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Hege Therese Bell, Aslak Steinsbekk & Anne Gerd Granas

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ORIGINAL ARTICLE

Factors influencing prescribing of fall-risk-increasing drugs to the elderly: A qualitative study

HEGE THERESE BELL[1,2], ASLAK STEINSBEKK[2] & ANNE GERD GRANAS[3]

[1]*Department of Pharmacy, Faculty of Health Sciences, Nord-Trondelag University College, Namsos, Norway,* [2]*Department of Public Health and General Practice, Norwegian University of Science and Technology, Trondheim, Norway,* [3]*Department of Life Sciences and Health, Faculty of Health Sciences, Oslo and Akershus University College, Oslo, Norway*

Abstract

Objective. Explore the situations in which GPs associate drug use with falls among their elderly patients, and the factors influencing the prescribing and cessation of fall-risk-increasing drugs (FRIDs). *Design*. A qualitative study with 13 GPs who participated in two semi-structured focus groups in Central Norway. Participants were encouraged to share overall thoughts on the use of FRIDs among elderly patients and stories related to prescribing and cessation of FRIDs in their own practice. *Results*. The main finding was that GPs did not immediately perceive the use of FRIDs to be a prominent factor regarding falls in elderly patients, exceptions being when the patient presented with dizziness, reported a fall, or when prescribing FRIDs for the first time. It was reported as common to renew prescriptions without performing a drug review. Factors influencing the prescribing and cessation of FRIDs were categorized into GPs' clinical work conditions, uncertainty about outcome of changing prescriptions, patients' prescribing demands, and lack of patient information. *Conclusions*. The results from this study indicate that GPs need to be reminded that there is a connection between FRID use and falls among elderly patients of enough clinical relevance to remember to assess the patient's drug list and perform regular drug reviews.

Key Words: *Drug review, elderly, falls, general practitioner, inappropriate prescribing, primary care, qualitative, Norway*

Introduction

Injuries caused by falls are one of the leading causes of death in elderly, and often lead to longstanding pain and disability [1,2]. The underlying causes of falls are multifaceted, including a combination of biological and environmental factors [3]. A number of drugs called fall-risk-increasing drugs (FRIDs), mainly those affecting the cardiovascular and the central nervous system, have been found to increase the risk of falls [3–6].

Inappropriate prescribing occurs commonly among elderly patients [7–9]. The sum of multiple disease, changed metabolism of drugs, and insufficient knowledge concerning how to use the drugs puts the elderly at higher risk for adverse drug events such as falls. The consequences of such adverse drug events are also decreased quality of life and high cost of health care [10].

General practitioners (GPs) usually manage the whole treatment, including medication management, for the elderly living at home, and they are therefore the main prescribers of FRIDs. Prescribing patterns in general practice vary and cannot be accounted for on purely pharmacological grounds [11]. Inappropriate prescribing of benzodiazepines and z-hypnotics for the elderly is common despite guidelines advising the contrary [12] and many physicians have poor knowledge of guidelines or are unaware of them [13]. General practitioners report that they experience conflicts between adhering to national guidelines and follow the patient's preferences [14].

However, there is still a lack of studies exploring the GPs' motives for providing medical prescriptions [15]. Knowledge regarding whether the GPs associate drug use with falls and how this might affect clinical practice is thus important. The aim of this

Correspondence: Hege Therese Bell, Høgskolen iNord-Trøndelag, Finn Christensens veg 1, NO-7800 Namsos, Norway. Tel: +47 920 80 915. E-mail: hege.t.bell@hint.no

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- Injuries caused by falls often lead to longstanding pain and disability and are one of the leading causes of death in the elderly. Psychotropic, antihypertensive, and cardiovascular drugs (termed FRIDs) contribute to the risk of falls.
- It was found that the GPs did not perceive drugs as a prominent factor in causing falls among the elderly. It was reported as common practice to renew FRIDs without further considerations.
- Access to and quality of the prescribing and de-prescribing support tools, handling outcome uncertainty, and patient demands were said to influence practice.
- GPs need to recognize the connection between FRID use and falls as of enough importance to change practice and perform regular drug reviews.

study was therefore to explore whether GPs associate drug use with falls among their elderly patients, and the factors influencing prescribing and cessation of FRIDs.

Material and methods

This was a qualitative study with focus-group interviews of GPs held in Central Norway during May and June 2013. The Regional Ethics Committee for Research in Medicine of Central Norway approved the study, and the participating GPs signed written consent.

Setting

In Norway, all citizens are entitled to have a GP who is responsible for providing general healthcare, and 99.6% of the population were registered with a personal GP by the end of 2012. In 2009 the elderly above 60 years had on average more than three consultations per year and those above 80 years up to five [16]. GPs have access to support tools for prescribing and cessation of possible inappropriate drugs for elderly, such as the NORGEP criteria (Norwegian General Practice Criteria) [17], the START/STOP criteria (Screening Tool to Alert doctors to the Right Treatment/Screening Tool of Older People's potentially inappropriate Prescriptions) [18], checklist on how to perform drug reviews [19] and the National Guidelines on the Use of Habit Forming Drugs [20]. The latter includes the driving licence regulation, which explains explicitly how much of a specific prescription drug a driver is allowed to use whilst driving.

New GP legislation from 2013 states that for patients who use four or more drugs the GP is supposed to perform drug reviews when considered necessary from a medical point of view [21]. However, this regulation does not state the frequency of drug reviews or whether they should be multidisciplinary.

Informants

The aim was to recruit GPs with experience in prescribing for the elderly. To ensure variation, we recruited GPs of both genders, with different length of experience and from different GP offices. Participants were recruited through two peer-continued medical education groups (CME). To keep their specialization, GPs in Norway are obligated to attend such groups at least three times, for a minimum of six hours, during each 12-month period [22].

Data collection

The semi-structured focus-group [23,24] interviews were conducted as part of an already scheduled CME meeting. The interviews lasted approximately one hour and were led by the first author (HTB). The term FRIDs was accounted for by referring to the drug groups psychotropic drugs, antihypertensive drugs, and cardiovascular drugs [25,26]. The open-ended questions in the interview guide used for this study were:

- In which situations do you associate drug use with falls among the elderly above 65 years and what factors influence your prescribing and cessation of FRIDs?
- What are your overall thoughts on the use of FRIDs amongst elderly patients?
- What are your experiences of consultations with elderly patients and their next-of-kin regarding FRIDs?

Data analysis

The focus-group interviews were digitally recorded and transcribed verbatim. They were analysed using the method of systematic text condensation [27], which consists of an iterative four-step process. In the first step, all authors read the transcripts, and preliminary themes were then identified and discussed. In the second step, the transcripts were coded according to these themes by identifying meaning units and the main themes were adjusted. In the third step, the meaning units were arranged into subthemes and a condensate was made of each theme and sub-

theme. In the last step, an analytic text was produced based on each theme and subtheme. The themes and the analysis were discussed in an extended research group to ensure validity. During the whole process, the authors went back to the transcripts to ensure that the analysis was based on them.

Results

Participant characteristics are listed in Table I. When starting the interviews the GPs' immediate response was that they did not perceive the use of drugs among their elderly patients to be a prominent factor in causing falls. Upon reflection two exceptions were expressed: when they received an external probe to do a drug review and when they prescribed FRIDs for the first time. The factors influencing the prescribing or cessation of FRIDs were categorized into the following subthemes; consultation time, guidelines and prescribing support, uncertainty about outcome of change in FRIDs, patient's demand for prescriptions, and not getting all information about the patient.

Drugs not perceived as a prominent risk factor for falls

The sum of multiple factors such as alcohol use, slippery floors, domestic obstacles, multiple diseases, and poor quality of life were spontaneously mentioned by the GPs to be equal or more important contributors to falls than drugs. After further elaboration antihypertensive drugs were also mentioned as a potential challenge due to orthostatic hypotensive side effects. Orthostatic hypotension was perceived to be a greater contributor to falls than the use of psychotropic drugs.

> To be honest I believe it is the sum of many factors like alcohol, domestic traps, multiple diagnosis, and bad quality of life, due to poor sleep, that makes them fall. (Male GP, 10 years of practice)

Table I. Participant characteristics.

	Focus group 1 n = 5	Focus group 2 n = 8	Total n = 13
Female (n)	1	2	3
Years as GP (n)	7–11	11–36	7–36
Specialist in general practice	4	8	12
Specialist in another medical discipline	1	1	2
Number of different GP offices	5	7	11*

Note: *One GP from FG1 and one from FG2 came from the same GP office and two GPs in FG2 worked at the same GP office.

When asked how consultations regarding FRIDs took place and how they communicate with the patient the GPs said that the majority of their elderly patients had used the same FRID for many years. It was therefore common practice to renew any prescription without performing a drug review, the reason being no perceived medical indication for a change and also reluctance to change a treatment that seemed to work even though they knew patients received potentially inappropriate prescriptions. The GPs would continue to prescribe FRIDs if they perceived that termination of that medication would negatively affect the patient's quality of life. Drug addiction was generally not seen as a problem in this patient group compared with younger patients.

> Long-term treatment passes by without my questioning. We know that inappropriate combinations occur sometimes, but we daren't make changes since things seem to work, at least to a certain extent. (Female GP, 7 years in practice)

One situation leading to a consideration of the drug prescribed was if a patient had fallen or had presented with symptoms such as dizziness. This information could come from the patient, the next-of-kin or in a hospital discharge letter. Some GPs said they especially appreciated discharge letters in which someone had done a medical review and made suggestions for alterations on their prescribing. These external probes triggered considerations and decisions about whether to terminate the drug or change its dose. This made them aware of those previously effective drugs that might now be ineffective due to physiological age-related changes. It was said that discharge letters could serve as a general reminder of regular drug reviews for the elderly.

> If a patient has fallen I feel guilty, and the patient's medication list comes to mind as a possible explanation. (Male GP, 26 years in practice)

The initiation of a new FRID was also a situation where drug use was linked to falls. In this case, an accurate diagnosis was said to be important to ensure correct prescribing; to do a thorough examination of the patient in order to ensure that there was an indication for the drug; and to exclude other possible explanations for the symptoms. Before prescribing hypnotic drugs, some GPs said they would initially make an effort to explain changes in sleep patterns due to age, to make it clear to the elderly patient that they could not necessarily expect to sleep as much as when they were younger. If the consultation resulted in a prescription, they would thoroughly explain both effects and side effects. First-time

prescribing of FRIDs was perceived to occur more rarely than renewal of existing prescriptions.

> It is very important that the diagnosis is 110% and that they use the drug only for a short period of time. Start low and go slow. (Male GP, 23 years in practice)

Consultation time, guidelines, and prescribing support

The GPs said that the time set aside for consultations affected prescribing since elderly patients usually do not visit very often but when they do, they present with many issues. The perceived high workload, resulting in little time for each issue, was therefore given as a reason for renewed prescription of FRIDs.

> If he struggles with his sleep that is only one of many problems. I do not arrange a new appointment to just talk about his drugs. That will be a complication for both him and me. (Male GP, 9 years in practice)

Existing national prescribing guidelines were not perceived to be suitable when prescribing drugs for the elderly. The reasons given were that such guidelines cover only one disease and therefore do not reflect the complexity in primary care. In addition elderly people with polypharmacy and multiple diseases were perceived as very different from the population the guidelines were based on. Lack of suitable guidelines therefore contributed to the habit of renewing FRID prescriptions without a drug review. The GPs felt that if they were to follow all existing guidelines for a patient with multiple diseases the patient would be prescribed many more drugs than were appropriate. Some GPs also reflected upon the age at which they should stop attempting to prevent future diseases in a patient, since there is a trend for existing guidelines to no longer define an age limit.

A pull factor that could initiate change in prescribing of FRIDs and other drugs was the electronic prescription system and the multi-dose drug-dispensing system. One GP said that these two systems improved the possibility of gaining an overview of the patient's drug use and also of preventing over-prescribing and misuse. Some of the informants also found it helpful to receive notifications from the electronic prescription system when patients had picked up prescriptions in the pharmacy, allowing them to monitor adherence. However, on the push side another GP strongly expressed frustration related to too many alerts by the software indicating drug interactions; this was perceived as annoying and counterproductive.

> These new systems have forced me to go through the medication lists frequently. When I use the electronic prescription system, the whole medication list is presented each time I prescribe. I can no longer say, "I forgot you were using that drug" when talking to a patient. It also forces me to reflect on whether the patient really needs all these drugs or if I should remove some of them. (Male GP, 36 years in practice)

Uncertainty about outcome of change in FRIDs

Handling outcome uncertainty was perceived as a factor affecting both the prescribing and the cessation of FRIDs. To know that a drug might both be beneficial and harmful was described as a dilemma. When it was considered appropriate to end a FRID, decisions were made depending on the class of drug and the specific disease. The GPs described incidents in which terminating a drug had worsened the patient's condition, but also the opposite when reducing the number of drugs to a bare minimum made the patients blossom. The paradox of not being able to predict the outcome of changes in drug treatment was perceived as challenging and uncomfortable. They found it easier to remove drugs the patient did not like, such as antihypertensive drugs, compared with psychotropic drugs. They assumed that from the patient's point of view this had to do with the type of withdrawal symptoms or absence of such, and also with the patient's experience of the condition being treated. The GPs said that the patients might be reluctant to terminate psychotropic drugs due to the drug being perceived as an assurance in life, and that termination of the drug would create great discomfort and a nocebo effect. From the GPs' point of view, they found it easier to explain and understand the pharmacological causality of adverse drug reactions such as dizziness from antihypertensive drugs compared with reactions from psychotropic drugs. The knowledge that physiological changes often lead to orthostatic hypotension due to ageing itself was mentioned as a reason, but it was also perceived as easier to examine the possible correlation between dizziness and orthostatic hypotension.

> I find it is easier to remove antihypertensive drugs compared with psychotropic drugs, since I better understand the pharmacological correlation between the effect of the drug and the symptom of dizziness. (Male GP. 9 years in practice)

Patients' demands for prescription

Prescribing demands by the patient were not mentioned spontaneously by the GPs. When asked, the GPs described the elderly as modest and

undemanding compared with younger patients. However, they could put some pressure on the GPs, e.g. by asking for their annual prescription of sleeping pills just before leaving the consultation room leaving little chance for discussion. In addition the GPs described situations where the elderly person or next-of-kin expressed a deep need for sleeping pills and the GP found it unpleasant to say no. One GP expressed that he found it easier to say yes and that it was a limitation to how many times he had the energy to say no during one day. It was described as unpleasant to say no, in spite of the drugs' potential side effects, when the GP perceived the drug to be a possible solution to the patient's problems.

> Many patients are very fond of their drugs and are very reluctant to end the treatment. Then my threshold to let them continue is often low. (Female GP, 11 years of practice)

It was described as difficult to terminate a drug due to a feeling of letting the patient down, especially in those patients who had used the drug for a very long time. Deeper conversations and pharmacological explanations were mentioned as the best approach to getting the patient to support the decisions for termination or dose-reduction of a drug. When the patient offered resistance to terminating a psychotropic drug the GPs said they appreciated if they could get others to support their decisions, like receiving a specialist's second opinion or that of the next-of-kin. They perceived it to be easier for the patient to accept a drug termination when more than one professional supported the decision.

> It might be our bad consciences that make it easier to write a prescription. Most patients are initially more satisfied if they get one. But if you take time to talk, the majority of patients will understand that a prescription is not always the only possible solution. (Male GP 36 years of practice)

The GPs generally agreed that their patients sometimes take FRIDs such as psychotropic drugs for too long and at too-high dosages. However, this was said to be difficult to alter because the GPs perceived that the patients were not motivated for change. The driving licence regulation was highlighted as a gateway to change, as the GPs could use the dose range given in the regulation to both explain side effects related to the drug's use and to justify a drug's termination. By using this regulation, they felt they could shift the responsibility for such a difficult decision onto the authorities.

> If I use the driving licence regulation to justify termination of a drug, it feels as though it is not solely my decision and I am no longer the "executioner". Then they have the choice of either keeping their driving licence or the psychotropic drug. (Male GP, 8 years in practice)

Not getting all information about the patient

The GPs told of situations where they felt that they did not have all the relevant information about the patient and this was said to affect both prescribing and termination of FRIDs and whether they performed drug reviews. Patients sometimes withheld important information concerning side effects from the GP, in fear of either being taken off the drug or being forced to move home to a nursing home.

The next-of-kin attending the consultation with the patient was in this regard viewed as helpful to ensure that vital information was available and exchanged. The next-of-kin could also help to gain better insight before making a decision, especially so for patients living in nursing homes.

> We need to rely upon our observations and the information given by the patient at consultations. Sometimes we need to act without having access to the whole picture. (Male GP, 36 years of practice)

Discussion

Drug use was not immediately perceived by the GPs as a prominent factor in falls among the elderly. It was reported as common practice to renew FRIDs without further consideration of the drugs in use. Factors such as the GPs' clinical work conditions, uncertainty about outcome of changing prescriptions, patients' prescribing demands, and lack of patient information were also found to affect prescribing and cessation of FRIDs and whether a drug review was performed.

Strengths and limitations

The strength of this study was the wide variation in the sample regarding working experience, gender, and GP offices. Since we used existing CME groups, the interviewees knew each other in advance and this might have contributed to a more relaxed and free-speaking environment. However, any former disagreements might have limited the discussions.

Two of the authors being pharmacists (first and last author) with an interest in and experience of issues related to appropriate drug prescribing and patient empowerment would naturally affect what is emphasized in the results. It cannot be ruled out that the GPs avoided some points due to social desirability, but our

judgement is that we obtained a fair representation of their actual opinions, as some of the things that were said could be perceived as reflecting negatively upon the GPs.

A limitation was that the interviewees came from CME groups in only one city in Norway. Although this might hamper the transferability, the findings are similar to other studies in other contexts indicating that some general themes identified have external validity [28]. The numbers of focus groups were low and saturation might not be met. However, there are similar studies with the same number of focus groups and participants [28].

Contribution of FRIDs in falls

The GPs in this study correctly identified some of the other central risk factors for falls that have been documented in the literature in addition to drug use, such as advanced age, previous falls, increased disability, musculoskeletal problems, and neurological diseases [3,29]. Diseases such as depression, heart failure, or hypertension may increase fall risk, but so also may the drugs used to treat these conditions, and the fall risk increases with an increasing number of simultaneously occurring chronic diseases and risk factors present [25,26,30].

However, the GPs in our study did not consider drug use to be an important enough risk factor for falls in general to let it affect their habit of renewing prescriptions of FRIDs without performing regular drug reviews. This is in contrast to research findings, in which the use of FRIDs is found to be associated with an increased risk of falls even after adjustment for comorbid conditions and disability [3]. Several others have confirmed the relationship between number of prescription drugs and falls, although the definition of polypharmacy has varied [25,29,31–33]. Higher doses of antihypertensive drugs have been shown to be independently associated with falls in older people, with a 48% greater risk in those with a daily defined dose of more than three, particularly in those with a history of stroke [34]. In particular the use and dose of psychotropic drugs such as hypnotics/anxiolytics and antidepressants has been linked to falls even when adjusted for chronic disease status [30,35,36].

In light of both polypharmacy and multimorbidity being factors that increase the risk of falls, it is understandable that this complexity might give rise to insecurity when assessing the prescribing and cessation of FRIDs for elderly patients. The GPs in our study had experienced both favourable and unfavourable results of changing prescription, creating an uncertainty about which outcome to expect and an attitude that it might be better not to change prescriptions and therefore to renew prescriptions of FRIDs. Whether this is anchored in a fear of making mistakes was not further looked into in this study, but other studies has showed that there exist "non-pharmacological" prescribing reasons [11,37].

Different tools have been developed to assist GPs in these complex situations such as the Beer criteria [38], the START/STOP criteria [18], and the NORGEP criteria [17]. There is less research performed on assisting best-practice de-prescribing [39] and the lack of such research might have an impact on GPs' habit of keeping the status quo and not terminating possibly inappropriate drugs. The GPs in this study reported being more influenced on cessation of FRIDs from national prescribing support initiatives than guidelines since the latter were perceived as not suitable. This is consistent with other research showing that external validity of research evidence-based guidelines is perceived as problematic in general practice [40]. Both the e-prescription system and the driving licence regulation were perceived by the GPs as of great value. By using the driving licence regulation they felt they could shift the responsibility of the difficult decision on to the government. This was in contrast to when they used guidelines and criteria and might felt that they had to vouch for the decision by themselves. This might indicate a greater wish for shared decision-making than revised guidelines.

Regular drug reviews

Our results indicate that GPs do not necessarily follow the precautionary principle when prescribing FRIDs to the elderly. Research has shown that drug-related events such as falls are often associated with unnecessary prescriptions [41], too long a duration of drug treatment [42], and the lack of drug reviews on repeated prescriptions [43]. It has been stated that it is important to review the indications and evidence for continuing long-standing drugs on a regular basis for elderly patients [44–47] and re-evaluation of drug therapy has been mentioned by several authors as one of the major prevention strategies against falls [48,49]. A thorough anamnesis, regular blood pressure control, and regular drug reviews have been suggested to be obligatory tasks to prevent falls in all parts of the health care system [50].

Since the GPs in this study did not spontaneously comment on the drug-review paragraph in the new GP legislation, and the reimbursement connected to it [21], there is still an open question as to whether this will lead to regular drug reviews. The GPs stated that they appreciated hospital discharge letters where someone at the hospital had performed a

drug review and made suggestions for alteration. This might indicate that the GPs could be open to accept input on their drug care from others.

Drug reviews can be performed by GPs alone or supported by other health personnel, such as nurses and pharmacists [51]. Drug-review interventions where clinical pharmacists have formulated prioritized written recommendations to the GP have been associated with reductions in inappropriate prescribing in older outpatients showing a reduction of 24% compared with 6% in the control group [52]. In another study community pharmacists met with GPs to discuss possible drug changes based on clinical drug reviews. This showed a significantly improved Medication Appropriateness Index in the intervention group [53]. In light of the results of this study, where the GPs appreciated the ability of support in difficult situations, receiving input from other health personnel on possible changes in prescribing and cessation of FRIDs might be a reasonable way to reduce inappropriate prescribing of these drugs.

The results from this study indicate that GPs need to be reminded that there is a connection between FRID use and falls among elderly patients of enough clinical relevance to remember to assess the patient's drug list and perform drug reviews on a regular basis.

One way to change GPs' behaviour could be to offer the GPs help with reviewing their patients' prescriptions and suggest alterations.

Ethical approval

The Regional Ethics Committee for Research in Medicine of Central Norway approved the study, and the participating GPs signed written consent.

Declaration of interest

The authors report no conflict of interest. The authors alone are responsible for the content and writing of the paper.

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