



IMPACT OF LIMITED ENGLISH SPEAKING ABILITIES ON SELF-CARE IN THE ELDERLY SUBJECT WITH ASTHMA

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Asthma is an increasing cause of morbidity for elderly Americans and is highly prevalent among Hispanic populations in the United States. The inability or limited ability to speak and communicate in English poses a barrier to patient-provider communication. Limited English proficiency is associated with poorer self-management and worse outcomes among elderly patients with asthma. Further understanding of mechanisms underlying this relationship is necessary to develop interventions that improve asthma outcomes in this vulnerable population. Dr. Sudheer Reddy Koyagura, a practicing hospitalist at the Northwest Medical Center in Bentonville, Arkansas, is bringing about sea-changes in health behavior and asthma self-care management by his vigorous advocacy of the use of a machine learning tool in effective communication in the healthcare setting with these cohort of patients. Dr. Koyagura plays a critical role on the Board of Advisors of Talk2All. This app, Talk2All, goes one step beyond Google Translator and translates more than one hundred languages, including Spanish, in real time.

Low health literacy is a significant problem in the United States. It is projected that approximately 80 million people in the United States have limited health literacy. On the basis of the Institute of Medicine's definition, limited health literacy indicates an obtunded "capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions". The 2003 National Assessment of Adult Literacy survey, which used the Institute of Medicine's definition, noted that nearly 1 in 6 Americans possess only the most simple health literacy skills (U.S. Department of Education, & National Center for Education Statistics, 2006). A 2003–2011 systematic review of the English language literature documented that patients with low health literacy compared with patients whose health literacy is adequate have significantly worse health outcomes, more hospital admissions and emergency room use, and fewer access to health maintenance and preventative medicine services, such as mammography screenings and immunizations. Proceedings from the Surgeon General's workshop on enhancing health literacy also noted the strong correlation between low health literacy and poor health outcomes, such as emergency department use, hospitalization, self-reported health, and mortality (Office of the Surgeon General and the Office of Disease Prevention and Health Promotion, 2006). Economists have projected that the adverse consequences of low health literacy add \$106 billion to \$238 billion annually to U.S. health care costs.

Hispanics are disproportionately represented among people with less than adequate health literacy and, in 2003, comprised 41% of U.S. adults with less than average basic health literacy. Elderly Hispanics—the fastest growing subgroup among older U.S. adults (Federal Interagency Forum On Aging-Related Statistics, 2010)—are at greater risk than younger Hispanics of having inadequate health literacy. Compounding the problem of low health literacy, older Hispanics are more likely than elderly European Americans are to report functional limitations and disabilities. However, older Hispanics are less likely than their European Americans counterparts to seek to access community-based long-term care services; instead, they frequently rely on informal caregivers such as spouses or family members and friends. Dr. Koyagura has taken a step forward in the care of these patients with limited

communication abilities in English. During a visit, the patient or the family members can use this easily downloadable app (available in Android form currently) and make the doctor-patient and doctor-family members encounter appear seamless and smooth.

As persons age, the onset of cognitive impairment diminishes the capacity to comprehend and act on health information. Given that advancing age contributes to low health literacy, the presence of a caregiver may safeguard individuals in assuring their effective use of health services. Caregivers play a major role in encouraging adherence to medications, interpreting medical information due to inadequate comprehension during an actual encounter, communicating with providers, making decisions about when to seek medical treatment, learning and performing technical procedures, and acting as translators for patients who are not proficient in English. The last pointer is especially important; Talk2All takes away the necessity of an additional human presence in order to achieve higher quality and efficient care.

Quite naturally, The Agency for Healthcare Research and Quality advocates universal health literacy precautions to minimize the risk that patients will not understand the information they are given. These precautions ensure that systems are in place to promote better understanding of health care information for all patients, not just those that clinicians think need extra assistance. The high prevalence of low health literacy among caregivers highlights the need for clinicians to apply universal health literacy precautions not only to all patients but extend to all caregivers as well.

To potentially improve communication with caregivers, health professionals may want to use quick tools originally developed for patients. For example, the teach-back method requires the patient to verify understanding by repeating the information the provider just communicated to them to assure that this information was understood. Age, vision impairment, cognitive impairment, lower education, and lower acculturation are pragmatic factors associated with low health literacy. These factors affect verbal and written communication among health care providers and their patients and caregivers. The current structure and characteristics of the U.S. health care system including lack of time and incentive, underdeveloped technology platforms to support communication, and provider/population mismatch across language and culture, does not support screening for and taking steps to address low health literacy by individual providers in their clinical practice settings (Office of the Surgeon General and the Office of Disease Prevention and Health Promotion, 2006). This leads to spiraling down of the quality of care extended.

In older adult patients with asthma, fluid abilities were strongly related to health literacy and explained a large portion of the relationship between health literacy and asthma medication behaviors. This is not surprising when considering the tasks faced by older patients with asthma to manage their health conditions. Asthma medication behaviors include recall of physicians' instructions provided at the point of care, the use of multiple devices, understanding when to use each type of device (maintenance vs emergency), and following a range of steps in a pre-decided action plan. Although reading and numeracy are involved in all of these activities, these tasks rely on many other

components of cognition too, including memory, reasoning, and the ability to multitask and avoid distraction and most importantly, unambiguous understanding of the instructions.

Medications are increasingly prescribed by physicians for prevention and treatment of chronic diseases. However according to the World Health Organization (WHO), adherence rates for chronic medications is on an average less than 50%.¹ Additionally, an estimated one- to two-thirds of medication-related hospitalizations are thought to result from non-adherence to medications.

Adequate communication is at the heart of intercultural effectiveness and competence.² Spoken language is often used as a proxy measure of acculturation and considered a predictor of satisfaction with patient-provider interactions. Language barriers have been associated with poorer quality care and dissatisfaction with care. Poor interactions with non-Latino health care providers can result in perceived lack of cultural sensitivity and control over the interaction. The perception of poor provider communication or lack of accommodation from the provider has been shown to negatively impact adherence among Spanish-speaking Latinos. Talk2All is making a significant difference to overcome this barrier in real time and facilitate enhancement of the quality of healthcare.

Language concordance is an issue for Latino patients because a majority of healthcare providers identify as non-Latino and do not speak Spanish, which may amplify the cultural distance between the patient and the provider. Adequate social support is a protective coping resource that can enhance self-management behaviors and physical health among less acculturated Latinos. An example of social support within the context of Latino culture is *familismo*, which refers to a strong sense of collectivism, and attachment to immediate and extended family members. Talk2All, by its ability to translate in real time, can incorporate a sense of empowerment during the clinical meeting.

Lower health literacy has been shown to contribute to poor medication adherence in many populations including patients living with HIV, patients with gout, patients with asthma, and the elderly. Compromised health literacy is more common among minorities with lower socioeconomic status and lower English proficiency, where it can contribute to poorer lifestyle behaviors and self-management of diseases such as asthma, diabetes and hypertension. Dr. Koyagura is showing us the correct direction by encouraging the use of a simple patient-facing smartphone application.

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