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ASSESSMENT OF RISK FACTORS ON URINARY INCONTINENCE FOR THE ELDERLY WOMEN RESIDED IN RELATIVELY COLD AREA IN JAPAN.

Hypothesis / aims of study

To clarify the risk factors on urinary incontinence (UI) in elderly women living in northern Japan.

Study design, materials and methods

This study was cross-sectional study and conducted in October 2011. The target of study subjects was 1,600 women aged 65 to 75 years old randomly selected from records of Sapporo City resident registration in northern Japan. This sample size was equal to 1.4% of the women in that age range. They were surveyed using a self-administrated questionnaire by post. The title of the questionnaire was "Improving the health of women living in a cold climate. The prevalence of UI was defined as frequent UI at least once a week or so.

Results

Among the target of subjects, 3 women were dead before the survey, and 7 women were institutionized because of poor health condition. Among 1,590 subjects available for the study, 800 women gave us informed consent (the response rate was 50.3%). Their average age was 69.8±2.6 years old. The prevalence of UI was 29.6%. In 65 to 70 age group, the prevalence of UI was 29.3%, and in the 70 to 75 age group it was 30.2%.There was no significant difference between the 2 groups. The mean of ICIQ-Short Form was 1.7±2.9.

Analysis with the logistic regression model analysis revealed that risk for the prevalence of UI were positively associated with weight (odds ratio: 1.65, 95% confidence interval; 1.21-2.25), BMI (1.46, 1.07 -1.98), cold extremities (1.54,1.07-2.21), smoking index (1.76,1.13-2.73), poor health status (2.64,1.56-4.4), use of pads for urinary leakage (3.92, 1.67-9.19), urinary tracts diseases (1.93,1.30-2.86), hemorrhoids (1.75,1.21-2.55), knowledge of pelvic floor muscle exercise (1.76, 1.30-2.40), UI in a mother (4.23,2.80-6.40), and inversely associated with UI in a sister (0.41,0.23-0.72).

Table1. Background of the study subjects for risk factors of urinary incntinence (UI)

n=800

		mean±SD n(%)	Positive symptom of UI, n=237(29.6)	Negative symptom of UI, n=563(70.4)	p (probability)
Age	All subjects	69.8±2.6	69.9±2.6	69.7±2.6	n.s.
	65～70	482(60.3)	141(17.6)	341(42.6)	.812
	70～74	318(39.8)	96(12.0)	222(27.8)	
Years resided in Sapporo	All subjects	43.5±16.6	43.7±16.0	43.4±16.9	n.s.
	0～45	410(51.3)	127(15.9)	283(35.4)	.395
	45～75	390(48.8)	110(13.8)	280(35.0)	
Age at the first delivery	All subjects	25.6±3.3	25.4±3.1	25.6±3.3	n.s
	16～25	412(56.1)	125(17.0)	287(39.0)	.745
	25～40	323(43.9)	94(12.8)	229(31.2)	
Age at the last delivery	All subjects	29.3±3.6	29.2±3.6	29.3±3.7	n.s.
	20～29	411(55.8)	124(16.8)	287(39.0)	.808
	29～41	325(44.2)	95(12.9)	230(31.3)	
Body height(cm)	All subjects	153.2±4.9	153.2±4.7	153.2±5.0	n.s.
	120～153	434(54.3)	135(16.9)	299(37.4)	.351
	153～168	366(45.8)	102(12.8)	264(33.0)	
Body weight(kg)	All subjects	52.7±8.1	54.0±8.5	52.1±7.8	**
	33～52	419(52.4)	104(13.0)	315(39.4)	.002
	52～98	381(47.6)	133(16.6)	248(31.0)	
BMI	All subjects	22.4±3.2	23.0±3.3	22.2±3.1	*
	15～22	399(49.9)	103(12.9)	296(37.0)	.020
	22～39.3	401(50.1)	134(16.8)	267(33.4)	
Rate of weight gain[1] (kg/year)	All subjects	0.30±0.41	0.31±0.34	0.29±0.43	n.s.
	−1.5～0.2	382(47.8)	107(14.4)	275(36.9)	.152
	0.2～5.0	363(45.4)	120(16.1)	243(32.6)	
Smoking index[2]	All subjects	65.5±211.6	98.2±267.6	51.9±181.8	*
	0～65	703(88.0)	198(24.8)	506(63.3)	.017
	65～1960	96(12.0)	39(4.9)	57(7.1)	

χ2 test:** p＜0.01, * p＜0.05, n.s.:no significant
1) Rate of weight gain was defined as (current body weight − the lightest body weight)/(current age − age at the lightest body weight)
2) Smoking index was defined as number of cigarette per day × (current age or age at cessation of smoking − age at onset of smoking)

Table 2. Results of analysis with the logistic regression model for risk factors of urinary Incontinence (UI)

	Odds ratio	95% CI	p（probability）
Age	1.05	0.77-1.43	0.78
Years resided in Sapporo	0.88	0.65-1.19	0.39
Age at the first delivery	0.94	0.69-1.30	0.72
Age at the last delivery	0.96	0.70-1.32	0.78
Body height(cm)	0.85	0.62-1.15	0.29
Body weight(kg)	1.65	1.21-2.25	<0.001 P for trend<0.01
BMI	1.46	1.07-1.98	0.016 P for trend<0.01
Cold extremities	1.54	1.07-2.21	0.022 P for trend<0.01
Smoking index	1.76	1.13-2.73	0.012
Poor health status	2.64	1.56-4.47	<0.000 P for trend<0.01
Urinary tracts dieseases	1.93	1.30-2.86	<0.001
Disease of the uterus	1.34	0.93-1.93	0.112
Disease of the ovary	1.21	0.67-2.17	0.531
Hemorrhoids	1.75	1.21-2.55	0.003
Diabetes mellitus	1.38	0.81-2.32	0.233
Asthma	1.38	0.74-2.55	0.309
Allergic rhintis	0.92	0.78-1.16	0.618
Onset age at UI	1.00	0.99-1.01	0.99
Using the pad	3.92	1.67-9.19	0.002 P for trend<0.01
Knowledge of pelvic floor muscle exercise	1.76	1.30-2.40	<0.001
UI in a mother	4.23	2.80-6.40	<0.001
UI in a sister	0.41	0.23-0.72	0.002

95% CI: 95% confidence interval

Interpretation of results

The prevalence of urinary incontinence (29.6%) as well as ICIQ-Short Form score (1.7±2.9) may be consistent with some of the other similar studies. Our results, showing that risk of UI was positively associated with weight, BMI, cold extremities, smoking index, poor health status, urinary tracts diseases, hemorrhoids, using of pads, knowledge of pelvic floor muscle exercise, UI in a mother, and negatively associated with UI in a sisters, were partly consistent with the previous studies.

<u>Concluding message</u>

Our results suggest that some lifestyle habits may be important to reduce the prevalence of UI in elderly women. Further studies, including a follow-up study, are necessary to clarify risk factors of UI for women and health workers, in order to conduct effective support for elderly women at cold climate.

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Is this a clinical trial?	**No**
What were the subjects in the study?	**HUMAN**
Was this study approved by an ethics committee?	**Yes**
Specify Name of Ethics Committee	**This study was approved by the Ethical Committee of Sapporo Medical University.**
Was the Declaration of Helsinki followed?	**Yes**
Was informed consent obtained from the patients?	**Yes**