

# CERVICAL SCREENING IN ELDERLY WOMEN IN SINGAPORE

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## ABSTRACT

*The study was conducted to determine the pick-up rate of abnormal cervical smears and the prevalence rate of cervical cancer in women aged 60 years and above and the demographic characteristics of the women screened. The pick-up rate of abnormal cervical smears was 1.65%. The prevalence rate for cervical intraepithelial neoplasia and frank carcinoma was 6.4 and 5.0 per thousand women screened respectively. The study group comprised 89.7% Chinese, 4.7% Malays, 3.6% Indians and 2.0% Others. The pick-up rate of abnormal smears was 1.9% in the Chinese and 1.3% in the Indians. There were no abnormal smears in the Malays and Others. The results demonstrate the importance of a routine cervical cancer screening programme among elderly women aged 60 years and above in Singapore.*

*Keywords: cervical cancer screening, elderly.*

SINGAPORE MED J 1996; Vol 37: 61-65

## INTRODUCTION

Studies have shown that the stage at which cervical cancer is diagnosed advances with increasing patient age, and proportionately more invasive cancers are detected in elderly women than in younger women<sup>(1)</sup>. Most, if not all, of the excess mortality due to invasive cervical cancer is because the elderly in general do not participate in cervical cancer screening<sup>(2)</sup>. Many studies have noted that non-participants in Pap smear screening have a 2.7 to 4 times greater incidence of cervical cancer when screened compared with women who have been screened at least once<sup>(3)</sup>. Studies in Scotland and Iceland have found that routine screening reduces mortality from cervical cancer in elderly women as well as in their younger counterparts<sup>(4,5)</sup>. The screening programme in Iceland includes women up to the age of 70. By 1977, 65% aged over 60 had been screened at least once, and mortality fell by 60% in this age group<sup>(6)</sup>.

Cervical cancer is presently the fourth most common female cancer in Singapore with an incidence of 16.2 per 100,000 women per year and mortality of 5.5 per 100,000 women per year<sup>(6)</sup>. Since 1987, population screening for cervical cancer was made available to all sexually active women aged 25-60 years in the Maternal and Child Health (MCH) clinics. However, the screening rate in women aged 60 years and above has been low. Over the period 1987 to 1992, only 0.5% to 3.0% of women who participated in the Well Women Programme per year were aged 60 years and above<sup>(7)</sup>.

In view of the above, Health Service for the Elderly (HSE) has since February 1992 incorporated cervical cancer screening into the geriatric health screening programme for the elderly in the Senior Citizens' Health Care Centres (SCHCCs) as well as

the Bukit Merah and Queenstown Polyclinics.

## Objectives

The objectives of this study were to:

- (i) determine the pick-up rate of abnormal cervical smears in elderly women;
- (ii) determine the prevalence rate of cervical intraepithelial neoplasia and carcinoma in elderly women based on cytological diagnosis; and
- (iii) study the characteristics of the elderly women screened in the HSE cervical cancer screening programme.

## MATERIALS AND METHODS

Pap smear was offered to all women who attended the SCHCCs and Bukit Merah and Queenstown Polyclinics for geriatric health screening from February 1992. The study was based on women aged 60 years and above who consented to have the Pap smear taken during the period February 1992 to December 1993.

Pap smears were taken by the doctor carrying out the geriatric health screening. A bivalve speculum lubricated with water and an Ayers extended tip spatula were used. Both endocervical and exocervical specimens were taken and smeared onto a clear glass slide. The smears were fixed immediately with an aerosol fixative and read at the Department of Pathology at the Singapore General Hospital.

The patient particulars and Pap smear results were entered into the computer using the dBase III plus programme. The dBase III plus and KWIKSTAT programmes were used for the statistical analysis.

The definition of abnormal smears was similar to that used by the Research and Evaluation Department, Ministry of Health, in their reports on the MCH Cervical Cancer Screening Programme.

## RESULTS

### Socio demographic profile

A total of 2,179 smears were taken from 2,105 women aged 60 years and above during the study period. This comprised 18.5% of all the women who attended for geriatric health screening.

The women ranged in age from 60 years to 91 years, with an average age of 67 years. 70.9% of the women were between the ages of 60 and 70 years (Table I). 11.4% of the women screened were above 75 years of age. 89.7% were Chinese, with Malays, Indians and Others making up only 4.7%, 3.6% and 2.0% of the women screened respectively. Among those whose educational status was known (which constituted 70.5% of the women),

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54.8% had no education, 32.6% had primary education and 12.2% had secondary education. Six women (0.4%) had tertiary education.

**Table I – Percentage distribution of women screened by age group, ethnic group and educational status**

Characteristic	No.	%
Total	2,105	100.0
<i>Age group (in years)</i>		
60-64	801	38.1
65-69	690	32.8
70-74	367	17.4
≥75	240	11.4
Unknown	7	0.3
<i>Ethnic group</i>		
Chinese	1,889	89.7
Malays	99	4.7
Indians	75	3.6
Others	42	2.0
<i>Educational status</i>		
None	812	38.6
Primary	484	23.0
Secondary	181	8.6
Tertiary	6	0.3
Unknown	622	29.5

#### Screening history

There were 1,508 women (71.6%) who never had any previous screening. Women with no education formed the largest percentage of the women (41.0%) who never had any previous cervical screening (Table II). Among those never screened before, 22.1% had a primary education, 5.6% had secondary education and 4 women (0.3%) had a university education. The educational status of 31.0% of the women was unknown.

Among the total number of Chinese screened, 71.8% had never been screened before; while 72.7% of the Malays and 69.3% of the Indians and 64.3% of Other races had never been screened before (Table III). The percentage of women who had never been screened before increased with advancing years, increasing from 65.8% among those aged < 65 years, to 72.5% in the 65-69 years age group, to 75.7% in the 70-74 years age group, and 82.1% in those 75 years and above.

**Table II – Percentage distribution of women who never had screening before by educational status**

Characteristic	No.	%
Total	1,508	100.0
None	619	41.0
Primary	333	22.1
Secondary	85	5.6
Tertiary	4	0.3
Unknown	467	31.0

#### Cytologic diagnosis

Smears were obtained from the cervical os or endocervix in 96.4% of the women screened. 2.3% were obtained from the vaginal pool or lateral vaginal wall because of the difficulty in visualising and identifying the cervix in these women. In 1.3% of women who had a past history of hysterectomy, the smears were taken from the vault (Table IV).

**Table III – Percentage distribution of women by ethnic group, age group, educational status against type of screening**

Characteristic	Screening history	
	Never had screening before	Ever had screening before
<i>Ethnic group</i>		
Chinese	71.8	28.2
Malays	72.7	27.3
Indians	69.3	30.7
Others	64.3	35.7
<i>Age group (in years)</i>		
60-64	65.8	34.2
65-69	72.5	27.5
70-74	75.7	24.3
≥75	82.1	17.9
Unknown	85.7	14.3

**Table IV – Percentage distribution of women screened by source of smear**

Characteristic	No.	%
Total	2105	100.0
<i>Source of smear</i>		
Cervical os/endocervix	2030	96.4
Vaginal pool/lateral vaginal wall	48	2.3
Others (Vault)	27	1.3

The pick-up rate of abnormal smears was 1.65%. The prevalence rate for cervical intraepithelial neoplasia (CIN) was 6.4 per 1,000 women screened and the prevalence rate for frank carcinoma was 5.0 per 1,000 women screened.

Of the 36 women with abnormal smears, there were 9 women with squamous/glandular cells of undetermined significance and one with dysplasia NOS, (not otherwise specified) (Table V). Fourteen women had CINs of which 3 had mild dysplasia, one had moderate dysplasia and 10 had severe dysplasia (Table V). One woman had atypia, suspicious for malignancy, and 11 women had frank CA. There were none with carcinoma in-situ or koilocytotic atypia.

The pick-up rate of abnormal smears was 1.9% in the Chinese women screened and 1.3% in the Indians. None of the Malay women had abnormal smears. It was difficult to determine the statistical significance of this difference in pick-up rate among the different races because of the small numbers in the races other than the Chinese. No abnormal smears were picked up for the other races; this could have been due to the small number screened.

The pick-up rate for abnormal smears was 1.4% among those aged 60-64 years, 2.2% among those 65-69 years, 1.9% among those 70-74 years of age and 1.3% among those 75 years and above. 66.7% of women with abnormal smears never had a previous smear. In the women with abnormal smears, 75.0% had no education; 13.9% had primary education; 11.1% had secondary education. Only one woman with abnormal smear had a history of postmenopausal bleeding at the time of screening; all the rest were asymptomatic.

Table VI relates cytologic diagnosis with ethnic group and age group. Sixty-two percent of the smears were atrophic smears. 13.6% of smears were reported as negative for malignant cells. 19.3% had inflammatory smears with or without reactive/

reparative changes. 3.4% of the smears were deemed unsuitable for analysis, of which 92% were because of inadequate sampling and 8% because of inflammation which prevented proper interpretation of the samples.

## DISCUSSION

Cervical cancer causes considerable morbidity and mortality in its late stages. However, the disease has a relatively good cure rate when detected early. Detection can be carried out by a simple and painless test - the Pap smear test.

Pap smear was incorporated into the geriatric health screening programme to increase the screening rate in women aged 60 years and above. 18.5% of women who came for geriatric health screening consented to have a Pap smear screening. The reasons for women refusing the Pap smear screening were not available. It is not likely that the women refused because they had been screened recently as a national health survey carried out in 1992 showed that only 34.6% of women aged 60-69 years had a Pap smear in the past 5 years. There is a need for educational intervention in the elderly women to increase awareness of the

need for routine Pap smears. Efforts should be made to dispel the notion that Pap smears are unnecessary or "unrewarding after age 60". Doctors should discuss the importance of cervical cancer screening with each elderly woman who comes for geriatric health screening and allay fears about a procedure that many are ignorant or fearful of.

There was a statistically significant difference in the participation rate for Pap smear screening among the different ethnic groups. Compared to the national female population, there was a much higher participation rate by the Chinese. The Malay and Indian women were under represented. This may be due to cultural factors. Education was not a factor in determining participation because there were more Indians with at least a secondary education compared to the Chinese and Malays.

The pick-up rate of abnormal smears for women 60 years and above was 1.65%. This was comparable to the pick-up rate of 1.63% in 1992 and 1.57% in 1993 in the MCH Well Women Programme. This was higher than the pick-up rate of 1.2% for women aged 60 years and above in the MCH Well Women Programme in 1992 but lower than the pick-up rate of 1.8% in

Table V - Cytologic diagnosis of abnormal smears by ethnic group and age group

Age group/ Ethnic groups*	Cytologic diagnosis								Total
	Dysplasia NOS	Squamous/ Glandular cells of undetermined significance	Mild dysplasia	Moderate dysplasia CIN II	Severe dysplasia CIN III	Atypia, suspicious of malignancy	CA- in- situ	Squamous cell CA NOS <sup>#</sup>	
Total	1	9	3	1	10	1	0	11	36
60 - 64	0	4	2	0	3	0	0	2	11
65 - 69	1	3	1	0	4	1	0	5	15
70 - 74	0	2	0	1	2	0	0	2	7
≥75	0	0	0	0	1	0	0	2	3
Chinese	1	9	3	1	9	1	0	11	35
60 - 64	0	4	2	0	2	0	0	2	10
65 - 69	1	3	1	0	4	1	0	5	15
70 - 74	0	2	0	1	2	0	0	2	7
≥75	0	0	0	0	1	0	0	2	3
Malays	0	0	0	0	0	0	0	0	0
60 - 64	0	0	0	0	0	0	0	0	0
65 - 69	0	0	0	0	0	0	0	0	0
70 - 74	0	0	0	0	0	0	0	0	0
≥75	0	0	0	0	0	0	0	0	0
Indians	0	0	0	0	1	0	0	0	1
60 - 64	0	0	0	0	1	0	0	0	1
65 - 69	0	0	0	0	0	0	0	0	0
70 - 74	0	0	0	0	0	0	0	0	0
≥75	0	0	0	0	0	0	0	0	0

\* = excludes Other races which had no abnormal smear results

<sup>#</sup> = squamous cell carcinoma NOS and squamous cell carcinoma keratinizing type NOS

Table VI - Cytologic diagnosis of smears by ethnic group and age group

Age group/ Ethnic group	Cytologic diagnosis									
	Negative for tumour cells	Atrophic NOS	Inflammatory smear	Koilocytotic Atypia (WVI)	Atypia, suspicious of malignancy	Squamous/ Glandular cells of undetermined significance	CIN*	Carcinoma-in-situ	Squamous cell CA <sup>#</sup>	Insufficient material for diagnosis
Total	296	1,351	421	0	1	9	15	0	11	75
60 – 64	127	492	169	0	0	4	5	0	2	35
65 – 69	96	448	129	0	1	3	6	0	5	22
70 – 74	39	248	75	0	0	2	3	0	2	8
≥ 75	31	160	47	0	0	0	1	0	2	10
Unknown	3	3	1	0	0	0	0	0	0	0
Chinese	258	1,218	381	0	1	9	14	0	11	69
60 – 64	109	432	151	0	0	4	4	0	2	33
65 – 69	81	401	118	0	1	3	6	0	5	19
70 – 74	37	234	68	0	0	2	3	0	2	7
≥ 75	29	148	43	0	0	0	1	0	2	10
Unknown	2	3	1	0	0	0	0	0	0	0
Malays	16	63	16	0	0	0	0	0	0	5
60 – 64	9	30	9	0	0	0	0	0	0	2
65 – 69	6	20	2	0	0	0	0	0	0	2
70 – 74	1	8	3	0	0	0	0	0	0	1
≥ 75	0	5	2	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0
Indians	14	43	17	0	0	0	1	0	0	1
60 – 64	6	18	7	0	0	0	1	0	0	0
65 – 69	5	19	8	0	0	0	0	0	0	1
70 – 74	1	3	2	0	0	0	0	0	0	0
≥ 75	1	3	0	0	0	0	0	0	0	0
Unknown	1	0	0	0	0	0	0	0	0	0
Others	8	27	7	0	0	0	0	0	0	0
60 – 64	3	12	2	0	0	0	0	0	0	0
65 – 69	4	8	1	0	0	0	0	0	0	0
70 – 74	0	3	2	0	0	0	0	0	0	0
≥ 75	1	4	2	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0

\* = includes mild dysplasia, moderate dysplasia CIN II and severe dysplasia CIN III

# = squamous cell carcinoma NOS and squamous cell carcinoma keratinizing type NOS

1993. This was not statistically significant. More cancers were detected in elderly women than in younger women. In 1992, the pick-up rate for carcinoma-in-situ and invasive cancer was 0.2 per 1,000 women screened in women aged 59 years and below in the MCH Well Women Programme. The rate was 2.8 per 1,000 women screened in women 60 years and above in the HSE screening programme. This was statistically significant ( $p < 0.001$ ).

As the numbers involved in this study were small, a large

scale programme might yield less dramatic contrasts between the pick-up rates in the two age groups of women.

In this study, abnormal smear results in women who never had a previous screening were 2 times greater than those who had been screened at least once before. This finding is consistent with that of studies which have noted that non participants in Pap smear screening have a 2.7 to 4 times greater incidence of cervical cancer compared with women who had been screened at least once<sup>(3)</sup>.

1.3% of women in the study had a history of hysterectomy. None of these women had abnormal smear results. However, the reason for the hysterectomy and whether a cervical stump was present were not documented. Studies show that women who had a hysterectomy for malignant disease have a high risk of developing vaginal cancer<sup>(9)</sup> and that between 4% and 8% of cervical cancers arise in the cervical stumps of women who had a hysterectomy<sup>(9)</sup>. Thus, it is important to carry out Pap smear screening in women who had a hysterectomy for malignant disease and in all post hysterectomy women with a cervical stump.

In 1992, in the MCH Well Women Programme, 37.5% of women screened never had previous screening. In this study, 71.6% of the women had never been screened before.

The high pick-up rate of abnormal smear and cervical cancers among elderly women is most likely because they had not been screened before. It would be useful to carry out a study on elderly women, who had received 2 or more Pap smears, to determine whether it is necessary to continue Pap smear screening in future cohorts of elderly women who had been screened when they were younger.

### CONCLUSION

From this study, it can be concluded that:

- (i) It is important to include cervical cancer screening in elderly women as a part of the primary health care programme in Singapore to decrease the morbidity and mortality from cervical cancer.
- (ii) In the elderly, efforts should be made to encourage the Malay

and Indian women to come forward for cervical cancer screening.

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