

## Spectrum of endocrine disorders in outpatient settings: Insights from three hospitals in Bangladesh

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### Abstract

**Background:** Endocrine disorders make up a significant and expanding portion of non-communicable diseases in Bangladesh; there is still a dearth of thorough outpatient data from the country.

**Objective:** This study aimed to describe the spectrum of endocrine disorders encountered in specialized endocrine outpatient departments (OPDs) across government and private hospitals in Bangladesh and to classify these disorders using the World Health Organization (WHO) ICD-11 coding system.

**Methods:** We conducted a multicenter cross-sectional study using retrospective data from the endocrinology OPDs of three healthcare settings (government, private, and diagnostic consultation centers) in urban and semi-urban Bangladesh. Consecutive patients attending OPDs between September 2022 and December 2025 were included. Demographic and clinical data were extracted from hospital registries and electronic medical records. Endocrine disorders were classified according to the WHO ICD-11 framework.

**Results:** Among 17,069 OPD attendees, 16,531 (96.84%) endocrine diagnoses were recorded. The mean age was 40.3±15.2 years, with female predominance 11792 (71.3%). Endocrine pancreatic disorders were most prevalent, 8522 (43.9%), largely dominated by type 2 diabetes mellitus 7958 (93.4%). Thyroid disorders 5889 (30.3%), obesity/metabolic syndrome 2312 (11.9%), and reproductive endocrine disorders 1470 (7.5%) were the next prevalent disorders. Overt hypothyroidism and polycystic ovary syndrome were the most frequent thyroid and reproductive disorders, respectively. Diabetes predominated in the 40–60-year age group, whereas thyroid disorders were more common among younger adults and females.

**Conclusion:** This large multicenter OPD-based study demonstrates a substantial burden of diabetes and thyroid disorders in Bangladesh, with marked female predominance and significant reproductive endocrine morbidity. The findings underscore the need for integrated endocrine care, targeted screening strategies, and strengthened public health interventions to address the rising burden of endocrine diseases in Bangladesh. [*J Assoc Clin Endocrinol Diabetol Bangladesh*, January 2026; 5(1): 35-44]

**Keywords:** Endocrine disorders, diabetes mellitus, thyroid diseases, Bangladesh, outpatient study

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### Introduction

Endocrine disorders are medical conditions resulting

from dysfunction of the endocrine system, which produces and secretes hormones directly into the

bloodstream to regulate multiple physiological processes, including growth, metabolism, reproduction, stress response, and energy homeostasis.<sup>1</sup> These disorders commonly arise from hormone excess or deficiency, structural or functional abnormalities of endocrine glands, or impaired tissue responsiveness to hormones. Many endocrine disorders are chronic in nature and require lifelong monitoring and management, with delayed diagnosis often leading to significant metabolic, cardiovascular, reproductive, and neuropsychiatric complications. Diabetes mellitus (DM) and thyroid disorders represent the leading causes of endocrine consultations in routine clinical practice.<sup>2</sup> However, a wide range of other endocrine conditions-including adrenal disorders, pituitary and hypothalamic diseases, reproductive endocrinopathies, infertility, endocrine hypertension, obesity, and disorders of growth and puberty-are also frequently encountered in endocrine outpatient departments (OPD).

Non-communicable diseases (NCDs) are the leading causes of mortality worldwide and constitute a major challenge for healthcare systems, particularly in low- and middle-income countries. In 2021, more than 43 million deaths were attributed to NCDs, accounting for nearly three-quarters of all non-pandemic-related deaths globally.<sup>3</sup> Diabetes mellitus alone contributed to 9.3% of global deaths in 2024.<sup>4</sup> Currently, approximately 589 million adults worldwide (11.1%) are living with DM, while 635 million (12%) have impaired glucose tolerance, and nearly one in three live births is affected by some form of hyperglycemia.<sup>3</sup> In Bangladesh, the prevalence of DM among adults is estimated at 13.2%, reflecting a rapidly growing public health burden.<sup>4</sup> Thyroid disorders affect nearly 200 million people globally.<sup>5</sup> While obesity and metabolic syndrome are increasing in parallel with rapid urbanization, dietary transitions, and sedentary lifestyles.<sup>6</sup> Importantly, diabetes, thyroid disorders, and obesity are strongly associated with increased cardiovascular morbidity and mortality, contributing substantially to premature death and healthcare expenditure.<sup>7</sup>

In Bangladesh, the majority of patients with endocrine disorders are initially evaluated and managed by non-endocrinologists from various specialties, including general medicine, gynecology, psychiatry, dermatology, and urology, largely due to a shortage of trained endocrinologists. Endocrine disorders often present with non-specific symptoms or overlap with other systemic diseases, further contributing to delayed diagnosis and fragmented care. In recent years, both government and

private medical colleges and hospitals have recognized the growing demand for endocrine services, leading to the establishment of dedicated endocrine OPDs in many institutions. Pediatric endocrine services, however, remain limited and are largely concentrated in Dhaka; outside the capital, pediatric endocrine disorders are often managed by adult endocrinologists or general pediatricians. Although some non-endocrine conditions are evaluated in endocrine OPDs, their overall proportion appears to be minimal.

Epidemiological data form the foundation for health policy formulation, resource allocation, and advanced clinical research. In Bangladesh, reliable epidemiological information is lacking for many endocrine disorders despite their frequent presentation in outpatient settings. Most available data are derived from small, single-center studies or disease-specific analyses, limiting generalizability. To date, comprehensive data describing the overall spectrum of endocrine diseases from large representative OPD-based cohorts are scarce. Therefore, this study aimed to describe the spectrum of endocrine disorders encountered in specialized endocrine OPDs across government and private hospitals in Bangladesh and to classify these disorders using the World Health Organization (WHO) ICD-11 coding system.

## Methods

**Study design and population:** We conducted a cross-sectional study using retrospective data from the OPDs of three hospitals representing government, private, and personal chamber settings in both urban and semi-urban areas: Medical College for Women and Hospital (MCWH), Uttara, Dhaka; Ibsina Diagnostic Center (IDC), Uttara, Dhaka; and Khulna Medical College Hospital (KMCH), Khulna. MCWH is a private, multidisciplinary tertiary care medical college hospital located within Dhaka North City Corporation. It provides both undergraduate medical education and a wide range of healthcare services, serving primarily patients from Dhaka North and the surrounding areas. A substantial number of patients also visited from Tongi, Gazipur, Savar, Brahmanbaria, Feni, Noakhali, Munshiganj, and other districts, as indicated by their addresses. IDC is a multidisciplinary consultation center focused exclusively on routine outpatient consultations. KMCH is a government medical college hospital that provides both basic and advanced healthcare services to patients residing in or around the Khulna division. All consecutive patients who visited the endocrinology

OPDs of the aforementioned hospitals were considered for this study. A total of 17,069 unique patients were collected from hospital databases without repetition: IDC from 01 September 2022 to 12 December 2025 (n = 5,157), MCWH from 17 July 2025 to 12 December 2025 (n = 595), and KMCH from 16 September 2024 to 18 September 2025 (n = 11,317). Both participating institutions maintain routine medical records in which patient demographic details, clinical diagnoses, and investigation results are systematically documented at the time of service using standardized institutional formats. For this study, relevant data were extracted from these existing records under the supervision of the same investigator to ensure consistency and accuracy. However, as with all retrospective record-based studies, the possibility of incomplete or missing data cannot be entirely excluded. Relevant variables for the study, including registration number, age, sex, endocrine diagnosis, comorbidities, and reasons for consultation, were extracted from hospital registries and electronic medical records. Multiple visits by the same patient were counted only once. Patients who presented with non-endocrine problems or were ultimately diagnosed with non-endocrine conditions were also recorded and reported as frequencies and percentages. After applying the inclusion criteria, a total of 16,009 participants with a spectrum of endocrine disorders, classified according to the World Health Organization (WHO) ICD-11 for Mortality and Morbidity Statistics, were included in the final analysis.<sup>8</sup>

**Statistical analysis:** All data were analyzed using descriptive statistics. Continuous variables, including age, were summarized as mean  $\pm$  standard deviation (SD), while categorical variables, such as sex and disease types, were presented as frequencies and percentages.

As patients could have more than one endocrine diagnosis, disease categories were not mutually exclusive. Therefore, the total number of endocrine disorder diagnoses exceeded the number of participants (n=16,009). For each condition, percentages were calculated both within the specific disease group (e.g., type 2 diabetes mellitus within endocrine pancreatic disorders) and relative to the total study population. Therefore, disease frequencies were calculated independently for each diagnosis using binary variables. Percentages were calculated using the total study population and relevant disease subgroups as denominators. Cumulative percentages were not

reported. Data management and analyses were performed using SPSS.

**Ethical consideration:** The study was conducted after being approved by the Institutional Ethics Committee of Khulna Medical College [Ref: KMC/ERC/05]. As this was a retrospective analysis of routinely collected clinical data, the requirement for written informed consent was waived. Formal consent was taken from the respective authorities of hospitals. Patient confidentiality was strictly maintained, and all data were anonymized before analysis to ensure privacy and compliance with ethical standards.

## Result

Among the study participants (n=17,069) who attended the endocrine OPDs, a total of 16,531(96.84%) endocrine disorder diagnoses were recorded, while 538 (3.15%) diagnoses were of non-endocrine origin. The mean age of participants was 40.31 $\pm$ 15.19 years, with 7807 (47.2%) aged under 40 years. The majority were female, 11792 (71.3%), and age and sex distributions were broadly similar between government (n=10,936) and private hospitals (n=5,595) (Table-I).

The organ-specific distribution of endocrine disorders showed that the most prevalent conditions were endocrine pancreatic disorders (8,522; 43.9%), thyroid disorders (5,889; 30.3%), obesity and metabolic syndrome (2,312; 11.9%), and reproductive endocrine disorders (1,470; 7.5%). Less common disorders included adrenal (0.8%), parathyroid/vitamin D/calcium (1.6%), pituitary/hypothalamic (0.3%), growth (0.6%), pubertal (0.2%), and syndromic conditions (0.03%) (Table-I). Because patients could have more than one diagnosis, diseases were not mutually exclusive, and frequencies were calculated independently for each condition and expressed as proportions of the total study population.

Endocrine pancreatic disorders were dominated by type 2 diabetes mellitus (7,958; 93.4% within group; 49.7% overall), followed by prediabetes (3.18%), gestational diabetes (2.30%), and rare cases of type 1 diabetes (0.07%) or other specified diabetes (0.22%) (Table-II). Thyroid disorders were primarily overt hypothyroidism (63.1% within group; 23.2% overall) and subclinical hypothyroidism (20.7%; 7.6% overall), with smaller contributions from thyrotoxicosis (9.3% within group; 3.4% overall), nontoxic goiter (3.0%), and thyroiditis (1.9%) (Table-III). Among adrenal disorders, iatrogenic

**Table-I:** Characteristics of patients attending an endocrine outpatient department and organ-specific distribution of endocrine disorders (N=16,531)

Characteristics/Disorders	Total (n=16531)	Govt. Hospital (n=10936)	Private Hospital (n=5595)
Age (years, mean ± SD)	40.31 ± 15.19	40.04 ± 14.90	40.89 ± 15.80
<b>Age Category</b> (years); (n, %)			
<40	7807 (47.2%)	5352 (47.3%)	2455 (47.1%)
40-60	7248 (43.8%)	5076 (44.9%)	2172 (41.6%)
>60	1476 (8.9%)	888 (7.8%)	588 (11.3%)
<b>Sex;</b> (n, %)			
Female	11791 (71.3%)	8443 (74.6%)	3348 (64.2%)
Male	4740 (28.7%)	2873 (25.4%)	1867 (35.8%)
<b>Organ-specific distribution of endocrine disorders</b>			
Endocrine pancreatic disorders; (n, %)	8522 (43.9%)	4691 (38.8%)	3831 (52.3%)
Thyroid disorders; (n, %)	5889 (30.3%)	4306 (35.6%)	1583 (21.6%)
Adrenal disorders; (n, %)	158 (0.8%)	77 (0.7%)	81 (1.1%)
Reproductive endocrine disorders; (n, %)	1470 (7.5%)	987 (8.2%)	483 (6.6%)
Parathyroid, Vitamin D, and Calcium Disorders; (n, %)	306 (1.6%)	126 (1.0%)	180 (2.5%)
Pituitary and Hypothalamic Disorders; (n, %)	67 (0.3%)	42 (0.3%)	25 (0.3%)
Growth Disorders; (n, %)	130 (0.6%)	90 (0.7%)	40 (0.6%)
Pubertal Disorders; (n, %)	35 (0.2%)	21 (0.2%)	14 (0.2%)
Obesity & Metabolic Syndrome; (n, %)	2312 (11.9%)	1300 (10.7%)	1012 (13.8%)
Syndrome (BB + Down syndrome); (n, %)	6 (0.03%)	4 (0.03%)	2 (0.03%)
*Other disorders; (n, %)	522 (2.7%)	449 (3.7%)	73(1.00%)
<b>Total endocrine disorder</b>	<b>19417</b>	<b>12093</b>	<b>7324</b>

Mean±SD for normally distributed data; BB: Bardet-Biedl syndrome; \*Other diseases: (Weight loss, increased sweating, weakness, vertigo, abnormal thyroid and diabetic test report, hair fall, graying of hair, electrolyte imbalance, palpitation, hyperhidrosis, PN, polyuria); Percentage done over column total.

Characteristics are expressed as frequencies from all attendees at the OPD. Percentages of endocrine disorders were calculated from the total endocrine diagnoses (Total = 18895, in Government Hospital = 11644, in Private Hospital = 7251); categories are not mutually exclusive. Multiple diagnoses per patient were permitted; therefore, categories are not mutually exclusive.

**Table-II:** Endocrine pancreatic disorders according to ICD-11 (n=8522)

Disease type	n	% within group (n=8,522)	% within total (n=16,009)
5A10 Type 1 diabetes mellitus	6	0.07%	0.04%
5A11 Type 2 diabetes mellitus	7,958	93.38%	49.73%
5A13 Diabetes mellitus, other specified type	19	0.22%	0.12%
JA63 Hyperglycemia during pregnancy – GDM	196	2.30%	1.22%
JA63 Hyperglycemia during pregnancy – DIP	57	0.67%	0.36%
5A41 Spontaneous hypoglycemia	15	0.18%	0.09%
Prediabetes	271	3.18%	1.69%
<b>Total</b>	<b>8,522</b>	<b>100%</b>	<b>53.24%*</b>

Percentages are expressed as within-group (denominator=disease-specific total, n=8,522) and within-total (denominator=overall population, n=16,009); categories are not mutually exclusive. \*53.24% indicates that pancreatic disorder constituted this proportion of the overall cohort (8522 of 16,009); GDM: Gestational diabetes mellitus; DIP: Diabetes in pregnancy.

**Table-III:** Spectrum of thyroid disorders according to ICD-11 (n=5889)

Disease type	n	% within group (n=5,889)	% within total (n=16,009)
<b>5A00 Hypothyroidism</b>			
Subclinical hypothyroidism	1,220	20.72%	7.62%
Overt hypothyroidism (primary + secondary)	3,718	63.13%	23.23%
<b>5A02 Thyrotoxicosis</b>			
5A02.0 Graves' disease	372	6.32%	2.32%
5A02.1 Toxic single thyroid nodule	7	0.12%	0.04%
5A02.2 Toxic multinodular goiter	23	0.39%	0.14%
5A02.Y Other specified thyrotoxicosis (GTT)	27	0.46%	0.17%
5A02.Z Thyrotoxicosis, unspecified	120	2.04%	0.75%
<b>5A01 Nontoxic goiter</b>			
5A01.0 Nontoxic diffuse goiter	177	3.01%	1.11%
5A01.1 Nontoxic single thyroid nodule	54	0.92%	0.34%
5A01.2 Nontoxic multinodular goiter	58	0.99%	0.36%
<b>5A03 Thyroiditis</b>			
5A03.1 Subacute thyroiditis	53	0.90%	0.33%
5A03.Z Thyroiditis, unspecified	60	1.02%	0.37%
<b>Total</b>	<b>5,889</b>	<b>100%</b>	<b>36.78%*</b>

Percentages are expressed as within-group (denominator=disease-specific total, n=5889) and within-total (denominator=overall population, n=16,009); categories are not mutually exclusive; \*36.78% indicates that thyroid disorders constituted this proportion of the overall cohort (5,889 of 16,009); Thyrotoxicosis (Unclassified): Patients on antithyroid drugs for a long time, but couldn't specify their diagnosis; GTT: Gestational transient thyrotoxicosis

**Table-IV:** Spectrum of adrenal disorders according to ICD-11 (n=158)

Disease type	n	% within group (n=158)	% within total (n=16,009)
5A70 Cushing syndrome (unspecified)	3	1.90%	0.02%
5A70.0 Pituitary-dependent Cushing disease	5	3.16%	0.03%
5A70.2 Pseudo-Cushing syndrome	2	1.27%	0.01%
5A70.Y Other specified Cushing syndrome	0	0.00%	0.00%
Adrenal Cushing syndrome	2	1.27%	0.01%
Iatrogenic Cushing syndrome	66	41.77%	0.41%
5A71 Adrenogenital disorders (CAH)	6	3.80%	0.04%
5A72 Hyperaldosteronism	0	0.00%	0.00%
5A74 Adrenocortical insufficiency	0	0.00%	0.00%
5A74.0 Acquired adrenocortical insufficiency (steroid withdrawal)	66	41.77%	0.41%
5A61.1 ACTH deficiency (pituitary cause)	6	3.80%	0.04%
5A75 Adrenomedullary hyperfunction (pheochromocytoma)	1	0.63%	0.01%
5A76 Certain specified disorders of the adrenal gland	1	0.63%	0.01%
<b>Total</b>	<b>158</b>	<b>100%</b>	<b>0.99%*</b>

Percentages are expressed as within-group (denominator=disease-specific total, n=158) and within-total (denominator=overall population, n=16,009); categories are not mutually exclusive; \*0.99% indicates that adrenal disorders accounted for this proportion of the total cohort (158 of 16,009); CAH: Congenital adrenal hyperplasia.

**Table-V:** Reproductive endocrine disorders according to ICD-11 (n=1470)

Disease type	n	% within group (n=1,470)	% within total (n=16,009)
<b>Female reproductive disorders</b>			
5A80.0 PMS	234	15.92%	1.46%
5A80.1 Polycystic ovary syndrome	482	32.79%	3.01%
GA30.6 Premature ovarian failure	9	0.61%	0.06%
ED72.1 Hirsutism with hyperandrogenemia	143	9.73%	0.89%
<b>GA20 Menstrual disorders</b>			
GA20.00 Amenorrhea (primary+other)	43	2.93%	0.27%
GA20.11 Oligomenorrhea	14	0.95%	0.09%
GA20.10 Menorrhagia	19	1.29%	0.12%
GA31 Female infertility	90	6.12%	0.56%
<b>Male reproductive disorders</b>			
5A61.2 Hypogonadotropic hypogonadism	34	2.31%	0.21%
5A81.1 Hypergonadotropic hypogonadism	19	1.29%	0.12%
GB04 Male infertility (primary + secondary)	44	2.99%	0.27%
<b>Male sexual dysfunction</b>			
MB22.1 Decreased libido	48	3.27%	0.30%
HA01.1Z Erectile dysfunction, unspecified	113	7.69%	0.71%
HA03 Ejaculatory dysfunction (premature ejaculation)	65	4.42%	0.41%
GB22 Gynecomastia	101	6.87%	0.63%
DSD (both sexes)	12	0.82%	0.07%
<b>Total</b>	<b>1,470</b>	<b>100%</b>	<b>9.18%*</b>

Percentages are expressed as within-group (denominator=disease-specific total, n=1470) and within-total (denominator=overall population, n=16,009); categories are not mutually exclusive; \*9.18% indicates that reproductive and sexual disorders constituted this proportion of the overall cohort (1,470 of 16,009); Abnormal semen analysis reports are included in the male subfertility group; DSD: Disorders of Sex Development; PMS: Post-menopausal Syndrome

Cushing syndrome (41.8% within group; 0.41% overall) and acquired adrenocortical insufficiency (41.8% within group; 0.41% overall) were most frequent, while rarer conditions included pituitary-dependent Cushing disease, adrenogenital disorders, and pheochromocytoma (Table-IV).

Reproductive endocrine disorders were more common in females, with polycystic ovary syndrome (32.8% within group; 3.0% overall) and premenstrual syndrome (15.9% within group; 1.5% overall) predominating, along with hirsutism, menstrual disorders, and female infertility. Male reproductive and sexual disorders included erectile dysfunction (7.7%), gynecomastia (6.9%), decreased libido (3.3%), and male infertility (2.99%), while disorders of sex development (DSD) were rare (0.82% within group; 0.07% overall) (Table-V). The other endocrine disorders group (pituitary, hypothalamic, growth, pubertal, parathyroid,

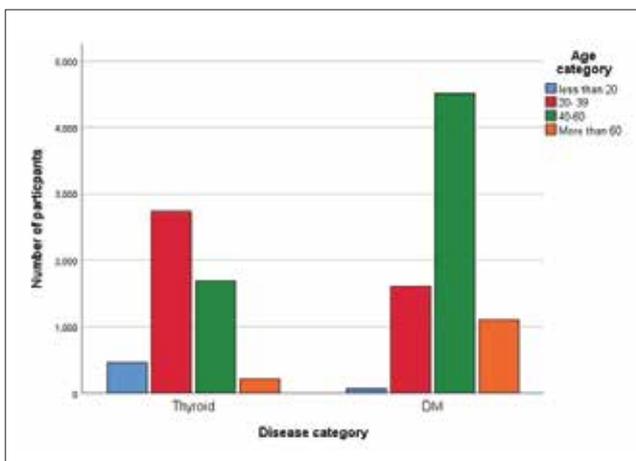
and vitamin D disorders) was led by vitamin D deficiency (52.5% within group; 1.77% overall), short stature (23.8%; 0.8% overall), and prolactinoma/hyperprolactinemia (8.6%; 0.29% overall), with less frequent occurrences of hypopituitarism, acromegaly, precocious or delayed puberty, and parathyroid disorders (Table-VI).

Among 12,363 patients with the most prevalent endocrine disorders (excluding gestational diabetes, diabetes in pregnancy, and overlapping diabetes and thyroid), thyroid disorders were most frequent in the 20–39-year age group and predominantly affected females. Diabetes mellitus was more common in the 40–60-year age group, with a slightly higher prevalence in females. Overall, thyroid disorders demonstrated marked female predominance, whereas diabetes showed a relatively balanced distribution between sexes (Figures 1 and 2).

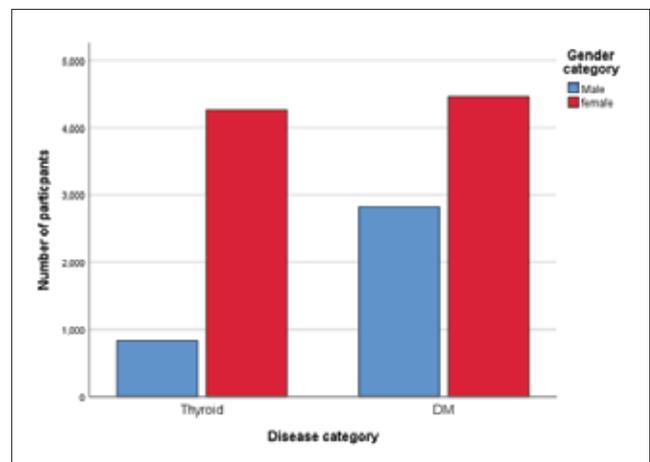
**Table-VI:** Other endocrine disorders according to ICD-11 (n=538): pituitary, hypothalamic, growth and puberty, parathyroid, calcium, and vitamin D-related disorders

Disease type	n	% within group (n=538)	% within total (n=16,009)
<b>Pituitary tumors</b>			
5A60.1 Prolactinoma and Hyperprolactinemia	46	8.55%	0.29%
5A60.0 Acromegaly	4	0.74%	0.02%
5A70.0 Hypopituitarism	14	2.60%	0.09%
XH1AZ2 Non-functional tumor (craniopharyngioma & others)	3	0.56%	0.02%
<b>Pubertal disorders</b>			
5A92 / 5A60.3 Precocious puberty (all types)	13	2.42%	0.08%
5A91 Delayed puberty	22	4.09%	0.14%
<b>Growth disorders</b>			
MG44.12 Short stature	128	23.79%	0.80%
5B12 Tall stature	2	0.37%	0.01%
<b>Parathyroid &amp; Vitamin D disorders</b>			
5A50 Hypoparathyroidism	12	2.23%	0.07%
5A51.0 Primary hyperparathyroidism	3	0.56%	0.02%
5A51.1 Secondary hyperparathyroidism	8	1.49%	0.05%
5B57.0 Vitamin D deficiency (osteomalacia+rickets)	283	52.51%	1.77%
<b>Total</b>	<b>538</b>	<b>100%</b>	<b>3.36%*</b>

Percentages are expressed as within-group (denominator=disease-specific total, n=538) and within-total (denominator=overall population, n=16,009); categories are not mutually exclusive; \*3.36% indicates that pituitary, pubertal, growth, and parathyroid/Vit-D-related disorders together accounted for this proportion of the overall cohort (538 of 16,009).



**Figure-1:** Distribution of more frequently prevalent diseases according to age (GDM, DIP, and mutual data were excluded) (n=12363).



**Figure-2:** Distribution of more frequently prevalent diseases according to sex (GDM, DIP, and mutual data were excluded) (n=12363).

**Discussion**

Endocrine pancreatic diseases accounted for almost half of all diagnoses in this large endocrine outpatient cohort (n=16,009), with type 2 diabetes mellitus accounting for the great majority of cases. The second most prevalent

group was thyroid disorders (30.3%), predominantly overt hypothyroidism. Obesity and metabolic syndrome were present concurrently in 11.9% of patients, highlighting the rising metabolic burden in this population. Reproductive endocrine disorders were

diagnosed in 7.5% of patients; among women, the most common conditions were polycystic ovary syndrome (PCOS) and premenstrual syndrome (PMS), while in men, erectile dysfunction and gynecomastia were the most frequently observed. Vitamin D deficiency and short stature were the most common in the other endocrine disorders group, while adrenal, pituitary, hypothalamus, growth, pubertal, and parathyroid/vitamin D disorders were less common (<2% individually). These results highlight the wide range of endocrine diseases encountered in standard clinical practice and indicate problems with hormonal and metabolic health across all age and sex groups. The participants' mean age was  $40.3 \pm 15.2$  years, and there was a significant female predominance (71.3%), which is in line with endocrine disease distributions found in other parts of South Asia, where women are disproportionately affected by conditions, including thyroid disease and reproductive endocrinopathies.<sup>9</sup>

Type 2 diabetes mellitus surpassed all other endocrine disorders as the most common diagnosis, accounting for 49.7% of cases. This high burden is consistent with South Asia's fast-increasing type 2 diabetes mellitus prevalence, where changes in urbanization, lifestyle, and environmental risk factors have been linked to higher incidence and earlier onset ages. Bangladesh has one of the highest rates of diabetes in South Asia, with a projected 13.2% of adults between the ages of 20 and 79 having the disease, according to estimates from the International Diabetes Federation (IDF) for 2025.<sup>4</sup>

Metabolic risk factors, such as diabetes and metabolic syndrome, are frequently documented in Bangladesh, although community-based prevalence estimates differ. Several investigations have shown increased trends over the past ten years.<sup>10</sup>

With 30.3% of all endocrine diagnoses, thyroid pathology was the second most prevalent endocrine category. Thyroiditis, thyrotoxicosis, nontoxic goiter, and subclinical hypothyroidism were the next most common causes of thyroid disease, after overt hypothyroidism. These results closely resemble clinic-based research from Bangladesh, where the predominant thyroid dysfunctions, especially in female patients, are overt and subclinical hypothyroidism.<sup>11</sup> This is also in line with more general evidence from Bangladesh that indicates different prevalence estimates of thyroid dysfunction in various age groups and areas.<sup>12,13</sup>

Significantly, glycemic control is negatively impacted by the combination of thyroid dysfunction and diabetes,

highlighting the clinical significance of integrated screening strategies in endocrinology practice.<sup>14</sup>

11.9% of participants had metabolic syndrome and obesity, indicating the growing public health threat posed by cardiometabolic illnesses in Bangladesh. Population-based research has shown that the prevalence of metabolic syndrome varies in Bangladesh based on diagnostic criteria, underscoring the intricate interactions between age, socioeconomic status, and lifestyle changes in metabolic disease.<sup>15</sup>

Females were more likely to have reproductive endocrine diseases, with premenstrual syndrome and polycystic ovary syndrome (PCOS) being the most common. PCOS is becoming more common throughout South Asia, according to regional epidemiological data, and studies have shown that the burden of the condition has been rising over time, especially among women who are of reproductive age.<sup>16</sup> Both Bangladesh and India show a high incidence of PCOS with associated metabolic concerns; however, prevalence rates differ depending on the environment and diagnostic criteria.<sup>17</sup> Although they were less common, male reproductive and sexual problems represent the wider androgenic and functional endocrine spectrum seen in clinical practice, which frequently gets less epidemiological attention in South Asian registries.

Rare endocrine diagnoses, including pituitary and adrenal diseases, were detected at the anticipated low frequency. A significant percentage of the "other" group had vitamin D deficiency, underscoring a prevalent but often underdiagnosed endocrine-metabolic condition in South Asian communities. The necessity for more extensive nutritional and metabolic screening is highlighted by the widespread reports of vitamin D insufficiency in South Asia, which is associated with musculoskeletal issues and metabolic disorders.<sup>18</sup>

Age-stratified study revealed that diabetes was more common in the 40–60 age group, while thyroid diseases were more common in younger persons (20–39 years), with a significant female predominance. These age-sex distributions are consistent with regional epidemiological patterns observed in Bangladesh and India, where diabetes rises with age and thyroid dysfunction and reproductive endocrinopathies cluster in younger female cohorts.<sup>19</sup>

The results of this large multicenter endocrine OPD cohort show the dual burden of less common but clinically severe problems that require specialist care and common noncommunicable endocrine diseases, particularly diabetes and thyroid disorders. The

necessity for specialized women's endocrine health services, such as thyroid and reproductive health screening, is highlighted by the high female presence. The high prevalence of diabetes highlights the significance of multidisciplinary therapy to reduce complications, integrated chronic disease programs, and preventative measures that target environmental and lifestyle risk factors.

According to local data, routine thyroid dysfunction screening for diabetics may enhance metabolic results and optimize clinical care pathways.<sup>20</sup>

This study's large sample size, multicenter design, inclusion of consecutive patients, and systematic classification of endocrine disorders using the WHO ICD-11, which improves representativeness and comparability, are its main advantages. However, population-level generalizability and causal inference are constrained by the retrospective, cross-sectional OPD-based approach. The hospital data lacked important information like family history, lifestyle factors, and socioeconomic level. Selection and referral bias are inherent in this facility-based study conducted in paid healthcare settings, as the study population may not reflect the true community-level disease burden. The frequency of asymptomatic endocrine diseases in the population could not be determined, and diagnostic and referral procedures may have differed between sites.

### Conclusions

This multicenter cross-sectional study provides a comprehensive overview of endocrine disorders in urban and semi-urban populations in Bangladesh. The most common diagnoses were type 2 diabetes mellitus and thyroid problems. While rare illnesses such as adrenal, pituitary, and vitamin D-related disorders were found at expectedly low rates, reproductive endocrine disorders, especially polycystic ovary syndrome, were prevalent in women. In order to treat both common and uncommon endocrine illnesses, the results emphasize the significance of focused screening, early diagnosis, and coordinated therapeutic approaches.

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### Conflict of interest

The authors have no conflicts of interest to disclose.

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### Data Availability

Any inquiries regarding supporting data availability of this study should be directed to the corresponding author and are available from

the corresponding author on reasonable request.

### Ethical Approval

The study was conducted after being approved by the Institutional Ethics Committee of Khulna Medical College [Ref: KMC/ERC/05]. As this was a retrospective analysis of routinely collected clinical data, the requirement for written informed consent was waived. Formal consent was taken from the respective authorities of hospitals. Patient confidentiality was strictly maintained, and all data were anonymized before analysis to ensure privacy and compliance with ethical standards.

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