

Barriers to cervical cancer screening and the potential role of HPV self-sampling in Singapore: A cross-sectional study

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Dear Editor,

Cervical cancer is a common female cancer and a leading cause of cancer deaths, with about 170 deaths annually in Singapore.¹ Despite a population-based screening programme, with government subsidies and affordable co-payments, the current screening rate of 45.4% among 25–74 year-olds,² falls far below the 70% national target. In other countries, the introduction of self-testing for human papillomavirus (HPV) has improved cervical cancer screening uptake.³ Our cross-sectional survey explored the barriers to screening among Singaporean women, their attitudes towards self-testing, and the potential increase in cervical cancer uptake should HPV self-sampling be made available.

Consecutive women aged ≥30–70 years attending 1 general practice clinic were invited to complete the survey on whether they had ever participated in cervical screening. Women were excluded if they had a total hysterectomy, a history of cervical cancer, or never had sexual intercourse. A recruitment quota for each age group ensured population representation.⁴ Women <30 years were excluded in view of international guidelines that recommend HPV test for ages above 30.

The online self-administered questionnaire collected sociodemographic data, cervical cancer screening history, knowledge of the national screening programme, together with the barriers (personal, professional and organisational) challenging compliance to recommendations.

Over 90% of women were aware of screening for cervical cancer and believed that screening was beneficial, recognising that cervical cancer can be serious and fatal (95%) and recognising their own risk (75%). Of concern was that far fewer women knew the correct frequency (20%) or eligibility (29%) for screening, and 1 in 10 women previously or sexually active thought they were not at risk of developing cervical cancer. These observations

suggest that there is a need to enhance women's awareness of the need for repeat and regular cervical cancer screening, something that could be supported by a personalised reminder system.

Although three-quarters of the women had screened at least once for cervical cancer, only 62% had screened within the required previous 5 years. While the intention for future screening was high (63% indicating they were "very likely" and 24% "somewhat likely"), three-quarters indicated 1 or more barrier to screening. Common barriers were pain/discomfort (25%), fear of abnormal result (24%), embarrassment/lack of privacy (21%) and cost/financial concerns (21%). Less common barriers included lack of female doctors (16%), shortage of time (13%), uncertainty of screening interval (12%) and unawareness of screening venues (10%). The 2024 Healthier SG initiative is expected to reduce financial concerns, as national screening programmes are now fully subsidised for women ≥40 years. However, lack of knowledge and experiential barriers require attention from health-care professionals and policymakers to increase further cervical cancer screening uptake.

In many regions (e.g. Australia, North America, Europe, Asia, Central Africa), cervical cancer screening uptake has been boosted between 4.1–46.2% after the introduction of HPV self-sampling.^{5–8} We wanted to estimate its potential impact among Singaporean women, but first had to describe the procedure for self-sampling as it is not used routinely in Singapore, and awareness is low (7%). Even with such unfamiliarity, almost two-thirds (64%) expressed willingness to participate in self-administered HPV testing, 27% being accepting of both clinician and self-sampling methods, 18% preferred the idea of self-testing but were happy with either, and 6% wanted only self-sampling.

Concerns expressed about self-sampling included, but to a slightly lesser extent than for a clinician-sampled Pap smear, pain/discomfort

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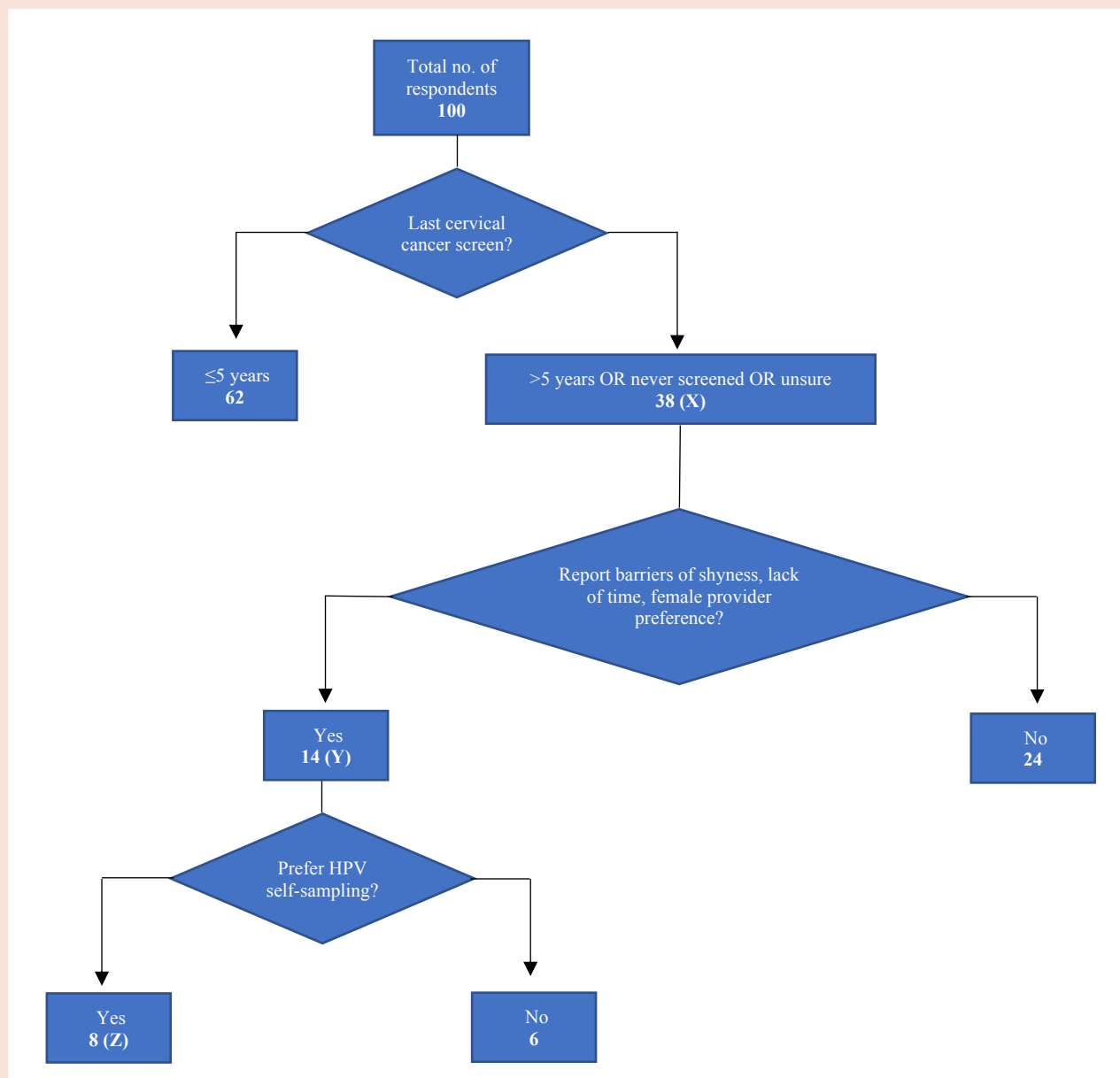
(18%) and cost (13%). The method-specific barrier for women was doing the test incorrectly (67%). They described how willingness to self-test would be enhanced by discussing with a doctor (48%), to get more information (41%) and reassurance about reliability (36%). They suggested that it would also be helpful to meet with women who had self-sampled (25%).

Fourteen of the 32 women in our sample who were not compliant with cervical cancer screening (out of date or never screened), were challenged by embarrassment, lack of time and preference for a female health provider. Each of these 3 barriers

can be reduced by self-sampling, and 8 of these women indicated they would prefer self-sampling. Using the formula $[(X \cap Y \cap Z)/n] \times 100\%$, the expected percentage increase in screening rates with the introduction of HPV self-sampling would be $(8/100) \times 100 = 8\%$ (Fig. 1). As most respondents expressed a favourable response to self-sampling, if allowed, its introduction could also impact on sustained 5-yearly cervical cancer screening.

The introduction of self-sampling is not without its challenges. Self-collected vaginal samples are deficient in ectocervical and/or endocervical cells, resulting in a lower sensitivity for detecting

Fig. 1. Workflow map to calculate the potential increase of cervical cancer screening rate with availability of HPV self-sampling.



HPV: human papillomavirus

high-grade cervical lesions compared to clinician-collected samples.⁹ When patients who have self-sampled are found to be positive for non-HPV type 16 or 18 (high-risk strains), they need to return for a clinician-sampled Pap test, whereas if conventional screening methods are used, reflex cytology can be conducted on the same sample. In Singapore, about 21.0–25.6% of women are positive for high-risk HPV on testing^{10,11}; if so, up to 1 in 4 women who undergo self-sampling will possibly need to be recalled for a clinician-sampled Pap test to complete the screening process. Our respondents were not informed about the potential for a second screening test, and if aware may have been less enthusiastic about self-sampling. However, as mentioned above, other countries have boosted their screening rates with the introduction of HPV self-sampling.⁵⁻⁸

Our study summarises the ways in which the current cervical cancer screening programme is perceived as challenging, focusing on these barriers has the potential to boost women's future compliance. We have also estimated that with the introduction of self-sampling cervical cancer screening, an additional 8% of women would be willing to be screened. Unfortunately, the current funding for cervical cancer screening is targeted on clinician-sampling only. Thus, women would need to do both self-sampling and self-funding in the short-term. The costs of a self-sampling programme (i.e. initial test, recall for inadequate test, recall for further testing) are needed and set against the benefits (i.e. quality of life and number of years of life gained). With this objective data, a decision can be made about the cost-effective target for self-sampling (unscreened only, unscreened and inadequately screened, or all women eligible for screening who wish to self-sample) and the extra investment required.

Ethics statement

Ethics approval was obtained from Parkway Independent Ethics Committee (PIEC/2022/059).

Declaration

The authors have no affiliations or financial involvement with any commercial organisation with a direct financial interest in the subject or materials discussed in the manuscript.

Keywords: cancer, cervical, HPV, screening, self-sampling

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