

# DIABETES FACT SHEET IN KOREA 2013



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## SUMMARY

Among adults aged 30 years and older, about 4 million Koreans (12.4%) had diabetes in 2011.

20% of Korean adults were diagnosed as having impaired fasting glucose.

28% of subjects with diabetes were undiagnosed.

Only one-third of subjects with diabetes have reached target goal for glycemic control.

Obesity, hypertension and dyslipidemia were uncontrolled among subjects with diabetes.

One-third of subjects with diabetes had diabetic microvascular complications.

## DATA SOURCE

The estimated percentages and the total number of people over the age of 30 with diabetes and prediabetes were determined from data on the 2011 Korea National Health and Nutritional Examination Survey (KNHANES) conducted by the Korea Centers for Disease Control and Prevention (KCDC) and the Korean Ministry of Health and Welfare.

Diagnosis of diabetes was based on fasting plasma glucose  $\geq 126$  mg/dL, A1C  $\geq 6.5\%$ , current anti-diabetes medication, or previous diagnosis.

Impaired fasting glucose (IFG) was defined based on fasting plasma glucose of 100-125 mg/dL.

# PREVALENCE OF DIABETES 2011 ( $\geq 30$ YRS OLD)

- › The prevalence of diabetes in adults 30 years and older is 12.4%.
- › As of 2011, an estimated 4.0 million people (about 1 every 8 adults) had diabetes.



Total  
**12.4%**  
4,006,686



Men  
**14.5%**  
2,246,205



Women  
**10.4%**  
1,760,481

**2.9%** Age 30-39  
235,089

**8.4%** Age 40-49  
718,345

**15.6%** Age 50-59  
1,105,878

**23.2%** Age 60-69  
957,113

**25.9%** Over Age 70  
990,260  
(Number)

# IMPAIRED FASTING GLUCOSE



Total  
**19.3%**  
6,100,430



Men  
**23.8%**  
3,667,699



Women  
**14.9%**  
2,432,730

- › Approximately 20% of adults 30 years and older (6.1 million people) have impaired fasting glucose.
- › Therefore, about 1 in 3 adults was diabetes or had potential risk for diabetes.

Age 30-39

**11.6%** 944,710

Age 40-49

**20.5%** 1,755,320

Age 50-59

**22.3%** 1,577,755

Age 60-69

**25.5%** 1,051,693

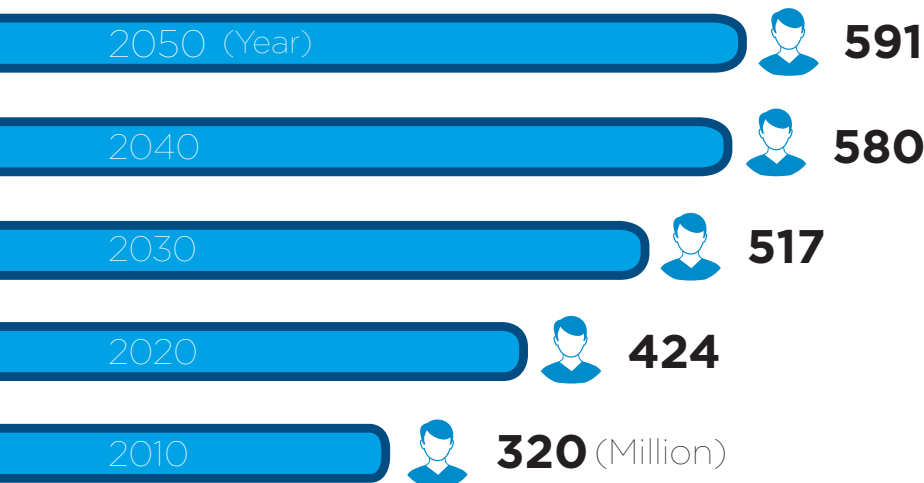
Over Age 70

**20.3%** 770,952 (Number)

# FUTURE DIABETES POPULATION

190% 

- › Diabetic population expected to reach about 6 million in 2050.
- › 183% increase compared to 2010 : two-fold growth expected for the next 40 years.



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## STATISTICAL ANALYSIS CURRENT (2010)

Diabetes prevalence by age (in decades) and gender, multiplied by estimated future population.

# AWARENESS OF DIABETES

3 out of 10

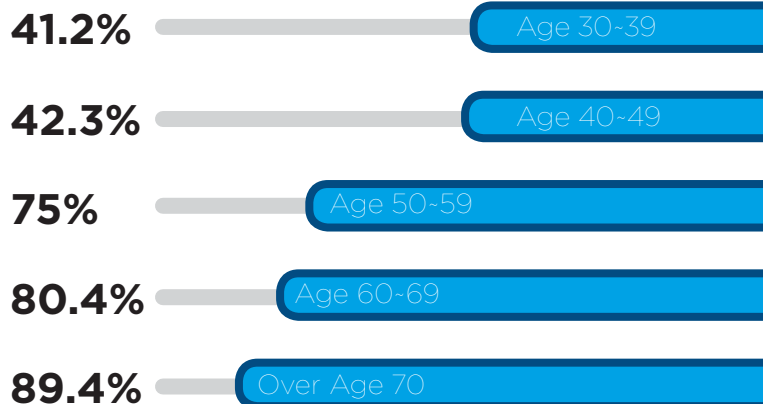
diabetic patients are not aware  
of their condition.  
(diabetes awareness rate: 72%).



In a younger population of age < 50,

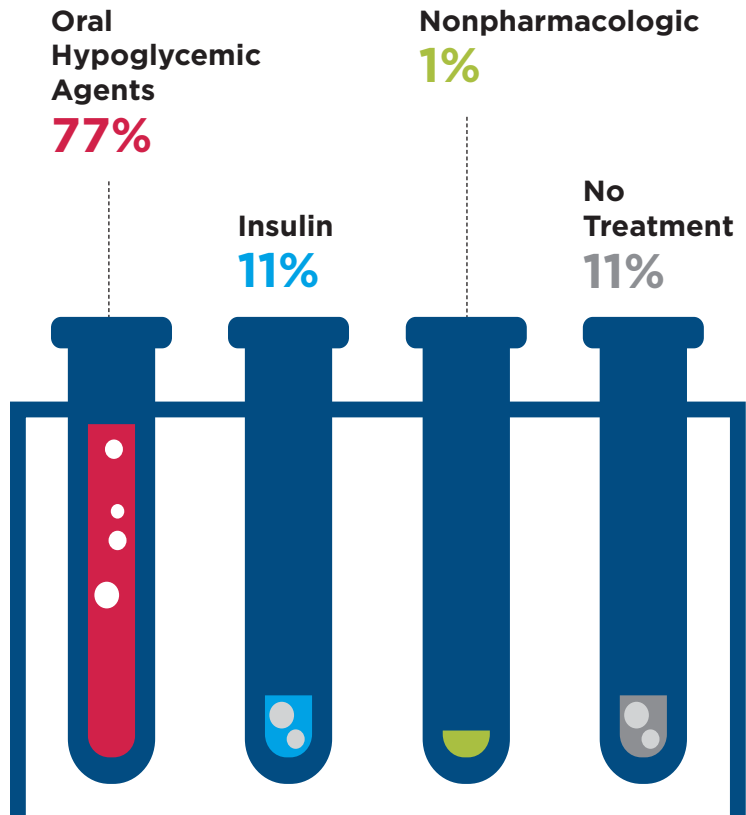
6 out of 10

are unaware of their diabetes.



# TYPE OF TREATMENT

Most of subjects with diabetes are treated with oral hypoglycemic agents and 11% of them are using insulin therapy.



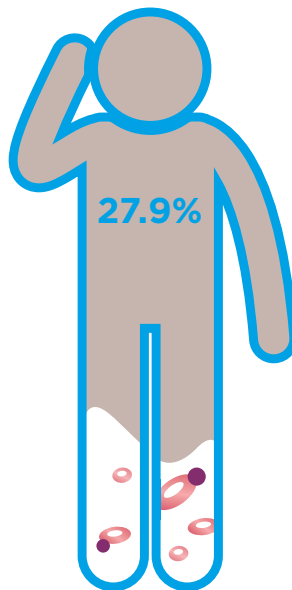
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2011 KNHANES.

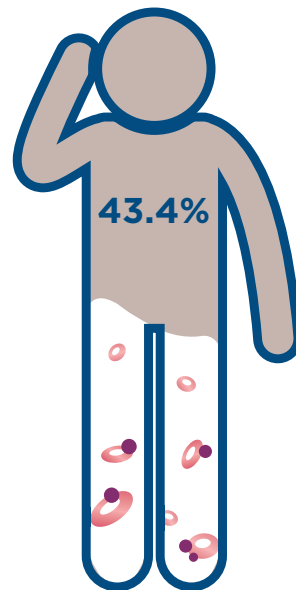
Among the subjects with diagnosed diabetes.

# REACHING TARGET GOAL

- › Only 27.9% of patients with diabetes have reached their target blood glucose level.
- › Even if the ADA recommendation of  $\text{HbA1c} < 7\%$  is applied, only about half are under adequate glycemic control.



$\text{HbA1c} < 6.5\%$



$\text{HbA1c} < 7.0\%$

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## GLYCEMIC CONTROL:

Defined as the proportion of  $\text{HbA1c} < 6.5\%$  among the subjects with diagnosed diabetes



# OBESITY



BMI

Non-diabetes

**30.8%**

Diabetes

**44.4%**

Men

**37.1%**

Women

**51.8%**



WC

Non-diabetes

**25.5%**

Diabetes

**50.4%**

Men

**42.1%**

Women

**58.8%**

Half of subjects with diabetes are obese and women are more likely to be obese than men.

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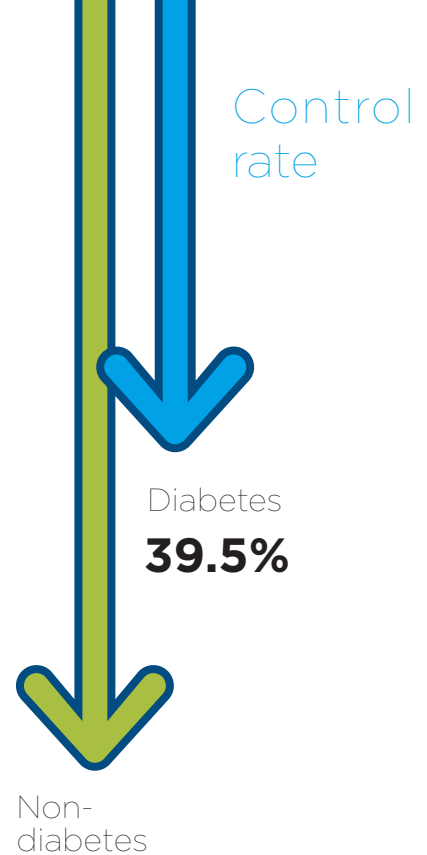
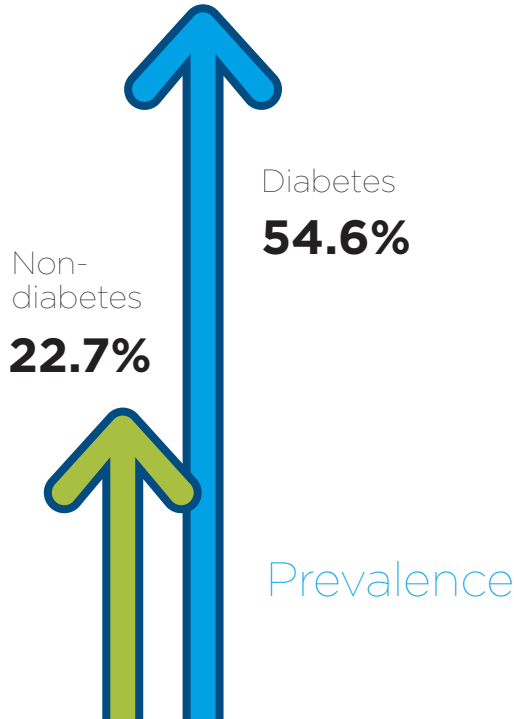
## DEFINITION OF OBESITY

Body mass index (BMI)  
 $\geq 25.0 \text{ kg/m}^2$

Waist circumference (WC)  
> 90 cm for men,  
> 85 cm for women

# HYPERTENSION

- › About half of subjects with diabetes have hypertension (54.6%), which is more than 2-fold compared with non-diabetic adults (22.7%).
- › Only 40% of them reaches the target goal of blood pressure < 130/80 mm Hg.



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## DEFINITION OF HYPERTENSION:

mean SBP  $\geq 140$  mm Hg,  
DBP  $\geq 90$  mm Hg, or use of  
antihypertensive medication

## CONTROL RATE OF HYPERTENSION AMONG TREATMENT:

BP < 130/80 mm Hg

# DYSLIPIDEMIA

Non-diabetes

56.7%

Diabetes

79.6%

- › About 80% of subjects with diabetes had dyslipidemia.
- › However, only 24% of subjects with diabetes received lipid-lowering medications and less than 20% of them reached the target levels.



Awareness Rate

**34.6%**



Treatment Rate

**23.6%**



Control Rate

**17.4%**

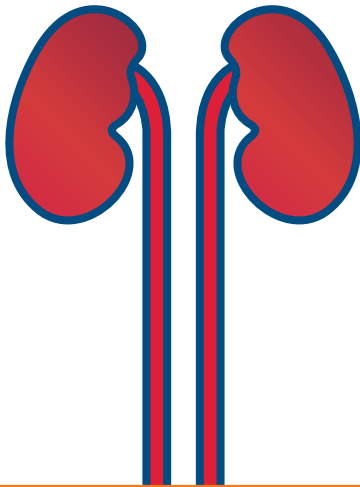
Definition of dyslipidemia: one or more of the following lipid abnormalities;

- 1) hypercholesterolemia (total cholesterol  $\geq 240$  mg/dL or diagnosis of dyslipidemia or treatment)
- 2) hypertriglyceridemia ( $\geq 150$  mg/dL)
- 3) hyper-LDL-cholesterolemia ( $\geq 160$  mg/dL or diagnosis of dyslipidemia or treatment)
- 4) hypo-HDL-cholesterolemia ( $< 40$  mg/dL for men and  $< 50$  mg/dL for women)

DEFINITION OF CONTROL RATE  
IN DIABETES :

LDL-C  $< 100$  mg/dL +  
TG  $< 150$  mg/dL + HDL-C  
( $> 40$  mg/dL in men and  
 $> 50$  mg/dL in women)

# DIABETIC NEPHROPATHY



Albuminuria

**27.3%**

CKD

**10%**

- › One third of subjects with diabetes have diabetic nephropathy.
- › The prevalence of chronic kidney disease among subjects with diabetes is 10%.

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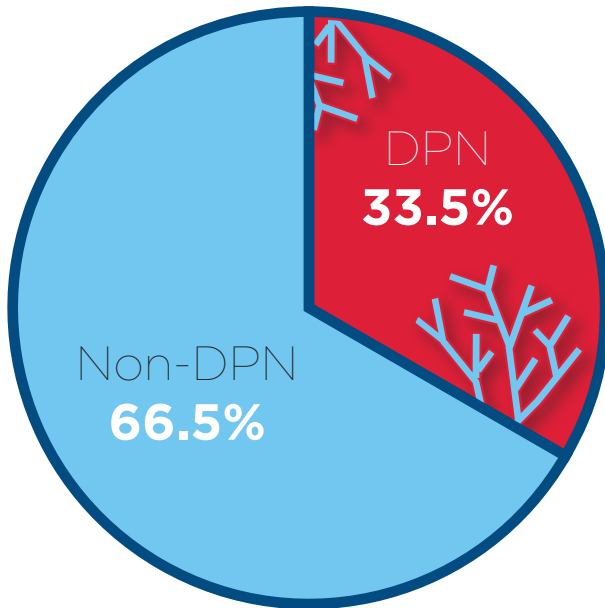
## DEFINITION OF ALBUMINURIA

Spot urine albumin/creatinine ratio(ACR),  $ACR \geq 30$  mg/g

## CHRONIC KIDNEY DISEASE (CKD)

eGFR by MDRD formula,  
< 60 ml/min

# DIABETIC NEUROPATHY



One third of subjects with diabetes have diabetic neuropathy.

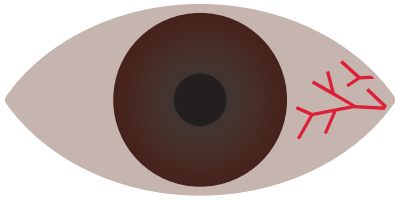
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## DIABETIC NEUROPATHY STUDY GROUP KDA

Subjects: 40 hospitals (n=3,999)  
2009-2010

Definition : Questionnaire,  
(Michigan Neuropathy  
Screening Instrument, score  $\geq 3$ )  
or 10 g monofilament exam

# DIABETIC RETINOPATHY



One fifth of subjects with diabetes have diabetic retinopathy.

- › Examined by two-field non-mydriatic retinal camera fundus photography
- › Graded by Wisconsin grading system

**18.6%**

of total diabetes

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## DEFINITION OF DIABETIC RETINOPATHY

Presence of at least one definite retinal blot hemorrhage and/or microaneurysm with or without more severe lesions (hard exudates, soft exudates, intraretinal microvascular abnormalities, venous bleeding, new retinal vessels, fibroproliferations)

Based on the diagnosis in the more severely affected eye

# GESTATIONAL DIABETES



SOURCE  
2011 National Health  
Insurance Corporation

- › As of 2011, 1 out of every 10 pregnant women visited the hospital for management of gestational diabetes.
- › The prevalence has steadily increased annually by 1~2% since 2007.

**10.5%** 2011

**9%** 2010

**7.1%** 2009

**5.2%** 2008

**4.1%** 2007

# PREVALENCE OF CHILDHOOD DIABETES 2011

- › The number of children and adolescents with diabetes are estimated to be at 57.5 per 100,000 as of 2011.
- › The prevalence in adolescents are about 6 times higher than that in children (age 0~9).

Patient number  
per 100,000

**57.5**  
Total

**19.4**  
Age  
0~9

**74.9**  
Age  
10~14

**118.7**  
Age  
15~17

SOURCE  
2011 National Health  
Insurance Corporation