人工妊娠中絶件数：45–49歳

	平成3年	平成4年	平成5年	平成6年	平成7年	平成8年	平成9年	平成10年	平成11年	平成12年	平成13年	平成14年(1–3月)	平成14年度	平成15年度	平成16年度	平成17年度	平成18年度	平成19年度
	1991年	1992年	1993年	1994年	1995年	1996年	1997年	1998年	1999年	2000年	2001年	2002年	2002年度	2003年度	2004年度	2005年度	2006年度	2007年度
全国	3,538	3,853	3,954	4,014	3,734	3,583	3,178	2,823	2,455	2,287	2,139	491	1,885	1,853	1,666	1,663	1,572	1,447
北海道	200	209	211	215	227	211	166	140	143	109	112	26	98	86	78	87	62	61
青森	47	44	42	41	45	50	35	32	26	24	34	8	22	18	18	25	8	17
岩手	53	67	77	73	54	63	51	55	58	40	33	10	43	41	39	23	26	25
宮城	78	101	97	107	87	89	83	88	62	57	47	13	43	45	29	32	44	29
秋田	41	50	55	41	61	50	36	31	39	47	29	10	31	21	20	15	15	18
山形	45	35	30	34	32	31	49	28	24	36	31	8	19	18	23	23	15	14
福島	85	81	92	99	91	96	107	89	59	54	53	9	36	48	36	42	47	29
茨城	48	81	53	63	58	59	51	55	38	55	56	7	38	30	37	27	29	21
栃木	64	51	47	66	56	61	46	42	31	32	46	8	28	29	26	28	27	16
群馬	72	59	64	80	58	56	53	40	37	36	41	11	30	18	27	30	23	24
埼玉	185	174	191	171	115	163	122	118	105	116	85	15	78	94	55	79	85	52
千葉	132	153	160	125	160	133	138	93	121	86	83	16	57	60	56	36	52	54
東京	289	265	276	277	257	216	156	191	174	145	149	23	137	132	117	139	126	129
神奈川	254	219	234	201	225	183	161	118	113	126	86	16	103	73	89	79	98	89
新潟	67	70	81	69	66	63	71	66	42	55	45	9	48	36	29	33	25	28
富山	28	48	51	58	42	32	30	27	22	15	17	5	23	26	19	18	19	10
石川	28	27	26	47	38	31	33	24	23	22	15	6	17	26	11	17	13	14
福井	16	21	37	30	41	28	27	22	13	17	16	2	9	9	13	7	12	16
山梨	14	16	18	10	11	19	12	16	16	11	10	2	7	11	13	5	12	6
長野	54	71	66	60	59	64	51	55	56	51	43	13	40	54	59	36	42	38
岐阜	59	60	67	60	126	125	57	52	57	34	42	4	36	30	24	38	28	27
静岡	102	107	107	129	91	112	100	91	66	71	59	26	62	49	49	57	47	44
愛知	213	225	204	243	233	179	168	132	93	109	118	22	101	88	66	101	81	64
三重	56	68	84	78	58	58	56	41	44	33	39	6	23	80	31	24	32	21
滋賀	46	36	45	61	56	41	33	35	24	25	26	7	26	20	20	18	14	12
京都	69	173	107	88	94	62	65	59	45	38	15	3	33	23	30	28	28	35
大阪	195	191	224	219	194	190	136	129	120	99	113	25	123	85	79	87	80	83
兵庫	132	159	148	191	169	188	127	112	88	75	70	17	58	74	71	55	61	61
奈良	23	22	29	25	25	16	22	11	13	20	13	3	14	12	12	14	14	11
和歌山	24	22	28	33	30	28	21	20	19	23	17	3	12	11	15	14	6	16
鳥取	16	25	23	33	21	31	22	23	18	16	9	8	13	13	7	7	9	7
島根	25	30	32	30	35	17	29	24	17	6	14	2	13	12	12	12	13	7
岡山	58	74	74	56	48	62	55	42	42	50	42	8	41	22	25	21	35	26
広島	69	77	78	81	67	56	73	77	44	41	38	17	33	46	33	43	40	36
山口	29	40	44	42	35	36	27	27	11	12	28	9	16	15	15	10	19	13
徳島	16	23	21	30	26	16	28	18	19	16	14	6	19	8	18	14	8	10
香川	38	35	30	33	32	27	28	24	33	18	17	4	12	21	13	20	6	11
愛媛	34	56	44	38	44	56	37	35	34	33	40	4	18	29	22	17	28	22
高知	38	30	43	46	45	30	41	40	24	21	24	6	22	18	17	14	13	11
福岡	176	200	214	226	145	179	174	148	141	123	107	29	100	93	92	76	68	80
佐賀	34	35	38	46	57	51	46	45	24	31	24	11	25	27	30	20	21	17
長崎	62	72	67	79	78	66	72	48	54	41	49	9	39	39	28	27	30	14
熊本	36	73	60	70	65	53	56	47	42	62	40	13	36	36	36	33	29	25
大分	47	55	67	55	52	49	72	60	39	45	42	4	18	52	22	23	17	21
宮崎	53	36	64	57	49	57	58	53	43	35	41	8	25	15	25	28	17	27
鹿児島	63	52	62	61	49	61	58	70	64	38	36	11	36	43	49	45	27	39
沖縄	25	35	42	37	27	39	39	30	35	38	31	9	24	17	31	36	21	17

出典：母体保護統計報告（厚生労働省）、母子保健の主なる統計（財団法人母子衛生研究会）

人工妊娠中絶件率(女性人口1000人対):45－49歳

	平成3年 1991年	平成4年 1992年	平成5年 1993年	平成6年 1994年	平成7年 1995年	平成8年 1996年	平成9年 1997年	平成10年 1998年	平成11年 1999年	平成12年 2000年	平成13年 2001年	平成14年度 2002年度	平成15年度 2003年度	平成16年度 2004年度	平成17年度 2005年度	平成18年度 2006年度	平成19年度 2007年度
全国	0.8	0.9	0.8	0.8	0.7	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4
北海道	1.0	1.0	0.9	0.9	0.9	0.8	0.6	0.5	0.6	0.5	0.5	0.5	0.4	0.4	0.5	0.3	0.3
青森	1.0	0.9	0.8	0.7	0.7	0.8	0.5	0.5	0.4	0.4	0.6	0.4	0.3	0.4	0.5	0.2	0.4
岩手	1.2	1.5	1.6	1.5	0.9	1.1	0.9	1.0	1.1	0.8	0.6	0.9	0.9	0.8	0.5	0.6	0.6
宮城	1.1	1.4	1.3	1.3	0.9	0.9	0.8	0.9	0.7	0.7	0.6	0.5	0.6	0.4	0.4	0.6	0.4
秋田	1.1	1.3	1.3	0.9	1.2	0.9	0.7	0.6	0.8	1.0	0.6	0.7	0.5	0.5	0.4	0.4	0.5
山形	1.2	0.9	0.8	0.8	0.7	0.6	1.0	0.6	0.5	0.8	0.7	0.4	0.4	0.6	0.6	0.4	0.4
福島	1.4	1.3	1.4	1.4	1.2	1.1	1.2	1.0	0.7	0.6	0.7	0.5	0.7	0.5	0.6	0.7	0.4
茨城	0.5	0.8	0.5	0.6	0.5	0.4	0.4	0.4	0.3	0.5	0.5	0.4	0.3	0.4	0.3	0.3	0.2
栃木	1.0	0.8	0.7	0.9	0.7	0.7	0.5	0.5	0.4	0.4	0.6	0.4	0.4	0.4	0.4	0.4	0.3
群馬	1.1	0.8	0.8	1.0	0.7	0.6	0.6	0.5	0.5	0.5	0.6	0.5	0.3	0.4	0.5	0.4	0.4
埼玉	0.7	0.7	0.7	0.6	0.4	0.5	0.4	0.4	0.4	0.5	0.4	0.4	0.4	0.3	0.4	0.4	0.3
千葉	0.6	0.7	0.7	0.5	0.6	0.5	0.5	0.4	0.5	0.4	0.4	0.3	0.3	0.3	0.2	0.3	0.3
東京	0.7	0.6	0.6	0.6	0.5	0.4	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.4	0.3	0.3
神奈川	0.8	0.7	0.7	0.6	0.6	0.5	0.5	0.4	0.4	0.5	0.3	0.4	0.3	0.4	0.3	0.4	0.3
新潟	0.9	0.9	1.0	0.8	0.7	0.6	0.7	0.7	0.4	0.6	0.5	0.6	0.5	0.4	0.4	0.3	0.4
富山	0.7	1.1	1.1	1.2	0.9	0.6	0.6	0.6	0.5	0.4	0.5	0.6	0.8	0.6	0.6	0.6	0.3
石川	0.7	0.6	0.6	1.0	0.7	0.6	0.6	0.5	0.5	0.5	0.4	0.5	0.7	0.3	0.5	0.4	0.4
福井	0.6	0.8	1.3	1.0	1.2	0.8	0.8	0.7	0.4	0.6	0.6	0.3	0.3	0.5	0.3	0.5	0.6
山梨	0.5	0.6	0.6	0.3	0.3	0.5	0.3	0.5	0.5	0.4	0.3	0.2	0.4	0.5	0.2	0.4	0.2
長野	0.8	1.0	0.9	0.8	0.7	0.7	0.6	0.7	0.7	0.7	0.6	0.6	0.8	0.9	0.6	0.7	0.6
岐阜	0.8	0.8	0.8	0.7	1.4	1.3	0.6	0.6	0.7	0.5	0.6	0.5	0.5	0.4	0.6	0.4	0.4
静岡	0.8	0.8	0.8	0.9	0.6	0.8	0.6	0.6	0.5	0.5	0.5	0.5	0.4	0.4	0.5	0.4	0.4
愛知	0.9	0.9	0.8	0.9	0.8	0.6	0.6	0.5	0.4	0.5	0.5	0.5	0.4	0.3	0.5	0.4	0.3
三重	0.9	1.1	1.2	1.1	0.7	0.7	0.7	0.6	0.6	0.5	0.6	0.4	1.4	0.5	0.4	0.6	0.4
滋賀	1.1	0.8	1.0	1.2	1.1	0.7	0.6	0.7	0.5	0.5	0.6	0.6	0.5	0.5	0.4	0.3	0.3
京都	0.7	1.8	1.0	0.8	0.8	0.5	0.6	0.6	0.5	0.4	0.2	0.4	0.3	0.4	0.4	0.4	0.5
大阪	0.6	0.5	0.6	0.6	0.5	0.5	0.4	0.4	0.4	0.3	0.4	0.5	0.3	0.3	0.4	0.3	0.3
兵庫	0.7	0.8	0.7	0.8	0.7	0.8	0.5	0.5	0.4	0.4	0.4	0.3	0.4	0.4	0.3	0.4	0.4
奈良	0.4	0.4	0.5	0.4	0.4	0.2	0.3	0.2	0.2	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3
和歌山	0.6	0.6	0.7	0.8	0.7	0.6	0.5	0.5	0.5	0.6	0.5	0.4	0.3	0.5	0.4	0.2	0.5
鳥取	0.9	1.3	1.1	1.5	0.9	1.2	0.9	1.0	0.8	0.7	0.4	0.6	0.7	0.4	0.4	0.5	0.4
島根	1.1	1.2	1.2	1.1	1.2	0.5	0.9	0.8	0.6	0.2	0.6	0.5	0.5	0.5	0.5	0.6	0.3
岡山	0.9	1.1	1.0	0.7	0.6	0.7	0.7	0.6	0.6	0.8	0.7	0.7	0.4	0.4	0.4	0.6	0.5
広島	0.7	0.7	0.7	0.7	0.5	0.4	0.6	0.7	0.4	0.4	0.4	0.4	0.5	0.4	0.5	0.5	0.4
山口	0.5	0.7	0.7	0.7	0.5	0.5	0.4	0.4	0.2	0.2	0.5	0.3	0.3	0.3	0.2	0.4	0.3
徳島	0.6	0.9	0.7	0.9	0.8	0.4	0.8	0.5	0.6	0.5	0.5	0.7	0.3	0.7	0.5	0.3	0.4
香川	1.1	1.0	0.8	0.8	0.7	0.6	0.6	0.6	0.6	0.5	0.5	0.4	0.7	0.4	0.6	0.2	0.4
愛媛	0.7	1.1	0.8	0.6	0.7	0.8	0.6	0.6	0.6	0.6	0.8	0.4	0.6	0.5	0.4	0.6	0.5
高知	1.4	1.0	1.4	1.4	1.3	0.8	1.2	1.2	0.8	0.7	0.9	0.8	0.7	0.7	0.6	0.5	0.5
福岡	1.1	1.2	1.2	1.2	0.7	0.8	0.8	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.5	0.4	0.5
佐賀	1.3	1.3	1.3	1.5	1.8	1.4	1.2	1.3	0.7	0.9	0.8	0.8	0.9	1	0.7	0.8	0.6
長崎	1.3	1.5	1.3	1.4	1.3	1.0	1.1	0.8	0.9	0.7	0.9	0.7	0.7	0.5	0.5	0.6	0.3
熊本	0.6	1.3	1.0	1.0	0.9	0.7	0.7	0.6	0.6	0.9	0.6	0.5	0.6	0.6	0.5	0.5	0.4
大分	1.2	1.3	1.5	1.1	1.0	0.9	1.3	1.2	0.8	1.0	1.0	0.4	1.3	0.6	0.6	0.4	0.6
宮崎	1.5	1.0	1.6	1.3	1.0	1.1	1.1	1.1	0.9	0.8	0.9	0.6	0.4	0.6	0.7	0.4	0.7
鹿児島	1.3	1.0	1.1	1.0	0.8	0.9	0.8	1.0	1.0	0.6	0.5	0.6	0.7	0.8	0.7	0.5	0.7
沖縄	0.9	1.2	1.3	1.1	0.6	0.8	0.8	0.6	0.7	0.8	0.6	0.5	0.4	0.7	0.8	0.5	0.4

出典:母体保護統計報告(厚生労働省)、母子保健の主なる統計(財団法人母子衛生研究会)

「薬事工業生産動態統計調査表」

年	生産数量（グロス）	国内生産数（グロス）	輸入数（グロス）	国内出荷数（グロス）	輸出出荷数（グロス）	国内出荷個数（国内出荷数×144）
1979年（S54）	6,226,454			4,681,357	1,545,097	674,115,408
1980年（S55）	6,574,747			5,118,999	1,455,748	737,135,856
1981年（S56）	6,415,853			5,055,846	1,360,007	728,041,824
1982年（S57）	5,999,573			4,607,180	1,392,393	663,433,920
1983年（S58）	6,054,882			4,030,458	2,024,424	580,385,952
1984年（S59）	5,600,018			4,532,890	1,072,624	652,736,160
1985年（S60）	5,529,432			4,454,598	1,178,104	641,462,112
1986年（S61）	5,912,926			4,344,193	1,544,607	625,563,792
1987年（S62）	7,044,357			4,553,463	2,522,058	655,698,672
1988年（S63）	8,024,208			4,398,818	3,276,892	633,429,792
1989年（H1）	6,693,053			4,070,149	2,443,808	586,101,456
1990年（H2）	6,477,617			4,239,793	2,671,950	610,530,192
1991年（H3）	7,260,229			4,254,393	3,126,798	612,632,592
1992年（H4）	8,094,411			4,502,421	3,502,201	648,348,624
1993年（H5）	8,494,951			4,747,293	3,589,175	683,610,192
1994年（H6）	7,657,647			4,227,767	3,200,625	608,798,448
1995年（H7）	7,410,676			4,102,273	3,508,585	590,727,312
1996年（H8）	7,138,196			3,917,138	3,094,779	564,067,872
1997年（H9）	8,587,626			4,001,709	2,670,140	576,246,096
1998年（H10）	7,099,974			4,010,552	3,307,096	577,519,488
1999年（H11）	6,835,389	6,835,389	0	3,450,708	3,023,437	496,901,952
2000年（H12）	5,922,966	5,913,410	9,556	3,418,153	2,564,424	492,214,032
2001年（H13）	5,878,701	5,871,590	7,111	3,122,986	2,715,139	449,709,984
2002年（H14）	5,284,674	5,282,410	2,264	2,962,868	2,393,930	426,652,992
2003年（H15）	4,897,861	4,894,833	3,028	2,949,458	1,981,174	424,721,952
2004年（H16）	4,685,340	4,671,326	14,014	2,931,042	1,772,771	422,070,048
2005年（H17）	4,314,451	4,313,896	555	2,449,625	1,819,014	352,746,000
2006年（H18）	3,608,903	3,605,341	3,562	2,135,382	1,533,208	307,495,008
2007年（H19）	3,537,813	3,537,549	264	1,994,215	1,577,292	287,166,960

平成 21 年度厚生労働科学研究費補助金（エイズ対策研究事業）
内外の HIV/STI 流行及び関連情報の集約的分析に関する研究:二次データ分析
（国内外の HIV 感染症の流行動向及びリスク関連情報の戦略的収集と統合的分析に関する研究）

Demographic and behavioral characteristics of non-sex worker females attending sexually transmitted disease clinics in Japan: a nationwide case-control study

Masako Ono-Kihara[1,2,§], Tatsuya Sato[3], Hideko Kato[1,2], Sonia P Suguimoto-Watanabe[1], Saman Zamani[1,2,4], Masahiro Kihara[1,2]

[1]Department of Global Health and Socio-epidemiology, Kyoto University School of Public Health, [2]Joint United Nations Programme on HIV/AIDS Collaborating Centre for Socio-epidemiological HIV Research, [3]Faculty of Medicine, Kyoto University School of Medicine, [4]Japan Foundation for AIDS Prevention

Abstract

Background: Although number of sexually transmitted infections (STIs) reported in STI surveillance increased rapidly for women in Japan during the 1990s, the sexual behavior of women potentially at risk of STI infection remains unknown. **Methods:** In order to determine the demographic and behavioral characteristics of non-sex worker (SW) females attending STI clinics, female attendees (n=145), excluding SW, from nine clinics across Japan and female controls from the general population (n=956), both aged 18-50 years, were compared using two data sets of nationwide sexual behavior surveys conducted in 1999. **Results:** Although the occupation-type and education level were unrelated to STI clinic attendance in multivariate analysis, non-SW females attending STI clinics were younger (adjusted odds ratios [AOR]=0.94, 95%CI: 0.89, 0.99), and more likely to be unmarried (AOR=4.11, 95% CI: 1.73, 9.77) than the controls from the general population. In the previous year, STI clinic attendees were more likely to have had multiple partnerships (AOR=3.09, 95% CI: 1.42, 6.71) and unprotected vaginal sex with regular partners (AOR=3.59, 95% CI: 1.49, 8.64), and tended to have had their first sexual intercourse at a younger age (AOR=1.77, 95%CI: 0.89, 3.54) and more unprotected vaginal and/or oral sex with casual partners (AOR=2.08, 95%CI: 0.75, 5.71). Identical sexual behavior patterns were observed between the female attendees with a current diagnosis of STI (n=72) and those before diagnosis (n=73) and between those with a past history of STI (n=66) and those without (n=79). **Conclusion:** These results indicate that not only multiple partnerships or unprotected sex with casual partners, but also unprotected vaginal sex within a regular partnership is prevalent among non-SW female STI clinic attendees. The identical sexual behavior patterns observed between female attendees with a current STI diagnosis and those without, and between those attendees with a past history of STI diagnosis and those without, indicate that the result are unlikely confounded with the cases of non-STI infection. This sexual behavior pattern may be predictive of STI infection among young Japanese women and could have contributed to the STI epidemic in women in Japan during the 1990s.

BACKGROUND

National sexually transmitted infection (STI) surveillance in Japan witnessed a rapid increase in the reported number of STIs among women, especially in non-viral STIs such as chlamydial and gonococcal infections, beginning in the mid-1990s and reaching peaks in 2002 in both genders [1,2]. In women, average annual numbers of reported cases per designated clinic or hospital increased from 10.0 in 1995 to 27.8 in 2002 for genital chlamydia and from 1.3 to 4.7 for gonorrhea over the same period. Although the reported numbers of chlamydial and gonococcal infections have shown some decline in recent years (in 2006 the average numbers of reported cases per designated clinic or hospital were 19.2 and 2.4 for genital chlamydia and gonorrhea, respectively), they still remain high and other types of STIs such as genital herpes, condyloma acuminatum and syphilis have continued to increase over the same period [3].

Surveillance provides useful information regarding trends in STIs. It shows that genital chlamydia and gonorrhea are the most common types of STI among female patients, and that patients of 30 years old or younger account for 66% of all female cases [4]. However, since the demographic information collected in the surveillance is limited to age, gender and residential area, questions remain about what kind of sexual behaviors in what subpopulations have led to the recent increases in STIs in Japan. Such information is vital for developing effective STI/HIV prevention programs. In a recent case-control study using the data sets of nationwide surveys conducted in 1999, we determined the STI infection risk profiles of male STI clinic attendees in Japan [5]. Using the same data sets, this study attempts to describe demographic and behavioral characteristics of non-sex worker (SW) females attending STI clinics in Japan to gain insight into the sexual behavior patterns that drove the STI epidemic among women during the 1990s and subsequently contribute to the development of effective STI/HIV prevention programs to avert such epidemics.

METHODS

Study design

The study employed a case-control design in which cases and controls were selected from two data sets of sexual behavior surveys conducted in Japan in 1999. One was from a sample of STI clinic attendees and the other from a probability sample of the general population. Both studies were designed by the authors of this study (MOK, MK) using the same set of questions, other than those specific to each study.

Sexual behavior survey of the general population

The sexual behavior survey of the general population was conducted during June-July of 1999 [6]. A sample of 5000 individuals, aged 18-59 years, was selected from the general population using a two-stage cluster sampling procedure. Briefly, the entire country was divided into 11 regions. Each region was further divided into five population density bands, yielding 57 strata. A total of 5000 samples (2559 males and 2441 females) were allocated to each stratum in proportion to the population size. Within each stratum, sampling wards were selected in a probability proportional to size using ward lists prepared for the census survey. Around 20 samples were drawn systematically from the residents' basic register or electoral

register from each ward. Each subject was visited by trained staff, four times at most if absent, and asked to complete an anonymous self-administered questionnaire. To maximize the response rate, visits were arranged at the time and day most convenient for the subject, as identified during the multiple visits. 1762 males and 1800 females were sampled without replacement, yielding final response rates of 68.8% and 73.7%, respectively.

Nationwide STI clinic survey

The nationwide STI clinic survey was conducted during July-September of 1999 [5]. STI clinic attendees were recruited from 21 private STI clinics, including 9 clinics that reported female attendees, in six large cities (Sapporo, Sendai, Tokyo, Osaka, Hiroshima, and Fukuoka) within six districts (Hokkaido, Tohoku, Kanto, Kansai, Chugoku, and Kyushu) of Japan. The clinics were recruited through consultation with local STI physicians' associations and chosen based on their proximity to the largest entertainment district in each city. Subjects were selected from attendees at the clinics who were currently diagnosed with STIs or before diagnosis displaying STI-related symptoms during the study period. STIs included chlamydial infection, gonorrhea, syphilis, non-chlamydial non-gonococcal urethritis, genital herpes, condyloma acuminatum, chancroid, phthirus pubis, and STI-related symptoms included unusual genital discharge (flow), sores, warts, burning with urination, and redness or itching around the genitals. Eligible attendees were consecutively recruited and asked to complete an anonymous, self-administered questionnaire in a waiting room. A total of 1119 subjects participated in the survey, yielding a final response rate of 84.9 percent (791 males, 304 females, 24 unknown gender). As the survey was anonymous, not all participants responded, and information from the clinics could not be linked to the survey, the distribution of the exact diagnosis of STIs and STI-related symptoms among participants was not determined.

Integration of the data sets

The data sets in the two surveys were combined for female subjects who lived in the six districts mentioned above. Subjects who had sexual intercourse during the previous year, met age criteria (18-50 year old) and denied involvement in commercial sex were included in the analysis. The merged data set included information about age, gender, occupation, educational background, marital status, HIV/STI-related knowledge, age at first sex, number of sexual partners in the previous year, types of sexual partners (regular, casual, or commercially-related), and condom use with each type of sexual partner in the previous year or during their last sexual experience. For STI clinic attendees, information on the presence of a current diagnosis of STI and a past history of STI infection excluding current diagnosis was included for subgroup analysis.

Sample characteristics

The control group was somewhat older than that found in the 2000 census data [7]. The proportion of subjects in the age group of 18-29, 30-39 and 40-50 was 25, 37, and 38 percent respectively for the control group, and 37, 30 and 33 percent respectively for the female census population. Controls were more likely to be married than the census population (78 percent vs. 58 percent), and were better educated (50 percent vs. 42 percent for at least a college/university education). Occupational patterns were similar between the

populations. Regarding STI clinic attendees, only age was available for comparison with the 1999 national sentinel STI surveillance data [8]. STI cases in this study were slightly younger than the STI surveillance population. The proportion of subjects in the age group of 18-29, 30-39, 40-50, was 79, 18, and 3 percent respectively, for STI clinic attendees, and 70, 24 and 6 percent respectively, for the STI surveillance population.

Ethical issues

In both surveys, verbal informed consent was obtained from participants. They were then asked to complete the questionnaire and return it in a sealed envelope, in person or by mail. This research study was approved by the Committee for Research on Human Subjects at Kyoto University in Japan.

Statistical analysis

All statistical analyses were performed using SPSS for windows (version 12.0; SPSS Inc., Chicago, Illinois, USA). Bivariate analyses were performed to determine the association between STI clinic attendance and demographic and behavioral variables. Logistic regression was conducted to calculate adjusted odds ratio (AOR) and 95 percent confidence intervals (CI). Answers to HIV/STI knowledge questions were transformed into scores by giving 1 for a correct answer and 0 for an incorrect answer. Behavioral variables were combined to create variables that coded presence (=1) or absence (=0) of unprotected sex for each type of partner. These variables were compulsorily entered into a multivariate model, together with age at first sex, number of sexual partners in the previous year, and demographic variables, except for the variables of behaviors practiced by too few participants and those strongly interrelated. All statistical tests were two-tailed and results were considered significant when $p<0.05$.

RESULTS

The study examined data relating to 145 STI clinic attendees and 956 controls. Subjects in the control group who reported having had an STI in the previous year (n=16) were excluded from the study.

Table 1 compares the demographic characteristics and HIV/STI-related knowledge of the two groups. STI clinic attendees were much younger than the control group (average age 24.9 vs. 36.3, $p<0.001$). There was significant difference in the type of occupation between the groups ($p=0.012$), with more employed individuals and less housewives among the STI clinic attendees than among the controls. Marital status varied between the groups with 78% of the controls being married while only 15% of the STI clinic attendees were married ($p<0.001$). Education level was almost equivalent between the groups, with about 50% of both the STI clinic attendees and controls having at least a college/university education. Average scores on HIV/STI-related knowledge were higher for STI clinic attendees than for controls (11.9 vs. 9.6, $p<0.001$).

Table 2 compares sexual behavior characteristics between the groups. STI clinic attendees experienced their first sexual intercourse almost three years earlier than the controls. Also, there was a remarkable

difference in the number of sexual partners in the previous year. While only 8% of the controls reported that they had multiple partners in the previous year, 44% of STI clinic attendees reported multiple partners in the previous year. 40% of STI clinic attendees reported having had casual partners in the previous year, compared to only about 4% of controls.

Significant difference was observed between the groups in the prevalence of unprotected sexual practice. While the proportion of STI clinic attendees who experienced unprotected vaginal and oral sex with regular partners was 82% and 84%, respectively, the figures were 65% and 55% respectively, among the controls. Also, while the proportion of STI clinic attendees who experienced unprotected vaginal and oral sex with casual partners were 30% and 28%, respectively, with the figures only 2% for both among the controls. The proportions of those having had anal intercourse with either regular or casual partners were low in both groups without statistical difference between them.

Subgroup analysis of the female STI clinic attendees having self-reported current STI diagnosis (n=73) and those before diagnosis (n=72) revealed that the sexual behavioral patterns were identical between the groups with *p*-values of Chi-square tests for group difference all ranging between 0.77-1.00, except for unprotected oral sex with regular partners ($p = 0.16$). Subgroup analysis of the female STI clinic attendees with a past history of STI diagnosis (n=66) and those without (n=79) yielded similar results.

Multivariate analysis was performed to evaluate the independent association of demographic and behavioral variables with STI clinic attendance (Table 3). While age at the time of the survey was entered into the model as a continuous variable, occupation, educational level, marital status, age at first sexual intercourse, and number of partners in the previous year were entered collectively into the model, together with other behavioral variables that represent the presence of unprotected sex with regular or casual partners, all as dichotomous variables. HIV/STI-related knowledge scores and unprotected anal sex with casual partners were excluded from the analysis. Variables representing unprotected oral and vaginal sex with casual partners were combined to create a single dichotomous variable that represents the presence or absence of unprotected oral and/or vaginal sex, since these variables were closely correlated (r=0.79).

Results of the multivariate analysis showed that female STI clinic attendees were younger (AOR=0.94, 95% CI: 0.89, 0.99) and more likely to be unmarried (AOR=4.11, 95% CI: 1.73, 9.77), while educational and occupational categories showed no significant association with STI clinic attendance. Female STI clinic attendees were more likely to have had multiple partners in the previous year (AOR=3.09, 95%CI: 1.42, 6.71), and have had unprotected vaginal sex with regular partners (AOR=3.59, 95% CI: 1.49, 8.64). Though not statistically significant, they tended to have experienced their first sexual practice at younger ages (AOR=1.77, 95% CI: 0.89, 3.54), and have more unprotected vaginal and/or oral sex with casual partners in the previous year than the controls (AOR=2.08, 95% CI: 0.75, 5.71). In order to eliminate any confounding effects of age, the same analysis was performed in the groups of STI clinic attendees (n=139) and controls (n=139) that were exactly frequency matched for age using one year intervals from 18 to 50 years old. Marital status and the same set of behavioral variables were found to be associated with STI

clinic attendance in similar magnitudes as in the original unmatched analysis with statistical significance except for the age at first sexual intercourse and unprotected vaginal and/or oral sex with casual partners that were associated at the *p*-value level of between 0.1- 0.2.

DISCUSSION

This is the first study to evaluate the sexual-behavior profile of Japanese, non-SW females attending STI clinics utilizing the data sets collected in 1999. Using population-based controls, rather than hospital-based controls that bring a risk of over-controlling [9], our study shows that female STI clinic attendees are more likely to be younger, unmarried, have unprotected vaginal sex with regular partners in the previous year, and have multiple sex partners in the previous year. They also tended to have their first experience of sexual intercourse at a younger age and have more unprotected vaginal and/or oral sex with casual partners. These results however cannot be immediately translated into the risks for STI infection because the results may be confounded by attendees with non-STI infections such as vulvaginal candidasis, bacterial vaginosis or urinary tract infection. Confounding of such cases may well be why our study found unprotected sex with a regular partner was generally high among our subjects. However, this is unlikely to be the case because identical sexual behavioral patterns were identified between female attendees with a current diagnosis of STI and those before diagnosis, and between those with and without a past history of STI diagnosis. It is, therefore, likely that these sexual behaviors are predictive of STI infection among young women in Japan and could have contributed to the STI epidemic in women which Japan witnessed during the 1990s.

Case-control or cross-sectional studies that assess the possible STI infection risk of women using population-based controls are limited. These include a British study that compared females who attended STI clinics in the previous year (n=250) with those who did not (n=9584) among the probability samples of the general population using the data set of the British National Surveys of Sexual Attitudes and Lifestyles (NATSAL) conducted in 1990 [10]. Another British study, using the 2000 NATSAL samples, also compared females who had STIs in the previous five years (n=416) with those who had not (n=5459) [11]. In the U.S., two population-based studies were performed in North Carolina; one study compared black women with a lifetime history of gonococcal infection (n=27) with women without such histories (n=120) [12]; and the other study compared women in a low-income neighborhood with herpes simplex type 2 infections (n=534) with those who had no such infection (n=1101) [13]. In China, a national population-based study was conducted in 1999-2000 comparing women testing positive for chlamydia (n=41) with negative controls (n=1194) [14]. Finally, in Slovenia, a national population-based study was performed in 2000 that compared women with a lifetime history of STI infection (n=41) and those without (n=737) [15]. Although there are other studies that attempt to assess the correlates of STI infection in females, they either do not include the results of multivariate analysis for women or lack information on sample size [9, 16, 17].

The results of our study are consistent with all of the studies cited above, indicating that multiple

partnerships is a strong correlate with STI infection or STI clinic attendance, though the time frame of the question and the stratification of multiple partners varies between the studies. While our study and the China study adopted the previous one year as the time frame for the questions on sexual behaviors, lifetime or the previous five years were used in other studies. Similarly, while the number of partners was used as a dichotomous variable of one or more in our study, it was used as a dichotomous variable with different categorization, a continuous variable or polychotomous variables in other studies. Our findings that STI clinic attendees are more likely to be unmarried or experienced sex at an earlier age are also consistent with the results of some of these studies in STI patients or STI clinic attendees [9, 10, 12].

Our study, however, differs importantly from other studies in analytic strategy. Though types of partners, types of sex or condom use are usually introduced as separate variables in analysis, we structured the questions so that we could construct dichotomous variables that represent the presence or absence of unprotected sex in each type of sex (vaginal, oral or anal) with each type of partner (regular, casual or paid). This enabled us to more accurately evaluate the potential risk of sexual behaviors for STI infection, especially the sexual behavior with regular partners that has not been adequately addressed because regular partnerships are usually used as a reference for other types of partnerships. Our analysis clearly showed that unprotected vaginal sex with a regular partner is an independent correlate of STI clinic attendance or STI infection. About 60% of female STI clinic attendees in our study experienced sex only with regular partners in the previous year, suggesting that not only multiple partnerships or unprotected sex with casual partners, but also unprotected sex with regular partners may pose a risk of STI infection for young women in Japan. It may be important to note the difference in the type of regular partnership between STI clinic attendees and controls. While 78% of the regular partners for controls were husbands, 77% of the regular partners of STI clinic attendees were boyfriends, who may be potentially short-term, which is consistent with the increased number of partnerships for STI clinic attendees.

The risk of sexual transmission through a regular partnership has been suggested in a number of studies on STIs or HIV [18-21]. These studies are, however, either case studies or cross-sectional studies that only show the proportion of people who are monogamous or have only a regular partner. To our knowledge, our study is the first to quantitatively assess the possible risk of unprotected sex with regular partners among women. The China study introduced variables that represent the level of income or socialization of the male steady partner and showed that women with chlamydial infection are more likely to have steady partners with higher incomes and displaying frequent socialization [14]. Since 98% of women having chlamydial infection had only a steady partner, it was suggested that infection from a steady partner is the single most important risk factor for STI infection for women in China. In view of the importance of the prevention of STI among women, more evidence on the risk of regular partnerships should be accumulated.

It is interesting to interpret the findings of the present study in relation to those of our previous study that analyzed the demographic and sexual behavioral risk profile of male STI clinic attendees using the same data sets and adopting the same analytic strategy [5]. That study showed that male STI clinic attendees are

more likely to be unmarried, have multiple partnerships in the previous year, have unprotected vaginal sex with regular partners, have unprotected vaginal and/or oral sex with casual partners, and unprotected vaginal and oral sex with paid partners in the previous year. These findings, together with the results of the present study, suggest that Japanese women may be at risk of STI infection not only through casual or multiple partnerships but also potentially through regular partnerships with men who have frequent genital and/or oral sexual contact with paid or casual partners. Japanese women, especially unmarried women, may be at a greater risk of STI infection from male partners who buy sex than women in other developed countries because it was shown in our previous study [5] that the proportion of men who paid women for sex was 62.0% of male STI patients and 10.5% of probability male controls, while it is only a few percent among the general male population in other developed countries [22-24].

The results of the present study should be interpreted with caution. Although the case-control design utilized here is pertinent for rare diseases such as STIs, the analytic value may be compromised compared with cross-sectional studies utilizing a representative sample with nested cases and controls. In the present study, STI cases were sampled from private clinics. This is because over 90% of medical institutions in Japan are privately operated and because almost all Japanese people are covered by medical insurance programs, which are applied equally to both private and public institutions. Though selection bias should be considered, important characteristics of the female STI clinic attendees in the current study are shared with the 16 women with STIs in the previous year who were excluded from the control group. Like the STI clinic attendees in the current study, these women were, though to a lesser extent, more likely to have had experienced sex earlier, had unprotected vaginal or oral sex with regular partners or with casual partners and had multiple sex partners in the previous year than the women who had no history of STI infection in the previous year. Among control subjects, although the response rate for our survey (73.7%) was similar to other general population sexual behavior surveys [24-27], our samples were more likely to be married and better educated compared to the census population as described in the Methods section. Since marital status, but not education level, was strongly associated with sexual behavior, this could have affected the results of the bivariate comparison. It is, however, unlikely to have affected the results of multivariate analysis because results were adjusted for both education level and marital status. The control group could have also been biased in that the highly sexually-active subpopulation may have avoided the survey. However, our experience with a nationwide survey of students from 30 universities in 1999 using a similar questionnaire showed little association between the answers to the questions related to sexual behaviors and response rates, which ranged between 16.4-100% [28]. It is also possible that other unmeasured factors could have confounded the results, although in an attempt to avoid this four demographic and four district variables were included in the analysis. Finally, limitations in the results also exists in the fact that our data are 10 years old, making the extrapolation of the findings into the current STI epidemic among women difficult. The present study, however, remains valid because it aimed to analyze the possible background of the STI epidemic among women during the 1990s and this is the only data set available in Japan for this purpose.

Despite the possible limitations, the results of this study are important in showing the possible STI risk

profile of non-SW females in Japan for the first time. Together with the results of male STI clinic attendees in our previous analyses, the present results suggest that the epidemic of STIs in young men and women which Japan has experienced since the mid-1990s may have been driven by the sexual network that has expanded among the younger population, linking sex workers and casual and regular partners, and increased in intensity due to multiple partnerships and the prevalent practice of oral sex. These finding should be translated into prevention programs. Of particular importance will be the education campaign to inform the public of the possible risk contained in regular partnerships for both men and women that has been long neglected. Reducing unprotected sex with sex workers by men that may bring STIs into casual and regular partnerships is also important.

Finally, in view of the rapid cultural globalization, the message from the present study may extend to other Asian countries experiencing similar changes in the sexual norms and behavior of young people [29, 30].

CONCLUSION

In a case-control design using population-based controls, our study described demographic and behavioral characteristics of non-sex worker (SW) females attending STI clinics. The results suggested that not only casual sex or multiple partnerships, but also unprotected vaginal sex with regular partners are predictive of STI infection among the non-SW, female population in Japan. HIV/STI prevention programs should focus on both the risk of frequent casual partnerships and the possible risk from regular partnerships that has been long-neglected.

REFERENCE

1. Kumamoto Y, Tsukamoto T, Kagabe T, Akaza H, Nogichi M, Kamidono S, Usui T, Kagawa S, Naitoh S, Minowa M, Tanihata T: **Epidemiological survey of sexually transmitted diseases prevalence in Japan–sentinel surveillance of STIs in 2000.** *Jpn J Sex Transm Dis* (in Japanese) 2001, **12** :32-67.
2. Watts J: **"Japanese face reality about sexually transmitted diseases."**(Article). *Lancet* 1999, **354:**2059.
3. Infectious disease surveillance center : **Surveillance data table 1999-2008.** (http://idsc.nih.go.jp/idwr/ydata/report-E.html)
4. National Institute of Infectious Diseases: **The topic of this month: Genital Chlamydia trachomatis infection 1999-2003** (in Japanese). Infectious Agents Surveillance Report 2004, **25:**198-9.
5. Homma T, Ono-Kihara M, Zamani S, Nishimura YH, Kobori E, Hidaka Y, Ravari SM, Kihara M: **Demographic and behavioral characteristics of male sexually transmitted disease patients in Japan: a nationwide case-control study.** *Sex Transm Dis* 2008, **35:**997-8.
6. Ono-Kihara M, Kihara M: **The first nationwide sexual behavioral survey in Japan. the results of "HIV & Sex in Japan" survey 1999.** *J Asian Sexology* 2001, **2:**65-7.
7. National Statistics Bureau: **The 2000 Population census** (in Japanese). 2000 (http://www.stat.go.jp/english/data/kokusei/index.htm)
8. National Institute of Infectious Diseases: **1999 files of Annual data summary 1999-2004** (in

Japanese). (http://idsc.nih.go.jp/idwr/ydata/index-e.html)

9. Manhart LE, Aral SO, Holmes KK, Critchlow CW, Hughes JP, Whittington WLH, Foxman B: **Influence of study population on the identification of risk factors for sexually transmitted diseases using a case-control design: the example of gonorrhea.** *Am J Epidemiol* 2004, **160:**393-402.
10. Johnson AM, Wadsworth J, Wellings K, Field J: **Who goes to sexually transmitted disease clinics? Results from a national population survey.** *Genitourin Med* 1996, **72:**197-202.
11. Fenton KA, Mercer CH, Johnson AM, Byron CL, McManus S, Erens B, Copas AJ, Nanchahal K, Macdowall W, Wellings K: **Reported sexually transmitted disease clinic attendance and sexually transmitted infections in Britain: prevalence, risk factors, and proportionate population burden.** *J Infect Dis* 2005, **191**(Suppl 1)**:**127-38.
12. Doherty IA, Adimora AA, Schoenbach VJ, Aral SO: **Correlates of gonorrhea among African Americans in North Carolina.** *Int J STI AIDS* 2007; **18:**114-7.
13. Buchacz K, McFarland W, Hernandez M, Klausner JD, Page-Shafer K, Padian N, Molitor F, Ruiz JD, Bolan G, Morrow S, Katz MH: **Prevalence and correlates of herpes simplex virus type 2 infection in a population based survey of young women in low-income neighborhoods of Northern California.** *Sex Transm Dis* 2000, **27:**393-400.
14. Parish WL, Laumann EO, Cohen MS, Pan S, Zheng H, Hoffman I, Wang T, Ng KH: **Population-based study of chlamydial infection in China: a hidden epidemic.** *JAMA* 2003, **289:**1265-73.
15. Grgič-Vitek M, Švab I, Klavs I: **Prevalence of and risk factors of self-reported sexually transmitted infections in Slovenia in 2000.** *Croat Med J* 2006, **47:**722-9.
16. Habel LA, Van Den Eeden SK, Sherman KJ, McKnight B, Stergachis A, Daling JR: **Risk factors for incident and recurrent condylomata acuminata among women. A population-based study.** *Sex Transm Dis.* 1998, **25:**285-92.
17. Wilson TE, Uusküla A, Feldman J, Holman S, Dehovitz J: **A case-control study of beliefs and behaviors associated with sexually transmitted disese occurrence in Estonia.** *Sex Transm Dis* 2001, **28:**624-9.
18. Van Duynhoven YT, van de Laar MJ, Schop WA, Mouton JW, van der Meijden WI, Sprenger MJ: **Different demographic and sexual correlates for chlamydial infection and gonorrhoea in Rotterdam.** *Int J Epidemiol* 1997, **26:**1373-85.
19. Gangakhedkar RR, Bentley ME, Divekar AD, Gadkari D, Mehendale SM, Shepherd ME, Bollinger RC, Quinn TC: **Spread of HIV infection married monogamous women in India.** *JAMA* 1997, **278:**2090-92.
20. Dolcini MM, Catania JA: **Psychosocial profiles of women with risky sexual partners: the national AIDS behavioral surveys (NABS).** *AIDS Behav* 2000, **4:**297-308.
21. Diaz T, Chu SY, Conti L, Sorvillo F, Checko PJ, Hermann P, Fann SA, Frederick M, Boyd D, Mokotoff E, Rietmeijer CA, Herr M, Samuel MC: **Risk behaviors of persons with heterosexually acquired HIV infection in the United States: results of a multistate surveillance project.** *J Acquir Immune Defic Syndr* 1994, **7:**958-63.

22. Carael M, Slaymaker E, Lyerla R, Sarkar S: **Clients of sex workers in different regions of the world: hard to count**. *Sex Transm Infect* 2006, **82**(Suppl 3):26-33
23. Anderson JE, Wilson RW, Barker P, Doll L, Jones TS, Holtgrave D: **Prevalence of sexual and drug-related HIV risk behaviors in the U.S. adult population: results of the 1996 National Household Survey on Drug Abuse**. *J Acquir Immune Defic Syndr* 1999, **21:**148-56.
24. Hubert M: **Studying and comparing sexual behavior and HIV/AIDS in Europe**. In *Sexual behaviour and HIV/AIDS in Europe*. Edited by Hubert M, Bajos N, Sandfort. London: UCL Press; 1998:3-34
25. Fenton KA, Korovessis C, Johnson AM, McCadden A, McManus S, Wellings K, Mercer CH, Carder C, Copas AJ, Nanchahal K, Macdowall W, Ridgway G, Field J, Erens B: **Sexual behaviour in Britain: reported sexually transmitted infections and prevalent genital Chlamydia trachomatis infection**. *Lancet* 2001, **358:**1851-4.
26. ACSF investigators: **AIDS and sexual behaviour in France**. *Nature* 1992, **360:**407-9.
27. Mosher WD, Chandra A, Jones J: **Sexual behavior and selected health measures: men and women 15-44 years of age, United States, 2002. Advance data from vital and health statistics; no 362**. Hyattsville, MD: National Center for Health Statistics. 2005.
28. Ono-Kihara M, Kihara M, Amano K, Nakaune N, Kimura H, Ichikawa S, Ohya H, Ochiai K, Yamamoto T, Uchino H: **Sexual behavior survey among students of national universities**. *Annual Report of Japanese Study Group on HIV Epidemiology and Prevention* (in Japanese). Ministry of Health, Labour and Welfare, 2000:584-93.
29. Ono-Kihara M: **Sexual behavior of teenagers in contemporary Japan: The WYSH Project**. Sanko Publisher, Tokyo, Japan, 2010 (in press).
30. Ma Q, Ono-Kihara M, Cong L, Xu G, Zamani S, Ravari SM, Kihara M: **Sexual behavior and awareness of Chinese university students in transition with implied risk of sexually transmitted diseases and HIV infection: a cross-sectional study**. *BMC Public Health* 2006, **6:**232.

Table 1. Demographic profile of Japanese non-sex worker female STI clinic attendees compared with population-based female controls

Characteristic	STI* clinic attendees (n=145)		Population-based controls (n=956)		*p* value†
	n	%	n	%	
Age at survey					<0.001§
18-19	19	13.1	18	1.9	
20-29	96	66.2	225	23.5	
30-39	26	17.9	353	36.9	
40-50	4	2.8	360	37.7	
Missing	0	0	0	0	
Mean(SD*)	25.0(5.9)		36.1(8.7)		
Median	23		36		
Employment					<0.001
Self-employed	7	4.8	86	9.0	
Management	0	0	6	0.6	
Employee	88	60.7	467	48.8	
Unemployed, full time student	40	27.6	57	6.0	
Housewife	5	3.4	326	34.1	
Missing	5	3.4	14	1.5	
Marital status					<0.001
Married	21	14.5	746	78.0	
Not married	123	84.8	201	21.0	
Missing	1	0.7	9	0.9	
Education level					0.43
High school or below	66	45.5	471	49.3	
College/university or above	79	54.5	482	50.4	
Missing	0	0	3	0.3	
HIV/STI-related knowledge score¶					<0.001§
Mean(SD)	11.9(3.0)		9.6(3.6)		
Median	12		10		

* STI, sexually transmitted infection; SD, standard deviation

†*p* values for chi-square test unless otherwise noted

¶Score for HIV/STI-related knowledge is the total number of 18 questions answered correctly.

§*P* values for Student's *t*-test

Table 2. Sexual behavior profile of Japanese non-sex worker female STI clinic attendees compared with population-based female controls

Characteristic	STI* clinic attendees (n=145)		Population-based controls (n=956)		*p* value†
	n	%	n	%	
Age at first sexual intercourse (years)					<0.001
<19					
19 or older	105	72.4	244	25.5	
Missing	38	26.2	641	67.1	
Mean(SD*)	2	1.4	71	7.4	
Median	17.6(2.7)		20.5(3.3)		
	17		20		
No. of partners (previous year)					<0.001
1	56	38.6	871	91.1	
2 or 3	33	22.8	65	6.8	
4 or more	30	20.7	12	1.3	
Missing	26	17.9	8	0.8	
Type of sex partner (previous year)					
Regular partner					0.011
Yes	139	95.9	942	98.5	
No	6	4.1	10	1.0	
Missing	0	0	4	0.4	
Casual Partner					<0.001
Yes	58	40.0	35	3.7	
No	86	59.3	908	95.0	
Missing	1	0.7	13	1.4	
Sex with regular partners (previous year)					
Had unprotected vaginal sex					
Yes					<0.001
No	119	82.1	622	65.1	
Missing	17	11.7	268	28.0	
Had unprotected oral sex	9	6.2	66	6.9	
Yes					<0.001
No	122	84.1	524	54.8	
Missing	18	12.4	375	39.2	
Had unprotected anal sex	5	3.4	57	6.0	
Yes					0.31
No	10	6.9	42	4.4	
Missing	130	89.7	851	89.0	

	5	3.4	63	6.6	
Sex with casual partners (previous year)					
Had unprotected vaginal sex					
Yes					<0.001
No	44	30.3	20	2.1	
Missing	94	64.8	922	96.4	
Had unprotected oral sex	7	4.8	14	1.5	
Yes					<0.001
No	40	27.6	17	1.8	
Missing	97	66.9	925	96.8	
Had unprotected anal sex	8	5.5	14	1.5	
Yes					1.00
No	0	0	1	0.1	
Missing	138	95.2	941	98.4	
	7	4.8	14	1.5	

* STI, sexually transmitted disease; SD, standard deviation

†p values for chi-square test unless otherwise mentioned

Table 3. Bivariate and multivariate analyses on the demographic and sex behavioral correlates of STI infection among non-sex worker Japanese women.

Characteristic	Crude odds ratio	95%CI*	Adjusted odds ratio†	95%CI
Socio-demographic factors				
Age (years)	0.83	0.80-0.86	0.94	0.89-0.99
Occupation				
Unemployed, full time student or housewife	0.69	0.47-1.01	0.61	0.30-1.25
Others				
	1.00		1.00	
Education				
High school education or less	0.86	0.60-1.21	0.76	0.39-1.48
University education or above	1.00		1.00	
Marital status				
Unmarried	21.74	13.34-35.40	4.11	1.73-9.77
Married	1.00		1.00	
Behavioral factors				
First sexual experience (years)				
□18	7.26	4.87-10.82	1.77	0.89-3.54
□19	1.00		1.00	
Number of sexual partners (previous year)				
□2	12.72	8.29-19.54	3.09	1.42-6.71
1	1.00		1.00	
Sex with regular partners (previous year)				
Had unprotected vaginal sex				
Yes	3.02	1.78-5.11	3.59	1.49-8.64
No	1.00		1.00	
Had unprotected oral sex				
Yes	4.85	2.91-8.10	1.34	0.57-3.18
No	1.00		1.00	
Had unprotected anal sex				
Yes	1.56	0.76-3.18	0.83	0.23-2.95
No	1.00		1.00	
Sex with casual partners (previous year)				
Had unprotected vaginal and/or oral sex				
Yes	23.16	13.51-39.68	2.08	0.75-5.71
No	1.00		1.00	

* CI, confidence interval

†Odds ratio was adjusted by multiple logistic regression analysis for districts (Hokkaido/Tohoku, Kanto-Koshinetsu, Chubu/Kinki, Chugoku/Kyushu)

平成21年度厚生労働科学研究費補助金(エイズ対策研究事業)
国内外のHIV感染症の流行動向及びリスク関連情報の戦略的収集と統合的分析に関する研究
分担研究報告書

性感染症患者のHIV感染と行動のモニタリングに関する研究

分担研究者：　小野寺　昭一　東京慈恵会医科大学感染制御部
研究協力者：　赤枝　恒雄　赤枝六本木診療所
家坂　清子　いえさか産婦人科医院
佐々木　寛　佐々木医院
南　邦弘，前田　信彦　札幌東豊病院
澤村　正之　新宿さくらクリニック
保科　眞二　保科医院
尾上　泰彦　宮本町中央診療所
大原　宏樹　新宿山の手クリニック
吉尾　弘　吉尾産婦人科
澤畑　一樹，吉田　晃　三菱化学ビーシーエル

研究要旨

主要都市のSTDクリニックを受診したSTD症例及び検診のために受診したCSW症例を対象として、HIV抗体検査や梅毒抗体検査などの血清疫学調査と、性器クラミジア、淋菌の核酸診断法による陽性率に関する検査を行い、STD患者及びCSWにおけるHIV感染の浸透度について検討した。対象症例は、症状を有してSTDクリニックを受診した患者及び検診のために受診したcommercial sex workers (CSW)とし、このうちSTDクリニック受診者に対しては、同意を得てHIVを含むSTD検査を行った。また、可能な症例に対しては性に関するアンケート調査を行った。

平成21年度の集積症例数は、STD外来を受診した男性患者122例、女性患者125例、検診目的のCSW174例で合計421例であった。このなかでHIV検査を拒否した症例は、STD外来を受診した男性患者14例と女性STD患者28例であった。CSWにおいてHIV検査を拒否した症例はなかったが、HBs抗原検査を拒否した症例が6例みられた。今年度のHIV抗体陽性者は、男性STD外来受診者122例中2例（1.9%）で、女性STD患者、CSWではHIV抗体陽性者を認めなかった。その他のSTDの陽性率はクラミジアは男性STD患者で8.4%、女性STD患者で8.0%、CSWで6.3%、淋菌は男性STDで6.7%、女性STDで0.8%、CSWで1.7%であった。TPHA陽性者は男性STDで5.8%、女性STDでは0.8%、CSWでは2.9%の陽性率であった。HBs抗原は男性STD、女性STDで0%、CSWでも0.6%と低かった。性行動に関するアンケート調査に協力が得られたのは男性50例、女性143例（CSWは除く）であった。この中で過去3ヶ月のセックスでのコンドーム使用状況に関する調査では、使用しない方が多かった、一度も使用しなかったと答えたのは女性で44.1%、男性34.0%と女性の方が高かった。一方、自分がHIVに感染する可能性がどの程度だと思うかとの質問に対しては、まったくないあるいは低いと思っているのは女性の60.1%、男性の78%であった。今回の調査の結果、わが国における男性STD患者において、HIV陽性者は昨年と同程度であった。また、コンドームの使用状況調査については昨年と比べ低くなっており、HIV感染症を含むSTDの予防は十分には行われてはいなかった。今後も継続してSTD患者におけるHIV感染の浸透状況の検討を継続していくことが重要と思われた。

A　研究の目的

主要都市のSTDクリニックを受診したSTD症例とCSWを対象として、HIV抗体検査や梅毒抗体検査、HBs抗原検査などの血清検査と、性器クラミジア、淋菌の陽性率に関する病原検査を行ってSTD患者におけるHIV感染の浸透度について検討した。これらの結果をもとに、STDとしてのHIV感染と他のSTD感染でどの程度相互関連性をもつのかを検討した。さらに、可能な症例に対して、性行動に関するアンケート調査を行ってSTDへの予防介入の試みを行った。

B　対象

1) STD患者：東京、川崎、前橋、札幌、京都においてSTD外来をもつ診療施設に受診し、HIV検査を含む他のSTD検査について同意が得られた症例。
2) CSW：検診を目的として受診した症例。

上記1)、2)とも原則として20歳以上の成人を対象とした。

C　方法

1) 上記5都市のSTDクリニック受診症例を対象に、患者の同意を得てHIV抗体、梅毒血清抗体(TPHA)、B型肝炎ウイルス検査(HBs ag)及び、初尿あるいは膣分泌物（自己採取可）を検体としてクラミジア、淋菌の保有状況をPCR法により検査した。
2) その結果については、患者のプライバシーに十分配慮して通達する方法をとった。HIV検査が陽性であった症例に対しては、確認検査を行い、希望があれば専門の医療機関を紹介することとした。なお、検診のために来院したCSWについては検査の同意は不要とした。研究のために行う検査の費用については、当該患者において疑われる性感染症の検査を除く他の検査にかかる費用を研究費で負担した。CSWを除く男性、女性のSTD症例については、検査を勧めた症例数とそのなかで何人が検査を拒否したのかを検査項目毎に記録にとどめた。また、可能な症例に対しては、性に関するアンケート調査への協力を依頼した。
3) 本研究は、日本性感染症学会倫理委員会の承認を得て行った（受付番号 JSSTI-09-002）

D　結果

1) 集積症例数とその内訳

平成21年度の目標症例数は、男性STD症例186例、女性STD症例186例、CSW症例186例であった。実際の集積症例は、男性STD症例122例、女性STD症例125例、CSW174例で、合計421例であった。このうち、今年度にHIV検査を拒否した症例はSTD外来を受診した男性14例、女性28例で、CSWでは0であった。症例別年齢分布では男性STD症例では20歳代が54.2%、30歳代が17%、女性ではSTD症例では20歳代が66.6%、30歳代が31.8%であった。CSWでは20歳代が36.2%、30歳代が33.9%であった。

2) 症例別STD関連項目陽性率

今年度対象となった症例のなかでHIV抗体陽性例は、男性STD症例108例中2例（1.9%）、この2例の年齢分布は、20歳未満が1例、20歳代後半が1例であった。

その他、女性STD症例、CSWにはHIV陽性者はみられなかった。

他のSTD関連項目の陽性率は、クラミジアは男性STD症例が8.4%、女性STD例で8.0%、CSWでは6.3%であった。

淋菌の陽性率は、男性STD症例で6.7%、女性STD例で0.8%、CSWで1.7%であった。TPHA陽性者は、男性STD例で5.8%、女性STD例で0.8%、CSW例で2.9%であった。HBs抗原陽性者は男性STD症例、女性STD症例では0%であったがCSW例で0.6%といずれも低かった。

クラミジア陽性者を年齢別にみると、男性STD症例では40歳代前半に1例認め、他は不明であった。女性STD症例では殆どが20歳代であった。一方、淋菌陽性者は、男性STDでは不明例が多かったが、女性STDでは20歳代後半に1例認めた。

TPHAは男性STDにおいて40歳代後半の陽性率が高く、20歳未満に1例認めた。

3) 性に関するアンケート調査