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Title: Reasons why older adults in three countries agreed with a deprescribing recommendation in a hypothetical vignette

Running title: Patient and user perspectives and characteristics

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The purpose of this study was to examine factors important to older adults who agreed with a deprescribing recommendation given from a General Practitioner (GP) to a hypothetical patient experiencing polypharmacy. We conducted an online, vignette-based, experimental study in the United Kingdom, United States, and Australia with participants ≥ 65 years. The primary outcome was agreement with a deprescribing recommendation (6-point Likert scale; 1=strongly disagree and 6=strongly agree). We performed a content analysis of the free text reasons provided by participants who agreed with deprescribing (score of 5 or 6). Among 2,656 participants who agreed with deprescribing, approximately 53.7% shared a preference for following the GP's recommendation or considered the GP the expert. The medication was referred to as a reason for deprescribing by 35.6% of participants. Less common themes included personal experience with the medicine (4.3%) and older age (4.0%). Older adults who agreed with deprescribing in a hypothetical vignette most frequently reported a desire to follow the recommendations given the GP's expertise. Future research should be conducted to help clinicians efficiently identify patients who have a strong desire to follow the doctor's recommendations related to deprescribing as this may allow for a tailored, brief deprescribing conversation.

Introduction and Background

Older adults who take unnecessary medications are at increased risk for cognitive impairment, falls, adverse drug events, and increased health care costs.¹

Deprescribing, in which medications are thoughtfully stopped, is increasingly recognised as an important strategy to address excessive medication use among older adults.²

Patient-centered deprescribing should include shared decision making, in which the patient and clinician collaborate to make an informed decision about stopping or

continuing a medication.³⁻⁹ Clinicians often consider both patient characteristics (e.g., comorbidities and functional status) and medication-related factors (e.g., adverse effects) when making deprescribing recommendations.¹⁰ However, patients may have other concerns that need to be addressed, such as the fear of withdrawal effects or the return of their condition as a result of medication discontinuation.^{11,12}

Little is known about what factors are involved in a patient's decision to agree with a deprescribing recommendation from a GP.

We initially conducted an experimental survey to explore the extent to which the medication type and the GP's rationale for recommending deprescribing influenced older adults' acceptance of stopping the medication.¹³ Here we report the results of a content analysis seeking to identify what factors older adults who agreed with deprescribing identified as being important in the decision-making process.

Materials and Methods

Study design and participant selection

Adults 65 years and older living in the United Kingdom, United States, Australia, and the Netherlands were recruited by Qualtrics Research Services (Provo, UT) for an online study testing different medication-related factors that influence the acceptance of deprescribing (full methods and results reported elsewhere).¹³ Qualtrics recruits through a panel of internet users who have opted-in to participate in online surveys. Individuals 65 years and above who lived in the four participating countries were randomly routed to our survey based on sample requirements. Demographic diversity was ensured by applying quotas such as equal participants per country and

50% female participants. Panelists continued to be invited to participate in the survey until all quotas were reached. The survey did not include the study topic to decrease self-selection bias. Participants were compensated based on the conditions of their panel agreement.

We created a vignette about a patient experiencing polypharmacy. During the development process, we edited the vignette based on feedback from patient and public engagement stakeholders to ensure that it was relatable and understandable.

Participants read a hypothetical conversation between a GP and “Mrs. EF”, a 76-year-old who takes 11 chronic medications. Participants were randomly assigned to her GP recommending stopping one of two medications, either her 1) simvastatin for the prevention of heart disease and stroke or 2) lansoprazole for the treatment of indigestion. The rationale given for stopping a medication was either a lack of benefit, potential for harm, or combination of lack of benefit and potential for harm (randomly assigned).

Outcomes

After the GP provided a recommendation for Mrs. EF to stop a medication, participants rated their level of agreement with the recommendation (6-point Likert scale with scale anchors of 1 = ‘Strongly disagree’ to 6 = ‘Strongly agree’) and gave reasons for their rating in free-text. Subsequently, clinical and medication-related variables were measured including self-reported health (5-point Likert scale; poor to

excellent), level of support needed to manage their own medications (no support, occasional support, or complete assistance), prior experience taking a medication in the same therapeutic class as their assigned vignette (HMG-CoA reductase inhibitor or proton pump inhibitor), and number of medications.¹⁴ We collected demographic data including age, gender, education, and health literacy using a one-item question about confidence filling out medical forms (5-point Likert scale; not at all confident to extremely confident).^{15,16}

Data analysis

The original study was conducted in accordance with the Basic & Clinical Pharmacology & Toxicology policy for experimental and clinical studies and was registered with ClinicalTrials.gov, NCT04676282.^{13,17} In this secondary data analysis, we included participants who agreed with the deprescribing recommendation (responses 5 and 6 on the 6-point Likert scale). Free-text responses in English were examined using content analysis, which combines quantitative and qualitative methods to report both the frequency and content of codes and overarching themes.¹⁸ The comments were organised and coded in Microsoft Excel and all data except the responses provided by the participants were hidden throughout the coding process.

The research team generated codes based on the content of the vignette and themes that were observed while reading a sample of the responses. The coding framework was revised iteratively and piloted by K.W. and three research assistants (J.S., J.C., and R.R.). The framework had four domains with ten codes in total and

responses could have more than one code applied. The final coding framework was applied to all the data with the research assistants each independently coding one-third of the responses. We used three codes (disagree with deprescribing, unsure/confused, and irrelevant/unable to code) as a screening mechanism to remove participants who did not clearly agree with deprescribing from the study. The research assistants triple-coded 50 responses (~2%) at the end of the coding process with 95% agreement (Fleiss Kappa=0.78).

Descriptive statistical analysis was used to assess the frequency of each code and quotations from the responses are used to illustrate a diverse range of themes. We reported the frequency per individual code. We subsequently reported the number of domains in which the participant had at least one comment. We used chi-squared tests and simple logistic regression to examine the factors associated with comments related to agreement with each domain and code. The factors we explored included country, gender, level of education, health status, health literacy measured using a one-item question related to confidence filling out medical forms, support needed to manage medications and finally, personal use of a statin or proton pump inhibitor among participants who received simvastatin or lansoprazole in the vignette, respectively. We used a statistical significance level of $P < .05$. All analyses were conducted with Stata, version Stata SE 17.0 (StataCorp). This study was deemed exempt by the University of Michigan Health Sciences and Behavioral Sciences Institutional Review Board.

Results

A total of 5,311 participants were included in the original study. We excluded individuals who disagreed with deprescribing based on their response to the primary outcome question (n=1,320) and participants from the Netherlands (n=1,250) as their responses were in Dutch. We excluded individuals who did not provide a written rationale (n=5), provided a rationale stating that they disagreed with deprescribing (n=18), were unsure or confused (n=30), or their response was unable to be coded (n=32). Our final analytical sample included 2,656 participants (Figure 1).

The average age of participants was 71.5 years (SD 5.0) and 47.3% identified as female (Table 1). Participants reported an average of 6.5 medications (SD 9.4) and most (87.5%) managed their medications without assistance.

Below we describe characteristics of participants across four domains: the GP's opinion ('GP domain'), impact of the medicine ('medicine domain'), personal experience, and additional factors including age. A total of 85% of responses were given one code based on their content, while 14% were assigned two codes and 1% assigned three codes.

General Practitioner's opinion

Older adults most frequently brought up the GP ('GP domain') as their reason for agreeing with deprescribing (53.7%) (Table 2). The codes within the GP domain were a desire to follow the GP's recommendations (36.0%) and perceiving the GP as

the expert (18.5%). Male participants (57.4%) more frequently brought up the GP domain than female participants (49.5%) ($P < 0.01$) (Table 3).

There was no difference in frequency of the GP domain based on education ($P = 0.14$). However, participants with a Bachelor's degree or higher were more likely to refer to the GP as the expert ($P = 0.01$) while participants with an education level less than a Bachelor's degree were more likely to state that they would follow the GP's recommendations ($P < 0.01$) as their reason to agree with deprescribing.

Participants who received the simvastatin vignette referenced a desire to follow the GP's recommendations more often (40.0%) than those who received the lansoprazole vignette (32.7%) ($P < 0.01$). In contrast, participants with the lansoprazole vignette were more likely to refer to the GP as the expert (21.3%) compared with the simvastatin vignette (15.0%) ($P < 0.01$). The rationale for deprescribing that was provided in the vignette was not associated with participants' perceptions of the GP.

Impact of the medicine

The second most common domain raised by older adults as their reasons for agreeing with deprescribing was related to the medicine ('medicine domain') (35.6%). The codes within the medicine domain were as follows: the medicine may cause problems (17.3%), the medicine may not provide benefit (15.9%), or an alternative to the medicine is needed (7.6%). Female participants more frequently

brought up the medicine domain (40.6%) than male participants (31.3%) ($P<0.01$). In particular, female participants more often reported that they were concerned that the medicine may cause problems as a reason to deprescribe (20.9%), compared with male participants (14.1%) ($P<0.01$).

There was no difference in frequency of the medicine domain based on education ($P=0.05$). However, individuals with a Bachelor's degree or higher were more likely to raise the idea of the medicine not providing benefit (18.9%) ($P<0.01$) or an alternative to the medicine is needed (9.2%) ($P=0.03$) compared with individuals who earned less formal education (14.3% and 6.8%, respectively).

Participants were more likely to refer to the medicine domain when they received the lansoprazole (41.8%) compared with simvastatin vignette (28.2%) ($P<0.01$). In particular, individuals who received the lansoprazole vignette were more likely to state that the medicine may not provide benefit (20.7%) ($P<0.01$) or bring up needing an alternative to the medicine (9.3%) ($P<0.01$) compared to those who received the simvastatin vignette (10.0% and 5.6%, respectively). The medicine-related reasons that participants provided for agreeing with deprescribing often aligned with the information that was provided in the original vignette participants received. For example, participants who received the lack of benefit vignette more frequently brought up the lack of benefit reasoning (21.6%) as opposed to the medicine causing harm (9.4%) ($P<0.01$).

Personal experience

Participants occasionally (4.3%, n=113) referred to their real-life knowledge or experience in their short answer response about why they supported deprescribing. There were no differences in the frequency of this domain based on gender (P=0.63), education (P=0.48), or the medication provided in the vignette (P=0.66). However, participants who received a rationale about the medicine lacking benefit (b=0.67, 95% CI 0.18, 1.16) or the potential for harm (b=0.56, 95% CI 0.06, 1.06) were more likely to share their personal experience compared with those participants who received both rationales.

We also asked participants if they had personal experience taking a medication in the same therapeutic class as the medication presented in the vignette. Participants who had taken the medicine in the past (b=1.31, 95% CI 0.83, 1.78) or currently (b=0.53, 95% CI 0.08, 0.97) were more likely to talk about their personal experience in relation to agreeing with deprescribing than individuals who had never taken this type of medication before.

Additional factors

A total of 4.0% (n=107) of participants referred to Mrs. EF's older age as a reason to deprescribe the medicine. Participants who received the simvastatin vignette were more likely to raise concerns about age (7.1%) than those who received the lansoprazole vignette (1.5%) (P<0.001). In the vignette, the GP referred to Mrs. EF's advanced age as part of the rationale to stop simvastatin, but it was not included in the rationale for stopping lansoprazole.

Participants who reported lower agreement with deprescribing (score of 5 out of 6) more frequently reported the medicine domain (37.9%) compared with those with a higher level of agreement (score of 6 out of 6) (33.9%), ($P=0.03$). Participants with a lower agreement score were also more likely to raise concerns that the medicine may not have benefit [18.0% vs. 14.1%, $P=0.01$] and an alternative may be needed [9.6% vs. 6.1%, $P<0.01$] than those who reported a higher score.

The country of residence, self-reported health, health literacy as measured by confidence filling out medical forms, and level of support needed to manage medications did not significantly influence our findings.

Discussion

Discussion

Older adults who agreed with deprescribing most frequently cited the GP as an important factor in their decision, followed by the impact of the medicine. Male participants were more likely to refer to the GP domain while female participants more frequently discussed the medication. There was no difference in frequency of responses in the GP domain or medicine domain by level of education. However, participants with a Bachelor's degree or higher more frequently reported that the GP was the expert and they shared concerns about the medicine not providing benefit, while participants with less than a Bachelor's degree thought that they should follow the GP's recommendations and were less likely to raise the idea of needing an alternative to the medicine. Participants' personal experiences with taking

medications like those in the vignettes were often reflected in their responses which provides support to the idea that the vignette was realistic.

In our study, approximately one-half of older adults who agreed with deprescribing felt that the GP's recommendation was an important consideration. This aligns with studies showing that older adults are often willing to deprescribe medications, if it is recommended by the GP.¹⁹⁻²¹ However, the specific rationale that the GP provides for deprescribing may also influence older adults' acceptance of the recommendation. In our original study, we found that participants were more willing to deprescribe when the potential for harm was provided compared to a lack of benefit or combination of both a lack of benefit and potential for harm.¹³ Similarly, Green et al. reported that older adults are more supportive of a deprescribing recommendation from the GP that focused on increased risk of adverse effects.²²

In the literature, patients' attitudes towards deprescribing often focuses on medication-related factors such as appropriateness, burden, and concerns.²³ However, we found that only one-third of participants discussed the medication in their reason for agreeing with deprescribing. Vordenberg et al. reported that characteristics and preferences of older adults, as opposed to medication-specific characteristics, predict patient concern about stopping medications.²⁴ Weir et al. found that some older adults have very high trust in the GP and we hypothesize that these individuals may assume that their GP will automatically consider information about the medication, such as burden and side effects, prior to making a recommendation to the patient.²⁵

Participants who had taken the same type of medication in the vignette (in the past or currently) were more likely to mention their own personal experience in relation to agreeing with deprescribing than individuals who had never taken this type of medication before. Many participants had experience taking a medication like those in the vignettes; approximately half in the simvastatin group and one third in the lansoprazole group. It is possible that previous experience with deprescribing may lead an individual to accept deprescribing again, particularly if it was a positive experience.

Older adults who agreed with deprescribing most frequently reported a desire to follow the GP's recommendations. A common barrier that has been cited related to the adoption of deprescribing in clinical practice is lack of time during clinic visits.²⁶⁻²⁸ Future research should be conducted to help clinicians efficiently identify patients who have a strong desire to follow the doctor's recommendations related to deprescribing as this may allow for a tailored, brief deprescribing conversation as compared to patients who prefer more information or are resistant to medication changes and thus may benefit from a more detailed deprescribing conversation.

The primary strength of our study is that we recruited a large number of older adults who resided in three countries with diverse healthcare systems. We obtained feedback from laypeople when developing the vignette used in the survey and the researchers were blinded to the experimental factors when coding the free-text responses. The primary limitation of our study is that the decision participants make

in a hypothetical vignette may not reflect their real-world actions if they were in a similar situation. Similarly, vignettes may not reflect all aspects of the deprescribing process given its complex nature and that discussions may take place over multiple consultations. In addition, while we sought to include diverse participants that were drawn from a panel across three countries, we make no claims that it is representative of all older adults, if only because our participants shared the common characteristic of being willing to participate in survey research. For example, most participants in this study reported relatively high levels of education given the age of the population and were quite a bit or extremely confident filling out medical forms. Furthermore, we acknowledge that GP's have varying degrees of confidence with deprescribing in clinical practice; this study focuses specifically on situations in which the conversation was raised by the GP. Finally, we excluded individuals from the original study from the Netherlands as their responses were in Dutch.

Conclusion

Older adults who agreed with deprescribing in a hypothetical vignette most frequently reported a desire to follow the GP's recommendations given their expertise. Future research should focus on strategies to leverage trust between older adults and their GPs and effective communication strategies during deprescribing conversations.

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Conflicts of Interest

The authors have declared no conflicts of interest.

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References

1. Maher RL, Hanlon JT, Hajjar ER. Clinical consequences of polypharmacy in elderly. *Expert Opin Drug Saf.* 2014;13:57-65.
2. Sadowski CA. Deprescribing – A few steps further. *Pharmacy (Basel).* 2018;6:112.
3. Jansen J, Naganathan V, Carter SM, McLachlan AJ, Nickel B, et al. Too much medicine in older people? Deprescribing through shared decision making. *BMJ.* 2016;3(353):i2893. doi:10.1136/bmj.i2893.
4. Holmes HM, Todd A. The role of patient preferences in deprescribing. *Clinics in geriatric medicine.* 2017 May 1;33(2):165-75. doi:10.1016/j.cger.2017.01.004
5. Farrell B, Pottie K, Rojas-Fernandez CH, Bjerre LM, Thompson W, Welch V. Methodology for developing deprescribing guidelines: Evidence and GRADE to guide recommendations for deprescribing. *PLoS One.* 2016;11:e0161248. doi:10.1371/journal.pone.0161248
6. Todd A, Jansen J, Colvin J, McLachlan AJ. The deprescribing rainbow: A conceptual framework highlighting the importance of patient context when stopping medication in older people. *BMC Geriatr.* 2018;18:295. doi:10.1186/s12877-018-0978-x.
7. Linsky A, Gellad W, Linder JA, Friedberg MW. Advancing the science of deprescribing: A novel comprehensive conceptual framework. *J Am Geriatr Soc.* 2019;67:2018-22. doi:10.1111/jgs.16136
8. Doherty AJ, Boland P, Reed J, Clegg AJ, Stephani AM, et al. Barriers and facilitators to deprescribing in primary care: A systematic review. *BJGP Open.* 2020;4: bjgpopen20X101096. doi:10.3399/bjgpopen20X101096.

9. Thompson W, Reeve E. Deprescribing: Moving beyond barriers and facilitators. *Res Social Adm Pharm.* 2022;18(3):2547-2549.
doi:10.1016/j.sapharm.2021.04.004
10. Huffmyer MJ, Keck JW, Harrington NG, Freeman PR, Westling M, Lukacena KM, Moga DC. Primary care clinicians and community pharmacist perceptions of deprescribing. *J Am Geriatr Soc.* 2021;69:1686-1689.
doi:10.1111/jgs.17092
11. Thompson W, Black C, Welch V, Farrell B, Bjerre LM, Tugwell P. Patient values and preferences surrounding proton pump inhibitor use: a scoping review. *The Patient-Patient-Centered Outcomes Research.* 2018 Feb;11:17-28. doi:10.1007/s40271-017-0258-4
12. Page AT, Clifford RM, Potter K, Schwartz D, Etherton-Ber CD. The feasibility and effect of deprescribing in older adults on mortality and health: A systematic review and meta-analysis. *Br J Clin Pharmacol.* 2016;82:583-623.
doi:10.1111/bcp.12975
13. Vordenberg SE, Weir K, Jansen J, Todd A, Schoenborn N, Scherer AM. Harm and type of medication matter when older people make deprescribing decisions: A survey across four countries. *J Gen Intern Med.* [in press]
doi:10.1007/s11606-022-07850-5.
14. DeSalvo KB, Bloser N, Reynolds K, He J, Muntner P. Mortality prediction with a single general self-rated health question: A meta-analysis. *J Gen Intern Med.* 2006;21:267-275. doi:10.1111/j.1525-1497.2005.00291.x
15. Chew LD, Bradley KA, Boyko EJ. Brief questions to identify patients with inadequate health literacy. *Fam Med.* 2004;36:588-594.

16. Wallace LS, Rogers ES, Roskos SE, Holiday DB, Weiss BD. Brief report: Screening items to identify patients with limited health literacy skills. *J Gen Intern Med.* 2006;21:874-877.
17. Tveden-Nyborg P, Bergmann TK, Jessen N, Simonsen U, Lykkesfeldt J. BCPT policy for experimental and clinical studies. *Basic Clin Pharmacol Toxicol.* 2021;128:4-8. doi:10.1111/bcpt.13492
18. Weber RP. Basic content analysis. 2nd edn. Thousand Oaks, California: Sage, 1990.
19. Garfinkel D, Mangin D. Feasibility study of a systematic approach for discontinuation of multiple medications in older adults: Addressing polypharmacy. *Arch Intern Med.* 2010;170:1648-54. doi:10.1001/archinternmed.2010.355
20. Parr JM, Kavanagh DJ, Young RM, McCafferty K. Views of general practitioners and benzodiazepine users on benzodiazepines: A qualitative analysis. *Soc Sci Med.* 2006;62:1237-49. doi:10.1016/j.socscimed.2005.07.016
21. Choi J, Vordenberg SE. Older adults' perceptions of deprescribing chronic benzodiazepines. *J Am Pharm Assoc.* 2021;61:533-38. doi:10.1016/j.japh.2021.04.003
22. Green AR, Aschmann H, Boyd CM, Schoenborn N. Assessment of patient-preferred language to achieve goal-aligned deprescribing in older adults. *JAMA Netw Open.* 2021;4:e212633. doi:10.1001/jamanetworkopen.2021.2633
23. Weir KR, Ailabouni NJ, Schneider CR, Hilmer SN, Reeve E. Consumer attitudes towards deprescribing: a systematic review and meta-analysis. The

Journals of Gerontology: Series A. 2022 May;77(5):1020-34.

doi:10.1093/gerona/qlab222

24. Vordenberg SE, Zikmund-Fisher BJ. Characteristics of older adults predict concern about stopping medications. *J Am Pharm Assoc.* 2020;60:773-80.

doi:[10.1016/j.japh.2020.01.019](https://doi.org/10.1016/j.japh.2020.01.019)

25. Weir K, Nickel B, Naganathan V, Bonner C, McCaffery K, Carter SM, McLachlan A, Jansen J. Decision-making preferences and deprescribing: Perspectives of older adults and companions about their medicines. *J Gerontol B Psychol Sci Soc Sci.* 2018;73:e98-e107.

doi:10.1093/geronb/gbx138.

26. Gillespie RJ, Harrison L, Mullan J. Deprescribing medications for older adults in the primary care context: A mixed studies review. *Health Sci Rep.*

2018;1:e45. doi:[10.1002/hsr2.45](https://doi.org/10.1002/hsr2.45)

27. Clyne B, Smith SM, Hughes CM, et. al. Sustained effectiveness of a multifaceted intervention to reduce potentially inappropriate prescribing in older patients in primary care (OPTI-SCRIPT study). *Implement Sci.*

2016;11:79. doi:[10.1186/s13012-016-0442-2](https://doi.org/10.1186/s13012-016-0442-2)

28. Peat G, Fylan B, Marques I, Raynor DK, Breen L, Olaniyan J, Alldred DP.

Barriers and facilitators of successful deprescribing as described by older patients living with frailty, their informal carers, and clinicians: A qualitative interview study. *BMJ Open.* 2022;12:e054279. doi:10.1136/bmjopen-2021-054279

Table 1. Demographic and medication characteristics (n=2,656)

Characteristic	Number (Percent)
Country	
Australia	834 (31.4)
United Kingdom	829 (31.2)
United States	993 (37.4)
Gender	
Male	1,394 (52.5)
Female	1,255 (47.3)
Transgender or other	7 (0.3)
Education	
High school diploma or less	749 (28.2)
Trade school, some college, or associate's degree	1,002 (37.7)
Bachelor's degree	645 (24.3)
Master's degree or higher	259 (9.8)
Health status	
Excellent	112 (4.2)
Very good	647 (24.4)
Good	1,097 (41.3)
Fair	663 (25.0)
Poor	137 (5.2)
Health literacy (Confidence filling out medical forms)	
Extremely	1,474 (55.5)
Quite a bit	798 (30.1)
Somewhat	253 (9.5)
A little bit	84 (3.2)
Not at all	46 (1.7)
Support needed to manage medications	
No support	2,304 (87.5)
Occasional support	229 (8.7)
Complete assistance	100 (3.8)
Personal use of statin among participants who received simvastatin vignette	
Never	574 (47.6)
In the past	119 (9.9)
Current	512 (42.5)
Personal use of proton pump inhibitor among participants who received lansoprazole vignette	
Never	918 (63.3)
In the past	212 (14.6)
Current	321 (22.1)
	Mean (SD)
Age, years	71.5 (5.0)
Total medications	6.5 (9.4)
Prescription medications	4.5 (7.8)
Over-the-counter medications and dietary supplements	2.1 (4.1)

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Table 2. Frequency of codes provided by participants by domain (n=2,656)

Code by domain	Example quotations	Number (%)
GP-related		1,426 (53.7) ^a
Follow the GP's recommendation	<i>"Doctor knows best"</i> <i>"Because Drs know what they are talking about"</i> <i>"Because the doctor is a professional and trained in this"</i>	956 (36.0)
The GP is the expert	<i>"I would expect the GP to have access to the latest medical evidence to back up his advice"</i>	490 (18.5)
Medicine-related		946 (35.6) ^a
Medicine may cause problems	<i>"Long term use may be harmful"</i> <i>"it causes quite a few side effects"</i>	460 (17.3)
Medicine has no benefit	<i>"Because after a while it may not provide much benefit"</i> <i>"if it is not working why take it"</i> <i>"It would be better to follow a special diet"</i>	421 (15.9)
Alternative to medicine can be used	<i>"I think he could prescribe something better"</i>	202 (7.6)
Personal experience		113 (4.3)
Personal experience or knowledge about the medicine or side effects of the medicine	<i>"I have been asked to stop taking this medication and so has my husband"</i> <i>"From my understanding of lansoprazole, it is intended to be taken for short durations"</i>	113 (4.3)
Age in vignette		107 (4.0)
A patient's older age means medicine not working or causing problems	<i>"Because she has now reached an age where the disadvantages might well outweigh the benefits"</i> <i>"As it can cause other problems in people of her age"</i>	107 (4.0)

^a Number of participants with one or more codes in the domain

Table 3. Comparison of frequency of codes based on gender, education, medication, and rationale

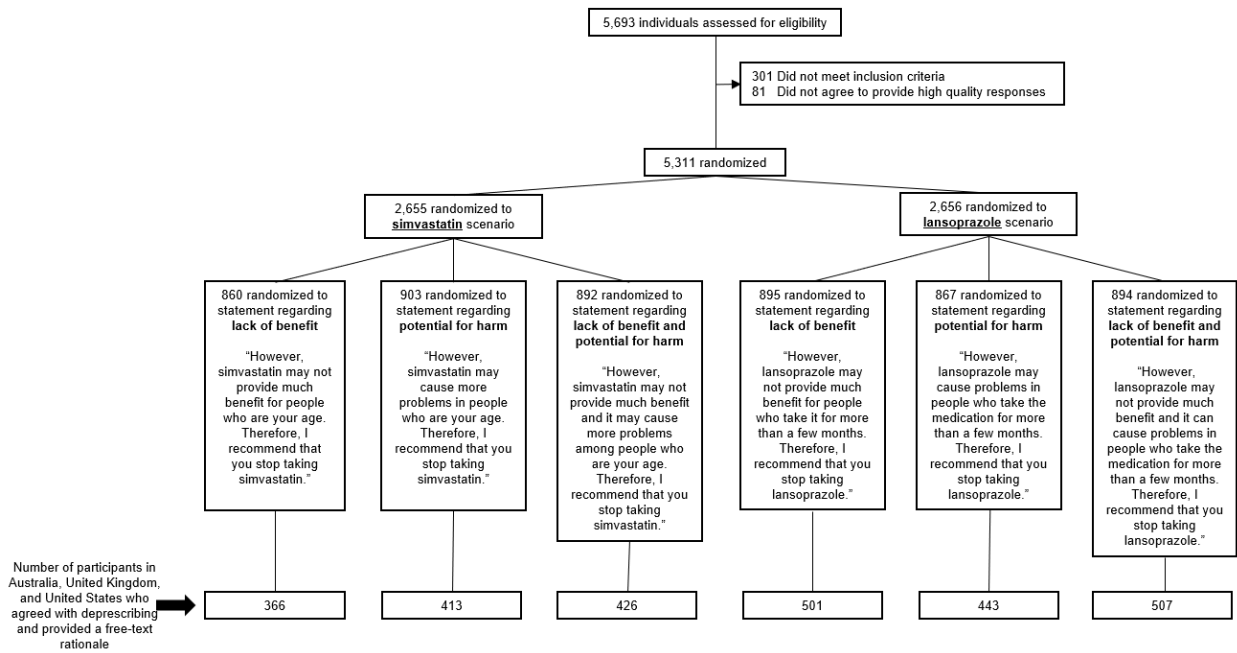
Gender^a	Male (n=1,394)	Female (n=1,255)		P-value
GP-related domain	57.4	49.5	-	<0.01
Follow the GP's recommendations	37.5	34.3	-	0.08
The GP is the expert	20.9	15.7	-	<0.01
Medicine-related domain	31.3	40.6	-	<0.01
Medicine may cause problems	14.1	20.9	-	<0.01
Medicine has no benefit	14.9	17.0	-	0.15
Alternative to medicine	6.8	8.5	-	0.10
Personal experience	4.5	4.1	-	0.63
Age in vignette	3.5	4.6	-	0.15
Education	Less than Bachelor's degree (n=1,751)	Bachelor's degree or higher (n=904)		P-value
GP-related domain	54.7	51.7	-	0.14
Follow the GP's recommendations	38.4	31.4	-	<0.01
The GP is the expert	17.0	21.1	-	0.01
Medicine-related domain	34.3	38.2	-	0.05
Medicine may cause problems	17.5	16.9	-	0.70
Medicine has no benefit	14.3	18.9	-	<0.01
Alternative to medicine	6.8	9.2	-	0.03
Personal experience	4.5	3.9	-	0.48
Age in vignette	4.3	3.5	-	0.36
Medication	Simvastatin (%) (n=1,205)	Lansoprazole (%) (n=1,451)		P-value
GP-related domain	54.8	52.8	-	0.31
Follow the GP's recommendations	40.0	32.7	-	<0.01
The GP is the expert	15.0	21.3	-	<0.01

Medicine-related domain	28.2	41.8	-	<0.01
Medicine may cause problems	15.8	18.6	-	0.05
Medicine has no benefit	10.0	20.7	-	<0.01
Alternative to medicine	5.6	9.3	-	<0.01
Personal experience	4.1	4.4	-	0.66
Age in vignette	7.1	1.5	-	<0.01

Rationale	Lack of benefit (%) (n=867)	Potential for harm (%) (n=856)	Lack of benefit and potential for harm (%) (n=933)	P-value
GP-related domain	55.7	54.4	51.5	0.13
Follow the GP's recommendations	37.1	35.5	35.4	0.69
The GP is the expert	19.7	19.2	16.6	0.19
Medicine-related domain	36.0	32.5	38.2	0.04
Medicine may cause problems	11.8	18.5	21.4	<0.01
Medicine has no benefit	21.6	9.4	16.5	<0.01
Alternative to medicine	7.3	8.1	7.5	0.82
Personal experience	5.3	4.8	2.8	0.02
Age in vignette	4.8	3.9	3.4	0.30

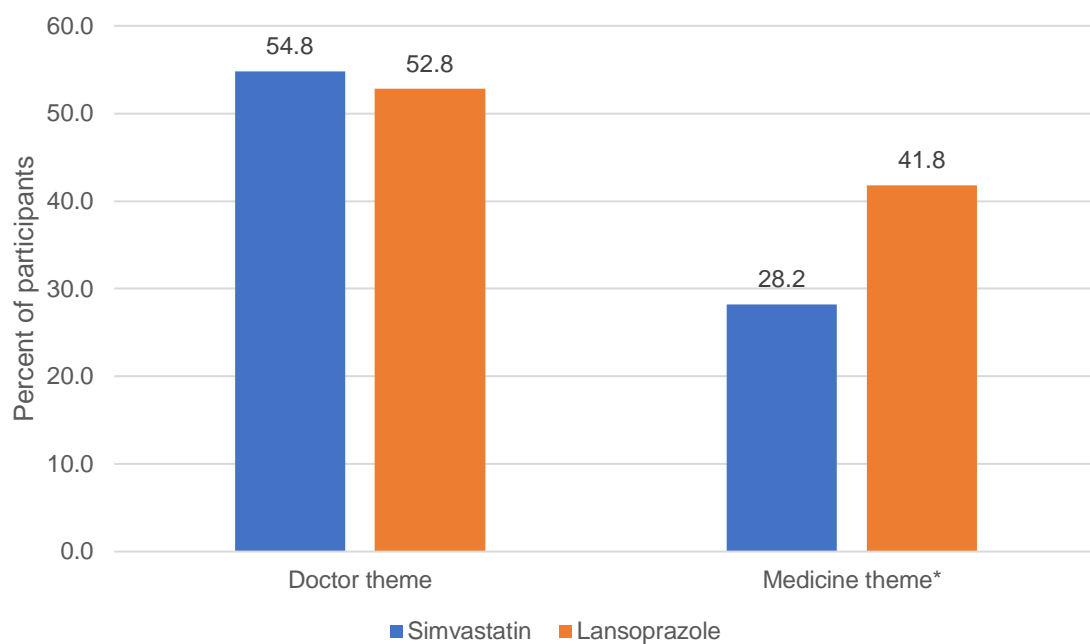
^a Transgender (n=4) or individuals with a different gender (n=3) were excluded from this analysis due to the small sample size

Figure 1. Study flow chart



Accepted

Figure 2. Frequency of primary domains by medicine provided in hypothetical vignette



*P<0.01

Accepted