

# Endocrine Disorders And Their Presentations, Scope, Patterns, And Clinical Aspects In Primary Health Care Setting

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**Abstract** - Background: Endocrine disorders are very common among general population in Saudi Arabia. The prevalence of endocrine disorders in primary healthcare as well as their common presentation, scope, pattern, and clinical aspect is a topic that needs to be looked into for its proper management.

Methods: We assessed 3737 patients who came to the primary healthcare clinics between years 2015 to 2016 at Al Jedaani hospital, Ghulail and Al Jedaani hospital, El-safa in Jeddah, KSA. Out of the 3737 patients 234 had endocrine disorders. The patients with endocrine disorders were the focus of this study.

Results: We calculated our results based on factors such as gender, age groups, type of investigation, type of management, outcome, and hospital of admission.

Conclusions: Based on our results we can conclude that endocrine disorders are of a very common occurrence among the Arab population and its prevalence among primary health care is vital which needs a proper handling and understanding.

**Keywords:** Endocrine disorder, Primary health clinic, Arab population, Management, Presentation, Outcome, Awareness

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## 1 INTRODUCTION

It is believed that the pattern and outbreak of diseases differs among developing and developed countries. In countries like Saudi Arabia, an outbreak of endocrine disorders such as diabetes mellitus type 1, diabetes mellitus type 2, hyperthyroidism, and hypothyroidism are most common. Among the middle-east countries, Saudi Arabia ranks highest in prevalence of diabetes [1]. This creates a burden on primary health care clinics that need to be prepared with proper screening tests, equipment, staff training, and awareness campaigns. Emphasis was laid on establishing primary health care by WHO as early as 1970's since it was considered to be an accessible point for keeping an eye on social causes of ill health [2]. By year 2000, development of primary health clinics came to be regarded as a source of

maintaining health for all the people.

General practitioners working in primary health clinics fall in the first line of treatment in Saudi Arabia. Hence, the awareness and readiness of a primary healthcare setup to deal with diseases is of utmost importance.

A few studies conducted on the quality of primary healthcare in Saudi Arabia have revealed that these setups need proper establishment with regards to management, organization, quality and promptness to deal with a disease [3],[4],[5]. Since it is hypothesized that most of the disease outbreaks in Saudi Arabia are linked to endocrine disorder, we conducted a research on the pattern and frequency of these diseases at the primary healthcare centers. Only with an ample knowledge about the said topic, can a primary health clinic be made organized and fully equipped with proper staff and diagnostic tools to deal with the increasing load of endocrine disease outbreaks in Saudi Arabia.

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## 2 MATERIALS AND METHODS

A cross-sectional study using a convenient sampling technique was conducted on patients enrolling in Al Jedaani hospitals. This study was approved by the Institutional Review Board of the hospital following NIH guidelines. After reviewing 3737 filed records of patients registered at two hospitals between the year 2015 and 2016, only 234 patients passed the inclusion criteria and were enrolled in the study.

**Inclusion criteria:** Patients who came in through the primary healthcare clinics and were diagnosed to have a problem related to the endocrine system through the years 2015- 2016 were included in the study.

**Exclusion criteria:** Patients who came in through the primary healthcare clinics and were diagnosed to have a problem unrelated to the endocrine system were excluded from the study.

Data was collected on-the-spot at several outpatient clinics at two hospitals to assess if it qualified the inclusion criteria. Tabulation of data was done on basis of gender, age groups, elevated systolic and diastolic blood pressure, type of investigation, type of management, outcome, and hospital of admission. Tabulated data was put through statistical analysis.

## 3 STATISTICAL ANALYSIS

Statistical analysis was performed using SPSS software package. To check the statistical differences in data, paired sample t-test was used and  $p < 0.05$  was considered as significant in this study.

## 4 RESULTS AND DISCUSSION

Table 1 summarizes the distribution of all disorders amongst the total of 3737 patients who came to the primary health care clinics at the two hospitals between the years of 2015 and 2016. The most prevalent disorder was that of the respiratory system with 1219 patients being affected whereas the gastrointestinal, cardiovascular, ENT, endocrine, blood disease, central nervous system, skin, musculoskeletal, genitourinary, and fever disorders had 834, 531, 510, 234, 91, 84, 67, 63, 58, and 46 affected patients respectively. Only those patients (234) were taken into further consideration who had endocrine system disorders which ranks 5th among all the human body system disorders.

Table 2 describes the distribution of all endocrine system disorders amongst 234 patients who came to the primary health care clinics at the two hospitals between the years of 2015 and 2016. The most common endocrine system disorder was diabetes with 174 patients being affected whereas hypothyroidism, DM type 1, hyperthyroidism, diabetic ketoacidosis, thyroglossal cyst, steroid dependent nephrotic syndrome, obesity, multinodular goiter, and lymph adenopathy had 27, 14, 9, 5, 1, 1, 1, 1, and 1 patient(s) affected respectively. Saudi Arabia ranks among the top 10 countries of

the world having highest prevalence of diabetes (6). This could be the reason that even at the primary health centre; the commonest of the diseases has a high rate of occurrence.

Table 1: Distribution of all diseases observed at primary healthcare clinics (\* indicates  $p = 0.05$ )

Diseases	Frequency	Percent
Fever	46	1.2
Genitourinary	58	1.6
Musculo-Skeletal Disorders	63	1.7
Skin Disorders	67	1.8
Central Nervous Disorders	84	2.2
Blood Diseases	91	2.4
Endocrine Disorders	234	6.3
ENT	510	13.6
Cardiovascular Disorders	531	14.2
Gastrointestinal Disorders	834	22.3
Respiratory System Disorders	1219*	32.6

Table 2: Distribution of endocrine disorders at primary health care clinic (\* indicates  $p = 0.05$ )

Diseases	Frequency	Percent distribution
Lymph Adenopathy	1	.4
Multinodular Goiter	1	.4
Obesity	1	.4
Steroid-Dependent Nephrotic Syndrome	1	.4
Thyroglossal Cyst	1	.4
Diabetic Ketoacidosis	5	2.1
Hyperthyroidism	9	3.8
DM Type 1	14	6.0
Hypothyroidism	27	11.5
Diabetes	174*	74.4

Table 3: Distribution of outpatient visits at primary health care unit for endocrine disorders according to gender (\* indicates  $p = 0.05$ )

Disease	Gender	
	Male	Female
Diabetes	128*	46*
Diabetic ketoacidosis	2	3
DM type 1	8	6
Hyperthyroidism	2	7
Hypothyroidism	7	20*
Lymph adenopathy	0	1
Multinodular goiter	0	1
Obesity	0	1
Steroid Dependent Nephrotic Syndrome	0	1
Thyroglossal Cyst	1	0

The visits of patients to primary health clinics were classified according to their gender (Table 3). It was observed that male patients were higher in number than females and the highest disease of occurrence amongst these male patients was diabetes. Diabetes was also the most significant disease among both males as well as females. However, among females hypothyroidism was also very common. Previous studies

conducted on Saudi population have also shown diabetes to be highly prevalent among males rather than females [6],[7],[8]. Among the Saudi female population, sub clinical hypothyroidism has been found to be a very common disorder as per reported data [9],[10]. Hence our findings fall in line with previously conducted studies.

Table 4 categorizes the patient visit to a primary health care center according to different age groups of patients. It was observed that among the 234 endocrine patients the most commonly affected age group was the adult age group with up to 203 patients who suffered from various diseases whereas infants, under five, school aged children and old aged patients had only 1,3,11, and 16 disease outcomes respectively. The highest disease of occurrence amongst the adult age group was diabetes with a significantly high count as compared to others. Similar to these findings many previous studies show diabetes to be the most prevalent diseases among adult Saudi population [11],[12].

Table 4: Distribution of outpatient visits at primary health care unit for endocrine disorders according to age distribution (\* indicates p = 0.05)

DISEASE	AGE GROUP				
	Infants	Under 5	School age	Adult	Old Age
Diabetes	0	1	3	154*	16*
Diabetic Ketoacidosis	0	0	2	3	0
DM Type 1	0	1	3	10	0
Hyperthyroidism	0	0	0	9	0
Hypothyroidism	0	1	1	25	0
Lymph Adenopathy	0	0	1	0	0
Multinodular goiter	0	0	0	1	0
Obesity	0	0	0	1	0
Steroid dependent Nephrotic Syndrome	0	0	1	0	0
Thyroglossal Cyst	1	0	0	0	0

Table 5 summaries the disease outcome of patients having an elevated systolic and diastolic blood pressure dividing them into either normal or hypertensive. It was observed that We can see through table 2 that among the 234 endocrine patients most patients had a normal systolic as well as diastolic blood pressure. The highest disease that was accompanied even with normal blood pressure was diabetes.

Table 6 describes the methods of investigation among the patients; whether there was no investigation, a routine investigation, or some specific investigation. It was observed that most significant type of investigation among patients was a specific investigation related to the endocrine disorder. Total number of specific investigations among all the patients was 149 whereas no investigation and routine investigation had 27 and 58 patients respectively. The highest disease for which a specific investigation was chosen was diabetes, however this was found to be an insignificant finding when compared with the routine and no investigations.

Table 7 summarizes the type of management among the patients whether it was symptomatic, therapeutic, counseling or referral.

Table 5: Distribution of outpatient visits at primary health care unit for endocrine disorders according to systolic and diastolic blood pressure (\* indicates p = 0.05)

DISEASE	SYSTOLIC BLOOD PRESSURE		DIASTOLIC BLOOD PRESSURE	
	Normal	Hypertension	Normal	Hypertension
Diabetes	138*	30	150*	18
Diabetic Ketoacidosis	1	2	1	2
DM Type1	8*	3	9*	2
Hyperthyroidism	9	0	9*	0
Hypothyroidism	22*	3	22*	3
Multinodular Goiter	1	0	1	0
Obesity	1	0	1	0
Steroid Dependent Nephrotic Syndrome	1	0	1	0
TOTAL	181	38	194	25

Table 6: Distribution of outpatient visits at primary health care unit for endocrine disorders according to type of investigation (\* indicates p = 0.05)

DISEASE	TYPE OF INVESTIGATION		
	No investigation	Routine	Specific
Diabetes	23	51	100
Diabetic Ketoacidosis	0	2	3
DM Type1	0	4	10
Hyperthyroidism	1	1	7
Hypothyroidism	3	0	24
Lymph Adenopathy	0	0	1
Multinodular Goiter	0	0	1
Obesity	0	0	1
Steroid Dependent Nephrotic Syndrome	0	0	1
Thyroglossal Cyst	0	0	1
Total	27	58	149*

The most significant type of disease management at the primary healthcare setup was therapeutic. Most of the patients that presented with endocrine disorders were given a therapeutic treatment. The highest disease for which a therapeutic management was chosen was diabetes with a total of 138 patients.

Table 8 summarizes the type of outcome among the patients whether they were admitted to the hospital or discharged. It was observed that the most significant outcome among patients visiting these hospitals was discharge. A very small number of patients got admitted. The disease for which a

highest discharge outcome was chosen was diabetes with 158 patients.

patients, however this was an insignificant figure when compared to patient visit to El-Safa hospital.

Table 7: Distribution of outpatient visits at primary health care unit for endocrine disorders according to type of management (\* indicates p = 0.05)

DISEASE	Management			
	Symptomatic	Therapeutic	Counseling	Referral
Diabetes	22	138*	11	3
Diabetic Ketoacidosis	1	4	0	0
DM Type1	1	13	0	0
Hyperthyroidism	0	9	0	0
Hypothyroidism	5	22	0	0
Lymph Adenopathy	0	1	0	0
Multinodular Goiter	0	0	0	1
Obesity	0	0	1	0
Steroid Dependent Nephrotic Syndrome	0	1	0	0
Thyroglossal Cyst	0	0	0	1
Total	29	188*	12	5

Table 9: Distribution of outpatient visits at primary health care unit for endocrine disorders according to hospital of admission

DISEASE	HOSPITAL		
	Ghulail	El-Safa	Total
Diabetes	103	71	174
Diabetic Ketoacidosis	4	1	5
DM Type1	9	5	14
Hyperthyroidism	1	8	9
Hypothyroidism	13	14	27
Lymph Adenopathy	1	0	1
Multinodular Goiter	0	1	1
Obesity	0	1	1
Steroid Dependent Nephrotic Syndrome	1	0	1
Thyroglossal Cyst	0	1	1
Total	132*	102	234

Table 8: Distribution of outpatient visits at primary health care unit for endocrine disorders according to outcome (\* indicates p = 0.05)

DISEASE	Outcome		Total
	Discharged	Admitted	
Diabetes	158*	16	174
Diabetic Ketoacidosis	2	3	5
DM Type1	13	1	14
Hyperthyroidism	9	0	9
Hypothyroidism	27	0	27
Lymph Adenopathy	0	1	1
Multinodular Goiter	1	0	1
Obesity	1	0	1
Steroid Dependent Nephrotic Syndrome	1	0	1
Thyroglossal Cyst	1	0	1
Total	213*	21	234

## 5 CONCLUSION

In summary, the most commonly encountered endocrine disease at a primary health clinic was diabetes, with males being more affected than females. A therapeutic treatment of this disease outcome results in fewer number of hospital admissions. Further research needs to be conducted on a larger data set so that in future the primary health care clinics will be prepared with the proper staff, training, diagnostic tools, and awareness campaigns in order to ease the process of diagnosing common endocrine illnesses and improving cost efficiency among patients and all health care personnel.

## 6 ACKNOWLEDGMENT

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Table 9 classifies the hospitals according to most of the patient visits. It was observed that among the 234 endocrine patients the most common hospital visited was Al Jedaani hospital, Ghulail. The number of patients who visited Al Jedaani hospital, Ghulail were 132 whereas only 102 patients visited Al Jedaani hospital, El-safa. The highest disease for which Al Jedaani hospital, Ghulail was visited was diabetes with a 103

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