Cancer, once thought of as a public health problem for the developed world alone, has now become a major public health burden for the developing world. With the advent of greater control over nutritional, parasitic and infectious diseases, the morbidity and mortality from cancer has soared. With the exception of skin cancer, breast cancer represents the most common cancer in women in the world. As very little is understood about the aetiology of the disease, and no acceptable primary prevention exists, secondary prevention or screening is the current answer.

Very good background reading can be found in "Epidemiology of breast cancer" by Kelsey and Gammon, an excellent review of the current literature with an extensive, up-to-date bibliography. Topics such as risk-factors, the magnitude of the problem and reproductive variables are comprehensively covered. As this is an update of a 1979 article by Kelsey from the same publication, progress in the field over the last ten years is summarized, and it is interesting to note how the incidence and mortality rates in many Asian, central European, and some Latin American countries - previously very low - have shown marked increases. More importantly, these increases have been found in comparatively young women (less than 50 years of age) and as these women age, the increases will expand into the postmenopausal years also. If this is true, it is estimated that the number of new cases in the world will nearly double by the year 2000.

A concise tabulated summary of risk factors for breast cancer is found in "Breast cancer in the developing world - an unaddressed challenge" by Kalache and Horton, which is divided by magnitude of risk so that comparisons of relative importance can be made. Those factors with particular significance in the developing world are highlighted and then explored: age, race, social class, country and place of residence, age at menarche, age at first and last full-term pregnancy, diet-related factors, oral contraceptive use, hormone replacement therapy, lactation, abortion, infertility, and cigarette smoking. The increasing westernization of the developing world is discussed in the context of escalating incidence rates and policy implications. Suggestions for primary and secondary prevention are made, with breast self-examination (BSE) instruction and trials for physical examination using paramedical staff advocated, since costly sophisticated imagery systems are beyond the financial reach of most developing countries.

My third reading is in a publication entitled "Cancer prevention in developing countries" the proceedings of the second UICC Conference on cancer prevention, edited by Khogali et al. It was during this conference that data was presented showing that more than half of all new cancers are in developing countries, emphasizing the need for cancer prevention. This book is well worth reading from cover to cover. Chapter 3, by Donn and Muir deals specifically with "Breast cancer: epidemiology and risk factors." This article discusses incidence and mortality data and compares them geographically (by country), based on age-adjusted rates from Volumes III and IV of "Cancer incidence in five continents." They find that breast cancer incidence and mortality are increasing all over the world, but particularly in countries with previously lower rates, and that the rates of breast cancer in developing countries are likely to increase in the future, as lifestyles become more westernized.

Estimates of the worldwide frequency of sixteen major cancers in 1980 by Parkin, Laara and Muir is an extremely handy reference. Sixteen cancers in 24 areas of the world are tabulated by site and sex in terms of crude rates of cancer incidence (per 100 000) and numbers of new cancer cases (in thousands) that represent the actual burden of new cases. The status of the statistics on cancer incidence from each of the 24 areas is described, as in many parts of the world none are...
available, and estimates must come from cancer frequency or mortality data, which is not always reliable.

The paper finds little change from the estimates from an article published in 1975, with breast cancer remaining the third most frequent cancer worldwide. It also states: 'It is only approximately true that incidence of cervix cancer exceeds that of breast cancer in the 'developing' areas of the world; breast cancer is markedly more frequent in northern Africa (although not in Algeria), temperate Latin American and western Asia, and numbers are approximately equal in southern Africa, the Caribbean, tropical Latin America and Micronesia/Polynesia.'

Miller suggests in the conclusion to his article Mammography: a critical evaluation of its role in breast cancer screening, especially in developing countries, that breast cancer screening be integrated with cervical cancer screening in women aged 40 and over. He states: '... as countries improve in socioeconomic status, and as screening programmes for cancer of the cervix are introduced, breast cancer supplants cancer of the cervix in importance.' He highlights some of the drawbacks to mammographic screening such as costs (sophisticated machinery, trained radiographers, radiologists, x-ray films, and so on) and lack of effectiveness in younger women, and goes on to evaluate less technological and skilled personnel-dependent tests, such as physical examination of the breast and breast self-examination, finding them more appropriate for the developing world.

The possibilities of physical examination and BSE are mentioned in Stanley, Stjernsward, and Koroltchouk's Cancers of the stomach, lung and breast: mortality trends and control strategies. Other benefits of BSE are addressed - it is simple, inexpensive, non-invasive and non-hazardous in addition to promoting responsibility for one's own health. The authors note that without public education programmes, breast cancer detection often occurs at a late stage, particularly in developing countries. As late detection is associated with poor prognosis, it is not surprising that the great majority of patients in developing countries are incurable at time of diagnosis, and half the worldwide mortality from cancer occurs in these countries. They conclude that early detection and prompt treatment, in conjunction with public awareness of the value of this, is necessary for a decrease in breast cancer mortality.

The need for a method of early detection in areas where regular mammography and physical examination of the breast are impractical for the whole population at risk was recognized by the World Health Organization (WHO) in a meeting held in Geneva in November 1983, where recommendations were made calling for further research demonstrating mortality reduction from BSE. One such trial, Breast self-examination for the early detection of breast cancer: a USSR/WHO controlled trial in Leningrad not only found a substantial increase in the number of cases of breast abnormalities detected and a reduced delay between detection and presentation to a doctor, but also cases diagnosed at earlier stages. In short, they found BSE feasible and effective (as measured by the frequency and technique of performance of BSE). An updated paper was published by the same authors in Russian in 1988 and data on the correlation between application of BSE and breast cancer mortality are expected by 1994.

My eighth reading comes from the developing world, entitled: The challenge of breast cancer control and treatment in India by Mittra, who finds that although breast cancer is the second most common cancer in women in India, in Bombay its incidence has overtaken that of cervical cancer, the most prevalent female cancer in the rest of India. In concurrence with Stanley, most of the cases are incurable at time of presentation. Reasons for this delay in presentation include low economic status, ignorance and fear, poor facilities for transport and communication and lack of easily accessible facilities for treatment. Problems with, and practices regarding, delivery of breast cancer therapy in a country the size of India are described, including manpower, facilities, laboratories and so on. Mittra finds physical examination of the breast would be the most appropriate for India as mammographic screening would be prohibitively expensive, and BSE would be ineffective as it requires motivation to practise.

A paper by Ibrahim et al. entitled Women's knowledge of and attitude toward breast cancer
in a developing country: implications for programme interventions - results based on interviewing 500 women in Saudi Arabia may give a partial explanation for the delay between detection and presentation. The authors found that a large proportion of women of all educational levels, in addition to being misinformed about basic aspects of breast cancer aetiology, detection, management and risk factors, also held misconceptions about unconventional treatment and complications with such methods. They conclude that academic education alone is not sufficient and propose brief guidelines for establishing cancer health education and/or early detection programmes.

Finally, Cost-effectiveness analysis of mass screening for breast cancer in Japan by Okubo et al. is an interesting article, as the official Japanese screening recommendation is physical examination (PE) by a physician, not screening by mammography (MG). The authors compared five strategies using a cost-effectiveness model: no screening, PE, MG, PE followed by MG if PE findings were abnormal, and PE + MG. Comparisons of sensitivity and specificity of the various screening options, stage distribution, and five-year to ten-year survival rate by stage were made. They found that the total cost per woman was: PE = US$412; MG = US$517; to PE + MG = US$731; and the years of life saved per 100 000 women was: PE = 719; MG = 3238; and PE + MG = 3724. These costs demonstrate the lack of practicability of screening by mammography and physical examination by a physician in the developing world, and emphasize the need for screening trials incorporating physical examination by paramedical personnel and breast self-examination.

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