

Content available at: <https://www.ipinnovative.com/open-access-journals>

Journal of Preventive Medicine and Holistic Health

Journal homepage: <https://www.jpmmh.org/>

Original Research Article

Epidemiological study and cervical cancer screening by pap smear in Delhi

Paras Wani^{1,*}, Urmila Bhardwaj², Ayesha Raza³¹Directorate of AYUSH, GNCT, Delhi, India²Dept. of Community Medicine, Nursing Shadra University, Greater Noida, Uttar Pradesh, India³Dept. of Unani Gynaecology, Ayurvedic and Unani Tibbia College, Karol Bagh, New Delhi, India

ARTICLE INFO

Article history:

Received 06-07-2021

Accepted 16-07-2021

Available online 29-11-2021

Keywords:

Pap smear

Cervical cancer

India

ABSTRACT

Objectives: To study the epidemiological characteristics of cervical cancer in Delhi. With this background we intended to find out the epidemiological characteristics associated with cervical cancer and screening of participants by pap smear.

Materials and Methods: Pap smear were conducted and detail socio demographic records were obtained and details of demographic characteristic and other risk factors were noted.

Results: A total of 98 participants were evaluated of which 76.5% of women were in the age group of 30-40 years, By educational status about 46.94% were illiterate. Forty seven percent of the study subjects had a history of abortion. More than half of the study subjects (60.5%) had history of induced abortion in non-licensed clinics (70%). More than half of the study subjects (62%) were sexually active before 15 years of age and almost all the study subjects were sexually active by 18 years of age. Almost one third of the subjects did not use any contraceptive method. Thirty eight percent of the study subjects had normal cervix on per speculum examination and 40 % had cervical erosion. 8.2% participants tested positive to pap smear.

This is an Open Access (OA) journal, and articles are distributed under the terms of the [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License](https://creativecommons.org/licenses/by-nc-sa/4.0/), which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: reprint@ipinnovative.com

1. Introduction

Demographic transition and changes in distribution of risk factors have accelerated the epidemic of non-communicable diseases in developing countries. The BOD projection for 2020 indicate that in India there will be double burden of disease due to persistence of a relatively larger burden of communicable disease with a significant increase in non-communicable diseases. Using 1990 data base and assuming the trends in epidemiological transition, the changing pattern of disease was computed by WHO and World Bank which implies that the proportion of communicable to non-communicable diseases is going to reverse, with a rise in non-communicable diseases from 33% to 56.5%

accounting for more than half of the burden of diseases. This epidemiological transition will affect the poor most as they lack the resources for prolonged, expensive treatment that non-communicable diseases require [World development report, 1993; India health report, 2003; World health report, 2003; Tenth five-year Plan, 2002-2007].

The overall challenge for public health and medicine in the future is to allocate available resources effectively to reduce major causes of disease burden globally and to decrease health disparities between poor and affluent populations. Chronic diseases are the largest cause of death in the world led by cardiovascular disease and followed by cancer, chronic lung diseases and diabetes mellitus (17 million deaths, 7 million deaths, 4 million, 1 million deaths in 2002 respectively). WHO estimated that in 2005, 60% of all the deaths are expected to occur by chronic diseases

* Corresponding author.

E-mail address: parastalat@gmail.com (P. Wani).

and cancer accounting for 13% of all deaths just after Cardiovascular diseases (30% of all deaths) [WHO, 2005b]. It is found that cervical cancer is an important women's health problem, especially in developing countries, where an estimated 190,000 women die from the disease each year. In developing countries, mortality rates are reported at 11.2 per million/year women on an average, almost three times the rate of developed countries. [Ferlay et al. 2002].¹

In India Cervical cancer is the most common malignancy affecting female population. An estimated 132 thousand new cases, or more than one-fourth of the worldwide total, are reported annually [ACCP, 2000].^{2,3} The two most common cancers among Indian women are those of the cervical and breast. The burden of cancer in India is high with nearly one million patients diagnosed every year. The estimated number of women diagnosed with cancer each year is 3,000,000 of women. Among them approximately one third have cervical cancer. According to the data compiled by Indian council of Medical Research (2005) from the cancer registries cervical cancer ranks first among cancers in women [ICMR,2005].

A comparison of inter registry rates (according to the incidence rates of Cancers registered during the period Jan 1999 to 31st Dec 2000 in different regions of India) suggests that among females, cervical cancer was the leading site of cancer, highest being in Chennai and Barshi constituting 23.2% of all cancers in females. The other registries like Bhopal, Bangalore, Delhi and Mumbai have cervical cancer as the second leading site of cancer with relative proportion of 19.18%. Barshi which is the first and only rural cancer Registry in India has double relative proportion of cervical cancer than in other urban registries (43.24% versus 19.18%). Age adjusted rate of Barshi region (23.4 per million/year) is also more than the average rate found in all other five registries (21.21 per million/year). In rural areas burden of cervical cancer is more [ICMR,2005].⁴

Although cervical cancer can be prevented or treated effectively if detected early. More than 70% of all cancers in India are found when the disease is so advanced that treatment is much less effective [ICMR,2005].

Various epidemiological studies have identified a number of risk factors that contribute to the development of CIN and cervical cancer. Human Papilloma virus (HPV) is associated with almost all cervical cancer worldwide [Bosch et al. 1995; Schiffman 1995; Pisani et al.[14] 1997].⁵ Infection with one or more of the oncogenic HPV types may result in the integration of the viral genome into the host cellular genome resulting in the formation of cervical neoplastic cells, the proliferation of which leads to various grades of CIN, which may progress to invasive cervical cancer [Shankararayan and Ramani 2003; [19] WHO, 2002; Ibn-e- Sina 1927;⁶ Ho 1995; Munoz, 1992; Thomas 2001; Walboomers 1999].

Other risk factors are number of sexual partners, age at first sexual intercourse, smoking, genetic factors, and sexual behavior of the woman's male partners. Tobacco smoking has been a well-known risk factor for cervical cancer. A direct carcinogenic action of cigarette smoking on the cervix has been upheld on the grounds that nicotine metabolites can be found in the cervical mucus of women who smoke. The number of live births is a consistent risk factor for cervical cancer. There is a linear trend in the association between parity and risk. Deficient diets of women in developing nations may be contributory factors for the high incidence rates of cervical cancer observed in these regions. The evidence for an effect of diet on risk of cervical cancer indicates that a high intake of food containing beta carotene and vitamin C and, to a lesser extent, vitamin A may reduce the risk of cervical cancer. Authors have concluded that there is an excess risk of cervical cancer associated with long-term use (12 years or more) of oral contraceptives but it has not been accepted by the scientific community [Franco 1988, 2001; [6] Castellague et al.⁷ 1997; Kjaer, 1997;⁸ Ylito et al. 1999; Schiffman 1987, 1996;^{9–12} Parazzani 1988;¹³ Temple 1988;¹⁴ Ibn-e-Sina; Weinkieliston 1990; Veechi 1986; Mantos 2005].

Identifying modifiable causes and risk factors and natural history of disease play an important role in prevention of cervical cancer. Primary prevention can limit the incidence of cervical cancer by controlling risk factors and causes which can be done by improving personal hygiene and change in lifestyle. With this preview present study was conducted to study epidemiology and other associated factors associated with participants undergoing cervical Cancer screening in Delhi.

2. Objectives

To study the epidemiological characteristics of cervical cancer in Delhi. With this background we intended to find out the epidemiological characteristics associated with cervical cancer and screening of participants by pap smear.

3. Materials and Methods

A Clinic initiated community oriented cross sectional study on, "A Study of efficacy of VIA Technique in Screening of Carcinoma of cervix in Situ" was conducted by department of Tahaffuzi-wa-Samaji Tib (Preventive and Social Medicine), Jamia Hamdard, New Delhi. The subjects were from Sangam Vihar, Tughlakabad, Khanpur and Vasant Kunj attending Surjit wasu memorial charitable trust and Vasant Kunj health centre. The study was conducted between October 2005 to January 2006. The demographic characteristics and other attributes associated with cervical cancer were assessed.¹⁵ After informed consent, an interview of the subject was conducted by using the instrument of pre-tested, translated, re-translated

vernacular questionnaire by face-to-face interview in the clinic followed by pap smear. A follow up and more detailed in depth interview of the study subjects was conducted in the community to elicit their sexual history and Socio-Economic Status and other variables. On the basis of eligibility for the study subjects attending Vasant Kunj Health Centre and Surjit wasu Memorial Trust were taken using random number technique and screened. Out of 2230 female subjects who attended Surjit wasu memorial Trust and in South Delhi, 419 (18.78%) were found eligible for screening. Out of them 189 (45% of eligible subjects or 8% of the total subjects) agreed to participate in the study. One hundred were located in the community. Further 2 more subjects were lost due to attrition, so 98 (4.4%) subjects formed the final sample set. Analysis of personal attributes and observational results was done by appropriate statistical test. Analysis of Pap smear with personal attributes and observational results was done by Chi Square test.

4. Observation and Results

The Study group comprised 76.5% in the age group of 30-40 years and the rest (23.5%) were 40 years plus. Thus, more than half of the participants were in age group of 30-40. Among these participants 82.7 % were Hindus and 14.3% Muslims. Seventy nine percent (79%) of the participants had total monthly family income from all sources of less than Rs. 5000 a month. By educational status about 46.94% were illiterate (Table 1). Amongst the educated about 18.36% completed high school and above education. About 95% of the participants were from lower and lower middle socio-economic group.(Table 2) More than one third of the study subjects (44%) had habit disorder of taking Pan Masala, Bidi and addiction to alcohol, while half of the participants (55%) had no such habits. No subject was regular addict. Consumption of Alcohol was occasional.(Table 3)

Two percent of study subjects had history of uterine cancer in their mother. Eighty six percent of the subjects attained menarche between the age of 11 and 15 years. More than half (70%) of the study subjects had normal menstrual flow. Fifteen percent had irregular flow. One fifth of the study population had inter menstrual bleeding.

Ten percent of study population had post menopausal bleeding. Eighty percent of the participants being Hindus, only 20% of study subjects were Muslims, hence their husbands were circumcised. Almost 80 % of all the study subjects adopted unhygienic practices during menstrual cycle.¹⁶⁻¹⁹

Distribution of study subjects by their history of sexually transmitted infections(STI) was seen by persistent vaginal discharge, smell, colour of discharge, pain during intercourse, pruritus vulvae and inflammation of external genitalia. More than 50% of the study population had persistent vaginal discharge. Seventy six percent had curdy white discharge. It was foul smelling in less than 1/4th of

the study population. One third (33%) of the study subjects had pain during inter-course and itching per vagina / vulvae (25%). Two percent had inflammation of external genitalia.

Lowest age at time of the marriage of study subjects was 13 year and highest was 32 years. Median was 16.5. About two third of the study subjects (77%) were below 18 years at the time of marriage. Half of the study population was in the age group of

16-18 years at the time of first pregnancy. Forty seven percent of the study subjects had a history of abortion. More than half of the study subjects (60.5%) had history of induced abortion in non-licensed clinics (70%).²⁰⁻²⁴

Distribution of study subjects by their sexual history was evaluated by multiple sexual partners of the subjects, multiple sexual partners of their husbands and age at first coitus. Four percent of the study subjects had more than one concurrent sexual partner. More than half of the husbands had more than one sexual partners. In most of the cases these partners were fixed. More than half of the study subjects (62%) were sexually active before 15 years of age and almost all the study subjects were sexually active by 18 years of age.²⁵

Distribution of study subjects by their use of contraceptive practices was seen. Almost one third of the subjects did not use any contraceptive (72%) among those using contraceptives used IUD and Tubal ligation use any contraceptive method.²⁶

Distribution of subjects by their visual examination of cervix was observed by Per Speculum examination, Squamo columnar junction(SCJ), visible, bleeding on touch and discharge seen. Thirty eight percent of the study subjects had normal cervix on per speculum examination and 40 % had cervical erosion. More than half of the study subject had some abnormality on per speculum examination. Squamo-columnar junction was visible almost in all the study subjects. One third of the study subjects had bleeding on touching the cervix. Discharge was seen in more than fifty percent of the study subjects.

Analysis of positive pap smear with demographic attributes was done and it was found that Probability of positive Pap smear in subjects with regular and heavy bleeding was more. (Chi square = 5.6, (D.f 1,C. I 95% P<.05). Probability of positive Pap smear in subjects with irregular and heavy bleeding was more.(Chi square = 9.6, (D.f 1,C.I 95%, P<.05)

Probability of positive Pap smear with postmenopausal bleeding was more. Probability of positive Pap smear in subjects with husband circumcised was not more(Chi square = .002, (D.f 1,C.I 95%) Probability of positive Pap smear in subjects with pain during intercourse was more. Probability of positive Pap smear in subjects with per vaginal discharge was more (P<.05). Probability of positive Pap smear in subjects with age at marriage before 15 years was more (P<.05).Probability of positive Pap smear in

subjects with persistent vaginal discharge was more.

5. Conclusion and Discussion

A Clinic initiated community oriented cross sectional study on, “A Study of efficacy of VIA Technique in Screening of Carcinoma of cervix in Situ” was conducted by department of Tahaffuzi-wa-Samaji Tib (Preventive and Social Medicine), Jamia Hamdard, New Delhi. The subjects were from Sangam Vihar, Tughlakabad, Khanpur and Vasant Kunj attending Surjit wasu memorial charitable trust and Vasant Kunj health centre. On 98 subjects. Out of 98 subjects screened for pap smear 8 were tested positive. 8.2 % of the subjects were tested positive to pap smear. Summarizing the observations a stronger association was found between Pap smear positive in subjects with:

1. Habit of taking Pan Masala, bidi and alcohol.
2. Heavy bleeding during the cycle
3. Post menopausal bleeding
4. Inter-menstrual bleeding
5. Pain during intercourse
6. Foul, curdy white smelling discharge.
7. Itching per vagina / vulvae
8. Age at marriage below 16 years.
9. Age at first pregnancy <16 years
10. History of induced abortion.
11. Multiple (Concurrent) sexual partners
12. Use of oral contraceptives
13. Cervix bleeding on touch
14. Cervical hypertrophy
15. Exudates / Discharge seen on per speculum examination (P<.05)

Not much of an association was observed with Pap smear positive subjects with:

1. Husband Circumcised
2. Use of unhygienic practices during menstrual cycle
3. Per vaginal discharge
4. Spontaneous abortion
5. Multiple (Concurrent) sexual partners of the study subject's spouse
6. Age at first coitus <15 years.
7. Tubal Ligation
8. Cervical erosion on per speculum examination.

6. Recommendations

On the basis of observations of this study it is recommended that a larger study with statistically determined sample size and stratified design may be conducted to reach conclusions that can be extrapolated to the Indian population in general.

Note: The age of the participants was calculated by history and anecdotal event calendar.

Table 1: Distribution of subjects by their demographic profile (Age, Religion, Education) N=98

Demographic Profile	Frequency	Percentage (%)
Age		
a) 30-40	75	76.5
b) 41-50	20	20.4
c) 51-60	3	3.1
Religion		
a) Hindu	82	83.7
b) Muslim	14	14.3
c) Others	2	2.0
Education		
a) Illiterate	42	42.9
b) Primary school	30	30.6
c) High school and above	26	26.5

6.1. Inference

1. Majority of the subjects (76.5%) were between 30-40 years of age.
2. Most of the study subjects (42.9%) were poor in educational status.
3. Majority of the study subjects were from the 2 major religions and more than three fourth of the women were Hindu (82%).

Table 2: Distribution of study subjects by their monthly family income and socioeconomic status. n=98

Socio economic status	Frequency	Percentage (%)
Monthly income		
a) <1000	3	3
b) 1001-2500	25	25.5
c) 2501-5000	45	46.0
d) >5000	25	25.5
Socio-Economic status		
a) Upperclass	10	10.2
b) Upper middle	15	15.3
c) Lower middle	46	46.9
d) Lower	27	27.6
Total	98	100%

Table 3: Distribution of study subjects by their Distribution of study subjects with respect to their habit Disorder /addiction

Habit disorder and addiction	Frequency	Percentage (%)
a) Pan masala	30	30.6
b) Bidi / Cigarette	9	9.2
c) Alcohol	5	5.1
d) None	54	55.1
Total	98	100

7. Source of Funding

None.

8. Conflict of Interest

None.

References

1. Ferlay. Cervical Cancer Prevention in the 21st Century: Cost Is Not the Only Issue. *Am J Public Health*. 1998;109(9):1549–55. doi:10.2105/AJPH.2011.300204.
2. Planning and Implementing Cervical Cancer Prevention and Control Programs; 2004. Available from: https://screening.iarc.fr/doc/ACCP_screen.pdf.
3. for Cervical Cancer Prevention (ACCP) TA. Planning and Implementing Cervical Cancer Prevention Control Programs; Alliance for Cervical Cancer Prevention. Seattle; 2004. p. 3–20.
4. Icmr I. 1999.
5. Bosch. M : Prevalence of human Papillomavirus in cervical cancer: a worldwide perspective. *J National Cancer Inst*. 1995;7(11):796–802.
6. Kuliyaat-e-Qanoon ; 1928. p. 145–91.
7. Castellsagué X, Ghaffari A, Daniel RW, Bosch FX, Muñoz N, Shah KV. X : Prevalence of penile human Papillomavirus DNA in husbands of women with and without cervical neoplasia: a study in Spain and Colombia. *J Infect Dis*. 1997;176(2):353–61. doi:10.1086/514052.
8. Kjaer SK, Brule AJ, Bock JE, Poll PA, Engholm G, Sherman ME, et al. OM Determinants for genital human Papillomavirus (HPV) infection in 1,000 randomly chosen young Danish women with normal pap smear: are there different risk profiles for oncogenic and nononcogenic HPV types? *Cancer Epidemiol Biomark Prev*. 1997;6(10):799–805.
9. Schiffman MH, Haley NJ, Felton JS, Andrews AW, Kaslow RA, Lancaster WD. Biochemical epidemiology of cervical neoplasia: measuring cigarette smoke constituents in the cervix. *Cancer Res*;47(14):3886–94.
10. Schiffman M, Wentzensen N. Human Papillomavirus Infection and the Multistage Carcinogenesis of Cervical Cancer. *Am Assoc Cancer Res*. 1996;22(4):553–60.
11. India health report ; 1996. Available from: https://www.who.int/whr/2003/en/whr03_en.pdf.
12. Schiffman MH. New epidemiology of human papillomavirus infection and cervical neoplasia. *J Nat Cancer Ins*. 1995;87(18):1345–7. doi:10.1093/jnci/87.18.1345.
13. Parazzini F, Vecchia CL, Negri E, Fasoli M, Cecchetti G. Risk factors for adenocarcinoma of the cervix: a case-control study. *Br J Cancer*. 1988;57(2):201–4. doi:10.1038/bjc.1988.43.
14. Scheppach W, Dusel G, Kuhn T, Loges C, Karch H, Bartram HP, et al. Effect of L-glutamine and n-butyrate on the restitution of rat colonic mucosa after acid induced injury. *Nut Res*. 1988;8(6):685–701.
15. Tenth five year Plan 2002 _ Tenth five year Plan; 2002. Available from: <https://niti.gov.in/planningcommission.gov.in/docs/aboutus/committee/index.php?about=11strindx.htm>.
16. Thomas DB, Ray RM, Kuypers J, Kiviat N, Koetsawang A, Ashley RL, et al. Human Papillomavirus and Cervical Cancer in Bangkok ; III ;The Role of Husbands and Commercial Sex Workers. *Am J Epidemiol*. 2001;153(8):740–8. doi:10.1093/aje/153.8.740.
17. Brinton LA, Schairer C, Haenszel W, Stolley P, Lehman HF, Levine R, et al. Cigarette smoking and the risk of cervical neoplasia. *Am J Epidemiol*. 1986;255(23):22–31.
18. Walboomers JM, Jacobs MV, Manos MM, Bosch FX, Kummer JA, Shah KV, et al. Human Papillomavirus is a necessary cause of invasive cervical cancer worldwide. *J Pathol*. 1999;189(1):12–9. doi:10.1002/(SICI)1096-9896(199909)189:1<12::AID-PATH431>3.0.CO;2-F.
19. Winkelstein W. Smoking and cervical cancer—current status: a review. *Am Epidemiol*. 1990;131(6):945–56. doi:10.1093/oxfordjournals.aje.a115614.
20. WHO 2002 _ WHO : Cervical cancer screening in developing countries,A report of aWHO consultation; 2002.
21. WHO. Preventing Chronic diseases a vital investment. *WHO Glob*. 2002;p. 37–44.
22. World Bank 1993 _ World Development Report 1993 : Investing in Health. vol. 195; 1993. p. 213–25.
23. World health report 2003_ world health report : Shaping the future, WHO, Geneva; 2003.
24. Ylitalo N, Sorensen P, Josefsson A, Frisch M, Sparén P, Pontén J, et al. Smoking and oral contraceptives as risk factors for cervical carcinoma in situ. *Int J Cancer*. 1999;81(3):357–65. doi:10.1002/(sici)1097-0215(19990505)81:3<357::aid-ijc8>3.0.co;2-1.
25. Matos A. The influence of smoking and other cofactors on the time to onset to cervical cancer in a southern European population. *Eur J Cancer Prev*. 2005;14(5):485–91.
26. Ho GY, Burk RD, Kadish AS, Chang CJ, Palan P, Basu J, et al. Persistent genital human Papillomavirus infection as a risk factor for persistent cervical dysplasia. *J Nat Cancer Ins*. 1995;87(18):1365–71. doi:10.1093/jnci/87.18.1365.

Author biography

Paras Wani, Medical Officer /Assistant Professor Unani

Urmila Bhardwaj, Professor

Ayesha Raza, Associate Professor

Cite this article: Wani P, Bhardwaj U, Raza A. Epidemiological study and cervical cancer screening by pap smear in Delhi. *J Prev Med Holistic Health* 2021;7(2):84-88.