IPD cases, ARI cases contributed only 881 (27.1%) cases. All 06 cases of neonatal tetanus were included in IPD cases. Next common disease in the IPD was acute diarrhoea, which contributed 1110 (34.2%) cases. Diseases like ARI, pulmonary tuberculosis, hepatitis, and syphilis were mostly managed in the OPD set up. Where as rest of the reported diseases needed hospitalisation.

Males dominated females in the reported morbidity spectrum. There were 6557 (57.8%) males among all reported cases. Males were reportedly more sufferers of all diseases. Among males 2886 (44.0%) and among females 2137 (44.6%) cases of ARI were reported and this was the commonest morbid condition reported. Distributions of cases reported in OPD and IPD varied significantly (P<0.01) according to disease conditions as indicated by Kolomogrov – Smirnov two-sample test. Also disease patterns according to gender were found to differ significantly (P<0.01). The observed variation in the distributions among males and females may also be due to difference in sex ratio. Therefore, adjusted percentages of male and females within different disease groups were also calculated and compared. Adjusted proportions of males suffering from ARI and typhoid (P<0.001) were found to be significantly higher (P<0.03) as compared to those of females.

Morbidity pattern of non-communicable diseases showed significantly higher percentage of cases managed in OPD. Among all 17874 cases reported only 3820 (21.4%) needed hospitalisation. All diseases except cancer were mostly managed in the OPD. About 97% of cancer cases needed hospitalisation. Large proportion of common mental disorders (98.2%) and asthma (97.9%) could be managed in the OPD set-up only requiring no hospitalisation. Distribution of diseases in the OPD and IPD showed significant variability (P<0.01) as concluded by Kolomogrov – Smirnov two-sample test. Observed distributions of males and females in different morbidity categories were also found to differ significantly by this test. Females were found to be comparatively more sufferers of hypertension (57.2%), asthma (53.2%), neurological diseases (54.9%) and cancer (55.8%). Rest of the reported non-communicable diseases were found to be comparatively more prevalent among males than that among females. Proportions of females after adjustment for gender differences were found to be significantly higher (P<0.001) for diseases like hypertension (63.2%), asthma (59.4%), diabetes (55.1%) and neurological diseases (61.0%). Adjusted proportions of males suffering from IHD (62.9%), emphysema (83.6%) and CVA (55.8%) were found to be significantly higher (P<0.001).

Communicable disease burden shared by different

departments in the institution is shown in Table-3. Paediatrics department shared maximum 6458 (56.9%) of all 11353 communicable disease cases followed by 3205 (28.2%) cases shared by Pulmonary Medicine Department. Paediatrics department shared 4295(52.9%) of total cases in OPD and 2163 (66.6%) of total IPD cases. In all departments except Medicine, loads patient loads of communicable diseases in OPD were comparatively higher than those in IPD's of respective departments.

### Figure 3

Table 3: Burdens Of Communicable Diseases In Opd & Ipd Of Different Departments

| Diseases | | Paediatrics | Medicine | Obstetrics & Gynaecology | Pulmonary Medicine | Skin and VD |
|---|---|---|---|---|---|---|
| ARI | | | | | | |
| | OPD (4142) | 3363 (81.6) | 29 (42.1) | 0 | 750 (18.2) | 0 |
| | IPD (881) | 756 (18.4) | 40 (57.9) | 0 | 85 (9.6) | 0 |
| | Total (5023) (100.0) | 4119(100.0) (82.0) | 69 (100.0) (1.4) | 0 | 835 (100.0) (16.6) | 0 |
| Pulmonary Tuberculosis | | | | | | |
| | OPD (2386) | 52 (71.2) | 206 (69.2) | 0 | 2128 (93.6) | 0 |
| | IPD (260) | 21 (28.8) | 92 (30.8) | 0 | 147 (6.4) | 0 |
| | Total (2646) (100.0) | 73 (100.0) (2.7) | 298 (100.0) (11.3) | 0 | 2275(100.0) (86.0) | 0 |
| Acute Diarrhoea | | | | | | |
| | OPD (640) | 640 (38.2) | 0 | 0 | 0 | 0 |
| | IPD (1110) | 1034 (61.8) | 67 (100.0) | 9 (100.0) | 0 | 0 |
| | Total (1750) (100.0) | 1674 (100.0) (95.7) | 67(100.0) (3.8) | 9 (100.0) (0.5) | 0 | 0 |
| Pneumonia | | | | | | |
| | OPD (179) | 104 (25.6) | 11 (9.2) | 0 | 64 (68.1) | 0 |
| | IPD (440) | 302 (74.4) | 108 (90.8) | 0 | 30 (31.9) | 0 |
| | Total (619) (100.0) | 406 (100.0) (65.6) | 119 (100.0) (19.2) | 0 | 94 (100.0) (15.2) | 0 |
| Hepatitis | | | | | | |
| | OPD (256) | 65 (86.7) | 191 (73.7) | 0 | 0 | 0 |
| | IPD (78) | 10 (13.3) | 68 (26.3) | 0 | 0 | 0 |
| | Total (334) (100.0) | 75(100.0) (22.4) | 259 (100.0) (77.5) | 0 | 0 | 0 |
| Typhoid | | | | | | |
| | OPD (70) | 70(80.4) | 0 | 0 | 0 | 0 |
| | IPD (69) | 17(19.6) | 52 (100.0) | 0 | 0 | 0 |
| | Total (139) (100.0) | 87(100.0) (62.6) | 52(100.0) (37.4) | 0 | 0 | 0 |
| Measles | | | | | | |
| | OPD (1) | 1 (5.6) | 0 | 0 | 0 | 0 |
| | IPD (17) | 17 (94.4) | 0 | 0 | 0 | 0 |
| | Total (18) (100.0) | 18(100.0) (100.0) | 0 | 0 | 0 | 0 |
| Syphilis | | | | | | |
| | OPD (15) | 0 | 0 | 1 (50.0) | 0 | 14 (100.0) |
| | IPD (1) | 0 | 0 | 1 (50.0) | 0 | 0 |
| | Total (16) (100.0) | 0 | 0 | 2(100.0) (12.5) | 0 | 14(100.0) (87.5) |
| Neonatal Tetanus | | | | | | |
| | OPD (0) | 0 | 0 | 0 | 0 | 0 |
| | IPD (6) | 6 (100.0) | 0 | 0 | 0 | 0 |
| | Total (6) (100.0) | 6 (100.0) (100.0) | 0 | 0 | 0 | 0 |
| Others | | | | | | |
| | OPD (417) | 0 | 213 (36.9) | 204 (91.1) | 0 | 0 |
| | IPD (385) | 0 | 364 (63.1) | 20 (8.9) | 1 (100.0) | 0 |
| | Total (802) (100.0) | 0 | 577 (100.0) (72.0) | 224(100.0) (27.9) | 1(100.0) (0.1) | 0 |
| Overall | | | | | | |
| | **OPD (8106)** | **4295 (66.6)** | **650 (45.2)** | **205 (87.2)** | **2942 (91.7)** | **14 (100.0)** |
| | **IPD (3247)** | **2163 (33.4)** | **791 (54.8)** | **30 (12.8)** | **263 (8.3)** | **0** |
| | **Total (11353) (100.0)** | **6458 (100.0) (56.9)** | **1441 (100.0) (12.7)** | **235 (100.0) (2.1)** | **3205(100.0) 28.2)** | **14 (100.0) (0.1)** |

Paediatrics department shared patient load of 4119 (82.0%) of all 5023 ARI cases, 3363(81.2%) and 756 (85.8%) of total ARI cases within OPD and IPD respectively. Among all 4119 ARI cases attended by Paediatrics Department, only 756 (18.4%) cases needed hospitalisation. Pulmonary Medicine Department, attended 835 (16.6%) of total ARI cases.

Medicine Department also shared 298(11.3%) of 2646 pulmonary tuberculosis cases though majority (86.0%) were managed in the pulmonary medicine department. In Pulmonary Medicine Department, the proportion of pulmonary tuberculosis cases attended in OPD set-up was found to be 93.6% as compared to 71.2% and 69.2% of respective cases in Paediatrics and Medicine Departments respectively. This indicates that that significant burden of pulmonary tuberculosis disease in IPD can be averted through proper utilization of patient care services in this department.

Although 1110 (63.4%)of 1750 acute diarrhoea cases required indoor care, within paediatric clinic hospitalisation rate was comparatively less (61.8%) as compared to all cases managed in IPD in all other departments.

Higher proportions of pneumonia amounting to 74.4% and 90.8% were treated at indoor level in Paediatrics Department and Medicine Departments respectively compared to its 31.9% in IPD of Pulmonary Medicine department. Paediatrics and Medicine Departments managed 65.6% and 19.2% of total pneumonia cases respectively as compared to 15.2% cases in the Department of Pulmonary Medicine. Out of 52 cases of typhoid reported to Medicine Department, none was managed at outdoor level whereas out of 87 cases of typhoid in Paediatric department, 70(80.4%) were attended in the OPD. Similarly, higher proportion (86.7%) of hepatitis cases were managed in OPD of Paediatrics Department compared to lower proportion (73.7%) managed in Medicine Department. Two (12.5%) of syphilis patients and 9 (0.5%) patients of diarrhoea were reported in the department of Obstetrics and Gynaecology. Six cases of neonatal tetanus were also reported in the studied health facility during study period of one year.

Medicine Department shared maximum patient load (72.3%) of total 17874 non-communicable disease cases followed by Pulmonary Medicine Department (23.7) as shown in Table-4. In Pulmonary Medicine Department, proportion of non-communicable diseases in OPD was found to be 97.6% whereas in Obstetrics and Gynaecology Department, all 719 cases were IPD cases mostly hypertensives. Among all 12922 cases in Medicine Department, only 3000 (23.2%) required hospitalisation.

**Figure 4**

Table 4: Burdens Of Non-Communicable Diseases In Opd & Ipd Of Different Departments

| Diseases | | Medicine | Obstetrics & Gynaecology | Pulmonary Medicine |
|---|---|---|---|---|
| Hypertension | | | | |
| OPD | (4138) | 4138 (88.4) | 0 | 0 |
| IPD | (1191) | 545 (11.6) | 646 (100.0) | 0 |
| Total | (5329) | 4683 (100.0) | 646(100.0) | 0 |
| | (100.0) | (87.9) | (12.1) | |
| Asthma | | | | |
| OPD | (3270) | 359 (89.6) | 0 | 2911 (99.0) |
| IPD | (70) | 42 (10.4) | 0 | 28 (1.0) |
| Total | (3340) | 401(100.0) | 0 | 2939 (100.0) |
| | | (12.0) | | (88.0) |
| Diabetes Mellitus (Type-II) | | | | |
| OPD | (1868) | 1868 (63.8) | 0 | 0 |
| IPD | (1111) | 1061 (36.2) | 50 (100.0) | 0 |
| Total | (2979) | 2929 (100.0) | 50(100.0) | 0 |
| | (100.0) | (98.3) | (1.7) | |
| IHD | | | | |
| OPD | (2061) | 2061 (78.8) | 0 | 0 |
| IPD | (555) | 555 (21.2) | 0 | 0 |
| Total | (2616) | 2616 (100.0) | 0 | 0 |
| | (100.0) | (100.0) | | |
| Emphysema | | | | |
| OPD | (1069) | 1 (1.0) | 0 | 1068 (97.9) |
| IPD | (34) | 10 (99.0) | 0 | 24 (2.1) |
| Total | (1103) | 11 (100.0) | 0 | 1092(100.0) |
| | (100.0) | (1.0) | | (99.0) |
| CVA | | | | |
| OPD | (552) | 552 (51.0) | 0 | 0 |
| IPD | (530) | 530 (49.0) | 0 | 0 |
| Total | (1082) | 1082 (100.0) | 0 | 0 |
| | (100.0) | (100.0) | | |
| Other Neurological Disorders | | | | |
| OPD | (700) | 700 (78.1) | 0 | 0 |
| IPD | (196) | 196 (21.9) | 0 | 0 |
| Total | (896) | 896 (100.0) | 0 | 0 |
| | (100.0) | (100.0) | | |
| Bronchitis. | | | | |
| OPD | (192) | 39 (72.3) | 0 | 153 (88.9) |
| IPD | (34) | 15 (27.7) | 0 | 19 (11.1) |
| Total | (226) | 54 (100.0) | 0 | 172 (100.0) |
| | (100.0) | (23.9) | | (76.1) |
| Common Mental Disorders. | | | | |
| OPD | (165) | 165 (98.2) | 0 | 0 |
| IPD | (3) | 3 (1.8) | 0 | 0 |
| Total | (168) | 168 (100.0) | 0 | 0 |
| | (100.0) | (100.0) | | |
| Cancer | | | | |
| OPD | (2) | 2 (8.3) | 0 | 0 |
| IPD | (75) | 22 (91.7) | 23 (100.0) | 30 (100.0) |
| Total | (77) | 24 (100.0) | 23 (100.0) | 30 (100.0) |
| | (100.0) | (31.1) | (29.9) | (40.0) |
| Snake bite | | | | |
| OPD | (37) | 37 (63.7)) | 0 | 0 |
| IPD | (21) | 21 (36.3) | 0 | 0 |
| Total | (58) | 58 (100.0) | 0 | 0 |
| | (100.0) | (100.0) | | |
| Overall | | | | |
| **OPD** | **(14054)** | **9922 (76.8)** | **0** | **4132 (97.6)** |
| **IPD** | **(3820)** | **3000 (23.2)** | **719 (100.0)** | **101 (2.4** |
| **Total** | **(17874)** | **12922 (100.0)** | **719 (100.0)** | **4233 (100.0)** |
| | **(100.0)** | **(72.3)** | **(4.0)** | **(23.7)** |

Medicine Department shared 4683 (87.9%) 0f total hypertension cases. Among all these cases of hypertension in Medicine Department, 4138(88.4%) were managed in OPD set-up whereas all 646 cases of hypertension in Obstetrics and Gynaecology Department were hospitalised. Asthma cases were mostly managed in Pulmonary Medicine Department in OPD set-up. Among all 2979 cases of Diabetes Mellitus (Type-II), 2929 (98.3%) were reported in Medicine Department (63.8% in OPD and 36.2% in IPD). Only 21.2 % of IHD cases required hospitalisation and all these IHD cases were reported by Medicine Department. Also, all cases of CVA, other neurological disorders, mental disorders, and snake bite were reported in Medicine Department. Hospitalisation rate for CVA was found to be 49% while for other diseases reported exclusively in Medicine Department, hospitalisation rates were found to be very low. Emphysema mostly reported in Pulmonary Medicine Department required only 2.1% hospitalisation rate in this department. Hospitalisation rate for bronchitis in Pulmonary Medicine Department was comparatively less (11.1%) as compared to than that in Medicine Department (27.1%). Cancer cases were reported by all the three departments as shown in this table requiring 100% hospitalisation rates in Obstetrics and Gynaecology Department and Pulmonary Medicine Department and 91.7% in Medicine Department.

## DISCUSSION

In this study, we explored spectrum of communicable and non-communicable diseases and health care pattern thereof in a health facility. Burden of non-communicable diseases came out to be much higher (61.2%)as compared to communicable diseases (38.8%)in the studied health facility. Among communicable diseases, ARI (44.2%) was the most common disease reported followed by pulmonary tuberculosis (23.3%0 and acute diarrhoea (15.4%). Hospitalisation rates for communicable and non-communicable diseases were obtained to be 28.6% and 21.4% respectively. In the non-communicable disease group, Hypertension (29.8%) was the major disease burden followed by Asthma (18.69%) and Diabetes Mellitus (DM) (16.67%). Adjusted prevalence rates for males and females indicated male dominance on communicable and female dominance on non-communicable diseases. Improper distribution of patients in different departments of studied health facility is also reported resulting in wastage of expert clinical skills and wastage of health facilities available.

Paediatric departments had to manage most of reported diseases under IDSP where as burden shared by all other department except medicine was confined only to a few specific diseases. Skin department was confined only to management of syphilis. Managing more cases of pneumonia by paediatric and medicine department than by Pulmonary Medicine Department is an important observation. Higher proportion of ARI cases in OPD than that in IPD contradicts observation in an earlier study [6]. Possibility of misdiagnosis for diseases like ARI in the OPD set up cannot be ruled out for this finding. Though respiratory infections are more common in urban areas due to higher air pollution, the same, however, does not appear to be a feature of this beautiful city of India. Low level of environmental pollution in Chandigarh may explain the lower burden of ARI cases in the city apart from possibility of under reporting. Considerable respiratory diseases like ARI, pneumonia and pulmonary tuberculosis were treated in medicine department. Pulmonary Medicine Department would have easily managed these cases even in OPD set up. Patients ideally belonging to Pulmonary Medicine

department occupied about one third of beds in Medicine Department. Chest physicians were more confident in treating such patients as evident by lower percentage of indoor patients in this department. So their services could have been utilized effectively for the management of such patients.

High hospitalisation rate (63.4%) for acute diarrhoea indicates avoidable bed occupancy, as oral rehydration therapy (ORT) can be helpful in preventing large proportion of these cases. This is a point of almost equal concern for both Community Physicians and Paediatricians. Both of these health care providers must intensify their health education efforts in their respective community set-up. Community Physicians must also avail the opportunity to meet medical officers at primary health centres and multi purpose workers at sub-centres, so as to propagate the advantages of dehydration prevention by the use of oral rehydration solutions (both WHO recommended and home based). Managing all patients of diarrhoea at indoor level by Medicine Department may partially be justified by the fact that among adults and elderly, diarrhoea many times is secondary to some other pathology.

Managing all cases of typhoid at indoor level in Medicine Department against 19.6% in Paediatrics Department may either be due to more severe nature of the disease with more complications among them or due to chances of misdiagnosis. Also most patients visiting Medicine Department have already been to many practitioners before landing in the studied health facility and might very well be suffering from infections with resistant bacteria. Also, among adults complications can develop despite clinical improvement [7] requiring indoor care.

Finding of six cases of neonatal tetanus in the studied health facility of Chandigarh is also a matter of concern leading to epidemiological investigations to explore causes of such high incidence of this disease and taking appropriate remedial measures. Hypertension being the commonest non-communicable morbidity corresponds with the findings of others [8] . The female preponderance of this disorder is as per expectations. After 45 years systolic blood pressure increases more in females than in males [9] In Chandigarh, female population predominate [10] among elderly and approaching for treatment here. This fact can explain the female predominance in hypertension. In most regions, hypertension accounts for 10% of adult hospital morbidity [11] . The similar figure in our hospital is 23.4%. Higher proportion of elderly in total patients' load of hospital may again explain this higher proportion. In Chennai reported prevalence of hypertension was 8.3% among males and 8.2% among females. Crude Prevalence of hypertension in the age group 20 years and above was reported to be 21.1% with the age standardized prevalence of 17% [12] . Prevalence of hypertension even in rural areas of Kerala is as high as 12.5% to 17.9% [13] in spite of the fact that this state is considered a model for betterment of health situation in India.. In some developing countries especially those with a high prevalence of diabetes almost 100 percent of persons with diabetes fall into its type-II category [14] . Type-II Diabetes affects approximately 8% of adults in United States [15] . Diabetes prevalence ranged from 8.4% among normotensives to 25.6% amongst hypertensives in a study conducted in South India [16] . This fact indicates the role of hypertension as an important component of studying morbidity spectrum for health planning in India

In India approximately 1 million patients of cancer develop annually. To reinforce the population-based registry, hospital-based cancer registry data play important roles and they provide valuable information for planning effective strategies for cancer control [17] . Asthma was more prevalent than diabetes. There is reason to believe it because in single decade, 2.5 fold increase in asthma has been observed by various workers [18] . In Asian population, IHD was present in 9.4% of normotensives and 17.1% hypertensives giving 3.3% prevalence in combined population [19] . This finding is in agreement with our study results of 14.6% prevalence. Prevalence of CHD was reported to be 4.5% in Jaipur [20] . The variations in prevalence of IHD at different places suggest the need of conducting more studies on regional basis. Improper distribution of patients seeking care from tertiary care hospital is observed in the present study. Patients were found not to be approaching at proper OPD resulting in wastage of clinical expertise. Expert clinicians were not adopting proper inter departmental referral system, perhaps due to avoiding denial from services and managing patients to the extant possible at their own level. Although there were no serious ethical concern associated with the adoption of referral system. Also, patients were approaching tertiary care hospital for some common ailments also which can easily be managed at primary and secondary care health facilities. Even after approaching they were not seeking treatment at proper OPD. This may be due to lack of proper awareness and guidance at the time of registration.

Distribution of OPD and IPD patients also indicates that about one third of patients attending the health facility required hospitalisation. Improper and undesired distribution of patient at OPD will result in deprivation of proper care for IPD patients. Some cases were being admitted at the cost of depriving IPD care for more serious patients.

The study has several limitations in terms of duration and coverage. Switching over of increase in disease burden from communicable to non-communicable diseases cannot be commented on the basis of this study as only one year data were analysed. Also, the study reports diseases covered under IDSP only and some other diseases remain unreported. The study does not explore causes of the observed patterns also.

The study has several implications for health care policy and practice. Observed patterns of communicable and non-communicable diseases among different sub group may be extrapolated at community levels and may be helpful for health planners to frame policies capable to facing future challenges. Observed distribution in OPD and IPD may guide health managers in strengthening and remodelling health care facilities in health institutions for attaining better satisfaction levels for both patients as well as health care providers. Further multi-centric long-term studies with wider coverage are desirable for studying disease trends suggesting better planning strategies.

## CONCLUSIONS & SUGGESTIONS

The study concludes that there is an improper distribution of patients in the health facility with undesired/improper disease burdens in the health facility. Some departments were overburdened whereas some department were unexpectedly under utilised. Remodelling of health care system is suggested for optimum distribution of patients inside health facility. Awareness through some health educational strategies should be attempted for restructuring health care services for attaining proper distribution of patient loads and averting disease burdens.

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