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ROLE OF SOCIAL DETERMINANTS OF HEALTH IN REPRODUCTIVE CANCER CARE AMONG WOMEN: A CROSS-SECTIONAL SURVEY FROM DIVERSE DEMOGRAPHIC AND REGIONAL SETTINGS IN INDIA

Padmaja Gadiraju[*1], *C. Vanlalhruaii*[1], *Ranjit Kumar Dehury*[2], *Punam Singh*[2], *Imteyaz Ahmad*[1,3], *Parthsarathi Dehury*[3]

1. Centre for Health Psychology, School of Medical Sciences, University of Hyderabad, Telangana – 500 046, India
2. School of Management Studies, University of Hyderabad, Telangana - 500 046, India
3. School of Public Health, AIPH University, Bhubaneswar- 754001, India

Correspondence: gpadmaja.psychology@uohyd.ac.in

ABSTRACT

Access to reproductive cancer care in India is significantly affected by social determinants of health. Reproductive cancers, including cervical, ovarian, and uterine cancers, constitute a significant health challenge for women in India. This cross-sectional survey aims to comprehensively assess the landscape of reproductive cancer care among women in India, exploring access, awareness, and barriers to timely diagnosis and treatment. This study highlights challenges in delivering care for reproductive cancers among women in India.

A cross-sectional survey design was adopted, involving a representative sample of women from four diverse geographical regions, urban and rural settings, and varying socioeconomic backgrounds. Structured interviews were conducted, and questionnaires were used to collect data on participants' awareness of reproductive cancers, utilization of healthcare facilities, and experiences related to access to cancer care. The study adopted a convenient sampling approach and captured data from 509 women diagnosed with reproductive cancer.

The collected data were analysed using the SPSS 25 version. Univariate, bivariate and multivariate analyses were performed. The survey identified one-fourth of the respondents as having ovarian cancer, and 23.4% were diagnosed with cervical cancer. One-third of the study respondents were diagnosed with breast cancer, and 18% had other reproductive system cancers. The survey also assesses the prevalence of risk factors contributing to the incidence of reproductive cancers.

Socioeconomic status, education level, rural–urban settings, and cultural beliefs influence the healthcare-seeking behavior of the study participants. Insufficient knowledge, the stigma of reproductive health problems, and a lack of family income frequently discourage women from obtaining timely medical treatment.

KEYWORDS

Reproductive Cancer, Diverse Demographic, Social Determinants and Regional Setting

INTRODUCTION

Reproductive cancers, such as breast, cervical, ovarian, and uterine cancers, have important effects on the health and death rates of women worldwide. Social determinants of health (SDOH), such as economic status, education and geographic location, significantly impact the quality and availability of cancer care. Gaining insight into the influence of these factors on reproductive cancer treatment is essential for developing successful treatments and policies.

Socioeconomic status (SES) is a highly significant factor that affects the outcome of cancer care. Research consistently indicates that women from lower socioeconomic status (SES) households have a lower probability of receiving cancer tests in a timely manner and are susceptible to being detected at advanced stages of the disease [1]. The study revealed an association between a lower socioeconomic level (SES) and a lack of adherence to treatment guidelines for early-stage ovarian cancer. Women with socioeconomically disadvantaged backgrounds face difficulties such as inadequate healthcare availability and financial constraints, resulting in substandard medical treatment and sometimes adverse outcomes. This highlights the necessity for targeted treatments for women diagnosed with reproductive cancer.

The delay in diagnosing a condition often results in worse outcomes and increased mortality rates [2,3]. Financial constraints, such as the inability to meet the expenses of insurance or out-of-pocket payments, greatly affect the capacity to obtain preventive care and treatments [4]. This study examined the total individual expenses associated with different treatment approaches for ovarian cancer. This study reveals substantial cost disparities on the basis of the treatment method, with certain approaches causing significant burdens on patients. This emphasizes the importance of considering both the clinical effectiveness and the economic consequences when selecting options for treatment [5].

Education is strongly linked to socioeconomic status (SES) and has a significant effect on the accessibility of reproductive cancer care. Women with higher education levels tend to possess better health literacy, which empowers them to adequately navigate healthcare systems, understand medical information, and adhere to proposed cancer screenings [6]. This study assessed the level of awareness of cervical cancer among women and investigated the factors that influence their knowledge. A substantial percentage of women have a limited understanding of cervical cancer, and this lack of knowledge is associated with lower levels of literacy, which, in response, can be caused by characteristics such as educational attainment, socioeconomic status, and healthcare accessibility. Enhancing education and raising awareness are crucial for more effective prevention and early detection [7].

In contrast, individuals with lower levels of education tend to have limited knowledge about the risks and symptoms of cancer, leading to delays in seeking treatment and reduced involvement in preventative activities [8]. Access to reproductive cancer care is substantially influenced by geographic location, and rural women encounter different problems in this regard. Rural regions frequently lack healthcare establishments, specialized cancer centers, and oncology experts, increasing the travel distance for treatment and lowering the availability of medical care [9]. In addition, rural women are more vulnerable to having a lower socioeconomic status (SES), which increases the obstacles they face in accessing timely and sufficient healthcare [10].

In the context of reproductive cancer care among women in India, social determinants of health play an important role in affecting the incidence, diagnosis, treatment, and survival rates of cancers such as cervical, ovarian, and breast cancers. As per the NFHS-5, intersectional socioeconomic disparities in breast cancer screening have revealed significant disparities in accessibility. Women belonging to marginalized communities, namely, those with lower socioeconomic status, experience lower rates of screening, highlighting the necessity for focused initiatives to address these disparities [11]. A study conducted on sociodemographic and reproductive risk factors for cervical cancer in rural India identified several aspects that contribute to the risk. Early marriage, a high number of pregnancies, a low level of education, and restricted availability of healthcare services were reported. These findings emphasize the necessity of implementing focused prevention and awareness initiatives to address the risks of cervical cancer in rural areas [12,13]. A study conducted on adolescents from low socioeconomic backgrounds in India revealed that insufficient health communication, education, and social support have a substantial influence

on their involvement in cancer preventive behaviors. It is essential to prioritize the development of awareness and support networks to increase cancer prevention efforts for those at risk [14].

The literature highlights the significant impact of social determinants of health on the provision of reproductive cancer care for women. Factors such as socioeconomic status, education, geographic location, and the healthcare system influence cancer care access and outcome disparities. It is crucial to address these factors by implementing specific interventions, implementing policy changes, and implementing community-based initiatives to reduce inequalities in reproductive cancer care. This study aims to determine the role of social determinants of health in reproductive cancer care in India.

MATERIALS AND METHODS:

Reproductive cancers, such as cervical, ovarian, and breast cancers, create substantial health risks for women in India. Socioeconomic status, cultural beliefs, geographic location, and healthcare access are among the social determinants that impact the accessibility and utilization of reproductive cancer care. An analysis of these factors was conducted via a cross-sectional survey method. The utilization of this study methodology provides the gathering of data at specific times, resulting in a valuable understanding of the social determinants that impact cancer treatment approaches for women.

STUDY POPULATION AND SAMPLING

This survey focused on women of reproductive age from four diverse regions of India: Telangana, Odisha, Jharkhand, and Mizoram. Telangana belongs to the southern part of India, whereas Odisha and Jharkhand are in the eastern region. The state of Mizoram belongs to the northeast region of India, where the prevalence of cancer is high compared with that in other states. The sample was chosen for those who were either at risk of or had received a diagnosis of reproductive cancer. The sample included women from a wide range of socioeconomic statuses, with different educational levels, belonging to various religious and cultural categories, and residing in both rural and urban regions. The inclusiveness of this diversity ensures that the survey encompasses a wide spectrum of social determinants that impact cancer care. A structured interview was conducted among 509 women via a structured questionnaire.

The continent sampling method was adopted in different hospitals and healthcare institutions. Sampling was performed according to the disparities in healthcare accessibility between urban and rural communities, as well as within the selected states in India, marked by significant inequalities in health infrastructure and services. These surveys collect quantitative data on variables such as age, religion, family annual income, education, and access to healthcare. Other potential factors, such as types of cancer, risk factors, and symptoms, were included in learning about individual health habits, such as participating in cancer screening and treatment.

DATA ANALYSIS

The study used SPSS (version-25) for coding and computing the variables. The demographic characteristics of the participants were analyzed via descriptive statistics. The analysis detected significant trends in the data, such as the proportion of women who were aware of their risk factors and symptoms regarding reproductive cancer according to their social determinants. The associations between social determinants and outcomes such as HPV vaccination, cancer diagnosis, treatment, physiotherapy and counseling services were investigated via inferential statistics. Approaches such as cross-tabulation and chi-square tests were used to determine the variables that significantly affect access to healthcare.

RESULTS

Table 1 presents the sociodemographic profile and various social determinants of health of the study respondents. Among the study population, most (86.4%) of the respondents were up to 60 years of age. The mean age of the respondents was 48.34 years. Fifty-six percent of the respondents were from Hindu religious groups. In terms of education attainment, 53.2% of the respondents had received primary education. The majority (71.5%) of the respondents were homemakers. Fifty percent of the respondents reported that their family annual income was up to an international normalized ratio (INR) of 1,50,501, the mean household income. Nearly 30% of the respondents were from the Jharkhand region.

TABLE 1. SOCIODEMOGRAPHIC STATUS OF THE STUDY RESPONDENTS

Respondents' characteristics	Categories	Frequency	Percentage	Total
Age	Up to 60 years	440	86.4	509
	61years and above	69	13.6	
	Mean age	48.34		
Religion	Hindu	286	56.2	509
	Muslim	59	11.6	
	Christian	164	32.2	
Caste	SC	58	11.4	509
	ST	190	37.3	
	OBC	132	25.9	
	General	129	25.3	
Education	Primary	271	53.2	509
	Up to 10th	177	34.8	
	11th and above	61	12.0	
Occupation	Employed	145	28.5	509
	Homemakers	364	71.5	
Family income (Annul)	No income	79	15.5	509
	Low Income (Up to 150500)	255	50.1	
	High Income (150501 and above)	175	34.4	
States	Jharkhand	152	29.9	509
	Mizoram	114	28.3	
	Odisha	113	22.2	
	Telangana	100	19.6	

TABLE 2. TYPES OF REPRODUCTIVE CANCER WITH RISK FACTORS AND SYMPTOMS

Factors	Category	Frequency	Percentage	Total
Type of cancer	Ovarian	127	25.0	509
	Cervix	119	23.4	
	Breast	172	33.8	
	Another reproductive organ	91	17.9	
Self-reported top five Risk factors	Tabacco chewing	215	42.2	509
	Poor sexual hygiene	143	28.1	
	Multiple sexual partner	112	22.0	
	History of STDs	81	15.9	
	Multiple Abortion	66	13.0	

Top five symptoms	Heavy bleeding	290	57.0	509
	Foul-smelling discharge	221	43.4	
	Postmenopausal bleeding	215	42.2	
	High fever	163	32.0	
	Discomfort while sitting	117	23.0	

Table 2 shows various types of reproductive cancer and the top five risk factors and symptoms. One-fourth of the respondents were diagnosed with ovarian cancer, 33.8% with breast cancer, 23.4% with cervical cancer and nearly 18% with other reproductive system cancers. The top five self-reported risk factors were tobacco chewing (42.2%), poor sexual hygiene (28.1%), multiple sexual partners (22%), a history of STDs (15.9%) and multiple abortions (13%). The top five symptoms of reproductive cancer were heavy bleeding (57%), foul-smelling discharge (43.4%), postmenopausal bleeding (42.2%), high fever (32%) and discomfort while sitting (23%).

TABLE 3. OBTAINING CANCER CARE AMONG STUDY RESPONDENTS AS SOCIAL DETERMINANTS OF HEALTH

Respondents' characteristics	Categories	Cancer care among study respondents				Total N
		Vaccinated HPV	Treatment	Physiotherapy	Counseling	
Age	Up to 60 years	15.0	65.9	28.9	38.2	86.4
	61years and above	17.4	62.3	23.2	20.3	13.6
Religion	Hindu	5.2***	73.1***	19.6***	52.8***	56.2
	Muslim	10.2	64.4	39.0	40.7	11.6
	Christian	34.8	52.4	39.0	4.3	32.2
Caste	SC	1.7***	63.8***	25.9**	34.5***	11.4
	ST	31.1	52.1	37.4	9.5	37.3
	OBC	7.6	73.5	23.5	42.4	25.9
	General	6.2	77.5	20.2	68.2	25.3
Education	Primary	12.2	60.1**	27.7	35.4	53.2
	Up to 10th	19.2	68.9	28.2	31.6	34.8
	11th and above	18.0	78.7	29.5	49.2	12.0
Occupation	Employed	18.6	62.1	30.3	23.4	28.5
	Homemakers	14.0	66.8	27.2	40.7	71.5
Family income (Annual)	No income	24.1***	58.2***	32.9***	29.1***	15.5
	Low Income (Up to 150500)	7.8	73.7	18.8	51.4	50.1
	High Income (150501 and above)	22.3	56.6	39.4	16.0	34.4
State	Telangana	4.0***	77.0***	9.0***	8.0***	19.6
	Odisha	1.8	99.1	0.0	100.0	22.2
	Jharkhand	11.2	48.7	46.7	38.8	29.9
	Mizoram	38.2	48.6	43.8	1.4	28.3
Total		15.3	65.4	28.1	35.8	509

Note: Significance level: ***p< 0.01, **p< 0.05, *p< 0.1

Table 3 presents the levels of cancer care provided by various social determinants of health among the study respondents. Cancer care, such as receiving the HPV vaccine, treatment, physiotherapy and counseling, was considered for analysis. Only 15.3 percent of the respondents were vaccinated, and 65.4 percent received treatment. Twenty-eight percent of the respondents received physiotherapy, and 35.8 percent received counseling services.

The age distribution shows that only 15% of the respondents aged 60 years were vaccinated. Nearly 66% of the respondents from the same age group received treatment for reproductive cancer. One-fifth of the respondents, who were 61 years old and above, received counseling services. With respect to educational background, more respondents with higher education levels reported receiving more cancer care than did those with lower educational statuses. More respondents from high-income levels than those from lower-income levels received more vaccinations, treatment, and physiotherapy. Social determinants of health, such as religion, caste, education, family income and regional state, were strongly associated with cancer care treatment.

Figure 1 illustrates respondents' preferred health facilitiesfor cancer care. The majority (63.3%) of the respondents preferred govt. hospital for cancer care treatment. Twenty-one percent of the respondents preferred private hospitals, 12% preferred charity-based hospitals, 2.6% preferred semigovernment hospitals, and only 0.6% preferred corporate hospitals for cancer care.

FIGURE 1. PREFERRED HEALTH FACILITIES FOR TREATMENT

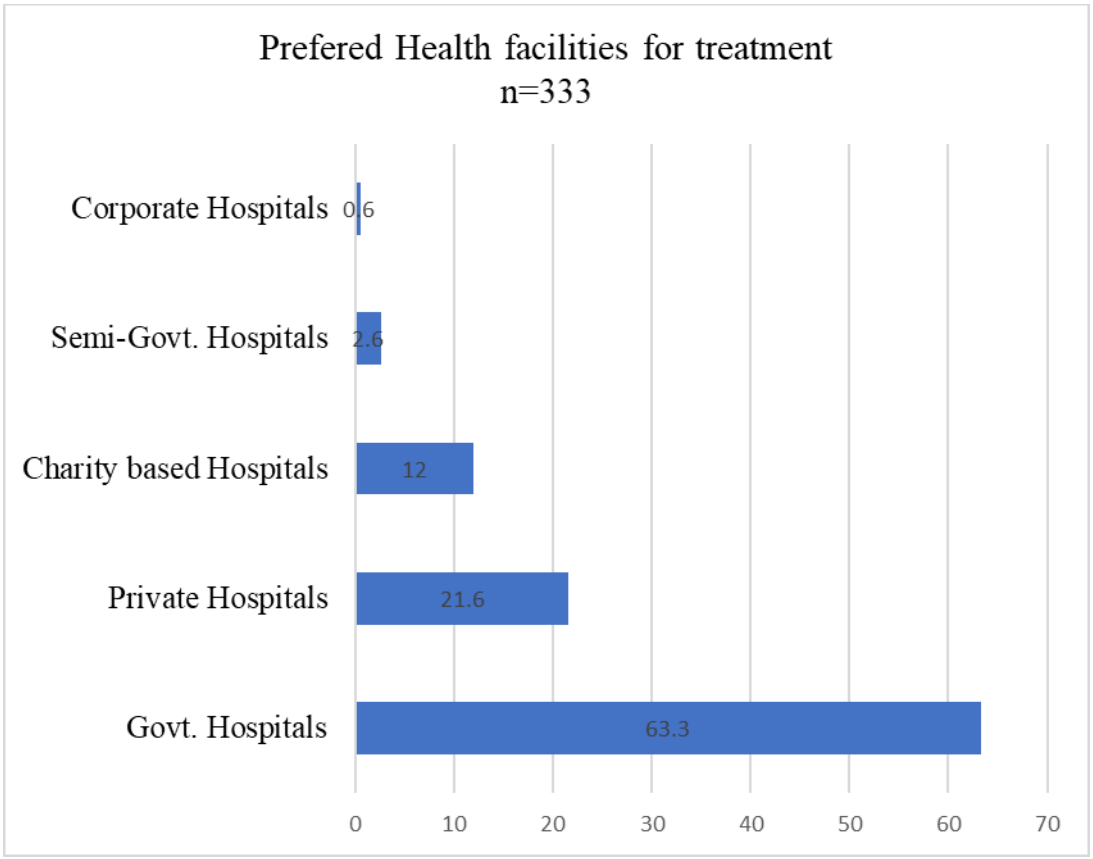

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FIGURE 2. CAUSES FOR PREFERRING HEALTH INSTITUTIONS

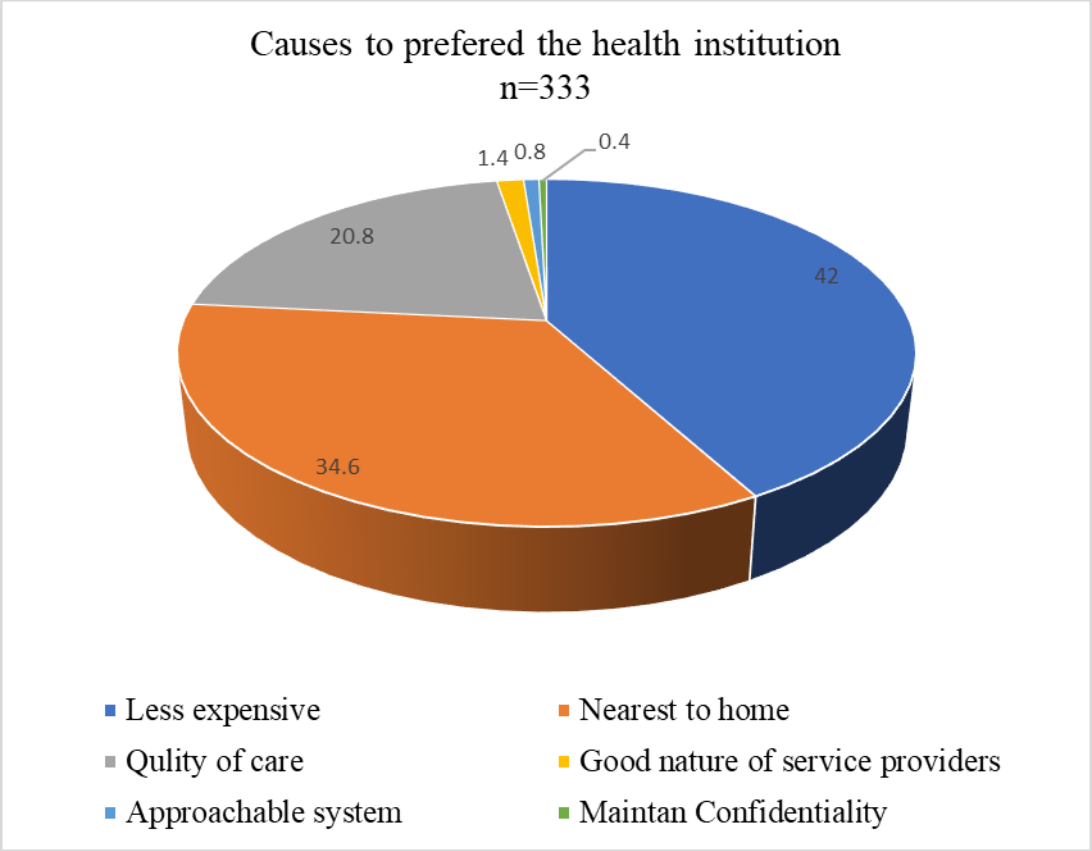

Figure 2 shows the causes of preferred health institutions for reproductive cancer care. The majority (42%) of the respondents preferred a particular health institution because it was less expensive. More than 34% of the respondents preferred the health institution because it was nearest to the home. One-fifth of the respondents preferred it due to quality of care, 1.4% for the good nature of the service provider, 0.8% for the approachable health system and 0.4% for maintaining confidentiality.

DISCUSSION

Socioeconomic status, education, occupation, healthcare access, and geographic location constitute the social determinants of health (SDH) that significantly shape differences in access to reproductive cancer care. This paper examines the significance of social determinants of health (SDHs) in the provision of reproductive cancer treatment for women in India. It focuses on findings from cross-sectional surveys in various demographic and geographic regions.

Social determinants of health refer to nonmedical factors that impact health outcomes. This includes the circumstances under which individuals are born, develop, reside, labor, and age, together with the broader range of influences and structures that shape the conditions that define daily life. Within the context of reproductive cancer care in India, social determinants of health (SDHs) have an important effect on the availability of timely diagnosis, therapy, and supportive care.

The socioeconomic status (SES) of a person is an important variable that affects their ability to obtain healthcare services. The current study revealed that family annual income is strongly associated with receiving reproductive cancer treatment. The financial limitations faced by women from lower-income households result in a reduced likelihood of them undergoing routine cancer tests, including Pap smears and mammograms [15]. Similarly, the present study revealed that respondents from lower annual income backgrounds had less access to physiotherapy and counseling services. Empirical evidence indicates that economic disadvantage restricts the availability of preventative healthcare, leading to delayed detection of cancer and unfavorable prognoses [16]. This study also indicates that the majority of respondents were unable to access private and corporate hospital-driven cancer care due to their disadvantaged economic conditions. Moreover, the financial burden of treatment for reproductive cancers can be too severe for many

households, resulting in inequalities in adherence to treatment and rates of survival [17].

Education is vital in the timely identification and treatment of reproductive cancers. The current study revealed that respondents with a low level of education received less treatment than did those with a higher level of education. Higher levels of education among women correlate with increased awareness of the symptoms associated with reproductive cancers and timely medical intervention [7]. However, a lack of education leads to a postponement in the early detection of diseases, especially in rural and semiurban regions characterized by limited health literacy [18]. The current study revealed inadequate knowledge about the risk factors for reproductive cancer among the respondents. Data from cross-sectional surveys have shown that women who have limited knowledge about reproductive cancers frequently attribute symptoms to benign illnesses, therefore postponing the seeking of specialist medical care [19].

Access to healthcare services in India shows significant disparities across regions. Owing to the proximity of healthcare facilities in cities, women residing in urban regions are more likely to access reproductive cancer treatment than their rural counterparts are. Rural women frequently face significant barriers to accessing healthcare, such as considerable distances to healthcare facilities, limited transportation, and a lack of qualified healthcare practitioners [18,20]. The presence of these barriers leads to inequitable availability of cancer screening, diagnosis, and treatment services in various regions of the nation. The present study shows that the respondents preferred healthcare institutions because they are nearest to their current place of residence.

Social determinants of health are significant contributors to inequalities in the delivery of reproductive cancer treatment for women in the study area. Factors such as socioeconomic level, education, geographic location, healthcare infrastructure, and occupation significantly affect the availability of cancer treatment. Enhancing cancer outcomes and obtaining health equity for women in various demographic and regional contexts in India requires the implementation of focused public health interventions, policy changes, and awareness campaigns to address these factors.

CONCLUSION

Preliminary findings reveal varying levels of awareness regarding reproductive cancer care, with regional disparities influencing the adoption of preventive measures such as HPV vaccinations for cervical cancer. To address these social determinants, the survey results contribute to implementing comprehensive efforts such as educational campaigns, enhancing healthcare accessibility, and addressing socioeconomic disparities to ensure fair and equal access to reproductive cancer care in India. Addressing reproductive cancer care among women in India requires dealing with the social determinants of health. Interventions should prioritize reducing socioeconomic inequities, enhancing health literacy, and facilitating access to healthcare services. Addressing these factors can potentially optimize early identification, deliver timely medical intervention, and ultimately increase the chances of survival for women in India who are affected by reproductive cancers.

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ETHICAL APPROVAL:

Was obtained from institutes ethical clearance committee.

CONSENT TO PARTICIPATE:

A written consent was obtained from participants before beginning the study.

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