Results:

The observed comorbid symptoms paired with rate of polypharmacy (Number of medications taken per day) yield measurements, Charlson Comorbidity Index (Charlson , Szatrowsk, Peterson , & Gold , 1994) that incorporated patient's age. CCI for sample and CCI distribution across various age groups is tabulated in Table2.

Symptom Burden is measured by comparing the symptoms prior to prescribing medication and symptoms after using medication. Patients are categorized into higher symptom burden and lower symptom burden groups based on observed results. 34.6 % of patients have show lower symptom burden after polypharmacy.

Crude Odds Ratio (COR) calculated between rate of polypharmacy and the symptoms burden as the outcome have yielded following results.

i) The likelihood of symptoms burden being higher is 17.73 times more for rate of polypharmacy greater than 7 compared to patients with lower rate of polypharmacy in the confidence interval of 95% The risk ratio is 10.62 times higher with in the same confidence interval.

ii) The comparison between ROP group i.e. patients taking 5 to 7 medication per day and less than 5 shows that risk of having higher symptoms burden is 6.25 times more for patients who take more than 5 drugs a day within the confidence interval of 95%

Comorbidity Polypharmacy Score (CPS), an indicator derived from observed comorbid symptoms and rate of polypharmacy shows that the distribution of patients who reported an improvement in quality of life is statistically different from distribution of patients who did not. These results are based on The Wilcoxon Rank-Sum Test with p-value 0.7 and statistic -0.38. The patients with "Good" quality of life score had lower CPS scores.

Analysis of Variance (ANOVA) of rate of polypharmacy (ROP) shows that there are significant differences among ROP in female patients with p values observed to be 0.015 whereas ROP in male patients is of no significant difference, p-value 0.12. (Note: P-value greater than 0.05 is indicator for rejecting null hypothesis).

A likelihood of survival for next ten years is calculated based on CCI and the results are tabulated in Table2.

Table 1: Demographics

Demographics	Statistics
Gender (male), n (%)	169(53.65%)
Age (years) mean (SD)	69.31 (4.14)
Marital Status	
1. Married n (%)	246 (78.1%)
2. Widowers n (%)	69 (21.9%)
Employed n (%)	95 (30.16%)

Education n (%)
    a) Elementary   33 (10.47 %)
    b) High School   18 (5.71 %)
    c) Graduate   7 (2.2 %)

Polypharmacy n (%)
    Patients using less than 5 medications a day   8 (2.53%)
    Patients using between 5 and 7 medication per day   227 (72.06 %)
    Patients using 8 or more medication per day   80 (25.39 %)

Number of Medicine Intake per day, mean (SD)   6.76 (1.61)

Table 2: Indexes

Index	Statistics
Charlson Comorbidity Index (CCI)	4.37 ± 1.1
Overall CCI (Mean ± Standard Deviation)	
Distribution based on age groups	
a. 60 to 69 years	3.87 ± 0.87
b. 70 to 79 years	4.92 ± 1.03
c. 80 or more	5.73 ± 0.73
Comorbidity Polypharmacy Score (CPS)	
CPS (mean ± standard deviation)	8.48 ± 1.88
Distribution based on age groups	
a. 60 to 69 years	8.34 ± 1.83
b. 70 to 79 years	8.72 ± 2.03
c. 80 or more	8.33 ± 0.98
Ten-year mortality percentage	43.22 ± 23.96
Distribution based on age groups	
a. 60 to 69 years	54.87 ± 23.14
b. 70 to 79 years	30.57 ± 21.3
c. 80 or more	9.6 ± 9.97
Rate of Polypharmacy (mean ± std)	6.79 ± 1.61

Table 3: Quality of Life

Quality of Life	Size (N)	Percentage
Overall QoL		
Good (0 – 90)	95	30.15 %
Poor (90 – 175)	220	69.85 %

Medication Related QoL		
Good (0 – 36)	32	10.15 %
Poor (37 – 75)	283	89.85 %

Conclusion

Results obtained from various statistical analysis and indicators from scoring Medication Related Quality of Life (MRQoL) as well as Health Related Quality of Life (HRQoL) points toward detrimental effect of polypharmacy overall.

I) Increase in symptoms burden in 65.4 % of patients i.e. 206 patients have shown overall increase in symptoms after polypharmacy.

II) Survival percentage over ten years has been significantly reduced for patients with higher Comorbidity Polypharmacy Score.

III) Overall Quality of Life recorded to be poor for 69.85 % of sample as a result of polypharmacy.

CPS was the independent predictors for severe impairment in MRQoL. This study needs further investigation to see the correlation between independent variables and dependent outcomes.

Future Scope and Improvement in Study

The effects of individual drugs and combination of drugs over quality of life can be studied. The risk factors for various age groups and combination of comorbidities with specific drugs could yield cause and effect correlation for impairment of MRQoL.