



Polypharmacy, Polyherbacy, and Potential Interactions Among Senior Citizens in the Paso del Norte Region



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Introduction

Polypharmacy refers to the use of several medications, although definitions vary in the minimum number of drugs used concomitantly in one patient. Polyherbacy is a term that describes the ingestion of multiple herbal products.

Significant consequences are associated with the concomitant use of several medications and herbs, particularly among older adults. Examples include nonadherence to medication regimens, increased risk of adverse drug reactions and drug interactions, increased potential for medication errors, and increased utilization and cost of healthcare services. These risks can be minimized through identifying the prevalence of this potential problem in a high-risk senior population and by increasing awareness among seniors and healthcare professionals.

Study Objectives

- Estimate the prevalence of polypharmacy and polyherbacy among senior citizens in the Paso del Norte region (El Paso, Texas, Southeastern New Mexico and Ciudad Juárez, México)

- Evaluate the presence of potential interactions between medications and herbal products



Methodology

Study design

This was a descriptive study that involved the administration of a bilingual (English/Spanish) questionnaire targeted at assessing polypharmacy and polyherbacy among the elderly.

Study participants

Senior citizens ≥ 60 years of age were recruited from 10 senior centers located in the Paso del Norte region. These included seven centers in El Paso, TX, one center in Alamogordo, NM, and two centers in Ciudad Juárez, Mexico.

Polypharmacy and polyherbacy questionnaire

The bilingual questionnaire was specifically designed for this project in order to assess polypharmacy and polyherbacy among seniors in the Paso del Norte region. Prior to use, the questionnaire was reviewed by a consultant with expertise in development of survey instruments. Information collected by the questionnaire included the following:

- Demographic information
- Current medical conditions
- Current prescription medications (drug, dose, frequency, indication)
- Current non-prescription (over-the-counter) medications (drug, dose, frequency, indication)
- Current herbal products or nutritional supplements (product, dose, frequency, indication)

Methodology, cont'd

Administration of questionnaire

Questionnaires were completed through semi-structured interviews with seniors at their respective senior centers. Seniors agreeing to participate in the study were asked to bring to the interview a list of all medications, herbal products, or nutritional supplements that they were currently taking. They were also allowed to bring in the actual products if no list was available. Administration of the questionnaire was performed with the assistance of bilingual interviewers (Drs. Loya and Gonzalez-Stuart).

Outcome measures

Based on the information obtained from the questionnaire, the following outcome measures were determined:

- Number of prescription and over-the-counter (OTC) medications, herbal products, and nutritional supplements per senior
- With the use of Micromedex® DRUG-REAX® System, potential interactions between drugs, herbal products, and supplements were identified for each senior
- Interactions were further classified by the system as major, moderate, or minor

Statistical Analysis:

- We used SAS software (Version 8.2) and an analysis of variance (ANOVA) to determine if there were any differences in quantitative outcomes between genders and geographical areas within the Paso del Norte Region.

Results

Table 1. Demographics (n= 130)

Average Age (SD, range)	71.42 (7.05, 60-90)
% Females	76.92
% Males	23.08

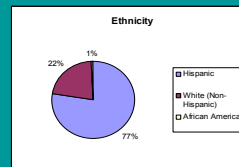


Table 2. Polypharmacy & Polyherbacy Outcomes (n=130)

Average # of Rx per senior (SD, range)	3.25 (2.99, 0-17)
Average # of OTC per senior (SD, range)	0.76 (0.95, 0-4)
Average # of herbals/supplements per senior (SD, range)	1.69 (2.01, 0-12)

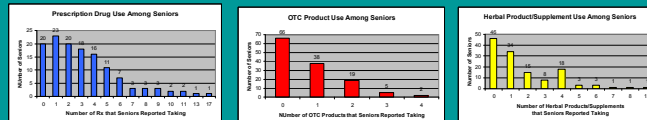


Table 3. Potential Drug/Drug Interactions (n=130)

Total # of interactions identified	125
Average # of interactions per senior (SD, range)	0.96 (1.74, 0-10)
% of seniors w/ at least one potential interaction (n)	38.46% (50)
Total # of MAJOR interactions (%)	22 (17.60%)
Average # of MAJOR interactions per senior (SD, range)	0.17 (0.56, 0-4)
% of seniors w/ at least one potential MAJOR interaction (n)	11.54% (15)

Results, cont'd

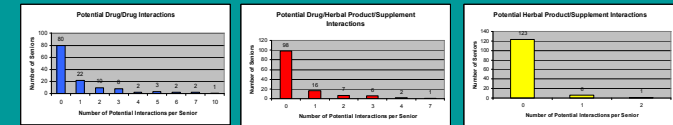


Table 4. Potential Drug/Herbal/Supplement Interactions (n=130)

Total # of interactions identified	63
Average # of interactions per senior (SD, range)	0.48 (1.07, 0-7)
% of seniors w/ at least one potential interaction (n)	24.62% (32)
Total # of MAJOR interactions (%)	6 (9.52%)
Average # of MAJOR interactions per senior (SD, range)	0.05 (0.21, 0-1)
% of seniors w/ at least one potential MAJOR interaction (n)	4.62% (6)

Table 5. Potential Herbal/Supplement Interactions (n=130)

Total # of interactions identified	8
Average # of interactions per senior (SD, range)	0.06 (0.27, 0-2)
% of seniors w/ at least one potential interaction (n)	5.38% (7)
Total # of MAJOR interactions (%)	0
Average # of MAJOR interactions per senior (SD, range)	0
% of seniors w/ at least one potential MAJOR interaction (n)	0

Table 6. Regional Differences in Outcomes (n=130)

Outcomes (means*)	El Paso, TX (n=68)	Alamogordo, NM (n=25)	Juarez, Chih, Mexico (n=37)	P value
Number of Rx	3.6 ^a	4.32 ^a	1.86 ^b	0.002
Number of OTC	0.85 ^a	1.04 ^a	0.41 ^b	0.0169
Number of Herbs	1.69 ^a	2.76 ^b	0.97 ^a	0.0023
Drug/Drug Interactions (all)	1.16 ^a	1.16 ^a	0.45 ^b	0.116
Drug/Drug Interactions (major)	0.12 ^a	0.20 ^a	0.24 ^a	0.5245
Drug/Herb Interactions (all)	0.50 ^a	1.00 ^b	0.11 ^a	0.005
Drug/Herb Interactions (major)	0.07 ^a	0.04 ^a	0 ^a	0.2306
Herb/Herb Interactions (all)	0.07 ^a	0.12 ^a	0 ^a	0.2036
Herb/Herb Interactions (major)	0	0	0	---

*NOTE: Any means followed by different superscript letters are statistically different P < 0.05

Conclusions

The prevalence of polypharmacy among seniors in the Paso del Norte region taking two or more concomitant prescription medications is 66.92% (n=87). Minor polypharmacy (2-4 prescription medications) occurred in 41.53% (n=54) and major polypharmacy (5 or more prescription medications) occurred in 25.38% (n=33). The prevalence of polyherbacy, which is defined as taking two or more herbal products or supplements, is 38.46% (n=50).

There were no statistically significant differences in outcomes between males and females (data not shown here). However, there were regional differences in the numbers of Rx, OTC, and herbal products taken by seniors (see Table 6).

Polypharmacy and polyherbacy are a concern among the senior population in the Paso del Norte region and the potential for interactions between medications, herbal products, and supplements for this study population is substantial. Education of seniors and their healthcare providers about polypharmacy and polyherbacy is important in reducing the risks associated with multiple drug and herbal product use.