



Health Service Utilization and Costs Associated with Co-morbidity in Older Adults with Dementia, Diabetes, or Chronic Stroke

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Summary of Project

BACKGROUND

This study describes co-morbidity, health services utilization, and associated costs over 5 years among community-dwelling older adults with one of dementia, diabetes, or chronic stroke (haemorrhagic or ischemic). This study was intended to provide context for the condition-specific interventions developed by other ACHRU researchers, as well as provide insight into the health services use patterns of older adults with multiple chronic conditions. For each cohort with one of dementia, diabetes or chronic stroke, we asked the following research questions:

- 1] What is the prevalence of co-morbid chronic conditions?
- 2] What are the health care utilization patterns in relation to the number of co-morbid conditions in this cohort over 5 years?
- 3] What are the health care attributable costs in relation to the number of co-morbid conditions in this cohort over 5 years?

The analyses of the individual cohorts provided in-depth and comprehensive data related to each of the above questions. We also found that important trends emerged across the three cohorts that we believe are important to understanding the needs of older adults with multiple chronic conditions. We focus on these findings in the Results below.

We identified 100,630 people with dementia, 376,421 with diabetes, and 29,673 with chronic stroke as of April 1, 2008 (baseline). The diabetes cohort was the youngest (51% were 65-74 years, only 9% were 85+), followed by the stroke cohort (32% were 65-74, 22% were 85+). The dementia cohort was the oldest (20% were 65-74, 32% were 85+). Women comprised about half of the diabetes and stroke cohorts, and 60% of the dementia cohort.



RESEARCH SUMMARY | STUDY 2

RESULTS

Research Question 1: Prevalence of Co-Morbid Conditions

The mean number of co-morbid conditions was: 2.5 in diabetes, 2.9 in dementia, and 3.5 in stroke; there was little variability by age in any cohort. Across all cohorts, over 90% of individuals had at least 1 co-morbid condition but the proportion with 5 or more co-morbid conditions differed (diabetes: 9.6%, dementia: 18.4%, stroke: 30.5%). Hypertension and arthritis were the 2 most common co-morbid conditions affecting upwards of 78% and 62%, respectively, of the three cohorts. Chronic obstructive pulmonary disease and ischaemic heart disease affected at least 20% of each cohort, while inflammatory bowel disease affected at least 20% of each the dementia and stroke cohorts. Over 20% of the stroke cohort also had dementia.

Research Question 2: Health Care Utilization Patterns over 5 Years

Across all cohorts, the frequency of physician visits (both to primary care and specialists), emergency department visits, hospital admissions, and home care visits increased with the number of co-morbid conditions. In most cases, the frequency of each type of service use at least doubled when comparing those with 0 to those with 3+ conditions. The majority of physician visits, ED visits, and hospital admissions were for reasons other than the index condition in all cohorts (for example, primary care visits among the diabetes cohort were predominantly for non-diabetes reasons). This pattern was observed even in those with 0-1 co-morbid conditions. Utilization trends over the 5 year follow up period differed by cohort, service type, and number of co-morbid conditions. However, a common pattern seen across all three cohorts was a decline in utilization for many services in people with the highest number of co-morbidities (3+).

Research Question 3: Health Care Attributed Costs over 5 Years

For each cohort, total health care costs increased sharply with the number of co-morbid conditions but the overall costs and increase reflect both the underlying cohort size and level of service use (from 2008 – dementia: \$13 million in those with 0 conditions to \$532 million in those with 3+; diabetes: \$18 million to just over \$1 billion; stroke: \$604,000 to \$203 million).

In the dementia and stroke cohorts, the highest proportion of costs in those with 0 co-morbid conditions was home care, and in diabetes it was specialist visits. However, for all three cohorts, the largest proportion of costs shifted to hospital admissions in people with 3+ conditions. Over the 5 years, all cohorts showed a decline in total cohort costs that was largely attributed to attrition. Otherwise, the general trends related to increases with co-morbidity and cost drivers persisted.

Average annual per patient costs also increased with the number of co-morbidities across all cohorts but the actual costs and degree of increase differed across cohorts (from 2008 – dementia: \$3,467 in those with 0 conditions to \$8,873 in those with 3+; diabetes: \$1,063 to \$5,941; and stroke: \$2,879 to \$10,394). After adjustment to 2012 dollars, all cohorts showed a decrease in the overall average annual per patient costs over the 5 years; however, this decline was not consistent across the levels of co-morbidity. In all cohorts, average annual per patient costs for individuals with 0-2 co-morbid conditions either stayed constant or increased while average annual per patient costs decreased for those with 3+ co-morbid conditions. This result reflects the decline in utilization seen in all three cohorts among people with the highest number of co-morbidities (3+).

CONCLUSIONS

Comorbidities in older adults with diabetes, dementia and chronic stroke are highly prevalent and are associated with a high level of burden in terms of health care service use and costs. Health concerns that are unrelated to these core conditions are a significant reason for health service use. This highlights the importance of using a multiple chronic conditions (not single-disease) lens in order to understand and address the factors shaping utilization. This study highlights the need for integrated, holistic and patient-centred approaches to designing treatment programs to ensure that they are tailored to address the full range of conditions that impact care and the quality of life of older adults. Additionally, the proportionately higher use of expensive services (e.g., acute care hospital services) at higher levels of comorbidity seen in this study suggests the importance of focusing on prevention and health promotion to avoid the use of expensive services where possible.