

Different Socioeconomic Factors Associated with Cervical Cancer

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Abstract— Cervical cancer is the third most common cancer among women. It account for 13% of all female cancers and 85% of these new cases occur in developing countries. This study is a critical review of literature concerning with different risk factors of cervical cancer. In the last section of the study discussion is made for further research point of view.

Index Terms— Cervical cancer, Risk factors of cervical cancer, Socio-economic status

I. INTRODUCTION

Accounting for approximately one-fourth of all deaths, cancer is the second leading cause of death among U.S. adults, in recent years[1],[2]. More than 80% of cancers are found occurred in developing countries[3]. Of 1.5 million estimated new cases of cancer in 2009, 24% were reported breast, colorectal, and cervical cancers[4],[5]. It was also reported that low rates are more troublesome for populations of lower socio-economic status (SES) due to disproportionate cancer incidence and mortality experience[6],[7],[8].

SES is also defined as the social and economic standing of an individual within a hierarchically stratified society that has consistently been associated with cancer screening rates. Low-income, less education, and working-class populations were found less likely to have obtained and maintained cancer screening than their counterparts [8]-[13]. The risk was observed greater in some studies originating from North America and in studies originating from South America, Asia and Africa, approximately a 100% increased risk was observed among the low social class group when compared to the high social class group.

In this study we have considered various studies concerning with different socioeconomic factors associated with cervical cancer viz. increasing age, marital status, education, financial status, occupation, household income, neighborhood income, financial dependence of females on their husbands, women having male partner sole decision maker of the family, use of clothes instead of tampons or sanitary pads during menstruation, sexually activeness, multiple sexual partners, human papillomavirus infection, early onset of sexual activity, inter menstrual bleeding, post-menopausal bleeding, offensive vaginal discharge, prolonged use of family planning pills and injections, having many pregnancies, gender preference, consultations with a gynecologist, conversation with the women, media exposure to information about cervical cancer prevention, open communication, social networks, rural females, women with no previous knowledge of cervical screening tests, Females

in resettlement villages, women in traditional rural reserve villages, health region, knowledge of any risk factor for cervical cancer, recent doctor's visit, and having health insurance.

One of the study conducted in Nigeria from 1973 to 1976, revealed that 80% of the patients, considered in the study had no formal education and were belonging to lower socioeconomic groups. Study reported that 88% women got married before the age of 20, and 76% were frequent coitus[14].

We came across a study considering 556 women registered with the Trent Cancer Registry from 1971 to 1984. In this study five year survival for all cases was reported 49%. Study also reported increasing age, as a risk factor. Socioeconomic status is observed having little effect on survival of women[15].

In one of the studies conducted in Maharashtra, India between 1999 and 2003, 100800 women aged 30–59 years were considered for screening. In this study 932 women diagnosed with high-grade lesions. This study reported that screened women were younger (aged 30–39), better educated and had ever used contraception [16].

In a case-control design conducted in four public primary health care institutions in the capital city of Serbia, Belgrade during the year 2008. Study was found considering women aged 18–70 years as cases and as the controls study considered the women with no Pap smears within the last 4 years, matched by age and education and marital status with the cases. Study revealed a significant association between better financial status [odds ratio (OR)= 5 10.8, P= 5 0.001], no gender preference for a gynecologist (OR =5 3.1, P= 5 0.015), consultations with a gynecologist (OR =5 4.7, P= 5 0.029), conversation with the women with cervical cancer about that disease (OR= 5 2.8, P= 5 0.029) and higher media exposure to information about cervical cancer prevention (OR= 5 5.0, P= 5 0.004) with adherence to cervical cancer screening practices. Study concluded that open communication, social networks and improving social-economic status of women as the most prominent factors of society [17].

We came across a study dealing with 514 randomly selected, sexually active, rural females between 12 to 84 years of age. According to the study 91% had never undergone cervical screening and 81% had no previous knowledge of cervical screening tests. Educational intervention was observed resulting beliefs of 80% women turning positive towards cervical screening tests. In this study financially independent females were found 6.61% more likely to access cervical screening compared with those who were dependent on their husbands. Females in resettlement villages were also observed 20% less likely to access cervical screening than women in traditional rural reserve villages in the same study [18].

In one of the study 812 women with average age of 35.51 ± 10.64 years were considered in 2010. Study found only

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9.59% women who had ever heard of cervical cancer. Most of the women were observed belonging to upper socioeconomic group with only 11.62% women who had undergone at least once cervical screening in their life time. In case of 47.20% women male partner were found the sole decision maker of the family. This study also revealed that 73.65% of the respondents were using clothes instead of tampons or sanitary pads during menstruation [19].

In another cohort study, women between the ages 18 and 70 years, eligible for Papanicolaou testing, were observed participated. In this study, 3.7 million women were reported eligible for screening, of these, 69% had had Pap tests in the past 3 years. Women residing in the lowest income neighborhoods were revealed half as likely to screen (odds ratio 0.56, 95% CI 0.55 to 0.56). Study reported various associated socio-demographic factors viz. age, neighborhood income level, and health region [20].

In one of the cross-sectional studies in Italy, data was drawn from national health interview survey 2004-2005. In this study 15,486 women aged 50-69 years were considered for mammography and 35,349 women aged 25-64 years for Pap smear. Results of the study revealed positive association between education and occupation with attendance to both screening. Women having higher levels of education were reported more likely to have a mammogram than women having a lower level (OR = 1.28; 95% CI = 1.10-1.49). In the same study women in the highest occupational class were found having a higher likelihood of cervical cancer screening compared to those in the lowest class (OR = 1.81; 95% CI = 1.63-2.01) [21].

In another cross-sectional study conducted in Kerala, India in the year 2009, 809 women were selected from four Panchayats. In this study mean age of the study population was found 34.5 ± 9.23 years. It was reported that three fourths of the population (74.2%) knew the fact that the cervical cancer could be detected early by a screening test. 89.2% respondents were observed having no knowledge of any risk factor for cervical cancer in the study [22].

A study considered data between 1987 and 2008 from the Demographic and Health Surveys in Bolivia, Brazil, Dominican Republic, Ecuador, Guatemala, Nicaragua, Peru, and Trinidad and Tobago to assess the impact of health care access and socioeconomic determinants on Pap smear screening in Latin America. The proportion of women with Pap smear screening was found below 55% in all the considered countries. Study reported age, education, and recent doctor's visit as key determinants of knowledge of Pap smears. In this study women were found 1.47 to 3.44 times more likely to receive a recent Pap smear if they had a recent doctor's visit. Study also disclosed that the poorest women with a recent doctor's visit were more likely to screen than the richest women without a recent visit [23].

A cross-sectional design resulted, on the basis of 573 Chinese American women aged 18 years and older, that age is significantly related to screening status [$\chi^2_{(4)} = 36.30$]. Younger women (aged 18-39 years) were found more likely to be never-screened (46.8%) than women in the 40-64-year age group (20.6%) and the 65+ age group (19.7%). In this study marital status was also found significantly related to screening status [$\chi^2_{(2)} = 34.94$]. Unmarried women were found reported never-screened than married women (47.1% versus 22.4%). In the same study unemployed women (37.6%) were reported never-screened than employed

women (22.5%) [$\chi^2_{(2)} = 15.71$]. Annual household income was also reported associated with screening status [$\chi^2_{(4)} = 29.54$]. In this study educational status and screening status were not found reported having a significant relation [24].

One of the studies studied the data of a cohort of 30,958 women who constituted the unscreened control group in a randomized screening trial conducted in India. Study reported mean follow up time of the control group 5.76 years (SD 1.18) with 178517 person years of observation (PYO) and the crude cervical cancer incidence rate 88.5 per 100 000 person years. This study disclosed that women of increasing age (HR=2.4; 95% CI: 1.6, 3.8 in 50-59 vs 30-39), having many pregnancies (HR=7.1; 1.0, 52 in 4+ vs 0) and no education (HR=0.6; 0.2, 0.7 in high vs none) were found at significantly increased risk of cervical cancer [25].

In a cross-sectional population-based survey conducted in Uganda in 2012, a sample of 448 persons aged 18 years and above was included. In this study most participants (444/448) were found heard about cervical cancer. Different risk factors including multiple sexual partners, human papillomavirus infection, and early onset of sexual activity, were reported recognized by 88%, 82%, and 78% of respondents respectively. 63% of participants were observed believing that prolonged use of family planning pills and injections caused cervical cancer. In the same study majority of participants also recognized symptoms of cervical cancer including inter-menstrual bleeding (85%), post-menopausal bleeding (84%), and offensive vaginal discharge (83%). Study also disclosed that 70% of participant had belief that cervical cancer is preventable and 92% believed that it is curable if diagnosed at an early stage [26].

II. DISCUSSION

On the basis of studies considered, we come to know that socio-economic status has its key role in prevalence and precaution of any disease. Today we know several risk factors of this disease but it seems that there is a need to work in such a way that can predict the risk of getting cervical cancer on the basis of information for combination of different risk factors for example for a women of a particular age at menarche, given age at marriage and given age at first full term pregnancy, what would be the risk that she will diagnosed with cervical cancer in premenopausal or in postmenopausal years?

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REFERENCES

- [1]. Jemal A I, Siegel R, Ward E, Hao Y, Xu J, Murray T, Thun MJ. "Cancer statistics", CA Cancer J Clin, vol.58, 2008, pp.71-96
- [2]. Sandi L. Pruitt, Matthew J. Shim, and Benjamin C. Amick III, Patricia Dolan Mullen, Sally W. Vernon. "Association of Area Socioeconomic Status and Breast, Cervical, and Colorectal Cancer Screening: A

- Systematic Review”, *Cancer Epidemiol Biomarkers Prev*, vol.18(10), 2009, pp.2579-2599.
- [3]. Parkin DM, Bray F, Ferlay J, Pisani P. “Estimating the world cancer burden: Globocan 2000”, *Int J Cancer*, vol.94, 2001, pp.153– 6.
- [4]. Smith RA, Cokkinides V, Eyre HJ. “American Cancer Society guidelines for the early detection of cancer, 2006”, *CA Cancer J Clin*, vol.56, 2006, pp.11–25
- [5]. U.S. Preventive Services Task Force. Guide to clinical preventive services: recommendations of the U.S. Preventive Services Task Force. Rockville (MD): Agency for Healthcare Research and Quality, 2007 2008/03/11/. Report No.: AHRQ Publication No. 07-05100.
- [6]. Meissner HI, Breen N, Klabunde CN, Vernon SW. “Patterns of colorectal cancer screening uptake among men and women in the United States”, *Cancer Epidemiol Biomarkers Prev*, vol.15, 2006, pp.389–94.
- [7]. Singh GK, Miller BA, Hankey BF, Edwards BK. “Area socioeconomic variations in U.S. cancer incidence, mortality, stage, treatment, and survival, 1975-1999”, Bethesda (MD): National Cancer Institute; 2003. NIH Publication No. 03-0000.
- [8]. Ward EI, Jemal A, Cokkinides V, Singh GK, Cardinez C, Ghafoor A, Thun M. “Cancer disparities by race/ethnicity and socioeconomic status”, *CA Cancer J Clin*, vol.54, 2004, pp. 78–93.
- [9]. Swan J, Breen N, Coates RJ, Rimer BK, Lee NC. “Progress in cancer screening practices in the United States: results from the 2000 National Health Interview Survey”, *Cancer*, vol.97, 2003, pp.1528–40.
- [10]. Katz SJ, Hofer TP. “Socioeconomic disparities in preventive care persist despite universal coverage. Breast and cervical cancer screening in Ontario and the United States”, *JAMA*, vol.272, 1994, pp.530–4.
- [11]. Nelson DE, Bolen J, Marcus S, Wells HE, Meissner H. “Cancer screening estimates for U.S. metropolitan areas”, *Am J Prev Med*, vol.24, 2003, pp.301–9.
- [12]. Phillips KA1, Liang SY, Ladabaum U, Haas J, Kerlikowske K, Lieberman D, Hiatt R, Nagamine M, Van Bebber SL. “Trends in colonoscopy for colorectal cancer screening”, *Med Care*, vol.45, 2007, pp.160–7
- [13]. Parikh Seema, Paul Brennan and Paolo B Offetta. “Meta-Analysis of Social Inequality and the Risk of Cervical Cancer International Agency for Research on Cancer, Lyon, France”, *Int. J. Cancer*, vol.105, 2003, pp. 687–91
- [14]. Emovon AC. “Sociocultural Factors Associated with Cervical Cancer in Bendel State, Nigeria”, *Int J Gynaecol Obstet*, vol. 15(3), 1977, pp. 253-5.
- [15]. Milner PC and M Watts. “Effect of Socioeconomic Status on Survival from Cervical Cancer in Sheffield” *Journal of Epidemiology and Community Health*, vol.41, 1987, pp.200-03
- [16]. Nene Bhagwan, Kasturi Jayant, Silvina Arrossi, Surendra Shastri, Atul Budukh, Sanjay Hingmire, Richard Muwonge, Sylla Malvi, Ketayun Dinshaw & Rengaswamy Sankaranarayanan. “Determinants of Women’s Participation in Cervical Cancer Screening Trial, Maharashtra, India”, *Bulletin of the World Health Organization*, vol.85(4), 2007, pp.264-272
- [17]. Matejic Bojana, Dejana Vukovic, Tatjana Pekmezovic, Vesna Kesic and Milica Markovic. “Determinants of Preventive Health Behavior in Relation to Cervical Cancer Screening among the Female Population of Belgrade”, *Health Education Research*, vol.26(2), 2011, pp.201–11
- [18]. Sylvia C. Mupepi, Carolyn M. Sampselle, and Timothy R.B. Johnson. “Knowledge, Attitudes, and Demographic Factors Influencing Cervical Cancer Screening Behavior of Zimbabwean Women”, *Journal of Women’s Health*, vol.20(6), 2011, pp.943-952.
- [19]. Singh S, Badaya S. “Factors Influencing uptake of Cervical Cancer Screening among Women in India: A Hospital based Pilot Study”, *J Community Med Health Educ* vol.2, 2012, 157. doi:10.4172/2161-0711.1000157
- [20]. Elit Laurie, Monika Krzyzanowska, Refik Saskin, Lisa Barbera, Asma Razzaq, Aisha Lofters, Naira Yeritsyan, Arlene Bierman. “Socio-demographic Factors Associated with Cervical Cancer Screening and Follow-up of Abnormal Results”, *Can Fam Physician*, vol.58, 2012, pp.e22-31
- [21]. Damiani Gianfranco, Bruno Federico, Danila Basso, Alessandra Ronconi, Caterina Bianca Neve Aurora Bianchi, Gian Marco Anzellotti, Gabriella Nasi, Franco Sassi, Walter Ricciardi. “Socioeconomic Disparities in the uptake of Breast and Cervical Cancer Screening in Italy: A Cross Sectional Study”, *BMC Public Health*, vol.12, 2012 pp.99. doi: 10.1186/1471-2458-12-99
- [22]. Aswathy S., Mariya Amin Quereshi, Beteena Kurian & Leelamoni K. “Cervical Cancer Screening: Current Knowledge & Practice among Women in a Rural Population of Kerala, India”, *Indian J Med Res*, vol. 136, 2012, pp. 205-210
- [23]. Soneji S, Fukui N. “Socioeconomic determinants of cervical cancer screening in Latin America” *Rev Panam Salud Publica*, vol.33(3), 2013, pp.174–82.
- [24]. Grace X Ma, Min Qi Wang, Xiang S Ma, Steven E Shive, Yin Tan, Jamil I Toubbeh. “Pathways of Cervical Cancer Screening among Chinese Women”, *International Journal of Women’s Health*, vol.5, 2013, pp.351–359
- [25]. Thulaseedharan JV, Nea Malila, Matti Hakama, Pulikottil O Esmay, Mary Cheriyan, Rajaraman Swaminathan, Richard Muwonge, Rengaswami Sankaranarayanan. “Socio Demographic and Reproductive Risk Factors for Cervical Cancer – A Large Prospective Cohort Study from Rural India”, *Asian Pacific J Cancer Prev*, vol. 13, 2012, pp.2991-2995
- [26]. Mwaka, A. D., Orach, C. G., Were, E. M., Lyratzopoulos, G., Wabinga, H. and Roland, M. “Awareness of Cervical Cancer Risk Factors and Symptoms: Cross-Sectional Community Survey in Post-Conflict Northern Uganda”, *Health Expectations*, 2015. doi: 10.1111/hex.12382



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