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A Study to Assess the Effect of an Awareness Program on Knowledge and Practice Regarding Prevention of Reproductive Cancers among Teachers at Uka Tarsadia University, Bardoli

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Abstract: ***Reproductive cancers, including breast, cervical, and ovarian cancers, remain major health concerns among women in developing countries due to inadequate awareness and poor preventive practices. This study aimed to evaluate the effectiveness of an awareness program on knowledge and preventive practices related to reproductive cancers among female teachers at Uka Tarsadia University, Bardoli. A pre-experimental one-group pre-test–post-test design was adopted, involving 120 female teachers selected through a convenience sampling technique. Data were collected using a socio-demographic tool, a self-structured knowledge questionnaire, an inventory checklist for preventive practices, and an observational checklist for breast self-examination (BSE). The intervention comprised a Structured Teaching Program delivered via PowerPoint presentation, a BSE demonstration, and distribution of an informational pamphlet. Post-test assessments were conducted after 7 days (post-test I) and 30 days (post-test II) using the same tools. The results revealed marked improvements in post-test II, with good knowledge increasing to 66.67%, good preventive practices to 60.83%, and good BSE practice to 72.50%. The calculated t-values for knowledge (21.83), practice (14.04), and BSE practice (23.42) indicated highly significant improvements ($p < 0.001$). A low positive correlation was observed between post-test knowledge and practice ($r = 0.026$) and between knowledge and BSE practice ($r = 0.117$). The study concludes that the awareness program was effective in enhancing knowledge and preventive practices related to reproductive cancers, highlighting the need for regular reinforcement and follow-up to sustain long-term behavioural change.***

Keywords: Awareness program, Knowledge, Practice, Reproductive cancers, Teachers, Structured teaching program

1. Introduction

Reproductive (gynaecological) cancers define as it arises in the female reproductive organs and include cervical, ovarian, uterine, vaginal, and vulvar cancers. Each type has distinct risk factors, symptoms, and prevention strategies. Although all women are at risk, the likelihood increases with age. Early detection greatly improves treatment outcomes.[1]

The study aimed to evaluate the effectiveness of an awareness program in improving knowledge and preventive practices related to reproductive cancers among female teachers. The purpose was to evaluate the effectiveness of the awareness program in improving knowledge and preventive practices regarding reproductive cancers among female teachers at Uka Tarsadia University, Bardoli. The objectives were to assess the baseline level of knowledge and preventive practices, determine the change in knowledge and practices after the intervention, examine the correlation between knowledge and preventive practices, and identify associations between post-intervention knowledge and practices and selected demographic variables.

According to the World Health Organization (WHO) and its International Agency for Research on Cancer (IARC), the global prevalence rates for breast in 2020 was the most commonly diagnosed cancer worldwide, with over 2.26 million new cases. By 2022, this number increased to more than 2.31 million new cases. Breast cancer remains the leading cause of cancer death among women and the fourth most common cause of cancer death overall.[2] Awareness plays a crucial role in helping individuals recognize early signs of reproductive cancers, encouraging regular screening, reducing myths and fear, and promoting healthy behaviors. With better awareness, women are more likely to seek timely care, increasing the chances of early detection and reducing cancer-related mortality. Awareness can be promoted through health education sessions, community campaigns, posters and leaflets, and mass media platforms such as television, radio, and social media. Training healthcare workers and involving NGOs further help reach larger groups and ensure the delivery of accurate information. Various programs are initiated by government to improve the health of women, especially focused on the prevention of cervical cancer for the screening, treatment vaccinations is available, but cervical cancer cases remain due to less information, misconnects etc. [3]

This study is important because it identifies the awareness and preventive practices of university teachers regarding reproductive cancers. By highlighting existing gaps and addressing them through structured teaching, demonstration, and reinforcement using pamphlets, the study helps improve their knowledge and practices. Enhanced awareness supports

early detection and empowers teachers to disseminate accurate information within the community. Ultimately, the findings can guide future health education programs and contribute to reducing the overall burden of reproductive cancers.

2. Material & Methods

An experimental study was conducted among 120 female teachers at Uka Tarsadia University, Bardoli, from 3 March to 11 April 2025, using a non-probability convenience sampling technique. Ethical clearance, institutional permission, and informed consent were obtained prior to data collection. Teachers from non-paramedical departments who consented to participate were included, whereas those diagnosed with reproductive cancers or who had recently undergone breast surgery were excluded. Content validity of the tools was established by seven external experts from different specialties. Reliability of the self-structured knowledge questionnaire and the preventive practice checklist was assessed using the test–retest method, and coefficients were calculated using Karl Pearson's correlation formula. Data were collected using four tools: a socio-demographic questionnaire, a self-structured knowledge questionnaire, an inventory checklist for general preventive practices, and an observational checklist for breast self-examination (BSE). Knowledge and practice scores were categorized as poor (<60%), average/fair (60–79%), and good (80–100%). Baseline assessment (pre-test) was followed by a Structured Teaching Program (STP) delivered through a PowerPoint presentation covering reproductive cancers and a live BSE demonstration. Post-test I was administered after 7 days, followed by distribution of an educational pamphlet on BSE and early warning signs of reproductive cancers. Post-test II was conducted after 30 days to measure knowledge retention and sustained practice improvement. Data were analyzed using descriptive and inferential statistics. Frequencies and percentages summarized socio-demographic variables, while mean and standard deviation described knowledge and practice scores. A paired t-test assessed differences between pre- and post-tests, correlation analysis examined the relationship between post-test knowledge and practice, and the chi-square (χ^2) test determined associations with selected socio-demographic variables.

3. Result

Demographic details of the samples: among teachers with maximum (49.2%) were between the age group of 25-30 years. Most were Hindus (91.7%) and resided in urban areas (59.2%). A large proportion followed a vegetarian diet (67.5%) and were married (59.2%). More than half (55.0%) belonged to nuclear families. Regarding monthly family income, most respondents (38.3%) earned between ₹21,000–₹40,000. The majority of participants held a master's degree (68.3%), while one-fourth (25%) were employed as teaching assistants.

Notably, none of the participants reported any bad habits.

Table 1: Range, Mean, Sd and Median of pre-test and post-test level of knowledge and practice among teachers regarding prevention of reproductive cancers, (N=120)

Pre-test and Post-test of knowledge, practice & BSE	Range	Mean	SD	Median	Mean Difference
Pretest-Posttest Knowledge					
Pre-test Knowledge	12	12.73	2.97	13	4.45
Posttest Knowledge-1	12	17.18	2.82	17	
Posttest Knowledge-2	12	18.64	2.60	19	5.90
Pretest- Posttest Practice					
Pre-test Practice	7	4.56	1.54	5	1.93
Post-test 1 Practice	9	6.46	1.68	6	
Post-test 2 Practice	7	7.33	1.63	8	2.18
Pretest- Posttest Breast Self-Examination Practice					
Pre-test BSE	5	1.84	1.08	2	1.40
Post-test 1 BSE	4	3.25	0.918	3	
Post-test 2 BSE	4	3.84	0.744	4	2.008

The intervention led to a clear and sustained improvement in all outcomes. The mean knowledge score increased from **12.73 ± 2.97** in the pre-test to **17.18 ± 2.82** in post-test I and **18.64 ± 2.60** in post-test II. Likewise, the mean practice score improved from **4.56 ± 1.54** at baseline to **6.46 ± 1.68** and **7.33 ± 1.63** in post-test I and II, respectively. Breast self-examination (BSE) practice also showed a marked rise, with mean scores increasing from **1.84 ± 1.08** (pre-test) to **3.25 ± 0.91** (post-test I) and **3.84 ± 0.74** (post-test II). These results confirm the effectiveness of structured teaching program, BSE demonstration and informational pamphlet in enhancing knowledge and preventive practices related to reproductive cancers.

Table 2: Repeated measure ANOVA compare the mean pre-test and post-test score of knowledge and practice among teachers regarding prevention of reproductive cancers. (N=120)

Repeated measure ANOVA	Source	SS	df	MS	F		Sig.
					Cal. value	Tab. value	
Repeated measure ANOVA Knowledge							
Knowledge	Between Groups	2273.506	2	116. 753	**144. 26**	3.07	0.000 S
	Within Groups	283.025	3577	7.880			
	Total	506.531	359				
Repeated measure ANOVA Practice							
Practice	Between Groups	493.156	2	246.578	**91. 089**	3.07	0.000 S
	Within Groups	966.400	357	2.707			
	Total	1459.556	359				
Repeated measure ANOVA BSE practice							
BSE Practice	Between Groups	255.072	2	127.536	**151. 87**	3.07	0.000

	Within Groups	299.792	357	0.840			S
	Total	554.864	359				

Correlation analysis revealed a low positive association between knowledge and overall practice (r = **0.026**), and between knowledge and BSE practice (r = **0.117**). However, the relationship between overall practice and BSE practice was weak and not statistically significant (r = **–0.087**, p = **0.343**). Overall, these results suggest that increased knowledge was only minimally associated with improvements in practice, although general practice and BSE practice were weak, indicating that other factors may influence these behaviors.

The repeated measures ANOVA showed statistically significant improvements across all three outcomes. Knowledge scores increased significantly (**F = 144.26**), practice scores showed a marked rise (**F = 91.089**), and BSE practice demonstrated the highest improvement (**F = 151.87**). In each case, the calculated F-value exceeded the table value (3.07) with **p = 0.000**, confirming that the intervention like structure teaching program, BSE demonstration and informational pamphlet was produced significant changes in knowledge and preventive practice.

1) Correlation of mean post-test score of knowledge and practice.

2H0: There will be no significant correlation between mean post test score of knowledge and practice among teachers regarding reproductive cancers at 0.005 level of significance

Table 3: Correlation between mean post-test score of Knowledge and practice among teachers regarding reproductive cancers. (N=120) df=119

Correlation	Mean	Sd	r	Sig.	Types of correlation
Knowledge ↔ Practice	18.64, 7.33	2.61, 1.64	0.026	0.776	Low positive significant
Knowledge↔ BSE Practice	18.64, 3.85	2.61, 0.71	0.117	0.205	Low positive significant
Practice ↔ BSE Practice	7.33, 3.85	1.64, 0.71	-0.087	0.343	Not significant

2) Association between post-test level of knowledge mean post-test score of knowledge regarding reproductive cancers among teachers with their selected socio-demographic variables.

In the Association between knowledge with their selected demographic variables related reproductive cancers. A significant association was found with the teachers' religion (χ^2 = 15.047, p = 0.020), suggesting that religion had a meaningful influence on the knowledge scores after the structured teaching program. This significance may be attributed to the fact that a higher number of participants belonged to the Hindu religion, which could have contributed to the observed association.

3) Association between post-test level of practice mean post-test score of practice regarding reproductive cancers among teachers with their selected socio-demographic variables.

In the Association between practice with their selected demographic variables related reproductive cancers. A significant association was found with the teachers type of family (χ^2 = 12.098, p = 0.012), suggesting that this factor had a meaningful influence on their practice scores after the structured teaching program, as the p-value is less than 0.05. This significance may be due to the larger number of participants belonging to nuclear or joint families, which could have contributed to the observed pattern in practice behavior.

4) Association between post-test level of BSE practice mean post-test score of BSE practice regarding reproductive cancers among teachers with their selected socio-demographic variables.

In the Association between BSE practice with their selected demographic variables related reproductive cancers. The computed chi-square values indicated no statistically significant association between the post-test BSE practice scores of participants and their selected socio-demographic variables.

4. Discussion

The finding shows that the majority of female teachers were 25-30 years of age (49.2%), belonged to Hindu community (91.7%), (59.2%) were married, in term of education (68.3%) were held a master's degree and working as assistant professors (66.7%). The above finding was supported by a study conducted by Mujidat Awogbayila,et al on assessment of breast cancer risk perception, knowledge, and breast self-examination practices among market women in Owo, Ondo State, Nigeria. The finding of the study revealed that, out of 335 samples, majority women age was 40-50 years old 135(40.3%), most of women religion was Christian 159(47.5%), 204(60.9%) women was married, about 15(47.5%) women completed with secondary education.

The pre-test, only **6.67%** of participants demonstrated good knowledge, which increased to **41.67%** in post-test I and **66.67%** in post-test II, indicating the effectiveness of the structured teaching programme (STP). Preventive practices also improved, with good practice scores rising from **10.83%** at baseline to **43.33%** in post-test I and **60.83%** in post-test II following reinforcement through educational pamphlets. Similarly, good BSE practice increased from **8.33%** in the pre-test to **49.17%** in post-test I and **72.50%** in post-test II after the STP and BSE demonstration. These findings confirm the positive impact of the intervention on knowledge and preventive behaviours related to reproductive cancers. The above finding was supported by a study conducted by Gore. S. et.al. (2022) on assessing knowledge and practice of breast self-examination in Yuvatmal, India. The finding of the study revealed that, out of 460 samples, , majority 85% were aware (good knowledge) regarding breast self-examination practice and about 89 (38.19%) participant were do practice regarding breast self-examination.

The Repeated measures ANOVA demonstrated a highly significant difference between pre- and post-test scores. For knowledge, the calculated **F** value was **144.26** (df = 2), for practice **91.09**, and for BSE practice **151.87**, all exceeding the respective critical **F** values (≈ 3.02–3.07) at the **0.05** level. In

addition, paired *t*-test analysis showed statistically significant improvements in knowledge (*t* = **21.83)**, practice (*t* = **14.04**), and BSE practice (*t* = **23.42),** all exceeding the critical *t* value (**1.64, *p* < 0.001**). These results confirm the strong effectiveness of the intervention. The study conducted by Rumpa Sarker et.al. (2021) on Effectiveness of educational intervention on breast cancer knowledge and breast self-examination among female university students in Bangladesh. The study result showed that the paired t-test value of knowledge about prevention of breast cancer scores 37.350 (p=<0.001) and breast self-examination practice score 12.5 (percentage of correct changes) at p value <0.001. To conclude the study finding that the study population had poor awareness and knowledge at baseline that was improved significantly after educational session.

The Correlation of post-test mean score of knowledge, practice and breast self-examination practice. The Karl Pearson co-efficient correlation obtained in a low positive but not- significant correlation between knowledge and practice in prevention of reproductive cancers (r=0.026, p=0.776) and between knowledge and BSE practice (r=0.117, p=0.205). The correlation between practice and BSE practice was negative and not-significant (r= - 96 0.087, p= 0.343) among female teachers. The above finding was not supported by the other research supportive study.

With respect to association between knowledge with selected demographic variable of teachers, there was significant association found between knowledge of teachers with religion ($\chi^2 = 15.047$, p = 0.020) at 0.05 level of significance. In relation to association between practice with selected sociodemographic variables of teachers, there was significant association found with types of family ($\chi^2 = 12.908$, p = 0.012) at 0.05 level of significance. In addition, there was a no significant association found between breast self-examination practice with their selected sociodemographic variables of teachers. The above findings of the present study were supported by the study conducted by Mujidat Awogbayila et. al on 2023 on assessment of breast cancer risk perception, knowledge, and breast self-examination practices among market women in Owo, Ondo State, Nigeria. The study finding reviled that, there is significant association found with age, religion, educational qualification, average income per month, distance of residence from the nearest health facility and ethnicity.

Overall, the discussion suggests that the structured teaching programme significantly enhanced participants' knowledge, preventive practices, and BSE performance, which aligns with outcomes reported in similar intervention studies. Despite weak correlations between knowledge and practice and limited demographic associations, the overall evidence demonstrates that targeted educational interventions are highly effective in improving awareness and health-promoting behaviours related to reproductive cancers.

5. Conclusion

The study concluded that most teachers initially had average levels of knowledge and practice, which improved significantly to good levels following the intervention. Highly significant differences were observed between pre- and post-test scores for knowledge, practice, and breast self-examination (BSE). A low positive correlation was found between post-test knowledge and practice, and significant associations were identified with selected sociodemographic variables, including religion and type of family. These findings highlight the effectiveness of the educational intervention and support the need for ongoing awareness sessions to promote sustained preventive practices related to reproductive cancers.

Limitation: This study included only 120 female teachers from selected colleges in UTU, limiting the generalizability of the finding. The use of convenient sampling may have introduced selection bias, and self-reported data may have been affected by recall or social desirability bias.

Benefits: This study provides valuable insights into the knowledge and practices of female teachers, helping identify gaps that can be addressed through targeted awareness and structured teaching programs. The findings can guide researcher in improving intervention and supportive evidenced based practices within similar educational setting,

Recommendation

On the basis of the present study the following recommendation have been made for further study,

1) The similar study can be repeated on large on samples.
2) The similar study can be done to assess the effectiveness of any technology-based interventions like mobile apps or online modules can be explored to reach a wider population.
3) The similar study can be conducted in different settings such as schools and colleges students, community centers, and health care institutions.
4) The similar study can also be assess actual behavior change, such as screening uptake and regular practice of preventive measures.

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