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Medication understanding among patients living with multiple chronic conditions: Implications for patient-reported measures of adherence

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ABSTRACT

Background: Low health literacy is associated with poor medication adherence and poor health outcomes. Limited understanding of prescribed medications may decrease validity of patient-reported adherence measures.

Objectives: To assess knowledge of names and purposes of prescribed medications among patients with multiple chronic conditions.

Methods: Individual interviews were conducted with a convenience sample of patients from six U.S. primary care clinics. Participants (n = 57) were English and/or Spanish-speaking patients prescribed 3+ medications for chronic conditions, for which non-adherence may lead to disability or death. In individual interviews, patients were asked to name their medications, explain the purpose of each, and to explain how they distinguish them from one another. Interviews were audio recorded, transcribed, and coded; coded content was quantified by 1) whether or not the patient could name medications; 2) method of categorizing medications; 3) whether or not the purpose of the medication was understood. Descriptive statistics were compiled using Fisher's exact test to determine the relationship between patient knowledge and medication characteristics.

Results: Thirty percent of patients could not name at least one of their medications; 19% did not know their purpose; 30% held misconceptions about the purpose of one or more medications. There was no significant difference in ability to name medications or state their medication's purpose between patients using medi-sets, pre-packaged rolls, or blister packs, and patients who stored pills in their original containers (p = 0.56 and p = 0.73, respectively), or across demographic groups (p = 0.085 to 0.767).

Conclusions: Many patients demonstrated difficulty identifying the name and purpose of prescribed medications; this did not differ by demographic group or medication storage type. Patients may benefit from routine review of medications with their provider in order to improve health literacy, outcomes, and patient-reported adherence measurement.

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1. Introduction

Nearly one-third of all Americans, and 80% of Americans aged 65

and older, live with multiple chronic conditions (MCC).¹ The combination of an increasing population of older adults and longer life expectancy² suggests this proportion will increase, as will prescription medication use.³ In fact, since 1988, the percentage of patients taking three or more prescription medications has increased across all age groups for both males and females.⁴ The rates for all persons prescribed 3 or more medications increased from 11.8% to 20.8% in the period 1988–2010, and among persons 65 years and older from 35.3% to 66.6% in the same time period.⁵ As the number of medications prescribed per patient increases, so may the potential for non-adherence; two meta-analyses that included patients with at least one chronic condition found less-than-adequate adherence, broadly defined across multiple studies, to be widespread at rates of 25–50%.^{6,7}

Patients prescribed multiple medications are expected to process and understand a large amount of health information. This expectation has led to increased interest in the relationship between medication adherence and health literacy.^{8–10} Health literacy is defined as “the degree to which an individual has the capacity to obtain, communicate, process, and understand basic health information and services to make appropriate health decisions”.¹¹ Pharmacy health literacy focuses this definition to include medication information and pharmacy services.¹² Inadequate health literacy has been found in nearly half of the US population,¹³ and has been associated with poorer health, medication non-adherence,^{14–17} medication errors, higher medical expenses, and increased hospitalization.¹⁵ Conversely, health literacy has been positively associated with adherence.¹⁸ Several studies of patients using antiretroviral medications (ARVs) for HIV indicate that patients with limited health literacy are less likely to be adherent to their medications^{19–21} which leads to poor health outcomes.

Patients with low health literacy are less able to identify or distinguish their medications from each other^{22–24} or to report how their medications work,²⁵ which may negatively impact medication adherence. Low health literacy and limited understanding of prescribed medications may also diminish the validity or usefulness of patients' reports of their own adherence, including the use of patient-reported outcome measures, also known as PROs or PROMs, defined as assessments of a patient's health and disability experiences elicited in a structured and standardized format directly from the patient.²⁶ Understanding of medication type and purpose was assessed among patients prescribed medications for MCC for which a high level of adherence is advisable to avert illness or death. This research aimed to understand to what extent patients in the study clinic populations could 1) name each medication, 2) identify its associated class (i.e., “antiretrovirals” for HIV medications), and 3) articulate the medication's intended purpose.

2. Methods

2.1. Study design

This was a qualitative study using structured individual interviews, a maximum of 45 min in duration, with a convenience sample of HIV-infected and uninfected patients across six U.S. primary care clinics.

2.2. Setting

Interviews were conducted on-site with patients of three clinics within the Centers for AIDS Research Network of Integrated Clinical Systems (CNICS), and four community health centers across the U.S. This ensured a mix of patients from diverse geographic regions and urban/suburban/rural areas. Institutional review board (IRB)

approval was gained at the University of Washington, and at the local institutional level.

2.3. Participants

Participants were English and Spanish-speaking patients prescribed three or more medications from the following classes: ARVs, antihypertensives, lipid-lowering medications, diabetes medications, anticonvulsants, antidepressants, mood stabilizers, antipsychotics, medication for cardiovascular disease (CVD) (excluding aspirin), and/or osteoporosis medications. Patients with known cognitive impairment were excluded. From the CNICS sites, patients with both optimal and sub-optimal self-reported adherence were recruited, the latter defined as self-report of two or more missed doses of ARV medications in the past 7 days on a self-administered computerized assessment completed by patients on-site as part of routine clinical care prior to their same-day clinic visit.²⁷ Patient responses to the assessment triggered a research coordinator pager; the coordinator then reviewed the patient's medication list to determine study eligibility. If eligible, the patients were approached by the coordinator in a private room in clinic prior to their appointment to invite participation in the study, administering informed consent when there was interest. Non-CNICS (HIV-uninfected) patients were identified by research staff members at each site prior to their clinic visit and were invited by phone on the day before their visit to participate. Those interested were administered informed consent on-site on the day of the appointment. Both CNICS and non-CNICS patients were interviewed either before or after their clinic visit, depending on their preference and timing of their arrival to clinic.

2.4. Measurement

An interview guide was developed based on existing measures of medication-related health literacy. Patients were asked to bring in all of their currently prescribed medications to the interview, and to name their prescribed medications from memory. Patients were then asked to place their medications outside of their containers on a surface in front of them, name each (either generic or brand names sufficed), and explain how they categorized each of them (i.e., “What ‘kind’ of medication is this?”). Finally, patients were asked the purpose of each medication.

2.5. Analyses

Digital audio recordings of the interviews were transcribed by an external transcription service. The transcribed interviews were coded for themes by a multi-site team of qualitative researchers; these included identification, categorization, and perceived purpose of medications. Secondary codes were independently created by three reviewers for each category; for example, secondary codes developed under “categorization” included “by time of day taken” and “by disease/condition.” Consensus on final coding categories was achieved by three reviewers. Interview content was independently coded by three qualitative team members; reviewers discussed and reconciled differences in interpretation on biweekly conference calls. Coded content was quantified by 1) whether or not the patient could name all of their medications; 2) self-described method of categorizing medications; and 3) whether or not the purpose of the medication was understood.

All coding of transcribed interviews and qualitative analyses was conducted using the Dedoose web-based platform.²⁸ Fisher's exact test was used to evaluate differences in medication literacy by sex, interview language (Spanish vs. English), race, and packaging type, and t-tests were used to evaluate differences by age.

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