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Investigating Polypharmacy Levels From A Nationally Representative Sample of Older Adults

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ABSTRACT

Background:

- ❖ Polypharmacy is the use of multiple (>5) drugs concurrently and has become an increasingly prevalent issue among older adults (>65 years) within the United States.
- ❖ Polypharmacy can result in medication overload, financial burden, and higher risk of adverse drug events.
- ❖ Not enough is known on whether polypharmacy levels in older adults differ between urban and rural populations given the disparate barriers in these populations, e.g., access to providers and specialists, health literacy levels, etc.

Objective:

- ❖ Use a nationally representative survey of ambulatory care visits within the United States to investigate polypharmacy levels in metropolitan and non-metropolitan older adults.

Methods:

- ❖ Data from the 2016 National Ambulatory Medical Care Survey was used to analyze polypharmacy levels in older adult patients.
- ❖ Complex sample survey analysis was conducted using sampling weights to get to national estimates and to identify factors associated with polypharmacy-associated visits.

Results:

- ❖ Enabling (region and patient provider) factors and need (number of diagnoses, type of primary diagnosis, major reason for the visit, and total chronic disorders) factors were found to be significantly associated with polypharmacy visits for patients ages 65 and older.
- ❖ Several factors that were found to be significant in previous research at the turn of the century were not found to be associated in the current dataset.

Conclusion: The current research provides evidence-based cross-sectional findings on factors associated with increased polypharmacy levels in older adults in the US.

HYPOTHESIS

- ❖ There is a difference in polypharmacy levels between rural and urban older patients.

METHODS

- ❖ National Ambulatory Medical Care Survey (NAMCS) is a national survey that is conducted annually by the National Center for Health Statistics.
- ❖ Patient visits are recorded in a way such that nationally representative data is collected and national and regional estimates can be obtained.
- ❖ This study involved the analysis of patient visit records from the NAMCS 2016 public-use data files.
- ❖ Patient visits with polypharmacy were investigated with multivariable analysis to identify factors associated with polypharmacy.
- ❖ The dataset provides a host of other variables for these patient visits including whether this visit occurred in a metropolitan statistical area (MSA) or not, gender, age, number of chronic conditions, etc.
- ❖ The variables chosen for the survey sample weighted logistic regression (conducted in R) were based off past research and the Andersen model.^{4,6} The Andersen model illustrates the factors that lead a patient to using health services (predisposing, enabling, and need factors)⁶

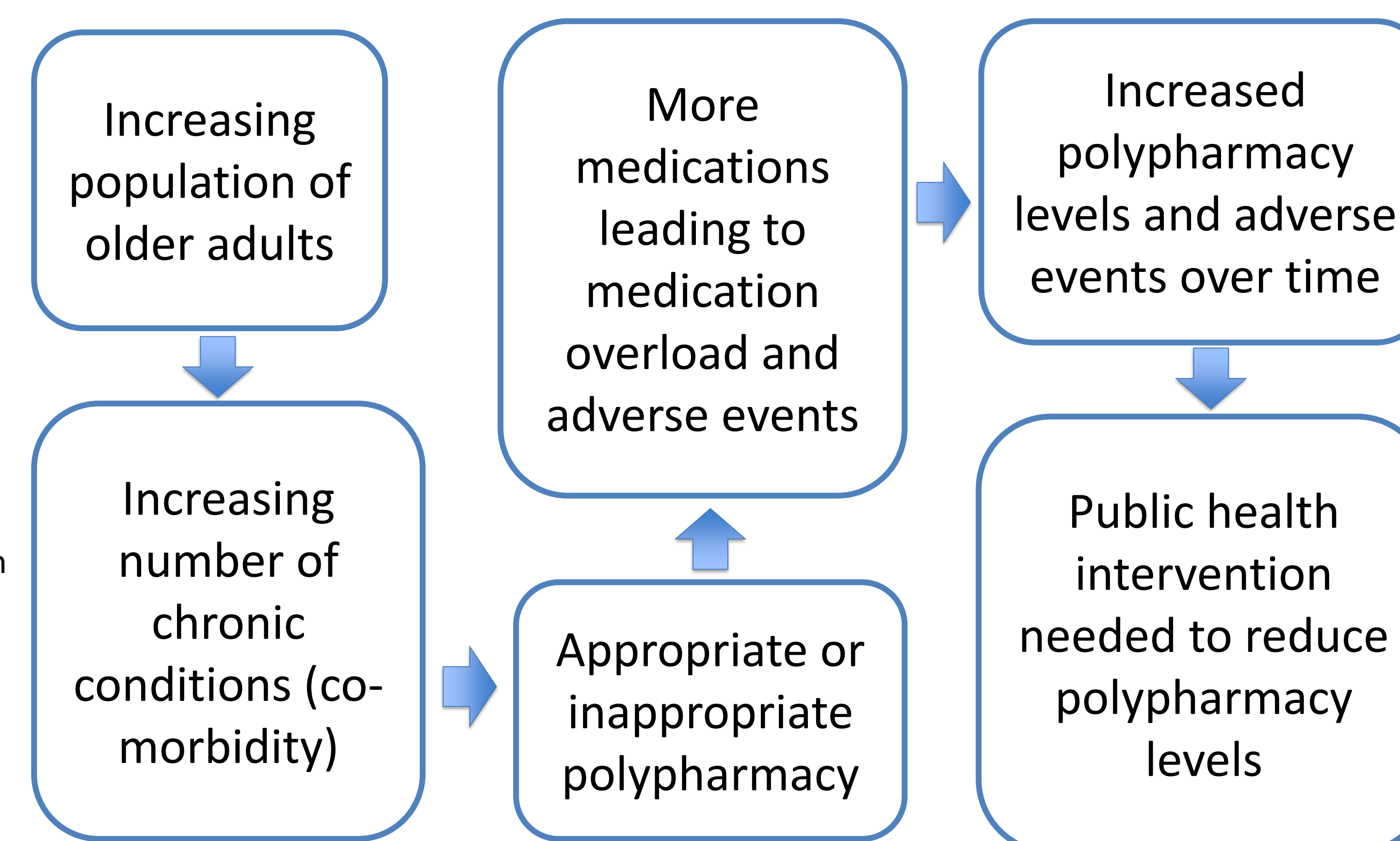
Table 1: Factors associated with polypharmacy (≥ 5 medications) visits within elderly adults

Factors	Odds Ratio (95% CI)
Enabling	
Patient Provider	
Not Primary	0.44 (0.26, 0.76)
Region	
West	0.50 (0.27, 0.92)
Need	
Primary Diagnosis	
Circulatory	1.71 (1.11, 2.65)
Infectious	2.32 (1.03, 5.25)
Number of Diagnoses	
>1	2.11 (1.56, 2.86)
Total Number of Chronic Disorders	1.29 (1.14, 1.46)
Major Reason for Visit	
Chronic	1.57 (1.02, 2.42)

INTRODUCTION

- ❖ Polypharmacy can be defined as the use of taking multiple drugs, typically five or more¹
 - Can be appropriate or inappropriate.
- ❖ Polypharmacy has been found to be associated with
 - falls,
 - cognitive and emotional impairment,
 - frailty,
 - medication overload,
 - financial burden, and
 - higher risk of adverse drug events.
 - Inappropriate polypharmacy is associated with medication overload.
- ❖ Related to polypharmacy, medication overload is defined to be the use of multiple drugs in which the drawbacks of using that many drugs outweigh the benefits⁵
- ❖ Polypharmacy is most prevalent in older adults (≥ 65 years).
 - Visits involving polypharmacy for elderly patients nearly quadrupled with 10.1 million visits in 1990 to 37.5 million visits in 2000.⁴
- ❖ In a study of 2005-2006, 37.1% of men and 36% of women between the ages 57-85 years took at least five prescribed drugs.¹
- ❖ Nearly 50% of older adults take one or more medications that are not medically necessary²
- ❖ Hypotheses as to why polypharmacy levels and medication overload are increasing include
 - lack of education and communication between patient and provider,
 - increase in disease,
 - lack of medication management programs and
 - knowledge of polypharmacy consequences, etc.

Background and Implications



RESULTS

- ❖ Enabling factors significant to polypharmacy within older adults include region within the US and patient provider
- ❖ Need factors significant to polypharmacy within older adults include number of diagnoses, type of primary diagnosis, major reason for the visit, and total number of chronic disorders.
- ❖ Factors that were previously found significant in past research but were not associated in this 2016 dataset include gender, patient insurance, and certain primary diagnoses (endocrine, neoplasms, and nervous system disorders)⁴

DISCUSSION

- ❖ Previous work has shown that older adults with diabetes had greater odds of having a potentially inappropriate medication if they were from a rural area.⁷
- ❖ Here, looking across all diagnoses, conditions, and drugs, patient visits in metropolitan and non-metropolitan areas were not found to differ in polypharmacy levels within adults ages 65 years and older after accounting for other variables in the model.
- ❖ Patient visits from the west region had a decrease in odds of polypharmacy among the elderly, with an odds ratio of 0.48 as compared to the northeast region.
- ❖ The only primary diagnoses that were significant in this study were circulatory and infectious disorders while in past research significant disorders included circulatory, neoplasms, endocrine, and nervous system disorders.⁴
- ❖ Even though polypharmacy may be appropriate in many cases, the growing number of prescribed medications per patient may require more regular monitoring of therapy regimens and stronger requirements for pharmacist run medication therapy programs.
- ❖ Future work will focus on comparing polypharmacy levels longitudinally as well as focusing on specific conditions and regional differences.

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