Cervical Screening by Visual Inspection and HPV Detection in Sudan

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Abstract: Cervical cancer is the third most frequent cancer in women worldwide and the recent report *on HPV and cervical cancer statistics in Sudan* estimates that every year 1664 women are diagnosed with cervical cancer and 1354 die of the disease. It will therefore be disastrous to Sudan if nothing is done about this major health problem. This paper aims to raise awareness and understanding of the role of HPV infection and cervical cancer in Sudan. The paper argues that the initiation of VIC screening idea in Sudan through Midwives schools (Aldayat) will help detection of the abnormality cell in different parts of Sudan where no hospital or medical center is available.

1 Cancer burden

In developing countries, one third of cancers are potentially preventable and the other third is treatable if detected early. In 2002, 7.6 million people worldwide died of cancer. This is in excess of the 5.6 million deaths from HIV/AIDS, TB and Malaria combined (Stewart and Kleihues, 2003).

2 Cervical cancer in Sudan

Cervical cancer is the third most frequent cancer in women worldwide. In developing countries this cancer is the second most common and the first leading cause of death among women (Garcia *et al*., 2007).

In Sudan the current estimate is that every year 1664 women are diagnosed with cervical cancer and 1354 die of the disease (WHO/ICO, 2007). As cancer reporting is not compulsory and there is no cancer national registry, this most probably represents an underestimate. A WHO study showed that Sudan has a population of 11.02 million women aged 15 years and older (approximately 25% of the entire population) and these women are at risk of developing cervical cancer. This health problem will be disastrous to Sudan if nothing is done (WHO/ICO, 2007).

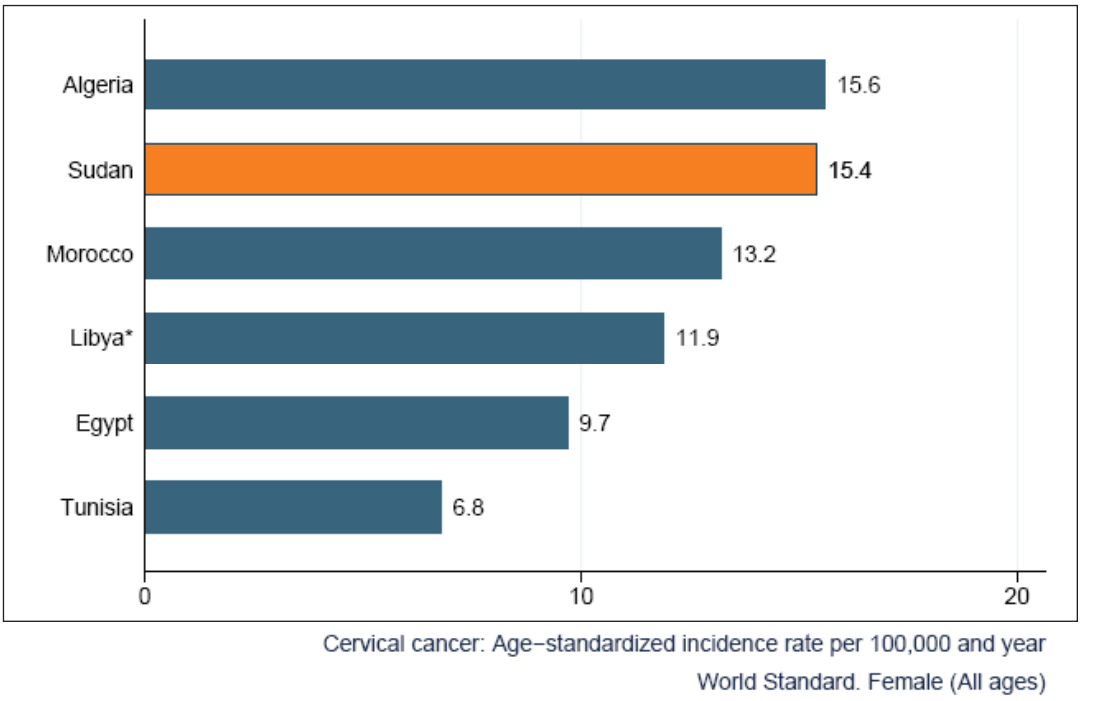
3 Incidence

Sudan has the second highest incidence of cervical cancer among countries of North Africa, figure 1and 2 (WHO/ICO, 2007).

4 Mortality

Similar to the high incidence rates, the highest mortality rates of cervical cancer among African countries are also found in Algeria and Sudan, figure 3 and 4 (WHO/ICO, 2007). The high mortality rate of cancers in these countries is attributable to the lack of screening facilities resulting in women with advanced stage disease at their initial referrals. In Sudan 78% of patients have stage III or IV disease which accounts for the big different between incidence and mortality rates, figure 5 (Hamad, 2006).

Fig. 1 Cervical cancer age-standardized (ASR) incidence rates in countries of Northern Africa



WHO/ICO. (2007) *Summary report on HPV and cervical cancer statistics in Sudan*

Fig. 2 Age-specific incidence rates of cervical cancer in Sudan as compared to estimates for Northern Africa and the World

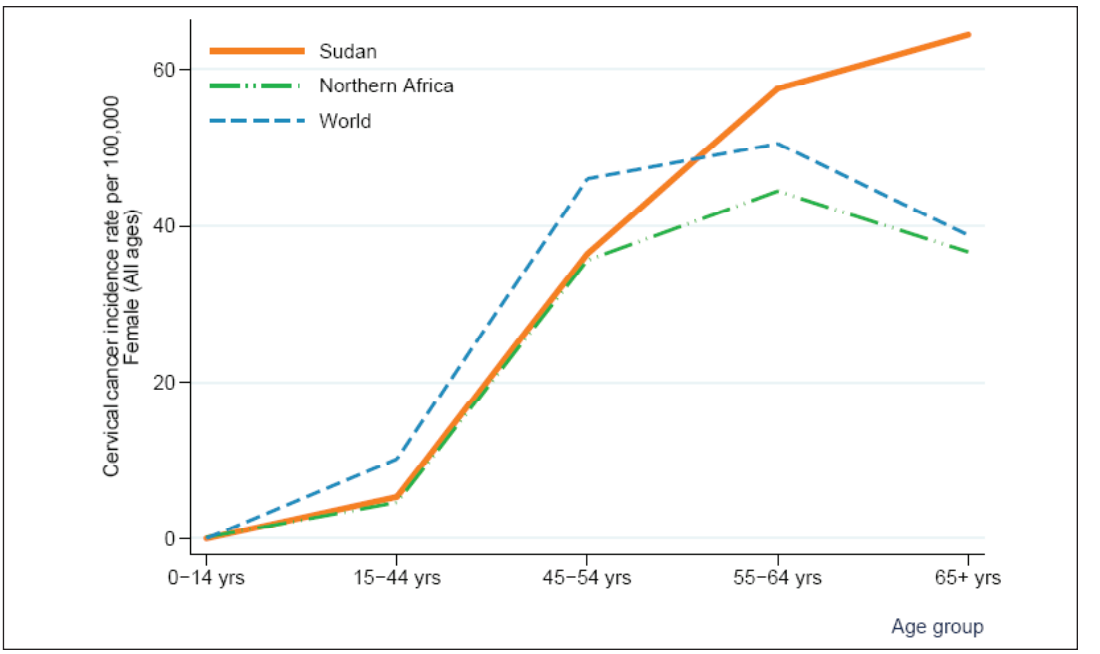


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Fig. 3 Cervical cancer age-standardized (ASR) mortality rates in countries of Northern Africa

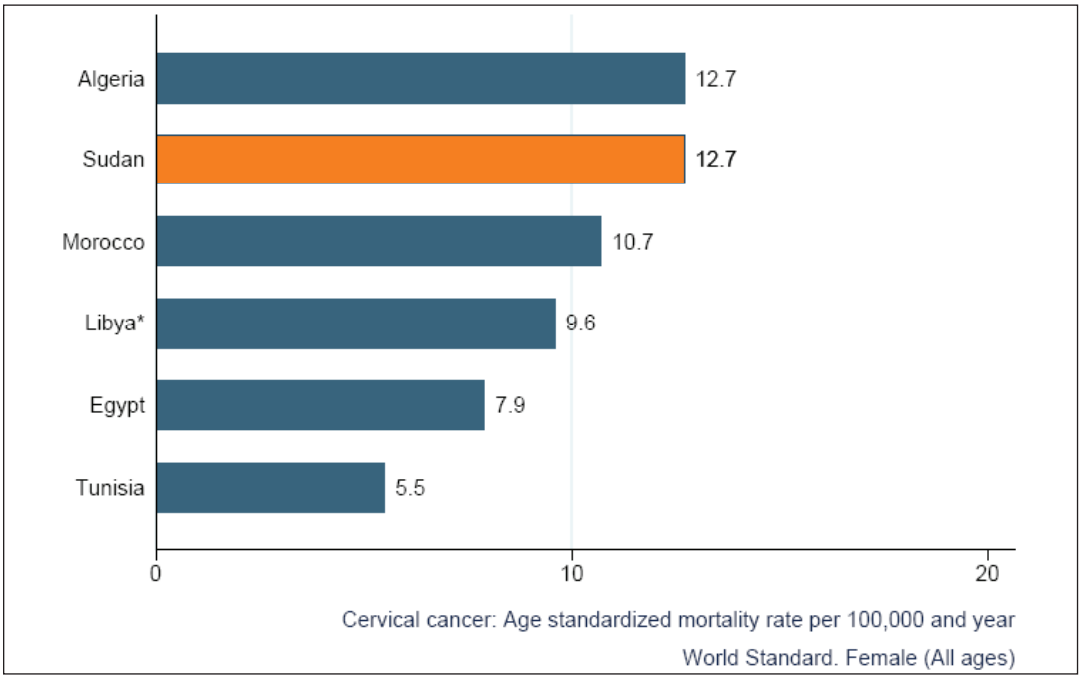

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Fig. 4 Age-specific mortality rates of cervical cancer in Sudan as compared to estimates for Northern Africa and the World

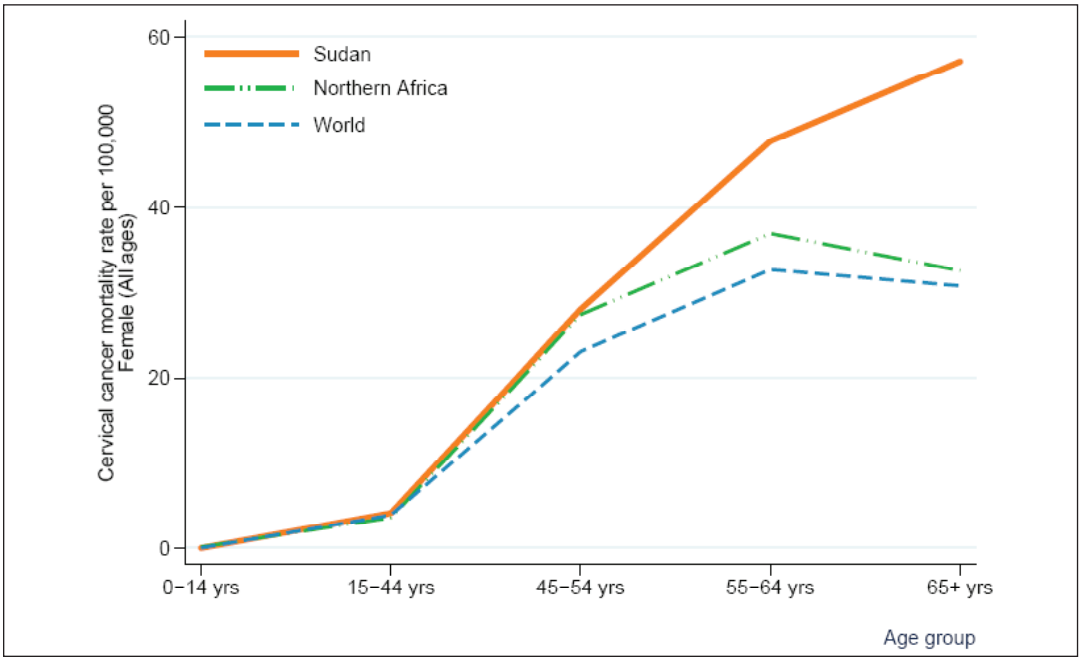

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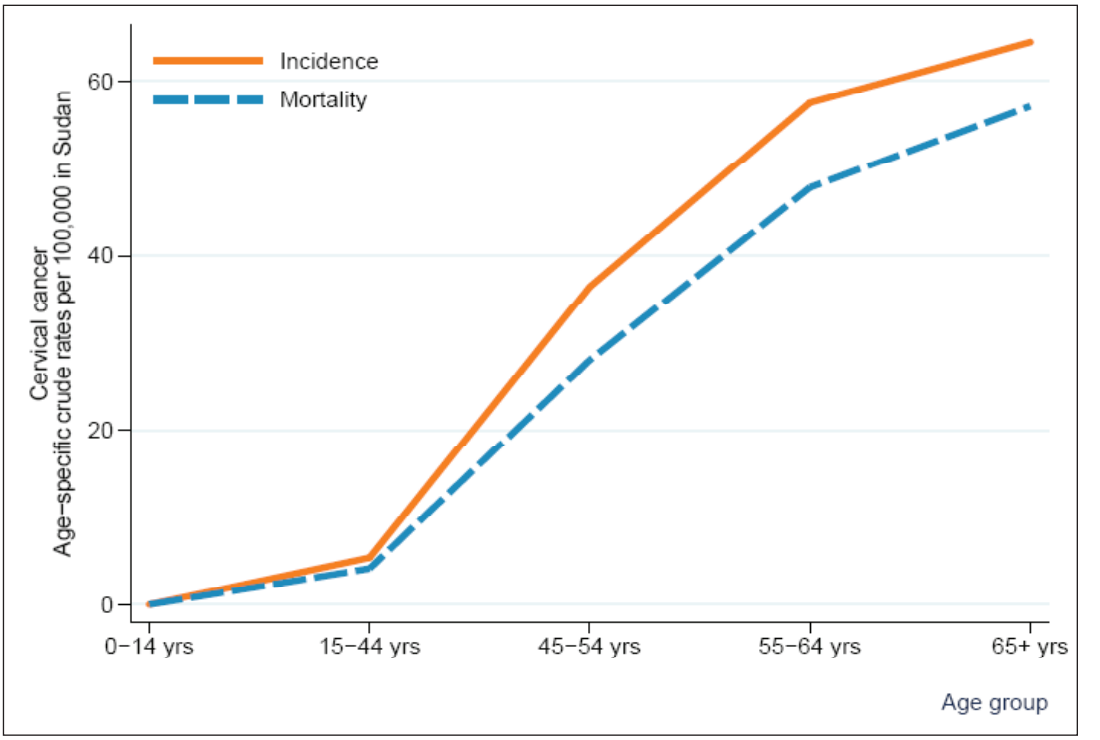
Fig. 5 A comparison of age-specific incidence rates and age-specific mortality rates of cervical cancer in Sudan



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3 Cervical screening

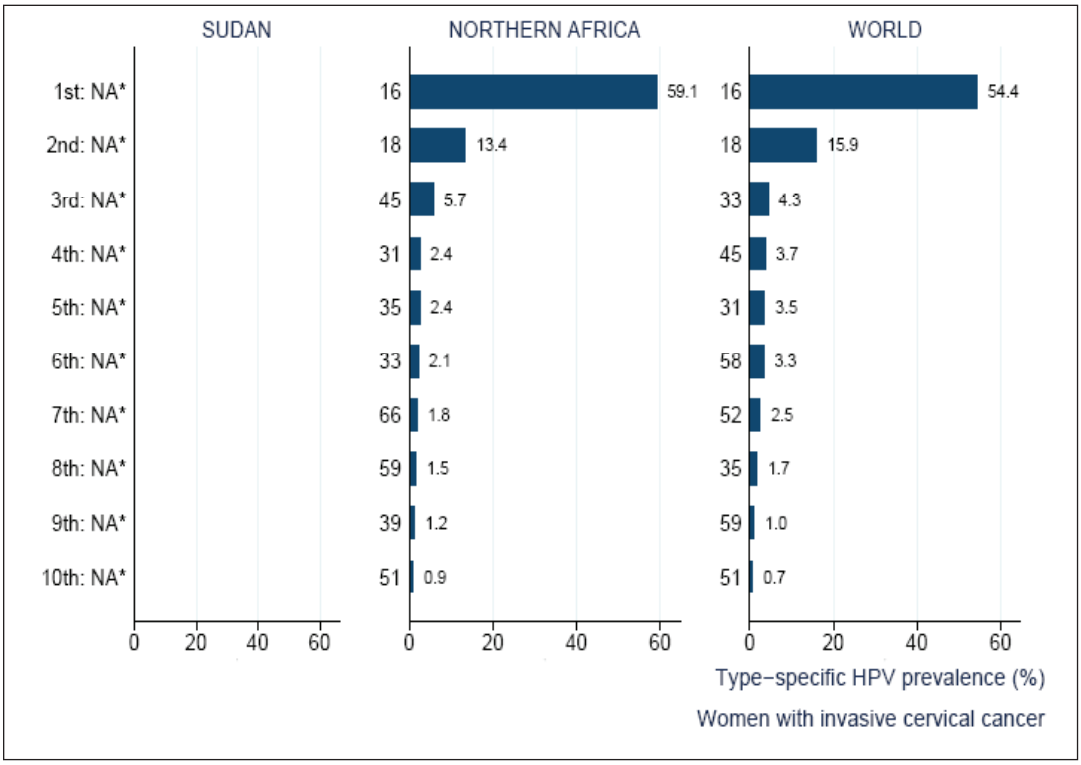
Early diagnosis and treatment remain the most effective way of combating cervical cancer. At present, screening programmes in developing countries have been very limited, and all have been 'opportunistic', centred on hospital or family planning clinics, rather than population-based. The main classes of available screening techniques are cytology, visual inspection and HPV DNA test. Combination of two techniques are advisable to get the benefit of the complementarily (IARC, 2005).

To implement cervical screening in Sudan, the programme has to be with low resource settings, low cost, and low technology that can lead to immediate treatment of abnormalities.

4 Visual Inspection using Acetic Acid (VIC)

The idea of the VIC is to look at cervix with the naked eye after application of 3–5% acetic acid using a cotton swab or spray. Positive test based on appearance of acetowhite areas in or close to the transformation zone. Aceto-whitening is thought to be due to a reversible coagulation of intracellular proteins following acetic acid application (Belinson *et al*., 2001). The sensitivity of VIA to detect high grade precursor lesions and invasive cervical cancer has varied from 49 to 96% and the specificity from 49 to 98% (Sankaranarayanan *et al*., 2005). For nurses or midwives to learn VIC techniques short course of 5-10 day is adequate (Blumenthal *et al*., 2005).

Fig. 6 Ten most frequent HPV types in women with invasive cervical cancer in Sudan as compared to Northern Africa and the World



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5 Human Papillomaviruse (HPV)

HPV is one of the most common sexually transmitted diseases and association with HPV has been accepted as the major risk factor for development of cervical cancer. An international group of experts has recently declared that ″there is sufficient evidence that testing for HPV infection as the primary screening modality can reduce cervical cancer incidence and mortality rates″ (IARC, 2005).

There are 15 types of oncogenic human papillomavirus (HPV), with HPV types 16 and 18, accounting for the majority of cervical cancer cases. (Schiffman et al., 1996; Bosch and de Sanjose, 2003; Munoz et al., 2003). Although there is no data available on HPV burden from Sudan, some studies have been carried out in North African countries, figure 6 (WHO/ICO, 2007).

6 HPV test (Care HPV)

Care HPV is a new test developed to screen women in developing countries. Care HPV which is based on HC2 technology, is a signal amplification assay that detects target HPV-DNA from 14 different carcinogenic HPV types ((16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59, 66, and 68; (Qiao *et al*., 2008).

The first report of clinical outcomes for the use of the care HPV test as a primary screening test shows the sensitivity with 85% while the sensitivity of HC-II is 95% (Qiao *et al*., 2008).

Care HPV assay needs only a small bench work area (25 50 cm), no mains electricity or running water and can be done by technical support staff in roughly 2.6 hours. Care HPV costs a few US dollars, however can be negotiated to be feasible to each eligible country or organisation (Qiao *et al*., 2008).

7 How will I implement my knowledge and experience in Sudan

1 Educational Programs: Help design education programs to reach a variety of audience to raise awareness and understanding the role of HPV infection and cervical cancer. A population based survey in the UK in 1999, found that fewer than 30% of people identified "infection" as a possible cause of cervical cancer, with almost none mentioning HPV (Wardle *et al*., 2001). Many studies show that women want more information about HPV (Anhang *et al*., 2004; McCaffery *et al*., 2006).

2 Initiate the VIC screening idea in Sudan throw Midwives school (Aldayat) in Omdurman, which helps detection of the abnormality cell in cervical in different place in Sudan where no hospital or medical center is available.

3 Screening: Since I work in Cancer Research, Department of Molecular Epidemiology, one of the projects that I participate in is Prediction of cervical intraepithelial lesions study. My responsibilities include detecting the HPV genotypes, where latest Molecular diagnostic assays are used, for example APTIMA and Hybrid Capture II (HC2) technologies. A new test, Care HPV, which is based on HC2 technology is available and I am willing to teach the technical support staff how to use care HPV. I am sure that cervical screening will reduce the cervical cancer incidents and mortality rates in Sudan.

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