

Original Research Article

## UTILITY ASSESSMENT OF SMART PHONE APPLICATION IN PROMOTING CERVICAL HEALTH AND RISK MITIGATION OF CARCINOMA CERVIX, AN INTER PROFESSIONAL PROJECT IN HYDERABAD, TELANGANA STATE, INDIA

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### Abstract

**Background:** More than one million women worldwide are currently living with carcinoma, and it is the second most leading cause of death amongst Indian women. Carcinoma cervix is easily preventable by screening test “Pap smear”. Screening requires awareness amongst the women of reproductive age group, Health care professionals and also the social workers. Awareness programmes are essential for early detection and reduce the morbidity and mortality <sup>[1]</sup>.

Lack of awareness, health care facilities and equipment, low information on Carcinoma screening and associated stigma in the community lead to the missing of early diagnosis of carcinoma cervix in the women of reproductive age group.

Awareness programs by using mobile phone short messaging service (SMS) and also special apps were conducted. Smartphone interventions can potentially influence health related behaviour and facilitate in the transfer of knowledge and plays an active role on ones health and medical care in turn leads to better health care quality, better health outcomes and likely lower health care costs <sup>[1, 2]</sup>.

**Methods:** Study was conducted for the duration of two years (June 2018-May 2020). Smart phone was used as a tool to transfer knowledge on awareness and preventive measures in the form of SMS, modules and apps to the Health care professionals and other community members.

**Results:** Out of the total 526 students were 500 teaching faculty were 9, health care workers 9 and women in reproductive age group 8. Their knowledge regarding awareness for cervical cancer was found to be significantly different following smart phone based health education intervention.

**Conclusion:** Educating the students regarding cervical cancer using smart phone as a tool, increased their knowledge and this in turn lead to increased number of women undergoing pap smear and detecting cervical cancer early detection and their by reducing morbidity and mortality.

**Keywords:** Carcinoma cervix, smart phone, pap smears, health education

## Introduction

An estimated one million plus women worldwide is currently living with carcinoma cervix. Carcinoma cervix is the 2<sup>nd</sup> most leading cause of death amongst Indian women. Among all malignant cancers carcinoma cervix is most easily preventable by screening. The detection of cytological abnormalities by microscopic examination of pap smears and subsequent treatment avoid development of carcinoma cervix. Which requires awareness amongst the women of reproductive age group, Health care professionals and also the social workers. Awareness programmes are essential and play an important part to lessen the mortality.

Lack of awareness and health care facilities, low information on Carcinoma screening, stigma associated with carcinoma cervix in the community, there are likely chances of missing the early diagnosis of carcinoma cervix in the women of reproductive age group. Awareness programs such as educating with the help of mobile phone short messages, by creating special apps. Smartphone interventions can potentially influence health related behaviour and facilitate in the transfer of knowledge and plays an active role on ones health and medical care, thus leading to better health care quality, better health outcomes, and also likely to lower health care costs.

If the Carcinoma cervix awareness programs through smart phone interventions aimed to reach to the potentially high risk women of reproductive age group, the cancer related morbidity and mortality can be reduced in the society. Health care promoters can be educated with the information provided by the modules and Apps. Which facilitate their services in providing information about the early diagnosis of carcinoma cervix and can guide about the screening and relevant investigations, which can reduce the apprehension and associated social stigma among the high risk patients. Students self-learning can be initiated through the smart phone interventions, and there is lots of scope for awareness regarding the problem, they can educate the patients as well as other society members.

Women of reproductive age group, high risk women, and community members can be educated about the preventive measures and precautions to be taken about the problem.

Faculty by updating their knowledge on recent advances can create awareness among the students, health care providers and can provide better services to the needy. Institutions are benefitted by providing efficient patient care by decreasing the morbidity and mortality and bringing up efficient students and staff.

This awareness is important, because as per the statistics, every five minutes one woman is succumbing to carcinoma cervix. Through smart phone interventions, by providing adequate information and advice regarding the screening procedures can make early diagnosis possible.

## Aims and Objectives

1. To assess the impact of awareness program to detect the carcinoma cervix through smart phone as a tool.
2. To compare the number of women underwent PAP smear screening test in the previous year and the current year at Gandhi Medical college/Hospital after awareness programme

**Inter professional education team and their assigned roles:** It is an inter-professional project involving many professions related to the project.

1. **Students [MBBS, Nursing, paramedical]:** At the end of the project, students were able to identify the signs and symptoms of Carcinoma cervix and diagnose early stages of Carcinoma cervix and can be able to educate the patients about it with the help of smart phone.
2. **Faculty:** Pathology and OBG faculty who gave willingness to participate in the project were able to educate the signs and symptoms of Carcinoma cervix to the Health care professionals and the students, use Smartphone interventions and be able to transfer the knowledge to the others.
3. **Health care professionals:** Health care professionals were able to educate the community workers and the high risk women regarding Carcinoma cervix and could provide information to the vulnerable.
4. **Community workers:** could educate the high risk women patients and their relatives and create awareness of the signs and symptoms of Carcinoma cervix.
5. **Women of reproductive age group:** could educate the high risk women patients and relatives and create awareness of the signs and symptoms of carcinoma cervix.
6. **Gram panchayat people:** ward members, sarpanch etc., should educate the high risk women patients and their relatives to create awareness of the signs and symptoms of Carcinoma cervix.
7. **Software experts:** Created and installed the APPs and Modules

## Methodology

Duration of the study is 2 years, from June 2018 to May 2020, conducted at Gandhi medical college, Govt Medical College Siddipet and the nearby village E.g., Pulluru, Raj Gopalpet etc. With the help of smart phone as a tool by creating Messages, Modules and APPs, awareness and preventive measures has been transferred to the Health care professionals and other community members and high risk women of reproductive age group 1<sup>st</sup> 6 Months: Sent messages through Whats app in the created group e.g., Awareness programmes in the form of messages through Smartphone including cervical cancer awareness programs to educate women about the risk factors, signs and symptoms of carcinoma cervix which include:

- Blood spots or light bleeding between or following periods.
- Menstrual bleeding that is longer and heavier than usual.
- Bleeding after intercourse, douching, or a pelvic examination.
- Increased vaginal discharge.
- Pain during sexual intercourse.
- Bleeding after menopause.
- Unexplained, persistent pelvic and/or back pain.

- Ignoring symptoms may allow the cancer to grow to a more advanced stage and lower your chance for effective treatment.
- Have regular screening tests for cervical cancer.
- These signs and symptoms can also be caused by an infection.
- If you have any of these symptoms, see a health care professional right away.
- About the Diagnostic tests available.
- Early Detection: Pap Test.

## Method

A swab of the cervix can reveal abnormal cells, often before cancer appears. At age 21, women should start having a Pap test every three years. From age 30 to 65, women who get both a Pap test and an HPV test can go up to five years between testing.

But women at higher risk may need testing more often, so it's best to check with your doctor. Skipping tests raises your risk for invasive cervical cancer. You'll still need Pap tests after getting the HPV vaccine because it doesn't prevent all cervical cancers. Program aims at spreading awareness about the routine tests and its frequency as per the age.

Free cervical cancer screening programs to help assist the women to detect the disease. To educate the women about necessity of regular screening, the risk factors associated with the disease, the age when women are most likely to develop cancer of the cervix, linking of cervical cancer to HPV infection and other sexually transmitted diseases, and also the preventive measures to combat the risk factors.

**Symptoms of cervical cancer:** When cervical cells first become abnormal, there are rarely any warning signs. As the cancer progresses, symptoms may include-

1. Unusual vaginal discharge.
2. Vaginal bleeding between periods.
3. Bleeding after menopause.
4. Bleeding or pain during sex.

## Results

Students have achieved a mean score of 3.5 (3.1-4.0) in the pretest and in the post test they have achieved a mean score of 6.8 (6.4-7.2) (Table1). A total of 534 women have undergone Pap smear from June-November 2018 and 596 women have undergone testing in the next six months (Table 2).

Overall there is increase of 11.16% in women undergone pap smear test. In the age group of 15-35 years the increase is observed to be 17.12%. 15% increase in the yield of suspected carcinoma cervix and 40% increase in diagnosed cases of carcinoma cervix (Table 3).

Students and healthcare professionals claimed increased awareness regarding prevention and early diagnosis of CA cervix by more than 95%, however in faculty group it has increased by 60% (Table 4).

## Discussion

In the present study after conducting pretests and posttests to the students and faculty, the results indicated the success of awareness program. When compared the statistics, number of women undergone pap smears has tremendously increased during the following 6 months after campaigning as compared with the other studies [3, 4]. And the feedback taken from all the stake holders Students, Faculty, community members and the high risk women of reproductive group and their friends and relatives found to be satisfactory

This awareness is important, because as per the statistics, every 5 minutes one woman is succumbing to carcinoma cervix. Through smart phone interventions, by providing adequate information and advice regarding the screening procedures can make early diagnosis possible. The morbidity and mortality can be reduced in the vulnerable country like India. Health care promoters can be educated with the information provided by the modules and apps. Which facilitate their services in providing information about the early diagnosis of carcinoma cervix and can guide them about the screening and relevant investigations, which can reduce the apprehension and associated social stigma among the high risk patients and also carcinoma cervix associated morbidity and mortality can be reduced. Students self-learning can be initiated through the smart phone interventions, and there is lots of scope for awareness regarding the problem, they can educate the patients as well as other society members.

Women of reproductive age group, high risk patients, and community members can also be educated about the preventive measures and precautions to be taken about the problem. Faculty members by updating their knowledge and research methodology, can create awareness among the students, health care providers can provide better services to the needy. Institutions are benefitted by providing efficient patient care by decreasing the morbidity and mortality and simultaneously bringing up efficient students and staff.

## Limitations

1. Time adjustment among inter professional team members for conducting meeting and cooperation between different departments was a difficult task.

**Table 1:** Inter professional Team knowledge regarding various aspects of Carcinoma cervix awareness program

S. No.	Inter professional team members Total=59	Pre-Test [MCQs] N=10 Mean (SD)	Post-Test [MCQs] N=10 Mean (SD)	P value
1.	Students [4 <sup>th</sup> yr MBBS], DMLT, MLT, Nursing students	3.5 (3.1-4.0)	6.8(6.4-7.2)	0.002
2.	Faculty-9 [Pathology, OBG]	7.5(7.1-7.9)	9.5(9.1-9.9)	0.001
3.	Health care Professionals-5 [Lab technicians, Nurses, Anganwadi workers, Asha workers	2.8(2.4-3.2)	7.8(7.4-8.2)	0.001
4.	Communityworkers-2, Head of the village, ward member, [Sarpanch]	2.5(2.1-2.9)	5.5(5.1-5.9)	0.003
5.	Women in reproductive age group-6 Gandhi hospital, PHC Pulluru	1.5(1.1-1.9)	5.5(5.1-5.9)	0.001

**Table 2:** Number of pap smears done age groups from June 2018-May 2019

S No.	Age group	Number of Pap smears done during June2018 to November 2018	Number of pap smears done from December 2018-May 2019
1.	15-35	132 [24.7%]	226 [38%]
2.	36-60	335[62.7%]	309 [52%]
3.	61 yrs above	67[12.3%]	60 [10%]
	Total	534	596

**Table 3:** Difference in yield of suspected and diagnosed cases of carcinoma cervix following awareness campaign

S. No.	Period of study	No of Pap smears	Suspected carcinoma	Diagnosis of Carcinoma cervix	Inflammatory smears
1.	June 2018-Nov 2018	534	21	3	500
2.	Dec 2018-May 2019	596	33	5	558

**Table 4:** Percentage of Increased awareness among participants of different groups

S. No.	Activities	Result
1.	Created awareness amongst the students regarding the early diagnosis of carcinoma cervix.	100%
2.	Creating awareness amongst the health care professionals regarding the prevention and early signs and symptoms of Carcinoma cervix.	97%
3.	Increased awareness and recent advancements amongst the Faculty about the carcinoma cervix.	60%



**Fig 1:** Awareness program conducted at PHC-Pulluru and at GMC Secunderabad

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