# Effects of Polypharmacy on Elderly Patients

# Notes

**Objective:** To study the effects of polypharmacy on elderly patients measured with the 53 item Patient Health Questionnaire. The patients were monitored over the course of one year. Sample of outpatients was used to study the effects. (Sample size n = 315)

**Demographics**

Gender, Age, Marital Status, Employment Status, Education, Using Medication.

Sample Demographics (N = 315)

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| **Demographics** | **Statistics** |
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| Gender (male), n (%) | 169(53.65%) |
| Age (years) mean (SD) | 69.31 (4.14) |
| Marital Status   1. Married n (%) 2. Widowers n (%) | 246 (78.1%)  69 (21.9%) |
| Employed n (%) | 95 (30.16%) |
| Education n (%)   1. Elementary 2. High School 3. Graduate | 33 (10.47 %)  18 (5.71 %)  7 (2.2 %) |
| Polypharmacy n (%)  Patients using less than 5 medications a day  Patients using between 5 and 7 medication per day  Patients using 8 or more medication per day | 8 (2.53%)  227 (72.06 %)  80 (25.39 %) |
| Number of Medicine Intake per day, mean (SD) | 6.76 (1.61) |
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# CCI CALCULATION

**Methodology**

As study demographic consists entirely of patients older than 60. Patients between the ages 60 and 69 are scored 2 points, patients between ages 70 to 79 are scored 3 points and patients aged 80 and higher are scored with 4 points. Thus, dividing patients into three risk groups.

Out for 68 diseases observed in 315 patients, 50 are categorized as 1-point condition and other 18 are categorized as 2-point diseases.

**1-point**

Hypertension, Diabetes Mellitus, Stroke, Pyrexia, Sinus, Parkinson's Disease, Hypothyroidism, CVA, Pneumonia, Polyarthria, Angina, Uncontrolled Hypertension, TB, Asthma, CCF, TAH, Glaucoma, Hypoglycemia, COPD, PDNS, Hypothyroidism, RVL, Koch's Disease, ALD, LTRI, Pancreatitis, Gastro Enteritis, Thrombocytopenia, Exacerbation, UTI, Respiratory Infection, Cervical Spondylosis, Arthralgia, Hypoalbuminemia, Hepatitis, Gastritis, CAD, Ischemic Attack, Epilepsy, AWS, Urinary Tract Infection, Urticaria, RHD, OAD, Bronchitis, MI, Pedal Edema, SOB, Cerebral Syndrome, Ulcer, Anasarca, Ischemic Stroke, AFL, Pneumonitis.

**2-point**

Severe Hypertension, Uncontrolled Diabetes Mellitus, Cerebellar Syndrome, CKD, Hemiparesis, LLM, Seizures, Spondylosis, LLC, Encephalopathy, TST, Cerebral Thrombosis, Cerebellar Thrombosis, Cerebellar Disorder, Neuropathy, Hypoglycemic Encephalopathy.

### Reference

<https://www.thecalculator.co/health/Charlson-Comorbidity-Index-(CCI)-Calculator-765.html>

<https://www.mdcalc.com/charlson-comorbidity-index-cci#creator-insights>

■ Age – divided into five age groups of different risk: age ≤40 years (0 points), age between 41 and 50 (1 point), age between 51 and 60 (2 points), age between 61 and 70 (3 points), 71 years of age or older (4 points).

Each of the conditions listed above are awarded 1, 2, 3 or 6 points depending on the mortality risk associated with each of the comorbidities.

■ 1-point conditions – Myocardial infarction, congestive heart failure, peripheral vascular disease, dementia, cerebrovascular disease, connective tissue disease, ulcer, chronic liver disease, diabetes mellitus.

■ 2-point conditions – Hemiplegia, moderate to severe kidney disease, diabetes mellitus with end organ damage, solid tumor, leukemia, lymphoma.

■ 3-point condition – Moderate to severe liver disease.

■ 6-point conditions – Malignant tumor, metastasis, AIDS.

### Calculating the Charlson probability

## This is the method through which the CCI score is transformed into a survival/mortality percentage: considering that C is the score result obtained by adding the points.

## The ten-year survival equals

## 0.983(e(C\*0.9)).

## For example, at a score of 6, the ten-year survival is 2.25%.

## Citations

<https://pubmed.ncbi.nlm.nih.gov/3558716/>

<https://pubmed.ncbi.nlm.nih.gov/24521366/>

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4744039/> (CCI as measure of mortality)

# Preprocessing

### Data that could potentially break patient confidentiality has been removed. This pertains to the Names and other identification. Location of the patients.

### Dealing with outliers and errors in data.

Fields Age, Gender, Social Habits have initially contained errors. These errors have been dealt appropriately either by replacement techniques or correction.

### Reclassification of fields.

Occupation, Marital Status and Education have been reclassified for demographic analysis. The specific occupations have been replaced with Employment Status making the field binary. While the Education has been standardized to 3 education levels elementary, high school and graduate.

### Editing fields for data consistency.

Fields containing Symptoms, Comorbid conditions and demographic data like

# Statistical Analysis

REFERENCES:

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6880671/>

# Results

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| **Index** | **Statistics** |
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| **Charlson Comorbidity Index (CCI)**  Overall CCI (Mean ± Standard Deviation)  **CCI of individual age groups**   1. 60 to 69 years 2. 70 to 79 years 3. 80 or more | 4.37 ± 1.1  3.87 ± 0.87  4.92 ± 1.03  5.73 ± 0.73 |
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https://www.who.int/healthinfo/survey/whoqol-qualityoflife/en/index2.html

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| **Overall QoL** | **Number** | **Percentage** |
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| Overall Quality of Life  Good (0 – 90)  Poor (90 – 175) | 95  220 | 30.15 %  69.85 % |