Abstract code: PCR114

# The Association Between Health-Related Quality of Life and **Social Determinants of Health for Diabetes in Japan** : A Cross-Sectional Patient Survey Toshiaki Murofushi<sup>1)</sup>, Yoshiyuki Uetake<sup>1)</sup>, Michael LoPresti<sup>1)</sup> 1) INTAGE Healthcare Inc., Tokyo, Japan

#### **INTRODUCTION**

- Health is influenced by many factors, of which social determinants of health (SDH) are one type of non-medical factor.
- □ In Japan, introduction of a questionnaire concerning SDH in diabetes and other lifestyle-related diseases is being considered for specified medical checkups.

Table 1: Participant cha	racteristics (continued)			
		Total	Diabetes patients	General persons
Employment status	Unemployed	19,021 (24.3%)	688 (0.9%)	18,333 (23.4%)
	Non-regular employee	16,228 (20.7%)	399 (0.5%)	15,829 (20.2%)
	Regular employee	43,057 (55.0%)	1,303 (1.7%)	41,754 (53.3%)
Household income	< 1 million yen	3,030 (3.9%)	88 (0.1%)	2,942 (3.8%)
	< 3 million yen	12,891 (16.5%)	445 (0.6%)	12,446 (15.9%)
	< 5 million yen	19,619 (25.1%)	651 (0.8%)	18,968 (24.2%)
	< 10 million yen	32,613 (41.6%)	906 (1.2%)	31,707 (40.5%)
	< 20 million yen	9,233 (11.8%)	265 (0.3%)	8,968 (11.5%)

#### **OBJECTIVE**

This study examines the association between health-related quality of life (HRQoL) and SDH for diabetes patients compared with that of the general population in Japan using cross-sectional patient survey data.

### **METHODS**

- □ Data from the 2022 Patient Mindscape® survey was used. Patient Mindscape® is a Japanese nationwide patientreported outcomes survey conducted annually among 500,000+ patients for 80+ conditions.
- Two populations were included: 1) Patients aged 40 or older that reported suffering from diabetes only within the past one year and 2) General persons aged 40 or older having no drug-treated disease within the past one year.
- □ SDH were defined as gender, employment status, household income, marital status, number of children living with the family, and presence of diabetes among cohabiting family members. EQ-VAS scores were used as a measure

Abbreviation: SD, standard deviation

#### 2. The Association Between HRQoL and SDH

- The details of the association between SDH and HRQoL are shown in Table 2 and Table 3.
- □ For general persons, while household income and marital status had a statistically significant positive association with HRQoL, employment status had a statistically significant negative association.
- □ A similar trend was observed for diabetes patients, with a strong association for household income more than 3 million yen, marital status and employment status.

		Estimate	<u>SE</u>	p value
Intercept		70.732	0.343	0.000
Gender	Male	Reference	-	
	Female	0.666	0.147	0.000
Marital status	Unmarried	Reference		_
	Married	3.172	0.165	0.000
Number of children living with the family	None	Reference	-	_
	Less than 2 children	-1.141	0.151	0.000
	3 or more children	-1.126	0.295	0.000
Presence of diabetes among	Νο	Reference	-	_
cohabiting family members	Yes	-0.253	0.358	0.479
	Unemployed	Reference	-	-
Employment status	Non-regular employee	-0.112	0.194	0.563
	Regular employee	-0.701	0.184	0.000
	< 1 million yen	Reference	-	-
	< 3 million yen	3.143	0.363	0.000
Household	< 5 million yen	4.371	0.358	0.000
income	< 10 million yen	5.415	0.360	0.000
	< 20 million yen	6.649	0.400	0.000
Abbreviation: SE, standard error Table 3: The Association Betwe	≥ 20 million yen en HRQoL and SDH for diab	8.337 etes patients	0.686	0.000
Abbreviation: SE, standard error Table 3: The Association Betwe	≥ 20 million yen en HRQoL and SDH for diab	8.337 etes patients Estimate	0.686 SE	0.000 p value
Abbreviation: SE, standard error Table 3: The Association Betwe Intercept	≥ 20 million yen en HRQoL and SDH for diab	8.337 etes patients Estimate 65.708	0.686 SE 2.064	0.000 p value 0.000
Abbreviation: SE, standard error Table 3: The Association Betwe Intercept	≥ 20 million yen en HRQoL and SDH for diab Male	8.337 etes patients Estimate 65.708 Reference	0.686 SE 2.064 -	0.000 <i>p</i> value 0.000
Abbreviation: SE, standard error Table 3: The Association Betwe Intercept Gender	≥ 20 million yen en HRQoL and SDH for diab Male Female	8.337 etes patients Estimate 65.708 Reference -0.891	0.686 SE 2.064 - 1.109	0.000 p value 0.000 - 0.422
Abbreviation: SE, standard error Table 3: The Association Betwe Intercept Gender	≥ 20 million yen en HRQoL and SDH for diab Male Female Unmarried	8.337 etes patients Estimate 65.708 Reference -0.891 Reference	0.686 SE 2.064 - 1.109 -	0.000 <i>p</i> value 0.000 - 0.422 -
Abbreviation: SE, standard error Table 3: The Association Betwe Intercept Gender Marital status	≥ 20 million yen en HRQoL and SDH for diab Male Female Unmarried Married	8.337 etes patients Estimate 65.708 Reference -0.891 Reference 6.097	0.686 SE 2.064 - 1.109 - 0.963	0.000 p value 0.000 - 0.422 - 0.000
Abbreviation: SE, standard error Table 3: The Association Betwe Intercept Gender Marital status	≥ 20 million yen en HRQoL and SDH for diab Male Female Unmarried Married None	8.337 etes patients Estimate 65.708 Reference -0.891 Reference 6.097 Reference	0.686 SE 2.064 - 1.109 - 0.963 -	0.000 <i>p</i> value 0.000 - 0.422 - 0.000 -
Abbreviation: SE, standard error Table 3: The Association Betwe Intercept Gender Marital status Number of children living with	≥ 20 million yen en HRQoL and SDH for diab Male Female Unmarried Married Married Less than 2 children	8.337 etes patients Estimate 65.708 Reference -0.891 Reference 6.097 Reference -1.003	0.686 SE 2.064 - 1.109 - 0.963 - 0.921	0.000 <i>p</i> value 0.000 - 0.422 - 0.000 - 0.000 - 0.276
Abbreviation: SE, standard error Table 3: The Association Betwee Intercept Gender Marital status Number of children living with the family	<ul> <li>≥ 20 million yen</li> <li>en HRQoL and SDH for diab</li> <li>Male</li> <li>Female</li> <li>Unmarried</li> <li>Married</li> <li>Mone</li> <li>Less than 2 children</li> <li>3 or more children</li> </ul>	8.337         etes patients         Estimate         65.708         Reference         -0.891         Reference         6.097         Reference         -1.003         1.147	0.686 SE 2.064 - 1.109 - 0.963 - 0.921 2.099	0.000 p value 0.000 - 0.422 - 0.000 - 0.276 0.585
Abbreviation: SE, standard error Table 3: The Association Betwe Intercept Gender Marital status Number of children living with the family Presence of diabetes among	<ul> <li>≥ 20 million yen</li> <li>en HRQoL and SDH for diab</li> <li>Male</li> <li>Female</li> <li>Unmarried</li> <li>Married</li> <li>Mone</li> <li>Less than 2 children</li> <li>3 or more children</li> <li>No</li> </ul>	8.337 etes patients Estimate 65.708 Reference -0.891 Reference 6.097 Reference -1.003 1.147 Reference	0.686 SE 2.064 - 1.109 - 0.963 - 0.921 2.099 -	0.000 <i>p</i> value 0.000 - 0.422 - 0.000 - 0.276 0.585 -
Abbreviation: SE, standard error Table 3: The Association Betwe Intercept Gender Marital status Number of children living with the family Presence of diabetes among cohabiting family members	≥ 20 million yen en HRQoL and SDH for diab Male Female Unmarried Married Married None Less than 2 children 3 or more children No Yes	8.337         etes patients         Estimate         65.708         Reference         -0.891         Reference         6.097         Reference         -1.003         1.147         Reference         -0.692	0.686 SE 2.064 - 1.109 - 0.963 - 0.921 2.099 - 0.956	0.000 <i>p</i> value 0.000 - 0.422 - 0.000 - 0.276 0.585 - 0.585 - 0.470
Abbreviation: SE, standard error Table 3: The Association Betwe Intercept Gender Marital status Number of children living with the family Presence of diabetes among cohabiting family members	≥ 20 million yen HRQoL and SDH for diab Male Female Unmarried Married Married None Less than 2 children 3 or more children No Yes Unemployed	8.337 etes patients Estimate 65.708 Reference -0.891 Reference 6.097 Reference -1.003 1.147 Reference -0.692 Reference	0.686 SE 2.064 - 1.109 - 0.963 - 0.921 2.099 - 0.956 -	0.000 <i>p</i> value 0.000 - 0.422 - 0.000 - 0.276 0.585 - 0.470 -
Abbreviation: SE, standard error Table 3: The Association Betwee Intercept Gender Marital status Number of children living with the family Presence of diabetes among cohabiting family members	≥ 20 million yen HRQoL and SDH for diab Male Female Unmarried Married Married None Less than 2 children 3 or more children 3 or more children Unemployed Non-regular employee	8.337         Estimate         65.708         Reference         -0.891         Reference         6.097         Reference         1.147         Reference         -0.692         Reference         1.281	0.686 SE 2.064 - 1.109 - 0.963 - 0.921 2.099 - 0.9256 - 1.207	0.000 <i>p</i> value 0.000 - 0.422 - 0.000 - 0.276 0.585 - 0.585 - 0.470 - 0.470 - 0.289
Abbreviation: SE, standard error Table 3: The Association Betwee Intercept Gender Marital status Number of children living with the family Presence of diabetes among cohabiting family members Employment status	≥ 20 million yen HRQoL and SDH for diab Male Female Unmarried Married Married None Less than 2 children 3 or more children 3 or more children HRO Regular employee	8.337         etes patients         Estimate         65.708         Reference         -0.891         Reference         6.097         Reference         -1.003         1.147         Reference         -0.692         Reference         1.281         -2.331	0.686 SE 2.064 - 1.109 - 0.963 - 0.921 2.099 - 0.9256 - 1.207 1.017	0.000 <i>p</i> value 0.000 - 0.422 - 0.422 - 0.276 0.276 0.585 - 0.470 - 0.470 - 0.289 0.022
Abbreviation: SE, standard error Table 3: The Association Betwe Intercept Gender Marital status Number of children living with the family Presence of diabetes among cohabiting family members Employment status	≥ 20 million yen HRQoL and SDH for diab Male Female Unmarried Married Married None Less than 2 children 3 or more children 3 or more children Yes Unemployed Non-regular employee Regular employee < 1 million yen	8.337         Estimate         65.708         Reference         -0.891         Reference         6.097         Reference         -1.003         1.147         Reference         -0.692         Reference         1.281         -2.331         Reference	0.686 SE 2.064 - 1.109 - 0.963 - 0.921 2.099 - 0.921 2.099 - 1.207 1.207 1.017	0.000 <i>p</i> value 0.000 - 0.422 - 0.000 - 0.276 0.276 0.585 - 0.470 - 0.470 - 0.289 0.289 0.022
Abbreviation: SE, standard error Table 3: The Association Betwe Intercept Gender Marital status Number of children living with the family Presence of diabetes among cohabiting family members Employment status	<ul> <li>≥ 20 million yen</li> <li>► HRQoL and SDH for diab</li> <li>Male</li> <li>Female</li> <li>Unmarried</li> <li>Married</li> <li>Mone</li> <li>Less than 2 children</li> <li>3 or more children</li> <li>3 or more children</li> <li>No</li> <li>Yes</li> <li>Unemployed</li> <li>Non-regular employee</li> <li>Regular employee</li> <li>A million yen</li> <li>&lt; 3 million yen</li> </ul>	8.337         etes patients         Estimate         65.708         Reference         -0.891         Reference         6.097         Reference         -1.003         1.147         Reference         -0.692         Reference         1.281         -2.331         Reference         4.775	0.686 SE 2.064 - 1.109 - 0.963 - 0.921 2.099 - 0.9256 - 1.207 1.207 1.017 - 2.182	0.000 <i>p</i> value 0.000 - 0.422 - 0.000 - 0.276 0.276 0.585 - 0.585 - 0.289 0.289 0.289 0.022 - 0.022
Abbreviation: SE, standard error Table 3: The Association Betwe Intercept Gender Marital status Number of children living with the family Presence of diabetes among cohabiting family members Employment status	<ul> <li>≥ 20 million yen</li> <li>≥ 20 million yen</li> <li>Example 20 million yen</li> <li>Male 20 million yen</li> <li>Male 20 million yen</li> <li>2 0 married 20 million yen</li> <li>2 0 million yen</li> <li>2 0 million yen</li> </ul>	8.337         etes patients         Estimate         65.708         Reference         -0.891         Reference         6.097         Reference         -1.003         1.147         Reference         -0.692         Reference         1.281         -2.331         Reference         4.775         5.126	0.686 SE 2.064 - 1.109 - 0.963 - 0.921 2.099 - 0.956 - 1.207 1.017 - 1.207 1.017 - 2.182 2.182 2.156	0.000 <i>p</i> value 0.000 - 0.422 - 0.000 - 0.276 0.276 0.585 - 0.276 0.585 - 0.289 0.022 - 0.029 0.029 0.017
Abbreviation: SE, standard error Table 3: The Association Betwee Intercept Gender Marital status Number of children living with the family Presence of diabetes among cohabiting family members Employment status	<ul> <li>≥ 20 million yen</li> <li>≥ 20 million yen</li> <li>HRQoL and SDH for diab</li> <li>Male</li> <li>Female</li> <li>Unmarried</li> <li>Married</li> <li>Mone</li> <li>Less than 2 children</li> <li>3 or more children</li> <li>3 or more children</li> <li>Yes</li> <li>Unemployed</li> <li>Non-regular employee</li> <li>Regular employee</li> <li>Regular employee</li> <li>&lt; 1 million yen</li> <li>&lt; 5 million yen</li> <li>&lt; 10 million yen</li> </ul>	8.337         Estimate         65.708         Reference         -0.891         Reference         6.097         Reference         -1.003         1.147         Reference         -0.692         Reference         1.281         -2.331         Reference         4.775         5.126         5.482	0.686 SE 2.064 - 1.109 - 0.963 - 0.921 2.099 - 0.921 2.099 - 1.207 1.207 1.207 1.017 - 2.182 2.182 2.156 2.188	0.000 <i>p</i> value 0.000 - 0.422 - 0.000 - 0.276 0.585 - 0.585 - 0.289 0.289 0.022 - 0.289 0.022 - 0.029 0.017 0.012
Abbreviation: SE, standard error Table 3: The Association Betwee Intercept Gender Marital status Number of children living with the family Presence of diabetes among cohabiting family members Employment status	≥ 20 million yen EVENTIAL Sector 20 million yen	8.337         Estimate         Estimate         65.708         Reference         -0.891         Reference         6.097         Reference         -1.003         1.147         Reference         -0.692         Reference         1.281         -2.331         Reference         4.775         5.126         5.482         7.644	0.686 SE 2.064 - 1.109 - 0.963 - 0.921 2.099 - 0.9256 - 1.207 1.017 - 1.207 1.017 - 2.182 2.182 2.156 2.188 2.188 2.447	0.000 <i>p</i> value 0.000 - 0.422 - 0.000 - 0.276 0.585 - 0.585 - 0.585 - 0.289 0.022 - 0.022 - 0.029 0.017 0.012 0.002

of HRQoL.

Linear regression models were used to examine the association between HRQoL and SDH for each population. A p value of less than 0.05 was considered statistically significant. Statistic analysis was performed using R version 4.2.1.

#### RESULTS

## **1. Participant Characteristics**

- □ The details of participant characteristics are shown in Table 1.
- □ 2,390 diabetes patients and 75,916 general persons were analyzed.

Table 1: Participant characteristics						
		Total	Diabetes patients	General persons		
Number of participants		78,306 (100%)	2,390 (3.1%)	75,916 (96.9%)		
Mean age, years (SD)		54.37 (9.1)	60.38 (9.7)	54.18 (9.0)		
Mean EQ-VAS score (SD)		76.96 (17.7)	73.83 (18.7)	77.06 (17.6)		
Gender	Male	45,522 (58.1%)	2,028 (2.6%)	43,494 (55.5%)		
	Female	32,784 (41.9%)	362 (0.5%)	32,422 (41.4%)		
Marital status	Unmarried	23,991 (30.6%)	655 (0.8%)	23,336 (29.8%)		
	Married	54,315 (69.4%)	1,735 (2.2%)	52,580 (67.1%)		
Number of children living with the family	None	45,225 (57.8%)	1,573 (2.0%)	43,652 (55.7%)		
	Less than 2 children	28,827 (36.8%)	730 (0.9%)	28,097 (35.9%)		
	3 or more children	4,254 (5.4%)	87 (0.1%)	4,167 (5.3%)		
Presence of diabetes among cohabiting family members	No	75,335 (96.2%)	1,921 (2.5%)	73,414 (93.8%)		
	Yes	2,971 (3.8%)	469 (0.6%)	2,502 (3.2%)		
Abbreviation: SD standard deviat	ion					

fl intage **INTAGE Healthcare** Inc. Healthier Decisions

### CONCLUSIONS

- □ There are differences in the strength of the association between HRQoL and SDH factors for diabetes patients compared to the general population in Japan.
- □ As such, it is important to consider policy initiatives taking into consideration the strength of the association between HRQoL and SDH.

ISPOR Europe 2023, 12-15 November 2023, Copenhagen, Denmark