

A Basic Screening Approach for Detection of Premalignant Lesions of Cervix in Rural India: A Prospective Observational Study

Ratnani Rekha*, Ghormode Poonam**, Pungle Anju***

Abstract

Background: Cervical cancer is the second most common cancer of women in age group 15-44 years worldwide. Approximate 3/4th of patients are diagnosed in advanced stages leading to poor long term survival and cure rates.³ The effectiveness of the pap smear, VIA & VIA guided biopsy as screening methods are easily available in a rural set up of india . **Aim:** To screen all the women between the age of 18-65 years attending Gynaecology OPD irrespective of their complaints, by Pap Smear and Visual inspection after applying acetic acid (VIA) followed by VIA guided cervical biopsy and to study incidence of positive findings & effectiveness of pap smear, VIA test and VIA guided cervical biopsy to screen cervical cancer and finally to study the incidence of premalignant lesions of the cervix in a rural set-up. **Material and Methods:** In 2146 total women (18- 65years) attending Gynecology OPD between February 2016 to July 2016 (6 months) & 828 consecutive women were examined after fulfilling the selection criteria and proper consent. **Results:** Out of total 828 women 3.38% women were positive for abnormal cytology, 35.26% women were VIA test positive. Out of total 828 VIA test done, 19.08% underwent VIA guided cervical biopsy & 5.43% women had positive HPE report. Out of 28 abnormal cytology 19 were ASCUS positive, 06 were LSIL & 03

were HSIL. Out of 45 abnormal biopsies 28 were CIN I (3.38 %), 10 were CIN II (1.21%) & 07 were CIN III (0.84%). Incidence of premalignant cervical lesions is 8.81%

Keywords: Premalignant Cervical Lesions; Cytology; Biopsies.

Introduction

Cervical cancer is the second most common cancer of women in age group 15-44 years [1] worldwide. India has a population of 432.2 million women aged 15 years and above, out of which 122,844 women are diagnosed and 67,477 die from cervical cancer every year.

It accounts for 23.3% of all cancer deaths in India [2]. Approximate 3/4th of patients are diagnosed in advanced stages leading to poor long term survival and cure rates [3]. According to a randomized controlled trial in India, even a single lifetime screening test significantly decreased the risk of mortality & incidence of advanced cervical cancer compared to no screening methods (mortality: risk ratio 0.65, 95% confidence interval 0.47, 0.90; incidence: relative risk 0.56, 95% confidence interval 0.42, 0.75) [4]. According to CDC data from low-income, uninsured, and underserved women, approximately 3.2 % of cytology test results are abnormal [5]. The Pap smear is effective but beyond the capacity of health services in periphery. Moreover delay in collecting reports may lead to loss of the patients for follow up. Hence other methods for screening are needed. Visual inspection with acetic acid (VIA) is one such simple low cost technique which is based on ability to detect aceto-white area in the cervical transformation zone and can be evaluated at primary health care level

*Professor, Dept of Obstetrics & Gynaecology, Chandulal Chandrakar Memorial Medical College Kachandur, Durg, Chhattisgarh 490024, India. & Senior Consultant at Apollo BSR Hospital , Bhilai, Chhattisgarh 490020. **Assistant Professor *** Junior Resident, Dept of Obstetrics & Gynaecology, Chandulal Chandrakar Memorial Medical College Kachandur, Durg, Chhattisgarh 490024, India.

Corresponding Author:
Ratnani Rekha, A 2/
392, Surya Vihar Colony,
Junwani, Bhilai,
Chhattisgarh 490020, India.
E-mail:
rekharatnani@gmail.com

Received on 13.07.2017,
Accepted on 16.08.2017

as an alternative to cervical cytology. It is shown that VIA has similar sensitivity but somewhat lower specificity when compared to quality cytology [6]. We tried to explore the effectiveness of the pap smear, VIA & VIA guided biopsy as screening methods available in a rural set up.

Aim & Objectives

- To screen all the women between the age of 18- 65 years attending Gynaecology OPD irrespective of their complaints, by Pap Smear and Visual inspection after applying acetic acid (VIA) followed by VIA guided cervical biopsy.
- To study incidence of positive findings & effectiveness of pap smear, VIA test and VIA guided cervical biopsy to screen cervical cancer.
- To study the incidence of premalignant lesions of the cervix in a rural set-up.

Material & Methods

The present prospective observational study was conducted in the Department of Obstetrics and Gynecology, CCM Medical College and Hospital, Kachandur, Durg (Chhattisgarh) in 2146 total women (18- 65years) attending Gynecology OPD between February 2016 to July 2016 (6 months) & 828 consecutive women were examined after fulfilling the selection criteria and proper consent.

After taking history, women were examined by per abdomen, per speculum & pervaginal examination and each & every woman was subjected for VIA test & Pap smear test. VIA +ve cases were targeted for proper antibiotic course & if required, direct VIA guided biopsies were also done.

Those women who responded well to the antibiotic treatment (became VIA -ve), their biopsies were not done & those women, who were highly suspicious for premalignant lesion, were directly subjected for VIA guided cervical biopsy followed by its histopathological (HPE) examination. In suspicious lesions where VIA test became negative after full antibiotic course, even then cervical biopsies & HPE were done. Positive tests for cytology (Pap Smear) were ASCUS, LSIL & HSIL. VIA showing opaque acetowhite lesion on applying 5% acetic acid in the transformation zone or near the squamo-columnar junction & circumoral TZ zone were considered positive. Positive cases were scheduled for biopsies and histopathological evaluation. Ethical clearance for this study has been taken.

Selection Criteria

Inclusion Criteria

Women in the age group of 18 - 65 years were included in the study with or without the following risk factors:

- Early marriage
- Early pregnancy & 2nd trimester pregnancy
- Sexual activity at early age
- Multiparity
- Multiple sexual partners/ multiple marriages
- Women with abnormal uterine or vaginal bleeding (not profuse), pain in lower abdomen, STI, leucorrhoea, post coital bleeding, lump in abdomen, prolapse uterus, infertility & in those patients who came for routine check-up & family welfare services.

Exclusion Criteria

- Unmarried women
- Women below 18 years and above 65 years
- Women with profuse bleeding P/V and active infection at the time of examination
- Women with frank invasive cervical cancer
- Big fibroid or endometrial polyp
- Women not willing for examination

Results & Observations

Total 2146 women attended the Obstetrics & Gynaecology OPD during the period of study that included new as well as follow up women. Out of these, 828 new women met the selection criteria for Pap smear & VIA test. Only 158 women underwent VIA guided cervical biopsy.

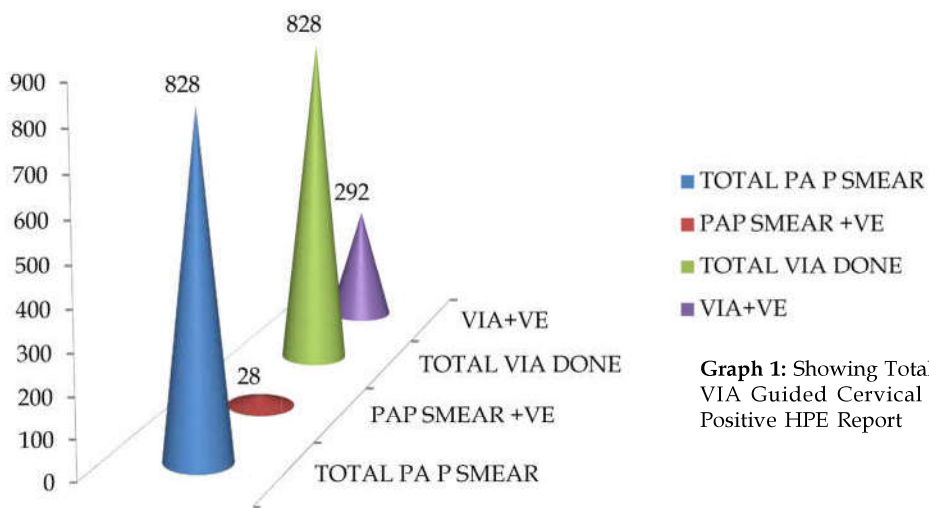
As seen in graph 1 out of total 828 women 28 (3.38%) women were positive for abnormal cytology, 292 (35.26%) women were VIA test positive

As seen in the graph 2 out of total 828 women on which VIA was done, 292 were VIA + ve women and out of these 40 women were directly taken for biopsy before giving antibiotic therapy as they were highly suspicious for premalignancy. The antibiotic treatment was hence given to 252 patients; 102 women didn't respond to antibiotic treatment (VIA + ve) and 150 women responded to antibiotic treatment (VIA - ve). But out of 150 (VIA -ve), 16 women were also

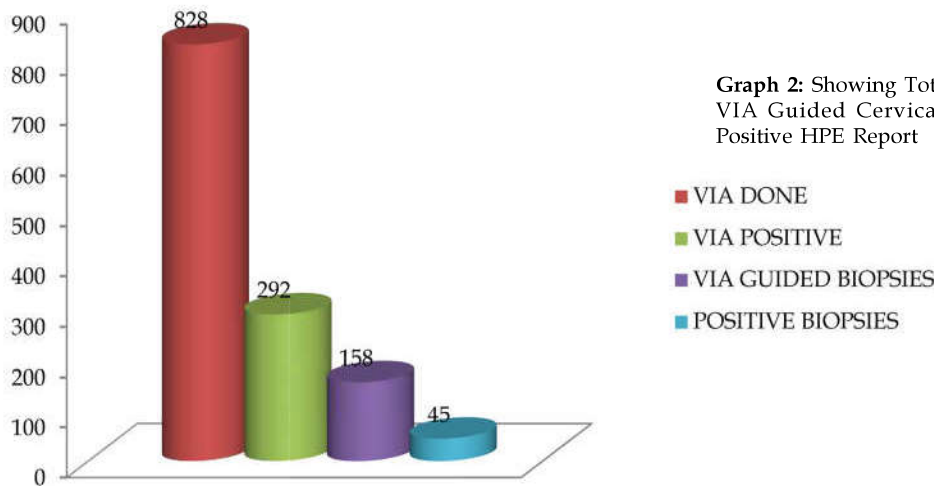
taken for biopsy as they were still suspicious. Hence these 158 (40+102+16) were taken for VIA guided Biopsy. Out of 292 VIA +VE women 45 turned out to be positive for HPE (histopathology Examination)

reports i.e. 15.41%

Out of total 828 VIA test done, 158 (19.08%) underwent VIA guided cervical biopsy & 45 women



Graph 1: Showing Total No VIA +VE cases & VIA Guided Cervical Biopsy done and Its Positive HPE Report



Graph 2: Showing Total No VIA +VE cases & VIA Guided Cervical Biopsy done and Its Positive HPE Report

Table 1: Incidence of total Premalignant Cervical Lesions (By Pap Smear & VIA Guided Cervical Biopsy)

Total Women	Premalignant lesions seen via Pap	Premalignant lesions seen via VIA Guided Biopsies	Total premalignant lesions	%age of total premalignant lesions
828	28	45	73	8.81%

Table 2: Incidence of various types of Premalignant Cervical Lesions by Pap and VIA Guided Cervical Biopsies

S. No	Various Types of Premalignant CX Lesions							
	Pap Smear	No. of Women	%age (of total 28)	%age of Total Women selected (828 pts)	VIA Guided Biopsy	No of Women	%age (of total 45)	%age of Total Women Selected (828 pts)
1	ASCUS	19	67.85%	2.30%	CIN I	28	62.22%	3.38%
2	LSIL	06	21.42%	0.72%	CIN II	10	22.22%	1.21%
3	HSIL	03	10.71%	0.36%	CIN III	07	15.55%	0.84%
Total		28	100%	3.38%		45	100%	5.43%

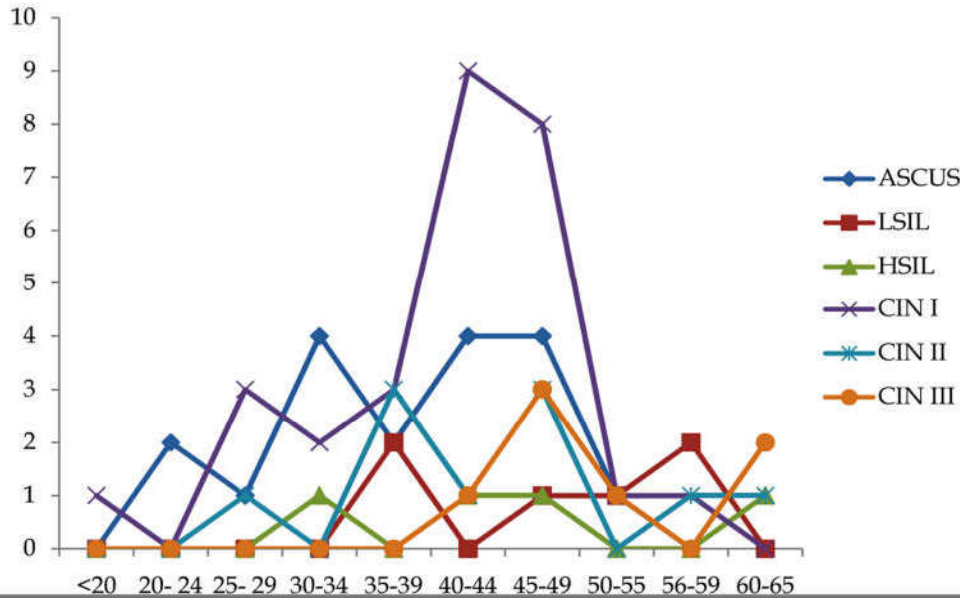
had positive HPE report i.e. 5.43% of total women selected.

As is seen in the Table 1 out of total 828 women of selection criteria total 73 (28 abnormal Pap + 45 VIA Guided biopsies) women were positive for premalignant cervical lesions i.e. 8.81%

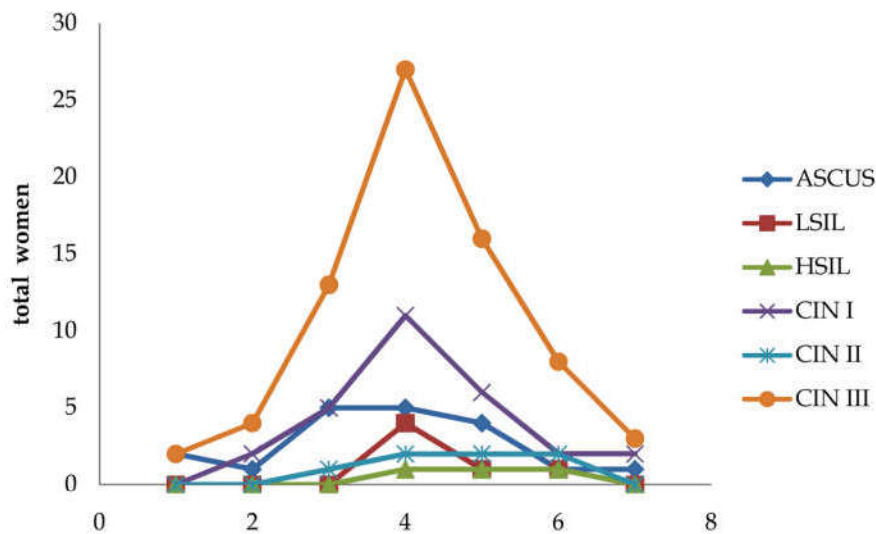
Table 2 shows Incidence of various types of Premalignant Cervical Lesions by Pap (28 women) and VIA Guided Cervical Biopsies (45 women). Out of 28 (of total study group) 19 were ASCUS positive (2.30%), 06 were LSIL (0.72%) & 03 were HSIL. Out of 45 (of total study group) 28 were CIN I (3.38 %), 10 were CIN II (1.21%) & 07 were CIN III (0.84%).

Graph 3 shows that maximum premalignant lesions were found in the age group of 45-49yrs (27.40%) followed by 40-45yrs (20.55%) & 35-39yrs (13.70%) and 2nd peak of incidence was found in the age group of 60-65yrs (8.22%) followed by 50-55 (5.48%)yrs & 55-69yrs (5.48%). Minimum no. of premalignant lesions were found in the age group of <20yrs (1.36%) followed by 20- 24yrs (2.74%).

Graph 4 shows that maximum premalignant lesions were found in Para 3 (36.99%) followed by Para 4 (21.92%), Para 2 (17.81%) & Para 5 (10.96%) women. But in 2.74% nulliparous women also it was also found.



Graph 3: Showing Age Wise Distribution of Cases of Premalignant Cervical Lesions (By Pap & Via Guided Cervical Biopsy)



Graph 4: Showing Parity Wise Distribution of Cases of Premalignant Cervical Lesions (By Pap & Via Guided Cervical Biopsy)

Table 3:

Study	Incidence of Abnormal Cytology (Pap)
Bamanikar SA et al (Indian study 2014) ⁷	4.64%
Singh MP et al (2016) ⁸	11%
CDC (2016) ⁵	3.2%
Present study (2016)	3.38%

Table 4:

VIA +VE- Out of 828 women, VIA was positive in 292 women (35.26%).

Study	Incidence of VIA Test Done of Total Population
Huchko MJ et al (2015) ⁹	26.2%
José Daniel FA et al (2015) ¹⁰	31%
Present study (2016)	35.26%

Discussion

Incidence of Premalignant Lesions

In this study, total 828 women of selection criteria attending OPD were included.

PAP Smear: Out of total 828 women, positive results obtained from cytology were 28 (3.38%).

Via Guided Cervical Biopsy: Out of 292 positive cases of VIA test, biopsy was done in 158 women. Histopathology in 45 (5.43% of total study group & 15.41% of total VIA positive women) were suggestive of CIN (I, II, III).

Incidence of Total Premalignant Cervical Lesions (Combined by Pap Smear & Via Guided Cervical Biopsy)

Table 5 shows that out of total 828 women 73 were positive for premalignant cervical lesions.i.e. 8.85% which is comparable with our study (mentioned above in tables)

Incidence of Various Cytological & Histopathological Abnormalities

Out of total 28 Pap smear positive results, ASCUS was found in13 cases i.e. 2.30%, LSIL in 06 cases (0.72%), HSIL in 03 cases (0.36%) & others included atypical or other dysplastic cells in 06 cases (21.42%)

Table 5:

Study	ASCUS	LSIL	HSIL
Gupta K et al (2013) ¹²	3.23%	1.36%	0.91%
Bamanikar SA et al (Indian study 2014) ⁷	2.32%	1.96%	0.36%
Present study (2016)	2.30%	0.72%	0.36%

Table 6:

Study	CIN 1	CIN 2	CIN 3
Abdel-Hadi M et al (2015) ¹¹	0.08%		0.03%
Fang-Hui Zhao et al (2012) ¹³	3.4	1.5	1.6
Present study (2016)	3.38%	1.21%	0.84

Out of total 45 cases of positive histopathological findings of biopsy CIN 1 were 28 cases (3.38%), CIN II were 10 (1.21%) cases & CIN III were 07 (0.84%) cases.

Bamanikar SA et al (Indian study 2014) [7] studied total 560 patients who had their Pap smear done, 26 (4.64%) revealed epithelial cell abnormality. It is comparable with our study.

Henk H] et al (2010) [11] Annual incidence for CIN 1 and CIN 2,3 was 1.6 and 1.2 per 1,000 women, respectively (0.16 & 0.12%). The incidence is much less than our study as we belong to rural population area of india.

Age wise Distribution of Cases of Premalignant Cervical Lesions

Out of total cytological positive cases most of the

cases were found in the age groups of >30 to 49 yrs of & histopathological positive cases were found in the age group of >25 to 49 yrs of age which is almost

same. But CIN I is also found in <20yrs of age. Following studies are comparable with our study

Table 7:

Study	Age (In Yrs)
Bhattacharya et al (2015) ⁶	> 40
Bamanikar SA et al (Indian study 2014) ⁷	>31- 40
Gupta K et al (2013) ¹²	30- 39
Present study (2016)	>30-35

Gupta K et al (2013) [12] & other studies (mentioned below) has shown a relatively high prevalence of epithelial abnormalities in cervical smears with increasing age, parity, early age at first coitus (<20 year) which is comparable with our study.

Paritywise Distribution of Cases of Premalignant Cervical Lesions

Out of total cytological positive cases & histopathological positive cases were found in the parity group of >2 to 5. Table 2 shows that maximum

Table 8:

Studies	Parity
Bhattacharya et al (2015) ¹⁰	>2
Present study (2016)	>2

premalignant lesions were found in Para 3 (36.99%) followed by Para 4 (21.92%), Para 2 (17.81%) & Para 5 (10.96%). But in 2.74% nulliparous women it was also found.

Above table 6 studies are comparable with our study.

Conclusion

A raised number of epithelial cell abnormalities reflect the lack of awareness about cervical cancer screening. Women of any age group harbour the bulk of premalignant lesions in the Pap smear, signifying that these women are the under users of cytological screening. Our study is a new approach specially to cover rural area to explore premalignant lesions by using simple & effective techniques.

The lack of effective screening program leads to reporting of very advanced cases of cervical cancer cervix where mortality and morbidity is very high. It is a fact that many cases reporting for vaginal bleeding or discharge are not even examined vaginally, thus missing the diagnosis at an early stage.

Advanced diseases involve high financial burden, limited treatment options, stress, loss to the family and higher mortality. PAP smear screening needs good infrastructure, trained manpower to make & interpret the slides which is not feasible considering the facilities available in the periphery.

Recommendation

Being a gynaecologist it is our responsibility & duty to pay attention towards each woman of our society, state & nation to make her disease free from the cancer cervix by doing early, effective & low cost screening.

So various recommendations are -

1. Every sexually active woman should be screened for cancer cervix irrespective of age, complaints & diagnosis, by down staging, pap smear & VIA test
2. In every PHCs, CHCs & Tertiary centres awareness programmes about VIA should be planned for public interest.
3. Various training programmes in VIA should be arranged by government from time to time.
4. ASHA health workers & MITANIN health workers should target and motivate the women in their area to get at least one cervical screening at nearby health centre by VIA.
4. In advanced setup, colposcopic guided biopsies should also be planned.
5. It is also important to maintain records of each & every case of positive findings to make correct data for studies.

References

1. ICO Information Centre on HPV and cancer (Summary Report 2014-08-22). Human Papillomavirus

- and Related Diseases in India. 2014
- World Health Organization; [Last accessed on 2012 Jan 23]. Globocan Fact Sheets. International Cancer Research. Available from: <http://www.globocan.iarc.fr/factsheet.asp#WOMEN>.
 - Guidelines for cervical cancer screening. Government of India and WHO Collaborative Program. [Last accessed on 2012 Jan 23]. Available from- http://www.whoindia.org/LinkFiles/Cancer_resource_Guidelines_for_CCSP.pdf
 - Peirson L¹, Fitzpatrick-Lewis D, Ciliska D, Warren R. Screening for cervical cancer: a systematic review and meta-analysis. 2013 May 24;2:35. doi: 10.1186/2046-4053-2-35.
 - Centers for Disease Control and Prevention, National Breast and Cervical Cancer Early Detection Program. Screening program summaries: national aggregate. Five-Year Summary: January 2010 to December 2014. 2016 Access at http://www.cdc.gov/cancer/nbccedp/data/summaries/national_aggregate.htm.
 - Bhattacharyya AK, Nath GD, Deka H. Comparative study between pap smear and visual inspection with acetic acid (via) in screening of CIN and early cervical cancer J Midlife Health. 2015 Apr-Jun;6(2):53-8.
 - Bamanikar SA, Baravkar DS, Chandanwale SS, Dapkekar P. Study of Cervical Pap Smears in a Tertiary Hospital. Indian Medical Gazette. 2014 Jul: 250-254.
 - Singh MP, Kaur M, Gupta N, Kumar A, Goyal K, Sharma A, Majumdar M, Gupta M, Ratho RK Prevalence of high-risk human papilloma virus types and cervical smear abnormalities in female sex workers in Chandigarh, India. Indian J Med Microbiol. 2016 Jul-Sep;34(3):328-34.
 - Huchko MJ, Sneden J, Zakaras JM, Smith-McCune K¹, Sawaya G, Maloba M, Bukusi EA, Cohen CR. A randomized trial comparing the diagnostic accuracy of visual inspection with acetic acid to Visual Inspection with Lugol's Iodine for cervical cancer screening in HIV-infected women. PLoS One. 2015 Apr 7;10(4):e0118568.
 - José Daniel FA, Karla Georgina SG, Josué Sarmiento-Ángeles, Jaime Claudio GM, Marco Antonio OR, Stark C, Hugo FN, Jaroslav SC. Rate of human papillomavirus infection in rural areas diagnosed by direct visualization with acetic acid and lugol. Ginecol Obstet Mex. 2015 Jul;83(7):429-36.
 - Abdel-Hadi M, Khalaf A, Aboukassem H, Naeem N, Baqy MA, Sallam H. Cervical intraepithelial lesions in females attending Women's Health Clinics in Alexandria, Egypt. Cytojournal. 2015;12:13.
 - Gupta K, Malik NP, Sharma VK, Verma N, Gupta A. Prevalence of cervical dysplasia in western Uttar Pradesh. 2013 Oct-Dec; 30(4): 257-262
 - Fang-Hui Zhao, Adam K. Lewkowitz, Shang-Ying Hu, Feng Chen, Long-Yu Li, Qing-Ming Zhang, Rui-Fang Wu, Chang-Qing Li, Li-Hui Wei, Ai-Di Xu, Wen-Hua Zhang, Qin-Jing Pan, Xun Zhang, Jerome L. Belinson, John W. Sellors, Jennifer S. Smith, You-Lin Qiao, and Silvia Franceschi. Prevalence of Human Papilloma-virus and Cervical Intraepithelial Neoplasia in China: A pooled analysis of 17 Population-based Studies. Int J Cancer. 2012 Dec 15;131(12):2929-2938.
-