ORIGINAL ARTICLE

Symptomatology and Disease Conditions of Patients Visiting the Largest Tertiary Care Hospital in Punjab, Pakistan: A One-Day Point Prevalence Study

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Abstract:

Background: Pakistan is a middle income, developing country with an immense disease burden. A sensitive perspective of what afflicts the general population will help the policy makers, to plan befitting services and health infrastructure, expend resources, devise medical curricula and determine research priorities, in line with the needs of the country. The present study aimed to find out the prevalence of symptoms and disease conditions with which patients visit the outpatient department of the largest tertiary care hospital in Punjab, i.e. Mayo Hospital, Lahore.

Subjects and Methods: Symptoms, medical conditions and demographic details of all patients visiting all Outpatient Departments of Mayo hospital Lahore on 2nd May,2016 were recorded for the entire length of the (business) day. Simple descriptive analysis of prevalence rates of different conditions was recorded and analyzed later with the help of SPSS 16.

Results: A total of 1997 patients visited the Out Patient Department on the day with Male to female ratio of 51: 49. Fever (13.2%)was the most prevalent symptom followed by headache (7.2%) body ache (6.7%) and breathlessness (6.3%). Respiratory system related symptoms made up 22.8% of the total complaints followed by Dermatology (14.8%) and then E.N.T (13.0%). The most common disease diagnosed was Hepatitis (8.55%) followed by Sore Throat (6.51 %) , Hypertension(4.92%) , Cataract (4.39%) and Tuberculosis (4.06%) .

Conclusion: The research highlights significant social and medical challenges in Pakistan in general and Lahore in particular. It highlights the disease burden of the biggest tertiary care hospital in Pakistan with far ranging implications in our quest for Universal Health Coverage.

Keywords: *point prevalence, morbidity, disease burden, Mayo Hospital*

Introduction

The quantification of burden of disease proves useful for carrying out comparisons over time and across countries, for benchmarking progress; helping place local health system performance and health improvement in context. Morbidity assessment also helps identify conditions and risk factors to inform evidence based health policy. A greater emphasis on disease burden assessment and evidence based practice has been laid after the launch of Global burden of disease report.[1] The study which was based on data from 188 countries concluded that "the proportion of disability-adjusted life years due to YLDs (Years Lost due to Disease) increased globally from 21·1% in 1990 to 31·2% in 2013."While the decision-making priorities of global health authorities are dependent on these projected data, developing countries often lack unified data sets at the national level for proper planning of healthcare provision.

Pakistan is the sixth most populous country in

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Received 31-05-2017: Accepted 20-09-2017

the world with a high burden of Communicable and Non communicable diseases. The country has a vast and dispersed public health system that provides the general population access to a mix of state sponsored and private healthcare facilities. Punjab with a population of over 100 million is the largest province of Pakistan. With approximately 3000 medical facilities in the Province, the health care system is roughly divided into Basic Health Units (BHUs), Rural Health Centers (RHCs), Tehsil Head Quarter (THQ) hospitals, District Head Quarter (DHQ) hospitals, and teaching hospitals. There are about 23 teaching hospitals in the province, of which 11 are in Lahore.[2] These hospitals deal with advanced healthcare requirements and also train doctors and Health related human resource for future needs.

Morbidity Surveillance in countries like Pakistan, is still in a nascent stage. There are no ongoing Public health surveillance systems in place providing timely information on mortality, morbidity, risk factors and their socioeconomic determinants. Because of a dearth of extensive population based studies on prevalence of disease conditions to inform national health assessment, estimates of disease burden are determined from smaller surveys such as the Demographic Health Survey[3] and other secondary data sources. The PDHS (Pakistan Demographic Health Survey) is the largest nationwide health related survey in Pakistan primarily collecting information related to demography, fertility, infant and child mortality, contraception and Family Planning, Maternal and child health, reproductive health, nutrition etc. and does not describe the morbidity profile of the population .

Mayo Hospital, Lahore, is the largest tertiary care Hospital in Pakistan, catering to the health needs of the highest number of patients from the Punjab Province. The Primary Health Care facilities are grossly underutilized and despite functional BHUs and RHCs in rural areas, patients prefer to come to "city" (implying the capital, Lahore) for minor ailments, posing immense burden on higher level facilities that are supposed to provide specialized care. In this context, the most frequented facility remains the Mayo Hospital, Lahore, which by convention, is the oldest, largest and busiest public hospital serving the province. A cross-sectional study marking the disease prevalence in the various out-patient departments of Mayo hospital was planned , which can, in effect, be projected to obtain region-wide prevalence of disease. Such Practice based surveys have provided useful information for health policy planners in countries like the United Kingdom,[4] Singapore,[5] Sri Lanka,[6] Malaysia,[7] South Africa[8] and most recently in India.[9]

The present study was designed in line with the POSEIDON study conducted in India in 2015 to determine the Prevalence of Symptoms on a Single Indian Healthcare Day on a Nationwide Scale. Though on a much smaller scale, the collected data from the present study on symptoms and disease conditions for which patients visit the largest tertiary care center in the Province on a single day , can assist ineffective priority-setting, targeting of programmes to various population groups, evaluation of process related activities and long-term evaluation of preventive interventions.

Methodology

A cross-sectional study was carried out in the Outpatient Department in Mayo Hospital, Lahore. The total number of patients that visited the Outpatient department of Mayo Hospital on 2nd May, 2016 was calculated. All patients that presented to the Outpatient Department on the day were included in our study. Patients that were referred to a different department for second visit on the same day were counted only once and were excluded from the study the second time The International Classification of Diseases (ICD-10) which is a standard diagnostic tool for clinical purposes, epidemiology and health management and is used to monitor the incidence and prevalence of diseases and other health problems was used to diagnose disease conditions.

Point Prevalence is a theoretical concept that assumes ability to count cases of illness at an infinitesimal short period of time, comprising of number of cases of particular disease in a sample as numerator and total number of patients as denominator. The Study questionnnaire was designed in line with the question-nnaire of POSEIDON research on the point prevalence of diseases in India, after obtaining due permission from the authors.56 more variables (symptoms) were added to the original POSEIDON Questionnaire to further strengthen the data

collection instrument so as to avert ambiguity while recording diverse disease symptoms. Hence, there were in total 128 variables inclusive of the 72 variables present in the original (POSEIDON) form. The Outpatient departments covered in Mayo Hospital included Departments of Medicine, Surgery, ENT, Ophthalmology, Chest medicine, Cardiology, Neurology, Psychiatry, Pediatrics, Urology, Dermatology, Orthopedics.

The data were collected with the help of trained medical volunteers who worked under supervision of the research team. A mock exercise was arranged with the volunteers beforehand, to minimize errors in data collection on the day of data collection. The Questionnaire was pretested and cross checked during the mock exercise. The written Patient Consent was waived off by the implied consent rule taking due permissions from Medical Superintendent of MAYO Hospital, Lahore. The patients were nevertheless duly informed regarding the research protocol during data collection and verbal consent was obtained. Prior permissions were obtained from all professors and Heads of Departments of Out-patient departments of Mayo Hospital. The total sample obtained was of 1997 patients. The data was then entered into and analyzed using SPSS 16. The results were later compiled where the frequencies and percentages for each variable were tabulated and compared across gender and age groups.

The authors declare no competing interests in the study. No funding was sought from any source during the conduction of the study.

Results

A total of 1997 patients were recorded to have visited Mayo Hospital, Lahore on Monday, 2nd of May 2016, with their respective symptoms and conditions. The mean age of the total sample was 35.8 years with a Standard deviation of 18.06 .The age distribution showed that most patients that presented fell in the age bracket 26-35 years while the least number were reported above(>)76 years of age. (Figure 1). The sex ratio amongst patients was found to be : Males= 979 (49%) Females =1018 (51%).The basic area distribution showed that the number of patients presenting from Lahore were 1393 (69.8%) and those presenting from outside Lahore were 604 (30.2%).

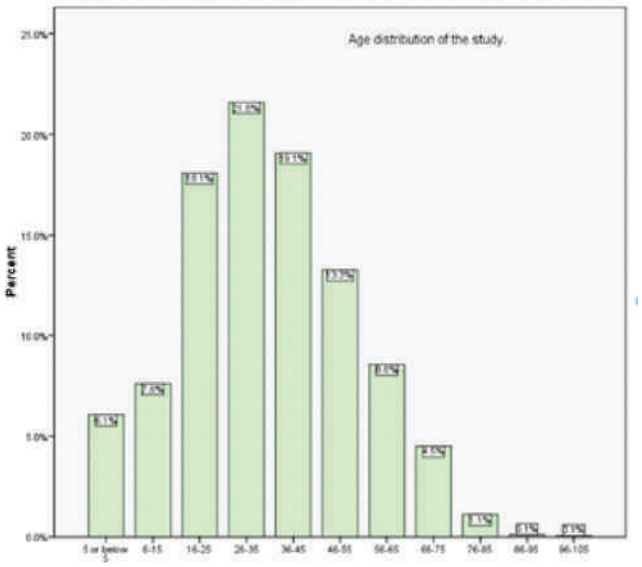

Figure 1. *Age Distribution of Patients Presenting to OPD of Mayo Hospital, Lahore*

Generally the medical outdoor (65.20%) received a much greater burden than the surgical one (Figure 2)

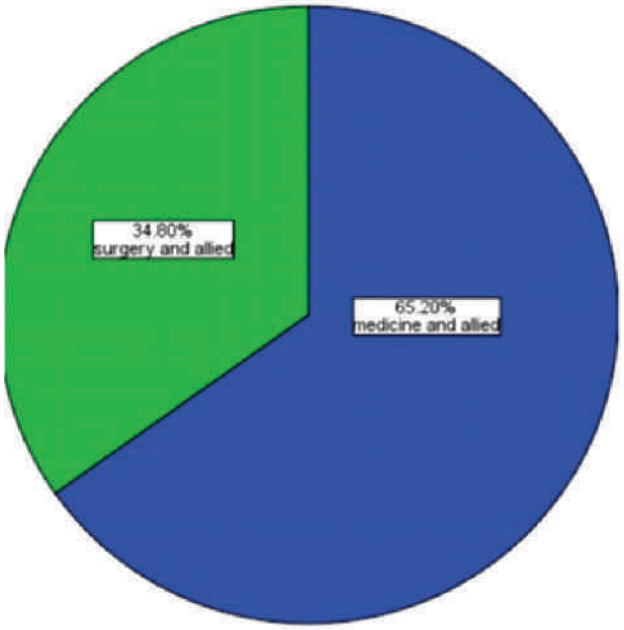

Figure 2. *Specialty wise Distribution of Patients*

The most prevalent symptoms / medical conditions were found to be the following in descending order: Fever (13.2%), Headache (7.2%), Body ache (6.7%), Breathlessness (6.3%), Hepatitis (5.7%), Chest pain (4.7), Expectorant cough (4.5),

Dry cough (4.4%), Acne (4.4%), Sore throat (4.3%), Diarrhea/ vomiting(4.1%) (Figure 3)

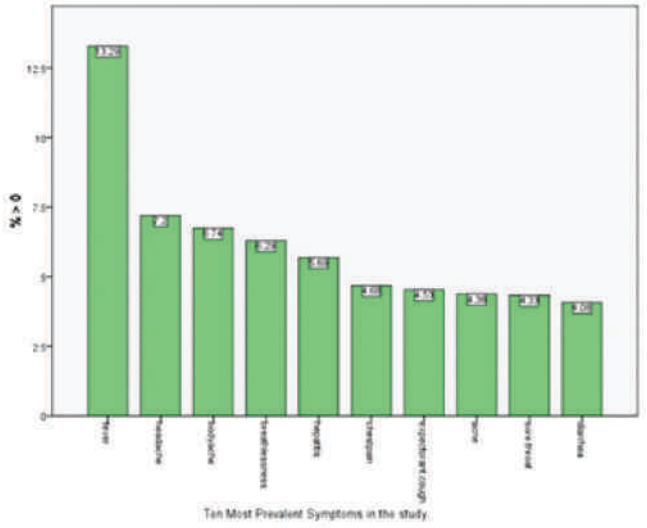

Figure 3. *Ten most Prevalent Symptoms in the Study*

The system-wise analysis showed that the maximum disease burden was received in Respiratory System (22.8%) followed by Dermatology (14.8%) and then E.N.T (13.0%) (Figure 4)

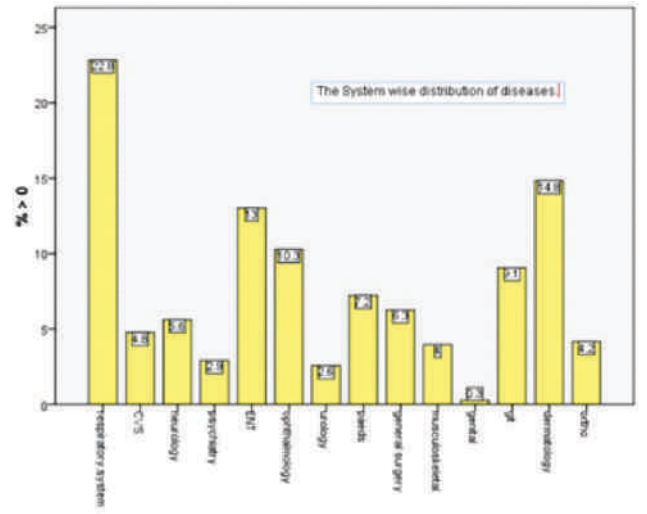

Figure 4. *System wise Distribution of diseases*

Within the respiratory system, the most prevalent symptom was found to be breathlessness (21.5%) followed by chest pain (16%) and then expectorant cough (15%). Within the dermatology system, the most prevalent symptom was found to be acne (15%) .Within E.N.T, the most prevalent symptom was sore throat (60%) followed by tinnitus and ear ache (9%). Within ophthalmology, the most prevalent symptom was cataract (24%) followed by refractory errors (18%) and then ocular infections (16%). Within the gastrointestinal system, the most prevalent symptom was hepatitis (17%) followed by vomiting (14%) and then diarrhea (12.5%). Within the musculoskeletal system, the most prevalent symptom was muscle ache (21.5%) followed by arthritis (17%) and then back pain (15%). Within the neurological system, the most prevalent symptom was dizziness (30%) tingling and numbness (22%) and epilepsy (15%).

Within the psychiatry system, the most prevalent symptoms were sleep disturbances (29%) depression (27%) and aggression (22%) . Within the urological system, the most prevalent were dysuria (42%) urinary retention (24%) and calculi (13%). Within the genital system, the most prevalent were menstrual disturbances (36%), Benign Prostatic Hyperplasia (27%) and Sexually Transmitted Diseases (27%). Within Cardio Vascular System , the most prevalent symptom is hypertension (48%) edema (26%) and Ischemic Heart Disease (9%)

The top 10 most common diagnoses in our study included , Hepatitis (8.55%), Sore Throat (6.51 %) Warts (5.22%), Hypertension (4.92%), Rhinitis (4.46%), Cataract (4.39%) Tuberculosis (4.06%), Thyroid disease (3.71%), Diabetes (3.40%) Refractory errors (3.33%).(figure5)

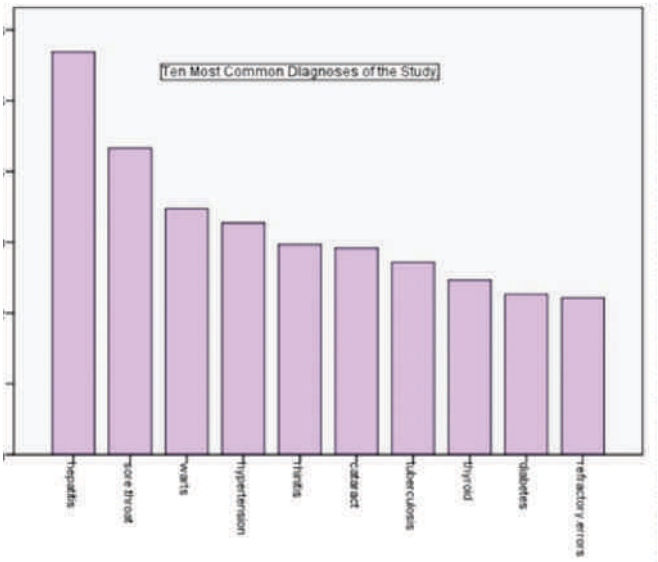

Figure 5. *Ten most Common Diagnoses of the Study*

Discussion

The one-day point prevalence study identified leading medical conditions that necessitate patients to access the formal health care system. Meaningful information related to symptoms and ailments from all Out Patient Departments of Mayo Hospital, Lahore was collected and analysed to recognize the general morbidity profile of the general population. Such studies are particularly significant as they illustrate information which has been validated by a health care professional as compared to population based health surveys which present data based on self reporting by lay respondents.

The one-day point prevalence was found to be 1997 patients on Monday, 2nd of May 2016.The Mayo Hospital website[10] shows that the patient turn over from July 2014 to June 2015 was 1009904 patients from which the average turnover for one day can be calculated to be approximately 2759. Our figure came out to be 762 less than the daily average as shown on the Institutional website. One explanation for this difference could be inaccuracy in total number of patient count due to clerical error. The patient turn-over is also affected by a number of factors, such as seasonal variations, time of month, day of week and extra ordinary circumstances like protests that hamper public access. As opposed to literature from South Africa, Sri Lanka and Malaysia, where more females visit health care facilities, this study reported more Males accessing the formal health system as compared to females (51:49). This finding was in line with the findings of the POSEIDON study from India. One major limitation of this study was the non-inclusion of women's health specialists (GynaeObs Departments) as due to the especially high burden related to childbearing needs of women, these specialties are catered to exclusively in two designated hospitals i.e. Lady Aitcheson and Lady Welling don.

The study highlighted that Communicable as well as Non communicable diseases Respiratory tract infections, diarrhea, tuberculosis etc. are among the leading causes of loss of healthy life, as they are in other parts of the developing world. [14]

Morbidity statistics of Pakistan show that there is a marked increase in disease rates in old age groups with highest morbidity in age group > 65 years.[11] The study results, showed a higher number of patients in younger instead of older age groups, with only 5.8% of the patients being > 65 years. This is probably reflective of the fact that the elderly have lesser access to healthcare. Older citizens from rural areas are often treated cursorily by family members and their complaints are not accorded due considerations due to social or economic constraints. This observation was in line with the Point Prevalence study carried out in India as well. In order to effectively cater to these age groups, the government may consider upgrading healthcare facilities in the remote areas. Supporting this observation is a finding from Agarwal and Colleagues that when healthcare is delivered near patients' homes, older people are the greatest benfactors.[12]

Respiratory symptoms were found to be leading cause of a visit to the outdoor of Mayo Hospital. This is in line with the results of the Global Burden of Disease Study 2013 that showed that amongst the top ten causes of years of life lost due to disease, LRI (Lower Respiratory Tract Infections) was on top for Pakistan.[13]

Moreover, the POSEIDON study conducted in India[9] also concluded that the most prevalent symptoms were related to the respiratory system. This means that respiratory ailments pose a regional problem which could be due to the common risk factors such as smoking and air pollutants from industrial and automobile dis-charge in the two countries. Household air pollution due to solid fuels has been recognized as the most critical risk factor accounting for high disease burden in Pakistan.[14]

Skin diseases came in second in our system-based analysis of disease with the most common symptoms therein, being acne followed by skin rashes. This too corresponds with the data collected from the POSEIDON study in which skin was the fourth most commonly affected system. It may again be speculated that the similar environ-ment of India and Pakistan, conducive to the formation of acne and rashes is responsible for this. Such problems should therefore be considered regional instead of local and appropriate public health measures should be taken to alleviate these problems.

Although, circulatory diseases are among the top most causes of mortality at a country level, our results did not present such an overwhelming

majority of these issues. According to the Pakistan World Health Organization statistical profile[15] ische-mic heart disease was the leading cause of death, killing 111.4 thousand people in 2012. The reason for this may be that patients who visit the OPD do not usually come with chronic circulatory problems such as hypertension as their presenting complaint. Moreover, blood pressure is not always checked as part of the OPD protocol to rule out the incidental presence of any such underlying cardiovascular disease. Therefore diseases with a great iceberg phenomenon i.e, having a large number of undiag-nosed cases in the community could not have been adequately reported through our study and this may be the reason behind their low numbers. This idea may be extended to urge the government to establish effective routine scree-ning programs for ailments such as Hypertension to alleviate their burden in the general population. As far as the age and gender profile of patients within the group of cardio-vascular diseases was concerned, it was observed that 35% of the patients presenting with cardio-vascular disease were between the ages of 76-85 years. Among females with cardiovascular disease 19.8% were above age 76 years whereas among the males 15.9% were above 76 years. This means that the spike in the incidence of cardiovascular disease observed after age 76 years is more prominent for females than males. This is in line with the globally accepted notion that an overall increase in heart attacks among women is seen more, 10 years following menopause.[16] Additionally, a study conducted in Karachi with patients from age group > 40 years also showed females to be affected with heart diseases in a greater proportion than males due to the increased rate of development of risk factors like diabetes, raised LDL levels (co-morbidity), obesity, sedentary lifestyles[17] Another very impor-tant finding was that females made up 68% of the total population of patients that presented with hypertension. The p value came up to a significant 0.032

Hepatitis was reported as the 5th most frequent condition in the study. This shows its highmagnitude in the community and hence calls for massive concern from public health experts. The analysis of most commonly diagnosed disease conditions revealed that hepatitis was the most common diagnosis in OPD of MAYO hospital, having almost twice the number of patients than Hypertension and Tuberculosis. The study high-lights the alarming rates at which Hepatitis is spreading in the general population. This is an area of concern for public health experts as well as policy makers to strengthen the Hepatitis Control Program and implement evidence based strategies on emergency footing to counter the deadly disease.

Within the realm of psychiatry, the most prevalent disorders were sleep disturbances (29%) depression (27%) and aggression (22%). The fact that depression is one of the leading causes of the cases presenting in the psychiatry department resonates with the finding that Pakistan faces higher rates of depression as compared to other developing countries. This has been highlighted in the Global Burden of Disease study (2013) that the top five leading causes of YLDs (Years of Life Lived with Disability) in Pakistan are major depressive disorder, iron-deficiency anemia, low back pain, chronic obstructive pulmonary disease and migraine. This could be attributed in part to social inequalities in the society, economic woes, large family sizes, etc[18]

The analysis of psychiatric diseases with age and gender show a p value of 0.008 and 0.003 respectively. The prevalence of Psychiatric conditions show a bimodal graph with a bulk of population (43%) within the age bracket of 20-35 years and another bulk(30%) at age of 65 years onwards. It was also interesting to know that the majority of females suffer from psychiatric conditions between ages of 16 -30. On the other hand, psychiatric conditions at a later stage in life were more associated with male gender.

In Ophthalmology department, Males (63.7%) outnumbered females (36.3%).

The basic catchment area distribution of the patients showed that the number presenting from Lahore were 1393 (69.8%) and those presenting from outside Lahore were 604 (30.2%) This highlights that a significant chunk of patient load is being received from outside Lahore which may be due to the fact that out of 23 teaching hospitals in Punjab, 11 are centered in Lahore[18]. Our study reinforces the fact that the government needs to

focus on provision of quality healthcare facilities in rural and remote areas to mitigate the burden in tertiary care level facilities.

Limitations

The Present study was a simple observational study in which we recorded basic data related to demographic characteristics, age, area of residence, in addition to the basic symptoms with which the patients presented to the out-door departments of Mayo Hospital, Lahore.

Due to logistic constraints, the data collection was confined to a tertiary care hospital, Such studies need to be conducted more often in larger settings, throughout the year to record seasonal variations in symptoms and diseases. The basic assumption from such a study is that the sample is representative of the whole population but the data lacks external validity and conclusions can only be generalized to a certain extent. This is due to the presence of some inherent flaws such as the Berkson bias, since using only hospital data to draw conclusions about the whole population is not advisable. Additionally, since Mayo hospital receives a heavy amount of "referred" cases, there could be an added degree of invalidity owing to referral bias.

Even within the confines of prevalence studies, we understand that our study may have lacked accuracy due to a number of factors. Primarily, simple logic dictates that a ONE-DAY point prevalence study is bound to over-represent chronic symptoms and under-represent acute ones. Secondly, the outdoor patient protocol is such that patients are only checked "hurriedly" and there is a possibility that many of their complaints are over-looked. Lastly, lack of proper instrumenttation and diagnostic facilities such as sphygmomanometers and thermometers could have added considerable error to the process of recording and reporting certain symptoms and conditions.

Conclusion

Despite affore mentioned limitations, the study offers considerable, insight into the health status of a region where public health is undervalued. The major priorities in Healthcare system in Pakistan are not aligned with population needs. The study results provide information for a disease based analysis in data constrained settings such as ours. Measures need to be taken at both hospital level and community level to cope with the emerging challenges of diseases in Health sector of Pakistan. Furthermore, the results of this study have implications for planning of health services, infrastructure development, inform design of medical curricula and determine research priorities for the country.

Acknowledgements

1:Dr. SundeepSalvi, Dr. Komalkirti Apte, Sapna Madas, Dr. Monica Barne, Sushmeeta Chhowala, Dr. Tavpritesh Sethi, Kunal Aggarwal, Dr. Anurag Agrawal, Dr. Jaideep Gogtay from Chest Research Foundation, 15, Marigold Premises, Kalyaninagar, Pune 411014 for their permission to use the questionnaire of their research of Point Prevalence in India.[7]

2: Noor UlFalah , AiemanSaeed, AnamIkram, Dua Noor Butt, Fatima Rizwan, Khadija Tul Qubra, Maryam Ikram , Syeda Ifrah Ali, Sonia Latif , Zanira Ali, Masooma Idrees , Raja Mobeen, Syed Mujtaba, Faiza Zaheer, Bisma Jamil, Farheen Shahid, Maham Rafiq and Ume Aimon for volunteering during data collection.

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Conflict of Interest : None
Funding Source: None