

Association of Low English Health Literacy with Medication Non-adherence among Elderly Singaporeans: Mediating Role of Uncertainty about Prescription Medication Labels



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1. INTRODUCTION

- Elderly (aged ≥ 65 years old) in Singapore:**
 - 83% take at least 1 prescribed medicine and 16% have polypharmacy (≥ 5 prescribed medicines).
 - 61% are unable to read in English.
 - English proficiency is unknown for those who can read English.
 - Will make up almost 40% of the population by year 2050.
- Studies show that the potential for medication non-adherence rises with increased number of medicines.
- English Health Literacy (EHL) and Medication non-adherence:**
 - Singapore uses English as its primary working language.
 - Written health information including prescription medication labels are predominantly in English.
 - Studies have cited various factors resulting in medication non-adherence – including inability to read and understand prescription medication labels in English.
 - Studies from elsewhere have shown that relationship between health literacy and medication non-adherence is either inconclusive or weak. Literature suggests the possibility of a mediated relationship.
 - EHL and medication non-adherence have not been studied in Singapore.

2. OBJECTIVE

- To assess if:
- uncertainty in taking medicines due to problems understanding written instructions on prescription medication labels;*
 - increased healthcare use resulting in more prescribed medicines and*
 - higher number of chronic diseases also resulting in more prescribed medicines*
- mediate the relationship between low EHL and medication non-adherence among community dwelling elderly Singaporeans.

3. METHODS

- Survey:**

Wave 3 of a national longitudinal survey of elderly Singaporeans (Panel on Health and Aging of Singaporean Elderly), conducted in 2015 (n=1572)
- Analytical Sample:**

1167 elderly who were taking ≥1 prescribed medication
- Predictor: Low English Health Literacy**

Assessed using the validated Health Literacy Test for Singapore (HLTS), which is an adapted version of the Short-Test of Functional Health Literacy in Adults (STOFLA); scores ≤26 indicated low EHL.
- Outcome: Medication non-adherence**

Measured using 2 questions that recorded medication-taking behaviour.

Elderly were adherent if they reported (a) not forgetting to take their prescription medicines AND (b) to be taking their medicines as prescribed by the doctor “all of the time”.

Elderly were non-adherent if they reported (a) forgetting to take their prescription medicines at times OR (b) taking their medicines “nearly all the time”, “most of the time”, “about half of the time” and “less than half of the time”.

3. METHODS

- Mediators:**
 - Healthcare Use (yes/no)**

Hospitalisation (past 6 months), ER presentation (past 6 months) and Doctor visit (past 3 months).
 - Number of Chronic Diseases (0 to 17)**

Self report of western doctor diagnosis of chronic diseases.
 - Number of Medicines (1 to 18)**

Self reported number of prescription medicines used.
 - Uncertainty about Prescription Medication Labels**

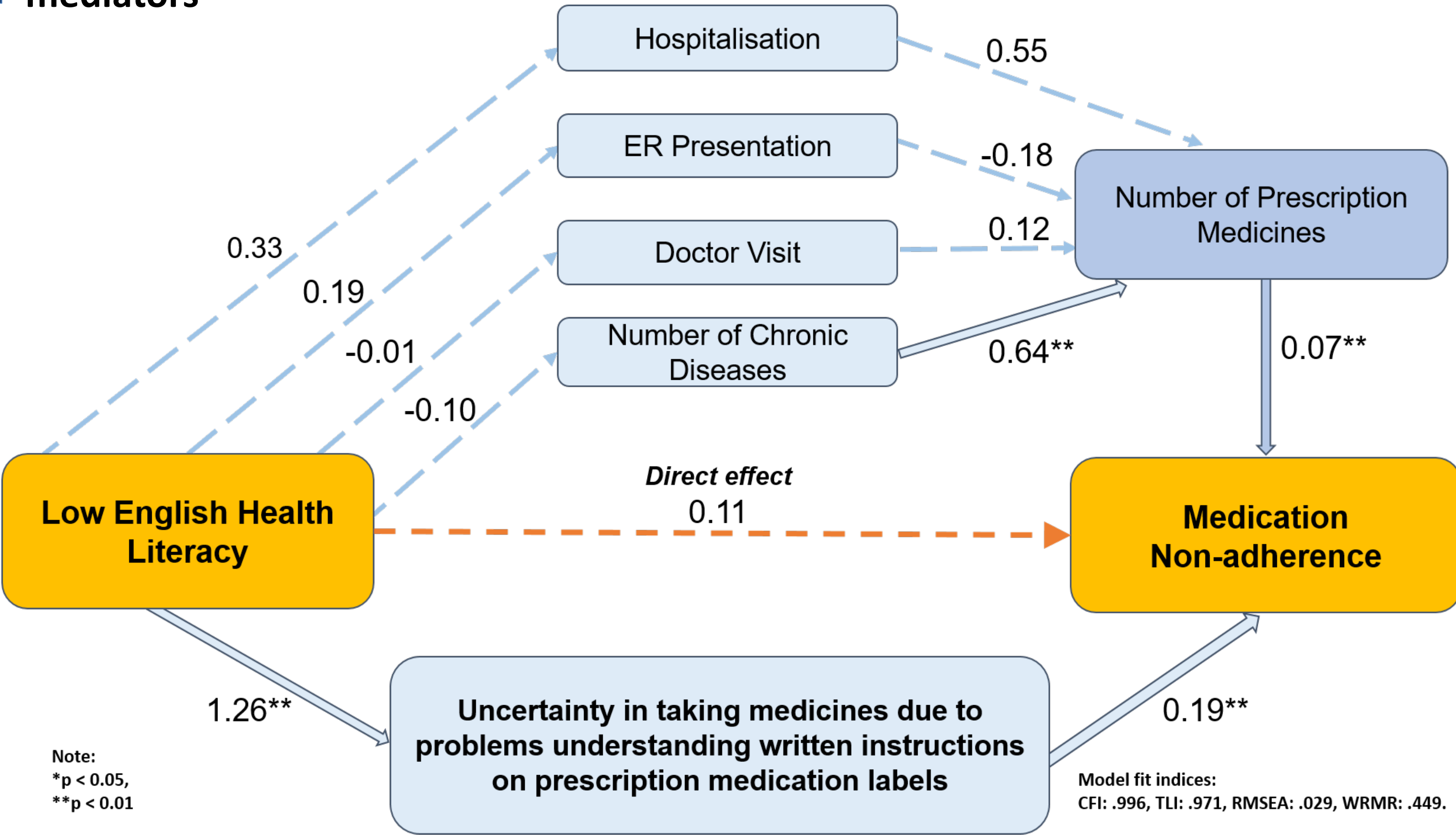
Participants’ uncertainty about prescription medication labels was assessed through their response to “How often are you unsure on how to take your medications correctly because of problems understanding written instructions on the medication packet or bottle label?”. The possible responses include “always”, “often”, “sometimes”, “occasionally” which were scored 0 and “never” was 1.
- Path analysis:**

Used to examine mediated relationships (associations were adjusted for socio-demographics and cognitive status).

4. RESULTS

- Majority of the respondents were female (59.6%), of Chinese ethnicity (74%), had primary education (35.6%) and lived in 4 & 5 room HDB flats (56%).
- Weighted prevalence of low EHL was 88.9%; even among those who can read English (35.2%), it was 68.4%.
- Medication non-adherence: higher for elderly with low EHL (31.4%) compared to those with high EHL (16.5%); $p=0.001$
- Path analysis:**
 - Total effect of low EHL on medication non-adherence = 0.35; $p:0.03$
 - The only significant mediator was ‘uncertainty about prescription medication labels (indirect effect=0.23 [0.12-0.39]).

Figure 1: Path diagram of the association between low EHL and medication non-adherence with healthcare use, chronic diseases and uncertainty about PMLs as mediators



5. CONCLUSION

- Elderly with low English health literacy (EHL) faced difficulties in understanding prescription medication labels which led to uncertainty in their medication use and thence medication non-adherence.**
- Screening for low EHL** during medication dispensing is needed.
- Addressing low EHL can provide an alternative, **patient-centered** approach to **improving medication adherence**.
- Appropriate **written health information** tailored for elderly with low EHL to improve their understanding of medication use should be developed to enhance medication adherence.
- PMLs should incorporate **bilingual text and/or pictograms** to optimise medication use outcomes in the elderly.