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Prevalence of Diabetes Mellitus (Fasting Plasma Glucose by the ADA Criteria) and Impaired Fasting Glucose according to Anthropometric Characteristics and Dietary Habits
- 1998 National Health and Nutrition Survey -

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- Abstract -

Background: The study is based on the National Health and Nutrition Examination Survey in Korea (1998). With these data, we want to predict the prevalence of diabetes mellitus (DM) and impaired fasting glucose (IFG). By investigating anthropometric characteristics and dietary intake habits, we also wanted to analyze any significant correlation between those factors and the prevalences of DM and IFG.

Methods: The study group was comprised of 8,166 people, a representative group of Koreans, who had undergone a health check-up and food intake survey among the total 39,331 members of 12,189 families who were surveyed.

Results: The final results are as the follows. 1) The peak prevalence of DM was 15.92% among women in their sixties and 18.21% among men in their fifties, and that of IFG was found to be 16.27% of women in their seventies and 14.09% of men in their sixties. 2) When analyzing the eating habits and the prevalences of DM and IFG, we found that women with more glucose intake had a lesser risk of DM, but this was of no statistical significance. 3) In men, age, total cholesterol, triglyceride (TG), and hypertension (HTN) were revealed as meaningful factors and in women, age, TG, and HTN were revealed as meaningful factors. As to the IFG, in females, age and TG were meaningful factors, and in males, age, TG, the waist/hip ratio (WHR), and body mass index (BMI) were meaningful factors.


Conclusion: Although this study could not demonstrate meaningful correlation between diet habits and DM, the prevalence of IFG and the recent increase in the prevalence of DM in Koreans, owing to alterations in their diet habits, demands further organized group study for a better understanding of their relationship (*J Kor Diabetes Assoc* 29:151 ~ 166, 2005).

Key Words: Diabetes mellitus, Impaired fasting glucose, Anthropometric characteristics, Dietary habit



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10 가 가 , 1995
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12,189가 가 39,331
20 7,962
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가 110~125 mg/dL
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119 mmHg , 120~139 mmHg, 140 mmHg
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analysis

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SPSS program for Windows version 11.0 (SPSS Inc.,
Chicago, IL) , *P* 0.05

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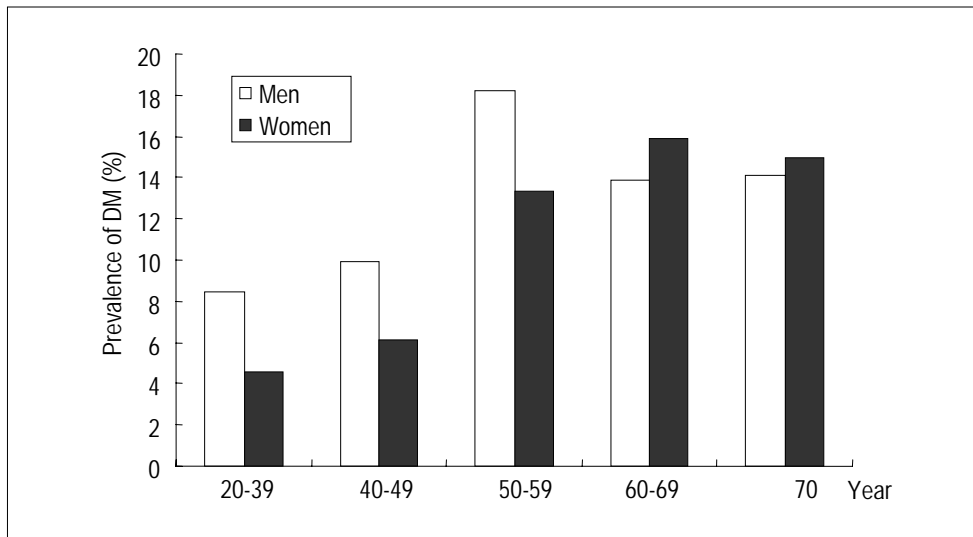


Fig. 1. Prevalence of Diabetes Mellitus according to Sex and Age

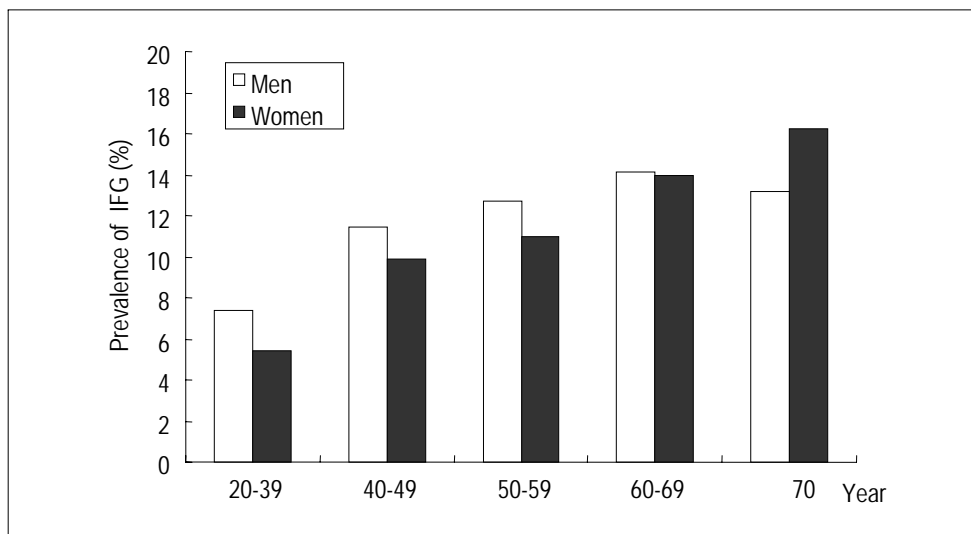


Fig. 2. Prevalence of Impaired Fasting Glucose according to Sex and Age

Table 1. Prevalence of DM and IFG according to General Characteristics in Male

	N (%)	Prevalence N (%)	
		DM	IFG
Educaion	2910 (100)	348 (11.96)	318 (10.93)
Primary school	756 (25.98)	99 (13.09)	93 (12.30)
Middle school	487 (16.74)	67 (13.76)	67 (13.76)
High school	1039 (35.7)	119 (11.45)	108 (10.39)
College	628 (21.58)	63 (10.03)	50 (7.96)
<i>P</i> -value		0.273	0.003
Smoking	2801 (100)	332 (11.85)	309 (11.03)
Yes	2352 (83.97)	277 (11.8)	261 (11.10)
No	449 (16.03)	55 (12.25)	48 (10.69)
<i>P</i> -value		0.78	0.94
Income (¥10,000/month)	2531 (100)	296 (11.69)	266 (10.51)
65	548 (21.65)	82 (14.96)	74 (13.50)
66-100	669 (26.43)	81 (12.11)	67 (10.01)
101-200	949 (37.5)	87 (9.17)	91 (9.59)
> 200	365 (14.42)	46 (12.6)	34 (9.32)
<i>P</i> -value		0.008	0.002
Exercise* (sessions/week)	2801 (100)	332 (11.85)	309 (11.03)
0-2	2509 (89.58)	286 (11.4)	283 (11.28)
3-7	292 (10.42)	46 (15.7)	26 (8.90)
<i>P</i> -value		0.03	0.05

DM, diabetes mellitus; IFG, impaired fasting glucose, respectively. by ²-test
 * intensity of mild dyspnea or sweating on exercise

Table 2. Prevalence of DM and IFG according to General Characteristics in Female

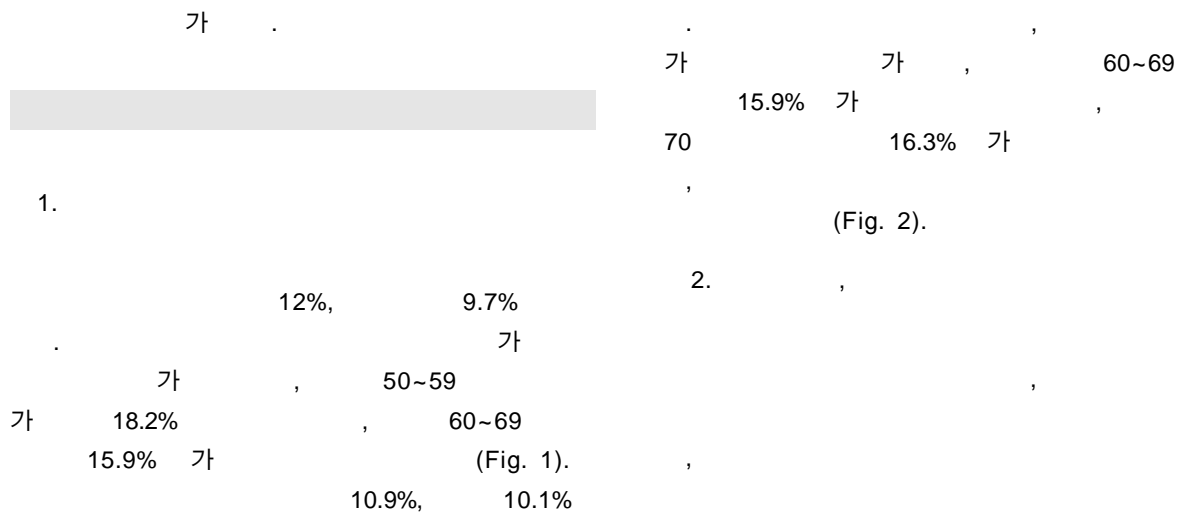
	N (%)	Prevalence N (%)	
		DM	IFG
Education	3472 (100)	335 (9.65)	352 (10.14)
Primary school	1636 (47.12)	207 (12.65)	220 (13.45)
Middle school	579 (16.68)	52 (8.98)	52 (8.98)
High school	917 (26.41)	61 (6.65)	61 (6.65)
College	340 (9.79)	15 (4.41)	19 (5.59)
<i>P</i> -value		< 0.0001	<0.0001
Smoking	3382 (100)	316 (9.34)	334 (9.88)
Yes	329 (9.73)	47 (14.29)	42 (12.77)
No	3053 (90.27)	269 (8.81)	292 (9.56)
<i>P</i> -value		0.001	0.0003
Income (¥10,000/month)	3064 (100)	286 (9.33)	293 (9.56)
0-65	853 (27.84)	98 (11.49)	108 (12.66)
66-100	774 (25.26)	62 (8.01)	80 (10.34)
101-200	1026 (33.49)	88 (8.58)	81 (7.89)
> 200	411 (13.41)	38 (9.25)	29 (7.06)
<i>P</i> -value		0.07	0.0003
Exercise* (sessions/week)	3382 (100)	316 (9.34)	334 (9.88)
0-2	3104 (91.78)	289 (9.31)	302 (9.73)
3-7	278 (8.22)	27 (9.71)	32 (11.51)
<i>P</i> -value		0.82	0.66

DM, diabetes mellitus; IFG, impaired fasting glucose, respectively. by ²-test
 * intensity of mild dyspnea or sweating on exercise

Table 3. Prevalence of DM and IFG according to Clinical Characteristics in Male

	N (%)	Prevalence N (%)	
		DM	IFG
Total cholesterol (mg/dL)	2910 (100)	348 (11.96)	318 (10.93)
< 200	1833 (62.99)	192 (10.47)	180 (9.82)
200-239	816 (28.04)	108 (13.24)	93 (11.40)
240	261 (8.97)	48 (18.39)	45 (17.24)
<i>P</i> -value		0.0005	< 0.0001
HDL cholesterol (mg/dL)	2910 (100)	348 (11.96)	318 (10.93)
1-39	772 (26.53)	111 (14.38)	86 (11.14)
40	2138 (73.47)	237 (11.09)	232 (10.85)
<i>P</i> -value		0.02	0.046
LDL cholesterol (mg/dL)	2910 (100)	348 (11.96)	318 (10.93)
< 100	991 (34.05)	98 (9.89)	101 (10.19)
100-129	1048 (36.01)	134 (12.79)	101 (9.64)
130-159	623 (21.41)	78 (12.52)	79 (12.68)
160-189	175 (6.01)	20 (11.43)	24 (13.71)
190	73 (2.51)	18 (24.66)	13 (17.81)
<i>P</i> -value		0.003	0.0003
Triglyceride (mg/dL)	2910 (100)	348 (11.96)	318 (10.93)
< 150	1757 (60.38)	163 (9.28)	168 (9.56)
150-199	659 (22.65)	91 (13.81)	74 (11.23)
200	494 (16.98)	94 (19.03)	76 (15.38)
<i>P</i> -value		< 0.0001	< 0.0001
SBP (mmHg)	2910 (100)	348 (11.96)	318 (10.93)
< 120	920 (31.62)	68 (7.39)	81 (8.80)
120-139	1334 (45.84)	168 (12.59)	152 (11.39)
140	656 (22.54)	112 (17.07)	85 (12.96)
<i>P</i> -value		< 0.0001	< 0.0001
Hypertension (mmHg)	2910 (100)	348 (11.96)	318 (10.93)
< 130/85	1443 (49.59)	120 (8.32)	148 (10.26)
130/85	1467 (50.41)	228 (15.54)	170 (11.59)
<i>P</i> -value		< 0.0001	< 0.0001

DM, diabetes mellitus; IFG, impaired fasting glucose; SBP, systolic blood pressure, respectively. by ²-test



1.

(Fig. 2).

2.

Table 4. Prevalence of DM and IFG according to Clinical Characteristics in Female

	N (%)	Prevalence N (%)	
		DM	IFG
Total cholestrol (mg/dL)	3472 (100)	335 (9.65)	352 (10.14)
< 200	2105 (60.63)	140 (6.65)	178 (8.46)
200-239	975 (28.08)	110 (11.28)	122 (12.51)
240	392 (11.29)	85 (21.68)	52 (13.27)
<i>P</i> -value		< 0.0001	< 0.0001
HDL cholesterol (mg/dL)	3472 (100)	335 (9.65)	352 (10.14)
1-39	634 (18.26)	84 (13.25)	71 (11.20)
40	2838 (81.74)	251 (8.84)	281 (9.90)
<i>P</i> -value		0.0007	0.0007
LDL cholesterol (mg/dL)	3472 (100)	335 (9.65)	352 (10.14)
< 100	1044 (30.07)	67 (6.42)	71 (6.80)
100-129	1267 (36.49)	102 (8.05)	134 (10.58)
130-159	772 (22.24)	84 (10.88)	85 (11.18)
160-189	289 (8.32)	57 (19.72)	48 (16.61)
190	100 (2.88)	25 (25.0)	14 (14.00)
<i>P</i> -value		< 0.0001	< 0.0001
Triglyceride (mg/dL)	3472 (100)	335 (9.65)	352 (10.14)
< 150	2587 (74.51)	171 (6.61)	238 (9.20)
150-199	598 (17.22)	103 (17.22)	76 (12.71)
200	287 (8.27)	61 (21.25)	38 (13.24)
<i>P</i> -value		< 0.0001	< 0.0001
SBP (mmHg)	3472 (100)	335 (9.65)	352 (10.14)
< 120	1534 (44.18)	85 (5.54)	103 (6.71)
120-139	1121 (32.29)	126 (11.24)	119 (10.62)
140	817 (23.53)	124 (15.18)	130 (15.91)
<i>P</i> -value		< 0.0001	< 0.0001
Hypertension (mmHg)	3472 (100)	335 (9.65)	352 (10.14)
< 130/85	2052 (59.1)	142 (6.92)	154 (7.50)
130/85	1420 (40.9)	193 (13.59)	198 (13.94)
<i>P</i> -value		< 0.0001	< 0.0001

DM, diabetes mellitus; IFG, impaired fasting glucose; SBP, systolic blood pressure, respectively. by ²-test

가 160 mg/dL (Table 3, 4).
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Table 5. Prevalence of DM and IFG according to Anthropometric Characteristics in Male

	N (%)	Prevalence N (%)	
		DM	IFG
WHR	2910 (100)	348 (11.96)	318 (10.93)
< 0.9	1538 (52.85)	130 (8.45)	131 (8.52)
0.9	1372 (47.15)	218 (15.89)	187 (13.63)
<i>P</i> -value		< 0.0001	< 0.0001
Waist (cm)	2910 (100)	348 (11.96)	318 (10.93)
< 102	2869 (98.59)	341 (11.89)	310 (10.81)
102	41 (1.41)	7 (17.07)	8 (19.51)
<i>P</i> -value		0.31	0.1
BMI (kg/m²)	2910 (100)	348 (11.96)	318 (10.93)
< 18.5	644 (22.13)	62 (9.63)	57 (8.85)
18.5-24.9	721 (24.78)	75 (10.4)	77 (10.68)
25	1545 (53.09)	211 (13.66)	184 (11.91)
<i>P</i> -value		0.01	0.003

DM, diabetes mellitus; IFG, impaired fasting glucose; WHR, waist to hip ratio; BMI, body mass index, respectively. by χ^2 -test

Table 6. Prevalence of DM and IFG according to Anthropometric Characteristics in Female

	N (%)	Prevalence N (%)	
		DM	IFG
WHR	3472 (100)	335 (9.65)	352 (10.14)
< 0.8	881 (25.37)	31 (3.52)	47 (5.33)
0.8	2591 (74.63)	304 (11.73)	305 (11.77)
<i>P</i> -value		< 0.0001	< 0.0001
Waist (cm)	3472 (100)	335 (9.65)	352 (10.14)
< 88	2798 (80.59)	198 (7.08)	240 (8.58)
88	674 (19.41)	137 (20.33)	112 (16.62)
<i>P</i> -value		< 0.0001	< 0.0001
BMI (kg/m²)	3472 (100)	335 (9.65)	352 (10.14)
< 18.5	727 (20.94)	49 (6.74)	41 (5.64)
18.5-24.9	811 (23.36)	46 (5.67)	67 (8.26)
25	1934 (55.7)	240 (12.41)	244 (12.62)
<i>P</i> -value		< 0.0001	< 0.0001

DM, diabetes mellitus; IFG, impaired fasting glucose; WHR, waist to hip ratio; BMI, body mass index, respectively. by χ^2 -test

103.3 g

가 (Table 7, 8).

348.1 g 10.7 g 1

54.6 g

339.2 g

가 가

Table 7. Prevalence of DM and IFG according to Food Intake in Male

	N (%)	Prevalence N (%)	
		DM	IFG
Calory (kcal)	2297 (100)	214 (9.32)	235 (10.23)
< 1421	340 (14.8)	39 (11.47)	37 (10.88)
1421-1840.5	509 (22.16)	51 (10.02)	53 (10.41)
1840.6-2397	662 (28.82)	60 (9.06)	75 (11.33)
> 2397	786 (34.22)	64 (8.14)	70 (8.91)
<i>P</i> -value		0.321	0.373
Cereal (g)	857 (100)	71 (8.28)	77 (8.98)
< 238.6	214 (24.97)	21 (9.81)	20 (9.35)
238.6-320.6	239 (27.89)	18 (7.53)	21 (8.79)
320.7-417.6	224 (26.14)	19 (8.48)	22 (9.82)
> 417.6	180 (21.0)	13 (7.22)	14 (7.78)
<i>P</i> -value		0.773	0.867
Saccharide (g)	1702 (100)	156 (9.17)	161 (9.46)
< 2.1	390 (22.91)	36 (9.23)	40 (10.26)
2.1-6.2	391 (22.97)	43 (11.0)	35 (8.95)
6.2-13.6	418 (24.56)	31 (7.42)	43 (10.29)
> 13.6	503 (29.55)	46 (9.15)	43 (8.55)
<i>P</i> -value		0.374	0.784
Bean (g)	1423 (100)	139 (9.77)	135 (9.49)
< 13	307 (21.57)	26 (8.47)	23 (7.49)
13-31.2	338 (23.75)	32 (9.47)	30 (8.88)
31.3-66.9	366 (25.72)	40 (10.93)	47 (12.84)
> 66.9	412 (28.95)	41 (9.95)	35 (8.50)
<i>P</i> -value		0.753	0.162
Vegetable (g)	2292 (100)	214 (9.34)	234 (10.21)
< 181.44	389 (16.97)	36 (9.25)	45 (11.57)
181.4-287.2	507 (22.12)	35 (6.9)	50 (9.86)
287.3-426.9	613 (26.75)	66 (10.77)	55 (8.97)
> 426.9	783 (34.16)	77 (9.83)	84 (10.73)
<i>P</i> -value		0.153	0.323
Fruit (g)	1133 (100)	93 (8.21)	106 (9.36)
< 138.77	320 (28.24)	27 (8.44)	29 (9.06)
138.77-269.0	288 (25.42)	25 (8.68)	26 (9.03)
269.1-465.4	263 (23.21)	14 (5.32)	24 (9.13)
> 465.4	262 (23.12)	27 (10.31)	27 (10.31)
<i>P</i> -value		0.208	0.461
Meat (g)	1623 (100)	146 (9.0)	158 (9.74)
< 27.605	332 (20.46)	36 (10.84)	35 (10.54)
27.6-60.6	401 (24.71)	33 (8.23)	38 (9.48)
60.7-130	411 (25.32)	46 (11.19)	32 (7.79)
> 130	479 (29.51)	31 (6.47)	53 (11.06)
<i>P</i> -value		0.049	0.111

DM, diabetes mellitus; IFG, impaired fasting glucose, respectively. by χ^2 -test

4.

(Table 9, 10).

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Table 8. Prevalence of DM and IFG according to Food Intake in Female

	N (%)	Prevalence N (%)	
		DM	IFG
Calory (kcal)	2790 (100)	181 (6.49)	283 (10.14)
< 1421	936 (33.55)	60 (6.2)	112 (11.97)
1421-1840.5	751 (26.92)	43 (5.73)	77 (10.25)
1840.6-2397	623 (22.33)	46 (7.38)	60 (9.63)
> 2397	480 (17.2)	34 (7.08)	34 (7.08)
<i>P</i> -value		0.581	0.041
Cereal (g)	950 (100)	54 (5.68)	85 (8.95)
< 238.56	245 (25.79)	18 (7.35)	22 (8.98)
238.6-320.7	213 (22.42)	10 (4.69)	18 (8.45)
320.8-417.6	221 (23.26)	11 (4.98)	13 (5.88)
> 417.6	271 (28.53)	15 (5.54)	32 (11.81)
<i>P</i> -value		0.599	0.138
Saccharide (g)	1895 (100)	122 (6.44)	160 (8.44)
< 2.13	517 (27.28)	34 (6.58)	44 (8.51)
2.1-6.2	521 (27.49)	34 (6.53)	43 (8.25)
6.3-13.6	463 (24.43)	21 (4.54)	41 (8.86)
> 13.6	394 (20.79)	33 (8.38)	32 (8.12)
<i>P</i> -value		0.153	0.993
Bean (g)	1643 (100)	6.09 (100)	158 (9.62)
< 13	465 (28.3)	23 (4.95)	47 (10.11)
13-31.1	454 (27.63)	33 (7.27)	36 (7.93)
31.2-66.9	366 (22.28)	26 (7.1)	44 (12.02)
> 66.9	358 (21.79)	18 (5.03)	31 (8.66)
<i>P</i> -value		0.316	0.245
Vegetable (g)	2784 (100)	181 (6.5)	281 (10.09)
< 181.4	838 (30.1)	56 (6.68)	100 (11.93)
181.4-287.2	735 (26.4)	43 (5.85)	73 (9.93)
287.2-426.4	640 (22.99)	38 (5.94)	50 (7.81)
> 426.4	571 (20.51)	44 (7.71)	58 (10.16)
<i>P</i> -value		0.521	0.062
Fruit (g)	1587 (100)	90 (5.67)	134 (8.44)
< 138.8	354 (22.31)	21 (5.93)	35 (9.89)
138.8-269	417 (26.28)	25 (6.0)	40 (9.59)
269.1-465.4	425 (26.78)	27 (6.35)	32 (7.53)
> 465.4	391 (24.64)	17 (4.35)	27 (6.91)
<i>P</i> -value		0.62	0.499
Meat (g)	1625 (100)	93 (5.72)	146 (8.98)
< 27.6	494 (30.4)	23 (4.7)	46 (9.31)
27.6-60.6	396 (24.37)	26 (6.63)	40 (10.10)
60.7-130	418 (25.72)	17 (4.08)	31 (7.42)
> 130	317 (19.51)	27 (8.26)	29 (9.15)
<i>P</i> -value		0.056	0.125

DM, diabetes mellitus; IFG, impaired fasting glucose, respectively. by χ^2 -test

가 0.9

1.4

(Table 11).

가

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39

2.6

60~69

Table 9. Prevalence of DM and IFG according to Diet Habit in Male

	N (%)	Prevalence N (%)	
		DM	IFG
Frequency of diet (per day)	2521 (100)	234 (9.28)	261 (10.35)
1-2	282 (11.18)	21 (7.61)	27 (9.57)
3	2201 (87.31)	210 (9.54)	229 (10.40)
4-5	38 (1.5)	3 (9.38)	5 (13.16)
<i>P</i> -value		0.67	0.67
Overeat	2521 (100)	234 (9.28)	261 (10.35)
breakfast	20 (0.79)	1 (5.0)	3 (15.00)
lunch	225 (8.93)	16 (7.11)	21 (9.33)
dinner	1156 (45.85)	101 (8.74)	116 (10.03)
no overeat	1120 (44.43)	116 (10.36)	121 (10.80)
<i>P</i> -value		0.3	0.55
Skip-eating	2521 (100)	234 (9.28)	261 (10.35)
breakfast	620 (24.59)	48 (7.74)	62 (10.00)
lunch	227 (9.0)	22 (9.69)	24 (10.57)
dinner	124 (4.92)	9 (7.26)	21 (16.94)
no skip	1550 (61.48)	155 (10.0)	154 (9.94)
<i>P</i> -value		0.34	0.17
Regularity of diet	2521 (100)	234 (9.28)	261 (10.35)
regular	885 (35.11)	83 (9.38)	94 (10.62)
almost regular	1026 (40.7)	93 (9.06)	91 (8.87)
almost irregular	439 (17.41)	44 (10.02)	57 (12.98)
irregular	171 (6.78)	14 (8.19)	19 (11.11)
<i>P</i> -value		0.89	0.32

DM, diabetes mellitus; IFG, impaired fasting glucose, respectively. by χ^2 -test

Table 10. Prevalence of DM and IFG according to Diet Habit in Female

	N (%)	Prevalence N (%)	
		DM	IFG
Frequency of diet (per day)	3053 (100)	196 (6.42)	307 (10.06)
1-2	615 (20.14)	39 (6.55)	54 (8.78)
3-4	2430 (79.59)	157 (6.46)	253 (10.41)
<i>P</i> -value		0.59	0.66
Overeat	3053 (100)	196 (6.42)	307 (10.06)
breakfast	47 (1.54)	3 (6.38)	3 (6.38)
lunch	465 (15.23)	30 (6.45)	38 (8.17)
dinner	1217 (39.86)	63 (5.18)	111 (9.12)
no overeat	1324 (43.37)	100 (7.55)	155 (11.71)
<i>P</i> -value		0.11	0.01
Skip-eating	3053 (100)	196 (6.42)	307 (10.06)
breakfast	726 (23.78)	34 (4.68)	57 (7.85)
lunch	484 (15.85)	19 (3.93)	55 (11.36)
dinner	277 (9.07)	22 (7.94)	27 (9.75)
no skip	1566 (51.29)	121 (7.73)	168 (10.73)
<i>P</i> -value		0.003	0.002
Regularity of diet	3053 (100)	196 (6.42)	307 (10.06)
regular	1004 (32.89)	66 (6.57)	98 (9.76)
almost regular	1167 (38.22)	82 (7.03)	122 (10.45)
almost irregular	665 (21.78)	32 (4.81)	63 (9.47)
irregular	217 (7.11)	16 (7.37)	24 (11.06)
<i>P</i> -value		0.27	0.52

DM, diabetes mellitus; IFG, impaired fasting glucose, respectively. by χ^2 -test

Table 11. Odds Ratios for DM and IFG as a Dependent Variables and the associated Factors as Independent Variables in Male (N=2910)

Variables	Classifications	DM	IGF
		OR (95% CI)	OR (95% CI)
Age (years) ^{*†}	< 40	1.0	1.0
	40-49	1.01 (0.77-1.32)	1.45 (1.11-1.89)
	50-59	1.88 (1.45-2.44)	1.73 (1.28-2.34)
	60-69	1.73 (1.29-2.33)	2.06 (1.48-2.87)
	70	1.92 (1.37-2.69)	2.62 (1.79-3.84)
Income (₩ 10,000)	0-65	1.0	1.0
	66-100	1.04 (0.82-1.33)	0.98 (0.77-1.25)
	101-199	1.07 (0.84-1.36)	0.94 (0.73-1.2)
	200	1.32 (0.99-1.76)	0.92 (0.67-1.27)
Education	Primary school	-	1.0
	Middle school	-	1.08 (0.83-1.39)
	High school	-	0.99 (0.76-1.28)
	College	-	0.45 (0.2-1.003)
	University	-	0.96 (0.67-1.37)
Total cholesterol (mg/dL) [*]	< 200	1.0	1.0
	200-240	1.26 (0.95-1.67)	1.03 (0.77-1.39)
	> 240	1.66 (1.02-2.72)	0.98 (0.58-1.66)
LDL cholesterol (mg/dL)	< 100	1.0	1.0
	100-129	1.08 (0.86-1.37)	1.09 (0.87-1.37)
	130-159	0.89 (0.63-1.28)	1.09 (0.76-1.55)
	160-189	0.9 (0.53-1.52)	1.5 (0.88-2.56)
	> 189	1.25 (0.67-2.34)	1.56 (0.77-3.18)
Triglyceride (mg/dL) ^{*†}	< 150	1.0	1.0
	150-199	1.59 (1.28-1.96)	1.11 (0.89-1.39)
	200	1.99 (1.55-2.56)	1.57 (1.19-2.05)
Hypertension [*]	No	1.0	1.0
	Yes	1.37 (1.14-1.64)	1.14(0.95-1.37)
WHR ^{*†}	< 0.9	1.0	1.0
	0.9	1.76 (1.46-2.12)	1.36 (1.13-1.64)
BMI (kg/m ²) [†]	< 25	1.0	1.0
	25	1.03 (1.0-1.06)	1.07 (1.04-1.09)

^{*} $P < 0.05$ from likelihood ratio test for trend for DM, [†] $P < 0.05$ from likelihood ratio test for trend for IFG. DM, diabetes mellitus; IFG, impaired fasting glucose; WHR, waist to hip ratio; BMI, body mass index; OR, odds ratio; CI, confidence interval, respectively.

39 가 10.8%,
2.18 , 70 2.77 7.9% , 12.5%,
(Table 12). 11.3%

가 12%, 가 9.7% . 60 50
10.9%, 10.1% . 1993
20) 30

Table 12. Odds Ratios for DM and IFG as a Dependent Variables and the associated Factors as Independent Variables in Female (N=3472)

Variables	Classifications	DM	IGF
		OR (95% CI)	OR (95% CI)
Age (years) ^{*,†}	< 40	1.0	1.0
	40-49	1.09 (0.75-1.58)	1.47 (1.001-2.16)
	50-59	1.95 (1.33-2.86)	1.59 (1.02-2.49)
	60-69	1.38 (0.89-2.15)	2.18 (1.35-3.52)
	70	1.34 (0.78-2.28)	2.77 (1.58-4.86)
Smoking	No	1.0	1.0
	Yes	0.9 (0.68-1.19)	1.08 (0.79-1.46)
Income (₩10,000/month)	0-65	-	1.0
	66-100	-	0.92 (0.64-1.33)
	101-199	-	0.88 (0.6-1.28)
	200	-	1.07 (0.66-1.73)
Total cholesterol (mg/dL)	< 200	1.0	1.0
	200-240	1.19 (0.81-1.77)	1.07 (0.69-1.66)
	> 240	1.35 (0.66-2.75)	1.2 (0.57-2.55)
HDL cholesterol (mg/dL)	< 40	1.0	1.0
	40	0.89 (0.67-1.18)	1.05 (0.77-1.43)
LDL cholesterol (mg/dL)	< 100	1.0	1.0
	100-129	1.18 (0.86-1.63)	0.92 (0.66-1.29)
	130-159	0.97 (0.59-1.58)	1.08 (0.64-1.81)
	160-189	0.8 (0.37-1.73)	1.33 (0.6-2.93)
	190	2.04 (0.85-4.94)	1.35 (0.48-3.84)
Triglyceride (mg/dL) ^{*,†}	< 150	1.0	1.0
	150-199	1.35 (1.01-1.83)	1.09 (0.78-1.52)
	200	1.59 (1.13-2.26)	1.73 (1.19-2.5)
Hypertension [*]	No	1.0	1.0
	Yes	1.77 (1.37-2.29)	0.95 (0.73-1.24)
WHR	< 0.8	1.0	1.0
	0.8	1.36 (0.71-2.6)	1.21 (0.64-2.26)
Waist circumference (cm)	< 88	1.0	1.0
	88	1.35 (0.97-1.88)	1.28 (0.89-1.82)
BMI (kg/m ²)	< 25	1.0	1.0
	25	0.99 (0.94-1.05)	1.04 (0.98-1.09)

^{*} $P < 0.05$ from likelihood ratio test for trend for DM, [†] $P < 0.05$ from likelihood ratio test for trend for IFG. DM, diabetes mellitus; IFG, impaired fasting glucose; WHR, waist to hip ratio; BMI, body mass index; OR, odds ratio; CI, confidence interval, respectively.

가
 21-23)
 가
 20)
 24-26)
 가
 가
 1 3~7

15 : (ADA)

1 1~2 7.4% 140 mmHg

17.07% 2.3 가 , 120 mmHg

5.5% , 140 mmHg 15.2% 2.74

47.2% 0.9 가 0.8

74.6% 가

Pan ²⁷⁾ ^{27,35)}

가 가 88 cm

가 가 240 ³⁴⁾

mg/dL Chihoui ²⁸⁾ 25 kg/m²

53.1%

HDL 55.7% 60.6%, 71.6%가

가 HDL 가 25 kg/m² 가

HDL 가 30 kg/m²

²⁹⁻³¹⁾ LDL 가 가 25 kg/m² ³⁶⁾

Bennett ³⁷⁾ Pima Indian 12

Pan ²⁷⁾ , LDL 가

Sevak ³⁸⁾

35~135 mg/dL 가

³²⁾ 가 200 mg/dL

가 19% 150 mg/dL 9.3%

2.1 , 가 200 mg/ (),

dL 21.3% 150 mg/dL

6.6% 3.2 ^{20,33)} 가 가

^{20,33,34)}

120 mmHg Franz ¹³⁾ , Feskens ¹⁴⁾

15 :

(ADA)

14.1% 가 . 2)

14:5-14, 1990

가

10. : 16:

163-74, 1992

가 , . 3)

11. , , , , , , , : 35

126 mg/dL

235

18:322-31, 1994

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