International Journal of Nursing Research (IJNR)

International Peer Reviewed Journal

Review article

Episode of cervix cancer: Facts and not fantasy

Rajshree Salgaonkar
Bharati Vidyapeeth Deemed University College of Nursing, Navi Mumbai

Abstract

Cervical cancer is the third most common cancer worldwide, and 80% of cases occur in the developing world. Even with recent advanced technology man is unable to find out exact etiology of cancer. Cancer shows different behavioral pattern. Some cancer can only see in male and some in female. Cancer is autonomous disease which is not particularly limited to age group or etiological factor. Cervical cancer is the one type of cancer which can be seen in female which is ranking 2nd for death of the women globally.

Cervical Cancer is malignant carcinoma type of cancer originates in cervix region. The cervix is the narrow portion of the uterus where it joins with the top of the vagina. Most cervical cancers are squamous cell carcinomas, arising in the squamous (flattened) epithelial cells that line the cervix. Adenocarcinoma, arising in glandular epithelial cells is the second most common type. Very rarely, cancer can arise in other types of cells in the cervix.

In spite of that in developing countries women are dying with cancer due to lack of knowledge and inadequate medical facilities. In this situation, very little can be expected for commercial sex workers who are one of the most neglected and vulnerable group of the society. It is very necessary for them to know about cancer cervix so that they can be motivated to approach the medical facilities available for them therefore decreasing the morbidity and mortality rate.

Keywords: Cervical cancer, malignant tumor, prevalence, treatment, prevention.

***Corresponding author: Ms Rajshree Salgaonkar,** Bharati Vidyapeeth Deemed University College of Nursing, Navi Mumbai. Email: salgaonkarrajshri@gmail.com

1. Introduction

Cervical cancer is the term for a malignant neoplasm arising from cells originating in the cervix uteri. One of the most common symptoms of cervical cancer is abnormal vaginal bleeding, but in some cases there may be no obvious symptoms until the cancer has progressed to an advanced stage. Human papillomavirus (HPV) infection appears to be a necessary factor in the development of almost all cases (90+ %) of cervical cancer. Histological subtypes of invasive cervical carcinoma include the following. Though squamous cell carcinoma is the cervical cancer with the most incidences, the incidence of adenocarcinoma of the cervix has been increasing in recent decades [1].

Cervical cancer: An update

It is a comprehensive compilation of what is known about the phenomenon. The purpose for review of literature to assess the evidence, regarding the research topic by identifying and synthesizing studies that examine the subject of interest [6].

Condition stage of cervical cancer

"A tumor is an abnormal mass of tissue, the growth of which exceeds and is uncoordinated with that of the adjacent normal tissue and persists in the same excessive manner after cessation of the stimuli which evoked the changes initially." Other definition of the cancer given by him is "lawless growth without control."[2].

The major risk factors in cervical cancer are coitus and multiple sexual partners. The probability cervical cancer is more in case of women who have married twice or more, are at high risk for cervical cancer, it also has genetic origin those girls whose mother and grandmothers suffer from cervical cancer are more prone to get cervical cancers. Further the probability is increases if sexual intercourse less than 17 years of age or before adolescent, multiple pregnancies is also one of the causes for cancer cervix [7]. Importantly, various viruses are also noted to be mainly responsible for diseases of sexual organs are the human papiloma virus, herpes simplex virus and human spermatozoa etc. These are the few factors which are responsible for developing cancer cervix. The study stated that, the cervical cancer is caused by the Human Papiloma virus (HPV) [8]. There are different types of HPV virus among them HPV 16 & 18, 45, 31 together account for 80% of squamous cell carcinomas of the cervix. Same HPV type is also responsible for 90% of adenocarcinoma of the cervix. Further it was believed that incidence rate of the cancer cervix is less in Jewish and Muslim community [9].
Researcher has found that it is due to male circumcision and the logic behind it is that males are able to keep penile hygiene, so there are less incidences of cervical and penile cancer. Furthermore, states that types of cervical cancer are squamous cell carcinoma, squamous epithelium of ectocervix, adenocarcinoma, mixed types and other undifferentiated types [10]. Staging of the cancer cervix is done according to FIGO. Staging of the cancer cervix are important to determine the prognosis and to formulate the line of treatment. It is based on clinical examination. Moreover, the symptoms of cervical cancer are menstrual abnormality in forms of contact bleeding or bleeding on straining especially during defecation, inter-menstrual bleeding excessive white discharge with offensive smell [11]. Speculum examination reveal red granular area which looks like an erosion extending from external Os, the lesion bleeds on friction, whereas bimanual examination reveal the lesion is indurate, friable, and bleeds when touch. Cervix is freely mobile, rectal examination also reveals the parametrium absolutely free. Pap smear used as screening test for cervical cancer and it fulfills the most important criteria of a useful test, good sensitivity and specificity [12]. The Pap smear sample should be taken from squamo epithelial junction. Various other techniques are used for obtaining a cervical a cervical smear. The primary evaluation process includes conformation of the diagnosis is done by biopsy, speculum examination, cystoscopy, X-ray chest, proctoscopy, intravenous pyalography [13]. In addition, treatment modalities used for the cervical cancer are radiation therapy, chemotherapy or chemo radiation therapy [14]. Radiation therapy can be used in all stages. The 5 year survival rate for the stage 1 cancer is approximately 85% with either radiation therapy or radical hysterectomy.

Prevalence rate of the cervical cancer:

Cervical cancer disease has often been regarded principally as a problem of the world, more than half of all cancers occur in the developing countries. In developed countries, cancer is the second most common cause of death, and epidemiological evidence points to the emergence of a similar trend in developing countries. Cancer is currently the cause of 12% of all deaths worldwide [4]. Developing countries accounted for 37,00,00 out of a total of 4,66,000 cases of cervical cancer that were estimated to occur in the world in the year 2000.Worldwide, cervical cancer claims the lives of 2, 31,000 women annually, over 80% of whom live in developing countries [15]. It was estimated that about 11,070 cases of invasive cervical cancer will be diagnosed in the United

States. Some researchers estimate that non-invasive cervical cancer (carcinoma in situ) is about 4 times more common than invasive cervical cancer. About 3,870 women died from cervical cancer in the United States [16].

Worldwide, cervical cancer comprises approximately 12% of all cancers in women. It is the second most common cancer in women worldwide, but it is common in developing countries. Annually global estimates around the year 2000 are for 4, 70, 600 new cases were diagnosed and 2, 33,400 deaths from cervical cancer annually, eighty percent of these cases occur in developing countries. It has been estimated that the number of prevalent cervical cancer cases diagnosed in the previous five years was around 1,401, 400 in the year 2002 with 1,064 000 of these occurring in developing countries [17].In U.S. in 2007, cervical cancer developed in more than 11,000 women and killed 3,600 women [18]. Cervical cancer is the 2nd most common cancer in the world but it is a major cancer in India [19]. It account for more than 50% of all malignancies of the female genital tract and 12% of all female cancers. In India annually 1, 00,000 women fall prey to cervical cancer and it constitutes 16% of the world's annual incidence every year. Carcinoma of the cervix is one of the most common cancers in the world, only Cancer breast has a higher incidence than cancer cervix [20].In developing countries, the incidence of cancer cervix is often equal to mortality. Globally there an estimated 4,50,000 new cases of cervix each year, with 3,00,000 deaths If the undiagnosed cases are taken into account, the number of new cases diagnosed each year would be 9, 00,000 worldwide [3].

In India cervical cancer is most common in women approximately 132,000 new cases were diagnosed every year and 74,000 women die due to this cancer globally Each year nearly 500,000 new cases diagnosed from which nearly 270,000 women actually die [8].

Chennai had the highest incidence rate of cervical cancer in India. On the other hand, district wise incidence rate of Pondcherry is 39.2/100,000 which is higher than that of incidence rate of Tamilnadu, and Chennai [21].

Cross sectional study conducted on 282 female sex workers. Results of the study shown that HPV DNA was detected in 85% of FSW among them HPV 52 infection was common. Prevalence rate among Female sex workers who were serving 25 or more clients per month is 93 %. HPV prevalence was higher among female sex workers with regular male partners who had other female partners 95% [22].
The prevalence of HPV infection and cervical abnormalities among 369 female commercial sex workers in the Philippines were examined. HPV DNA was detected in 211 (57.2%) women, among whom 46 HPV types were identified. Only 27% of these women were positive for HPV16 and18 the current vaccines may not be sufficient for preventing infection and the development of premalignant lesions of the cervix in women in the Philippines [23].

Cervical cancer: Case report updates

A study on role of husbands and commercial sex workers. Samples for this study were husbands of women with and without cervical neoplasia and commercial sex workers. Structured interview is used to collect the data, along with that cervical and penile scraping were collected and tested for HPV DNA. Results shows that prevalence of oncogenic HPV was higher in CSW's and HPV infections found more in females whose husbands were having unprotected intercourse with prostitutes. In conclusion investigator stated that CSW's in Bangkok are reservoir of oncogenic HPV and cervical cancer [24]. A study was conducted on prevalence of HPV and Herpes simplex virus infection in commercial sex workers of Korea. In order to investigate the prevalence rate of HPV and Herpes simplex 188 CSWs were selected. The result shows that 83.5% of CSWs were having HPV infection [25].

Another study regarding prevalence of HPV and its correlation with cervical lesions in

commercial sex workers in Japan. Surveys were conducted on 564 CSWs and 233 control subjects along with that cervical cytological examination also done on 247

Table 2 WHO published report on screening programme in developing countries. [38]

Country	HPV DNA	Cytology
	Sensitivity	Sensitivity
South Africa	73	68
Costa Rica	88	78
China	98	94
Zimbabwe	81	44
Germany	89	20
U.K.	95	79
New foundlad	68	27

CSWs and 233 control subjects with the objective to investigate the prevalence of HPV infection and its correlation with cervical lesions in CSWs. Results shows that prevalence rate of HPV infection was higher ($p<0.001$) in CSWs than in control subjects. Cytological grades were examined results show that grade IIIa and class IV was significantly higher in the HPV positive CSWs than in HPV negative commercial sex workers [26].

Screening of cervical cancer: An overview

Cervical cancer begins with HPV infection; it can be prevented if it is detected early. Cytological screening is the most useful criteria used to detect cervical carcinoma, since cytological screening introduction is more than 50 years ago. It is used throughout the world to identify precancerous and cancerous lesions in developed countries procedure has been contributed to the 70 to 80% in reduction of cervical cancer cases [27].

Results shows that HPV normally infect their natural host, human resulting genital wart in the external and internal genitalia the infected epithelial cells shows condylomas which are indicative of the HPV infection. Transmission of HPV is facilitated by the presence of macerated epithelial tissues [28]. A study was conducted to find out socio demographic predictors of adherence to annual cervical cancer screening in minority women of Philadelphia. It stated that the Pap test is a effective mechanism for reducing the morbidity and mortality from cancer of cervix [29].

A study on cervical intraepithelial neoplasia, management protocols. It was found that worldwide cancer of cervix is the most common cause of mortality. It also shows that screen studies by agency of health care and policy research concluded that the sensitivity of pap smears was 51% with increased with 3 annual pap smear to 86.8% [5].

On screening tests in developing countries reported that despite having greatest burden of cervical cancer in these countries. In this study researcher has also given information regarding screening tests which can be carried out at low resource setting in developing county like India. Those tests are VIA Visual inspection with acetic acid. If this test is positive then patient is shifted to district hospital for secondary prevention [30].

Effective screening programmes for cervical cancer in low and middle-income developing countries states that, in developed country like America it is mandatory that there should be screening programme for cervical cancer at least for thrice in the year, due to this mortality rate among women due to cervical cancer is decreased, unfortunately this scenario is totally opposite in the low and middle income developing countries like South Africa, where they do not have adequate financial support, manpower resources and capacity in their health services to organize and sustain a screening programme of any sort [31].

Human Papilloma virus-based and other novel options for cervical cancer screening in developed and developing countries. In this article they reported, that screening for cervical cancer precursors by cytology has been very successful in countries where adequate resources exist. Mortality reductions in excess of 50% have been achieved in many developed countries; however the procedure is generally inefficient and unworkable in many parts of the world where the appropriate infrastructure is not available especially in middle and low income countries [32].

During 1965-2005 on cervical cancer with emphasis on screening by Pap smear and other alternative methods. After reviewing results of those studies they concluded that, cervical cancer is the commonest cancer among Indian women [33]. In many developed countries a decline in the incidence and mortality due to cervix cancer has been observed in the past 30 years due to cytology screening programme [4].

DNA test betters Pap test in detecting cervical cancer: The human papillomavirus (HPV) screening test for cervical cancer is far more accurate than the traditional Pap test. News also reported a Canadian study done by Eduardo Franco, he states that the HPV test's accuracy in detecting pre-cancerous lesions at 94.6 percent, as compared to 55.4 for the Pap test. This study consist of sample 10,154 women aged 30-69 in Montreal, Quebec and St. John's, Newfoundland from 2002-2005 [34].

On Pap smear screening and cervical cancer mortality in Sweden in this investigation is an attempt to evaluate the effectiveness of the gynecologic Pap smear screening program in terms of reduction of mortality from cervical cancer. The analysis gave a calculated 53% reduction in cervical cancer mortality (95% confidence limits 23–72%) after screening with Pap smear. In conclusion she stated that Pap smear screening has had an important impact on the reduction in cervical cancer mortality [35].

A community-based cervical cancer screening program among women of Delhi using camp approach. Objective of this study is to find out number of cervical cancer cases among patients reporting to a general health care camp through screening program. Cross-sectional study done among 432 women attending cancer awareness camps. Pap smears of all the symptomatic patients were collected. Study results shown that the perceived gynecological morbidity was observed to be 59.8%. The smear of the women who were suspected of carcinoma on clinical examination was confirmed to be the cases of carcinoma-in-situ (7.8%) and high-grade neoplasia (2.9%) on laboratory investigations. The findings of the study highlight the utility and need of cancer cervix screening among the women at regular intervals through camp approach in the community [36].

A study regarding Pap smear screening among tribal women in Palakkad district under RTI control programme. Even though this is the accepted method of screening for cancer of the uterine cervix, this test is useful in detecting reproductive tract infections also [37].

Treatment and prevention of cancer

A member of the Apollo Hospital consultant committee for Human Papillomavirus Vaccine (HPV) said that the vaccine will be launched by November 2008. It has already been in use in the US for two years [38]. More than 130,000 new cases, about a fourth of the global total of cervical cancer cases are reported in India every year, with only breast cancer having a higher incidence. An estimated 74,000 Indian women die annually from the disease.

A study shows that on adult women approximately 20 percent of adults become infected with human Papilloma virus type 16 (HPV-16).In this double-blind study, 2392 young women randomly assigned to receive three doses of placebo or HPV-16 virus-like-particle vaccine (40 microg per dose), given at day 0, month 2, and month 6. Samples were obtained at enrollment, one month after

the third vaccination, and every six months thereafter. Biopsy tissue was evaluated for cervical cancer and analyzed for HPV-16 DNA. The primary end point was persistent HPV-16 infection, defined as the detection of HPV-16 DNA in samples obtained at two or more visits. The incidence of persistent HPV-16 infection was 3.8 per 100 woman-years at risk in the placebo group and 0 per 100 woman-years at risk in the vaccine group (100 percent efficacy; 95 percent confidence interval, 90 to 100; P<0.001). All nine cases of HPV-16-related cervical intraepithelial neoplasia occurred among the placebo recipients [39].

A study on Human Papilloma virus infection and cervical cancer prevention in India, Bangladesh, Sri Lanka and Nepal and found that "although one-third of the world cervical cancer burden is endured in India, Bangladesh, Nepal and Sri Lanka, there are important gaps in our knowledge of the distribution and determinants of the disease in addition to inadequate investments in screening, diagnosis and treatment in these countries [40].

In India, the most common (98%) oncogenic types are HPV types 16 and 18 with HPV 16 exclusively (80-90%) prevalent. Two recently developed virus-like particles (VLP) based prophylactic HPV vaccines, quadrivalent. Gardasil (HPV 16/18/6/11) and Cervarix (HPV 16/18) offer great promise. Several other therapeutic vaccines are also in clinical trials and are yet to establish their efficacy. The use of already developed VLP vaccine in resource-poor regions is limited by several factors in India [41].

HPV 16 & 18 infection starts soon after the first sexual congress. Preliminary studies have demonstrated that 70 per cent of the deaths can be avoided by vaccination. The major advantage of the vaccine is the fact that time-consuming and expensive tests and post-test treatments could be avoided [42].

Cervical cancer can be prevented through mass education, appropriate screening, treatment, follow up and vaccination.HPV vaccine is the treatment modality used to prevent cervical cancer which mainly targets the HPV 16 and 18. Recommended age for initiation of vaccination among girl is 12 to 26 years, it is to be given in 3 doses [43].

A study was conducted on 12000 women in 13 countries who were given 3 doses of the vaccine within 6 months and were monitored for 2 yrs, results shows that vaccine prevents 100% of high grade cancer cervix [44]. In June 2006 the first vaccine against HPV infection was approved and marketed as Merck's Gardasil in April 2007 [27]. It has been registered in more than 70 countries. It prevents infection with two of the most common cancer causing type of HPV 16 and 18. It is given in dose of 0.5 ml injection IM, 3 doses are given. Second dose should be given after first dose given and the third about six months after the first. Second vaccine Cervarix also protects against infection with HPV 16 and 18. Clinical trials have found that both vaccines have been at least 95% effectiveness in preventing HPV infection.

Cervical cancer is the most common cancer among women in many developing countries. Despite the public health importance that cervical cancer deserves, there are no organised population based screening programmes. Screening alone will not prevent a single case of cervical cancer. It required an effective system for treatment and follow-up of women who diagnosed positive for cervical cancer is the most important component of a successful cervical cancer prevention programme [45].

Planned health education related to cervical cancer

A study on effectiveness of structured teaching guide about cancer cervix , in term of knowledge and preventive practices study results shows that The finding showed that 16(53.33%) of wives were found to have low risk and 14(46.7%) had high risk for getting cancer cervix. The mean percentage of risk status for cancer cervix was 29.85. The mean knowledge scores of the wives in pretestposttest I and posttest II were 2.80,

20.30 and 21.23 respectively. There was a gain in post test score after the STG. The mean knowledge score of the husband in pretest, post test score I and posttest II were 5.99, 17.37 and 18.70 respectively. The post test scores were higher than their pre test scores. The area wise mean post test knowledge score of the couples was higher than their area wise mean pretest knowledge score [46]. The paired' test value of husband knowledge score for pretest and posttest I was $t = 27.4$, $p<0.05$. The paired t value of husbands knowledge for posttest I and posttest II was $t = 27.07$, $p<0.05$. The paired t test value of the wives knowledge score for pretest and posttest I was $t= 27.07$, $p=<0.05$. The paired t test value of the wives knowledge score for pretest II and posttest II was $t= 28.68$, $p< 0.05$. Thus it is found that STG is effective in improving the knowledge. The overall pretest practice score of the wives was 15.96 and posttest practice was 22.06, $t= 12.63$ ($p<0.01$).The mean pretest practice score of the husband is 6.43 and posttest practice score was 7.26,was not significant.85.5% of wives underwent medical examination for STI. 79.2% of the wives undergone pelvic examination and Pap smear test, none had undergone VIA. Among the husband, 36.3% had undergone physical examination to rule out STI.

A study on women's knowledge about cervical cancer practice and cervical cancer screening results shows that total 135 of women attended screening among them only 40% were aware about the screening test of cancer cervix [47].

Another study on knowledge barriers related to cancer cervix screening among Korean women. The findings of the study show that major structured barriers were economic, time. The main psychological barriers were fear, denial, confusion, fatalism [48].

Structured teaching programmes improves early detection and prevention of cervical cancer major findings of the study are during pretest out of 60 women only 41 (68%) had inadequate knowledge regarding cancer cervix , 19 (68%) had moderate knowledge, whereas no one of them had adequate knowledge. The post test results shows that knowledge of women increased in post test, 51 (55%) women had adequate knowledge, 9(15%) had moderate adequate knowledge. Findings also show that there is association between demographic variables and knowledge scores of women [49].

The morbidity and mortality of cervical cancer could be nearly eliminated, if women participated in regular screening and evaluation. The need of the hour is to create public awareness about the prevention of cancer of cervix through mass media. The target population should be entire population with greater emphasis laid on women above 15 years and commercial sex workers [50].

Conclusion

Cervical cancer remains unchartered territory for many practising physicians. Treatment of cancers at this site is often difficult because of the cervical location and most tumors are locally advanced with invasion of surrounding vital structures. To improve survival outcome and reduce morbidity and mortality rates, future studies should focus on earlier detection of these cancers and improving treatment design by investigating innovative radiation schedules and identifying the optimal backbone of systemic therapy. All the above studies helped the investigator to understand the magnitude of the problem. As a citizen and professional nurse, the investigator felt the responsibility to educate and facilitate early detection of cancer of cervix that could be controlled if appropriate teaching and dissemination of information was made. It helped the investigator in formulating the problem statement, select appropriate methodology, and constructs the tools for data collection, for smooth planning and implementation of study.

Reference

[1] Joshi S. K, Jadon G, (2012). Introduction to Neoplasm: Tumor Classification a Review Article. *IJARPB* 2277-6222 ; 1 (2):239.

[2] Mehta ,R.S. (1983). Oncology Nursing. New Delhi: *Jaypee publishers* ; 1-9

[3] Isaac, S. (2009). Cancer of cervix, knowledge and attitude of women. *Nightingale nursing times*; 5(1): 7-8.
[4] Dinshaw, K.A, Shastri, S.S & Patil, S.S. (2001) Cancer control programme in India, challenges for new millennium. Health Administrator; XVII. 1:10-13.
[5] Virochana, K. (2005). Cervical cancer intraepithelial neoplasia management protocoals. *Obstetrics and gynecology*; 10(4): 221-224.
[6] Boswell, C, & Cannon, S. (2007). Introduction to Nursing research.1st edition, Boston: *Jones and Bartlett publishers*; 98.
[7] Mehta, R.S. (2007). Oncology Nursing.1stedition. New Delhi: *Jaypee publication*;, 175-195.
[8] Khunteta, N. (2009). Cervix cancer vaccine. Gynecol. Oncol; 115:S15-23
[9] Khan, R. (2004). Five teacher's gynaecology. 3rd edition. New Delhi: CBS publishers and distributors; 189-191.
[10] Pdubidri, V.G. (2006). Gynaecology review series. 3rd edition. New Delhi: *Elsevier*; 206-208.
[11] Dutta, D.C. (2003). Textbook of Gynaecology. 4th edition. Calcutta: New central book agency; 316-320.
[12] Sivanesartham, V. (2005) Essential of Gynaecology. 2nd edition. New Delhi: *Jaypee publication*;203- 204.
[13] Panda, U.S. (2007) Handbook of Gynaecology and Obstetrics. 1st edition. New Delhi: *AITBS* ; 169- 172.
[14] Berek, J.S. (2007). Textbook of Gynaecology. 14th edition. New Delhi: *Lippincott and Wilkins*;, 323 – 324.
[15] Sankaranarayanan, R, Budakh, A, & Rajkumar, R. (2001). Effective screening programme for cervical cancer in low and middle income developing countries. *Bulletin of World Health Organisation*; 79(10).
[16] American cancer society, Los Angeles times. (2007). Cervical cancer test improves detection..
[17] Cervical cancer screening report of developing countries. (2002) World Health Organisation..
[18] Yahoo news .(2008). Cervical cancer prevention in U.S should focus on vaccinating adolescent girls and revising screening policies.
[19] Das, B.C. (2003). HPV infection and cancer cervix. *Obstetrics and Gynaecology* ;8(1).347-352.
[20] Williams, L. (2005). Professional guide to diseases.18th edition. Philadelphia: *Spring house publication*; 135-135.
[21] National cancer Registry programme development of an atlas of cancer of India. 2004.
[22] Hernandez, B. Y, Thuong, .Vu .N. (2008) Cervical Human Papilloma Virus infection among female sex workers in Southern Vietnam. *Infection agent of cancer cervix*.3 (7).
[23] Miyashita, M, Agdamang, D.M, & Sasagawat, T. (2009). High risk HPV types in lesions of uterine cervix of females sex workers in Philippines. *J Med Virol*.81(3).545-551.
[24] Thomas, D.B, Ray, R.M, Kuypers, J.(2001). Human papillomaviruses and cervical cancer in Bangkok. III. The role of husbands and commercial sex workers. *Am J Epidermiol;* 15;153(8):740-8
[25] Yun, H, Park, J, Choi, I. (2008). Prevalence of human papillomavirus and herpes simplex virus type 2 infection in Korean commercial sex workers. *J Microbiol Biotechnol* ; 18(2): 350-4.
[26] Ishi, K, Suzuki ,F.(2000). Prevalence of human papillomavirus, Chlamydia trachomatis, and Neisseria gonorrhoea in commercial sex workers in Japan. *J Obstet Gunaecol Res*; 26 (4): 253-7
[27] Castilaw, D & Wittet, S. (2007). Preventing cervical cancer: unprecended opportunities for improving women's health: Outlook, vol.23 (1).1-8.
[28] Krous e.J. (1994). Screening of HPV. *Br Med J*; 309: 590-91
[29] Kathleeen.J. (2000). Socio demographic predictors of adherence to annual cervical cancer screening in minority women: Cancer nursing; .23(5).350-356.
[30] Lynette, D, Quinn, M & Sanskarnarayannan. (2006). Screening for cervical cancer in developing countries. *Vaccine;*24S3, S3/71-77

[31] Sankaranarayanan, R, Budakh, A, Rajkumar, R. (2006). Effective screening programme for cervical cancer in low and middle income developing countries. *Bulletin of World Health Organisation;* 79(10).

[32] Cuzick, J, Arbyn, M, Sanskarnarayannan, Tsu, V, Ronco, G, Mayrand, M.H, Dillner, J & Meijer, C.J. (200). Overview of Human Papilloma Virus – based and other novel options for cervical cancer screening in developed and developing countries: *Vaccine*; 10: K 29-41.

[33] Patro, B.k, Nongkynrih, B. (2007). Review of screening and preventive strategies for cervical cancer in India: *Indian J Public Health*; 51(4).216-221.

[34] Yahoo news. (2008). New cervical cancer test beats Pap smear test.

[35] Mahlak, C.G, Johnson, H,& Lenner P. (2004). Pap smears screening and changes in cervical cancer mortality in Sweden. *International journal of Gynaecology and Obstetrics*.267-272.

[36] Sharma, P, Rahi, M, & Lal, P, (2010). A community – based cervical cancer screening programme among women of Delhi by using camp approach. *Indian J Community Med*. 35(1). 86-88.

[37] Kalavathy, M.C. (2010) RTI control programme by Pap smear screening among tribal women in Palakkad district. Centre for Development studies- UPR

[38] Bhave, **S**. Cervical cancer vaccine heads for India..

[39] Koutsky, L.A, Ault, K.A. (2002) A controlled trial of HPV type 16 vaccine. *N Engl J Med*;347:1645-51.

[40] Sanskarnarayanan. (2009). HPV vaccination the promise and problem. *Indian Journal of Medicine Res* ;130, 322-326.

[41] Bharadwaj, M, Hussaine, S, Nasare, V. (2009). HPV vaccination: Issues in developing countries. *Indian Journal of Medicine Res* 130. Sep 2009. 327-333.

[42] Nair, K.M. (2009). Vaccination option for cervical cancer. *N Engl J Med*;360:1385-94

[43] Nalini, S.J. (2009) Cervical cancer: a preventive. *Nightingale Nursing Times*. November. 5(8).31-32.

[44] Desai, P. (2007). Recent trends in Obstetrics and Gynaecology. 1st edition. New Delhi: BI publication; 152-155.

[45] Nongkynrih, B, Srinivasan, R, & Varghese, C. (2008). Cervical cancer screening programme for low resource setting a pragmatic approach. *Regional health forum*. 12(2). 5-15.

[46] Maragatham, Prakash, R. (2012). Effectiveness of structured teaching guide about cancer cervix, in terms of knowledge and preventive practices. *The Nurse journal*; 2(1). 11-14.

[47] Twinn, S. (2002). Women's knowledge about cervical cancer and cervical screening practice. *Cancer nursing an international journal for cancer cares*. 25(5). 377-383.

[48] Lee, M.C. (2008). Knowledge, barriers, motivators related to cancer cervix screening among Korean –American women .*Cancer Nursing Journal*; 23(3). 168-175.

[49] Mohanraj, J. (2008). Study regarding structured teaching programmes. *Nightingale nursing times* ; 4(9). 24-28.

[50] Nemcek, F. (1990). Maternity and Gynecological Nursing.5thedition. *Philadelphia: Mosby publication*; 148-149.