

# Screening for cervical neoplasia in Mamelodi — lessons from an unscreened population

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**Aim.** To determine the prevalence of abnormal cervical cytological findings in an unscreened population; to assess patients' awareness of cervical cancer and the importance of early diagnosis; and to evaluate the accuracy of visual inspection of the cervix as a screening method for asymptomatic cervical cancer.

**Study structure.** Descriptive.

**Setting.** Mamelodi Hospital, a community day hospital east of Pretoria, serving a black urbanised population that had never been exposed to a routine cervical cytological screening programme.

**Methods.** One thousand and ninety-five women of reproductive age, who presented with a non-gynaecological complaint, were offered cervical cytological testing and were asked to complete a questionnaire. Visual appreciation of the cervical condition was noted and compared with the cytology report.

**Results.** The prevalence of abnormal cervical cytological findings (low- and high-grade squamous cervical intra-epithelial neoplasia (CIN), excluding human papillomavirus-induced cell changes only) was 54/1 000. Only 2% of the patients had a good knowledge of cervical cancer and cervical screening. Visual inspection of the cervix detected 4 out of 5 cervical cancers in this group, but failed to identify those patients with high-grade CIN.

**Conclusion.** This study shows a high prevalence of abnormal cervical cytological findings in a population ignorant about cervical cancer. Recommendations on how to improve this situation are made.

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The incidence of cervical carcinoma, especially among the black population of South Africa, is high, and is regarded by both medical<sup>1-3</sup> and political<sup>4</sup> authorities as a major health problem. Cervical carcinoma is the most important cancer-related cause of death in black women and mortality rates

are increasing.<sup>5</sup> According to the 1988 National Cancer Registry Annual Statistical Report, black women have at least a 1 in 21 lifetime risk of contracting cervical carcinoma.<sup>3</sup> An incidence rate of 39,28/100 000, according to this report, is 2 - 4 times higher than in other developing countries.

Mamelodi is a township east of Pretoria with a rapidly growing population. Cervical cytology as a screening test is offered only at the antenatal clinics. Available data show that the yield of cervical screening in obstetric services is low, for a number of reasons: low smear adequacy, relative low age-related risk for cervical neoplasia and poor postpartum treatment rate.<sup>1,6</sup> The World Health Organisation recommends that cervical screening be directed at women aged 35 years and older in order to be cost-effective. The age distribution of patients in these clinics, however, peaks in the 20 - 29-year group, with only 9,3% of patients over the age of 35 (unpublished data from a study by the authors). It is therefore likely that this population is screened inappropriately, with little impact on the incidence of cervical cancer.

The aim of the study was: (i) to determine the prevalence of abnormal cervical cytology; (ii) to assess patients' awareness of cancer and the importance of early diagnosis; and (iii) to see how effective naked-eye inspection was as a screening method for asymptomatic cancer of the cervix. The findings, which may be of importance for future strategic planning of cervical screening in South Africa, are discussed.

## Patients and methods

All the women who presented with a non-gynaecological complaint at Mamelodi Hospital between April and October 1993 were offered cervical cytological testing. Except for minors (< 18 years of age), there was no age restriction. Informed consent was obtained for the completion of a questionnaire that was used to ascertain some patient characteristics related to risk factors for cervical cancer. The questionnaire included details on age, parity, type of contraception, age at first intercourse, number of sexual partners and previous cervical smears. Knowledge of cervical cytological testing and cancer was also tested by the questionnaire. Patients' knowledge about cervical cytological testing was graded as follows: good, when the patient knew exactly the nature and purpose of a cervical smear; average, when the term 'cervical smear' sounded familiar, but the patient was not sure about its nature or purpose; and weak, when the patient was totally ignorant. Patients' knowledge of cancer was graded similarly. All the questionnaires were conducted by one of the authors (H.M.J.), in some cases through an interpreter. At the time of the gynaecological inspection, with a Cuscoe speculum, abnormalities of the cervix were recorded as normal, infective or suspicious of malignancy. Cervical smears, taken with an Aylesbury spatula, were examined by the Cytology Laboratory of the Department of Obstetrics and Gynaecology, University of Pretoria. The Bethesda system<sup>7</sup> of reporting was used. Patients with abnormal cytological findings (defined as low- and high-grade squamous intra-epithelial lesions, excluding human papillomavirus (HPV)-induced cell changes only) were recalled and referred for further management.

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## Results

A total of 1 121 patients were entered in the study. None of the patients approached refused to participate. Only the data obtained from 1 095 patients were analysed, as data were incomplete in 26 cases. The mean age was 31 years and mean parity 1,9. The results of the questionnaire are summarised in Table I. The prevalence of abnormal cervical cytological findings (pre-invasive and invasive disease) was 54/1 000, with 34 (31 per 1 000) cases of low-grade cervical intra-epithelial neoplasia (CIN), 20 (18,3 per 1 000) of high-grade CIN and 5 (4,5 per 1 000) infiltrating lesions. The mean age of patients with low-grade CIN was 27,1 years, those with high-grade CIN 35,3 years and 52,6 years for the patients with infiltrating cervical carcinoma. Naked-eye inspection of the cervix indicated that it was normal in 918 (87,8%) cases; in 147 (13,3%) cases the clinical diagnosis of cervicitis was made and in 30 (2,7%) cases there was suspicion of cervical malignancy. The value of naked-eye inspection of the cervix compared with cytological screening is shown in Table II. None of the 54 CIN lesions was suspected clinically. Four out of the 5 patients with infiltrating cervical carcinoma had a macroscopically abnormal cervix. Only the 1 patient with adenocarcinoma of the cervix had a normal cervix on inspection.

Table I. Patient profile of the study group (N = 1 095)

Penarche (mean) (yrs)	17,23	
No. of sexual partners (mean)	3,05	
Contraception	677	(61,8%)
Type		
Non-barrier	674	(99,6%)
Barrier	3	(0,4%)
Previous cervical testing	132	(12,1%)
Knowledge		
Cervical cytological testing		
Good	25	(2,3%)
Moderate	54	(4,9%)
Ignorant	1 016	(92,8%)
Cancer		
Good	24	(2,2%)
Moderate	93	(8,5%)
Ignorant	978	(89,3%)

Table II. Comparison between naked-eye inspection of the cervix and cervical cytology

Cytology	Naked-eye evaluation	
	Non-suspicious	Suspicious
Negative	1 011	26
Positive	55	4*

\*All were invasive lesions.

## Discussion

Although this was a hospital-based study, no specific high-risk group was targeted. The 54/1 000 prevalence of abnormal cervical cytological findings in this asymptomatic population is high. Twenty years ago, this prevalence in a non-gynaecological inpatient population at Tygerberg Hospital was only 9,3/1 000.<sup>8</sup> A similar situation currently exists in Namibia where the prevalence of abnormal cervical cytological findings (excluding HPV cell changes only) in an

unselected, unscreened population was 77/1 000.<sup>9</sup> These prevalences are comparable with those found in populations designated as high-risk: 22/1 000 in mainly black women attending family-planning clinics in Johannesburg,<sup>10</sup> 41/1 000 in women over 40 years of age attending well-women care clinics in Soweto.<sup>1</sup> No such data are available for other regions in sub-Saharan Africa, although the incidence of cervical cancer in this region is high in general. We thus conclude that black urbanised women in South Africa are at high risk of cervical carcinoma, and should therefore be screened in a population-based screening programme.

Risk factors for cervical carcinoma are well known,<sup>11</sup> and in that respect this population's patient profile (Table I) is a cause for concern: early age of penarche (age at first intercourse) (17,2 years), high number of sexual partners (1 - 20; mean 3) and reluctance to use barrier contraception.

The majority of patients (98%) were found to be ignorant about cervical cancer and methods of early detection (Table I). This makes interpretation of a 12,1% rate of previous cervical testing found in this population difficult indeed. In spite of many recommendations made in the past to improve the population's knowledge through education,<sup>1,12,13</sup> no progress has been made in this regard. It was hoped that, along with the AIDS information campaign launched in this country,<sup>14</sup> efforts would have been made to institute educational programmes on cervical carcinoma and its prevention.

The WHO proposed a strategy of visual screening to detect asymptomatic cervical pathology.<sup>15</sup> Researchers in India have shown that in asymptomatic patients, 40 - 60% of cancers could be detected by direct inspection in a non-advanced stage of disease (stage 0 - IIA) versus 71% detectable cytologically.<sup>16</sup> Visual abnormalities became clinically apparent from the time the stage of carcinoma *in situ* was reached. In South Africa such a programme could indeed make an impact, as more than 50% of all cervical cancer patients admitted to the oncology units in this country have stage III and IV cancers with dismal outcome.<sup>2</sup> Mass routine visual screening, with referral of women with suspicious lesions for further evaluation, could increase the percentage of patients diagnosed in stage I several-fold.<sup>16</sup> In our study, the prevalence rate of suspicious-looking cervixes was 2,7% (Table II), which is low compared with an expected rate of 10% in an asymptomatic population.<sup>17</sup> This low prevalence in our study could well be explained by the fact that 'suspicious-looking' was interpreted as suspicious for malignancy, whereas in the other studies other less well-defined visual abnormalities were included, e.g. bleeding on touch. Although 80% of the cancers in the population could be detected, no high-grade CIN lesions were found. Refining of visual screening by coating the cervix with 4% acetic acid before evaluation could certainly improve the potential of visual screening to identify pre-invasive disease, especially high-grade CIN.<sup>18</sup> In a study of 3 032 asymptomatic patients, Cronjé *et al.* concluded that the acetic acid test, given its high sensitivity (64%) and low cost, was the ideal screening test in remote areas.<sup>19</sup> Long intervals between the mean ages of patients with low-grade CIN (27,1 years), high-grade CIN (35,3 years) and infiltrating carcinoma (52,6 years) as shown in this study, give us many opportunities to detect a cancer at a curable stage or even earlier if routine mass visual screening is done at regular intervals.

Three-yearly mass cervical screening by means of cytology has been shown to reduce the probability of a

woman's developing invasive cervical cancer by approximately 90%.<sup>20</sup> This high figure is the result of adequate infrastructure and sophisticated recall systems only found in developed countries. No developing country can duplicate this performance yet.<sup>21</sup> A structured national cervical screening policy with three subsidised cytological examinations at 10-year intervals as proposed, might be affordable for this country.<sup>22</sup> However, successful implementation of such a strategy and the overcoming of defaults of recall for an abnormal result remain a challenge. On the other hand, the preliminary results of studies testing the value of cervicography<sup>23</sup> and the naked-eye acetic acid test<sup>19,24</sup> as primary screening tools are promising.

In conclusion, cervical neoplasia is prevalent in South Africa. Therefore, we urgently need a national, well-structured and affordable cervical disease mass screening policy. Before implementation, the results and feasibility of screening programmes using different techniques (interval cytology, naked-eye acetic acid visual screening test, cervicography) should be known. Better knowledge of cervical cancer and ways of prevention through intensification of media coverage, education at school and making use of each patient contact as an education opportunity, are absolutely essential in order to help get mass screening off the ground.

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