

An early detection program focusing on primary and secondary health care achieved major and sustainable reduction of late stage Breast Cancer diagnosis in Sarawak, Malaysia

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1. OBJECTIVE

Sarawak, a state of Malaysia has a population of 2.2 million and its Human Development Index (HDI) is 0.763 which places it on the HDI scale between Sri-Lanka / Paraguay (HDI= 0.760) and Tunisia / China (HDI= 0.770). Between 1994 and 1998 a program aiming at decreasing late stage diagnosis for breast, cervical and nasopharyngeal cancer was implemented. The long-term impact and sustainability of this program on breast cancer (BC) is evaluated here.

2. BACKGROUND

Sarawak is located on the North of Borneo Island, comprehensive cancer care is available at only one place in the state: The Department of Radiotherapy and Oncology (DRO) at the Sarawak General Hospital. Primary and secondary health structures are accessible and affordable to all inhabitants; the private health sector represents only 11% of the total hospital beds. As in the rest of Malaysia, the cost of medications and travel for treatment in government hospitals are heavily subsidized by the government. The population of Sarawak is diverse composing of Natives, Malay and Chinese migrants. On average, the Chinese are of higher socio-economic level than Malay and Natives.

3. METHODS

Early detection program:

Between 1994 and 2000, a large proportion of the health staffs of the secondary and primary health care facilities of the state were trained in early signs of BC and in Breast Self Examination by a mobile training team of 2 doctors and 4 - 8 nurses. These health staffs were also asked to raise awareness in their community and were given material to do so (pamphlets & posters for their hospital). In parallel, referral from primary/secondary facilities to tertiary diagnostic & treatment facilities was simplified and streamlined (for more details see Devi *et al.* 2007).

Data analyses:

We recently collected, checked and validated the stage and T data in the 2663 BC cases series treated at the DRO between 1991 and 2009. This enabled us to measure the long-term impact and sustainability of the early detection program implemented between 1994 and 1998. The comparison between the DRO cases series and Sarawak registry data revealed that 82% of all the BC cases of Sarawak were treated at DRO.

5. RESULTS & DISCUSSION

5a). Prior to the program, in 1991-92 the percentage of breast cancer diagnosed at stage III & IV was 74% (95% CI=[67%-80%]). In the years 1997-1998 of the program, this percentage had decreased to 37% [31%-43%], reduction which was highly significant ($p < 0.0001$). Between 1999 and 2009, stage distributions remained stable, showing that the benefit gained was sustainable but that no significant additional benefit arose subsequently in the absence of a program (see figure 1). Between 2003 and 2009 some breast awareness campaigns (October month) took place in the state but no corresponding significant improvement in stage distribution was observed.

5b). Prior to the program, the proportion of late stage was lower among Chinese (69%) than among Malays and Natives (80%) and this difference remained after the program (see figure 2). This suggests that independently of the health system barriers addressed by the program, some cultural barriers to early detection remain amongst Malays and Natives. We are currently conducting a study to understand what these barriers are.

It is encouraging that the result of 27% [20%-34%] late stage diagnosis observed among Chinese at the end of the program (1997 to 2000) can be achieved with a **program which does not include screening**. Opportunistic screening exists in Sarawak but is uncommon. Prior to 2001 in our case series, screen detected cases represented less than 3.5% of the cases.

5c). The figure 3 reveals that the program resulted mainly in an increase of stage II diagnosis, from 19% in 1991-1992 to 40% in 1999-2000 ($p < 0.0001$); the percentage of stage I increased only slightly from 7% in 1991-1992 to 13% in 1999-2000 ($p < 0.08$). Interestingly, the reduction of late stage diagnosis was restricted to stage III, the percentage of stage IV remained the same throughout the years, around 12% (see figure 3). In the study we are currently conducting to better understand barriers to early diagnosis in Sarawak, one of the objectives is to understand what the exact determinants of stage IV diagnosis are, in order to tackle them more efficiently.

Figure 1: Evolution of late stage diagnosis (stage III & IV) in Sarawak from 1991 to 2009. (errors bars correspond to standard deviation)

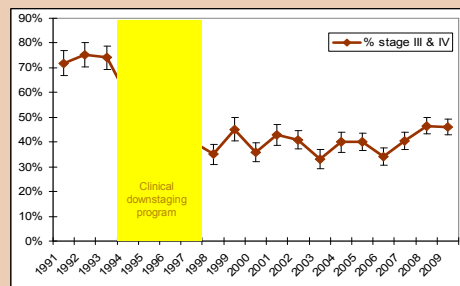


Figure 2: Evolution of late stage diagnosis (stage III & IV) among Chinese and Malay & Natives. (errors bars correspond to standard deviation)

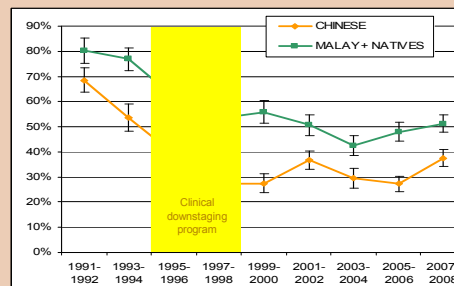
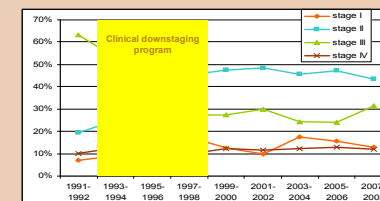


Figure 3: Evolution of stage I, II, III & IV from 1991 to 2008.



6. CONCLUSION

The above results suggest that:

1. It is possible to significantly reduce late stage diagnosis of breast cancer in LMC without any screening or costly public campaigns;
2. Increasing the knowledge and practices of health staff and streamlining referral process is the key to the success of this program;
3. The benefit gained is sustainable over a decade without additional effort.

Our results also suggest that public awareness using community health providers may be more cost effective than media campaigns however this needs to be studied further.

References:

- Devi BC, Tang TS, Corbex M. Reducing by half the percentage of late-stage presentation for breast and cervix cancer over 4 years: a pilot study of clinical downstaging in Sarawak, Malaysia. *Ann Oncol.* 2007 Jul;18(7):1172-6 (free article)
- Sarawak population-based cancer registry report 1996 to 2000. Ooi, C.H., Kiyu, A., Yao, S.K., Helli, B., Mastulu W, Assan J. Sarawak Health Department. 2005.

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