DOI: https://doi.org/10.53350/pjmhs221621204

ORIGINAL ARTICLE

Effect of Health Education in Improving Knowledge, Attitudes and Practices of Preventable Cancers amongst Reproductive Age Women A Randomized Field Trial

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ABSTRACT

Background: The increasing burden of preventable cancers among women in low-middle income countries call for urgent development of constructive health strategies. The aim of this study was to determine the effect of health education on knowledge, attitude and practices of reproductive age women about preventable cancers in two peri-urban communities of Lahore.

Material and Methods: The study was a Randomized field trial and the data was collected from women of reproductive age from areas of Lahore Shadewal (SC) and Satokatla (SI). SC stands for control group and SI for interventional group. Number of participants was 235 in each group. A validated questionnaire was administered to evaluate knowledge, attitude and practices for prevention of reproductive cancers from both groups. Then during next visit to intervention group, a health education program in form of group discussion, role play and demonstration related to preventable cancers was arranged. After 2 weeks of previous visit, questionnaires were again filled. Same questionnaire was filled by the comparison group without giving any intervention**.**

Results: Before intervention mean total score for knowledge was 4.24 ± 2.30 in SC group and 4.68 ± 2.99 in SI group. After educating, mean total score of SC group the score came out to be 5.91 ± 3.014 whereas in SI group it was improved to 20.57 ± 2.755. The mean change in total score of knowledge of SC group was 1.67 ± 2.62 and 15.89 ± 3.35 in SI group. The mean change was found to be highly significant in SI group when compared with SC group, ($p<0.001$). The attitude and self-practice was also improved in SI group while females of SC showed no improvement, ($p>0.05$).

Conclutions: The study highlighted the need for educational programs to create awareness regarding regular screening of gynecological preventable cancers.

Keywords: Females, Reproductive Age, Health education, Awareness, Cancers.

INTRODUCTION

"Health education is the opportunity to acquire information and the skills needed to make quality health decisions". It facilitates in modifying health behaviors voluntarily.(1) Reproductive age of woman is from menarche to menopause which is approximately 15-49 years.(2) It has been well documented that hormones act as morphogens, therefore extemporaneous exposure to even low doses of hormonally active chemicals can increase the susceptibility of cancer.(3) There are four major cancers in reproductive age women: breast cancer, cervical cancer, endometrial cancer and ovarian cancer.(4) Although these cancers are not 100% preventable as they have genetic associations but there are some life style modifications which can decrease the incidence.(5) It is said that modifying behavioral factors for e.g. avoiding exposure to tobacco products, maintenance of a healthy weight, increased physically activity and consumption of healthy diet can substantially reduce the risk of developing cancer.(6)

Increasing awareness of signs and symptoms of cancer contribute to the detection of disease in less advanced stages. With early detection there is a greater chance that curative treatment will be successful, it is therefore critical that people should be taught about the early warning signs of cancer.(7)

The most prevalent cancer in woman is breast cancer.(8) The current demographic trends indicate that breast cancer will pose an even greater public health concern in future for Pakistan.(9) A stable increase in incidence among youngest age group of women is expected.

Breast cancer is the most frequently diagnosed cancer and the leading cause of cancer death in females' worldwide, accounting for 23 % (1.38 million) of the total new cancer cases and 14 % (458,400) of the total cancer deaths.(10) About half the breast cancer cases and 60% of the deaths are estimated to occur in economically developing countries.(9) Reproductive factors that increase risk include a long menstrual history, nulliparity, recent use of postmenopausal hormone therapy or oral contraceptives, and late age at first birth. Alcohol consumption also increases the risk of breast cancer.(11) A study showed that Cervical cancer is the third most commonly diagnosed cancer and the fourth leading cause of cancer death in females worldwide, accounting for 9 % (529,800) of the total new cancer cases and 8 % (275,100) of the total cancer deaths among females in 2008 . More than 85 % of these cases and deaths occur in developing countries.(12)

Cervical cancer is one of the leading causes of morbidity and mortality amongst the gynecological cancers worldwide. It was found that 5 % Pakistani female had knowledge about screening, out of which only 2.6 % had a Pap smear in their lifetime. Cervical cancer is a neglected disease in Pakistan in terms of screening, prevention, and vaccination.(13) The most common cancers are largely amenable to preventive strategies by primary and secondary prevention, hence a need for effective interventions tackling lifestyle risk factors and infections.(14) The high mortality observed from breast and cervical cancer highlights the need to break the stigmas and improve awareness surrounding these cancers.

Primary prevention must therefore be prioritized as an integral part of global cancer control. Formal education should incorporate health education as part of the curricula at all academic levels, especially for women. The mass media can also play an important role in improving public health protective behavior.

The objective of this study was to determine the effect of health education on knowledge, attitude and self- reported practices of reproductive age women about preventable cancers in two peri-urban communities of Lahore.

METHODOLOGY

Sample Size: SC had a total population of 5600 and SI had a total population of 5400. Out of this 50% population consisted of women and among them 45% women were of reproductive age group. The sample size was calculated as follows:

$$\mathbf{n} = \frac{2\bar{p}*(1-\bar{p})(Z_{\frac{\alpha}{2}}+Z_{\beta})^2}{\Delta^2}$$

- p was the average of the expected event rates under the alternative hypothesis
- Z α/2 and Zβ were the critical values of the normal distribution
- Δ was the true difference under alternate hypothesis

α = 0.05, β = 0.20
n = 235 subjects from each community.

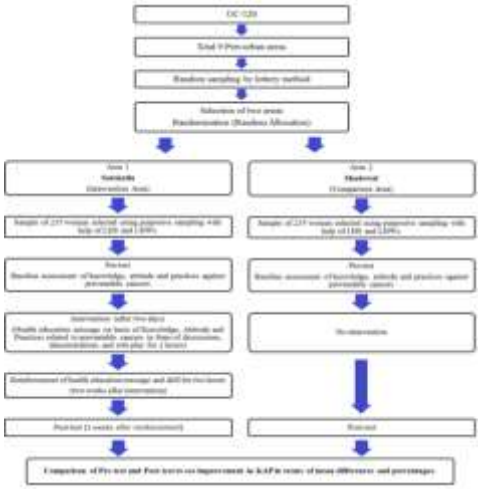

Figure 1: Randomized Field Trial conducted on female of reproductive age women.

Data Collection and Management: After elaborative literature review and discussion with experts, a well- organized closed ended questionnaire was developed. Questionnaire was translated into Urdu by bilingual expert and then re-translated into English by another bilingual expert to ensure validity of the instrument. It was pre-tested on ten subjects, that were fulfilling the eligibility criteria but from another community, similar to our study settings. Researcher collected data in order to ensure the reliability and validity of information. Questionnaire was modified according to the responses of subjects in order to improve the understanding of participants. It was then piloted in Urdu version on 30 women of reproductive age from a peri-urban area of similar settings.

Females of reproductive age group (15-49 years) who were health professionals (doctors, nurses, LHV, LHW and midwives), who had positive family history of reproductive system cancers, with already diagnosed reproductive cancers. Administrative approval was carried out. Women of reproductive age were included with informed consent. An organized questionnaire was completed by researcher accordingly to the response of participant to assess "knowledge, attitude and practices" used for prevention of reproductive cancers. Approximately 15 minutes were required to fill a form. Then during next visit to intervention area which was after 2 days, a health education program was arranged in government dispensary of SI group in which half hour group discussion, half hour role play and one hour demonstrations related to cancer prevention was given to women of reproductive age. Re-enforcement was performed after 2 weeks. Then after 2 weeks of last visit, again same questionnaires were filled by women under study to see the effect of health education. Same questionnaire was also filled by comparison group without giving any intervention.

The data entry was done and analyzed on SPSS version 21 and more modifications were made according to requirements, after doing focal group discussion with experts to ensure the validity. As questionnaire was multi-dimensional so first factor analysis was done and then researcher run Cronbach alpha on each factor for reliability of the tool. The questionnaire showed internal consistency and the value of alpha was found to be 0.9 so it was accepted for data collection. Post data collection, we checked the reliability and found it 83 %.

Age, Basic education, Socio-economic status. Qualitative/ categorical data was presented as frequency tables, pie charts and error bar charts. Quantitative/ continuous data was presented using mean ± S.D and bar charts.

For interpreting knowledge, qualitative data was presented by frequency and percentages and chi-square was applied for comparison of pre and post-test between two groups and pre and post-test in between intervention group for measuring significant changes. For qualitative data regarding to knowledge mean± S.D, median± IQR was measured. The total scores for knowledge were categorized into good and poor scores. Correlation was analyzed using correlation coefficient. When data was normally distributed we applied independent sample t-test for comparing mean ± S.D in both groups and Mann Whitney U-test was applied for comparing median ± IQR when data was not normally distributed. P value less than or equal to 0.05 was considered significant.

RESULTS

In this study most of the females were in 27 to 32 age group, in both the settings. Majority of women were earning PKR 5,000 to 10,000 in SC and SI. Approximately 39 % women in each community were primary pass and 22 % were middle pass. There was a trend of jobs in both areas, about 62 % to 64 % women were working and 37 % females were non-working. In total there were 422 (89.8 %) married and 48 (10.2 %) females were unmarried. There were two divorcees in SC i.e. 0.42 % of whole data, which we included as married women. In both groups the marital distribution was same, p- value > 0.05. Descriptive statistics of sociodemographic factors is given in table 1.

Before intervention mean total score was 4.24 ± 2.30 in SC group and 4.68 ± 2.99 in SI group. As we educated females of SC, the mean total score improved to 20.57 ± 2.755 and in SI group the score was 5.91 ± 3.014. The mean change in total score of SC group was 1.67 ± 2.62 and 15.89 ± 3.35 in SI group. As our data was not normally distributed so we applied non-parameter test i.e. Mann Whitney U test to compare median ± I.Q.R score before and after intervention in each group (the intervention was given to SI group only). So on the basis of Mann Whitney U-test, we observed significant difference in total score at each visit and found higher score in SI females, p-value < 0.05. The mean change was also highly significant in SI group when compared to SC group, p-value <0.001. Table 2 shows total knowledge score of women.

When the study was started we observed that in SC group 226 (96.2 %) females had poor knowledge, 9(3.8 %) female had good knowledge while in SI group, 232 (98.7%) of the females had poor knowledge and only 3 (1.3 %) females had good knowledge. The knowledge was statistically same in both groups, p-value > 0.05.

After educating females of SI, only 1 (0.4 %) female had poor knowledge, 9 (3.8 %) had good, 98 (41.7%) females had very good knowledge and 127 (54 %) of the females had excellent knowledge. While in females with no-intervention i.e. SC group, 211 (89.8 %) had poor, 20 (8.5 %) had good knowledge, 3 (1.3 %) females had very good and only 1(0.4%) female had excellent knowledge. The difference in knowledge was found to be highly significant, p value less than 0.001.

On applying spearman correlation coefficient, we found that in SC group there was a positive correlation between the responses which showed that mean poor to good knowledge remains same when it was asked first and second time while in SI group the correlation was negative. That showed poor to good knowledge before intervention shifted from good to excellent knowledge after intervention.

The attitude of females regarding preventable cancers among reproductive age women was compared in intervention and comparison groups (Table 3) and it was noticed that it was

improved from negative to positive in SI group after education, p-value < 0.05 while females from SC group showed no improvement in their attitude, p-value > 0.05. The medium suitable for health educating the women against preventable cancers was found to be through television programs and lady health workers and mid wives for both the groups. In both the groups, doctors were the first choice for treatment of cancers.

The practices of females were compared in intervention and comparison group and it was observed that practices were improved in SI after education, p-value < 0.05. BSE practices increased from 11.91 % to 97.44 %, CBE practices from 4.2 % to 37.45 %, Pap smear screening from 0 % to 7.66 % and condom usage improved from 29.78 % to 53.19 % but the response regarding mammography, level of physical activity and usage of oily foods remained same in this group, p-value > 0.05. The drift about sharing information related to preventable cancers among females of SI to the other women was found to be improved significantly. The main source of information among females of both groups was television. The females from SC showed no improvement in their practices, p-value > 0.05. Table 4 shows comparison of practices of females before and after intervension.

DISCUSSION

The mean age of female in our study was found to be 28.04 ± 8.204 with age range of 34 years. The education level was about 3.60 ± 4.049 years in comparison group and 3.22 ± 4.269 in intervention group. In another study from Nigeria which was done on 260 females of 15-44 years of age the mean was found to be 33.2 ± 11.7 years. Respondents identified fear of outcome of screening, lack of information and public awareness, lack of health worker request, high cost of screening and lack of personnel at the screening centres as the reasons why people do not patronize cervical screening.(15) The most pragmatic solution to early detection lies in breast cancer education of women.(7) The mean age in current study was found to be lower than this reported study, while the status of education was almost comparable.

In our study total of 89.8% women were married and 10.2% females were un- married. In both the groups, marital trends are found to be same. The mean age of marriage was found to be 18 years which predetermine their level of education and awareness about health The mean income in comparison group was 7.38 ± 6.026 and in control group 6.46 ± 5.55 (1000). Although these two groups were from same socio-economic class but still there was a statistical difference found, yet this difference had not affected their practices and attitude much.

In current study, 62% to 64% women are working and 37% females are non-working. Most of the females were house wives, domestic servants and laborers. Their type of job clearly predetermined their level of knowledge, attitude and practices regarding preventable cancers in women. A study conducted on women showed that their beliefs or limited knowledge appear to relate to their screening behaviors.(16)

Participant's knowledge about symptoms of breast cancer was rather poor. Only 214 participants (21.4%) knew that breast cancer presents commonly as a painless breast lump. Fewer participants were able to respond correctly to questions on non-lump symptoms of breast cancer such as pain in the breast, nipple discharge, and ulceration of the nipple. In terms of methods of diagnosis, only 432 participants (43.2%) were able to correctly identify breast self-examination (BSE) as a method for detection of breast cancer. A very small proportion of study participants indicated mammography as enhancing in early detection of breast cancer. Four hundred and fourteen participants (41.4%) correctly noted that breast cancer is curable when detected early. The main reasons advanced for not having clinical breast examination (CBE) include not having a breast problem in majority of the participants (568, 62.5%) and being unaware of the need for CBE in 293 participants (32.2%). None of the participants has ever had mammography screening. Unconditional logistic regression showed a significant association between knowledge scores and practice of BSE. Participants with higher knowledge scores were about 3 times more likely to practice BSE compared with those with scores below 50.0% (19) Moreover, in current study we found similar statistics. Before imparting health education, mean total score was 4.24 ± 2.30 in SC group and 4.68 ± 2.99 in SI group. As we educated females of SI, the mean total score improved to 20.57 ± 2.755 and in SC group the score was 5.91 ± 3.014. The mean change in total score of SC group was 1.67 ± 2.62 and 15.89 ± 3.35 in SI group. A study done in undergraduate students in Nigeria showed that about 2/3 of the students did not know about Pap smear and worse still, none of them had undergone a Pap screening test before.(17) This low participation in screening for cervical cancer was attributed to several reasons including ignorance of the existence of such a test, lack of awareness of centers where such services are obtainable, ignorance of the importance of screening and the risk factors to the development of cervical cancer.(18) To conclude it can be said that there is good level of awareness of cervical cancer among the female undergraduates but poor knowledge and participation in cervical cancer screening. The development of a comprehensive cervical cancer screening strategy is being recommended to improve participation with a view to prevent cervical cancer by early detection and treatment of the pre-malignant stages.(15) The study highlights the need for educational programs to create awareness regarding regular breast cancer screening behavior. As breast cancer and awareness of reproductive organs is effective for early diagnosis and management.(19) All these mentioned studies, strengthened results of our study regarding knowledge.

Limitations of Study: Main limitation was that questionnaire of study was found to be somewhat sensitive for young girls and unmarried women due to which they were reluctant and shy while answering, which can over all affect their answers and hence results of the study. Design of the questions also influenced the answers of participants. Funding was another important limitation, otherwise some reading and pictorial literature could be given to the females for their better understanding of preventable gynecological cancers. The study was time bound. Reporting bias was found due to the literature dissemination with availability of internet. Response bias was also highly marked as participant gave response what she thought researcher wanted to listen. Contamination of information was found by means of external sources like friends, colleagues, media and news.

CONCLUSION

Knowledge predetermines the level of prevention, screening, mode of treatment, usage of vaccination, required health services and incidence rates of cancers specific to women in reproductive age. Health education as an intervention improves knowledge to a greater extent and affects attitude and self-reported practices of reproductive age women about preventable cancers up to some extent. It has a positive impact towards practices and change in behavior can take place faster than anticipated, depending on the age of an individual being educated and the approach of information delivery. Even level of formal education of a female doesn't seem to affect intake of knowledge imparted during health education program. Hence, it is found that by imparting proper heath education, attitude and practices can be improved even in low socio- economic settings.

Although all the cancers show iceberg phenomenon, but cancers in women are far more difficult to identify and treat due to the socio-cultural factors of Pakistan. Most of the cancers in women are in reproductive age and are usually diagnosed late, leading to poor outcomes. Fortunately, these cancers can be diagnosed at an early stage by screening methods. In spite of the relative ease of prevention of these cancers, the incidence is on the increase. Health education can help in rooting out these cancers by helping females in making a right decision. Health education can lead to early detection, decrease morbidity and mortality and on large scale helps in saving funds that are currently allocated for expensive treatments of preventable cancers.

Table 1: Descriptive Statistics of Sociodemographic Factors of the study Population (N=235 per group)

Variables	SC		SI	
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
Age (in years)				
15-20	30	12.76	46	19.57
21-26	56	23.82	51	21.70
27-32	73	31.06	64	27.23
33-38	41	17.44	37	15.74
39-44	26	11.06	30	12.76
45-50	9	3.83	7	2.98
Income (Rupees)				
< than 5,000	94	40.0	91	38.72
5,000-10,000	111	47.23	119	50.63
11,000-15,0000	17	7.23	19	8.08
16,000-20,0000	8	3.40	6	2.55
21,000-25,0000	5	2.12	0	0.0
Education				
Illiterate	52	22.12	49	20.85
Primary	92	39.14	90	38.29
Middle	51	21.70	54	22.97
Matriculation	28	11.91	24	10.21
Intermediate	9	3.82	14	5.95
Graduate	3	1.27	4	1.70
Job status				
Working	147	62.55	151	64.25
Non-working	88	37.44	84	35.74 Married Non-married

Table 2: Comparison of Total Knowledge Score in study groups

		Mean	S.D	Median	IQR	Minimum	Maximum
Total score (before)	SC	4.24	2.310	4	2	1	15
	SI	4.68	2.299	3	4	1	13
Total score (after)	SC	5.91	3.014	4	3	1	22
	SI	20.57	2.755	19	4	6	25
Score difference (before –after)	SC	1.67	2.62	0	2	-6.00	18.00
	SI	15.89	3.35	14	4	4.00	23.00

Table 3: Comparison of Attitude of the Females Before and After Intervention

What is your opinion regarding		SC		SI	
		Before	After	Before	After
		No (%)	No (%)	No (%)	No (%)
Visit a doctor in case of symptoms related to reproductive cancers	Yes	217 (92.34)	219 (93.19)	211 (89.78)	229 (97.44)
	No	18 (7.65)	16 (6.81)	24 (10.21)	6 (2.55)
	p-value	0.722		0.001	
Perform BSE weekly	Yes	12 (5.11)	14 (5.95)	14 (5.95)	191 (81.27)
	No	223 (94.89)	221 (94.04)	221 (94.04)	44 (18.72)
	p-value	0.687		<0.0001	
Perform Pap smear once	Yes	11 (4.68)	12 (5.11)	11 (4.68)	67 (28.51)
	No	224 (95.32)	223 (94.89)	224 (95.32)	168 (71.49)
	p-value	0.831		<0.0001	
Perform CBE once a year	Yes	24 (10.21)	30 (12.76)	28 (11.91)	181 (77.02)
	No	211 (89.78)	205 (87.23)	20 7(88.08)	54 (22.98)
	p-value	0.385		<0.0001	
Practice safe-sex	Yes	52 (22.13)	63 (26.81)	61 (25.95)	163 (69.36)
	No	183 (77.87)	172 (73.19)	174 (74.04)	72 (30.63)
	p-value	0.238		<0.0001	
Preference of care provider for cancer treatment	Hakeem	10(4.25)	7(2.97)	9(3.83)	1 (0.42)
	Doctor	217(92.34)	219(93.19)	214(91.06)	232 (98.72)
	Homeopathic	6(2.55)	6(2.55)	7(2.98)	0 (0)
	Spiritual healer	2(0.85)	2(0.85)	3(1.27)	0 (0)
	Others	0(0)	1(0.42)	2(0.85)	2 (0.85)
	p-value	0.820		0.002	

Table 4: Comparison of Practices of the Females before and after Intervention

Practices		SC		SI	
		Before	After	Before	After
		No (%)	No (%)	No (%)	No (%)
Perform BSE for breast cancer	Yes	25 (10.63)	27 (11.48)	28 (11.91)	229 (97.44)
	No	210 (89.36)	208 (88.51)	207 (88.08)	6 (2.55)

	p-value	0.769		<0.0001	
No of sessions	Once a week	2 (0.85)	4 (1.7)	4 (1.70)	126 (53.62)
	Once a month	9 (3.83)	10 (4.25)	10 (4.25)	92 (39.14)
	Once a half year	14 (5.95)	13 (5.53)	11 (4.68)	6 (2.55)
	Once a year	0 (0)	0 (0)	3 (1.28)	5 (2.13)
	p-value	0.712		<0.0001	
Perform CBE for breast cancer	Yes	6 (2.55)	8 (3.40)	10 (4.25)	88 (37.45)
	No	229 (97.44)	227 (96.59)	225 (95.74)	147 (62.55)
	p-value	0.587		<0.0001	
No of sessions	Once a week	0 (0)	0 (0)	0(0)	0 (0)
	Once a month	0 (0)	0 (0)	0(0)	0 (0)
	Once a half year	0 (0)	0 (0)	1 (0.42)	63 (26.81)
	Once a year	6 (2.55)	8 (3.40)	9 (3.83)	25 (10.63)
	p-value	0.99		0.001	
Perform mammography	Yes	1 (0.42)	2 (0.85)	3 (1.28)	8 (3.40)
	No	234 (99.57)	233 (99.14)	232 (98.72)	227 (96.59)
	p-value	0.567		0.127	
Perform Pap smear	Yes	1 (0.42)	3 (1.28)	0 (0)	18 (7.66)
	No	234 (99.57)	232 (98.72)	235 (100)	217 (92.34)
	p-value	0.315		<0.0001	
Level of physical activity	Too much	23 (9.78)	25 (10.63)	22 (9.36)	29 (12.34)
	Normal	199 (84.68)	201 (85.53)	194 (82.55)	191 (81.27)
	Less	13 (5.53)	9 (3.83)	19 (8.08)	15 (6.38)
	p-value	0.663		0.483	

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