Title

Cognitive, physical, and sensory deficits that can affect everyday medication use among older adults: A national view

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Title: Cognitive, Physical, and Sensory Deficits That Can Affect Everyday Medication Use Among Older Adults: A National View

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Introduction:

Age-related changes make medication management more difficult. Older adults face medication management challenges in the domains of cognition (e.g., dementia, which may lead to issues with remembering medication schedules and dosages), physical ability (e.g., hand dexterity and strength, which may include difficulty opening pill bottles), and/or sensory ability (e.g., limited vision, which may present as problems reading medication labels). Challenges across these domains are associated with non-adherence[1], medication errors[2], and preventable medication-related hospital admissions.[3] Fortunately, these repercussions can be mitigated by social and/or institutional supports, such as moving to more supportive forms of housing, as well as safer prescribing and dispensing practices.

To understand the scope of these challenges among older adults, we sought to determine the national prevalence of overlapping and compounding cognitive, physical, and sensory impairments that can impact medication management abilities, how these impairments vary across living sites, and by whether one receives help with medication management.

Methods:

We conducted a cross-sectional study of a nationally representative sample of older adults who reported taking a prescription medication in the last month from the 2015 National Health and Aging Trends Study (NHATS). Key impairments included: cognition (defined as possible/probable dementia using a validated NHATS algorithm[4]), physical ability in grip strength and dexterity (defined as self-reported difficulty opening a jar), and vision (defined as self-reported blindness or difficulty reading newspaper size font with or without visual aids).[5]

Number of impairments was graded (0, 1, or ≥ 2) and (1) stratified across four living sites that encompassed a spectrum of living arrangements from community to nursing homes and (2) by medication management practices (self-managed or received some/complete help).

Results:

The unweighted sample included 6,592 individuals, representing over 35 million older adults; 55% were 65 to 74 years, 32% were 75 to 84 years, 13% were ≥ 85 years, and 56% were female (Table 1). Most (95%) lived in the community (as opposed to residential facilities where medication management supports are commonly provided). Overall, 37% had at least one measured impairment that could affect medication use. Specifically, 16% had possible or probable dementia, 26% were unable to open a jar, and 4% were unable to read newspaper size font with or without visual aids. The percentage of people with ≥ 1 impairment(s) increased as the living site care level increased (ranging from 35% in the community to 95% in nursing homes). Overall, 86% of study subjects managed medications by themselves. Among this group, 31% had at least one impairment (Figure 1), with inability to open a jar as the most common challenge.

Discussion:

Cognitive, physical, and sensory impairments that can negatively impact everyday medication use are common, with approximately one-third of older adults nationally reporting having at least one measured deficit. Of those who managed medications independently, 31% reported having at least one of the measured impairments. Our findings provide insights into the potential challenges older patients may encounter and supports needed for safe and effective medication

use. Understanding the challenges of independent medication use is especially important among older adults because they are more at risk for polypharmacy and burdened by complex medication regimens.[6]

Importantly, our study showed that 35% of older adults living in the community have at least one deficit that can impact medication safety and adherence. Supporting this population of 33 million in medication management is especially important because this is a group that may not have built-in supports. Possible solutions include modifications such as blister packs[5,7], building a network of formal (e.g., IHSS) and/or informal (e.g., family) supports[8], and changing prescribing practices to enhance feasibility of use (i.e., use of combination drugs and less-frequent dosing regimens).

There are additional factors that can impact a person's ability to manage medications. We described factors that were most pertinent to the act of taking medicines.[9] Limitations to our study include using survey measures that are not validated for medication management, inability to assess other impairments such as finger dexterity that can pose further challenges for medication use, accuracy of proxy responses, and not knowing the number and type of medications taken.

Our study suggests that deficits in the domains of cognition, physical ability, and/or sensory ability that can negatively impact medication use are common among older adults who take prescription medications. Assessing patients' cognitive, physical, and sensory abilities to take medicines, social supports, and living situations will help clinicians better prescribe safe

medications, connect patients to optimal supports, and spark specific interventions to help everyday medication use.

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121 Table 1: Cohort Characteristics[a]

Characteristics	Unweighted Respondents, No.	National Estimate, (%) weighted, Representing N= 35 million older adults
Age		
65-74	2,397	55
75-84	2,667	32
85+	1,528	13
Female	3,829	56
Race/Ethnicity		
White, non-Hispanic	4,622	81
Black, non-Hispanic	1,383	8
Hispanic	393	7
Other	194	4
Education (highest attainment)		
Below high school	1,470	18
High school	1,788	27
Beyond high school	3,334	56
Living arrangement		
Alone	2,237	30
With Spouse or Spouse and Others	3,161	56
Others Only	1,194	14
Reported Health Status		
Excellent or Very Good	2,468	43
Good	2,315	33
Fair or Poor	1,809	24

Number of Chronic Illnesses		
0-1	1,373	24
2-3	3,476	52
>3	1,743	24
Deficits Among Community Dwelling Older Adults		**National Estimate, (%) weighted, Representing N= 33 million older adults**
0	3614	65
1	1930	28
2+	676	7
Deficits Among Older Adults in Independent Living Facility Settings		**National Estimate, (%) weighted, Representing N= 750 thousand older adults**
0	82	51
1	58	33
2+	26	16

Note:

[a] Results are adjusted for weights and survey design to produce nationally representative estimates. Other race/ ethnicity includes people who reported their race/ethnicity as American Indian, Asian, Native Hawaiian, Pacific Islander, Other, Do not know, or More than one race/ethnicity. Independent living facility settings referred to living in the independent living

section (as opposed to the assisted living setting) of a multiunit facility in which services for activities of daily living were available.[10] Chronic conditions include health history of myocardial infarction, hypertension, heart disease, lung disease, diabetes, arthritis, osteoporosis, stroke, or cancer. Data for medication deficits among assisted living facility and nursing home residents are not reported due to small cell sizes.

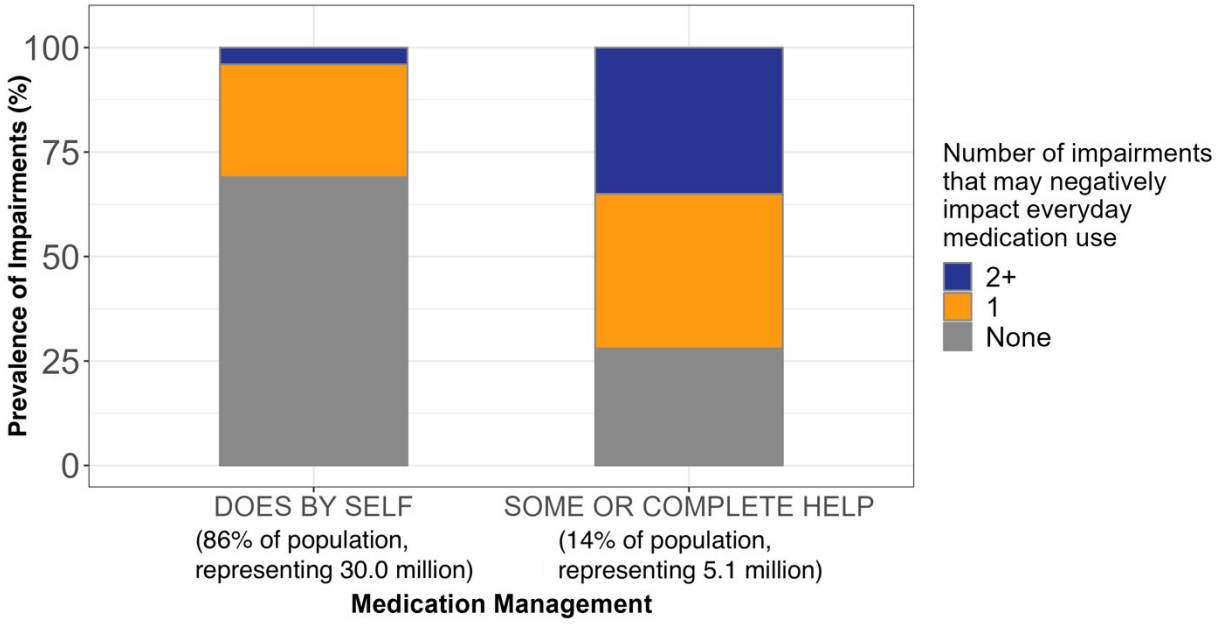

Figure 1: Prevalence of impairments that can affect everyday medication use among older adults, by medication management practices (self vs. receiving some/complete help). Among older adults as a group, 86% manage medications by themselves (represented by left column). Within this group, 69% had none of the measured impairments, 27% had one impairment, and 4% had two or more impairments; specifically, 10% had dementia, 23% were unable to open a jar, and 3% were unable to read newspaper sized fonts. These measures are survey weighted to provide national estimates.

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