

**The Distribution and prevalence
of Common Multifactorial
Disorders
in Saudi Arabia**

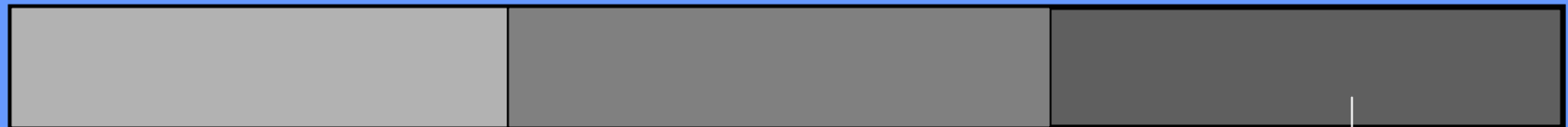
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Spectrum of Human Disease

Environmental
(Common)

Multifactorial
(Common)

Purely Genetics
(rare)



Tuberculosis
scurvy
Bacterial
Viral
Nutritional

Spina bifida
Ischaemic
HD
Ankylosing
spondylitis
Obesity

Peptic ulcer
DM
HT

PKU
Galactosaemia
Hemophilia
SCD
Thalassaemia
DMD

Multifactorial Disorders

- A large group of fairly **common disorders, partially genetic.**
- Do **not** obey **Laws of Mendelian Inheritance.**
- **Concentrate** in families.
- Have **multiple predisposing factors:**
 - Genetic
 - Environmental
- **Polygenic** – several contributing genes each with a small and additive effect it.
- Some are present at **birth** – congenital malformation.
- Others appear in **adult life.**

Complex Disorders of Adult Onset

- Make up a large proportion of **clinical medicine**.
- Common **chronic** disorders.
- Account for much of **morbidity and mortality** in adults.
- **Include:**
 - Coronary artery disease.
 - Diabetes mellitus:
 - IDDM
 - NIDDM
 - Hypertension.
 - Cancer.
 - Manic-depressive psychosis.
 - Schizophrenia.
 - Obesity
 - Others.

Studies in Saudi Arabia



Objective

To investigate the prevalence of diabetes mellitus, obesity and hypertension in Saudi male and female population

[National Project: “Study of Diabetes Mellitus in Saudis”]

Principal Investigator: Prof. Mohsen A.F. El-Hazmi

Financed by:

- King Saud University**
- King Abdulaziz City for Science Technology**
- Ministry of Health.**

Materials and Methods

Population Screened:

- Household screening **[According to a statistically designed protocol]**
- Areas screened: **34**
- No. screened (adults): **14,660**
 - Males: **6162**
 - Females: **8498**
- Age range: **14-70 years**

Materials and Methods (Contd.)

Information Recorded:

- **Age (years)**
- **Height (m)**
- **Weight (kg)**
- **Systolic and diastolic BP (mmHg)**

Investigations conducted:

- **Fasting and 2 hr. post-glucose load blood glucose.**

Diagnosis of Diabetes Mellitus

- **Diabetes mellitus (W.H.O. 1985)**
 - **Fasting venous blood glucose ≥ 6.7 mmol/l
and 2 hr post glucose-load ≥ 10.0 mmol/l
(Further grouping into NIDDM, IDDM & MODY)**
- **Impaired glucose tolerance:**
 - **Normal fasting blood glucose < 6.7 mmol/l
and 2 hr post glucose load 6.7-10.0 mmol/l**

Diagnosis of Obesity and Overweight

(W.H.O. 1988)

- Quetelet Index or BMI = $\frac{\text{Weight (kg)}}{\text{Height}^2 (\text{m}^2)}$
 - Normal Weight = <25
- Overweight:
 - BMI = $25 - 29.9$
- Obesity
 - BMI = ≥ 30

Diagnosis of Hypertension

Hypertension:

- Systolic pressure: > 140 mmHg
- and/or Diastolic pressure: > 90 mmHg

Results

The number of males and females with NIDDM, IDDM, IGT, MODY, overweight, obesity, hypertension were calculated and the prevalence of each abnormality was obtained.

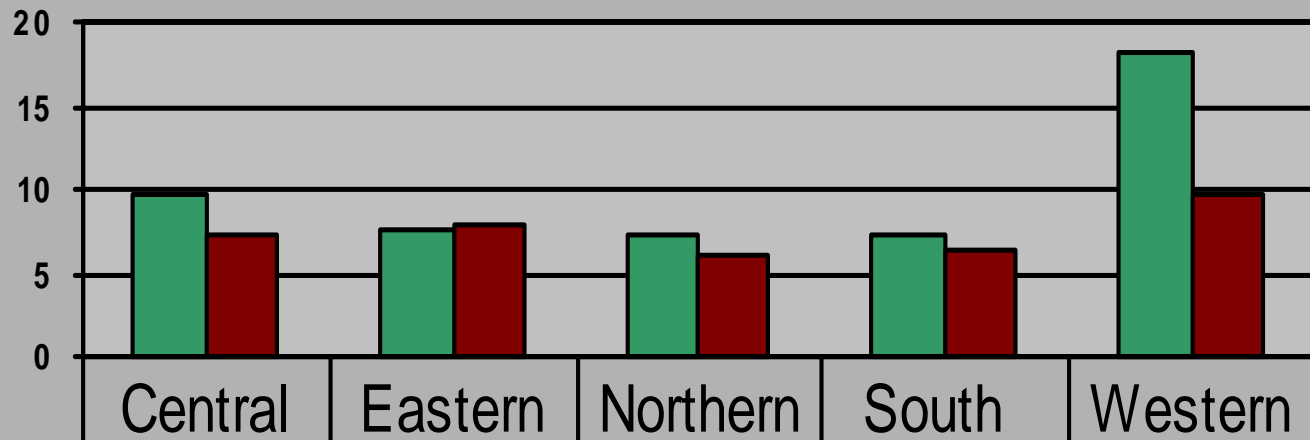
Prevalence of Diabetes Mellitus, Overweight, Obesity and Hypertension in adult Saudi population

Disorders	Prevalence (%)	
	Males	Females
• Diabetes mellitus		
• IDDM	0.239	0.248
• NIDDM	9.50*	6.82*
• IGT	0.717	1.347
• Overweight	27.23*	25.20*
• Obesity	13.05*	20.26*
• Hypertension	5.39	3.65

*p < 0.005

Prevalence of NIDDM in different provinces of Saudi Arabia

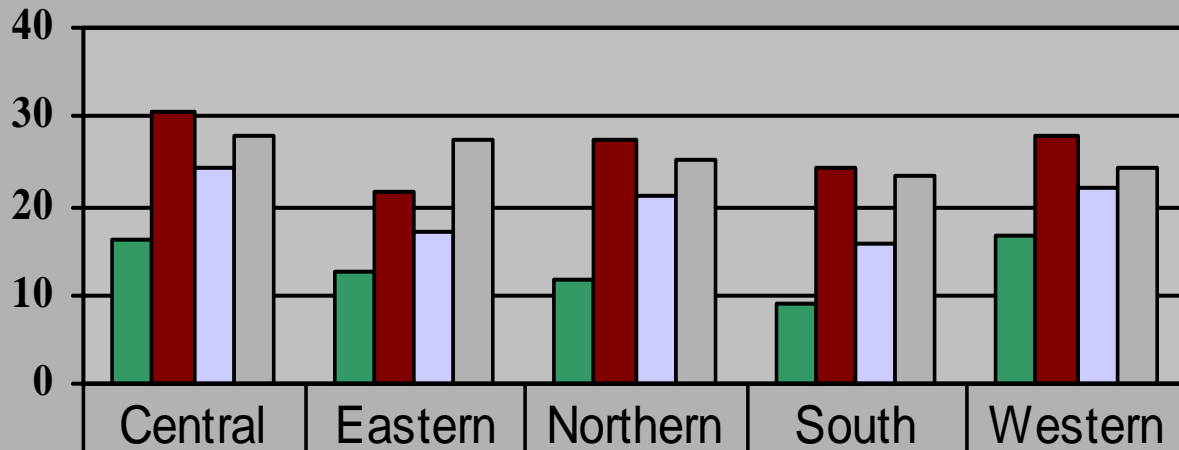
Prevalence (%)



■ Males	9.6	7.7	7.3	7.2	18.2
■ Females	7.2	7.9	6	6.3	9.7

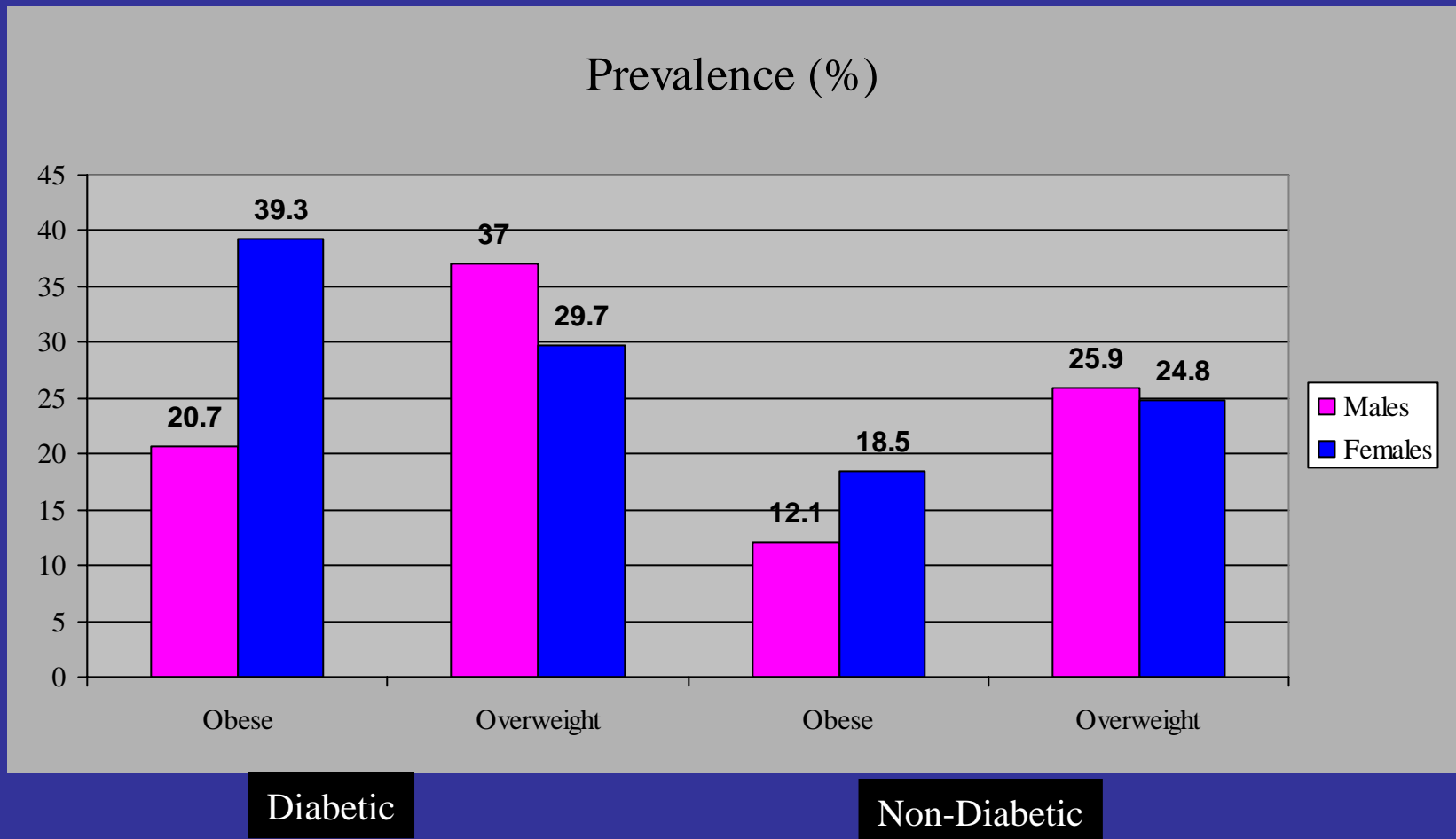
Prevalence of obesity and overweight in different provinces of Saudi Arabia

Prevalence (%)



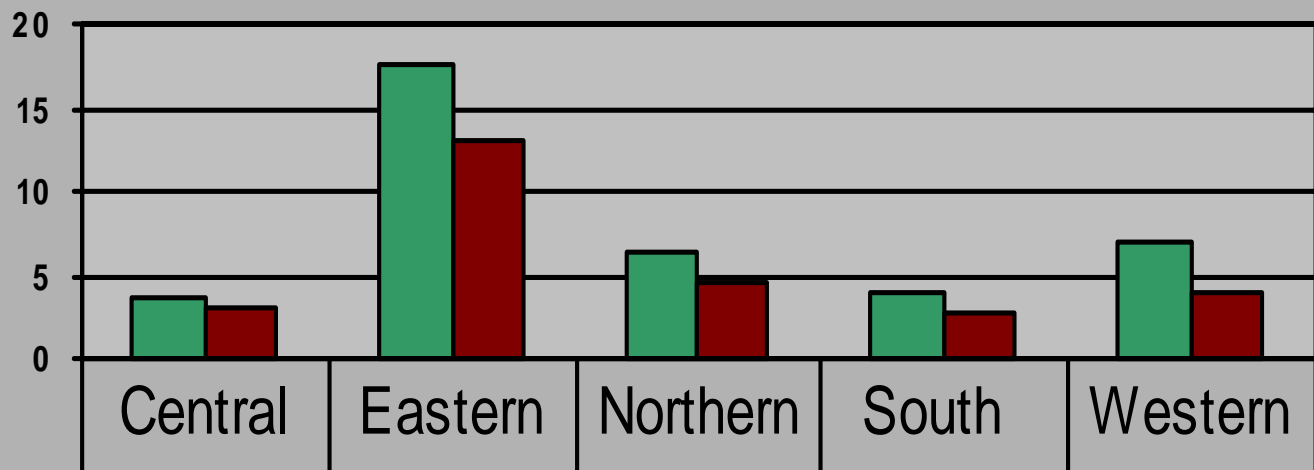
■ M(OW)	16	12.7	11.6	9.1	16.7
■ F(OW)	30.4	21.4	27.5	24.4	28
□ M(OB)	24.4	17	20.9	15.8	21.8
□ F(OB)	27.9	27.3	25	23.2	24.2

Prevalence of obesity and overweight in total diabetic and non-diabetic Saudi population



Prevalence of Hypertension in Saudi males and females in different provinces

Prevalence (%)
Hypertension



■ Males	3.7	17.5	6.4	4	7.1
■ Females	2.9	13	4.5	2.6	3.8

Conclusions

- Multifactorial disorders i.e. diabetes mellitus, obesity, overweight and hypertension occur at a high prevalence in Saudi males and females.
- The prevalence of these disorders increases significantly with age.
- In diabetic patients the prevalence of obesity, overweight and hypertension is significantly higher compared to the non-diabetic population.

Recommendations

- There is an urgent need to control the prevalence of DM, obesity, overweight and HT in Saudis.
- Extensive awareness programs are required in order to implement control and prevention strategies.