Impact of socioeconomic risk factors on carcinoma cervix: Hospital based pap smear screening of 2 years in Bihar

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Abstract

Introduction: Cervical cancer is leading cause of cancer related morbidity and mortality in Indian women with 123,000 new cases and 67,000 deaths annually. Various socioeconomic associated factors like Income, education, parity, early age at marriage and low awareness about risk factors and symptoms play contributory in initiation and progression from dysplasia to frank cervical carcinoma.

Aim: According to National Family Health Survey (NFHS) State fact sheet Bihar year 2015-16, National Census of India year 2011 and Annual Health Survey year 2012-13, various above mentioned socioeconomic associated factors etiological are highly prevalent in female population of Bihar leading to growing number of cervical cancer patients. This study was carried out in a 199 bedded zonal hospital in Bihar to assess the impact of these factors on routine screening cervical pap smears and correlate the findings.

Materials and Methods: Cross sectional study carried out by analysing 860 cervical pap smears at a 199 bedded hospital in Bihar from January 2015 to December 2017 with pre defined socioeconomic variables. Majority of patients were from low socioeconomic rural background.

Result: Result showed linear correlation all the above risk factors to development of cervical cancer other then level of formal education.

Conclusion: More awareness specific to cervical cancer is needed for effective control of cervical cancer. Also more access and effective implementation of cervical cancer screening programs nearest to rural patients and overall improvement in socioeconomic parameters will go a long way in reducing the burden of cervical cancer in developing countries.

Keywords: Cervical cancer awareness in Bihar, The bethesda system, Socioeconomic factors, Risk factors, Poverty, Illiteracy.

Introduction

Cervical cancer has become one of the most important preventable cause of morbidity, mortality and financial burden to modern society worldwide. GLOBOCON 2012 report estimated 528,000 new cases and 266,000 deaths due to cervical cancer annually. Around 85% of these cases were detected in developing countries. In India, cancer statistics reveal 123,000 new cases with 67,000 deaths with 5-year prevalence of 3,09,000 cases of cervical cancer.1,2 Increasing incidence of cervical cancer in developing countries could be attributable to wide spread prevalence of various etiological and associated socio economical contributory factors like chronic human papilloma virus infection, illiteracy, high parity, poor hygiene, early age of marriage and first pregnancy and most importantly, lack of awareness of symptoms and delayed reporting to hospital due to social stigma.2 Most of the patients reporting to Gynecology OPD are either not aware about various symptoms of cervical cancer like vaginal bleeding after menopause, vaginal bleeding during and after sex, persistent vaginal discharge, hematuria and in advanced cases, mass per vaginum.

Natural history of cervical cancer development follows stepwise progression from normal cervix to pre invasive intraepithelial lesions, carcinoma in situ and frank carcinoma and gives ample opportunity for early diagnosis, treatment and prevention. Various population based mass screening methods like cervical cytology by Pap stain, liquid based cervical cytology, automated cervical screening techniques, visual examination by applying acetic acid and lugol’s iodine at affected area are available for peripheral health care facilities.3 However, most commonly used method is cervical Pap smear study by 2001 The Bethesda System (TBS) because of its high sensitivity, cost effectiveness in identifying probable cases, ease of study and easy categorization of all suspected cases of cervical cancer.4 As per the National Family Health Survey (NFHS) State fact Sheet Bihar Year 2015-16,5 National Census of India year 20116 and annual health survey year 2012-13,7 Various above mentioned etiological factors are highly prevalent in female population of Bihar leading to growing number of cervical cancer patients. Around 85-90% of total population of Bihar lives in rural areas with effective literacy rate of 46.3%. About 41% rural women aged between 20-24 years get married before 18 years of age.8 Total Fertility rate among rural women is 3.6 children per woman. Most of the rural women in Bihar do not get proper nutrition. According to NFHS 2015-16. Around 31.8 rural women in Bihar have Body Mass Index below normal (BMI<18.5kg/m2). Most importantly, only 12.1 % of women from Bihar aged 15-45 years have undergone examination of Cervix, out of which 12.3 % are rural and 10.9 % are urban.9 Because of prevalence of these wide spread contributory factors causing cervical carcinoma, This cross-sectional study was carried out at 199 bedded...
zonal hospital to correlate impact of socioeconomic risk factors like income, education, parity, awareness about symptoms and risk factors of carcinoma cervix in present scenario and spread awareness.

Materials and Methods
Retrospective study was carried out by analyzing 860 cervical Pap smears at a 199 bedded hospital in Bihar from January 2015 to December 2017. Majority of patients were from low socioeconomic and educational background with rural background. For all patients, different socioeconomic variables like level of income, level of education, parity and awareness about risk factors were noted. For this study purpose, level of income was divided in low, medium and high based on income, 10,000-30,000/per month and >30,000/per month respectively. Education level was divided into illiterate and literate based on whether patient has received any formal education or not. There were no exclusion criteria. All smears were taken from Squamo-columnar Transition zone by conventional Ayre’s Spatula by trained personnel, spread on glass slide and fixed with 95% Ethyl alcohol and stained with Pap stain. All smears were analysed for various age specific parameters between 21 yrs-70 yrs on continuous variable as per 2001 The Bethesda system of reporting of cervical Pap smears and data was analysed using microsoft excel 2010.

Results
All 860 Pap smears studied as per the Bethesda system, 2001 for reporting of cervical Pap smears (Table 1). Total 41 smears were found unsatisfactory for evaluation due to various reasons like >75% obscuring inflammation, hemorrhage and absence of minimum squamous cellularity of 8000-12,000 Squamous cells. Age specific analysis of data revealed 44.19% (380/860) were from 31-40 yrs age (Table 2). Mean age of patient was 38 yrs. Total 77.44% (666/860) Pap smears showed abnormal results including inflammation and epithelial abnormalities.

Table 1: The bethesda system of reporting Pap smear (2001)

| Specimen Adequacy | Satisfactory/Unsatisfactory |
|------------------|---------------------------|
| General Categorization | Negative for Intraepithelial Lesion or Malignancy (NILM) |
|                   | Epithelial Abnormality   |
|                   | Others                  |

Table 2: Age wise distribution

| S No | Age (in yrs) | Number of cases | Percentage (%) |
|------|--------------|-----------------|----------------|
| 1.   | 21-30        | 153             | 17.79          |
| 2.   | 31-40        | 380             | 44.19          |
| 3.   | 41-50        | 218             | 25.35          |
| 4.   | 51-60        | 86              | 10.00          |
| 5.   | 61-70        | 23              | 02.67          |
| Total| 860          | 100             |                |

Abnormalities Negative for intraepithelial lesion or Malignancy (NILM) was reported in 90.23% (776/860) smears. Inflammation was seen in 72.44% (623/860) smears. Further analysis of these smears showed inflammation due to Trichomonas Vaginalis, Candida and non specific inflammatory changes. Reactive changes due to inflammation and intra uterine contraceptive device were seen in 17.79% (153/860) smears. Out of all smears, 5.0% (43/860) showed various Epithelial abnormalities including Low grade Squamous Intraepithelial Lesion (LSIL) and High Grade Intraepithelial lesion (HSIL). No cases of frank squamous cell carcinoma, atypical glandular cells or adenocarcinoma were reported. Maximum patients showing epithelial abnormality were from 31-40 years (Table 2).

Table 3: Incidence of various pathology (n=860)

| S. No | Category                               | Number of Cases | Percentage (%) |
|-------|----------------------------------------|-----------------|----------------|
| 1.    | Negative for Intraepithelial Lesion or Malignancy (NILM) | 776             | 90.23          |
|       | a) Reactive Cells                        | 153             | 17.79          |
|       | b) Inflammatory Smears                   | 623             | 72.44          |
| 2.    | Epithelial Abnormality                   | 43              | 5.00           |
| 3.    | Unsatisfactory for Evaluation            | 41              | 4.77           |
| Total |                                         | 860             | 100            |
null
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