MINI-REVIEW

Cervical Cancer Prevention and Early Detection - The Role of Nurses and Midwives

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Abstract

Worldwide 31% of cancers in women are in the breast or uterine cervix. Cancer of the uterine cervix is one of the leading causes of cancer death among women. The estimated new cancer cervix cases per year is 500.000 of which 79% occur in the developing countries, where it is consistently the leading cancer and there are in excess of 233.000 deaths from the disease. The major risk factors for cervical cancer include early age at first intercourse, multiple sexual partners, low socioeconomic status, HSV, HPV infection, cigarette smoking and extended use of oral contraceptives. Well organized and applied public education and mass screening programmes can substantially reduce the mortality from cervical cancer and the incidence of invasive disease in the population. Women who are health conscious are more likely to have used screening services (mammogram, pap-smear test) and performed breast-self examination and genital hygiene. There are both opportunities and burdens for nurses and midwives working in primary health care settings. This is a prime example of a role of public education in cancer prevention with reference to population-based cancer screening programs.

Key Words: Cervical cancer - epidemiology (incidence-mortality-survival) - prevention - early detection - public education - health care providers (nurses-midwives)

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Epidemiology

In developed countries, breast cancer is the most common in women, whereas cancer cervix occupies the top rank among cancer in women in developing (WHO/IARC, 2001; Shanta et al. 2000). Worlwide, cervical cancer is the second most common cancer and the major cause of cancer deaths among women (Ghim et al.,2002; WHO/IARC, 2001;GLOBOCAN, 2000).

There is geographical variations in cancer occurance (WHO/IARC, 2001). Asian, Eastern Europe, sub-Saharan Africa, and Latin American countries, it accounts for a considerably greater percentage (WHO/IARC, 2000; GLOBOCAN 2000). The rates are generally higher in urban than rural population. Rates are also related to marital status-higher in married women than in single, and higher in widow or divorced women than in married (Eisner et al.,1995; WHO/IAC 1986).

Figure 1 shows number of cases and deaths worldwide by sex and cancer site. Among women the most common cancers are, in terms of new cases breast (1.050 million) and cervix uteri (471.000), and in the terms of deaths, breast (370.000) and cervix uteri (233.000). Malignancies of the genital tract constitute approximately 20% visceral cancer in women. The numbers and the rankings of cancer types are quite different (WHO/IARC, 2001).

The mortality data for cervical cancer are not very informative, given the large number of deaths certified as "uterus, not otherwise specified (NOS)". It must also be noted the deaths certified as "cervix uteri" (WHO/IARC, 1993). Several studies have shown that there are often considerable inaccuracies in mortality statistics based on certification of cause of death (e.g. Heasman &Lipworth, 1966; Puffer&Wynne-Griffith, 1967; at al.; Percy et al., 1981) (WHO/IARC, 1986; WHO/IARC 1991).

The epidemiologic features associated with cancer of the cervix in women are low socioeconomic status, early age at the first intercourse, and multiple sexual partners, besides other risk factors such as age, ethnicity, multiparity, cigarette smoking and extend use of oral contraceptives, point to a

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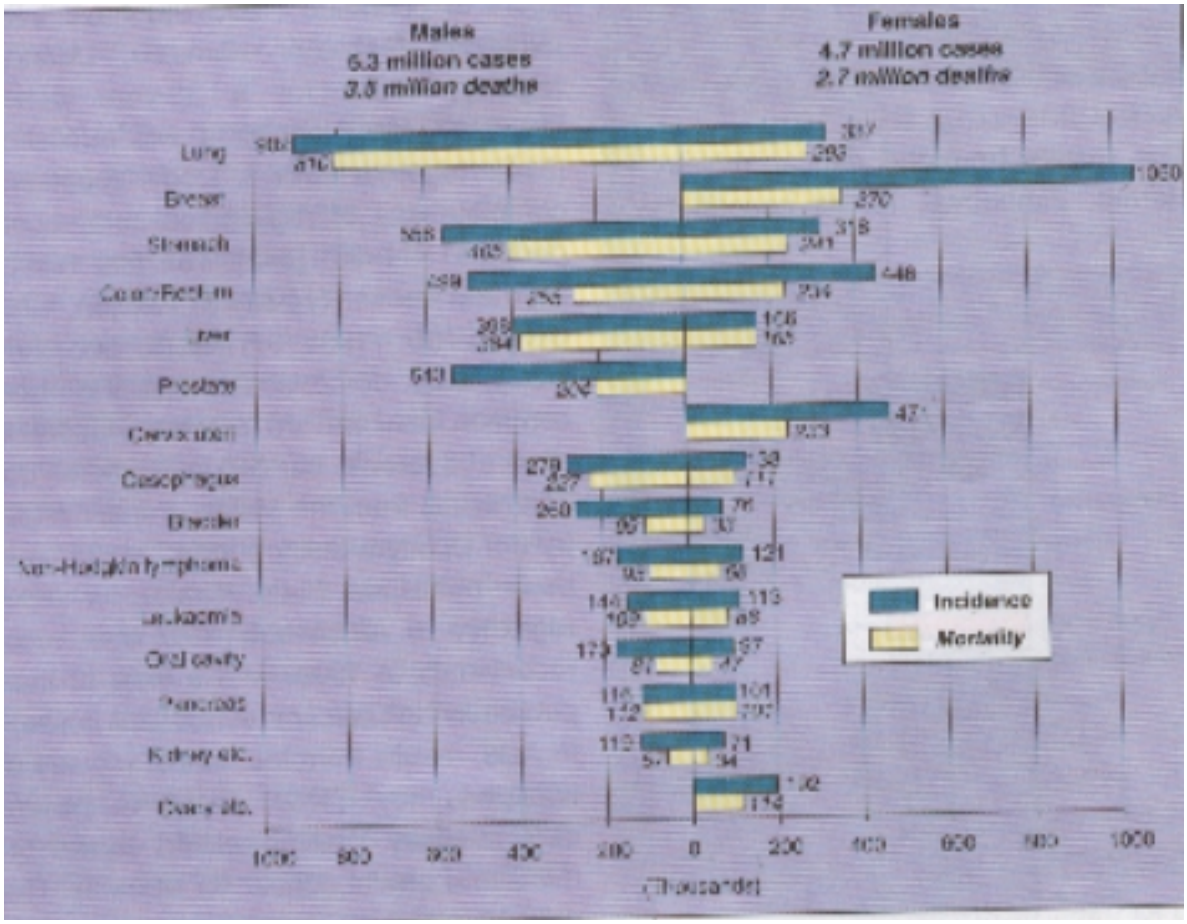

Figure 1. Numbers of Cases and deaths worldwide, by Cancer Site. From: WHO/IARC Biennial Report (2000-2001), Lyon 2001

venereal pattern of etiology (Shanta et al., 2000; Cuzick et al., 1996; Kjellberg et al., 2000). Oral contraceptives may contribute to the increase in risk through an interaction with HPV infection (Kjellberg et al., 2000; Madeline et al., 2001).

In Turkey, cancer (13.11%) is the second leading cause of death behind the cardiovascular diseases (44.52%) according to the statistical results of 1996. In women, the incidence of the cervix cancer is placed as 0.95 per 100.000 among the most frequent ten cancers in Turkey (Table 1). We have many studies on cervical cancer from the early diagnosis-screening to the palliative care but we have not yet reached the national statistical results analysed from population-based cancer registries except the Izmir Cancer Registry (KIDEM) statistics. Izmir Cancer Incidence Project -ICIP, 1992- is the first population-based study on cancer in Turkey organized by "The Ministry of Health, Department of Cancer Control" in collaboration with WHO/IARC. It is accepted that all cancers occurring in 1993 and 1994 were detected and recorded (25.790), and annual incidence rates were calculated for these years (Table 2).

Table 1. The Most Frequent Ten Cancers in Turkey (Females-1999)

Organ	Cases	Percentage	Incidence*
Breast	2390	24.10	7.32
Stomach	693	6.99	2.12
Skin	684	6.90	2.10
Ovary	556	5.61	1.70
Colon	419	4.22	1.28
Lung	404	4.07	1.24
Bone Marrow	391	3.94	1.20
Rectum	381	3.84	1.17
Brain	349	3.52	1.07
Cervix	310	3.13	0.95
Other	3342	33.69	10.24
Total	9919	100.00	30.38

* Per 100,000

It's well known that the primary prevention should be taken all actions aimed to reducing the occurrence of cancer and also the primary health care centres were not sufficient to follow recent advances in the science and art of health education have been applied in practical ways within medical and other settings for cancer prevention.

In Turkey, The Ministry of Health, Department of Cancer Control established the "Early Diagnosis and Screening Centers" in 1995 for the pilot project to control and decrease the incidence of breast and skin cancers as well as the cervix

Table 2. Cancer with Top Rank Incidence Rates - Izmir Cancer Incidence Project

Rank	Males		Females	
	Site	Annual incidence rate (*)	Site	Annual incidence rate (*)
1.	Trachea, bronchii and lungs	61.6	Breast	24.4
2.	Skin (except malign melanoma)	11.5	Skin (except malign melanoma)	8.8
3.	Larynx	10.6	Corpus uteri	6.4
4.	Bladder	11.0	Overii and Fallopian tubes	5.9
5.	Stomach	8.0	Cervix uteri	5.4
6.	Prostate	5.4	Trachea, bronchii and lungs	5.1

(*) per 100,000 population, age-standardised rates, 1993-1994 data base.

uteri (S.B., 2002). In addition, the health care providers, especially the nurses and midwives, who are working at primary health care centers, have been responsible for the public education organized on cancer control program in Turkey. But they are more interested in antenatal care, parental education, family planning and etc. than cancer control. So, training centres are essential in order to provide courses for the nurses and midwives in practical aspects of prevention, early diagnosis and screening for cervical cancer as well as the breast for women periodically.

Histology

It is now accepted that squamous-cell cancer of the cervix originates from intraepithelial precursors known as dysplasia and carcinoma in situ (or, cervical intraepithelial dysplasia-CIN). Approximately 80 percent of cervical carcinomas are squamous cancers (Eisner et al., 1995).

Several follow-up studies have indicated that the greater the degree of dysplasia, the greater the probability of progression to invasive cancer. These precancerous lesions of the cervix can be detected by cervical cytology, and a large body of observations demostrates that cytological screening, if properly performed, can make a major reduction in both the incidence and the mortality rates from cervical cancer in the whole female population, and that, for an individual woman, regular screening during adult life can greatly reduce her risk (Eisner et al., 1995; WHO/IARC, 1990).

Mortality rates uterine cancer largely reflect deaths caused by cancer of cervix because invasive neoplasms arising from that site have a considerably poorer prognosis than do endometrial cancers. Following the change in sexual practices within the last three decades, there has recently been an increase incidence and mortality rates of cervical cancer in several western countries (WHO/IARC, 2001; Cuzick et al., 1996; Kavanagh 1993).

The decline in mortality from uterine cancer is probably due to a combination of three factors; 1. a decrease in the number of women who still have a uterus because of an increase in rates of hysterectomies for nonneoplastic conditions, 2. an increase in cytological screening and 3. a true decline (until recently) in the incidence of new cases. Sexual behaviour is very important for cervix cancer in young women. So, now we need to discuss the early and relevant information to young women aged 16-21 years, adolescents, and their experience with health care providers about cytological screening and gynecologic examination is of importance (WHO/IARC, 2001; Cuzick et al., 1996; Kavanagh, 1993).

The IARC (International Agency for Research on Cancer) studies in Spain and Colombia were the first indicating a strong relationship between HPV DNA in the male penis/urethra and risk of cervical cancer in their wives. They also showed the HPV DNA among women was strongly related to the sexual behavior of husbands (Shanta et al. 2000; Bosch, 1997).

Current information suggest the coexistence of two viruses, Herpes Simplex Virus (HSV) type 2 and Human Papilloma Virus (HPV), as necessary for the induction of malignant transformation in cervix cancer. The major risk

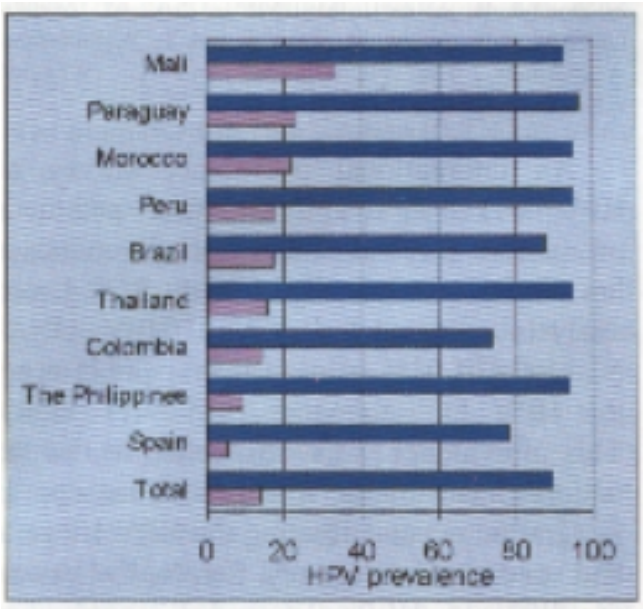

Figure 2. HPV Prevelance in Cervical Cancer Cases and Controls From:WHO/IARC Biennial Report (1998-199), Lyon 2000

factor squamous cell carcinoma of the uterine cervix is clearly viral, with a particular role for HPV. The association between HPV and cervical cancer is very strong, indipendent of other risk factors consistent in several countries. This association is strong not only with the most common HPV types (HPV 16 and 18) but also with the less prevalent types (HPV 31, 33, 45, 52, 58, 59).

Data on co-factors that influence progression from persistent HPV infection to invasive cervical cancer and on prevalence of HPV types in women with cervical cancer and in normal women are being collected that will provide essential backgraound information for planning preventive strategies using HPV vaccines that are under development Multi-centre case-control study of cervical cancer (2000 cases and 2000 controld) is sumarized in Figure 2. (Fukushima, 1999; Kalantari et al., 1997; WHO/IARC, 2000).

The lower prevalences in Spain and Colombia are due to the lower sensitivity of the early versions of the assay. Among the control group, there is a positive correlation between HPV prevalence and the risk of cervical cancer in the respective country. Thus, the control women from Latin American and African countries with the highest risk of cervical cancer have the highest HPV prevalence, while Spain shows the lowest HPV prevalence and risk of cervical cancer (Fukushima, 1999; Kalantari et al., 1997; WHO/IARC, 2000).

Prevention and Early Detection

While it is unrealistic to assume that a nationwide cervical cancer screening programme could begin in a developing country in the near future, two aspects deserve attention. Primary prevention through hygenic measures may be more realistic in a developing country than in a developed country. Secondly, there are possibilities for subnational coverage, and such limited programmes should be encouraged to provide data on the applicability of screening programmes in developing countries (Hakama, 2000).

In the World (in North America, Central America, Asia, Europe) screening programmes have been in operation for twenty years or more (Zappa et al., 2000). The essential screen for cervical cancer is Papanicalau smear. The freguency of examination is somewhat controversial. The American College of Obstetricians and Gynecologists reccommend an annual pelvic examination and smear for consecutive years. _f normal, the interval may be lengthened.The American Cancer Society allows “low risk” women to have smears every 3 years. However, the high-risk individual needs an annual examination (high risk is defined as having sexual intercourse before age 20 or a history of more than to sexual partners) (Kavanagh et al., 1993)

Most patients with cervical cancer are asemptomatic, and cases are detected routine pap smear Screening (Eisner et al., 1995). For the last 50 years the papanicolau smear test (PAP test) has been used to screen preninvasie and early invasive squamous cancer in asymptomatic women. If the PAP smear worked for early detection of invasive disease, a decrease in cervical cancer mortality was to be expected in screened populations (Lynge, 2000). Results of critical review of cytological screening for cervical were published in 1986. By combining data from 10 screening programs in eight countries, it was shown that two negative cytological smears were more effective than one in reducing mortality from cervical cancer, and that the protective effect did not decline until three years after a second negative smear. Based on the findings it is generaly believed that screening for cervical cancer every three years is sufficient, after a women

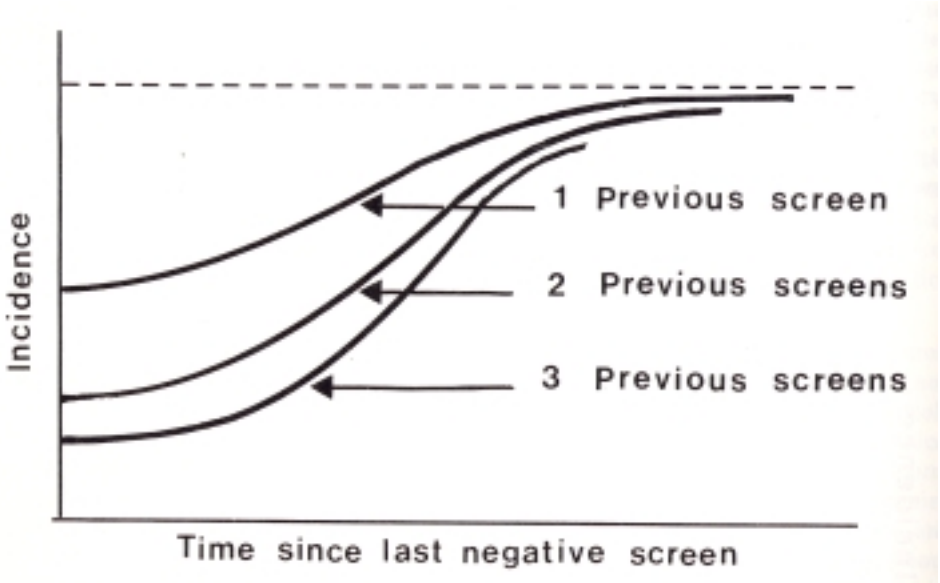

Figure 3. Anticipated Incidence Following One or more Negative Smears, by Time Since Last Negative Smear, Assuming Sensitivity <100% (from Walter& Day, 1983) From: WHO/IACR_UICC, Screening for Cancer of the Uterine Cervix, Lyon, 1986

has had two normal smears. Some women, however, do develop invasive disease soon after an apparently normal smear, and studies are needed determine what proportion of such events are a result of prior false-negative smears and how many represent a rapidly progressing form of the disease. The concepts are displayed graphically in Figure 3. The IARC study showed that the cumulative rate of invasive cervical cancer in women aged 35-64 could be reduce by 93.5% with screening every year, by 92.5% with screening every second year, and by 90.8% with screening every third year, see Table 3. (Lynge, 2000).

The variation in risk with time since last negative smear provides information on the distribution of sorjourn time of the preclinical disease, while variation with the number of negative smears allows the sensitivity of the test estimated . Since the publication of the IARC monograph (Hakama et al., 1986)on pap smears efficiancy in 1986, several case-control studies have been carried out within a process of evaluating current screening programmes (Zappa et al., 2000).

The natural history of the disease suggest a long preclinical stage, progressing from dysplatic changes to carcinoma in situ and finally to frank malignancy over 12-20 years. This pattern and the success of treatment in the early stages makes cancer of the cervix an ideal candidate for secondary prevention by screening. Well organized mass screening programmes can substantially reduce the mortality from cervical cancer and the incidence of invasive disease in the populations at whom screening is aimed (70-95 % reduction in cervical cancer mortality). The mortality of cervical cancer has declined by 50 percent over the 40 years, carcinoma and two-thirds are carcinoma in-situ (CIS) (Eisner, 1995).

Conclusions and Recommendations

Communicable diseases and the population explosion are the highest priorities for health care in developing countries. However, this should not prevent the development of appropriate cancer control programmes (WHO/IARC, 1986; Hakama, 2000). Cancer is an increasingly important problem in Turkey as well as in developing countries (Ceylan et al., 1995; Hayran & Fırat, 2002). This is especiallly true for cervical cancer, the risk of which is high and which occurs commonly in relatively young women.

It is important in developing countries to encourage the integration of different aspects within primary health care. For special studies, workers, such as social workers, can be trained. Individuals working, in primary health care can also act as motivators and educators in many programmes, including those of cervical cytology (WHO/IARC, 1986; Bosch, 1997; WHO/IARC, 1993; Hakama, 2000).

Although is necessary and desirable to integrate taking a smear and the managment of abnormalities within the general health care system, it is probably necessary to set up special mechanism for the laboratory aspects of cervical cytology. This requires the training of special personnel, such as cytotechnologists, and the avaliability of cytopathologists for final opinions (WHO/IARC, 1990).

It is clear that the cancer of cervix is not well understood by women and there is a need for information and enlightenment if women are to apply early in health care or training centres.

For cervical cancer, data on the protective effect have been obtained from several programmes. It seems that the protective effect after a negative smear is high (more than 90 per cent) and is only marginally dependent on the interval between screening of up to three years. Even ten year interval yield a two-thirds reduction in the risk (Hakama, 2000).

It is possible that taking even three smears during a women‘s life span would provide substantial protection if the first smear was taken at age 35 and others every ten years.In organizing screening programmes in developing countries, much attention should be paid to problems of personnel and to appropriate levels of traning. In cervical cytology, this process commends with taking a smear. (WHO/IARC, 1986; Bosch, 1997; WHO/IARC, 1993).

The screening program has latent potential for further development of the role of the nurses and midwives as an advocate for women throughout the lifespan and in variety of situations. Nurses or midwives constitute one group of health workers who can provide accurate information on cervical cancer to the public. This is because they are more frequently in contact with women and their relations than other health care professionals.

Nurses and/or midwives may be in contact with groups of families for many aspects of their health care, including maternal and child health. So, nurses and midwives take the majority of smears in order to detect cancer of the cervix at an early stage It is important that the nurse and midwive

Table 3. Percent Reduction in Cumulative Rate of Invasive Cervical Cancer in Women Aged 35-64 with Different Frequencies of Screening (IACR Working Group on Evaluation of Cervical Cancer Screening Programmes, 1986)

Interval between screening (years)	Per cent reduction in cumulative incidence	Number of tests
1	93.5%	30
2	92.5%	15
3	90.8%	10
5	83.6%	6
10	64.1%	3

provide women with sound and up-to-date information in a way that they understand. (Widmark et al., 1998; Abdullah & Leung 2001; Peate, 1999)

In view of the expanded roles nurses and midwives are expected to play in cervical screening, it's important to assess the midwives' knowledge of cervical cancer more than nurses' because of the lack of their professional familarity with cancer . Additionally, improving clinican-and other staff-patient communiation would be important for cervical screening programs (Widmark et al., 1998; Abdullah & Leung 2001)

It's necessarry to develope a research-based conceptual model of midwifery practice on women-with-midwives-with-women (Fleming, 1998). Clinical practice base, educational qualifications and age were influential in midwives' opinion practice (Furber 2000).

Several recent studies indicate that rates of screening by Pap smear and mammography are higher among female physicians than male physicians. Women are more likely to receive breast and cervical cancer screening if they see female physicians. Male and female physicians themselves may differ in their attitudes concerning prevention, their beliefs about the effectiveness of cancer screening, their practice organization, or in skills that facilitate successful screening (Lurie et al.,1997). In addition, Islamic beliefs and customs can influence the cervical cancer screening behavior of Muslim women (Underwood et al., 1999). So, there is a need for further research exploring midwives' opinions from a qualitative perspective.

For that reasons, if nurses and midwives are trained to gain a better understanding of their client's needs and to get more practice on cervical screening technics during graduate and post graduate educations actively they will succeed in behavior of women as well as the family planning interventions applied by nurse and midwives in Turkey or another countries.

It's becoming increasingly important for nations to develope health care programs that consider the diversity of cultural values, beliefs and attitudes that influence health promotion behaviours. Ultimately it is the health of women that will determine the wellness of future generations.

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