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# Increasing knowledge about and uptake of cervical cancer screening in Hong Kong Chinese women over 40 years

## Key Messages

1. Health promotion campaigns that are able to increase women's knowledge of their risk of cervical cancer and act as a prompt maximising screening attendance should be developed.
2. Health promotion campaigns targeting service providers to maximise appropriate opportunistic screening should be developed.
3. Health promotion campaigns that specifically target older women to increase their knowledge of cervical cancer and screening and their awareness of personal risk should be developed.
4. Health promotion messages should focus on the need for all sexually active women to have regular cervical screening and encourage women to return for further screening.
5. A database providing an accurate record of each woman's cervical screening status should be developed.

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## Introduction

Cervical cancer remains the fifth most common cause of cancer among Hong Kong women with an age-standardised incidence rate of 9.7 per 100 000 women in 2000. The incidence is higher in older women.<sup>1</sup> Although there are little population-based data available, uptake rates for cervical screening are generally low, with recent data suggesting 79% of women over 60 years have never been screened.<sup>2</sup> Several studies in Hong Kong women have demonstrated that a range of factors influence women's cervical screening attendance patterns. Studies of overseas Chinese women have found that older women have lower levels of knowledge about cervical cancer and screening.<sup>3</sup> A review of strategies used to increase the uptake of cervical cancer screening services found that targeted mass media campaigns can create a steady, if small, increase in cervical screening. Such community-based media campaigns aim to provide knowledge about cervical cancer, risk factors and screening, enabling women to access screening resources and respond positively to invitations for screening.<sup>4</sup> This study aimed to evaluate the effectiveness of a community-based health promotion campaign undertaken to increase knowledge about and uptake of cervical screening among Hong Kong Chinese women older than 40 years.

## Methods

This study was conducted from September 2002 to August 2003 and aimed to measure any changes in participants' knowledge about screening for cervical cancer, intention to participate in cervical screening, and uptake of cervical screening following the implementation of the health promotion campaign.

A two-phase mixed methods design was used to evaluate the health promotion campaign. The health promotion campaign consisted of five strategies, based on a 30-second television advertisement prompting women to attend for cervical screening which was prepared in collaboration with media experts and the Hong Kong Cancer Fund. It was broadcast on the Chinese language terrestrial television channels, TVB Jade and ATV Home during prime viewing time and morning viewing time. Other strategies included an in-store supermarket advertisement which consisted of a 15-second advertisement about the importance of attending for cervical screening and a community outreach programme which mailed information kits about the importance of cervical screening to approximately 1000 community groups accessed by older women.

Phase I involved the recruitment of a sample of 655 women using both random telephone interviews and convenience sampling. Women were stratified into three age-groups: 40-49 years, 50-59 years, and over 60 years of age. Women completed a baseline confidential structured interview consisting of four parts: cervical screening practice, knowledge of cervical screening, health locus of control, and demographic data. From this sample, 290 women successfully completed a post-campaign structured interview to assess changes resulting from the campaign. Time-series laboratory data were also collected to assess any increase in screening following the campaign.

Phase II consisted of a semi-structured tape-recorded telephone interview

**Table 1. Relationship between women's age and total knowledge score (n=655)**

Age-group (years)	Mean	SD	F	P value*
			27.205	0.00
40-49	13.11	3.17		
50-59	12.40	3.72		
≥60	10.43	4.90		

\* All comparisons were based on one-way analysis of variance for independent samples

with a purposive sample of 30 women from each of the three age-groups to examine women's perceptions of the campaign and how the campaign contributed to their screening practice.

Outcome measures included the use of inferential statistics to assess factors influencing women's knowledge about cervical cancer and their screening practices, factors influencing women's intentions and uptake of screening as well as changes in knowledge, intentions and uptake of screening following the campaign. A weighted analysis was undertaken to assess the impact of the different response rates according to the women's age-groups from data obtained in the post-campaign structured interview. Content analysis of the phase II qualitative data was undertaken to identify women's perceptions of the campaign and its effect on their attendance for screening.

## Results

A significantly higher number of those 365 women completing baseline data only were older, had received no formal education, were widowed, and had no children. There was, however, no significant difference between the two groups in experience of sexual intercourse and history of hysterectomy. Although no differences were identified in perceptions of health, a significant difference ( $P<0.05$ ) was identified in women's attendance for mammography with fewer baseline-only participants attending for screening. The baseline data also demonstrated that 458 (70%) women had ever attended for cervical screening. A statistically significant relationship was identified among those women who had previously attended for cervical screening ( $n=458$ ) and whether they re-attended for screening in the future. Older women were less likely to re-attend ( $P<0.001$ ).

### *Women's knowledge about cervical cancer and screening*

Due to the nature of the health promotion campaign, this section focuses on the baseline data. These data demonstrated that 600 (92%) women knew that cervical cancer could be cured if detected early. Importantly, only a third of women knew the correct screening interval and less than half knew the correct time for commencing cervical screening. The importance of age and level of knowledge is demonstrated in Table 1, with women over 60 years demonstrating significantly lower levels of knowledge.

A significant difference ( $P<0.001$ ) was also found in the

total mean knowledge score of those women participating in both pre- and post-campaign interviews ( $\bar{X}=12.78$ ; standard deviation [SD], 3.58) and the mean score of those women participating in collection of baseline data only ( $\bar{X}=11.41$ ; SD, 4.48).

### *Women's intention to participate in screening following the implementation of the health promotion campaign*

Among the 197 (30%) women who, at baseline, had either never attended or were unsure whether they had ever been screened, only 36 (19%) had ever thought about attending for cervical screening. Among these women there was a significant difference in the age-group of those women who had ever thought of attending for screening ( $P<0.01$ ) as well as their level of knowledge ( $P<0.01$ ). The total mean knowledge score of those women who had never attended for screening but had thought about screening was 11.69 (SD, 4.26) and those women who had never been screened and never thought about it was 9.13 (SD, 4.70). Importantly, never having thought about the necessity and no symptoms were the most commonly cited factors for not attending for cervical screening, highlighting the significance of a lack of knowledge as a barrier to intention for screening attendance.

Women's intention to attend for cervical screening following the implementation of the programme was assessed by asking those women who had not attended screening since 1 May 2002 whether they intended to attend in the future. Among the 226 women who had not attended for screening since the implementation of the campaign, 168 (74%) had previously attended for screening and 58 (26%) had never been screened. Among the 168 previously screened women, 126 (56%) described themselves as regularly attending for cervical screening. Among the 226 women who had not been screened, of the 158 who answered the question about intention to attend in the future, only 59 (37%) stated they would attend. The weighted analysis demonstrated no statistically significant difference in the responses from women in the three age-groups.

The qualitative data obtained from the semi-structured interviews provided some understanding of women's views on the campaign's effectiveness as an influence on their intention to attend for screening. Women in the three age-groups continued to describe their ambivalence about attending for screening. This ambivalence appeared to be influenced by both lack of knowledge about the necessity for screening as well as service provision. Women in the over 60 years' age-group also said they 'could not accept the idea' or 'were too old'. Women in all groups also clearly described how they had attended for screening prior to 1 May 2002 for either a routine screening appointment or because they had been encouraged to attend by friends, family, or health professionals.

**Table 2. Women's attendance for cervical screening since 1 May 2002 (n=290)**

Screened since 1 May 2002	Age-group, No. (%)			
	40-49 years	50-59 years	≥60 years	Total
Yes	37 (32)	22 (23)	5 (6)	64 (22)
No	77 (66)	72 (75)	70 (90)	219 (76)
Not sure	2 (2)	2 (2)	3 (4)	7 (2)

**Table 3. Women attending for their first cervical screening since 1 May 2002 (n=64)**

First cervical screening	Age-group, No. (%)			
	40-49 years	50-59 years	≥60 years	Total
Yes	2 (5)	3 (14)	1 (20)	6 (9)
No	35 (95)	19 (86)	4 (80)	58 (91)

**Table 4. Factors most likely to predict women's screening behaviours**

Variable	Initial model		Final model after step-down	
	P value	Adjusted odds ratio (95% CI)	P value	Adjusted odds ratio (95% CI)
Internal LOC*	0.841	1.023 (0.817-1.282)	-	-
Chance LOC	0.431	0.937 (0.797-1.102)	-	-
Powerful others LOC	0.606	0.948 (0.774-1.161)	-	-
Pre-campaign knowledge	0.229	1.064 (0.962-1.176)	-	-
Post-campaign knowledge	0.031	1.124 (1.011-1.250)	0.002	1.153 (1.052,1.265)
Age (ref: >60 years)				
Age-group: 40-49 years	0.026	2.633 (1.124-6.168)	0.001	3.754 (1.774,7.942)
Age-group: 50-59 years	0.053	2.250 (0.991-5.111)	0.004	3.078 (1.445,6.556)
Education level (ref: post-secondary education)	-	-	-	-
No formal education (ref: education)	0.656	1.333 (0.377-4.718)	-	-
Primary to junior secondary	0.125	2.209 (0.803-6.074)	-	-
Secondary graduate	0.261	1.860 (0.630-5.497)	-	-

\* LOC denotes locus of control

### ***Changes in women's uptake of cervical screening following the implementation of the health promotion campaign***

Among those 290 women who completed both the pre- and post-campaign questionnaires, 217 (75%) women reported ever having attended for cervical screening before the implementation of the campaign. The post-campaign data demonstrated that 232 (80%) women reported ever having attended for screening. Although 15 more women reported they had ever been screened, only six of these women stated they were first-time attendees. This inaccuracy in recall of cervical screening status concurred with international studies.<sup>5</sup>

When women were asked to state whether they had attended for cervical screening since the implementation of the programme on 1 May 2002, a total of 64 women reported attending (Table 2). The majority of these women were in the younger age-group, suggesting once again that the campaign acted as a reminder about attendance for screening.

Six (9%) of the 64 women who reported attending cervical screening after 1 May, were attending for their first cervical screening (Table 3). Although this was an increase in the number of unscreened women attending for screening, it is important to note that five of these six women described prompts from doctors, family, and nurses as the factors influencing their attendance for screening.

Time-series data from one pathology laboratory undertaking cervical cytology for government and non-

government service providers demonstrated an increase in the numbers of smears completed during the month of the campaign (May). This may, however, be a result of increased capacity created in government clinics as part of the health promotion campaign, especially since this increase was not sustained in the following months.

This finding is supported by analysis of the quantitative data that demonstrated the attendance prompt for the majority of women was a routine appointment. Only 12 women identified other factors that included: doctor (6), family member (3), friend (1), and nurse (2).

When women were asked about their perception of the effectiveness of the campaign in phase II of the study, women in each age-group described the campaign as helpful by acting as a prompt for them to attend for screening. One woman said "if the information could reach the target it should be helpful as a reminder and let the ignorant people know more about the subject" (B7: 66). Women in the 40-49 year age-group consistently described the media campaign as a reminder for women. Indeed, when questioned about the direct results of the campaign and whether the campaign was helpful, the common response from all three age-groups was that the campaign acted as a prompt and reminder.

However when using a multiple logistic regression analysis to assess the relationship between the dependent variable of uptake of cervical screening and the seven independent variables shown in Table 4, only age and post-campaign knowledge demonstrated a statistically significant relationship ( $P < 0.05$ ) suggesting these two factors were

most likely to predict women's screening behaviours.

## Discussion

Despite limitations to interpretation of the findings due to the sampling method used to recruit women and the differences in socio-demographic characteristics between women in the study and the general female population, some important issues can be drawn from evaluation of this health promotion campaign. Participants were shown to have more positive attitudes towards health screening practices. These issues will be considered under the major objectives of the campaign.

### *Women's knowledge of cervical cancer and screening*

There was a clear relationship between age and levels of knowledge, concurring with findings from international studies.<sup>3,6</sup> This highlights the importance of ensuring that older women are aware they remain at risk of developing the disease. In addition, our participants' consistent citation of lack of need to attend for screening as a major barrier to their attendance for screening demonstrates their lack of awareness of any personal risk of the disease, despite 94% describing themselves as having ever been sexually active.

An important finding concerning level of knowledge highlights participants' misconceptions about the appropriate interval for cervical screening or when screening should commence. Hong Kong Chinese women continue to associate cervical screening with marriage and children. It is particularly important that women are aware of the need for screening once they become sexually active. Indeed, the delaying of first pregnancies and the increasing number of young single women participating in sexual activity prior to marriage highlight the need for health promotion programmes to focus on such information.<sup>7</sup>

### *Women's uptake of cervical screening and perceptions of barriers to screening*

Although the 'ever attended for screening' rate indicates a rather biased sample in terms of positive health behaviours, our findings consistently highlight a range of barriers influencing women's attendance for screening, particularly lack of necessity and having no symptoms. It should also be noted that more than a third of those women in the 50-59 age-group who had been screened, had no intention of returning for further screening, indicating the need for health promotion campaigns to encourage women to continue to attend for screening.

An important finding was that lack of knowledge about cervical cancer and screening provision, particularly among older women, was a perceived barrier to screening. The qualitative data highlighted women's views about the need for greater government intervention in the provision of services, particularly promotion of such a service. This supports other studies highlighting the complexity of the

interaction between individual experiences of cervical screening and government provision of resources as determinants of the screening behaviour of older women.<sup>8</sup> Interestingly, the cost of the screening procedure did not appear to be a major barrier for the majority of women. Indeed, among those who had not been screened, only a third cited cost as a major factor for non-attendance. This was true also for screened women, with only 24% saying that the government should fund the service.

### *Changes in women's uptake of screening and intention to participate in cervical screening*

Of participants who completed both the pre- and post-campaign questionnaires, more attended for screening following the campaign. Nonetheless, of those women who attended for screening after the campaign, only six (9.4%) were attending for the first time. Although the majority were attending for a repeated smear, it was not possible to identify whether these women were attending for a routine appointment or because of a lapse in their screening status. Indeed, the data demonstrate that among those women citing the prompt for their screen, only 12 identified a factor other than a routine appointment. Among these 12 women, although five were attending for the first time, no woman cited the health promotion campaign as the factor prompting their attendance. Importantly, a common factor among all these women was that another person, either a professional or a layperson, prompted their attendance for screening. The qualitative data demonstrated, however, that participants perceived the campaign as a prompt to remind women to attend for cervical screening.

Such findings contribute to the evidence supporting the complexity of attributing change to health promotion campaigns. The extent to which those individuals prompting these women's screening attendances had been influenced by the health promotion campaign is unknown. Indeed, the complexity of attribution is further highlighted by the change in ever-screened women in this sample population demonstrating a small change in screening behaviour, suggesting some success in terms of measurable outcomes.

Among those 158 women who had not attended for screening since the implementation of the programme, only 59 (37%) stated they would attend for screening in the future. Since it is well accepted that regular screening is important for the prevention of cervical cancer, such findings highlight the need for health promotion campaigns focusing on the intention to attend for further screening.

## Conclusions

1. This evaluation suggests the campaign was perceived as a prompt to remind women to attend for cervical screening, particularly those women who were not regular attendees.
2. There is a need for cervical screening campaigns focusing on older women (particularly those >60 years)

who continue to demonstrate lower levels of knowledge about cervical cancer and the need for screening.

3. Practitioners play an important role in prompting unscreened women to attend for cervical screening. General practitioners are particularly important for initiating opportunistic screening.
4. There is a need for further research into women's perceived reluctance to return for repeated cervical screening and perception of their personal risk of developing cervical cancer.
5. These findings contribute to the evidence supporting the complexity of attributing outcomes to health promotion campaigns.

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