



RESEARCH ARTICLE

A survey analysis on the association between polypharmacy and health related quality of life indices in cancer patients

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ABSTRACT

Cancer is a leading cause of death. People living with cancer experience a variety of symptoms. Quality of life (QOL) is a major concern of patients with terminal cancer. Symptoms affect their QOL. Management of symptoms improves distress and QOL. Polypharmacy (PP), often defined as the use of five or more medications, is highly prevalent in patients with cancer. As the quantity of medications for treating cancer and comorbid conditions in patients with cancer become more numerous and diverse, it is important to understand the various ways in which patient health and economic outcomes may be adversely affected by prescribed medications. The purpose of this dissertation was to investigate distinct associations between PP and the lives of patients living with cancer by estimating how PP affects health-related quality of life (HRQoL), its association with healthcare expenditures, and health complications (HCs). We analyzed the data from various sources to evaluate if an association exists between PP and HRQoL in cancer survivors. The objective of the study was to assess the QOL among cancer patients. A survey was conducted among 768 cancer patients selected by a convenient sampling technique. Data was collected from cancer patients by interview technique using structured and validated interviewed schedule. Out of 768 cancer patients, 30.2% patients were in the age group of 51–60 years, majority with head-and neck cancer (40.1%) and 57.7% had stage III disease. QOL of majority of patients was influenced by their symptoms. 82.3% of them had low QOL scores. Cancer patients experienced many symptoms that affected their QOL. There is a need to develop interventions for effective management of symptoms that will empower the patients to have a greater sense of control over their illness and treatment and to improve the QOL.

Keywords: polypharmacy, health related quality of life, HRQoL.

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1. Introduction

Cancer is the main health issue in the community across the world. Globally, cancer is one of the most common causes for morbidity and mortality. The results from GLOBOCAN (2012) showed that 14.1 million new patients were diagnosed with cancer and 8.2 million deaths were due to cancer. This is projected to rise by at least 70% by 2030.[1] Polypharmacy in elderly individuals poses a significant risk to well-being; however, it is difficult to avoid with this background, we aimed to summarize the existing evidence regarding the impact of polypharmacy in elderly cancer patients. We also aimed to provide some strategies for clinical pharmacists to contribute to the management of such problems.

Cancer was the sixth most expensive condition to treat and most cancers are estimated to have a decreasing incidence and increasing survival rate for the foreseeable future.² A decreasing incidence may cause overall cancer-related expenditures to decline in the long run, but the prevalence of cancer coupled with the aging of the US population will result in an increase in the number of cancer survivors. The types of services and healthcare products cancer survivors require included in the national health expenditure estimates are hospital care, physician and clinical services, other professional services (specialists), dental services, home health care, nursing care facilities, medical equipment, prescription drugs, and various other services and products. The broad objectives of this study is to find an association between PP and HRQoL among cancer survivors using a nationally representative survey database.² Find the association between the QOL of cancer patients' with their demographic and disease-related variables.³ To estimate and describe the frequency of HCs in newly diagnosed cancer patients, with or without polypharmacy, in a multivariable framework.

2. Methodology

An exploratory survey was done among 768 cancer patients who aged above 30 years and diagnosed to be in Stage III or IV of cancer of breast/cervix/head-and-neck/gastrointestinal tract/lung/colorectal cancer and had undergone radiotherapy or chemotherapy or surgery or combination of them in IRCS, Nellore. Patients who were unable to perform activities and who had psychiatric problems were excluded from the study. Reputed cancer hospitals all over Andhrapradesh were selected by purposive sampling, and convenient method was used to select the samples from the selected hospitals. Data were collected using the pretested structured interview technique after obtaining permission from the respective hospital administrators.

Health-related quality of life

We chose the Physical Component Summary (PCS) and Mental Component Summary (MCS) scores, calculated from the Medical Outcomes Study Short-Form 12 Health Survey Version 2 (SF-12v2) as our dependent variables.

The SF-12v2 is collected as part of the MEPS during rounds 2 and 4 of the survey to measure HRQoL.²¹

Key independent variable Polypharmacy

A consensus definition of PP does not currently exist.²⁴ Some investigators have measured PP by individual drug or classes of medications.^{15,24} A prescriptions file with therapeutic medication class information which are linked to the Multum Lexicon database for analysis. We used these therapeutic class details to determine the maximum number of classes of prescription medications the individuals were prescribed in one of the rounds that coincided with our study years. We defined PP as using 5 therapeutic classes of medications in one of the rounds of interviews, which is consistent with other definitions in published literature.^[15,26]

Covariates

Demographic variables included age group based on quartile analysis, sex, race/ethnicity, geographic region, and marital status. Socioeconomic variables included income, insurance status, and level of education. Insurance was categorized as privately-insured, uninsured, or publicly-insured. Level of education was classified into 3 groups: less than high school (i.e. did not graduate), high school graduate, and some college (must not have graduated to be included). Clinical variables included type of cancer, time since cancer diagnosis, select chronic conditions common in cancer survivors, and number of total healthcare encounters. We classified cancer into several groups based on logical groupings or sample size (if a specific type of cancer had too small a count to be its own subclass). The cancer type groups were the following: breast, prostate and other male genitals (included testicular cancer), cervical and other female genitals (included uterine, ovarian, other female cancers), colon and other gastrointestinal (GI) (stomach, liver, pancreas, and other GI cancers), melanoma, leukemias/lymphomas, and other or unspecified (included lung) (Appendix A). This study involves a variable for time (years) since cancer diagnosis by subtracting the person's reported age at diagnosis from their reported age at the time of the survey because it was found to be a significant indicator of HRQoL among certain cancer groups.¹⁹ For patients who could not remember, or otherwise did not provide a response for age at diagnosis, we used a statistical multiple imputation procedure to assign time since cancer diagnosis. To assess the influence of mental health conditions in our study population, we selected mood disorders (bipolar and depression) and anxiety disorders, using the MEPS designated mental health disorders clinical classification codes to identify these conditions for each patient

Ethical considerations:

The objectives of the study were informed to the cancer patients, and informed consent was obtained. The study was approved by the institutional ethics committee. Administrative permission was obtained from the seven hospitals who granted permission for data collection.

Statistical analysis:

The obtained data were coded, tabulated, and analyzed using the SPSS package version 16 (IBM Corporation) and were interpreted using descriptive and inferential statistics on the basis of objectives and hypotheses of the study

3. Results and Discussion

Table 1. Distribution pattern of demographic variables:

Variables	Category	Frequency
Age (years)	30-40	125
	41-50	221
	51-60	232
	Above 60	190
Educational status	Illiterate	257
	Primary	301
	High school	127
	Preuniversity	32
	Graduate and above	51
Income of the month in rupees	<5000	416
	5001- 10,000	198
	Above 10,000	154
Type of cancer	Head and neck	308
	Lung 50	50
	Breast 136	136
	GIT 141	141
	Cervical	133
Duration of illness (years)	1	308
	1-5	50
	5-10	136
	10	141
Duration of treatment(years after diagnosis)	6	585
	6-12	110
	12 months and more	73
Stage of cancer	Stage III 443	443
	Stage IV	325

Table 2. Diagnosis and treatment characteristics for women (n=467) and men (n=301)

	Women	Men
Diagnosis		
Cabreast	185	0
Cabladder	0	28
Cacervical	124	0
Caeye	30	26
Cagroin	12	0
Cakidney	17	0
Calarynx	0	2
Caesophagus	42	31
Caprostate	0	18
Ca rectum, and colon	21	33
Caskin and eyes	22	2
Catongue	0	1
Hodgkin	16	0
Kaposissarcoma	2	3

Leukemiaandlymphoma	51	32
Liposarcoma	14	0
Nasalpharyngealcarcinoma	41	0
Squamouscellcarcinoma	0	13
Treatment		
Chemotherapy	179	22
Radiotherapy	147	10
Radiotherapy and chemotherapy	50	21
Radiotherapy and surgery	1	0
Surgery	25	6
Surgery and chemotherapy	3	0
Notyetstarted treatment	1	4

Table 3: The 10 Most Frequently Prescribed Therapeutic Classes by Polypharmacy in indian Adult (18 years) Cancer Survivors (n=768)

Polypharmacy		
Therapeutic Class	N	%
Analgesics	453	58.9
Antihyperlipidemic Agents (HMG-CoA reductase inhibitors)	234	30.5
Thyroid Hormones	129	16.7
Antidepressants	187	24.3
Beta-Adrenergic Blocking Agents	267	34.7
ACEIs	345	44.9
Dermatologic Agents	98	12.7
Proton Pump Inhibitors	198	25.7
Macrolide Derivatives	76	9.89
Antihypertensive Combinations	456	59.3
Loop diuretics	75	9.87
Loop diuretics	85	11.7
Oral hypoglycemic agents	340	43.8
Benzodiazepines (anxiolytic, sedativ/hyp)	109	15.7
quinolones	106	15.4

Discussion

The present study result showed that 632 (82.3%) cancer patients were in the below average category of QOL score and the QOL of the cancer patients was influenced by reported symptoms. Very low-level QOL was observed in general well-being among 738 (96.1%), physical well-being in 555 (72.3%), and psychological well-being in 411 (53.5%) participants. Seven hundred and nineteen (93.6%) of them reported below average economic well-being. Most of the participants' physical well-being was affected by pain 560 (72.9%), sleep problem 551 (71.7%), and fatigue 705 (91.8%). The psychological well-being was affected by feeling very much depressed among 418 (54.4%) of the participants, and 755 (98.3%) were not comfortable in attending the social functions. Most of them, i.e., 585 (76.2%), had a fear of recurrence, 755 (98.3%) of the participants felt that their income status was reduced due to physical condition/disease, and 658 (85.7%) of them were not satisfied with their body image.

4. Conclusion

This study revealed that cancer patients experience many symptoms which affect their QOL. The management of

cancer pain is a critical issue in the care of patients with cancer. All health professionals must ensure that patients receive timely and appropriate education and care. There is a need to develop measures for effective management of symptoms and to improve the QOL. The main issues are management of symptoms and need to use strategies that will empower the patients to have a better sense of control over their illness and treatment

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