

Community health worker–led multimedia intervention to increase cervical cancer screening uptake among South Asians: a randomised controlled trial (abridged secondary publication)

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KEY MESSAGES

1. The rate of cervical cancer screening uptake among South Asian women are significantly lower than that among the general population of Hong Kong.
2. A community health worker–led multimedia intervention is effective in improving cervical cancer screening uptake and readiness to undergo screening, while mitigating perceived barriers to cervical cancer screening, among South Asian

women in Hong Kong.

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Introduction

Cervical cancer screening enables early detection and treatment of pre-malignant lesions, thereby improving survival rates and reducing medical costs. In Hong Kong, >50% of South Asian women have never been screened,¹ owing to various barriers such as health illiteracy, insufficient awareness, misunderstandings about cancer and screening, difficulty accessing to medical services, and language barriers.^{1,2}

Multimedia interventions led by community health workers (CHWs) may increase the use of cervical screening services among ethnic minority women.³⁻⁵ The CHWs receive training and help connect community members with healthcare providers.⁴ The involvement of CHWs in intervention delivery enhances cultural appropriateness and healthy behaviors.⁵ We developed a CHW-led multimedia intervention guided by the Health Belief Model and the PRECEDE-PROCEED framework. The effectiveness of this intervention was evaluated in a cluster randomised wait-list controlled trial. We aimed to evaluate the effects of a CHW-led multimedia intervention on cervical cancer screening uptake among South Asian women in Hong Kong, and to assess the effects of the intervention on readiness to undergo screening and the beliefs regarding cervical cancer screening among these women. The cost of implementing the intervention was also evaluated.

Methods

This study was conducted between September 2018 and January 2020. Six female CHWs (two Indians, two Nepali, and two Pakistani) were recruited from

six different non-governmental organisations. They were aged 32 to 47 years, married, had completed at least secondary education, and had resided in Hong Kong for >10 years. They received 14 hours of training in seven sessions that covered information about cervical cancer and screening, barriers to screening services uptake, and strategies to overcome these barriers.

The six non-governmental organisations were randomised to either the intervention group (n=3) or the wait-list control group (n=3). Each CHW was allocated to either group. The CHW–led intervention included multimedia education, monthly telephone follow-up, and navigation assistance. South Asian women aged ≥25 years who were sexually active, had no history of cancer, and had not taken a Pap test in the past 5 years were invited to attend a multimedia education session that involved two half-hour health talks related to cervical cancer and screening. They then watched a video to reinforce the information they received; they were also given a booklet that included information provided in the health talk. In the 3 months after multimedia education, CHWs conducted monthly telephone follow-up to reinforce the women's knowledge and motivate them to undergo screening. The CHWs also provided assistance including arranging appointments for screening and accompanying women for screening.

Data were collected at three time points: baseline (T0), immediately after the intervention (T1), and 3 months after the intervention (T2). The primary outcome was cervical cancer screening uptake at T1 and T2; the secondary outcomes were readiness to undergo screening, as well as perceived susceptibility, perceived severity, perceived benefits,

TABLE I. Baseline characteristics of participants (n=402)

Characteristics	Intervention (n=201)*	Control (n=201)*	P value
Age, y	41.6±8.5	40.1±8.6	0.066
Duration living in Hong Kong, y	17.3±10.2	15.3±8.8	0.051
Ethnicity			1.000
Pakistani	67 (33.3)	67 (33.3)	
Nepali	67 (33.3)	67 (33.3)	
Indian	67 (33.3)	67 (33.3)	
Education			0.600
Primary school or below	65 (32.3)	55 (27.4)	
Secondary school	58 (28.9)	59 (29.4)	
College	43 (21.4)	43 (21.4)	
University or above	35 (17.4)	44 (21.9)	
Employment status			0.287
Full-time	52 (25.9)	42 (20.9)	
Part-time	14 (7.0)	21 (10.4)	
Housewife	135 (67.2)	138 (68.7)	
Monthly family income, HK\$			0.169
<10 000	36 (17.9)	23 (11.4)	
10 000-19 999	72 (35.8)	62 (30.8)	
20 000-29 999	30 (14.9)	41 (20.4)	
≥30 000	13 (6.5)	17 (8.5)	
Do not know	50 (24.9)	58 (28.9)	
Marital status			0.487
Single	0	1 (0.5)	
Married/cohabiting	189 (94.0)	191 (95.0)	
Separated/divorced/widowed	12 (6.0)	9 (4.5)	
No. of children	2.30±1.18	2.37±1.23	0.580
Religion			0.062
Hinduism	94 (46.8)	71 (35.3)	
Islam	61 (30.3)	71 (35.3)	
Buddhism, Sikhism, Christianity or no religion	46 (22.9)	59 (29.4)	
Family history of cervical cancer			0.441
No	169 (84.1)	168 (83.6)	
Yes	9 (4.5)	5 (2.5)	
Do not know	23 (11.4)	28 (13.9)	
Had any cervical disease before			0.703
No	198 (98.5)	197 (98.0)	
Yes	3 (1.5)	4 (2.0)	
Had any cervical cancer screening before (>5 y)			0.409
No	130 (64.7)	122 (60.7)	
Yes	71 (35.3)	79 (39.3)	
Know the clinics/centres providing cervical cancer screening			0.914
No	140 (69.7)	139 (69.2)	
Yes	61 (30.3)	62 (30.8)	
Annual physical check-up			0.287
No	150 (74.6)	159 (79.1)	
Yes	51 (25.4)	42 (20.9)	
Have any health insurance			0.059
No	167 (83.1)	180 (83.6)	
Yes	34 (16.9)	21 (16.4)	
Any doctor suggests the participant undergoing Pap test			0.324
No	168 (83.6)	175 (87.1)	
Yes	33 (16.4)	26 (12.9)	
Friends suggest the participant undergoing Pap test			0.615
No	86 (42.8)	91 (45.3)	
Yes	115 (57.2)	110 (54.7)	
Family suggests the participant undergoing Pap test			0.117
No	153 (76.1)	139 (69.2)	
Yes	48 (23.9)	62 (30.8)	
Ever received a reminder letter from doctor or healthcare organisation for cervix examination			0.162
No	187 (93.0)	179 (89.1)	
Yes	14 (7.0)	22 (10.9)	

* Data are presented as mean±standard deviation or No. (%) of participants

perceived barriers, and self-efficacy of undergoing cervical cancer screening. The cost of the intervention, including training and implementation of the intervention, was assessed at T2. The effectiveness of the CHW-led intervention was evaluated by comparing the proportions of women who reported cervical cancer screening uptake and indicated readiness to undergo screening. Changes in primary and secondary outcomes between the two groups were compared using generalised estimating equations.

Results

Of 402 South Asian women, 195 in the intervention

group and 192 in the control group completed the study. The baseline characteristics of the two groups were comparable (Table 1). Compared with controls, a higher proportion of participants in the intervention group reported having undergone a Pap test in T2 ($P=0.005$), readiness to undergo screening at T1 ($P<0.001$) and T2 ($P<0.001$), and greater reduction in perceived barriers at T1 ($P=0.047$) and T2 ($P=0.041$) [Table 2]. The cost of CHW training was HK\$13 500, and the cost of implementation was HK\$164 580.6. The total cost of intervention was HK\$178 080.6. The average cost of intervention per participant for each 1% increase in the Pap test uptake rate was HK\$20.2 ($178\,080.6/195-0/192$) ($97.9\%-52.6\%$).

TABLE 2. Cervical cancer screening uptake, readiness to undergo screening, and beliefs regarding cervical cancer screening between groups

Outcomes	Control (n=192)*	Intervention (n=195)*	Odds ratio (95% confidence interval)	P value
Cervical cancer screening uptake				
T1	73 (38.0)	110 (56.4)	2.09 (0.34-12.82)	0.424
T2	101 (52.6)	191 (97.9)	42.73 (3.09-591.82)	0.005
Readiness to undergo screening				
T0	52 (27.1)	30 (15.4)	0.49 (0.18-1.35)	0.169
T1	161 (83.9)	194 (99.5)	37.36 (6.78-205.82)	<0.001
T2	161 (83.9)	194 (99.5)	37.36 (6.78-205.82)	<0.001
Mean difference (95% confidence interval)				
Perceived susceptibility				
T0	2.20±0.97	2.12±0.94	Reference	
T1	2.14±0.95	2.01±0.91	-0.06 (-0.42 to 0.30)	0.749
T2	2.39±1.66	2.13±0.93	-0.19 (-1.80 to 1.42)	0.818
Perceived severity				
T0	3.10±0.84	3.16±0.90	Reference	
T1	3.45±0.84	3.27±0.94	-0.24 (-1.41 to 0.93)	0.684
T2	3.34±1.04	2.67±0.92	-0.74 (-2.17 to 0.70)	0.315
Perceived benefits				
T0	3.75±0.62	3.73±0.65	Reference	
T1	3.95±0.57	4.03±0.51	0.10 (-0.28 to 0.48)	0.605
T2	4.01±0.68	4.20±0.38	0.21 (-0.25 to 0.67)	0.367
Perceived barriers				
T0	2.58±0.59	2.90±0.69	Reference	
T1	2.50±0.61	2.14±0.46	-0.68 (-1.35 to -0.01)	0.047
T2	2.66±0.87	2.11±0.46	-0.86 (-1.69 to -0.04)	0.041
Self-efficacy				
T0	3.36±0.91	2.68±1.15	Reference	
T1	3.62±0.89	3.94±0.87	0.99 (-0.45 to 2.43)	0.177
T2	3.64±0.97	4.15±0.89	1.19 (-0.58 to 2.96)	0.188

* Data are presented as mean±standard deviation or No. (%) of participants

Discussion

The CHW-led multimedia intervention was able to increase cervical cancer screening uptake and readiness to undergo screening, while reducing perceived barriers to cervical cancer screening, among South Asian women in Hong Kong. The rate of cervical cancer screening uptake increased from 56.4% upon completion of the intervention to 97% at 3 months after the intervention.

Despite the significant effects of the intervention on reducing perceived barriers to screening, no significant effects were observed concerning other screening-related beliefs. This finding implies that efforts to reduce perceived barriers to screening are more effective for promoting screening uptake, compared with efforts to enhance perceived susceptibility, severity, benefits, and self-efficacy of undergoing cervical cancer screening. Perceived barriers constituted the only factor that contributed to the low rate of cervical cancer screening uptake among South Asians in Hong Kong.

There were some limitations in this study, including potential selection bias related to the small number of available clusters, the absence of comparison groups for individual components to determine their effects, the small sample size in each cluster, the short follow-up period, the inability to include all South Asian women who do not undergo a Pap test every 3 years, and the limited generalisability to the South Asian populations in other countries. Future studies should assess the long-term effects of the intervention on outcomes and explore the application of CHW-led interventions for other ethnic groups.

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Disclosure

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1. Wong CL, Choi KC, Chen J, Law BMH, Chan DNS, So WKW. A community health worker-led multicomponent program to promote cervical cancer screening in South Asian women: a cluster RCT. *Am J Prev Med* 2021;61:136-45.
2. Wong CL, Choi KC, Law BMH, Chan DNS, So WKW. Effects of a community health worker-led multimedia intervention on the uptake of cervical cancer screening among South Asian women: a pilot randomized controlled trial. *Int J Environ Res Public Health* 2019;16:3072.
3. Wong CL, So WKW, Chan DNS, Choi KC, Rana T. A community health worker-led multimedia intervention to increase cervical cancer screening uptake among South Asian women: study protocol for a cluster randomized wait-list controlled trial. *Trials* 2019;20:270.

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