

Original Research**Patient-level Medication Regimen Complexity in Older Adults With Depression**

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ABSTRACT

Purpose: Polypharmacy and medication adherence are well known challenges facing older adults. Medication regimen complexity increases the demands of self-care in the home. Some medication regimens may be more complex than others, especially when dosage form, frequency of dosing, and additional usage directions are included in complexity along with the number of medications. In older adults with depression, it is unknown what features of their medications most influence their medication regimen complexity.

Methods: A sample cohort of 100 adults ≥ 65 years old with a diagnosis of depression was randomly selected from electronic medical records (EMR) in ambulatory clinics at the University of Colorado (CU) and University of San Diego (SD). Demographic, medical history, and medication-related information was extracted from the EMR. Complexity was determined using the Medication Regimen Complexity Index (MRCI). IRB approval was obtained.

Findings: The cohort mean age was 74.3 years (SD) and 79.7 years (CU). The mean unweighted Charlson comorbidity index for 1.0 (SD) and 1.8 (CU). The

mean number of medications was 7.1 and 8.0, with 1.1 and 1.2 depression meds, 5.4 and 4.3 non-depression prescription meds, and 0.6 and 2.4 OTC meds for the SD and CU cohorts, respectively. 66% of SD adults and 70% of CU adults took six or more meds. Individual MRCI scores were on average 17.62 (SD) and 19.36 (CU). Dosing frequency contributed to 57-58% of the MRCI score, with patients facing an average of 7-8 unique dosing frequencies in their regimen. In both cohorts, there was an average of 3 additional directions added to the regimens to clarify dosing.

Implications: As expected, in our older adult cohorts with depression the majority of patients took multiple medications. Using a standardized instrument, we characterized the regimen complexity and found that it was increasingly complex due to numerous dosing forms, frequencies and additional directions for use. Patient-level medication regimen complexity should go beyond depression medication to encompass the patient's entire regimen for opportunities to reduce complexity and improve ease of self-care. (*Clin Ther.* 2014;36:1538-1546) © 2014 Elsevier HS Journals, Inc. All rights reserved.

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Key words: aged, depression, geriatrics, medication adherence, medication regimen complexity, MRCI.

INTRODUCTION

Older adults are often challenged by managing multiple chronic conditions and the many medications associated with those conditions. Medication use by older adults can be even further complicated by the complexity of the medication regimens. Medication regimen complexity has been found to be high in institutionalized elderly—a setting where older adults have assistance in managing their medications.^{1,2} In ambulatory settings as older adults manage medications on their own, increasing medication regimen complexity increases self-care demands. Complexity of medication regimens can vary by the number of medications, different dosage formulations, dosing frequencies, and additional directions for use. Data indicate that increasing medication regimen complexity and especially frequency of dosing are directly associated with medication nonadherence.^{2–7} Medication nonadherence can be associated with polypharmacy and self-care demands; these can precipitate adverse events, poor response to medications, poor control of medical conditions, disease state complications, and increased health care burden.^{8,9} A gap exists in the literature whereby studies of medication regimen complexity have measured complexity associated only with a disease-defined cohort, instead of for the entire patient. An additional gap in knowledge is whether regional variations in care have a significant effect on medication complexity for a given cohort.

To characterize patient-level medication regimen complexity for older adults, we chose to evaluate a disease-defined cohort with depression diagnoses and antidepressant prescriptions. As a marker for potential adherence problems, we sought to assess patient-level medication regimen complexity for older adults with treated depression. Depression, a common comorbidity in the older adult, was used because it has been shown to adversely affect medication adherence for common chronic disease states in older adults.^{10–14} The patients used in this cohort represent patients whose adherence to a medication regimen would likely be affected by a complex medication regimen. We planned to measure medication regimen complexity of the patients' antidepressant regimens and to

contrast it with the medication regimen complexity attributable to all other medications the patients were taking. This would assist in understanding medication regimen complexity as a patient-level construct that may be a key piece of overall patient complexity. Additionally, the integral pieces comprising the patient's medication regimen complexity could inform practitioners of targets to reduce or simplify regimens and possibly affect adherence.

Validated tools for calculating medication regimen complexity exist in the literature. The Medication Regimen Complexity Index (MRCI) is a nondisease-specific validated tool that measures medication regimen complexity using paper-coded medication regimens from medication lists.¹⁵ Scores are derived from weighted values of the regimen components (eg, dosage formulations, dosing frequencies, and specific administration instructions). The MRCI was originally validated in 1 disease-defined cohort (chronic obstructive pulmonary disease) and measured only the prescriptions for that disease state.¹⁵ An extension of that work, the parent study of the current study, broadened the validation using multiple disease cohorts, to a patient-level MRCI (pMRCI) measuring medication regimen complexity across all of a patient's medications for the practical purpose of identifying patients with expected difficulty managing medication regimens and warranting interventions.^{16,17} The pMRCI is a sum of weighted subscores for 3 mutually exclusive medication categories: disease-specific prescription medications (ie, antidepressant medications), all other prescription medications, and over-the-counter (OTC) medications recorded on a medication list.

This study aimed to use the quantitative tool, the pMRCI, to measure medication regimen complexity and component parts for 2 cohorts of older adults with depression to better characterize the types of medication regimen complexities and possible associated self-care demands faced by older adults in the community. The objectives of this study were to evaluate the entire medication regimen and to determine potential targets to simplify the regimen and improve adherence. We hypothesized that cohorts from ambulatory care clinics at 2 different, geographically diverse, academic medical centers would be similar. We also hypothesized that our cohorts of patients with depression, known in the literature to be relatively nonadherent to medications, would

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