EXFOLIATIVE CYTOLOGY

CELL EXAMINATION FOR UTERINE CANCER—BRAKPAN PILOT EXPERIMENT

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In November 1961 new ground was broken in regard to preventive health services in South Africa. Under the combined auspices of the Town Council of Brakpan, the National Cancer Association of South Africa and the South African Institute for Medical Research, a pilot scheme was inaugurated to test the response of the women of Brakpan to a campaign offering free examination of vaginal exfoliative cytology smears.[1] This examination is essentially a detection test for uterine cancer, and early diagnosis is an important measure in increasing the number of cures and thus controlling the disease.

The last hundred years have witnessed great changes in the pattern of public health services. They have changed greatly from the time of the middle of the last century—with its stress on sanitation services—through the period of emphasis on prevention of infectious diseases, to a new modern concept where, in addition, services relating to subjects such as mental health, cancer control, rheumatic fever, etc., have become the interest and responsibility of the local authorities and health departments.

Health education is an essential element in the success of most public health control measures, but in the case of cancer, not only the form of education but also the reaction of the public to it, first had to be tested. The Public Health Department in Brakpan had made previous efforts to promote this type of education with a fair degree of success. In 1957 a film, 'Breast self-examination', detailing the routine examination for the detection of early signs of the disease in that organ, was screened for the benefit of 300 women. During antenatal and postnatal clinics examinations of the breast were conducted as a routine procedure for the same purpose. In addition, medical films on cancer were shown to the general practitioners of the town.

After a preview of the film 'Time and two women', dealing with the early diagnosis of cancer of the cervix of the uterus by means of exfoliative cytology, a report was prepared advising the establishment of a permanent cancer-screening clinic as part of the Town Council's regular services. The advice of the Cancer Association was sought and negotiations were started between the 3 bodies mentioned in the opening paragraph, culminating in the decision to promote the pilot experiment before any permanent screening clinic was established. The National Cancer Association undertook to provide films, mainly 'Time and two women', pamphlets, brochures, press articles, lectures, models, etc. to assist in the campaign. The participation of the South African Institute for Medical Research covered mainly the major problems of the training and availability of cyto-technologists and the examination of specimens. The Town Council of Brakpan was to make available accommodation, equipment, material and personnel, other than pathologists and cyto-technologists, for the pilot experiment, and would then on its own responsibility, financial and otherwise, institute permanent screening clinics for Whites and non-Whites as part of its services. The costs of the pilot experiment were shared by the 3 participating bodies.

Planning of the Pilot Programme

The planning of the pilot mass-screening programme involved the consideration of many factors, including availability of funds, the necessary education of the public, the availability of staff, accommodation, equipment and records, and the briefing of the personnel involved.

The education of the public had to take cognizance of several unusual factors, gleaned during previous cancer enlightenment campaigns. Knowledge of the disease was poor, and questions which had been asked showed that fear and ignorance were uppermost in the minds of most people. In addition, the intimate nature of the examination required careful consideration of the education programme to be launched.

This programme was concentrated into a few months and embraced national and local media. Radio, national and local newspaper coverage, lectures and talks to women's organizations, film shows and pamphlets, and contacts through the municipal clinics constituted the major efforts. Most of the doctors practising in the area offered their full cooperation.

The pilot scheme was followed by the establishment of permanent regular cancer-screening clinics for all races, with the Town Council accepting full financial responsibility.

The pilot scheme operated from 1 November 1961 to the end of February 1962, by which time 1,092 women were examined. Requests for examinations were received from neighbouring towns, and many letters came from women from distant parts of the Republic.

The main object of the pilot experiment in Brakpan was to gauge the reaction of the women towards a vaginal cytological examination for the early detection of cervical cancer, and in the main it was satisfactory.

The initial response to the campaign was enthusiastic, and appointments for examination were made weeks ahead. This rate slowed down after about 2 months.

It had been decided that the examination would be restricted to women over the age of 21 years, and quite a number under and over the age of 30 came forward. The great disappointment, however, was in the response of women over the age of 40 years (Table I). The propaganda

TABLE I. NUMBER OF PATIENTS EXAMINED AND PERCENTAGE OF THE POPULATION AGE GROUP*

Age group	*Number examined*	*Percentage of population age group*
White persons		
20 - 29	207	11·8
30 - 39	373	23·2
40 - 49	265	24·2
50 - 59	159	23·2
60 - 69	56	13·4
Over 70	32	11·3

*(Estimated female population over the age of 21 years is 8,000)

Non-White persons		
Over 35	70	

efforts had stressed that the age group mainly at risk was this particular one, and this fact, because of the fear factor, may have been the reason for the poor response.

The actual number of total attendances was smaller than anticipated and hoped for, and renders an assessment of the incidence of cancer of the uterus in the town very difficult. Accurate statistics can be achieved obviously only after far greater numbers of women have been examined. Nevertheless, the striking results published by the Departments of Pathology and Gynaecology of the University of British Columbia and the Vancouver General Hospital[2] and other institutions and sources, indicate the great value of the service.

Assessment of the Results

In attempting an assessment of the results of the pilot experiment, it must be remembered that propaganda and health education reach only a certain section of the public. Tremendous efforts have been made by the government and local authorities during the past few years to obtain the support and cooperation of the public to eradicate poliomyelitis. This campaign, on a national scale and with full government backing, was directed towards swallowing a small quantity of syrup and vaccine to eradicate a disease which shows its ravages in a most obvious and heart-rending manner. The initial response to vaccination was good, but, in spite of the great and sustained effort, a fairly large percentage of the population at risk still remained non-immunized, and the government found it necessary to introduce compulsory vaccination. The South African public does not appear to be sufficiently receptive as yet to health education, and considering the intimate nature of the vaginal cytological examination and the fear associated with the disease, it is felt that the public has responded well to the campaign in Brakpan and is definitely interested in such a service. Education propaganda can break down the fears and ignorance associated with cancer and the fatalistic attitude of some women towards the disease.

The results of the pilot scheme are tabulated in this report—(Tables I and II). As will be noted in Table II, positive results were obtained in 4 smears—2 White and 2 non-White.

TABLE II. RESULTS

	Positive	*Atypical*	*Trichomonas*	*Inflammatory cells*
White	2	19	18	30
Non-White	2	1	18	5

An unexpected and unforeseen development was the fact that the Municipal Health Department came to be regarded as the centre for advice and examination in regard to all forms of cancer, and the importance of this fact cannot be disregarded. The public is keen to obtain advice, assistance and assurance.

Many women attending for vaginal smears requested breast examination. In addition, quite a few presented themselves for breast examination only, and were then prevailed upon to accept the vaginal test. In this regard it is of the greatest importance to note that, of the breast examinations done, 5 were found to be positive, and the patients were treated surgically.

In a recent publication, an Expert Committee of the World Health Organization, having reviewed on the one hand the role played by cancer as an ever-increasing cause of mortality and morbidity, and on the other the impressive results achieved in some countries as a result of cancer-control programmes—especially as far as improved survival rates are concerned—urges responsible authorities in each country to develop a considered national control policy.[3]

A Control Programme

Because of my association with the pilot experiment, the cancer-screening clinic and the health-education programme, I have been asked to offer some brief comments in regard to the implementation of such a control programme in South Africa. They are obviously personal

opinions and do not commit any organization.

A national control programme can be introduced rapidly and easily into nationalized health services, such as exist in Britain, but alternatives must be sought in the Republic.

Firstly, education of the public is of paramount importance. It is my opinion that cancer education is more adequately conveyed through established medical services —public health and hospital departments—and organized societies such as women's guilds, welfare bodies, etc., than through the impersonal channels of press and radio. The latter are necessary, however, to stimulate the public from time to time, including the educators themselves. The education campaign of the public and the doctors should remain the responsibility of the National Cancer Association of South Africa, which has achieved great success in the past few years.

The organization necessary to inaugurate and conduct a cancer-control policy is not so easily acquired. Ideally, it should be a national body and it should embrace every facet of cancer control. Such a National Cancer Institute would be responsible for all cancer-screening examinations, not only gynaecological examinations, and would be the centre for research, examination and treatment of all types of cancer. It has been mentioned previously that the Brakpan Health Department came to be regarded as a centre where advice was sought in regard to many aspects of cancer.

The Institute could be based upon the National Cancer Association of South Africa, or created independently, but the costs would be considerable and its implementation would entail a major organizational effort. Nevertheless, because of its great potential value, it should be considered carefully; and support, financial and otherwise, should be sought from the State and interested organizations and private individuals.

A second, less ambitious, cheaper and yet satisfactory alternative would be the utilization of existing medical services and organizations to carry out the examinations. Hospitals, local authorities and doctors, either in private or organized practice, should include the taking of vaginal smears as part of routine gynaecological examinations. Hospitals and local authorities could utilize present staffs or establish special cancer-screening clinics, if necessary, and even permit nurses to take smears. Because of the scarcity of trained personnel, the use of these existing services would reduce to a minimum the appointment of extra and special staff. The National Cancer Association might be able to direct, coordinate, supervise and maintain the necessary statistical records of the control programme.

The crux of cytological examinations is the appointment of cyto-technologists. Whatever control policy is adopted, its implementation is dependent upon the number of technicians available to do the necessary screening examination of smears. The availability of pathologists as the final arbiters is obviously essential, but cyto-technologists are probably of greater importance. Sufficient must be trained by institutions such as the South African Institute for Medical Research, to ensure an adequate and constant supply. Government subsidy should be made available for their training and the cost of the smear examination.

In the pilot experiment the cost per slide was R1.00, but is not a true reflection of the costs of any future programme, since no account was taken of the expenditure on education, literature, films, part of the salaries of personnel in the Municipal Health Department, etc., and the tariff itself was a special one for the campaign. In regard to the permanent clinic established by the Council, however, when most of these expenses were debited, the approximate expenditure was R3.00 to R3.50 per examination. The charge made by the South African Institute for Medical Research was R2.00 per slide, thus accounting for half the costs of the service. It could be reduced if the service was conducted on a national scale, because the greater the number of examinations, the smaller the unit cost.

It has been estimated that a cyto-technologist can screen between 4,000 and 5,000 slides per year. According to the last census (September 1960), the White female population of the Republic over the age of twenty-one (21) years was 923,250, and if 10% of this population can be examined every year in a cycle of 5 years, giving a coverage of 50% (a not unambitious target), the cost at R2.00 per slide would be approximately R200,000 *per annum*. This sum should be subsidized by the State.

The cost of the control programme should not exceed R400,000 *per annum* for approximately 100,000 examinations, spread between State, Province and local authorities and the private individuals or organizations availing themselves of the services of private practitioners, and would be less than creating a special new organization to conduct the service. In addition, its implementation would not present great obstacles.

Efforts should be made to estimate the cost of treating uterine cancer in order to attempt a financial comparison between an intensive preventive service and a curative one. It must be remembered, however, that the monetary value of increased numbers of cured cases, lessened pain and suffering, and diminution of human agony, cannot be measured or assessed.

I feel that the institution of properly organized cancer-control programmes with the full participation of all medical units—general practitioners, specialists, hospitals, national and local health authorities and organizations—would help considerably in reducing the mortality of the disease. Our efforts in Brakpan, however small and circumscribed, have shown the value of such a service, and a start should be made with a nationally organized exfoliative cytology programme for gynaecological cancer. In a leading article in the *South African Medical Journal*[4] a reasoned and powerful plea is made for the inauguration of such a service in the Republic.

SUMMARY

A short report of the pilot experiment in regard to vaginal exfoliative cytology smears in Brakpan in 1961 - 1962 is presented. The particular problem of education of the public for this type of preventive medical service is discussed.

The results of the experiment indicate the interest of the public in, and desire for, such a service, and the institution of a national cancer-control programme is recommended. Two alternative forms of organization are suggested, with estimated costs.

REFERENCES

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