

## RESEARCH COMMUNICATION

# Patient and Disease Related Factors Associated with Lost-to Follow-Up/Drop-Outs of Cervical Cancer Patients: A Study at a Major Cancer Hospital in South India

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### Abstract

**Objective:** Cervical cancer is the one of most common cancer in India, and a significant proportion of patients do not complete the prescribed courses of treatment and post therapy surveillance, due to deficiencies in treatment availability, accessibility, affordability and other socio-demographic factors. **Materials and Methods:** Cervical cancer patient data for the year 2006-2007 were collected during June-August, 2008 from the Regional Cancer Centre (RCC), Thiruvananthapuram, Kerala, India and investigated for socio-economic, demographic and disease (SEDD) related factors impacting patients to drop-out during treatment and patients to loss to follow-up (LFU) post therapy. Odds ratio (OR) for drop-out and LFU and their 95% confidence intervals (CIs) according to SEDD factors were estimated through logistic regression model. **Results:** Among a total of 784 patients, 94 (12%) did not complete the initially planned treatment and among 690 cases who had completed the initially planned treatment, 34% were lost to follow up (LFU). In the multivariate analysis, higher chances of LFU for older patients (OR=1.8; 95% CI: 1.1-3.1), widowed/divorced/separated/unmarried (OR=1.5; 95% CI: 1.0-2.1), middle school education (OR=1.8; 95% CI: 1.0-3.1), poorer performance status (OR=2.4; 95% CI: 1.2-5.0) and in higher stages (OR=4.6; 95% CI: 2.1-10.3). Higher chances of drop-outs were noted for patients with medium income (OR=2.0; 95% CI: 1.0-4.1), higher stages (OR=4.8; 95% CI: 1.9-12.2) and ischemic heart disease (OR=3.4; 95% CI: 1.1-10.9). **Conclusion:** Drop-out rates are associated with disease related factors and patients in the LFU group were affected mainly by SEDD factors. Physicians should be aware of patients' different needs in these two different phases, thus improving the retention rate in the near future of cancer treatment.

**Keywords:** Cervical cancer - treatment drop-out - loss to follow-up - India

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### Introduction

Globally cervical cancer accounts for 493,000 newly diagnosed cases, 1.4 million prevalent cases and 273,000 deaths world-wide in the year 2002. It is observed that among these more than 80% occurred in the low and medium resource countries in south and south east Asia, sub-Saharan Africa and south and central America (Ferlay et al., 2004). The disease is the seventh most common cancer in the world and the second most common among women, incidence rates however are almost two times higher in less-developed compared to more developed countries (Kamangar et al., 2006). A significant burden of cervical cancer is accounted in the Indian sub-continent. The incidence rates range from 9.4 to 40 per 10<sup>5</sup> women in various regions of India. Additionally, the lowest incidence rate is observed in Thiruvananthapuram, Kerala, 9.4 per 10<sup>5</sup> women (Curado et al., 2007).

Cervical cancer is the one of most common cancer in India, with most women presenting with the disease extending beyond the cervix. The high cervical cancer

mortality rate observed is due to advanced clinical stage at presentation, and because there is a significant proportion of patients that do not complete the prescribed courses of treatment, due to deficiencies in treatment availability, accessibility and affordability in many developing countries (Sankaranarayanan et al., 2001). Once presented with the disease, post therapy surveillance, i.e. follow-up is required to maintain a better health status and diagnose and treat early recurrence of the disease. Recent studies reported that majority of cervical cancer recurrences were detected within 2 years of primary treatment (Elit et al., 2009). Another study observed that 87% of recurrences occurred within the first 3 years after primary treatment in cervical cancer, thus such high recurrence rates supports the fact that follow-up evaluations should be closer in the first 3 years after the primary treatment (i.e. post therapy) when the risk of recurrence is commonly very high (Sartori et al., 2007).

It is also reported that most women who recur with cervical cancer are not curable, however early identification can alter disease management and treatment

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options (Elit et al., 2010). Another study that assessed the impact of surveillance after treatment of cervical cancer observed that although the number of asymptomatic recurrence is small, the detection of asymptomatic recurrence is associated with prolonged overall survival and survival from time of initial detection of recurrence (Bodurka-Bevers et al., 2000).

The benefits of surveillance in women who had undergone curative treatment for cervical cancer appear to include identifying a subset of women in whom detection and treatment of recurrent cervical cancer may prolong life. Majority of cervical cancer women are observed to be highly non-compliant to complete treatment and on follow-up. It is essential to target this population and understand the social and disease related barriers to treatment and the post therapy follow-up in order to provide a better patient outcome. The present study was therefore conducted to investigate socio-economic, demographic and disease related factors impacting patients to drop-out during treatment and patients to loss to follow-up post therapy.

## Materials and Methods

Data of 784 consecutive women diagnosed with cervical cancer registered in the hospital based cancer registry (HBCR) of Regional Cancer Centre (RCC) from 1 January 2006 to 31 December 2007 were retrospectively collected for the study. RCC is a comprehensive cancer centre, and patients from all over the state of Kerala, the neighbouring state of TamilNadu and the neighboring countries such as the Maldives report for treatment to this centre. HBCR of RCC has been functioning since 1982 as part of the National Cancer Registry Programme of the Indian Council of Medical Research and collects socio-demographic, disease, treatment and follow-up information of all its registered patients.

Patients included in the study were only new cases hailing from Kerala and Tamil Nadu. Data was abstracted from the patient information form. The socio demographic and economic factors included in the present analysis were the age (<50, 50-59, above 60 years), religion (Hindu, Muslim, Christian), marital status (married, unmarried/widowed/divorced, unknown), education (illiterate, literate/primary, middle, secondary/college and above/technical after matriculation and unknown), monthly family income (low, medium, high) [monthly family income was assessed based on a variety of factors such as patient's occupation, husband's occupation and whether they own or rent their land etc. and grouped into the above three categories], the number of children (<2, >2, and unknown/no children), and residential district (Thiruvananthapuram, Kollam (the nearby district), the rest of South Kerala (Pathanamthitta, Alappuzha, Kottayam), North Kerala and Tamil Nadu).

Disease related factors included were stage, WHO performance status (PS) and co-morbidity. Stage was classified according to FIGO system (I, II, III, IV and unknown), and PS before treatment was assessed with 5 levels (0=normal activity, 1=restricted to strenuous activity but ambulatory and able to carry out light work,

2=ambulatory and capable of self care but unable to do work more than 50% waking hours, 3=capable of only limited self care or confined to bed or chair more than 50% waking hours, 4=completely disabled, cannot self care totally confine to bed or chair). In the present analysis PS was organized into 4 groups (0=normal activity, 1= light work, 2= included above description for 2, 3, 4 and a group for unknown). Patients co-morbidity conditions included were tuberculosis, hypertension, diabetes, ischemic heart disease and asthma.

HBCR maintains surveillance of all cancer patients reporting to the RCC. Those patients who had completed the initially planned treatment were considered as completely treated patients and those who did not complete the intended treatment against medical advice were termed as 'drop-out'. Patients are instructed to report for follow-up once in 3-4 months during the first two years and later on once in 6 months or according to the clinical indications. Those who failed to report for follow-up at due intervals were termed as 'loss to follow-up'. In the present analysis, two comparisons were conducted. The first comparison was between those who completed the primary treatment and on regular follow-up vs. lost to follow-up. The second comparison was between those patients who completed the primary treatment vs. those who did not, i.e. drop-out. The follow up status was obtained until 2010.

Two sets of cross tabulation were performed, the first set included drop-out vs. treatment completed according to all socio-economic and demographic and disease related (SEDD) factors. The second group consisted of lost to follow up (LFU) vs. regular follow-up (RFU) according to all the SEDD factors. In the univariate analysis, statistical association between the above variables was analyzed via chi-square statistic at significant p-value of  $p < 0.05$ . In the multivariate analysis, the odds ratio (OR) for drop-out and LFU and their 95% confidence interval (CI) according to SEDD factors were estimated through logistic regression model (Breslow and Day, 1980). The ORs were modeled using a linear relationship between the above factors and the log odds of drop-out or LFU rates. All the analysis were done using the statistical program SPSS.

## Results

Among a total of 968 cervix cancer patients registered at RCC during the years 2006-2007, 784 patients were included for the study. Among the 784 patients, 94 (12%) did not complete the initially planned treatment, 54 (57.4%) of drop-outs deferred chemotherapy and 35 (37.0%) deferred radiotherapy. Among the 690 cases who had completed the initially planned treatment, 34% were lost to follow up and 66% continued follow-up as recommended. Among the followed-up cases, 429 (94.1%) had follow-up of at least one year period and 358 (78.5%) had at least two years and 141 (31%) had more than three years of follow-up at RCC.

Patients age ranged from 30 to 81 years with a mean age of 55 years (SD=10 years). Seventy one percent of patients were 50 years of age or older, 33.1% resided in Thiruvananthapuram and 33.3% in nearby Kollam district.

**Table 1. Distribution and Multivariate Analysis of Patient and Disease-Related Factors According to Regular vs. Lost to Follow-Up Patients**

Factors	Category	Irregular (%)	Regular (%)	Total (n=690)	OR	95% CI	P- value
Age (yrs)	<50	20.1	29.2	180	1.0	--	0.019*
	50-59	31.2	39.9	255	1.0	0.6-1.7	
	>60	48.7	30.9	255	1.8	1.1-3.1	
Religion	Hindu	75.6	69.5	494	1.0	--	0.083
	Muslim	6.4	13.6	77	0.5	0.3-1.0	
	Christian	17.9	16.9	119	1.2	0.7-1.8	
Marital Status	Married	51.3	68.6	433	1.0	--	0.111
	widowed/divorced/ separated/ unmarried	47.9	31.4	255	1.5	1.0-2.1	
	Unknown	0.9		2			
Education	>Secondary	14.1	28.1	161	1.0	--	0.134
	Middle	27.4	24.3	175	1.8	1.0 - 3.1	
	Primary/Literate	30.8	26.3	192	1.3	0.8 - 2.3	
	Illiterate	25.2	20.4	152	1.3	0.7-2.5	
	Unknown	2.6	0.9	10	4.0	0.9-17.5	
Income	Ordinary	67.2	58.9	427	1.0	--	0.338
	Medium	15.9	18.0	119	1.4	0.9-2.3	
	Free	16.8	23.1	144	1.2	0.6-2.1	
Children	< 2	30.8	39.5	252	1.0	--	0.496
	> 2	63.7	57.7	412	1.2	0.8-1.8	
	Unknown/zero	5.6	2.9	26	1.6	0.6-4.2	
District	Thiruvananthapuram	27.8	33.1	216	1.0	--	0.033*
	Kollam	22.6	21.5	151	1.4	0.8-2.2	
	Rest of South Kerala	15.4	13.6	98	1.5	0.8-2.6	
	North Kerala	14.1	20.4	126	1.2	0.7-2.1	
	Tamil Nadu	20.1	11.4	99	2.4	1.4-4.2	
Performance Status (WHO)	Normal Activity	56.4	68.4	444	1.0	--	0.02*
	Light work	26.9	27.0	186	0.9	0.6-1.4	
	self care/ limited/ disabled	12.8	3.3	45	2.4	1.2-5.0	
	Unknown	3.8	1.3	15	2.9	0.9-9.3	
Stage at diagnosis	Stage 1	14.1	24.6	145	1.0	--	0001*
	Stage 2	20.5	35.3	209	0.9	0.5-1.6	
	Stage 3	48.3	34.2	269	1.9	1.2-3.1	
	Stage 4	12.8	3.7	47	4.6	2.1-10.3	
	Unknown	4.3	2.2	20	2.6	1.0-7.2	

\*statistically significant at 5% level

Patients belonging to Hindu religion constituted 70%, Muslims 13.6% and Christians 17%. Sixty nine percent of patients were married, 30% widowed/divorced. Patients in the lowest income category comprised 59%, medium 18% and high 23%. Twenty one percent of patients were illiterates, 26.3% literate or upto primary school level, 24.3% middle school, 23.5% secondary school and 4.6% had higher education. Seventy five percent of patients identified their occupation as 'housewife', 3% had 'white collar' jobs such as teachers, government employer, etc., and 22% had 'blue collar' jobs labeled as laborers and factory workers.

In the univariate analysis almost all socio-cultural demographic and disease related factors (SEDD) such as older age ( $p=0.0001$ ), Hindu religion ( $p=0.018$ ), widowed/divorced/ separated/unmarried ( $p=0.0001$ ), lower education ( $p=0.001$ ), lower income (borderline significant  $p$ -value of 0.082), higher number of children ( $p=0.028$ ), residing in far off district or in the nearby state Tamil Nadu ( $p=0.01$ ) were significantly associated with LFU. Significant disease related factors were performance status before treatment ( $p=0.0001$ ) and stage at diagnosis ( $p=0.0001$ ).

In the multivariate analysis all SEDD factors were associated with LFU except for income and number of

children. Older patients greater than 60 years of age had higher chances of LFU when compared to younger patients (<50) (OR=1.8; 95% CI: 1.1- 3.1). Muslim patients were less likely to be LFU when compared to Hindu patients (OR=0.5; 95% CI: 0.3-.97). Women who were widowed or divorced or separated or unmarried were more likely to be LFU when compared to women who are married (OR=1.5; 95% CI: 1.0-2.1). Patients with only middle school education were more likely to be lost to follow-up when compared to patients with secondary or higher education (OR=1.8; 95% CI: 1.0-3.1). Patients who lived closer to RCC were more to likely to continue regular follow-up (OR=2.4; 95% CI: 1.4-4.2 for patients reported from Tamil Nadu) than compared to those lived in Tamil Nadu (Table 1).

Poorer performance status of the patients before treatment increased the likelihood of LFU (OR=2.4; 95% CI: 1.2-5.0). Patients in higher stages such as stage 3 (OR=1.9; 95% CI: 1.2-3.1) and stage 4 (OR= 4.6; 95% CI: 2.1- 10.3), were more likely to be LFU when compared to patients with stage 1. Patients with unknown stage also showed borderline significance of being LFU (OR=2.6; 95% CI: 1.0-7.2) (Table 1).

In the univariate analysis of drop-out vs. completely treated patients according to SEDD factors, lower income

**Table 2. Distribution and Multivariate Analysis of Patient and Disease-Related Factors According to Drop-Out vs. Treatment Completed Patients**

Factors	Category	Drop-out (%)	Treatment completed (%)	Total (n=784)	OR	95.0% CI	P value
Age	<50	26.1	35.1	213	1.0	--	0.207
	50-59	36.8	30.9	283	0.7	0.4-1.2	
	>60	37.1	34.0	288	0.6	0.3-1.1	
Religion	Hindu	71.6	80.9	570	1.0	--	0.295
	Muslim	11.2	7.4	84	0.6	0.3-1.5	
	Christian	17.2	11.7	130	0.6	0.3-1.3	
Marital Status	Married	62.6	57.4	486	1.0	--	0.51
	widowed/divorced/ separated/unmarried	37.1	41.5	295	1.2	0.7-1.9	
	Unknown	0.3	1.1	3	4.0	0.3-52.0	
Education	Secondary/ College and above/ technica						0.456
	I after matriculation	23.3	18.1	178	1.0	--	
	Middle	25.4	30.9	204	1.3	0.6-2.5	
	Primary/Literate	27.8	22.3	213	0.7	0.3-1.5	
	Illiterate	22.0	28.7	179	1.1	0.5-2.3	
Income	Unknown	1.4		10			0.157
	Ordinary	61.7	74.5	497	1.0	--	
	Medium	17.3	13.8	132	2.0	1.0-4.1	
Children	Free	21.0	11.7	155	1.5	0.6-3.5	0.996
	< 2	36.4	38.3	287	1.0	--	
	> 2	59.9	56.4	466	1.0	0.6-1.6	
District	Unknown/zero	3.8	5.3	31	1.0	0.3-3.0	0.755
	Thiruvananthapuram	31.3	30.9	245	1.0	--	
	Kollam	21.9	24.5	174	1.1	0.6-2.0	
	Rest of South Kerala	14.2	9.6	107	0.8	0.3-1.7	
	North Kerala	18.3	13.8	139	0.9	0.4-1.9	
Performa-nce Status	Tamil Nadu	14.3	21.3	119	1.4	0.7-2.7	0.425
	Normal Activity	64.3	54.3	495	1.0	--	
	Light work	27.0	33.0	217	1.3	0.8-2.2	
	self care/ limited/ disabled	6.5	11.7	56	1.6	0.7-3.7	
	Unknown	2.2	1.1	16	0.4	0.1-3.2	
Stage at diagnosis	Stage 1	21.0	10.6	155	1.0	--	0.004*
	Stage 2	30.3	19.1	227	1.3	0.6-3.0	
	Stage 3	39.0	46.8	313	2.2	1.0-4.6	
	Stage 4	6.8	16.0	62	4.8	1.9-12.2	
	Unknown	2.9	7.4	27	3.9	1.3-12.0	
Heart Disease	No	97.8	94.7	764	1	--	0.037*
	Yes	2.2	5.3	20	3.4	1.1-10.9	

\* statistically significant at 5% leve

( $p=0.043$ ), higher stage ( $p=0.001$ ) and Ischemic Heart disease (IHD) ( $p=0.08$ ) were significantly associated with drop-outs. However the multivariate analysis showed that patients with medium income were more likely to drop-out than the lowest income group with borderline significance (OR=2.0; 95% CI: 1.0-4.1). Patient with higher stages [stage 3 (OR=2.2; 95% CI: 1.0-4.6), stage 4 (OR=4.8; 95% CI: 1.9-12.2) were more likely to drop-out when compared to patient at stage 1. Patients with unknown stage also showed similar results (OR=3.9; 95% CI: 1.3-12.0). Patients with IHD were more likely to drop-out compared to completely treated group (OR=3.4; 95% CI: 1.1-10.9) (Table 2).

## Discussion

The present study analyzed the impact of socio-cultural demographic and disease related factors on the drop-out rates from the initial treatment course and the rate of lost

to follow up among the completed treatment group of cervical cancer patients reported at RCC from 2006 to 2007. In the treatment completed group both socio-cultural demographic factors and disease related factors impacted patient lost to follow up after primary cancer treatment.

Older patients greater than 60 years of age were more likely to be lost to follow up. Younger patients may have more reasons as they may have younger children and a family to take care of, additionally younger patient may be more capable and attend some of the visits on their own without depending on other family members. Older patients may also avoid care because of their age they may be more dependent on others and are less likely speak up as death is inevitable at such a fragile age and they would like to avoid further painful treatment. Religion also played a role, among the treatment completed group. Muslim patients were less likely to be lost to follow-up when compared to Hindu patients. It is possible that that the Muslim patients were more dependent on their husband

or male member to attend the follow-up visits and may receive more familial and partner support to attend the follow-up.

After the treatment completion, patients were more likely to be lost to follow up if they were widowed or divorced or separated or unmarried. Similar trends were also observed in studies where marital status influenced patient delayed reporting of the cervical or breast cancer at RCC (Ali et al., 2008; Kaku et al., 2008). This trend may exist due to lack of support of a partner, where a woman of lower economic bracket may be more likely to be dependent on her partner for financial and psychological support. Vallikad et al., (2006) also observed similar reasoning among patients who were non-compliant to treatment, domestic lack of support, economic as well as symptomatic relief was among the patient reasoning. Without a partner a patient may less likely to be inclined to spend money on her own medical needs and places primary support for her children and spends most of her resources on the family, as there is no one else to be the head of the household. Married women are more likely to follow up after primary cancer treatment has been completed, perhaps due to the emotional support provided by her husband. Additionally the working schedule of the earning member of a family may prevent assistance to the patient and provide the moral and physical support thus partially discouraging the patient to continue follow-up care (Ganesh, 1985).

In the present study, education played a crucial role in increasing the chances of patient lost to follow up. Patients with middle school education were more likely to be lost to follow up when compared to patients with secondary or higher education. Patients with lower education are unaware of the medical treatment and disease related symptoms, therefore are less likely to report any abnormal conditions (Ganesh, 1985; Kaku et al., 2008). The impact of education is observed in other cancer studies as well. Ali et al., (2008) reported that lower education led to delayed reporting among breast cancer patients. The power of literacy becomes more transparent when reviewing the literacy rate in Indian states and the incidence rate of cervical cancer. Other studies have also reported that women with no education are predominantly contributed to the high burden of cervical cancer in India (Swaminathan et al., 2009). A prevalence survey from the Dindigul district in Tamil Nadu indicated that high-risk HPV infection, necessary for development of cervical cancer, was inversely associated with education (Franceschi et al., 2005).

In the present study, patient that lived closer to RCC were more likely to continue the follow-up. Patient from Tamil Nadu state had significantly higher rate of lost to follow-up when compared to patients residing Thiruvananthapuram district. Difficulty in transportation may be one of the criteria responsible for discouraging patients from attending the follow-up visits (Ganesh, 1985). A study in the US has also observed that transportation was a significant barrier to cancer treatment especially among minorities who would possibly avoid care due to difficulty in transportation to the treatment facility (Guidry et al., 1997). Kaku et al., (2008) also

observed similar trend, cervical cancer patients residing farther away from RCC were more likely to delay registration for cancer care. It is essential in medicine to seek early care, especially in cancer treatment, thus it is necessary to overcome such barrier so patients can get the appropriate as needed. Longer distance means more financial loss, as patient's family member may have to take more time off from work, loss of pay, and also traveling and hotel costs after arriving at RCC can be costly enough to discourage the patient from seeking routine follow-up.

Disease related factors also influenced patients attending for follow-up. In the present analysis, patients with higher stages (i.e. stages 3 and 4) were more likely to be lost to follow-up. As the patient grows more dependent, as the disease progresses, more familial support is necessary to keep up with the follow up care. Thus, a sicker patient will need more financial and physical support and resources as well as a more comfortable transportation to the facility to attend the follow-up care. Various socio-economic factors as described above compounded with progression of the disease and poor health conditions that patient is less likely to attend the follow-up care (Ganesh, 1995). Mathew, (1996) also observed similar trends among patients with advanced stage in ovarian cancer at RCC from 1988-1993.

Performance status before treatment has also affected follow-up pattern in the present study. As mentioned above, a patient with a deteriorating and poor health condition may need more financial and familial support to keep up the follow-up care. Thus patients with better performance status were more likely and more capable to follow through with their care.

The second analysis was on drop-out versus treatment completed. Interestingly, only income, stage and IHD were associated with drop-out in the univariate analysis, however in the multivariate analysis, IHD and stage showed significance. Income showed borderline significance in the multivariate analysis. Income was assessed based on a variety of factors such as patient occupation, husband's occupation, whether or not they rent or own their property house/land, it is possible that patients have consistently under estimated their income in order to avoid making payments for treatments and services in the hospital. Thus patient bias in reporting income may have led to the insignificance results. Similar results were observed among other studies on cervical and breast cancer patients at RCC (Ali et al., 2008; Kaku et al, 2008). Additionally, it is interesting to observe that statistical significance was observed among middle income group in the present analysis. It is possible that financial burden is greater among the middle class, as these patients do not qualify for free treatment and have to pay certain amount out of pocket and this creates a financial burden as they do not make enough to pay for regular follow-up but have sufficient income to be excluded from the free treatment. However this problem is avoided by the very poor that receives free treatment and the very wealthy that are able to manage multiple follow-up without having a financial burden.

Patients may forgo the initial treatment and physicians' recommendations and seek alternative care when medical

care at a later stage seem to provide very little hope and relief. Another possibility is those patients who are aware of their disease progression and may be in psychological denial may seek alternative route such as spiritual healing for hope and dignity. In accordance to disease stage there is a possibility to increase suffering from treatment as well as experiencing loss of self dignity from physical deterioration from tumor effect and gain of pain and a longer healing time associated with possible intense treatment regimen, this may decrease the hope of the patient to continue treatment or follow-up. In addition to that as mentioned previously poor health conditions creates a burden on the patient and the family thus increases the demand for financial and other resources to continue care, thereby increasing the likelihood to gradually discontinue treatment.

Having additional problems only supplements to and creates more of a burden and a barrier to proper care, thus patients with IHD may experience more risks from chemotherapy and additional medications exacerbating the risks of a heart attack, thus attributing to an increase in the drop-out rate. Another reason may be that the patient cannot afford both treatment care for IHD and cancer care.

The advantages of the present study includes analysis of large patient population of 784 cases from 2006 and 2007, and highly organized and descriptive and detailed medical records kept by the RCC.

In conclusion the present analysis has highlighted the two phases of different needs of cervical cancer patients. Drop-out rates are associated with disease related factors thus both patient and physician should be educated and be aware of how higher stages of disease along with combination of other health issues may burden the patient enough to drop-out. Both patients and physician should be aware of power of hope and physicians should be more aware of the patients' psychological need as many may drop-out of pain and hopelessness, physician can tailor to the patients' needs so as to decrease the rate of drop out.

On the contrary to the drop-out group, patients in the lost to follow up group were affected by many factors both socio-cultural and demographic and disease related factors. The results from this analysis can be similarly applied to various other cancer patients with similar outcomes. Additionally the study provides awareness that patients in different phases of cancer care whether in the initial treatment or in later follow-up care, deserves to be accommodated differently by the medical staff. Physicians should be aware of the patients' different needs at these two different phases, thus improving the retention rate in the near future of cancer treatment.

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