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Attitudes toward deprescribing in a middle-aged health disparities population

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Abstract

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Declaration of competing interest

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.sapharm.2020.02.014>.

Background: Patients' attitudes toward deprescribing are crucial to understand before developing interventions, but no such data exists in the medically underserved, health disparities population of rural Appalachian United States.

Objective(s): Assess Appalachian women's openness to deprescribing medications and determine if polypharmacy influenced their attitudes toward deprescribing.

Methods: Before and after a cognitive behavioral therapy intervention, middle-aged Appalachian women self-reported medication use and completed the revised Patients' Attitudes Toward Deprescribing Questionnaire (rPATD). Responses were described, stratified by presence of polypharmacy.

Results: 30 women completed the rPATD pre- and post-intervention (mean [SD] age 55.8 [6.6] years; 96.7% white). Those with polypharmacy (n = 16) had higher *burden* and *involvement* scores (median 2.8 vs 2.0, p = 0.01; 4.9 vs 4.6, p = 0.06), and lower *appropriateness* scores (3.4 vs 3.9, p = 0.04). *Burden*, *concerns about stopping*, and *involvement* factor scores were similar before and after the intervention (p = 0.08, 0.86, and 0.41 respectively). 90% of participants were satisfied with their current medications yet would be willing to stop one or more.

Conclusions: Middle-aged women in rural Appalachian United States are open to deprescribing; polypharmacy is associated with lower belief in the appropriateness of medications. Larger studies are needed to inform future deprescribing interventions for this and other similarly disadvantaged populations.

Keywords

Deprescribing; Health disparities; Medication appropriateness

Introduction

Polypharmacy and inappropriate medication use are global issues, as the number of adults using five or more medications (the most common definition of polypharmacy¹) is high and on the rise. Recent estimates suggest that nearly one-quarter of adults in the United States has polypharmacy,² compared to approximately 17% in Scotland,³ and 6% of a rural Chinese population.⁴ More individuals are being managed pharmacologically for comorbidities, with some health conditions requiring multiple medications, which will likely continue to increase with an aging, longer-living population.⁵ Though polypharmacy may not always be inappropriate,⁶ it does put patients at a higher risk for potentially inappropriate medication use; one study suggests nearly a seven-fold increased risk for potentially inappropriate medication use when polypharmacy is present.⁷ Polypharmacy and inappropriate medication use are not restricted to prescription medications; over-the-counter medication and herbal supplement use is on the rise, and many people may not realize that these medications have their own side effect profiles and interactions. Physiologic changes as people age can also alter pharmacokinetics and pharmacodynamics, resulting in increased risks for adverse effects, falls, confusion, and hospitalization.⁸

To address both polypharmacy and inappropriate medication use, the focus on deprescribing has grown. Deprescribing is the process of withdrawal of inappropriate medications after a

thorough medication review by a healthcare professional, with a goal of reducing risk associated with such use and improving health outcomes.⁹ While polypharmacy and inappropriate medication use are cross-national concerns, regional areas suffering from high levels of health disparities and poor access to healthcare are disproportionately affected.¹⁰ Specifically, rural Appalachia suffers from social and economic stressors such as geographic isolation, healthcare shortages, and high rates of prescription drug abuse,^{11,12} making it an important population in which to evaluate and address inappropriate medication use through deprescribing.

All successful healthcare interventions should be centered on the patient's individual needs and cultural values.¹³ Deprescribing interventions are no different: understanding patients' attitudes toward both their medication use and the process of deprescribing are key elements to designing and implementing successful deprescribing interventions¹⁴ that reduce rates of polypharmacy and inappropriate medication use. To date, no information is available that captures attitudes toward deprescribing in middle-aged to older adults living in rural areas, a unique and understudied population.

To that end, this study investigated the attitudes toward deprescribing among a population of middle-aged and older adult women in the rural Appalachian United States. Study objectives were to 1) describe attitudes toward deprescribing, and 2) investigate whether polypharmacy impacts said attitudes. Given that the revised Patients' Attitudes Toward Deprescribing (rPATD) questionnaire was developed and validated in older adults,¹⁵ the stability of the instrument over time was evaluated in this middle-aged female population from a medically underserved area.

Methods

Participants

Data from this analysis comes from a study evaluating an Internet-based cognitive behavioral insomnia intervention in Appalachian women ages 45+. Information on recruitment and procedures are found elsewhere.¹⁶ Briefly, participants who had self-reported insomnia symptoms at least two nights a week and were using prescription or over-the-counter sleep aids for at least three months were recruited from a rural health center to complete the Sleep Healthy Using the Internet (SHUTi) program.¹⁷ Participants were excluded if they self-reported obstructive sleep apnea, schizophrenia, dementia, Alzheimer's disease, Cushing's disease, or bipolar disorder with psychosis. All participants received a \$50 gift card after the pre- and post-intervention assessments. Intervention completers received another \$50 gift card. The study was approved by the University of Kentucky Institutional Review Board and all participants provided informed consent.

Data collection

Before and after the SHUTi intervention, participants completed a number of qualitative and quantitative assessments, including the rPATD. Although the parent study recruited women suffering from insomnia, participants reported all the prescription and over-the-counter medications used. When completing the rPATD survey, women were asked to consider all of

their current medications. Study data were collected and managed using REDCap electronic data capture tools hosted at University of Kentucky.¹⁸

The rPATD is a validated questionnaire used to capture how patients feel about their medications and deprescribing. The rPATD contains 22 statements to which participants respond on a 5-point Likert scale from strongly agree to strongly disagree. The questionnaire includes two global questions about overall satisfaction with medication use and willingness to deprescribe and 20 questions which are grouped into four factors (based on a previously validated factor analysis of rPATD).¹⁵ These factors included participants' perceived burden of taking their medications (*burden* factor), their attitudes toward the appropriateness of the medications they take (*appropriateness* factor), whether they might have concerns about stopping one or more of their medications (*concerns about stopping* factor), and how knowledgeable they felt they were about their medications and were involved in the decisions made about their medications by their doctor (*involvement* factor). To create factor scores, the responses to each of the factor questions are summed and then divided by the number of questions in the factor (resulting in a score between 1 and 5). A higher score represents greater perceived *burden*, *concerns about stopping*, and *involvement*. The questions in the *appropriateness* factor are reverse coded such that a higher score represents greater belief that medications are appropriate.¹⁵

Statistical analysis

Only participants who completed all components of the rPATD at baseline and post-intervention were included in this analysis. Participants were stratified by the presence of polypharmacy (defined as reported use of at least five prescription and/or non-prescription medications¹) and characteristics were compared between groups using chi-squared, t-tests, or Wilcoxon rank-sum tests as appropriate. Descriptive statistics and correlation coefficients for participants' attitudes toward deprescribing were provided for the entire study population stratified by polypharmacy status using baseline responses to the rPATD.

To determine whether responses were stable after the eight-week intervention period, one-way repeated measures ANOVA was used to assess differences between responses before and after intervention, with $p < 0.05$ considered a statistically significant difference. All statistical analysis was done in Stata IC, and results were reported following the CONSORT Extension for Pilot and Feasibility Trials Reporting Guideline¹⁹ amended to reflect the non-randomized single-arm nature of the study.

Results

Participants

Of the 46 participants that began any portion of the parent study-related surveys, 38 initiated the intervention, and 30 completed all rPATD components (average age 55.8 years, nearly 97% white race). Of these, 16 participants reported using five or more medications at baseline and were included in the polypharmacy group.

As seen in Table 1, those who reported using five or more medications at baseline were similar in demographic characteristics to those without polypharmacy. Participants with

polypharmacy took an average of 5.4 prescription and 2.1 over-the-counter medications, while those without polypharmacy took 1.9 and 0.9 respectively.

Attitudes toward deprescribing

At baseline, there were significant differences between those with and without polypharmacy in all rPATD factors scores except for the *concerns about stopping* factor (see Fig. 1). Participants with polypharmacy had higher *burden* and *involvement* factor scores and lower *appropriateness* factor scores than those without polypharmacy ($p = 0.01$, 0.06 , and 0.04 respectively). Regardless of polypharmacy status, most participants were satisfied with their current medications yet would be willing to stop one or more regular medications if their doctor said it was possible (90.0 and 93.3% at least agreed with global questions A and B respectively). Complete responses to all rPATD questions can be found in the Supplement.

Burden and *appropriateness* factors were strongly inversely correlated ($\rho = -0.69$), while *concerns about stopping* and *involvement* factors were moderately inversely correlated ($\rho = -0.52$). Both *burden* and *appropriateness* factors were weakly correlated with the “satisfaction with medication” global question A and moderately correlated to total number of medications reported ($\rho = 0.31$ and -0.33 ; 0.53 and -0.51 , respectively). The “willingness to stop medication” global question B was strongly correlated with the *involvement* factor and moderately correlated with the *concerns about stopping* factor ($\rho = 0.60$ and -0.58 respectively). All correlations and associated p values can be found in Fig. 2.

Response stability

The distribution of responses to each rPATD factor and the two global questions before and after the eight-week intervention can be found in Table 2. There were no statistically significant differences in the pre- and post-intervention responses to any rPATD factors or the global questions, except for a 0.2 factor score increase in the *appropriateness* factor post-intervention ($p = 0.02$).

Discussion

A recently completed non-randomized single-arm pilot study provided the opportunity to describe the attitudes toward deprescribing among a group of women aged 45 years and over in the Appalachian region of the United States. Using the validated rPATD questionnaire, attitudes toward deprescribing are described with four factors and two global questions. Overall, the majority of this high-risk population used five or more medications regularly, and those who did so felt more of a burden because of their medication use, felt their medication use was less appropriate, and were more involved with decisions about their medications. Regardless of the number of medications used, nearly all participants in this sample were willing to have a medication deprescribed, with the strongest correlates being a high degree of involvement in medication decisions and low concerns about stopping medications.

As in other studies,^{20–24} *burden* and *appropriateness* factors were inversely correlated, confirming that in this population an increased burden of medication use is correlated with

less belief in the appropriateness of one's medication regimen. Additionally, participants' perceptions of their level of involvement with medication decisions was directly correlated with their willingness to stop a medication, highlighting the importance of practicing patient-centered care when approaching a new deprescribing intervention. In addition to showing that when patients feel more involved in their medication decisions they are more willing to stop a medication, this study also suggests that taking into consideration patient-specific factors, such as the number of medications currently used, is crucial when approaching deprescribing. Three other studies have investigated the correlation between total number of medications and rPATD factors, two of which found results consistent with this study.^{22–24} While there are ongoing randomized trials investigating the effectiveness of deprescribing in older adults with polypharmacy and other inappropriate medication use in general,^{25–28} none currently target this middle-aged, high-risk, disadvantaged population. Given that pharmacists are some of the most accessible healthcare providers,²⁹ their participation in the deprescribing process could increase access to resources, encouraging patient involvement and improving outcomes.

Although this study is the first, to our knowledge, to evaluate attitudes toward deprescribing in a predominantly middle-aged population, these participants felt a similarly high burden of medication use to older adults studied in previously published literature.^{20–24,30} This similarity suggests that proactive deprescribing interventions in younger populations may be as effective as those conducted in older age. Furthermore, this is one of only three studies using the rPATD that has been conducted in a largely rural area with limited healthcare access. 90% of women in this study were satisfied with their current regimen, which is in line with estimates from other healthcare advantaged and disadvantaged populations (88.1–92.1% in the previously cited studies). However, despite being a rural and disadvantaged population, the proportion of women in this study who at least agreed that they would be willing to stop one or more of their medications was more similar to populations with greater access to care (88% and 92% in Australia²⁰ and a nationally representative American population³⁰) than to populations with poorer healthcare systems (67.7% in Malaysia²³ and 81.6% in Ethiopia²¹). While there are many differences between this health disparities population and those from developing countries, cultural differences regarding patient involvement with their healthcare providers may explain some of the disparities seen in willingness to stop medications.

Additionally, because participants in the single-arm pilot parent study were administered the rPATD twice over an eight-week period, rPATD stability could be assessed. Because the intervention given during this period was not primarily focused on deprescribing, and participants were instructed to consider all their medications, responses to the rPATD statements were not expected to change. This report demonstrates good stability of the rPATD tool. Although the *appropriateness* factor did have a statistically significant 0.2 point increase in the post-intervention questionnaire, this difference is unlikely to be clinically meaningful. Thus, the rPATD has high test-retest reliability in this unique population, as it did in the original validation amongst older adults.

While these results are integral to continuing efforts to improve medication use in a population at high-risk for negative medication use outcomes, there are some limitations to

the interpretation of these findings. Primarily, due to the pilot nature of the non-randomized study, the sample size in this report is small, potentially limiting generalizability to other rural and similarly disadvantaged populations. The findings reported herein are largely exploratory in nature; future studies should continue to investigate attitudes toward deprescribing to ensure that future interventions can be appropriately tailored to the target population.

Conclusions

This study found that in general, middle-aged women living in the rural Appalachian United States are open to deprescribing, and that significant differences exist in attitudes toward deprescribing between those with polypharmacy and those without. Additionally, this study provides further validation that the rPATD tool has high test-retest reliability over an eight-week period. Larger studies are needed to confirm the findings to inform future deprescribing interventions for this, and similarly disadvantaged populations.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Fig. 1.

Depicts the distribution for each of four factors that describe patient attitudes toward deprescribing, stratified by polypharmacy status.

Fig. 2.
Correlation matrix of Spearman correlation values and associated p-values for each rPATD factor, age, and total number of medications.

Table 1

Baseline participant characteristics.

Characteristic	All Participants N = 30	Polypharmacy n = 16	No Polypharmacy n = 14
Demographics			
Age, mean (SD)	55.8 (1.2)	57.2 (1.8)	54.3 (1.6)
White, n (%)	29 (96.7)	16 (100)	13 (92.9)
Private Insurance	27 (93.1)	13 (86.7)	14 (100)
Education, n (%)			
<i>HS diploma/GED</i>	8 (26.7)	6 (37.5)	2 (14.3)
<i>Undergraduate</i>	19 (63.3)	9 (56.3)	10 (71.4)
<i>Graduate school or above</i>	3 (10.0)	1 (6.3)	2 (14.3)
Health Characteristics			
Any health condition	15 (50.0)	9 (56.3)	6 (42.9)
Very Good or Better Health Status	14 (46.7)	5 (31.3)	9 (64.3)
Number of medications, mean (SD)			
<i>Total*</i>	5.3 (0.5)	7.5 (0.5)	2.8 (0.3)
<i>Prescription*</i>	3.8 (0.4)	5.4 (0.5)	1.9 (0.3)
<i>Over-the-counter*</i>	1.5 (0.2)	2.1 (0.3)	0.9 (0.2)

*
 $p < 0.05$

Table 2

RPATD responses pre- and post-intervention.

rPATD Factor	Pre-Intervention, median (IQR) (n = 30)	Post-Intervention, median (IQR) (n = 27)	p
<i>Burden</i>	2.4 (2–3.5)	2.3 (2–3)	0.080
<i>Appropriateness</i>	3.6 (3.2–4)	3.8 (3.6–4)	0.015
<i>Concerns about stopping</i>	2.9 (2.6–3.2)	2.8 (2.6–3.2)	0.857
<i>Involvement</i>	4.8 (4.2–5)	5 (4.4–5)	0.409
Global A	4 (4–4)	4 (4–5)	>0.999
Global B	4 (4–5)	5 (4–5)	0.528