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Original Research Article

Profile of PAP smears done in a tertiary centre in North Kerala

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ABSTRACT

Background: In India, cervical cancer is the second most common cancer among women. WHO sponsored expert group meeting on "Strategies for Cervical cancer Control" recommends women of 30-59 years as target group for cervical cancer screening in India. Statistics show us that routine cervical cancer screening is not happening in India.
Methods: This is a retrospective, descriptive, record based study done in a private medical college in Northern Kerala to study the profile of PAP smears during the years, 2014 and 2015 and to find out the appropriateness of the recommendations for age for cervical cancer screening. The data regarding cervical smears were analyzed using Epi info software.
Results: A total of 3059 cervical smears were analyzed retrospectively. The age group of the study population ranged from 21 years to 93 years with the mean age of 46.3942±13.7 SD. Of all the smears, 2993 (97.84%) were Negative for intraepithelial lesion or malignancy (NILM). A total of 66 smears (2.15%) showed epithelial abnormality. All precancerous lesions, LSIL (29.03%), HSIL (37.04%) and Atypia (37.5%) were most commonly found in the age group of 61-70 years.
Conclusions: The incidence of epithelial abnormality is found increasingly in older age groups. Limiting the target population for screening to 30-59 years, will result in missing out of many cases with precancerous lesions which in turn may fail our attempts in reducing the burden of cervical cancer. So a higher age group as target population needs to be set.

Keywords: Cervical cancer, PAP smears, Screening age group

INTRODUCTION

Latest cancer survey reports by the International Agency for Research on cancer reveal that there are 14.1 million new cancer cases worldwide, 8.2 million cancer deaths, and 32.6 million people living with cancer within 5 years of diagnosis. Less developed regions carry the major burden. With 528, 000 new cases popping up every year, cervical cancer is the fourth most common cancer affecting women worldwide, after breast, colorectal, and lung cancers. More than 25% of all new cases are diagnosed among the women in India.[1]

In India, cervical cancer stands second to breast cancer as the most common cancer among women.[2] With the National Cancer Control Programme incorporated into the National Programme for the Prevention of Cancer, Diabetes, Cardiovascular Disease and Stroke in 2010, cancer with an annual incidence of 1 million in India, remains its major focus.[2,3] Dr. Rengaswamy Sankaranarayanan, one of the investigators for an IARC research project concerned with cervical cancer screening in rural India rightly said, "Cervical cancer can have devastating effects with a very high human, social, and economic cost, affecting women in their prime. But this disease should not be a death sentence, even in poor

countries".[1] Cervical cancer, if detected early is often curable by standard treatment protocols as the natural history is well understood.

WHO recommends cervical cancer screening for women aged 21-65 years with priority to women in 30-49 years.[4] WHO sponsored Expert Group meeting on "Strategies for Cervical cancer Control" recommends women of 30-59 years as target group for cervical cancer screening in India.[5] But NFHS 2016 data shows us that only 22.3% of women in the age group of 15-49 years have ever undergone a cervical examination and 61.3% in Kerala.[6] This indicates that the recommended routine screening is not happening in India.

Kerala health model is known worldwide. Despite a high rate of institutional deliveries (99.6%) and 96.2% of at least one antenatal visit, health seeking behavior among women in Kerala for gynecological morbidity is as low as 39% as shown in the ICMR study.[7,8] The stigma associated with some gynecological problems, myths, misconceptions, various cultural differences and tradition, ignorance, illiteracy, poor social status, shyness, lack of decision making power and gender discrimination are major hurdles in seeking health care.[9]

Objectives

1. To study the profile of PAP smears done in a tertiary care centre in Northern Kerala during 2014-2015.
2. To find out the appropriateness of the recommendations for age for cervical cancer screening among women.

METHODS

This is a retrospective, descriptive, record based study done in a private medical college in Northern Kerala to study the profile of PAP smears during the years, 2014 and 2015. The study population included all females coming to gynecology department who were motivated and willing for PAP smear examination. The cervical smear samples were stained with Papanicolaou's method after fixing with 95% isopropyl alcohol. Data regarding PAP smear reports were collected from register maintained at the department of Pathology. A total of 3507 cervical smears were taken during these two years out of which 448 (12.7%) were inadequate or scanty and were excluded. The data regarding the remaining 3059 cervical smears were analyzed using Epi info software.

RESULTS

A total of 3059 cervical smears were analyzed retrospectively. The age group of the study population ranged from 21 years to 93 years with the mean age of 46.3942±13.7 SD. Majority belonged to the age group, 41-50 years (38.05%). The age distribution of the study population is given in Figure 1.

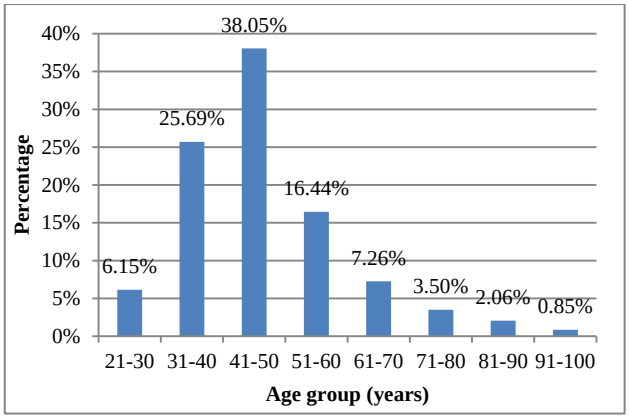

Figure 1: Age wise distribution of the study population (n=3059).

The Pap smear reports of the study population are given in Figure 2. Out of the 3059 smears examined, 2993(97.84%) were negative for intraepithelial lesion or malignancy (NILM).

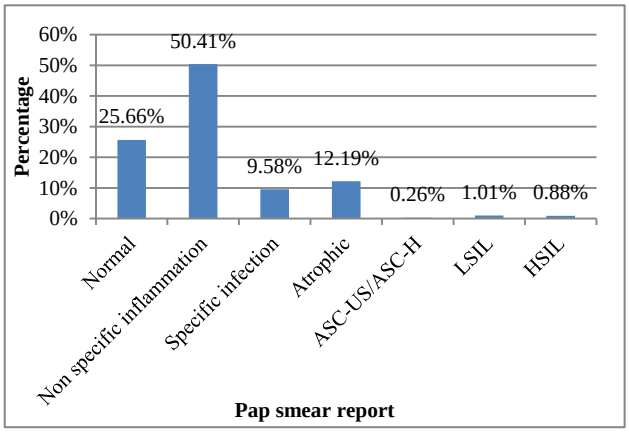

Figure 2: Pap smear reports of the study population (n=3059).

Out of these, majority of the smears i.e., 1542 (50.41%) were suggestive of non-specific inflammation. It was most commonly found in the 41-50 years age group (45.53%). 293(9.58%) were specific infection suggestive of trichomoniasis, candidiasis or bacterial vaginosis. It was most common in the 31-40 years age group (33.79%). Atrophic or postmenopausal characteristics were seen in 373 (12.19%) smears. Majority, i.e. 34.58% of them belonged to 51-60 years age group. 785 (25.66%) were normal smears.

A total of 66 smears (2.15%) showed epithelial abnormality. It was reported in the age group 21-80 years with mean age of 55.57 years. LSIL (low grade squamous intra epithelial lesion) was the most common epithelial abnormality. It accounted for 31 (1.01%) smears. It was found in a wide range of age group i.e., from 21 to 80 years. The age wise distribution of LSIL is given in Figure 3.

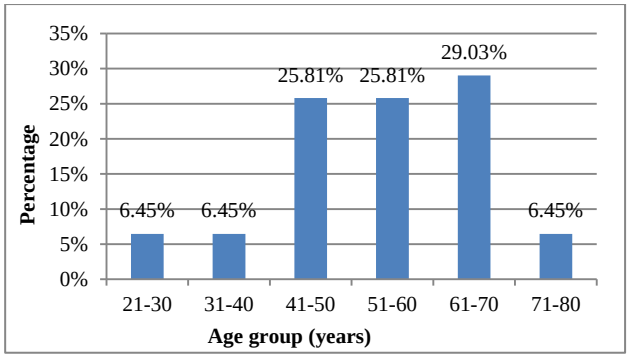

Figure 3: Age wise distribution of LSIL (n=31).
*LSIL (Low grade Squamous Intra epithelial Lesion)

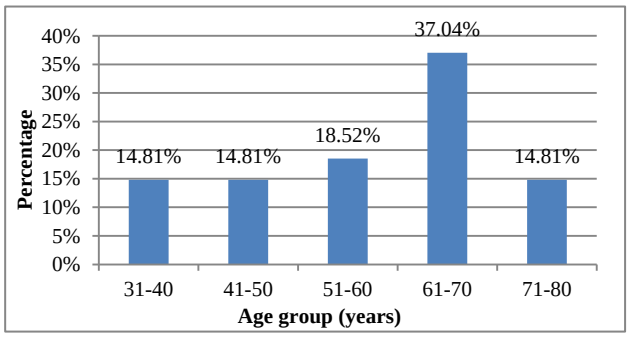

Figure 4: Age wise distribution of HSIL (n=27).
*HSIL (High grade Squamous Intra epithelial Lesion)

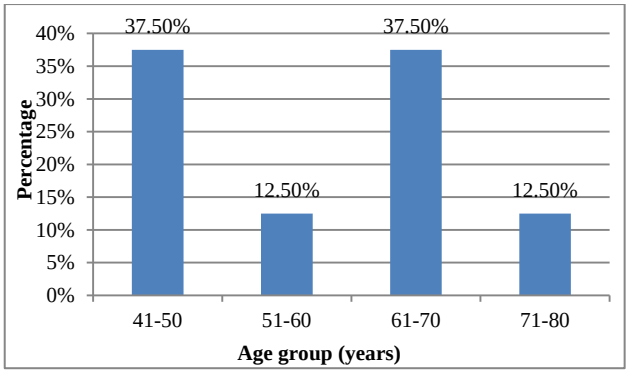

Figure 5: Age wise distribution of atypia (ASC-US /ASC-H) (n=8).
*ASC-US (Atypical Squamous Cells of Undetermined Significance) /ASC-H (Atypical Squamous Cells- cannot exclude HSIL)

HSIL (High grade Squamous Intra epithelial Lesion) was found in 27(0.88%) smears and ASC-US (Atypical Squamous Cells of Undetermined Significance) /ASC-H (Atypical Squamous Cells- cannot exclude HSIL) in 8 smears (0.26%). The age wise distribution of HSIL and ASC-US/ASC-H are given in Figure 4 and 5 respectively.

The PAP smear reports in specific age groups is shown in Table 1. The most common PAP report in each age group is highlighted. There were no cases of carcinoma in this study.

Table 1: Pap smear reports in specific age groups.

Bethseda classification of pap smear reports	Age group								
	21-30 (N=188) (%)	31-40 (N=786) (%)	41-50 (N=1164) (%)	51-60 (N=503) (%)	61-70 (N=222) (%)	71-80 (N=107) (%)	81-90 (N=63) (%)	91-100 (N=26) (%)	Total (N=3059) (%)
Normal smear	13.30	26.46	27.58	23.86	23.42	30.84	31.75	23.08	25.66
Non specific inflammation	31.38	58.27	60.31	39.56	30.18	32.71	26.98	19.23	50.41
Specific infection	51.06	12.60	4.55	8.15	1.35	0.00	0.00	3.85	9.58
Atrophic smear	3.19	1.91	6.27	25.65	35.14	29.91	41.27	53.85	12.19
ASC-US/ASC-H	0.00	0.00	0.26	0.20	1.35	0.93	0.00	0.00	0.26
LSIL	1.06	0.25	0.69	1.59	4.05	1.87	0.00	0.00	1.01
HSIL	0.00	0.51	0.34	0.99	4.50	3.74	0.00	0.00	0.88
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

DISCUSSION

There are only a few studies which shows the pattern of PAP smear reports in Kerala. The efficiency of any screening method can only be assessed on the basis of systematic analysis of data obtained from population or hospitals. Also, it helps in redefining protocol and guidelines for screening.

Pap smear based screening methods have played a pivotal role in reducing cervical cancer incidence and mortality i.e, upto 50-70% in developed countries.[5]

The prevalence of abnormal cervical epithelial tissues varies from country to country, from as low as 1.14% in Nepal to 14.52% in Saudi Arabia.[10, 11] A study in Kerala, in North Malabar shows a prevalence of 2.42%.[12] In this study it was 2.15%. This is lower than the prevalence in different studies conducted worldwide- Saudi Arabia, America, S. Africa, Bangladesh but higher than Nepal and Tehran as shown in Table 2. The prevalence within India also varies from 1.32% in Ahmedabad to 25% in Gauhati as shown in Table 3. This variation may be due to the difference in population, their risk factors, and health seeking behavior, sample size, selection criteria guidelines and expertise of people collecting Pap smears.

The most common epithelial abnormality found in the study population was LSIL (1.01%) similar to studies in S. Africa, Bangladesh, Nepal and in India- Ahmedabad, Lucknow, Malabar. But in other places other abnormalities were commoner than LSIL as shown in Table 2 and 3. No cases of invasive carcinoma were found in this study. This might be because women with higher grades of epithelial abnormalities may present late and may directly go for surgical intervention.

Table 2: Studies comparing prevalence of epithelial abnormalities in different places of the world.

No	Place	Duration of study	Author	Total no. of patients	Total prevalence (%)	LSIL (%)	HSIL (%)	Carcinoma (%)	ASC-US/ASC-H (%)
1	America	1995-2004	Nance et al[14]	3,10,080	-	-	0.28-0.5	-	-
2	Bronx, New York	1995	Edelman et al[13]	29,295	13.2	2.5	0.6	0.2	9.9
3	South Africa	Not mentioned	Fonn et al[15]	20,603	5.09	2.42	1.8	0.47	-
4	Jeddah, Saudi Arabia	2000-2012	Mufti ST et al[11]	15,721	14.52	2.2	0.8	0.06	11.48
5	Bangladesh	2010	Banik et al[16]	1699	8.18	6.36	1.18	0.35	0.18
6	Pakistan	2007-2009	Bukhari et al[18]	1000	10.2	4.5	2.2	1.4	1.05
7	Nepal	2010-2012	Marahatta[10]	1751	1.14	0.85	0.28	0	0.45
8	Tehran	2007	Maryam et al[17]	13315	1.18	0.21	0.13	0.2	0.63

Table 3: Studies comparing prevalence of epithelial abnormalities in different places of India.

No	Place	Duration of study	Author	Total no. of patients	Total prevalence (%)	LSIL (%)	HSIL (%)	Carcinoma (%)	ASC-US/ASC-H (%)
1	Delhi	2007-2008	Tiwari et al[19]	100	22.5	2.5	2.5	-	17.5
2	Guwahati	2015-2016	Alakananda et al[25]	280	25	3	7	SCC*- 2 Adenoca#- 1	12.3
3	Ahmedabad	1998-2010	Kothari et al[26]	36,740	1.32	0.83	0.31	0.05	0.13
4	Gujarat	2014	Patel et al[20]	1808	4.65	0.6	0.6	SCC*- 0.1 Adenoca#- 0.2	2.9
5	Lucknow	1971-2005	Misra et al[21]	36,484	7.8	5.5	1.6	0.6	0
6	Gujarat	2012	Tailor et al[27]	1425	1.89	0	0.35	0.14	1.4
7	Pune	2011- 2013	Bamanikar[28]	498	5.36	1.96	0.36	SCC*- 0.54 Adenoca#- 0.18	2.32
8	Malabar, Kerala	2012-2013	Nair[12]	2028	2.42	1.58	0.49	0.20	0.15
9	Kannur, Kerala	2014-2015	Present study	3059	2.15	1.01	0.88	0	0.26

*SCC- Squamous cell carcinoma; #Adenoca- Adenocarcinoma.

In this study it was noted that all precancerous lesions, LSIL (29.03%), HSIL (37.04%) and Atypia- ASC-US, ASC-H (37.5%) were most commonly found in the age group of 61-70 years. 71-80 years age group also had 6.45%, 14.81% and 12.5% of LSIL, HSIL and Atypia respectively. Various studies conducted in Pakistan, Delhi, Gujarat, Lucknow and Kerala also show that epithelial abnormalities increase with increase in age, especially in postmenopausal age group or even after 70s.[18-21,12] But Edelman et al in his study in New York revealed an alarming rate of 20.7% epithelial abnormalities among adolescent of 13- 22 age group.[13] In this study, 6.45% of LSIL cases were found in the 21-30 years age group. Absence of routine screening for the recommended age group, cultural differences and age of exposure to sex as in developed countries might contribute to this difference. The study conducted by Tiwari et al in Delhi revealed that 61% of the women did not know what cervical cancer and PAP test were.[19]

NFHS 2016 data shows us that only 22.3% of women in the age group of 15-49 years have ever undergone a cervical examination in India.[6] A study conducted by Naseema et al among health workers in Kozhikode revealed that 46.7% of women have never heard of PAP smear and only 30.7% of women has ever done a PAP smear.[22] Another population based study in Kasargod, Kerala showed that only 8.8% women had heard of PAP smear. Again, specific knowledge on cervical cancer is a

critical element which decides whether a woman will subject herself to pap test.[23]

Hence, we believe that in a country like India, setting a target group of women in 30-49 years for cervical screening would never be sufficient to decrease the burden of cervical cancer.[5]

There should be continued screening even at old age, especially unless routine screening is followed systematically. There is a need for proper awareness about cervical cancer, its precancerous lesions, importance of routine screening and motivation at grass root level for preventing women falling victims of a cancer that can very well be prevented or detected at an early stage. Community health workers and women volunteers can play a major role in removing the barriers in undergoing PAP test and women empowerment as proven in other studies conducted in India.[23,24] Tertiary centers need active coordination, with secondary and primary health care facilities, to mobilize women to undergo screening, if the latter's facilities and infrastructure are inadequate. Also, there must be strong campaigns and advertisements through media like for breast cancer and HIV-AIDS for health education regarding cervical cancer. Males of the family should be educated as well regarding the existence of cervical cancer and the methods of its early detection and prevention.

There should be larger studies to set the most appropriate target group for cervical screening. Issues regarding inadequate health infrastructure, women mobilization, awareness etc. should be addressed adequately and national screening policies should be formulated based on these.

The major limitation of our study was that as it was a retrospective study, the final outcome was not known and follow up of these patients could not be carried out. Also, correlation of cervical abnormalities with clinical symptoms was not done. Although HPV DNA tests and liquid based cytological methods can provide us with a better quality data, it is not affordable in our setting.

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