

Health related quality of life and its associated factors in patients with type 2 diabetes in South Korea

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Introduction & Objectives

■ Introduction

- Type 2 Diabetes Mellitus (DM)
 - Abnormal glucose metabolism due to insulin resistance combined with reduced insulin secretion
 - Macrovascular and microvascular complications
- Type 2 DM in South Korea
 - Prevalence – 2.86 million in 2003 (Diabetes in Korea 2007)
 - Incidence – 5~6 per 1000 are diagnosed as DM annually

■ Objectives

- To examine the level of HRQOL and identify its associated factors in type 2 DM patients in South Korea

Methods (1)

- Target Population
 - Inclusion criteria
 - Type 2 diabetes patients
 - 20 year-olds or over
 - Korean language
 - Informed consent
 - Exclusion criteria
 - Type 1 diabetes
 - Cognitive impairment
 - Substance abuse disorders
 - Severe illness

Methods (2)

- Locations for whole study
 - Out-patient clinics in 3 University Hospitals which are located in Seoul and Gyeonggi in South Korea.
 - Inje University Sanggye Paik Hospital
 - Inje University Ilsan Paik Hospital
 - Konkuk University Hospital

Methods (3)

- Information from patients
 - Socio-demographic factors
 - Sex, age, education, marital status, job et al
 - Clinical information
 - Height, weight, Body Mass Index (BMI)
 - Age at diagnosis as DM, Duration for treatment
 - Treatment modalities
 - Diet and exercise, PO med, insulin, and Complementary and alternative Medicine (CAM)
 - HRQOL
 - EuroQoL 5D (EQ-5D), Short Form-36 (SF-36)

Methods (4)

- Information from medical chart review
 - Height, weight, BMI
 - Clinical condition
 - Hypertension, hyperlipidemia, acute myocardial infarction (MI), angina, congestive heart failure, atrial fibrillation, cerebral hemorrhage, cerebral infarction, transient ischemic attack, retinopathy, and cataract
 - Prevalence, age at diagnosis, and treatment
 - Family history of diabetes, hypertension, MI, Cerebrovascular accident (CVA), cardiogenic premature death
 - Treatment modality

Analysis (1)

- Statistical analysis (1)
 - Descriptive analysis for the data
 - Comparison of EQ-5D complaint rate (some problems or severe problems), EQ-index (from Korean Time Trade-Off (TTO) valuation set, Jo MW et al, Value in Health, 2008), SF-36 dimension score on general characteristics
 - Examination of the relationships among EQ-5D, EQ-index and SF-36 dimension score

Analysis (2)

- Statistical analysis(2): the prediction model
 - The random intercept model
 - Dependent variable: EQ-5D index
 - Independent variables
 - Sex, age, BMI, hypertension, hyperlipidemia, myocardial infarction, angina pectoris, congestive heart failure, stroke (hemorrhage or infarction), transient ischemic attack, retinopathy, cataract et al
 - Variable selection
 - all variables lowering the level of HRQOL were kept in the model, regardless of p -value like Coffey and Associates

Results (1)

-General characteristics-

Number of patients	989	BMI	
Male	527 (53.3)	mean \pm SD	24.9 (3.6)
Age (year)		<18.5	26 (2.6)
mean \pm SD	57.5 \pm 12.2	<25.0	516 (52.2)
min, max	23, 86	<30.0	372 (37.6)
Education		\geq 30.0	75 (7.6)
elementary or below	255 (25.8)	Drinking	343 (34.7)
middle and high	490 (49.6)	Smoking	230 (23.3)
university or above	243 (24.6)	Treatment*	
Marital status		diet	396 (40.0)
married	762 (77.0)	medication	797 (80.6)
divorced	35 (3.5)	insulin	262 (26.5)
bereaved	147 (14.9)	insulin + medication	130 (13.1)
not married	45 (4.6)	CAM	50 (5.1)

* Plural responses

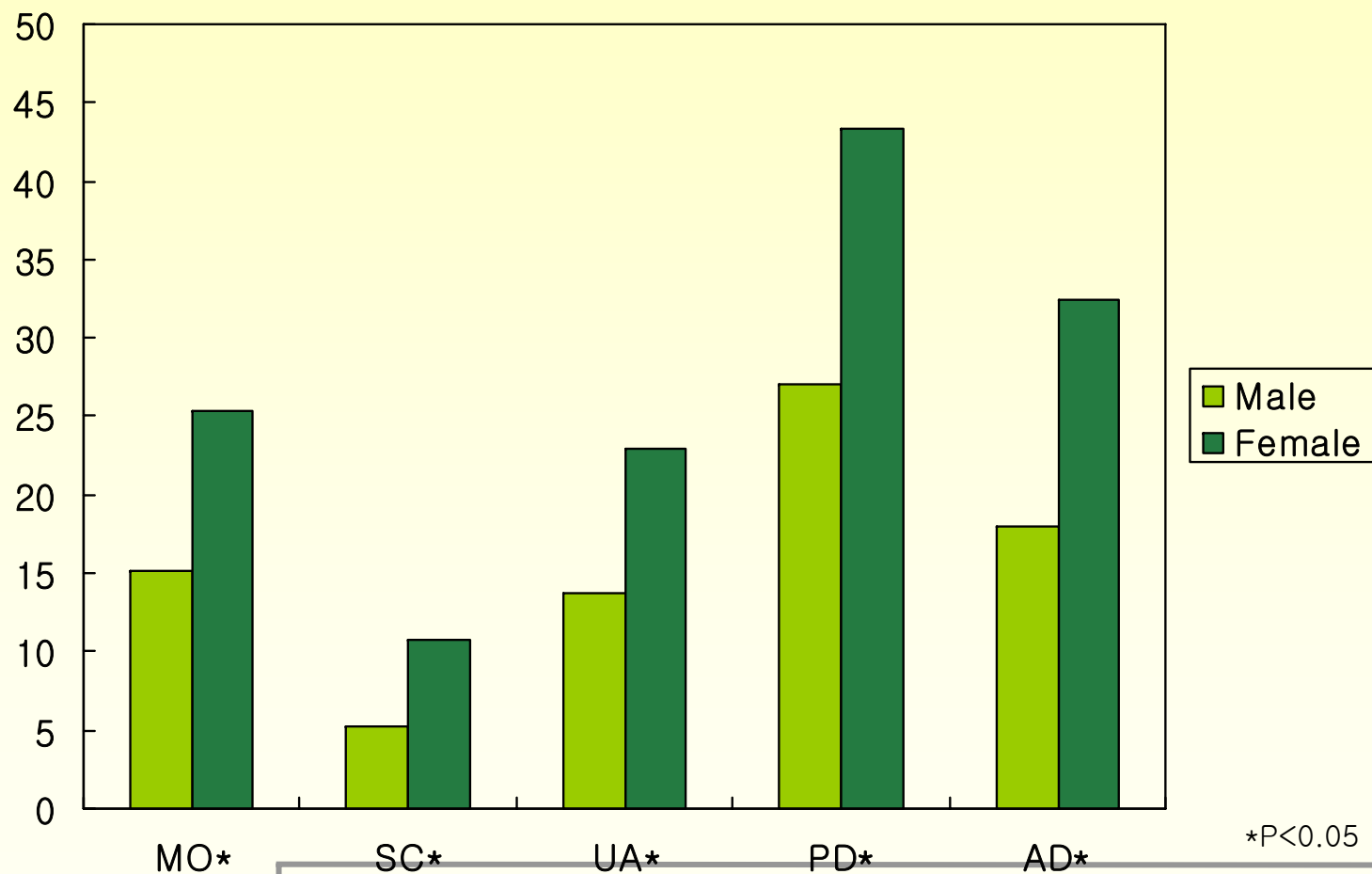
Results (2)

-Complications and family history-

Complications		Complications	
Hypertension	546 (55.2)	Retinopathy	231 (23.4)
Hyperlipidemia	520 (52.6)	Cataract	215 (21.7)
Acute Myocardial infarction	48 (4.9)	Family history	
Angina pectoris	81 (8.2)	Diabetes	407 (41.2)
Congestive heart failure	42 (4.2)	Hypertension	340 (34.4)
Cerebral hemorrhage	26 (2.6)	Acute myocardial infarction	79 (8.0)
Cerebral infarction	56 (5.7)	Stroke	124 (12.5)
Transient ischemic attack	16 (1.6)	Cardiogenic premature death	29 (2.9)

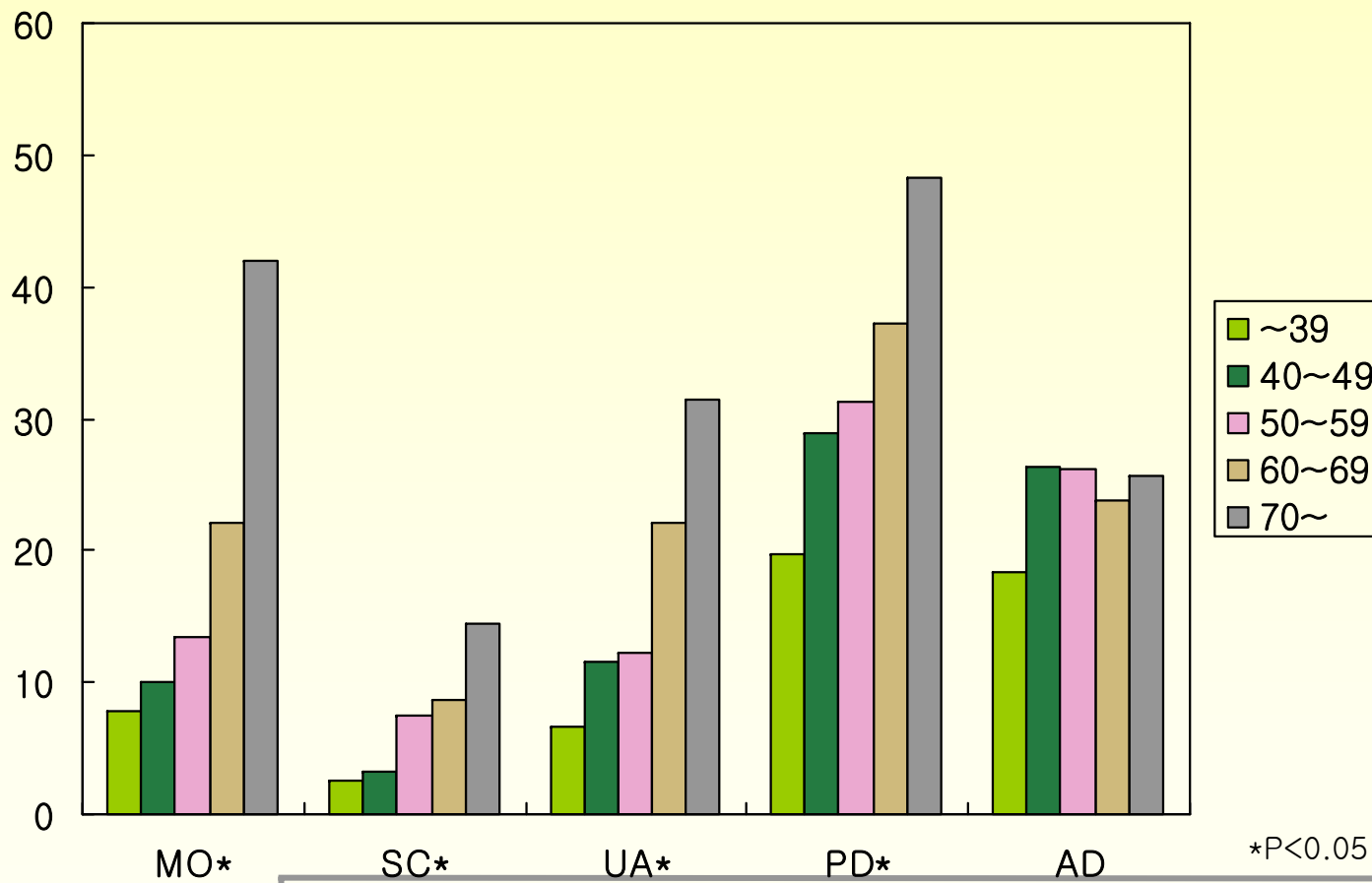
Results (3)

-EQ-5D complaint rates by sex-



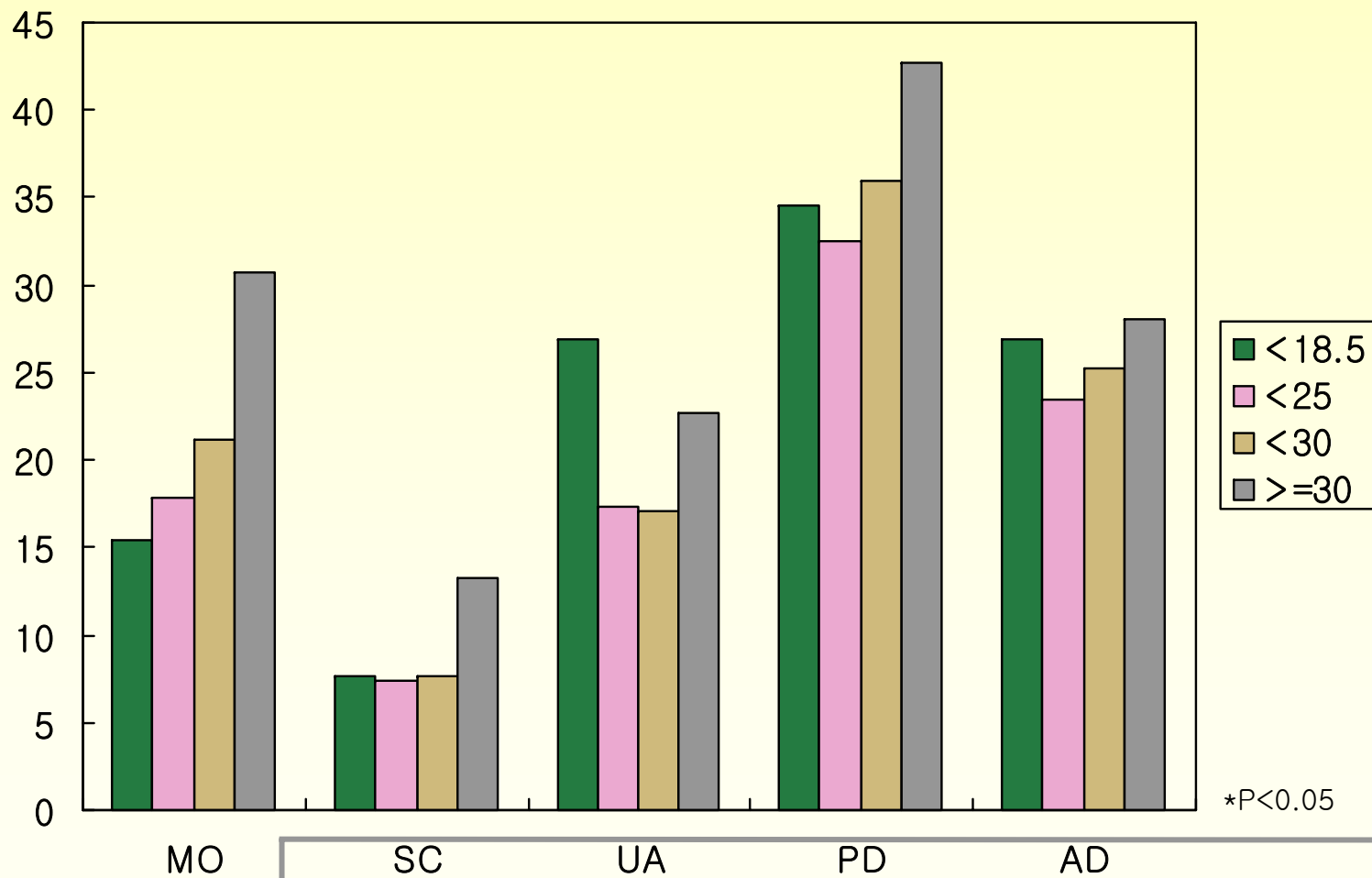
Results (4)

-EQ-5D complaint rates by age group-



Results (5)

-EQ-5D complaint rates by BMI group-



Results (6)

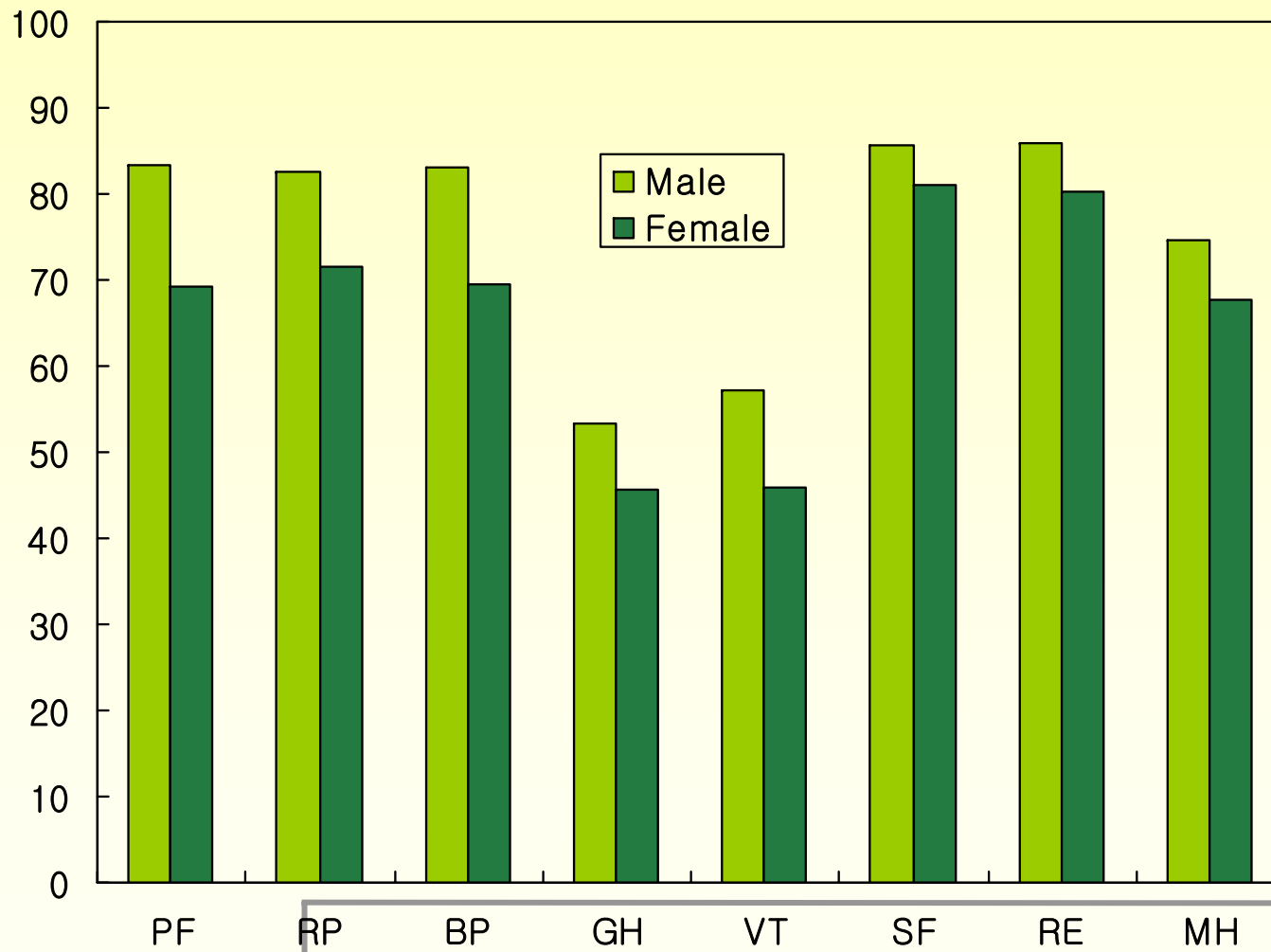
-EQ-index by general characteristics-

	EQ VAS Mean (s.e.)	EQ-5D index Mean (s.e.)		EQ VAS Mean (s.e.)	EQ-5D index Mean (s.e.)
Sex			Marital status		
Male	73.2(0.7)*	0.940 (0.091)	married	71.9(0.6)*	0.928 (0.102)
Female	68.4(0.9)	0.900 (0.119)	divorced	70.1(3.3)	0.897 (0.120)
Age			bereaved	67.0(1.7)	0.890 (0.122)
39 or below	70.4(2.3)	0.956 (0.080)	not married	68.9(3.4)	0.922 (0.098)
40~49	71.3(1.3)	0.940 (0.090)	BMI		
50~59	72.2(1.1)	0.932 (0.103)	<18.5	61.9(3.9)*	0.922 (0.093)
60~69	70.6(1.0)	0.916 (0.106)	<25.0	71.5(0.8)	0.928 (0.096)
70 or above	69.7(1.5)	0.881 (0.127)	<30.0	71.7(1.0)	0.919 (0.096)
Education			>=30.0	66.7(2.1)	0.889 (0.145)
elementary or below	67.0(1.3)*	0.889 (0.124)			
middle and high	71.6(0.8)	0.927 (0.103)			
university or above	73.7(1.1)	0.945 (0.086)			

*P<0.05

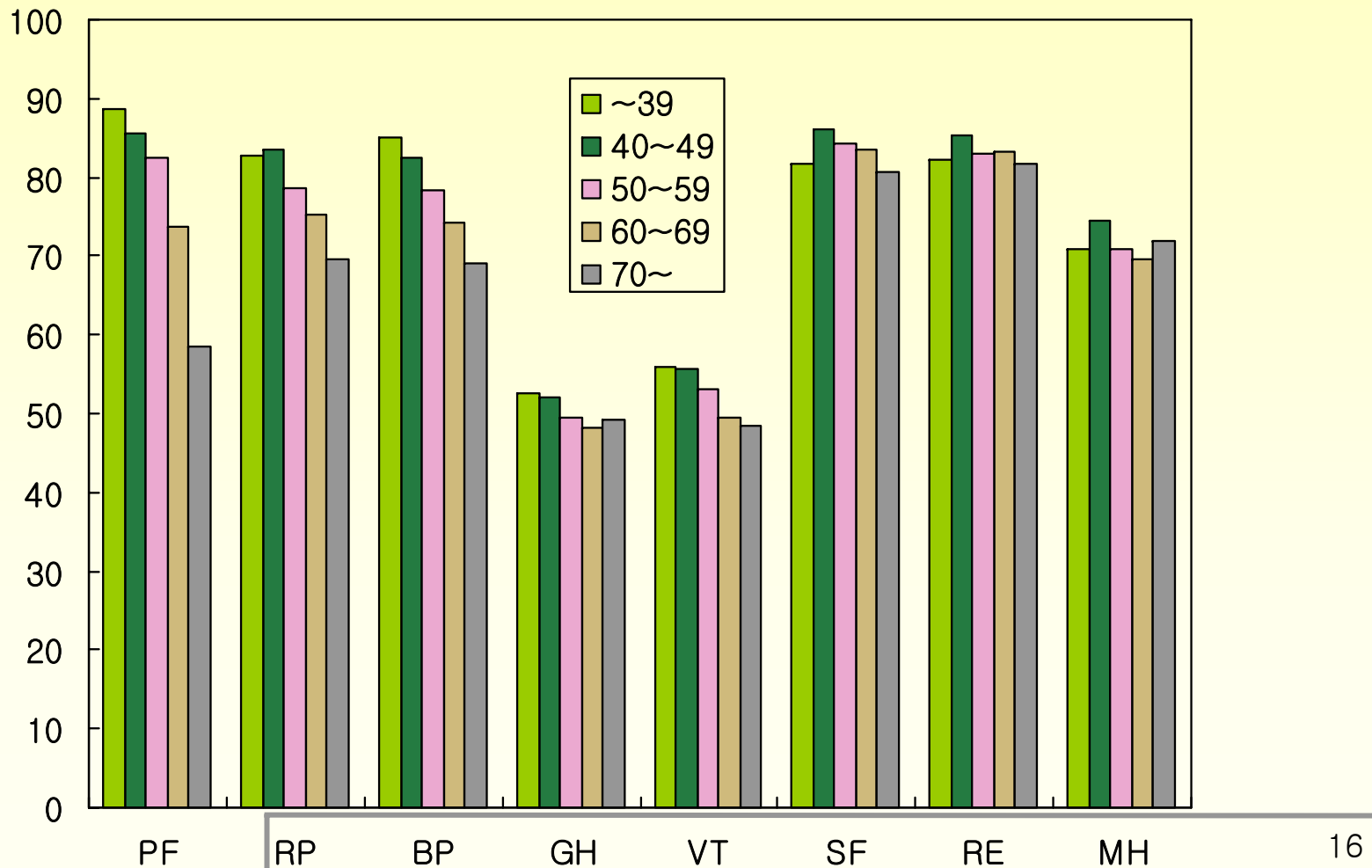
Results (7)

-SF-36 dimensions by sex-



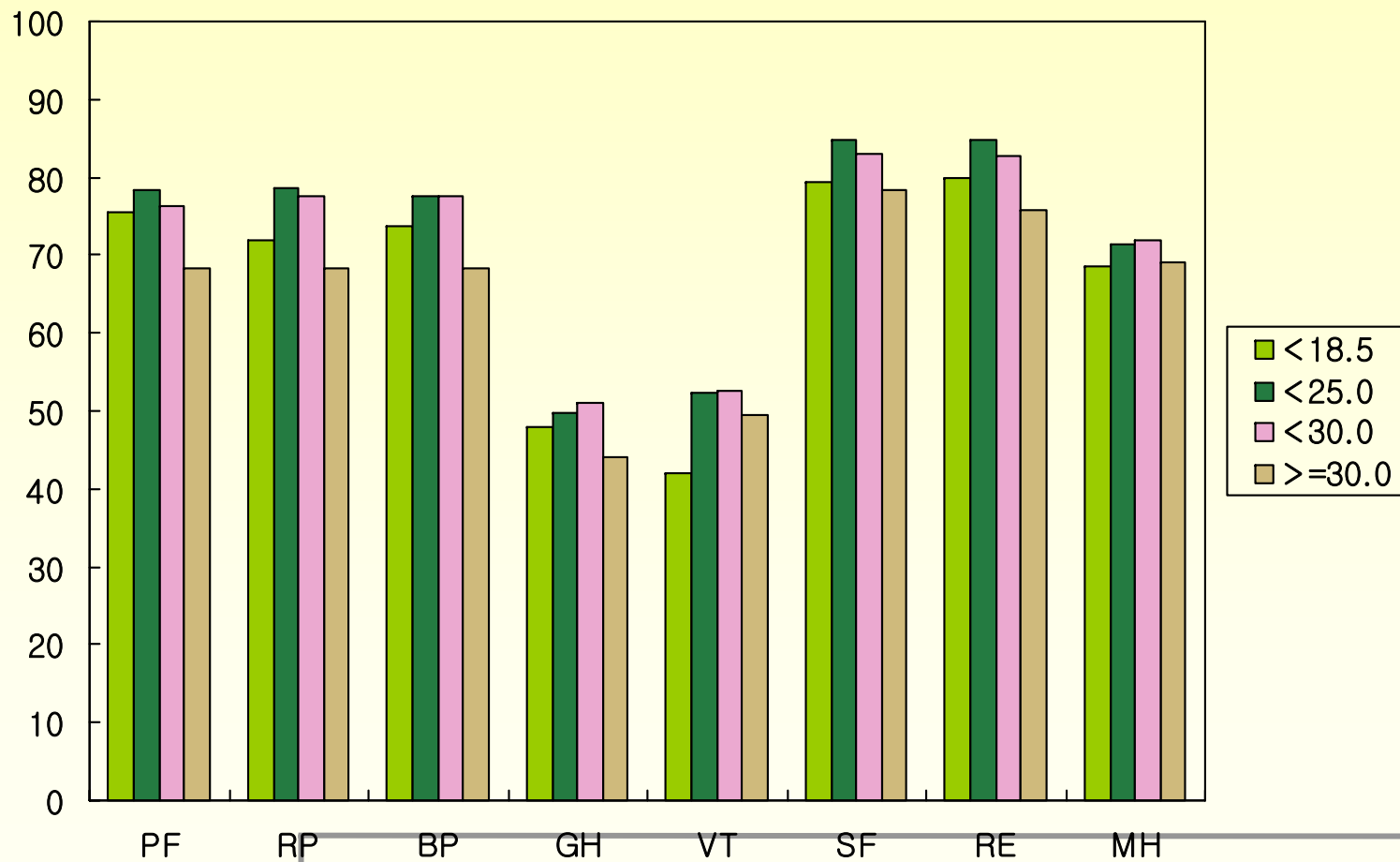
Results (8)

-SF-36 dimensions by age group-



Results (9)

-SF-36 dimensions by BMI group-



Results (10)

–Correlations between EQ-index and SF-36 dimensions–

	EQ-5D index	PF	RP	BP	GH	VIT	SF	RE	MH
EQ-5D index	1	0.614*	0.506*	0.622*	0.421*	0.476*	0.508*	0.468*	0.480*
PF		1	0.598*	0.519*	0.402*	0.433*	0.451*	0.406*	0.336*
RP			1	0.544*	0.420*	0.500*	0.581*	0.597*	0.420*
BP				1	0.509*	0.519*	0.610*	0.460*	0.515*
GH					1	0.647*	0.421*	0.351*	0.522*
VIT						1	0.476*	0.436*	0.649*
SF							1	0.579*	0.536*
RE								1	0.544*
MH									1

*P<0.05

Results (11)

–Sex & age adjusted model and the final model using EQ index–

	Sex & age adjusted model		The final model	
	Coefficient	s.e.	Coefficient	s.e.
Intercept			1.1114	0.0363
Age			-0.0015*	0.0003
Sex: female			-0.0314*	0.0064
Body mass index	-0.0035	0.0010	-0.0030*	0.0010
Hypertension	-0.0184	0.0067	-0.0074	0.0067
Hyperlipidemia	-0.0065	0.0070		
Myocardial infarction	0.0031	0.0151		
Angina pectoris	-0.0064	0.0117		
Congestive heart failure	-0.0404	0.0158	-0.0303	0.0155
Transient ischemic attack	-0.0566	0.0251	-0.0144	0.0257
Stroke	-0.0652	0.0120	-0.0566*	0.0124
Retinopathy	0.0145	0.0043	-0.0265*	0.0078
Cataract	-0.0132	0.0084	-0.0062*	0.008


*P<0.05

Discussions & Limitations

- Outpatients of University Hospitals
 - Selection bias
 - Similar distribution of socio-demographic characteristics
- No consideration of severity and interaction in comorbid diseases
- Relatively higher HRQOL status than results from other western countries
 - Similar values compared with results from other Asian country-Japan

Conclusions

- After adjustment for sex and age, various clinical factors such as body mass index, stroke, retinopathy were associated with the HRQOL of type 2 DM patients in South Korea

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Thank you for your attention!!