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Impact of Nurse-Led Counselling on Knowledge, Attitude and Willingness to Undergo Pap Smear Screening Among Women in Selected Rural Communities

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Abstract: ***Introduction: In India, cervical cancer is a major cause of death for women, but it can be mainly avoided with routine screening. Due to a number of major obstacles, such as fear, sociocultural barriers, and a lack of awareness, the Pap smear test uptake rate in rural communities is still extremely low. The purpose of this study was to assess how a focused counselling intervention led by a nurse affected rural women's willingness to get a Pap smear. Methods: Quasi-experimental – Non-equivalent control group design was adopted to evaluate the impact of nurse-led counselling among 150 women from selected rural communities. Participants were selected by using a purposive sampling technique and allocated in to experimental group (n=75) and a control group (n=75). Women in the Experimental Group received a structured, one-on-one counselling session from a trained nurse regarding Pap Smear Screening. Validated Questionnaire and Likert Scale were used respectively to collect data on awareness, attitude and willingness before and after the intervention. Data was analysed by using Descriptive and Inferential statistics. Results: The results of a paired t-test, shows a significant difference statistically, and are displayed in this table. With a very large (t =24.470) that indicates a very strong effect, the result is highly statistically significant. The null hypothesis is rejected because the p-value (.000) is significantly less than the conventional significance level of 0.05. Conclusion: The findings of the study concludes that nurse-led counselling has significant impact in enhancing the level of knowledge, attitude among women in rural communities. Willingness to undergo cervical cancer screening is greatly increased by nurse-led counselling, which is a powerful and successful method for overcoming important informational and emotional barriers. Improving preventive health outcomes for marginalised populations may depend heavily on incorporating this individualised counselling approach into primary healthcare.***

Keywords: Cervical cancer, pap smear screening, willingness, Nurse-led counselling, awareness, attitude, knowledge, women

1.Introduction

Cervical cancer is one of the most significant global health issues for women. Although it has a great potential to prevent, it is still the leading cause of mortality among women, disproportionately affecting low- and middle-income nations like India.[1] The fact that early detection can largely prevent this disease is one of its major tragedies. A tried-and-true, reasonably priced screening method for detecting precancerous changes, the Papanicolaou (Pap) smear test can significantly lower the incidence of invasive cancer by enabling prompt treatment.[1–3]

Even with the availability of this life-saving test, screening rates are still very low, especially for rural women. This discrepancy is caused by a complicated network of barriers, such as a lack of knowledge about cervical cancer, real-world issues like the cost and accessibility of facilities, and significant sociocultural barriers. A woman's willingness to seek screening is frequently suppressed by factors like fear of the procedure, embarrassment, social stigma, and the requirement for family consent. This results in a significant disconnect between the availability of services and their actual use.[4,5]

There is an urgent need for an intervention to address this concern, social barriers at the grassroots level. One of the

promising, patient-centred method to close this gap is nurse-led counselling.[6] As dependable and approachable medical professionals, nurses are in a unique position to establish rapport, offer individualised, culturally sensitive education, and discreetly address the particular misconceptions and anxieties that discourage women. Although the value of health education is well established, solid data regarding the direct effect of structured nurse counselling on rural women's screening willingness is still lacking.[7,8]

To provide vital information for creating successful public health initiatives, this study intends to assess the impact of a focused, nurse-led counselling program on awareness, attitude and raising the willingness among women in selected rural communities to undergo Pap smear screenings.

2.2. Objectives:

1. To assess the baseline level of knowledge, attitudes, related to Pap Smear screening among women before receiving the Nurse-Led Counselling.
2. To evaluate the effectiveness of Nurse-Led Counselling on knowledge, attitudes, regarding Pap Smear screening among the women after receiving the Nurse-Led Counselling.
3. To determine the impact of Nurse-Led Counselling on the willingness of women to undergo Pap Smear screening, by comparing the level of willingness before and after the intervention.
4. To find out the association between the level of knowledge & attitude selected socio-demographic variables and the women's willingness to undergo Pap Smear screening.

Null hypothesis

H_{01}: There is no significant difference between the post-test mean scores of knowledge, attitude, and willingness to undergo Pap Smear screening among women in Experimental Group and Control Group before and after the Nurse-Led Counselling.
H_{02}: There is no significant association between selected socio-demographic variables and the willingness of women to undergo Pap Smear screening.

3.Materials & Methods

Study Design**:** Quasi-Experimental – Non Equivalent Control Group Design was adopted to evaluate the impact of Nurse-Led Counselling on knowledge, attitude and Willingness to Undergo Pap Smear Screening Among Women.

Target Population: were the women of the reproductive age group of 25−50 years.

Setting: The study was conducted in selected rural communities of Lucknow, U.P.

Sample Size & Sampling Technique: A sample size of 150 women were selected by using Non probability – Purposive Sampling Technique and 75 women were allocated in Experimental group and 75 women in Control group. The sample size was determined by using G-Power software, 95% Confidence interval and a significance level (α) of 0.05.

Sampling criteria:

Inclusion criteria: women in the reproductive age group (25−50 years), permanent residence and those who are willing to participate were included in the study. Women who had never undergone pap smear screening and who gave written consent were included in the study

Exclusion criteria: Women who were undergoing treatment for any gynaecological malignancy and who are unable to communicate due to severe illness or cognitive impairment were excluded from the study.

Tools &Techniques: Semi structured Questionnaire was used to assess the knowledge and 5 point self-structured Likert Scale was used to assess the attitude.

Reliability of tool: was established by using test re-test method for knowledge and Cronbach's Alpha test for attitude.

Pilot study: A Pilot study was conducted with 20% of the sample size to determine the feasibility of the study and reliability of the tool.

Data Collection Procedure: Data was collected under 3 phases;

Phase 1**:** The researcher administered the pre-test to all eligible participants in both the Experimental and Control groups to assess the level of knowledge, attitude and willingness to undergo pap smear screening before the nurse led counselling.

Phase 2: **F**ollowing the pre-test, the researcher provided structured one-one counselling session, which is a 15 to 20-minute interaction, to the women in the Experimental Group only. Counselling was focused on clarifying misconceptions, emphasizing the benefits of early detection, and providing practical solutions to overcome barriers. The women in control the control group received only routine health information available at the PHC.

Phase 3: The post test was carried out **a**fter a follow-up period of 4 weeks after the intervention by using the same Questionnaire to assess the level of knowledge, and willingness to undergo screening among women in Experimental and Control group

Statistical methods: data were analysed by using descriptive and inferential statistics based on the objectives and the hypothesis tested in the study

4.Results

Table 1: Distribution of Socio-demographic Variables in Experimental Group and Control group

Socio Demographic Variables		Experimental Group		Control Group	
		f	%	f	%
Age	25-30 Years	13	17.3	18	24.0
	31-35 Years	28	37.3	29	38.7
	36-40 Years	26	34.7	13	17.3
	41-45	5	6.7	10	13.3
	46-50	3	4.0	5	6.7
Education	No formal education	15	20.0	18	24.0
	Primary education	27	36.0	20	26.7
	Higher Secondary	23	30.7	24	32.0
	Senior secondary	10	13.3	12	16.0
	Graduation and above	0	0.0	1	1.3
Occupation	Housewife	26	34.7	15	20.0
	Daily wage laborer	21	28.0	29	38.7
	Farming	28	37.3	31	41.3
Family monthly income	Below Rs 10,000/-	36	48.0	42	56.0
	Rs10,001-15000/-	37	49.3	26	34.7
	above Rs15000 /-	2	2.7	7	9.3
No of Children	One child	21	28.0	12	16.0
	Two to three children	50	66.7	35	46.7
	More than three children	4	5.3	28	37.3
Any Information about Pap smear	Yes	11	14.7	5	6.7
	No	64	85.3	70	93.3
Source of Information	Health care personnel	7	9.3	5	6.7
	Social media	4	5.3	0	0.0
	No information	64	85.3	70	93.3
Previous Pap smear Screening History	Yes over 3 years ago	2	2.7	3	4.0
	Never	73	97.3	72	96.0

Majority 37.3% of the women were in the middle-age (31-40 years) in the experimental group. Similarly, the same age group (38.7%) were participated as Control group. The majority of the women in both groups have either primary or higher secondary education, indicating that their educational backgrounds are quite similar. The majority of the participants were farmers (37.3%) in the Experimental group, whereas daily wage workers and farmers make up a larger portion of the Control group. This is the most striking difference. The control group has a much larger proportion of women with four or more children (37.3%) compared to the Experimental group (5.3%). Conversely, the experimental group has a higher concentration of women with one to three children. Participants in the control group are more likely to be in the lowest income (below ₹10,000 per month). The middle-income group (₹11,000–₹15,000) is slightly more represented in the experimental group. The vast majority of participants in both groups (93.3% in the control group and 85.3% in the experimental group) knew nothing about the Pap smear test beforehand. With more than 96% of each group having never had a Pap smear, the two groups' lack of screening experience was nearly identical.

Table 2: Pre- test & Post -test knowledge and Awareness regarding Pap smear screening in experimental group

Statement		**Pretest**		**Posttest**	
		f	%	f	%
I know that cervical cancer is a preventable disease.	Yes	0	0	75	100
	No	1	1.3	0	0
	Don't know	74	98.6	0	0
I know that the Pap Smear test is used to detect pre-cancerous changes.	Yes	0	0	74	98.6
	No	1	1.3	0	0
	Don't know	74	98.6	1	1.3
I know that HPV (Human Papillomavirus) is the main cause of cervical cancer.	Yes	0	0	73	97.3
	No	0	0	0	0
	Don't know	75	100	2	0
I know where the nearest facility for Pap Smear screening is located.	Yes	18	24	75	100
	No	1	1.3	0	0
	Don't know	56	74.6	0	0
I know that the Pap Smear test should be done regularly.	Yes	2	2.7	75	100
	No	1	1.3	0	0
	Don't know	72	96	0	0
Overall score:		**5.33%**		**99.2%**	

The value in Table 2 indicates that knowledge and awareness dramatically increased by almost 94 percentage points after the intervention.

Table 3: Pair t-test score on knowledge and Awareness regarding Pap smear screening in experimental group

Paired t test differences					t	df	Sig.
Mean	SD	Std. Error Mean	95% CI of the Difference				
			Lower	Upper			
1.77	0.63	.073	1.63	1.92	24.5	74	.000

The results of a paired t-test, shows a significant difference statistically, and are displayed in this table. With a very large (t =24.470) that indicates a very strong effect, the result is highly statistically significant. The null hypothesis is rejected because the p-value (.000) is significantly less than the conventional significance level of 0.05.

Table 4: Pre-test and Posttest attitudes and beliefs regarding Pap smear screening
1 = Strongly Disagree (SD), 2 = Disagree (D), 3 = Neutral (N), 4 = Agree (A), 5 = Strongly Agree (SA)

Statements		Pre-test		Post-test	
		f	%	f	%
I believe I could be at risk of getting cervical cancer someday.	SD	0	0	0	0
	D	1	1.3	1	1.3
	N	0	0	0	0
	A	34	45.3	33	44
	SA	40	53.3	41	54.7
I believe cervical cancer is a serious disease that can greatly affect my life.	SD	0	0	0	0
	D	0	0	0	0
	N	22	29.3	17	22.7
	A	52	69.3	50	66.7
	SA	1	1.3	8	10.7
Getting tested early is more important than the trouble of going.	SD	0	0	0	0
	D	1	1.3	0	0
	N	1	1.3	0	0
	A	53	70.7	51	68
	SA	20	26.7	24	32
Pap Smear screening is good for my health	SD	1	1.3	0	0
	D	0	0	0	0
	N	20	26.7	0	0
	A	54	72	56	74.7
	SA	0	0	19	25.3
I am confident I can make time to attend the Pap Smear screening appointment.	SD	0	0	0	0
	D	0	0	0	0
	N	22	29.3	12	16
	A	53	70.7	43	57.3
	SA	0	0	20	26.7
Over all		**3.97**		**4.22**	

The overall average increased from 3.97 to 4.22, suggesting that attitudes and beliefs regarding cervical cancer screening are becoming more positive. Perception of the test's advantages and confidence showed the biggest gains.

Table 5: Pretest and Posttest practical and cultural barriers in experimental group
(1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree)

Statement		Pre test		Post test	
		f	%	f	%
I feel embarrassed about having a pelvic examination.	SD	0	0	0	0
	D	0	0	0	0
	N	7	9.3	0	0
	A	16	21.3	13	17.3
	SA	52	69.3	62	82.7
I worry about the cost of the Pap Smear test.	SD	0	0	6	7.6
	D	32	42.7	57	72.2
	N	22	29.3	12	15.2
	A	21	28	0	0
	SA	0	0	0	0
The distance to the hospital is too far & difficult to travel.	SD	0	0	42	56
	D	21	28	28	37.3
	N	0	0	5	6.7
	A	54	72	0	0
	SA	0	0	0	0
My husband & family will not allow this test.	SD	0	0	10	13.3
	D	21	28	21	28
	N	0	0	4	5.3
	A	32	42.7	21	28
	SA	22	29.3	19	25.3
I am worried that the test results will be shared with others (lack of privacy)	SD	1	1.3	12	16
	D	0	0	34	45.3
	N	0	0	5	6.7
	A	74	98.7	24	32
	SA	0	0	0	0
I believe the Pap Smear test is painful or very uncomfortable.	SD	0	0	0	0
	D	0	0	4	5.3
	N	0	0	19	25.3
	A	43	57.3	39	52
	SA	32	42.7	13	17.3
Overall scores		**3.84**		**3.00**	

The overall score in the result indicates a favourable outcome. A lower score suggests that following the intervention, the participants viewed these problems as less significant obstacles than they had previously**.**

Table 6: Pre test and Post test willingness to undergo screening in experimental group

Statement		Pre test		Post test	
		f	%	f	%
Are you willing to schedule a Pap Smear screening within the next three months?	Not at all willing	12	16	0	0
	Slightly willing	23	30.7	0	0
	Neutral	21	28	12	16
	Moderately willing	18	24	46	61.3
	Very much willing	1	1.3	17	22.7
What would be the most helpful factor that could increase your willingness to be screened?	Free screening camp nearby	9	12	7	9.3
	Assurance of female staff for the procedure.	1	1.3	21	28
	Counseling and information session	42	56	1	1.3
	Permission & support from husband and family	23	30.7	46	61.3
	Others	0	0	0	0
Average score		**2.64**		**4.07**	

This indicates that following the intervention, the participants' willingness to schedule a Pap smear screening increased significantly and in a very positive way.

5.Discussion

The results of this study offered strong evidence that a counselling intervention led by a nurses can greatly increase rural women's willingness to get a Pap smear. The significant improvement in awareness, attitude, and general

willingness post-test scores highlights the significant influence of tailored health education in removing important obstacles to cervical cancer prevention. Similar finding were reported in a study conducted in South Ethiopia.[9] One fundamental finding is the sharp rise in the awareness score from the pre-test to the post-test. The goal of the Pap smear, the function of HPV, and cervical cancer as a preventable disease were all poorly understood prior to the intervention. Through the provision of understandable, easily accessible, and culturally appropriate information, the counselling sessions directly addressed this gap.

More significantly, the intervention was successful in changing attitudes rather than merely imparting knowledge. It appears that the counselling sessions were successful in reducing anxiety, closing the misconceptions about pain and discomfort, and redefining the Pap smear as a preventative and proactive health measure, as evidenced by the positive change in the attitude score. The substantial increase in the willingness score indicates the intervention's ultimate success. This illustrates a significant change from passive awareness to intentional behaviour. The nurse-led counselling enabled women to develop a firm intention to set up a screening by increasing their knowledge and cultivating a positive outlook.

Because influencing willingness is a key objective of any health promotion program and willingness is the direct precursor to action and this finding is crucial. Although our findings are consistent with research by Abotchie & Sharan (2020).[10] which also found that community-based education increases screening uptake, our study emphasises the critical role that nurses play as change agents.

6.Conclusion

This study concludes by showing that nurse-led counselling is a powerful and successful method for raising awareness, encouraging positive attitudes, and greatly enhancing rural women's willingness to get Pap smears. It goes beyond just pointing out issues to presenting a workable, replicable, and expandable solution. This intervention model provides a clear path to increasing cervical cancer screening rates and lessening the burden of this avoidable disease in communities that are already at risk by empowering nurses and directly involving women.

7.Limitations and Future Directions

The results are predicated on a particular geographic and cultural setting, and additional investigation is required to ascertain whether this model can be applied to other communities. Additionally, rather than measuring actual screening uptake, this study measured willingness. To find out how many participants actually act on their stated willingness over the next few months, a longitudinal follow-up study would be extremely helpful.

Given that family support was found to be a crucial component, future studies should also examine the effects of including male partners and community leaders in the counselling process. Finding the most resource-efficient models for widespread implementation may also be possible by contrasting the efficacy of individual and group counselling sessions.

Conflict of Interest

The authors declared no conflict of interest in this study.

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