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COMPREHENSIVE STUDY AND ASSESSMENT OF COMORBIDITY PROFILES IN GERIATRIC CANCER PATIENTS

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ABSTRACT

Aim: Comprehensive geriatric assessment can guide therapy and affect prognosis and quality of life in older cancer patients, since their clinical evaluation and treatment is influenced by conditions such as disabilities, comorbidity, and functional status. The objective is to comprehensively study, assess and evaluate the comorbidities in geriatric cancer patients. **Methods**: A prospective observational cross-sectional study consisting of 104 study participants, aged above 65 years, diagnosed with different types of cancers were identified and included who had presence of comorbidities and the quality of life was evaluated. The grading was done by using the principle based on Charlson comorbidity index system. **Results**: During our comprehensive research and evaluation of comorbidity patterns in older adults with cancer, we observed a higher prevalence of comorbidities in the age range of 65-75. Among these comorbidities, hypertension and diabetes mellitus were found to be the most prevalent, regardless of the specific type of cancer the patients were diagnosed with. In our study, we found that 37 patients, accounting for 35.5% of the participants, did not experience a significant impact on their quality of life as a result of comorbidity. However, for 58 patients (55.7%), there is a low risk of developing complications or mortality due to their comorbidity. As for 9 patients (8.65%), there is a moderate risk of comorbidity burden or mortality. It is notable that when a cancer patient has more than one comorbidity, their quality of life is likely to be negatively affected. **Conclusion**: The most recurring comorbidity was hypertension followed by diabetes melitus,

as age increases, comorbidities become more prevalent, with the 65-70 age group showing the highest incidence, followed by the 71-75 age group as well. Although this risk is present in all age groups, it is most commonly observed in 65-70 age group. Ultimately, the presence of a greater number of comorbidities has a detrimental effect on the quality of life of patients.

KEYWORDS: Comorbidity, assessment, complications, comorbidities, quality of life.

INTRODUCTION

Cancer is a disease condition characterized by abnormal cell division which is uncontrolled and unregulated leading to the damage of healthy cells / tissues A *tumour* or *neoplasm* is a mass of cells / tissue that grows faster than normal in an uncoordinated manner and continues to grow after the initial stimulus has ceased. [1] Normally, cells divide in an orderly manner. Neoplastic cells divide in a disorderly manner forming a tumour Signal transduction regulates the development, growth, and division of healthy cells. Conversely, cancer cells develop autonomous pathways for their own growth and reproduction. *Carcinogenesis* is the process through which normal cells transform into cancer cells, leading to the onset of cancer as a disease. [2] Cancer is a complex and multifaceted disease with a diverse aetiology, involving a combination of genetic, environmental, and lifestyle factors. The development of cancer is often attributed to genetic mutations that accumulate over time, disrupting the normal control mechanisms that regulate cell growth and division.

A *comorbidity* is the occurrence of multiple health conditions at the same time.[3] The word "comorbidity" is a combination of "co," meaning together, and "morbidity," which refers to a medical condition. These coexisting conditions may also be described as cooccurring. They may interact with each other or exist separately. Some conditions may increase the risk of developing others or commonly occur together. For example, a heart attack can be linked to stroke or vascular disease; and chronic kidney disease may coincide with hypertension and fatigue with anaemia. Comorbidities often involve long-term health concerns, impacting the well-being of an individual.

Age is certainly a risk factor for several diseases. Age related diseases are becoming more prevalent these days. Occurring of chronic diseases is common with aging[4] Likelihood of possessing two or more significant conditions is approximated to be 60% by the ages of 75 and 79 years and exceeds 75% between the ages of 85 and 89 years. Comorbid conditions impact cancer risk, cancer recurrence, and influence the stage at diagnosis. Patients with

obesity, diabetes, end-stage renal disease, or immunodeficiencies are at an elevated risk for developing cancer.

This is to be omitted, this was a mistake and to be replaced by - This study aims to promote awareness and highlight the importance of achieving and maintaining a level of overall health is essential to avoid these complications and improve health outcomes.

MATERIALS AND METHODS

Source of Data

- Case report form
- Prescriptions of patients
- Patient case sheet/medication chart
- Lab reports
- Patient questionnaire (NHS & Charlson Comorbidity Index)

Sampling method: sample size was determined to be 104 participants.

Study design: This is a prospective observational cross-sectional study.

Inclusion criteria

- Patients aged 65 years and above
- Patients diagnosed with cancer - de- novo patients / newly diagnosed patients and relapsed patients

Exclusion criteria

- Patients aged less than 65 years old

Study tools

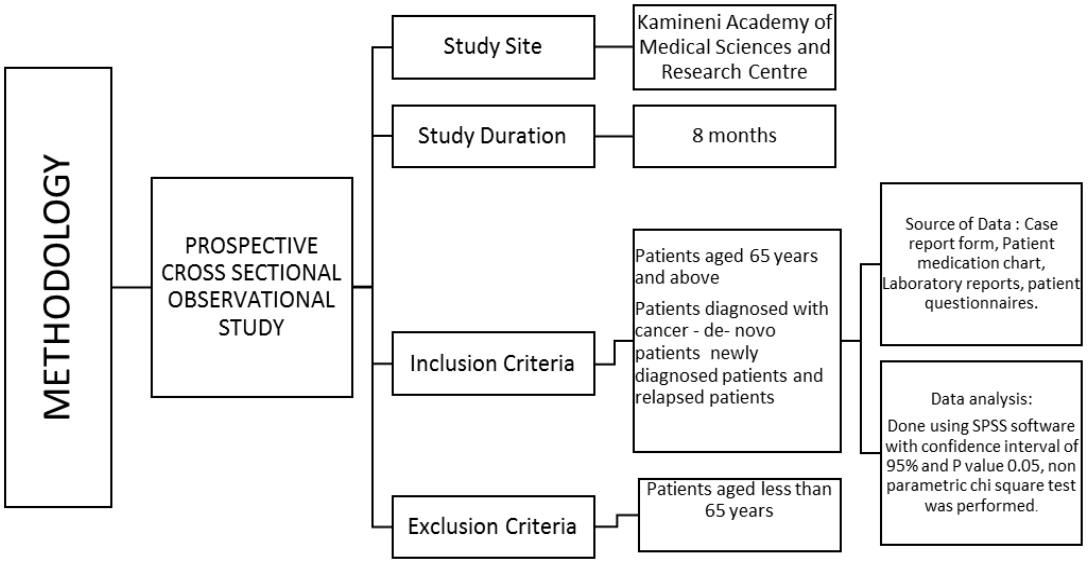
- Self-designed case report form: Data collection form designed to collect subject's demographic and disease specific aspects.
- Charlson Comorbidity Index principle – Comorbidity specific Quality of Life Questionnaire / index : it is a specific scoring index designed to assess and predict the mortality of a patient who may have a range of concurrent conditions (comorbidities).

Statistical Analysis

Data collected from case report form; questionnaires was used for data entry. The relevant data gathered was input into an Excel spreadsheet, and appropriate statistical analysis was conducted. Descriptive statistics was done by using SPSS software and Microsoft office tools.

Ethics and consent

Institutional Ethical Committee of Kamineni Academy of Medical Sciences, Research Centre and Hospital approved the survey; Chairperson of Institutional Ethics Committee gave permission to conduct the study. The study participants received an overview of the research, and their willingness to participate was confirmed.



RESULTS

A total of 104 patients were screened in accordance with the inclusion criteria. Table (1) indicates the gender wise distribution of patients; percentage of females (65.4%) was seen more than males (34.6%).

Table 1: Gender wise distribution.

S.no	Gender	Number of patients	Percentage
1	Female	68	65.4%
2	Male	36	34.6%
	TOTAL	104	100%

In our study we considered age wise distribution of patients with respect to age groups with present / known diagnosis as well as new diagnosis. Table (2) indicates representation of age wise distribution of patients with respect to age groups.

Table 2: Age wise distribution.

S.no	Age range	Number of patients	Percentage
1	65-70 years	72	69.23%
2	71-75 years	14	13.46%
3	76-80 years	10	9.61%
4	81-85 years	5	4.8%
5	85-90 years	3	2.88%

Around 69.23% patients were in the 65-70 age range as identified (shown in Fig.1)

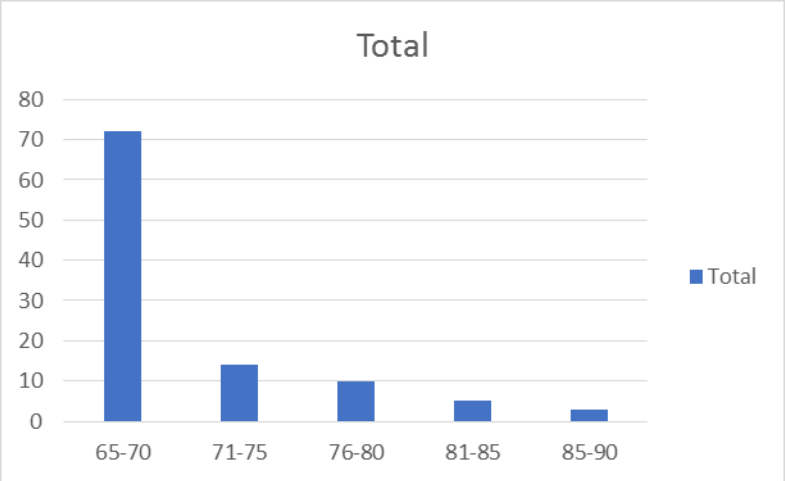


Figure 1: Age wise distribution.

Table (3) indicates representation of gender wise distribution of patients with respect to age groups.

Table 3: Gender wise distribution of age groups.

Age	Female	Male	Grand Total
65-70	21	12	33
71-75	4	2	6
76-80	0	1	1
81-85	42	21	63
86-90	1	0	1

Among the 104 patients the gender wise distribution with respect to age groups is identified (shown in Fig. 2)

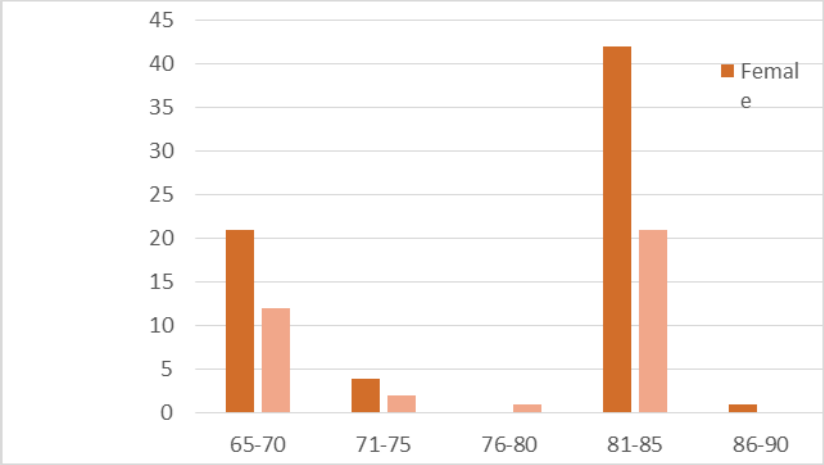


Figure 2: Gender wise distribution with age groups.

Table (4) indicates the types of cancer diagnosed in total number of patients

Table 4: Cancer diagnosis of total patients.

Type of Cancer	Frequency	Percentage
Acoustic neuroma	1	1.0%
Anorectal junction cancer	1	1.0%
Blood cancer	1	1.0%
Breast cancer	34	32.7%
Cervical cancer	6	5.8%
Endometrial cancer	5	4.8%
Ileo-caecal junction cancer	1	1.0%
Kidney cancer	1	1.0%
Larynx cancer	3	2.9%
Leukaemia	1	1.0%
Lung cancer	5	4.8%
Myxoid cancer	2	1.9%
Oral cancer	3	2.9%
Ovarian cancer	5	4.8%
Pancreatic cancer	1	1.0%
Prostate cancer	10	9.6%
Rectal cancer	1	1.0%
Rectosigmoid cancer	2	1.9%
Sigmoid colon cancer	5	4.8%
Stomach cancer	10	9.6%
Thyroid cancer	2	1.9%
Urethral cancer	1	1.0%
Urinary bladder cancer	2	1.9%
Vulva cancer	1	1.0%
Total	**104**	**100.0%**

Among the diagnosis majority of the patients were diagnosed with breast cancer (shown in Fig. 3).

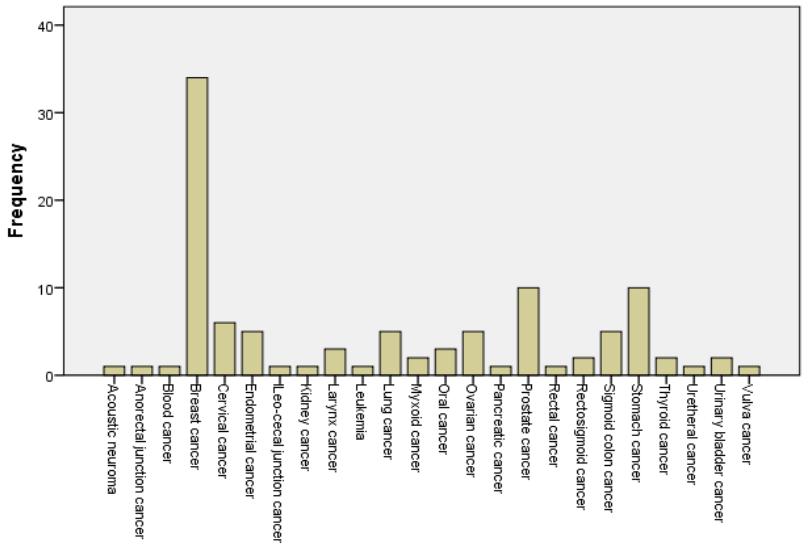


Figure 3: Cancer diagnosis.

Overall comorbidity distribution (shown in Fig. 4)

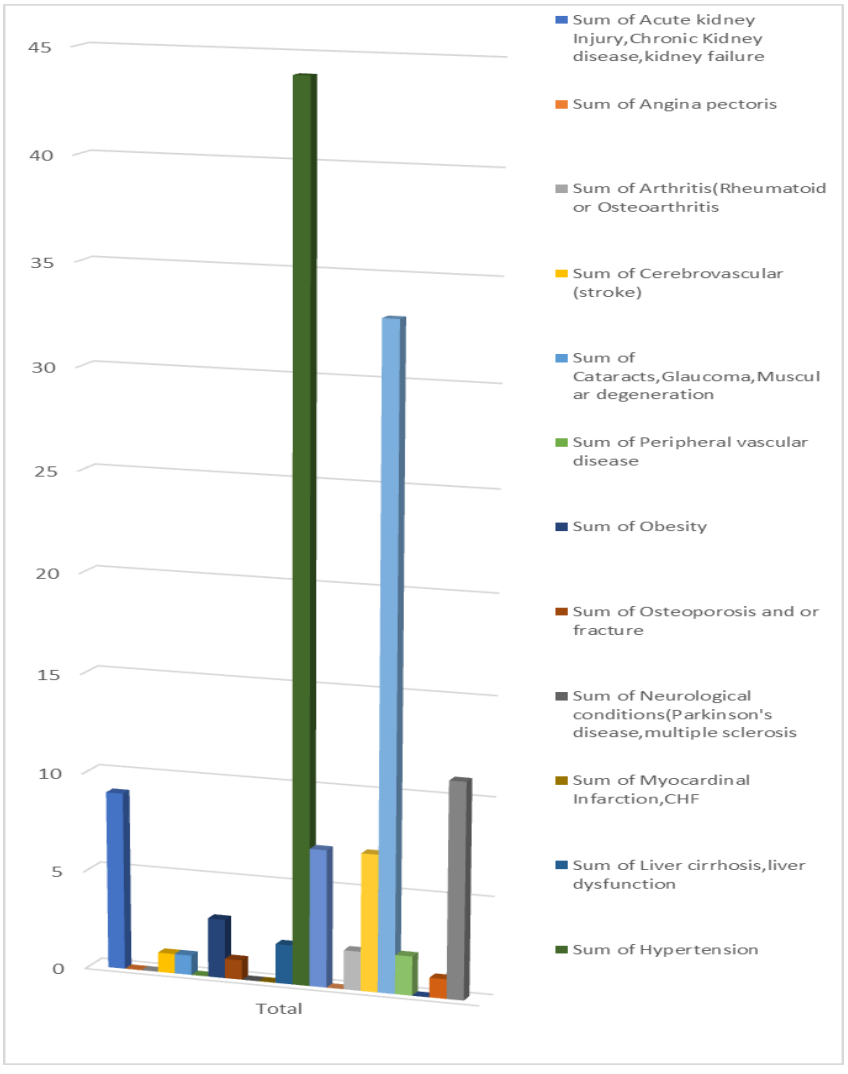


Figure 4: Overall Comorbidity distribution.

Patients with hypertension (HTN) is most commonly seen in the 65-70 age group, followed by Diabetes mellitus (DM) (shown in Fig. 4).

Graphical representation of age & type of cancer (shown in Fig. 5).

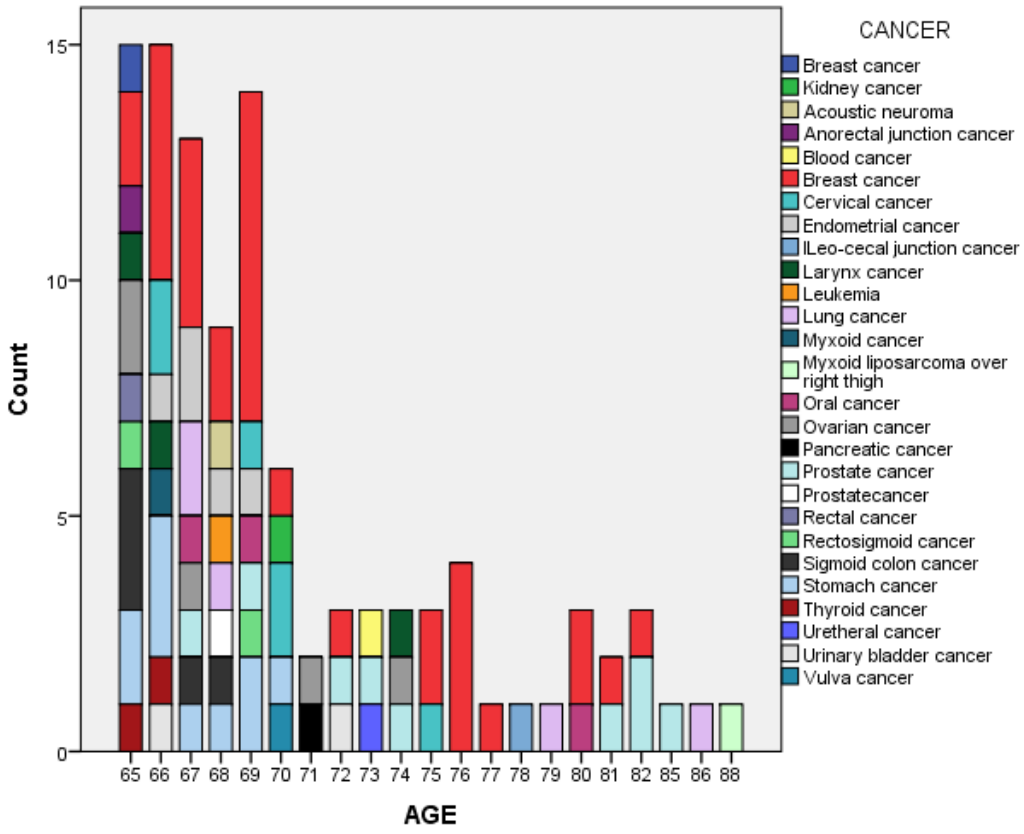


Figure 5: Age and type of cancer diagnosis.

Table 5: Severity of comorbidities in different age groups.

Age	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Total
65-70	26	24	12	4		66
71-75	4	5	7	1		17
76-80	4	1	4	1		10
81-85	2	1	3	1	1	8
86-90	1		1	1		3
Total	**37**	**31**	**27**	**8**	**1**	**104**

Table (5) indicates the severity of comorbidities diagnosed with Grade 1 – lesser effect on QoL; Grade 2 – moderate effect on QoL; Grade 3 – moderate to high effect on QoL; Grade 4 – significantly high effect on QoL & Grade 5 – very high effect on QoL.

Graphical representation (shown in Fig 6)

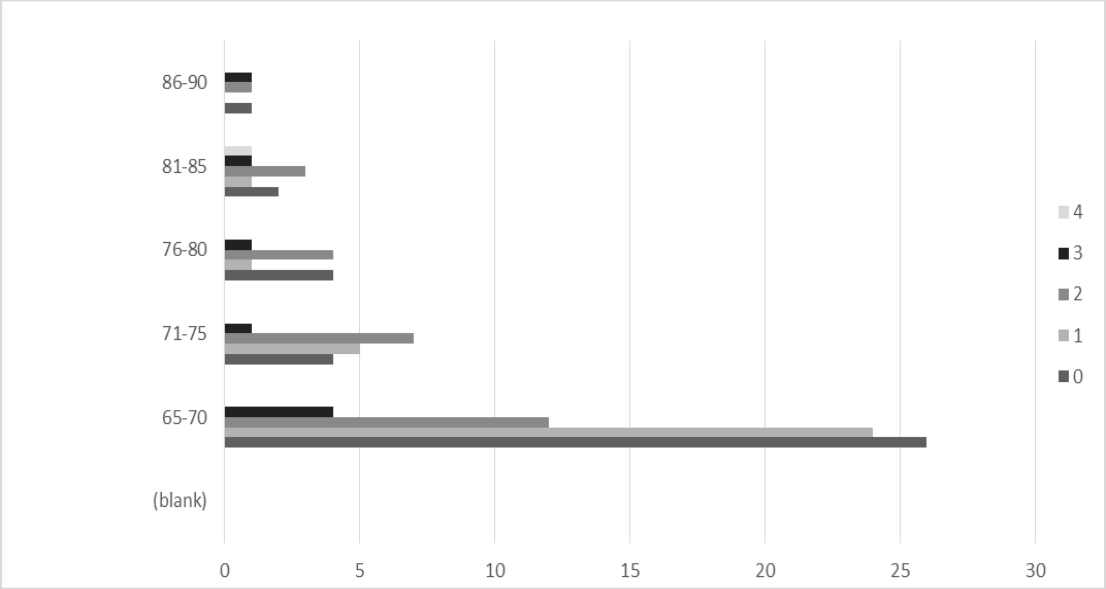


Figure 6: Graphical representation of severity in different age groups.

DISCUSSION

We conducted a thorough investigation and evaluation into the comorbidity patterns among elderly cancer patients, through a prospective observational study at Kamenini Academy of Medical Sciences and Research centre. The study encompassed both in-patients and out-patients, and data was gathered from **104** participants through patient case sheets, data collection forms, and questionnaires. In the oncology department, we diligently observed and analysed individuals above the age of 65 who had been diagnosed with cancer. These individuals were carefully selected based on strict eligibility criteria to participate in our study. Our objective is to gain a deeper understanding of the prevalence of any additional health conditions present in elderly cancer patients, as well as to evaluate their overall quality of life. Our study utilized the concept of Charlson comorbidity index to gauge the impact of comorbidities on the well-being of geriatric cancer patients. Out of the 104 participants, **68 were female (65.4%) and 36 were male (34.6%)**. Interestingly, the majority of our participants fell within the 65-75 age bracket. We also ensured a diverse range of cancer types among our participants, with **breast cancer being the most prevalent (32.7%), followed by prostate (9.6%) and stomach cancer (9.6%)**. It was found that individuals aged 66, 69, and 76 have a higher incidence of breast cancer. We also examined the comorbidity profile of 104 patients and discovered that Hypertension (HTN) is most commonly seen in the 65-70 age group, followed by Diabetes mellitus (DM). According to our index, a score of **1** indicates that patients do not experience a decrease in their quality of life due to comorbidities. Interestingly, among patients aged 65-70, the majority show little to no effect from

comorbidities. However, as age increases, comorbidities become more prevalent, with the 65-70 age group showing the highest incidence, followed by the 71-75 age group. For those with a grade of **2-3**, there is a mild risk of mortality and burden from comorbidities. Although this risk is present in all age groups, it is most commonly observed. Ultimately, the presence of a greater number of comorbidities has a detrimental effect on the quality of life of patients.

CONCLUSION

During our comprehensive research and evaluation of comorbidity patterns in older adults with cancer, we observed a higher prevalence of comorbidities in the age range of **65-75**. Among these comorbidities, **hypertension and diabetes mellitus** were found to be the most prevalent, regardless of the specific type of cancer the patients were diagnosed with. In our study, we found that **37 patients, accounting for 35.5% of the participants, did not experience a significant impact on their quality of life** as a result of comorbidity. However, for **58 patients (55.7%), there is a low risk** of developing complications or mortality due to their comorbidity. As for **9 patients (8.65%), there is a moderate risk** of comorbidity burden or mortality. It is notable that when a cancer patient has more than one comorbidity, their quality of life is likely to be negatively affected.

SUMMARY

In this study we assessed comorbidities associated with geriatric patients who are diagnosed with cancer during perioperative care as well as effect on quality of life. Patients were observed to have comorbidities such as hypertension and diabetes, with hypertension being particularly prevalent than other observed comorbidities included diabetes melitus, renal disease, & asthma. **58 patients (55.7%) were at low risk** of developing complications or mortality due to their comorbidity. It was observed that for **9 patients (8.65%), there is a moderate risk** of comorbidity burden or mortality because negative impact on their quality of life due was reported due to severity of existing comorbidities. Our findings highlight the importance of achieving and maintaining a level of overall health is essential to avoid these complications and improve health outcomes. The assessment of the existing comorbidity conditions is crucial, as it provides insights about the overall wellbeing of an individual. It helps us to understand the factors that impact the life. It is evident that older individuals[5] are prone to be more illnesses, given that age itself is one of the risk factor. Emphasis on assessment of comorbid conditions, especially in geriatric cancer patients is done to understand the patient's perspective on overall wellbeing. Such assessments help the medical

professionals to make informed decisions on treatment approach – dose modification, adjuvant therapies. It helps us to identify and understand if the particular patient needs an additional support.

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Declaration on competing interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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ABBREVIATIONS

- QoL – Quality of Life
- SPSS software- Statistical Package for the Social Sciences

- HTN - Hypertension
- DM – Diabetes Melitus

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