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ABSTRACT

The present study was designed with the objective of determining the prevalence of carcinogeniv Human Papilloma Virus(HPV) infection and its determinants among ever married women between 20-59 years of age in the district of Gampaha. It also aimed to estimate the proportion of cervical cancer attributable to HPV infection and to estimate the unit cost incurred by the government in screening for early detection of cervical cancer and the precancerous stages.

The study consisted of three components; a community based descriptive cross sectional study, a hospital based case control study and a clinic based cost estimation study.

Community based descriptive study

A total of 2000 study subjects were selected using a multistage stratified cluster sampling technique for the community based descriptive cross sectional study. Hundred clusters comprising 20 subjects in each were selected by probability proportionate to size of the population in "Grama Niladhari" (GN) divisions. Eligible women within the cluster were recruited according to population proportions of ever married women in each ten year age category.

Information on socio demographic, socio economic, reproductive health and sexual health related factors relevant to HPV infection was collected using an interviewer administered questionnaire. Cervical swab specimens for HPV DNA detection and Papaniculoau specimens for detection of cervical cytology were collected from all study participants.

HPV- DNA detection was carried out by the PCR method using GP5+/GP6+ primer system. Cytological examination was carried out by trained cytoscreeners. The repeatability of all instruments and tests used in the study were examined prior to the study and all field procedures were closely supervised to ensure the quality of data collected. Participation rate in the study was high (99.5%).

The study revealed that the overall prevalence of cervico vaginal HPV infection among clinically normal women was 3.3% (95% CI 3.15 - 3.44). HPV prevalence among cytologically normal women was 3.1%(95% CI ,2.96-3.24) and the prevalence of highly carcinogenic geno types 16 and 18 was 1.2 % (95% CI 1.15-1.25).

The prevalence of HPV was seen to decrease as age advances with a second peak occurring in the 50-59 year age group. Lower level of education, unemployment, lower income and lower social classes were seen to be significantly associated with higher prevalence of HPV infection. High prevalence rates were observed with high parity and also among women who have never been pregnant, but this difference was not statistically significant. Younger age at first sexual exposure, current or life time multiple sex partners, exposure to forced sex, multiple sex partners of the husband were identified with higher prevalence of HPV. These associations were significant in the univariate analysis. In the Logistic regression analysis, lower income levels (OR=2.15,CI 1.22-3.76), experience of forced sex (OR=5.61,95% CI 1.91-16.48) and multiple partners of the husband (OR1.29, 95%CI 1.16-4.53) were found to have a statistically significant association with HPV infection. Study also showed that promiscuity was low in the community (only 6% reporting multiple sex partners). It was also seen that coverage of the cervical cancer screening programme was low (6.7%).

Case control study

A case control study was carried out among 40 newly diagnosed cervical cancer patients originated from the district of Gampaha and presenting to the Cancer Institute, Maharagama. Four controls per case were randomly selected from the same GN area as the participant matched within the 10 year age groups. The selected controls were examined to ascertain their cervical cancer status. None of the selected controls had abnormal cervical cytology. Basic socio demographic, socio economic reproductive health and sexual behaviour information which are reported in the literature to be associated with cervical cancer was collected using an interviewer administered

questionnaire. Cervical swab specimens were collected to determine the HPV infection status.

This component was planned to quantify the risk association of HPV infection with cervical cancer. The risk of cervical cancer associated with HPV infection was high (OR=102.67, 95%CI 29.84-302.20) and the adjusted odds ratio was 172.31 (95% CI 34.63 – 857.31). The risk detected for vaccine preventable geno types 16 and 18 was 134.31 (95% CI 35.00-598.31) and adjusted odds ratio was 190.30 (95% CI 36.54-991.03). Young age (<19 years) at first vaginal sex (OR= 3.22, 95% CI 1.49- 6.99), extramarital sexual exposures (OR=8.08 95% CI 2.98-22.22), multiple partners (≥2 partners) (OR= 12 95% CI 4.55-34.59) and extra marital sex exposures of the husband (OR= 4.35, 95% CI 1.48-12.85) were associated with increased risk of cervical cancer. High parity lower age at first pregnancy, time since last delivery were also seen to be significantly associated with cervical cancer in univariate analysis, but only HPV infection (OR 172.31 95% CI 34.63-857.31), employment status (OR=7.64 95% CI 1.52-38.37), time since last delivery (OR=9.08, 95% CI 1.76-46.67) and extra marital sexual exposures (OR=32.37, 95% CI 4.61-227.00) were significant in the multivariate analysis. The population attributable risk for cervico vaginal HPV infection of all types in the development of cervical cancer was 85% and for genotype 16 and 18 the population attributable risk was 69%.

Cost estimation study

Component three of the study estimated the unit cost incurred by the government in the cervical cancer screening programme. This was estimated to be Rs.308.18. The minimum number of women needed to be screened for the detection of one cervical cancer was 1739, and the estimated cost was Rs. 535,925.02. Prevention of one cervical cancer attributed to HPV type 16 and 18 (through vaccination) requires the vaccination of a minimum of 2521 women.

The study highlights that at current levels of HPV infection and cost of the vaccine, the screening still remains the feasible option for prevention of cervical cancer in Sri Lanka. Thus the strengthening of cervical cancer screening programme to increase coverage is important.