

Financial Burden of Gynaecologic Cancers: Out-of-Pocket Expenses in Pre-Treatment Evaluation

Sandhya Jain*, Nazia Parveen**, Vishakha Singla***, Karishma****, Shashank Tripathi*****, Rachna Agarwal*

Abstract

Objective: With the increasing incidence of gynaecologic cancers, there has been an increase in financial burden on patients. Out-of-pocket expenditure (OOPE) affect patients' households and their ability to comply with treatment. The purpose of this study was to calculate the out-of-pocket expenditure and catastrophic health expenditure borne by patients during gynaecologic cancer diagnostic work-up.

Methods: A total of 200 patients with various gynaecological cancers were enrolled from the outpatient department, and data were collected regarding cost incurred by patients and caregivers under the headings of 'Direct medical', 'Direct non-medical', and 'Indirect' costs.

Results: The average OOPE for diagnostic evaluation of a patient receiving care for gynaecologic cancer in this institute was found to be INR 25550.34 with a standard deviation (SD) of INR 27292.73. The average Direct medical cost, Direct non-medical cost, and Indirect costs were INR 7899.21 (SD 9257.46), INR 3865.98 (SD 5320.14), and INR 13785.15 (SD 20501.72), respectively. Patients suffering from ovarian cancer had the highest OOPE, which was statistically significant (INR 33007.4, $p < 0.05$). The Indirect cost was also maximum in ovarian cancer patients (INR 18740). It was observed that 23.5% of them had to bear 'catastrophic health expenditure', which is when OOPE exceeds 40% of the total non-food expenditure of the family.

Conclusion: This study gives insight into the financial burden of patients, in terms of OOPE, in gynaecologic cancer diagnosis, which further delays health-seeking behaviour and thereby increases morbidity and mortality. Policy makers should give special attention to these patients and take remedial measures to reduce their cost burden.

Key words: Gynaecologic cancers, out-of-pocket expenditure, direct medical cost, direct non-medical cost, indirect cost, catastrophic health expenditure.

Introduction

India is facing a surge in non-communicable diseases, with cancer emerging as a significant global health problem, as highlighted by The Global Cancer Observatory (GLOBOCAN) 2022¹. India ranks third in cancer incidence globally, next to China and the United States (USA)². An estimated 2.5 million individuals are living with cancer in India (double the population of Hawaii), with an increase of nearly 700,000 new cases annually, as per the Indian Council of Medical Research (ICMR) report³. Gynaecological cancers account for 12.5% of all tumours in women. There has been an increasing incidence of ovarian and endometrial cancer, and recently, cervical cancer and endometrial cancer are being diagnosed in younger age groups also⁴. The economic burden endured by patients and their families due to the high cost of cancer diagnosis has become an emerging concern. High out-of-pocket expenditure (OOPE) and the Indirect costs involved in cancer diagnosis and treatment frequently lead to financial burden and toxicity⁵⁻⁷,

medication non-adherence, changes in spending habits, and the need to borrow money in 25% cases⁸.

Due to a lack of comprehensive government health insurance policies in India, a large part of the financial burden of cancer diagnosis and treatment is endured by patients and families. According to a survey, only 18% (government funded 12%) of the urban population and 14% (government funded 13%) of the rural population were covered under any form of health insurance⁹. The Ayushman Bharat-Pradhan Mantri Jan Arogya Yojana (AB-PMJAY) is India's largest public health insurance scheme. It is estimated to cover approximately 50 - 55 crore poor and vulnerable individuals, constituting the bottom 40% of India's population.

Out-of-pocket expenditure (OOPE) is defined as the total amount of money spent by the patient or family during diagnosis/treatment, which includes direct medical and non-medical costs as well as indirect costs. Direct medical expenditure includes costs of investigations, medicines,

*Director Professor, **Associate Professor, ****Senior Resident, Department of Obstetrics and Gynaecology, *****Assistant Professor, Department of Biostatistics and Medical Informatics, University College of Medical Sciences and Guru Teg Bahadur Hospital, Delhi - 110 095; ***Student, MSc Economics, London School of Economics and Political Sciences, UK.

Corresponding Author: Dr Sandhya Jain, Director Professor, Department of Obstetrics and Gynaecology, University College of Medical Sciences and Guru Teg Bahadur Hospital, Delhi - 110 095. Tel: 9958811946, E-mail: drsandy2015@gmail.com

consultation charges, etc. Direct non-medical expenditure includes costs incurred on travel, food, and accommodation¹⁰. Indirect cost is defined as the loss of income due to the absence from work of a patient/caretaker while being investigated or treated. Catastrophic health expenditure (CHE) is deemed to be present if the health expenditure of the family on the cancer-related illness, i.e., total OOPE, is more than or equal to 40% of the annual Capacity to Pay (CTP). CTP is defined as the total non-food expense of the family (household expenses minus the food expenses per month). The monthly CTP is multiplied by 12 to get the annual CTP¹¹.

According to the National Sample Survey Organisation (2015), around 60% of healthcare expenditure is paid out-of-pocket by patients in India¹². This causes an immense burden on household finances. Even before reporting to a tertiary care hospital, patients spend money going to small or private health facilities. To our knowledge, there have been very limited studies done in India that estimated the OOPE borne by cancer patients¹³⁻¹⁶. We conducted this study to estimate the OOPE from onset of symptoms till diagnosis for various types of gynaecological cancers at a tertiary care hospital in Delhi, India. We surveyed the socio-demographic profile of cancer patients seeking care at our hospital, along with a detailed evaluation of economic factors till the cancer diagnosis was made.

Methodology

This cross-sectional study was conducted at a tertiary care government hospital in Delhi from July 2023 to March 2026. We regularly receive referrals from smaller government hospitals, private clinics in and around Delhi, and other states as well. This was a pilot study, approved by the ethical committee of the hospital (GTBHEC 2024/P-201), and was registered under ClinicalTrials.gov (Reg. No.-CTRI/2024/07/070008). Patients visiting the outpatient department and diagnosed with/suspected of having gynaecologic cancer were included in the study. The exclusion criteria were non-gynaecologic cancer and patients unwilling to participate in the study. Women were enrolled, and data was analysed for 200 participants. Written consent was taken from all participants, and a pre-designed performa was used to collect data from patients and/or family members in a comfortable private place. Complete confidentiality of the information collected was ensured. We only took details of the cost incurred during the diagnostic workup of gynaecologic cancer, i.e., from onset of first symptoms till final diagnosis of cancer. The histopathological reports of gynaecologic cancers were collected later on and recorded to confirm the final diagnosis. The study used a bottom-up micro-costing method to estimate the OOPE (Direct and Indirect costs) associated with diagnosing gynaecologic

cancer. Micro-costing or bottom-up costing is defined as a method of cost calculation in which each component of resource use (e.g., laboratory tests, drugs, travel, food expenses) is estimated, and a unit cost is derived for each. This is used for precise calculation of the economic costs of health interventions. Here, cost was calculated for each element of an intervention.

Data collection was done by the principal investigator and/or co-investigator. Demographic characteristics of the study population were noted. Details of money spent under various headings, e.g., laboratory investigations, imaging, drugs, blood transfusion and medical materials, transportation, food expenses during hospital visit, and accommodation expenses for both the patient and caretakers, were collected based on recall by the patient and/or relatives. Details of the patient's total family income from all sources were noted. The total family expenditure breakdown was obtained to calculate the capacity to pay. The CHE rate, i.e., the proportion of patients who experienced catastrophic expenditure out of the total patients included in the study, was also calculated. All costs were reported in Indian National Rupees (INR).

Statistical analysis: Data was entered and managed using Microsoft Excel and subsequently analysed using SPSS version 31. Quantitative variables were summarised as mean and standard deviation (SD), while qualitative variables were presented as frequencies and percentages.

The normality of quantitative data was assessed using the Kolmogorov-Smirnov test. For comparison between two groups, based on a quantitative variable, the independent samples t-test was applied for normally distributed data, whereas the Mann-Whitney U test was used for non-normally distributed data.

For comparisons involving more than two groups, based on quantitative variables, one-way analysis of variance (ANOVA) was used for normally distributed data, while Kruskal-Wallis test was employed for non-normally distributed data.

A p-value of less than 0.05 was considered statistically significant.

Results

A total of 200 cases of gynaecologic cancers were recruited in the current study. An interim analysis of this study was published previously, which included 89 cancer patients¹⁷. Results show a similar trend in the outcome parameters, with minor differences. The baseline demographic characteristics are shown in Table I. Mean age of study participants was 49.2 years. Around 69.55% of participants were from an urban background. More than half (64%) of

the participants received no formal education.

Table I: Socio-Demographic characteristics of study group.

Characteristics	Summary measures n (%)	
Mean Age (years)	49.2 years	
Marital status	Unmarried	9 (4.5%)
	Married	174 (87%)
	Widow/ Divorced	17 (8.5%)
Religion	Hindu	144 (72%)
	Muslim	54 (27%)
	Other	2 (1%)
Education	Illiterate/Primary	128 (64%)
	Senior Secondary	61 (30.5%)
	Graduate	11 (5.5%)
Occupation	Unskilled	164 (82%)
	Semiskilled/Skilled	36 (18%)
Type of family	Nuclear	122 (61%)
	Joint	78 (39%)
Locality	Urban	139 (69.5%)
	Rural	61 (30.5%)

The disease characteristics of participants are mentioned in Table II. The majority of patients were of ovarian cancer, followed by cervix, endometrial, vulva, and other (vaginal and choriocarcinoma). More than half of them (65%) presented in stage II disease and above. Usually, cancer patients first approach the nearby private or small government hospital for their symptoms before being referred to a tertiary care hospital. During this time, they spend a lot of time and money until the final cancer diagnosis and treatment are initiated. The mean time duration from the onset of symptoms till reporting to the tertiary care hospital was 9.16 months for all cancers. This could be the reason for late presentation in the advanced stage. It was observed that almost 50% of participants showed up in other smaller government hospitals before coming to our hospital, and the rest were seen by private clinics, practitioners of alternative medicine or unqualified quacks.

Table II: Disease characteristics of cancer patients.

Stage (%)	Ovarian n (82)	Cervix n (67)	Endometrial n (44)	Vulval n (5)	Others n (2)
I (35%)	28	17	22	2	1 (Choriocarcinoma)
II (33%)	18	30	15	2	1 (Vaginal)
III (23%)	27	15	3	1	
IV (9%)	9	5	4	–	
Mean duration from onset of symptoms till hospital visit (months)	9.5	11.04	7.18	10.2	3.5

Type of Previous consultation

Private (50%)	47	25	24	2	2
Government (50%)	35	42	20	3	–

Table III gives insight into the socio-economic characteristics of the study participants. Among the 200 participants, 63% had a ration card above poverty line. Awareness regarding various government health schemes was very limited, and only 23% of participants were aware of the Ayushman Bharat Scheme. Only 3% of women reported utilisation of any health insurance scheme.

As mentioned in Table IV, the average OOPE for diagnostic evaluation of a patient receiving care for gynaecologic cancers in this institute was estimated to be INR 25550.34 with a SD of INR 27292.73. The average Direct medical, Direct non-medical, and Indirect costs were INR 7899.21 (SD 9257.46), INR 3865.98 (SD 5320.14), and INR 13785.15 (SD 20501.72), respectively. Patients having ovarian cancers spent the highest OOPE, which was statistically significant (INR 33007.4, $p < 0.05$). The average money spent by patients on Direct medical and Direct non-medical costs was highest with other types of cancer (choriocarcinoma and vaginal cancer). Indirect cost was highest in ovarian cancer patients (INR 18740) as shown in Table IV. There were significant differences in all cost parameters of OOPE among various types of gynecologic cancers ($p < 0.05$).

Table III: Socio-economic characteristics of participants.

Characteristics	n (%)	
Type of Ration Card	Above Poverty Line	126 (63%)
	Below Poverty Line	49 (24.5%)
	No Ration Card	25 (12.5%)
Awareness of the Ayushman Bharat Scheme	Yes	46 (23%)
	No	154 (77%)
Recipient of any Government Health Benefit	Yes	7 (3.5%)
	No	193 (96.5%)
Recipient of any Health Insurance	Yes	6 (3%)
	No	194 (97%)

Table V gives the section-wise Direct (medical and non-medical) and indirect expenses experienced by participants. Direct medical and Direct non-medical costs for each of the above-discussed independent variable categories were summarised as means with standard deviation (SD). Overall, total OOPE was also calculated and presented as the mean with SD. Direct medical and non-medical costs were higher in the 41 - 50 year age group (INR 10588.3, INR 4843.5), whereas Indirect cost and OOPE were highest in the <30 year age group of INR 18609.3 and INR 32145.9,

respectively, statistically significant ($p < 0.01$). The difference in total OOPE by urban and rural patients in various occupational groups was not found to be statistically significant.

The educated group of patients (graduates) spent the highest average OOPE of INR 33321.1 with statistical significance ($p < 0.05$). The OOPE for upper class of Modified Kuppaswamy Classification was highest at INR 59275 than other classes ($p < 0.05$). This was due to high Direct medical and non-medical costs. The OOPE was statistically higher in patients having an above poverty line ration card (INR 28377.6). Although only six patients utilised health insurance, making no significant difference in OOPE in comparison to patients not utilising health

insurance. Patients who were aware of the Ayushman Bharat Scheme spent a higher OOPE of INR 33907.8 when compared to those who were unaware of this scheme (p -value < 0.005).

Catastrophic health expenditure calculation

The data on household expenditure patterns and OOPE were analysed to explore the proportion of households suffering catastrophic health expenditure from the ongoing cancer evaluation and diagnosis. It was observed that 23.5% of individuals were found to have borne catastrophic health expenditures. When data was analysed based on the type of cancer, it was observed that 34.9% patients of ovarian cancer had CHE as mentioned in Table VI.

Table IV: Out of pocket expenditure (OOPE) in INR for different cancer types.

Type of cancer	Ovarian (82)	Cervix (67)	Endometrial (44)	Vulval (5)	Others (2)	p-value	Overall
Direct Medical Mean (SD)	9870.51 (9651.5)	5537.01 (9624.8)	7599.5 (6943.4)	8300 (11934.4)	11800 (4949.7)	<0.05	7899.21 (9257.46)
Direct Non-Medical Mean (SD)	4396.9 (4476.1)	3802.1 (7009.7)	2850.6 (2724.4)	1795 (667.6)	11750 (15202.7)	0.03	3865.98 (5320.14)
Indirect Mean(SD)	18740 (22849.3)	10232.0 (19689.3)	11304.5 (16687.2)	6180 (5745.6)	3250 (4596.1)	0.01	13785.15 (20501.72)
Total OOPE Mean (SD)	33007.4 (27365.0)	19571.2 (29549.7)	21754.77 (21949.3)	16275 (15714.0)	26800 (14849.2)	<0.05	25550.34 (27292.73)

*OOPE: Out of Pocket Expenditure. *Direct (medical) cost includes costs of investigations, medicines, consultation charges, etc. *Direct (non-medical) costs include costs on travel, food, and accommodation expenses. *Indirect cost is defined as the loss of income due to the absence from work of a patient/caretaker while being investigated/treated.

Table V: Patient characteristics and financial burden of gynaecological cancers expressed in INR.

	Direct (Medical) Mean (SD)	p-value	Direct (Non-medical) Mean (SD)	p-value	Indirect Mean (SD)	p-value	Total OOPE Mean(SD)	p-value
Age (Yrs)								
<30	8872.8 (6616.0)	0.11	4663.7 (5169.7)	0.36	18609.3 (17885.9)	0.01	32145.9 (21252.6)	0.01
31 - 40	7962.3 (7102.5)		3602.8 (3821.7)		15792.8 (19537.3)		27358.0 (24533.0)	
41 - 50	10588.3 (13462.4)		4843.5 (7797.4)		15128.8 (2719.2)		30560.7 (33133.1)	
51 - 60	6087.1 (7648.6)		3335.7 (4261.2)		12267.4 (19607.4)		21690.3 (24694.6)	
>60	6098.4 (6252.4)		3198.0 (3688.0)		10144.57 (20472.9)		19441.0 (25630.81)	
Occupation								
Unskilled (164)	7877.09 (9571.7)	0.51	3752.42 (5091.4)	0.24	12810.24 (20027.2)	0.01	24439.75 (27136.9)	0.06
Skilled (36)	8000.00 (7783.0)		4383.33 (6314.0)		18226.39 (22296.9)		30609.72 (27812.8)	
Locality								
Rural (61)	9157.2 (11354.9)	0.41	4714.8 (5174.4)	0.01	12619.3 (15053.4)	0.65	26491.3 (20396.8)	0.06
Urban (139)	7347.1 (8155.8)		3493.4 (5358.6)		14296.7 (22510.5)		25137.3 (29878.2)	
Education								
Illiterate	7352.3 (8933.3)	0.01	3823.0 (5869.1)	0.01	11707.9 (21356.6)	<0.05	22883.4 (29039.0)	<0.05
Senior secondary	8405.4 (10345.3)		3394.8 (2858.9)		18170.9 (19277.5)		29971.1 (24154.1)	
Graduate	12250 (3279.2)		7726.6 (8489.1)		13344.4 (10260.6)		33321.1 (15946.9)	
Socio-economic status								
Lower	6040.8 (7197.2)	0.01	3925.0 (5828.4)	0.01	6291.0 (15788.6)	<0.05	16256.9 (19712.2)	<0.05

Lower-middle	7325.1 (7424.7)		3223.7 (3597.1)		15494.2 (19091.1)		26043.1 (24370.1)	
Upper-lower	7399.2 (8783.1)		3916.3 (61775.9)		15280 (23041.7)		26595.5 (33004.6)	
Upper-middle	10100.0 (6036.8)		4230.9 (3820.3)		21276.1 (25578.7)		35607.1 (30292.7)	
Upper	35625.0 (29101.9)		13150.0 (7113.13)		10500 (16441.8)		59275 (26417.0)	
Ration card								
Above poverty line (126)	7756.4 (8998.6)	0.65	3827.8 (4162.9)	0.09	16793.2 (21993.4)	<0.05	28377.6 (27522.1)	0.01
Below poverty line (49)	7467.1 (8915.0)		4414.8 (8067.6)		7373.0 (17202.5)		19255.0 (29136.8)	
No card (25)	9465.4 (11263.1)		2982.4 (3579.5)		11192.0 (153)		23639.8 (20166.1)	
Health Insurance utilisation								
Yes (6)	11066.6 (8224.5)	0.18	6337.1 (6033.6)	0.27	9091.6 (7479.3)	0.91	26495.5 (17300.5)	0.43
No (194)	7801.2 (9289.2)		3789.56 (5295.7)		13930.3 (20766.1)		25521.1 (27572.9)	
Awareness about Ayushman Bharat Scheme								
Yes (46)	10642.7 (7847.9)	0.05	5316.2 (5841.5)	0.01	17948.9 (21359.4)	0.01	33907.8 (26494.2)	<0.05
No (154)	7079.7 (9508.5)		3432.8 (5094.7)		12541.4 (20142.9)		23053.9 (27113.1)	

Table VI: Catastrophic health expenditure calculation in various gynaecologic cancers in INR.

Type of cancer	Ovarian (82)	Cervix (67)	Endometrial (44)	Vulval (5)	Others (2)	Overall
Mean Annual Capacity To Pay (CTP) in INR	130495.7	104479.8	128082	147717.6	119496	121569.96
Number of patients exceeded 40% of annual CTP	29(34.9%)	10(15.1%)	8(18.18%)	0	0	23.5%

Discussion

The mean age of study subjects was 49.2 years. The age distribution is younger in comparison to previous studies conducted among head and neck cancer (HNC) patients in North India¹⁸. Most of the study population (69.5%) lived in urban areas and belonged to lower middle class. The utilisation of health insurance was very low (only six patients among 200), which is much less than reported in the study of Chauhan *et al*¹⁸. In the present study, 77% of patients were un-aware of the Ayushman Bharat Scheme.

The socio-demographic and economic stratum of patients visiting and government hospital can explain the low levels of awareness.

The average Direct medical cost, Direct non-medical cost, and Indirect costs in the current study were INR 7899.21 (SD 9257.46), INR 3865.98 (SD 5320.14), and INR 13785.15 (SD 20501.72), respectively. The Indirect cost was highest at INR 13785.15. The estimation of OOPE for cancer diagnosis and treatment depends on various factors, i.e., study period, type of cancer, and cost components. The present study showed a total OOPE of INR 25550.34, which was much less than the OOPE reported for various solid cancer treatments from South India (INR 35,817)¹⁹. The reported OOPE was INR 36,812 for HNC from New Delhi in 2006. In 2017, Chauhan *et al* from Chandigarh reported that OOPE for HNC was around INR 37,845¹⁸. Our study calculated

OOPE from symptom onset till final diagnosis was made and did not include the treatment aspect in the cost analysis. This was because treatment is free in our hospital. Also, as many cancer patients are referred to our attached oncology center (Delhi State Cancer Institute) for further chemo radiation, follow-up of these patients would have been difficult.

The OOPE for all types of cancer in India, done in 2006 - 2007, was INR 36,812. By 2017 - 2018, the average OOPE for cancer treatment had further increased, exceeding INR 2,895 for outpatient care and INR 52,393 for inpatient care²⁰. In 2018 - 19, the average OOPE for hospitalisation-related to cancer treatment in India was estimated at INR 85,595²¹. In 2023, the average Direct medical cost for an outpatient consultation was approximately INR 8,053, while the cost for each hospitalisation was around INR 39,085²¹. The high cost of cancer treatment, unfortunately forces many households to borrow money or sell assets to cover expenses²². A recent Indian study done at a tertiary care hospital of Uttar Pradesh, including 120 cancer patients attending surgical OPD from July 2020 to November 2021, estimated an average OOPE in cancer treatment of INR 79925.5. The Direct medical expenditure was INR 45151, and the Indirect non-medical expenditure was INR 10,000²³.

In the current study, patients with ovarian cancers spent the highest OOPE, which was statistically significant (INR 33007.4, $p < 0.05$). This may be due to the nonspecific and

overlapping nature of symptoms of ovarian cancer, leading to multiple specialist consultations and more investigations. The disease is already in an advanced stage at the time of diagnosis in most cases. The lower mean value of total OOPE in the present study (as compared to other studies) can be explained by the fact that we calculated the OOPE spent by patients from the onset of symptoms till the diagnosis was made, while other studies included the whole treatment cost of cancer. We focused on the expenses of diagnostic evaluation during outpatient and inpatient care received by gynaecologic cancer patients, including indirect cost estimation. The Indirect cost estimation has not been studied in many previous studies. In fact, the major part of OOPE was in the Indirect domain, followed by direct medical costs. This can be explained by the fact that, even though diagnostic modalities are free of cost, patients and/or caregivers need to leave their daily jobs for their hospital visits. This loss of income due to absence from work is directly proportional to the number of visits and time spent in hospital. Sometimes patients have to take loans or sell their fixed assets. This financial burden is also reflected by the significantly higher direct (medical and non-medical) and indirect costs among individuals who sought consultations from private practitioners before reporting to this hospital. Due to proximity and/or convenience, patients prefer to visit small or private health facilities for evaluation of symptoms. Long queues for consultation, lack of super-specialty doctors, and advanced investigations in government hospitals are deterrents to health-seeking behaviour. Patients sometimes fall prey to quacks who encash on their ignorance and illiteracy, further adding to the cost burden. The richer households belonging to upper socio-economic class were spending more on management of cancer, which is similar to studies by Rajpal and Chauhan *et al*^{13,18}. The OOPE was not significantly different between urban and rural patients. While in other studies, individuals from urban settings spent more than those from rural settings¹⁸.

Catastrophic health expenditure

The 40% cut-off on the CTP was used to calculate the incidence of CHE in present study. The prevalence of Catastrophic health expenditure (CHE) in the current study was 23.5%, as compared to 34% prevalence reported by Chauhan *et al*¹⁸. In fact, lower CHE in the present study could be again explained by the fact that our study took into account OOPE in the diagnostic part of gynaecologic cancers. The prevalence of CHE was 34.9% in ovarian cancer, followed by 18.18% in endometrial cancer and 15.1% in cervical cancer.

The overall OOPE was contributed mainly by Indirect costs. In a tertiary care hospital setting, unnecessary OPD visits by

both patients and caretakers can be avoided by utilizing telemedicine. Further research should focus on developing protocols for follow-up visits, along with establishing specialised cancer clinics in tertiary care hospitals and satellite follow-up clinics in Primary care centres near homes of patients.

Strengths and Limitations

There are few studies in literature regarding the cost analysis of gynaecologic cancers. Moreover, the present study is the only study to look into cost by gynaecologic cancer type. The indirect costs under various headings (loss of income due to the absence from work of a patient/caretaker while being investigated/treated) were collected, which has not been done in most previous studies. This would reflect the expenditure pattern in calculating OOPE. An important finding was that cancer patients paid substantial out-of-pocket costs under the category of Indirect cost. Patients with higher socio-economic class and higher education (graduates) had the highest direct medical and direct non-medical expenditure. Only 23% were aware of government schemes like the Ayushman Bharat Scheme; however, almost all patients (97%) were not covered by any health insurance scheme.

Limitations

We collected information related to economic burden, based on the recall method. It was the patient's perspective for capturing the cost incurred during diagnoses of gynaecologic cancers. The calculation of OOPE was dependent on self-reported costs by patients, but lacked verification (e.g., bills or receipts). Information was not collected about coping strategies used by patients and families to overcome catastrophic health expenditure. It was a cross-sectional study to quantify OOPE among selected cancer patients attending the OPD of a tertiary care center. Therefore, the results of the study may not be representative of all cancers in the general population. The sample size was small, so further studies with large sample size may give more insight into the health-related economic burden on patients suffering from gynaecologic cancers.

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