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Effect of inter-personal communication on cervical cancer knowledge and prevention among women in Rural Bengaluru, India

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Abstract

Introduction: Cervical cancer is one of the leading causes of cancer among women worldwide. In 2012, 528,000 new cases of cervical cancer were diagnosed globally, 85% of which were in less developed countries of Sub-Saharan Africa, Asia (including India) and Central and South American countries. Currently, cervical cancer is the 2nd leading cause of cancer deaths in India which approximately accounts to 1/3rd of the global cervical cancer deaths. High-risk types are HPV16 & 18 and they account for more than 90% of cervical carcinoma and the route of transmission is mainly by sexual contact, which can be prevented by health education. The present study was conducted among rural reproductive women where the prevalence of cervical cancer is high and can be prevented by using a simple intervention method of health education.

Materials and Methods: An interventional, community-based comparative study was conducted among 388 women of reproductive age residing in Whitefield, Bengaluru, over a period of one and a half years (May 2016 – October 2017). The pre-tested, semi-structured (Questionnaire) data collection tool was used to collect data before and after intervention (IPC).

Results: Out of 388 women who participated in the study, the majority 223 (57.48%) belonged to the age group of 15-29 years. The awareness about cervical cancer significantly improved post-intervention (IPC). 26.29% had underdone pap smear examination for cervical cancer post-intervention compared to only 18.04% pre-intervention. The findings suggest a significant improvement in awareness and screening practices post-intervention.

Conclusion: The findings of the study suggest that there was a positive impact of Interpersonal Communication on the overall increase in knowledge regarding Cervical cancer and its prevention among the women of reproductive age group in the study.

Keywords: Cervical cancer, Knowledge, Inter personnel communication, Prevention

Introduction

Cervical cancer is one of the leading cause of cancer among women worldwide. In 2012, 528,000 new cases of cervical cancer were diagnosed globally, 85% of which were in less developed countries of Sub-Saharan Africa, Asia (including India) and some in Central and South American countries. And among them 266,000 women died of cervical cancer, and this was seen more in low and middle income countries.[1] According to World health organisation (WHO), Human papilloma virus (HPV) infection affects about 10-20% of people between 15-49 years, and out of them 40% are women under 25 years of age.[2] Currently, cervical cancer is the 2nd leading cause of cancer deaths in India which approximately accounts to 1/3rd of the global cervical cancer deaths.[3]

Aetiology of cervical cancer is exposure to infection by Human Papilloma Virus (HPV). There are over 100 types of HPV. Among them high risk types are HPV-16-18 and it accounts for more than 90% of cervical carcinoma. Route of transmission of HPV is by sexual contact.[4] The predisposing factors for HPV infection are early age at intercourse, multiple sexual partners, Other factors like tobacco use and Immuno-suppression (for example HIV infection) facilitate HPV infection leading to metaplastic change and which in turn develop into cancer.[5] Primary prevention of cervical cancer aims at decreasing the incidence of cervical cancer by reducing causes and risk factors. Vaccines against HPV have been developed and proved to be effective against HPV infection.

The present study was conducted among rural reproductive women where prevalence of cervical cancer is high due to lack of knowledge and high risk practices. This can be prevented by using simple non-invasive method of intervention of health education specifically inter-personal communication (IPC). This method is chosen on ethical grounds as the subject is sensitive and taboo associated with female reproductive health, hence participants wants it to be confidential.

Objectives

- To determine the knowledge, attitude and practice about the cervical cancer among women of reproductive age group.

- To evaluate the impact of Interpersonal Personal Communication and Counselling on the knowledge, attitude and practices regarding cervical cancer prevention among women of reproductive age

Materials and methods

Study design: Interventional Community based comparative study

Study area: The study was carried out in Whitefield area, situated in the eastern part of Bengaluru city, Karnataka State.

Study period: The study was carried out over a period of one year and six months (May 2016 – October, 2017)

Study Population: This study was carried out among the women of reproductive age-group (15- 45 years) residing in study area.

Inclusion Criteria

- Women aged 15-45 years and residing in the study area for more than 6 months

- Women who have given consent to participate in the study

Exclusion Criteria

- Women who had been diagnosed with cervical pre-cancer or cervical cancer

- Women who had received treatment for cervical pre-cancer or cancer.

Sample size

Assuming that about 44.5% of the study population will know about cervical cancer (based on a study done by Siddhartha J et al among women attending a tertiary care hospital in Puducherry), 8 with an absolute precision of 5%, and 95% Confidence Interval, the sample size was calculated.

Minimum sample size required = 380.

Assuming about 5% of participants may drop out post-IPC for follow- up interview, a sample size of 400 (380 + 5% of 380) was considered for the study.

Sampling Technique

Line list of all the houses in the study area having at least one woman in the reproductive age group (15-45 years) was prepared. The houses were randomly selected by simple random technique using MS Excel. House visits were made to each of the selected houses. Details about the study and confidentially was explained to the eligible study subjects. Women who fulfilled the inclusion criteria, agreed to participate in the study and gave written informed consent were included in the study. This method was followed till the required sample size was reached.

Data collection

Data was collected using semi-structured, pre-tested questionnaire as data collection tool. The tool was validated by faculty from the Departments of Community Medicine, Obstetrics & Gynaecology and Oncology, VIMS and RC. Validated tool was field tested by pilot study with 25 women of reproductive age- group (15-45 years), randomly selected from the study area. The final tool, after incorporating inputs received during the pilot testing was used in the study.

The data collection tool had the following parts:

Part I: related to demographic data

Part II: to assess the knowledge, attitude and practice regarding cervical Cancer.

Data analysis

Data was entered in the data forms created in Epi InfoTM software Version 7.2.0.1, Centre for Disease Control and Prevention (CDC), Atlanta and analysed using the same software. The analysed socio-demographic data is expressed in proportions and percentages. The results of pre-intervention and post-intervention data were analysed using Mac Nemar's test and level of significance by 'p' value. The 'p' value < 0.05 is considered to be statistically significant.

Ethical Considerations

The ethical approval for the study was obtained from Vydehi Institutional Ethics Committee, Vydehi Institute of Medical Sciences and Research Centre. Written informed consent was obtained from the study participants and parental consent was obtained for the participants below 18 years. Confidentiality of the data collected was maintained. The anonymity of the study

participants was maintained throughout the study period.

Results

The line list of houses in the study area had 5500 houses, fulfilling the inclusion criteria. From these 5500 houses, 445 women who were eligible for the study were randomly selected and requested to participate in the study. Of them 400 women agreed to participate and gave the consent. Of those 400 women who participated in the study during baseline data collection, 12 were not available during post intervention data collection. Hence, the data of 388 (400-12) women who were available during both pre and post intervention was analysed and the results of the same is presented in this section.

The results of the study are presented under following sections:

1. Description of the study subjects

2. Comparison of Knowledge regarding Cervical Cancer and its prevention before and after the intervention

Table 1. shows most of the study participants (90 out of 388) are between 20-24 years accounting for 23% followed by 25-29 years (20%). 45.36% (176 out of 388) are professional and 30% are employed. Majority of them are married accounting 52.58% whereas 41.24% are single. Most of them belong to Upper Middle class (Mod. B G Prasad Classification) of Socio-economic status.

Table 1. Distribution of study subjects based on their demographic profile.

Age group	Number	Percentage
15-19 years	53	13.66
20-24 years	90	23.20
25-29 years	80	20.62
30-34 years	73	18.80
35-39 years	46	11.86
≥ 40 years	46	11.86
Total	388	100

Educational status

Professional/Postgraduate	176	45.36
Graduation	87	22.42
PUC /12th grade	31	7.99

High School	39	10.05
Middle School	27	6.96
Primary School	11	2.84
Illiterate	17	4.38
Total	388	100

Occupational status

Employed	120	30.93
self- employed	109	28.09
Homemakers	58	14.95
Students	101	26.03
Total	388	100

Marital status

Married	204	52.58
Single	160	41.24
Separated	16	4.12
Widowed	5	1.29
Divorced	3	0.77

Total	388	100
Socio economic status		

Upper	70	18.04
Upper Middle	269	69.33
Lower Middle	32	8.25
Upper Lower	17	4.38
Lower	0	0.00
Total	388	100

Table 2. shows 336 women out of 388 (87.88%) were aware about cervical cancer and for most of them, 55.93% the source of information were family members followed by friends and relatives who accounts for 40.72%.

Table 2. Distribution of study subjects based on awareness about cervical cancer from different sources; pre and post intervention.

	Awareness Cervical cancer	**Pre-intervention**		**Post-intervention**		**Statistical test**	
		No.	**%**	**No.**	**%**	**Mc Nemar Value**	**p value**
1.	Yes	336	87.88%	388	100%		
2.	No	52	14.01%	0	0.00%		
3.	**Total**	**388**	**100%**	**388**	**100%**	50.019	< 0.001

Source of information about cervical cancer risk factors & prevention

1	Family Members	217	55.93%	217	55.93%	----	---
2	Friends/neighbors	158	40.72%	158	40.72%	---	----
3	Colleagues	131	33.76%	157	40.46%	1.214	< 0.001
4	Health Personnel	141	36.34%	388	100%	245.004	< 0.001
5	Electronic Media, TV Channels, internet, etc.	69	17.78%	154	39.69%	89.011	< 0.001
6	Teachers	39	10.05%	39	10.05%	-----	----
7	News Paper	21	5.41%	36	9.28%	2.207	< 0.001
8	News magazines	22	5.67%	24	6.19%	0.121	< 0.001

* As there were multiple responses, the numbers are not mutually exclusive.

Table 3. shows that only 50% and less of women were aware about risk factors ; signs and symptoms regarding cervical cancer pre-intervention which has increased (knowledge) post intervention showing statistically significant.

Table 3. Distribution of study subjects based on awareness regarding risk factors and symptoms of cervical cancer, pre and post intervention.

Sl. No.	Awareness regarding risk factors of cervical cancer	Pre-intervention N=388		Post-intervention N=388		Statistical test	
		No.	%	No.	%	Mc nemar value	P value
1	Having multiple sexual partner	209	53.87%	388	100%	177.006	< 0.001
2	Early sexual intercourse	179	46.13%	388	100%	207.005	< 0.001
3	Acquiring HPV[#] virus infection	144	37.11%	294	75.77%	99.112	< 0.001
4	Cigarette smoking	31	7.99%	259	66.75%	206.116	< 0.001
5	Do not Know	143	36.86%	0	0.00%	141.007	< 0.001
Symptoms of cervical cancer							
1	Vaginal bleeding	290	74.74%	378	97.42%	71.406	< 0.001
2	Vaginal foul smelling discharge	256	65.98%	377	97.16%	106.667	< 0.001
3	Pelvic pain	135	34.79%	337	86.86%	235.102	< 0.001
4	Pain during urination	72	18.56%	104	26.80%	6.964	0.08
5	Fatigue	166	42.78%	367	94.59%	184.332	< 0.001
6	Weight loss	240	61.86%	373	96.13%	115.391	< 0.001
7	Loss of appetite	241	62.11%	376	96.91%	117.359	< 0.001
8	Do not know	58	14.95%	0	0.00%	57.017	< 0.001

HPV – Human Papilloma Virus

Figure 1 and 2. Shows the knowledge of women in their reproductive age about high risk people like women < 30 years or elderly women should undergo screening tests for ca. cx. and their availability to detect pre-cancerous lesions. Tests shows statistically significant pre- and post – intervention.
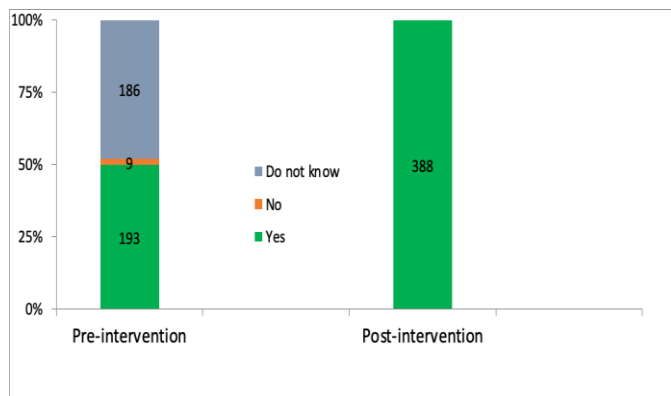
Figure 1. Knowledge of subjects regarding availability of screening test (s) for detection of premalignant cervical lesions, pre and post intervention. Marginal homogeneity test=13.884, P <0.001.
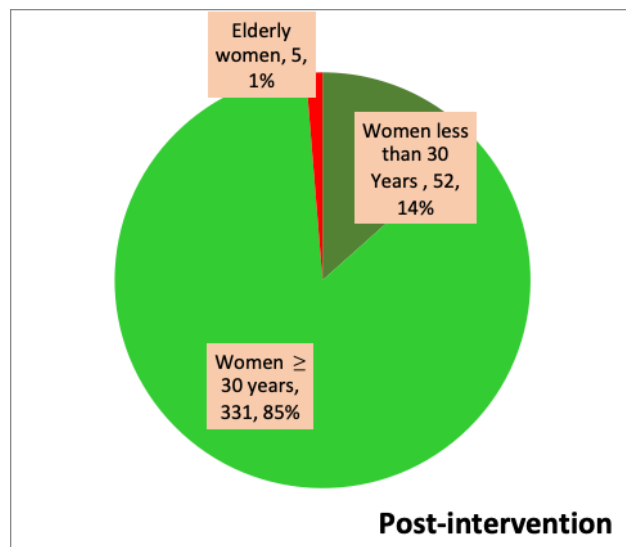

Figure 2. Distribution of study subjects based on the knowledge regarding who should be screened for cervical cancer, pre and post intervention (N=388).
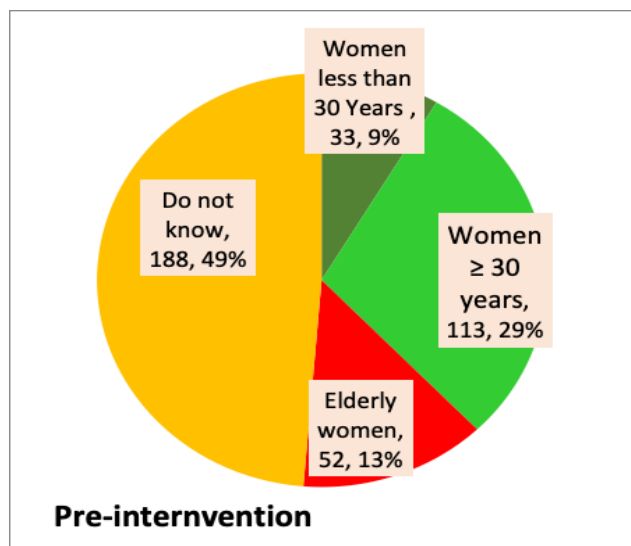
Table 4. Shows only 18% women undergone pap smear screening for ca. cx. In last five years which has increased to 26.29% and 61.8% were willing to get pap smear screening test done post-intervention.

Table 5. and Figure 3. shows statistically significant the awareness of reproductive age group (15-49 years) women regarding preventive measures like avoiding early intercourse, multiple sexual partners smoking; HPV vaccination pre – and post – intervention.

Table 4. Distribution of study subjects based on the status of pap smear examination, pre and post intervention.

Sl. No.	Pap smear done for cervical cancer in the last 5 years	Pre-intervention		Post-intervention	
		Number	Percentage	Number	Percentage
1	Yes	71	18.04%	102	26.29%
2	No	318	81.96%	286	73.71%
	Total	388	100%	388	100%

Sl. No.	Willing for pap smear examination	Pre-intervention		Post-intervention	
		Number	Percentage	Number	Percentage
1	Yes	71	43.04%	102	61.82%
2	No	94	56.96%	63	38.18%
	Total	165	100%	165	100%

Table 5. Knowledge of the study subjects regarding the preventive measures for cervical cancer, pre and post intervention (N=388).

Sl. No.	Preventive measures	Pre-intervention		Post-intervention		Statistical test	
		No.	%	No.	%	Mc Nemar	P value
1	Avoid Multiple Sexual Partners	205	52.84%	388	100%	181.005	< 0.001
2	Avoid Early Sexual Intercourse	174	44.85%	388	100%	212.005	< 0.001
3	HPV# vaccination	148	38.14%	388	100%	238.004	< 0.001
4	Quit Smoking	30	7.73%	259	66.75%	207.108	< 0.001
5	Do not Know	143	36.86%	0	0.00%	141.007	< 0.001

* As there were multiple responses, the numbers are not mutually exclusive.
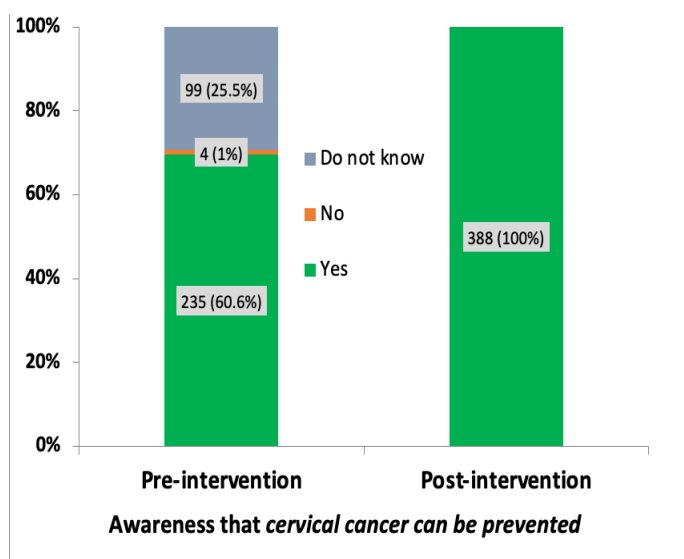

Figure 3. Distribution of study subjects based on the awareness that cervical cancer can be prevented, pre and post-intervention (N=388).

Discussion

In the present study, among the women of reproductive age group (15 years to 45 years), the awareness about cervical cancer significantly improved from 87.88% to 100% after post intervention (IPC). An interventional study conducted by Rao B A et al [6] among women of 15- 45 years of age group showed that before the intervention 17% of the participants were aware of cervical cancer, whereas after health education all 100% participants were aware of cervical cancer. In our study, there was also significant improvement among the study subjects regarding knowledge about the risk factors of cervical cancer after intervention.

In this study, before intervention 74.74% were aware about vaginal bleeding as one of the symptoms of cervical cancer, which after intervention increased to 97.42%. The multi-centric interventional study conducted by Raju S et al [7] among households of SHG women showed that awareness about any symptom of cervical cancer increased from 85.7% to 100% in intervention group compared to 58.2% to 86.7% in control group.

Regarding the knowledge on preventive measures for cervical cancer, in this study, the knowledge was significantly increased from 52.84% to 100% for avoiding multiple sexual partners whereas similar study done by Pandey D et al [8] among medical students showed that the overall awareness on the preventable nature of cervical cancer significantly increased from 81.5% to 88.8%, after intervention (IEC).

In this study, knowledge about "cervical cancer is highly prevalent in our county' and 'cervical cancer is one of the leading causes of deaths amongst all malignancies in India'; 'any adult women including you can get cervical cancer'; 'screening for cervical cancer is important for her'. The quasi-experimental study conducted by Abiodun O A [9] et al among adult women showed that the attitude towards willingness to

have cervical screening increased from 84.7% to 92.3%, post intervention.

The study conducted by Elamurugan S[10] et al showed 100% female school teachers compared to 93.25% of housewives were willing to get screened. In this study, among a total 388 study subjects, 26.29% had underdone pap smear examination for cervical cancer post intervention compared to only 18.04% pre intervention. The quasi-experimental study conducted by Abiodun O A[9] et al among adult women showed that the practice that ever had cervical screening increased from 4.3% to 8.3%, after intervention. The interventional study conducted by Ezeruigbo C R[11] et al among secondary school teachers showed that post intervention the practice about ever gone for cervical cancer screening was significantly increased form 12.9% to 93%.

Conclusion

The objectives of this study were to compare knowledge regarding cervical cancer and its prevention before and after intervention respectively.

The findings of the study suggest that there was a positive impact of Interpersonal Communication on overall increase in knowledge regarding Cervical cancer and its prevention among the women of reproductive age group in the study.

Limitations

1. Difficulty in recall bias and social desirability bias on self-reporting among the participants were noticed as tool used was questionnaire method.

2. Post-intervention follow-up was challenging in the present study due to unwillingness of participants for screening as it was invasive method and also migrants included were lost to follow-up.

Recommendations

1. There is a need of extensive IEC, BCC and IPC activities to be taken up by the health functionaries for making people aware of cervical cancer and motivated towards steps to be taken for prevention of the same, including HPV vaccination and screening for cervical

cancer in order to minimize preventable deaths in the community.

2. Attempts should be made to reach women who rarely visit health care services, for example, through increasing health campaigns in partnership with other organizations, school health services and community volunteers.

Author contribution

Conceptualization, methodology and data analysis by **GK**. Conceptualization, review and supervision by **HRRR** and paper writing - review and editing by **NBM**.

Conflict of interest

There is no Conflicts of interest/competing interests.

Funding

There is no funding.

References

1. D Gawdzik, K Chmaj-Wierzchowska, MU Jurczyk, S Sporny, T Opala. Knowledge assessment of women living in the Wielkopolska region concerning risk factors for cervical cancer. Przegląd Menopauzalny= Menopause Review. 2015 Mar;14(1):7.

2. KS Louie, S De Sanjose, P Mayaud. Epidemiology and prevention of human papillomavirus and cervical cancer in sub-Saharan Africa: a comprehensive review. Tropical Medicine & International Health. 2009 Oct;14(10):1287-1302.

3. Markowitz, EF Dunne, M Saraiya, HW Chesson, CR Curtis, J Gee, JA Bocchini, ER Unger . Human papillomavirus vaccination: recommendations of the Advisory Committee on Immunization Practices (ACIP). Morbidity and Mortality Weekly Report: Recommendations and Reports. 2014 Aug 29;63(5):1-30.

4. AM Nowakowski, J Kotarski. Risk factors of cervical cancer and possibilities of primary prevention. Przeglad epidemiologiczny. 2011;65(1):81-88.

5.   UA Emirates. The knowledge, attitude and practice of pap smear among local school teachers in Sharjah district. Middle East J Fam Med. 2004;4:10-18.

6.   BA Rao, JG Seshadri, C Thirthahalli. Impact of Health Education on HPV Vaccination. Indian Journal of Gynecologic Oncology. 2017 Sep 1;15(3):41.

7.   S Raju, MK Gupta, F Visnegarwala. An Educational Intervention to Empower and Engage the SHG Women against Cervical Cancer.

8.   D Pandey, V Vanya, S Bhagat, VS Binu, J Shetty. Awareness and attitude towards human papillomavirus (HPV) vaccine among medical students in a premier medical school in India. PluS one. 2012 Jul 31;7(7): 406 -419.

9.   OA Abiodun, OO Olu-Abiodun, JO Sotunsa, FA Oluwole. Impact of health education intervention on knowledge and perception of cervical cancer and cervical screening uptake among adult women in rural communities in Nigeria. BMC public health. 2014 Dec;14(1):814.

10.   S Elamurugan, P Rajendran, S Thangamani. Cervical cancer screening: Awareness, attitude, and practice of Indian women. Tropical Journal of Medical Research. 2016 Jan 1;19(1):42.

11.   R Ezeruigbo Chinwe, R UdeNebonta Abigail. Impact of Health Education on Knowledge, Attitude and Practice of Cervical Cancer Screening Among Secondary School Teachers in Enugu State. J Women's Health Care. 2015;4: 241.