

## Demographic and disease patterns at a primary healthcare setting

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### Summary

Universal health coverage (UHC) implied that all people had access to quality health services they need, without financial hardship. Nandail had a population of 402,727 with high poverty and low literacy rate. The vast diversity of diseases presenting on daily basis to this facility needs to be quantified on the basis of age and gender and presenting symptoms of the diseases and organ systems involved. This study was aimed to determine the demographic characteristics and disease patterns related to different organ systems presenting at a union sub center. Proportion of smoking among these patients as well as their relation to disease patterns was also assessed. This was a cross-sectional study conducted using the union sub centers patient registry database retrospectively in order to determine the distribution and burden of various common diseases. Secondary data from patient register that presented for the first time and of those whom a specific diagnosis was possible were included into this study for a period of 21<sup>st</sup> February 2020 to 20<sup>th</sup> February 2021 were obtained. Any patient with vague symptoms, inconclusive diagnosis, repeated visits for similar symptoms/diseases were excluded from the study. The results showed that, out of total 1304 patients, 482 (37%) were males and 822 (63%) were females. Most of the patients 670 (51.3%) belonged to the age group of 15-49 years. The maximum patients 246 (18.9%) presented with symptoms involving musculoskeletal system. Certain systems like musculoskeletal system; neurology and endocrine were significantly more involved in females than males. Respiratory cases were seen more in males as compared to females. About 41% of male were smokers, highest smoking proportion was among those who aged 50 or more years. Those man who smoked had more chronic obstructive pulmonary disease (COPD), hypertension and peptic ulcer disease than those who didn't. This study could act as landmark for future such studies which will ensure equitable distribution of limited resources and overall achieving greater efficacy.

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### Introduction

Bangladesh is eighth most populous Country in the world.<sup>1</sup> For its geography, political location, increasing youth population and progressive growth it's one of the world's leading developing countries. But still it faced issues with high maternal mortality (170/1000000 live birth) and under five-year child mortality (46/1000 live birth).<sup>1</sup> One of the major issues was lack of scientific data from primary care level. Most of the people in Bangladesh live in villages and majority of them are being treated in primary health care settings like union sub-center, community clinic and upazilla health complex. Bangladesh being a developing country had a diversity of health care problems and diseases that acted as a huge health care problem. The vast spectrum of diseases presented in a defined population, most of which were reported and treated at local level, but the need of quantification as well

as burden assessment still remained unmet. The imminent need of morbidity assessment could prove to be the key in the development of an up-to-date health care system that might prove useful in decreasing this disease burden.

The difference in symptomatology in different age groups often made it difficult to quantify diseases based solely on the basis of symptoms.<sup>2</sup> A rise in the disability-adjusted life years due to years lost to disease over a period of 23 years (1993-2013) in 188 countries was seen from 21.1% to 31.2%, which clearly emphasized on the importance of assessment of disease burden in developing countries.<sup>3</sup> In order to provide the health services to the people properly, detailed information on health and demographic situation of the country needed to be collected on a regular basis particularly data on morbidity, impairment, maternal

health, use of tobacco and injury/accidents are urgently needed to make appropriate policies for achieving the targets.

So, no doubt to achieve universal health coverage; to provide essential service package and to ultimately achieve the sustained development goals (SDGs) via equitable distribution of health resources, authentic grass root level data is a must. Nandail upazila of Mymensingh had a population of 402,727 with high poverty rate (50.5%) and low literacy rate (40.38%). Rajgati is one of its unions having population of 24,936.<sup>4</sup> Dorilla Union subcenter is 16km away from the upazilla health complex acting as a first point of contact of varieties of patient every day. The vast diversity of diseases presenting on daily basis to this facility needed to be quantified on the basis of age and gender and presenting symptoms of the diseases and organ systems involved. The burden of various diseases also needed to be calculated as was done in India,<sup>5</sup> United Kingdom,<sup>6</sup> South Africa<sup>7</sup> and Malaysia.<sup>8</sup> Authentic data of patients from this facility over a period of one year would eventually prove effective and helpful in the priority setting, placement of well-planned policies and appropriate resources to disease control at local levels so that the mortality and morbidity might be reduced and patient load might be filtered before reaching the tertiary care hospitals. So, the study was aimed to determine demographic characteristics and disease patterns related to different organ systems presenting at a union sub center as well as proportion of smoking among these patients and their relation to disease patterns was also assessed.

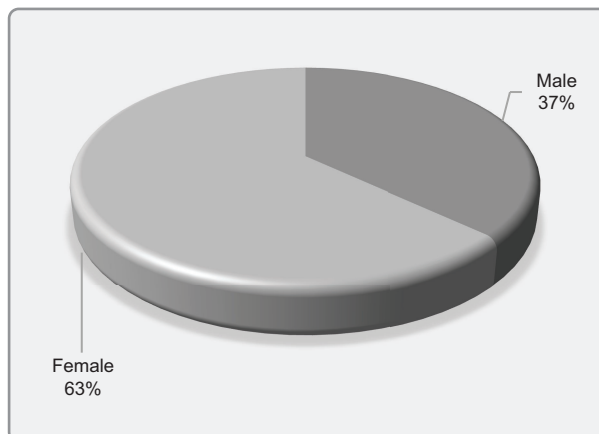
### Materials and methods

This was a cross-sectional study using the union sub centers patient registry database retrospectively. The Union Sub center was located in Pachdorilla village, under Rajgati Union. Secondary data from patient register that presented for the first time and of those whom a specific diagnosis was possible were included in this study for a period of 21<sup>st</sup> February 2020 to 20<sup>th</sup> February 2021 were obtained. Any patient with vague symptoms, inconclusive diagnosis, repeated visits for similar symptoms/diseases were excluded from the study. From total new 2432 patients, 1304 were retained as sample. Data for each individual patient were collected from a standard outpatient department (OPD) register which contained pre-defined proforma for each patient containing Socio-demographic characteristics, smoking history, presenting symptoms, probable diagnosis and system involved on basis of history, examination and relevant investigation. Data were entered into statistical package for the social sciences (SPSS) 25 for analysis.

### Results

Among those who visited the health care facility in the defined time period, the record of 1304 patients met study criteria. The

results showed that, Out of 1304 patients 482 (37%) were males and 822 (63%) were females (Figure 1).



**Figure 1: Gender-wise distribution of the patients (n=1304)**

Mean age of the participants was 37.8 ( $\pm$  22.793 SD) years. Most of the patients (n=670, 51.3%) belonged to the age group of 15-49 years. Thirty-two (2.5%) patients were less than one year old, whereas other children under five constituted 79 (6.1%). Total of 254 (19.4%) patients were of 50-69 years range while 160 (12.3 %) were 70 years or above (Table 1).

**Table 1: Age-wise distribution of patients (n=1304)**

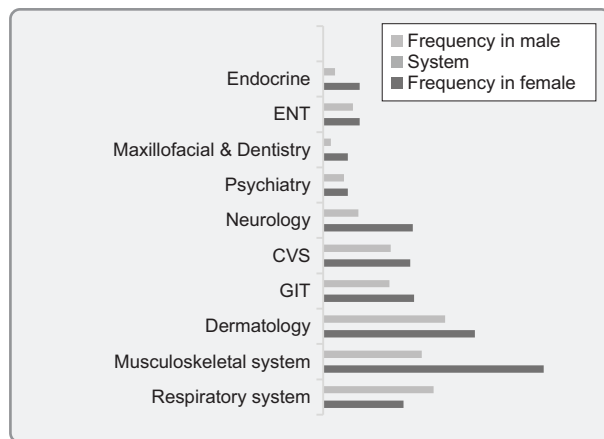
Age group (in years)	Frequency	Percentage
<1	32	2.5
1-4	79	6.1
5-14	109	8.4
15-49	670	51.3
50-69	254	19.4
70 or more	160	12.3

The presenting symptoms of the patients were organized into various organ systems. The maximum patients 246 (18.9%) presented with symptoms involving musculoskeletal system. Second most common presentation was symptoms involving the dermatological system 211 (16.2%). Symptoms involving respiratory system were 147 (11.3%) followed by cardiovascular system (CVS) with 119 (9.1%), gastro intestinal symptoms (GIT) 121 (9.3%) and neurological symptoms 96 (7.4%). Among other patients, 56 (4.3%) had gynecological symptoms, 51 (3.9%) had ear nose throat (ENT) symptoms, 44 (3.3%) were pregnant, 35 (2.7%) had psychiatric symptoms, 37 (2.8%) had endocrine symptoms, 25 (1.9%) had maxillofacial and dentistry symptoms (Table 2).

**Table 2: Distribution of patients according to organ system involved (n=1304)**

Organ system involved	Frequency	Percentage
Respiratory system	147	11.3%
Musculoskeletal system	246	18.9%
Dermatology	211	16.2%
GI	121	9.3%
CVS	119	9.1%
Neurology	96	7.4%
Psychiatry	35	2.7%
Gynecology	56	4.3%
Pregnancy	44	3.3%
Maxillofacial and dentistry	25	1.9%
ENT	51	3.9%
Endocrine	37	2.8%
Others	116	8.9%

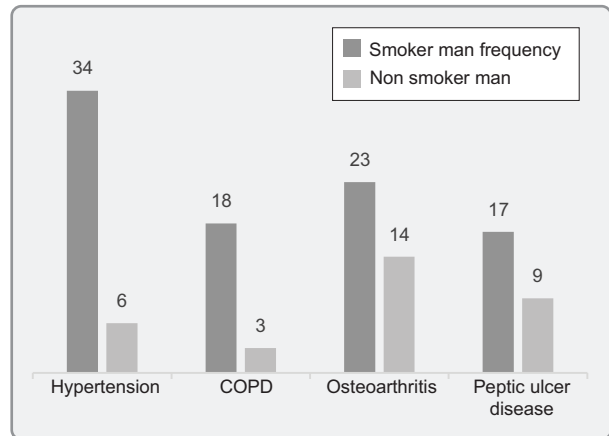
Comparing genders in organ systems involved showed that involvement of females than males were more in certain systems like musculoskeletal, neurology and endocrine systems. Respiratory cases were seen more in males as compared to females. System like psychiatry, ENT showed almost similar involvement (Figure 2).



**Figure 2: Gender-wise distribution of various organ systems involved (n=1304)**

After applying chi square test, a statistically significant relationship between gender and organ systems involved was seen (p- 0.000). By cross tabulating age with diagnosis, those of 15-49 age group suffered more with hypertension, osteoarthritis, tension type headache & peptic ulcer disease than other groups. On the other hand, considering organ systems involved it was seen that musculoskeletal, gynecological, dermatological, psychiatric, neurological and GI symptoms were far more prevalent in 15-49 age group as compared to other group. Another observation was about 201 patients were smoker

(15.41%), all were male. About 41% of male were smokers, highest smoking prevalence was among those who aged 50 or more years. Those man who smoked had more COPD, hypertension, Peptic ulcer disease than those who didn't (Figure 3). Smoking had strong association with diagnosis and system involved (p-.000).



**Figure 3: Comparative analysis between diagnosis of male smokers and non-smokers (n=1304)**

**Discussion**

This study was done across one year for assessing patients' demographic profile, symptom analysis, smoking status and diagnosis on the basis of appropriate measures. Later analysis was done among these variables establishing linkage between them when present. In this union sub center about 3217 patients had visited over a period of one year which is about 13% of the total population. Number was even higher even though record keeping was extremely difficult and sometimes inaccuracies seeped in due to lack of skilled man power. Lack of health education, presence of local quakes, long standing attitude of general people towards these sub centers, emergence of corona virus induced disease (COVID) 19, remote location and poor infrastructure might also had played roll into relative low patient turnout. Among these 1304 new patients were enrolled for the study to ensure data authenticity among which majority were women 822 (63%). This was in line with other studies which showed more female than male responders.<sup>9</sup> One of the explanation might be male were more involved in outdoor activity, female due to cultural stigma tended to attend centers close to the locality and were given lesser preference over male counterparts in health expenditure.<sup>10</sup> In current study, 15-49-years patients were highest (51.3%) among the study group which might be due to better health education, more concern about personal health, female of reproductive age visiting due to pregnancy and other reproductive issues and young males contracting various minor illnesses in their work place. Moreover,

according to Bangladesh sample statistics 2018, this age group accounted for 54.2% of the total population of Bangladesh. It was also noteworthy that a good number of patients aged 50 or more, 414 (31.7%) in total which was a testament to the data that Bangladesh was one of the 20 developing countries with the largest numbers of older people, and by 2025 Bangladesh, along with four other Asian countries, would account for about half of the world's older population.<sup>11</sup> This would pose new health issues and challenges for the current and future policy makers.

Most of the patients (18.9%) suffered from symptoms related to musculoskeletal system, which was quite natural considering hard manual labor people of these region go through. As female were less privileged and were to do both household and outside chores, they were the most sufferers. This figure also corresponded to other data showing more female involvement than male.<sup>12</sup> A good number of patients suffered from dermatological issues which was due to the poor water condition, working in unhealthy environment and lack of attention to skin care. Most common skin diseases were eczematous dermatitis, fungal infection, seborrheic dermatitis, urticaria which were common dermatological disorders in Bangladesh.<sup>13</sup> Another issue was around 11.3% patients suffered from symptoms ranging from minor respiratory tract infections to COVID 19. Due to lack of interest in patients in performing *reverse transcription polymerase chain reaction* (RT PCR) owing to their stigma and social disbelief of COVID 19, only one confirmed Covid-19 case was found. Crowded conditions, poor living standard contribute to more influenza cases in rural settings.<sup>14</sup> Like previous studies non-communicable disease rate was found to be higher than expected. Hypertension was found in about 7.5% of patients most of whom presented for other problems and diagnosed co incidentally. This reaffirmed the notion that prevalence of hypertension was high and rising in Bangladesh.<sup>15</sup>

Headaches of various kind also possessed a major burden for people in Bangladesh<sup>16</sup> needed proper assessment and expertise treatment. Other factor contributing to disease burden was smoking. It was the only other risk factor which was assessed in this study. All the smokers were male and about 41% male were smokers. Highest smoking prevalence was among those who aged 50 or more years. These findings were consistent with overall national male smoking prevalence of 37% which tended to be higher in rural areas and the prevalence of tobacco use increased consistently from younger to older age groups.<sup>17</sup> It was strongly associated with more cases of hypertension, chronic obstructive pulmonary disease (COPD), peptic ulcer disease as its preceding studies yielded similar results.<sup>18</sup> In this study osteoarthritis rate was higher among smoker males but some other studies showed different result with no or even protective effect in some other studies.<sup>19,20</sup>

## Conclusion

This study looked at some of the few variables which needed further quantification and assessment. Changing demographic might possess new burden and challenges for the government in coming days. If data from such grass root level could be collected periodically it would go a long way helping the government ensuring effective health care strategies. Moreover, people's perception of local health facilities might improve and health education could be more effective understanding each area burden of disease patterns via scientific method. Maternal health, child health, reproductive health, mental health these issues thus would get more priority ultimately helping the country to achieve SDGS by 2030.

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