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Healthcare utilization and knowledge concerning prescribed drugs among older people

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3 **Healthcare utilization and knowledge concerning prescribed drugs**
4 **among older people**
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ABSTRACT

Purpose: The aim of this study was to explore healthcare consumption in relation to more versus less knowledge concerning prescribed drugs among older people with functional dependency and repeated healthcare contacts and to explore determinants for more versus less knowledge

Methods: The sample comprised 63 persons (mean age 82.8). Data concerning use and knowledge about drugs, demographics, health complaints and self-reported diseases were collected from the baseline measure in an ongoing RCT and merged with data from two public registers about healthcare consumption two years prior to baseline measurement. Data were analysed descriptively and using regression analysis.

Results: 52% (n=33) of the sample had less knowledge (defined as not knowing the indications of 50% or less of their prescribed drugs) and these had more acute hospital stays (median 2 vs. 0), more total hospital stays (median 2 vs. 1) and more bed days in hospital (median 18 vs. 3) than those with more knowledge. Bed days and visits to other outpatient staff groups were associated with less knowledge; visits to physician were associated with more knowledge.

Conclusions: The healthcare consumption pattern of those with less knowledge differed from that of those with more knowledge in terms of more acute inpatient care. The results indicate that there is a need for the health system to create mechanisms to ensure that patients do not lose their knowledge about their drugs when admitted acutely; there is also an apparent patients educational interventions need starting at the time of admission.

Key words: Aged, Frail elderly, Drug use, Inpatient care, Outpatient care, Primary care.

INTRODUCTION

More knowledge is needed about frail older people's knowledge about their prescribed drugs in relation to their healthcare utilization. The use of healthcare increases with age but there is a group among the frail elderly who have a higher consumption in various agents. Condelius et al [1] investigated healthcare use during one year in a sample of 4907 people (aged 65+) and found that approximately 15% had three or more admissions. They also had more contacts with outpatient care than those with one admission (15 vs. 8 contacts in median). The study did not investigate aspects of drug use, which is one important aspect of healthcare consumption.

It is especially important that drug prescription and treatment procedures function optimally and that the patient knows about the prescribed drugs. Patients must be involved in drug procedures and be informed about the indications, expected effects and potential side effects so that they can actively participate in the treatment, evaluate it and communicate with caregivers. This is especially true for frail elderly since they are known to use several drugs and consume a great deal of healthcare from various caregivers.

Several studies have focused on various aspects of drug use in older people, mainly on: polypharmacy [2], medication errors [3], inappropriate drug use (i.e prescription of drugs that might be especially harmful to older people) [4] and adherence [5]. Age is the strongest predictor for using several drugs and polypharmacy (defined as a daily intake of five or more specific drugs) is common among older people. Haider et al [2] investigated the drug use of 626 258 people in Sweden aged 75 – 89 and found that polypharmacy occurred in 57% of the sample and that 18% had a daily intake of ten or more specific drugs. Polypharmacy was also more common among those of low socioeconomic status indicating that patient education

1
2 interventions targeting this group could be important. Polypharmacy may affect patient
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4 knowledge. In addition, when several caregivers are involved the risk of fragmentation and
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6 medicational errors might increase. This view was supported by Midlöv et al [3] who
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8 investigated 35 older people who were transferred between primary and secondary care. The
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10 results showed that on average two medicational errors occurred when a patient was
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12 transferred between caregivers. It is possible that fragmentation affects patient knowledge, but
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14 more knowledge is needed about this. The study, however, indicates that there is a need for
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16 the health system to develop mechanisms to prevent fragmentation.
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20 Older peoples knowledge about their drugs has been found to be poor [6-9], which might have
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22 an impact on adherence [10] and compliance [11]. A Danish study for instance investigated
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24 348 persons (aged 75+) and found that 60 percent knew about their medication [6]. There are
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26 many aspects to be considered when attempting to explain poor level of knowledge. Lack of
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28 communication between caregiver and patient might be one [12]; the patient's healthcare
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30 consumption might be another. More research is needed about patterns of healthcare use in
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32 relation to patient knowledge in order to gain a deeper understanding of the healthcare
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34 situation of frail older and to design interventions with a patient educational approach. Patient
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36 education interventions might increase patient knowledge. To design such interventions it is
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38 important to comprehend patient knowledge in relation to their healthcare use in order to
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40 target a relevant intervention group and also when in the healthcare process and where in the
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42 system interventions are most needed.
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AIM

The aim of this study was to explore healthcare consumption in relation to more versus less knowledge concerning prescribed drugs among older people with functional dependency and repeated healthcare contacts and to explore determinants for more versus less knowledge.

METHOD

This study employed a comparative design, using baseline data from an ongoing randomised controlled trial which were merged with data from two healthcare consumption registers.

Sample

The sample comprised 63 people (mean age 82.8). They were **participating in** an ongoing RCT aiming at evaluating the effects of a healthcare model using case managers for older people in a Swedish municipality [13]. This was carried out in a medium sized municipality (c.30 000 inhabitants) situated in the County of Skåne, Sweden. **The sample comprised everyone included in the RCT at the time for this present study and they were consecutively recruited from three clinics at a university hospital, through referrals from primary care or from the home care organisation. Information brochures were also placed in those settings making it possible for potential participants to refer themselves.** Inclusion criteria were that the participant should be aged 65 and above, need help with at least two activities in daily living, have had at least two hospital admissions, or four outpatient physician contacts, during the last twelve months. Exclusion criteria were cognitive impairment (defined as a Mini Mental Test score below 25 out of possible 30 [14]) and not being able to communicate verbally.

Data collection

The data used in this study were collected from three different sources. Baseline data from the ongoing case manager study were merged with data concerning healthcare consumption extracted from two registers regarding the two years prior to the baseline measure. In the case management study various data were collected during personal interviews using a questionnaire containing both single questions and instruments [13]. For the current study data concerning age, gender, marital status, living arrangements, health complaints, self-reported diseases and knowledge about prescribed drugs were used. **Health complaints were assessed using 30 questions about health complaints suffered during the last three months.** The questions were initially developed by Tibblin et al [15] and further developed by Stenzelius et al [16]. The responses were marked on a four-alternative ordinal scale varying from no complaint to much complaints. **Self-reported diseases were assessed according to the diagnostic groups used in the disease classification manual ICD-10 [17] and concerned diseases that the participants reported regarding the last three months.** Knowledge about prescribed drugs was assessed by means of questions developed by Modig et al [18]. For each prescribed drug the The participant's knowledge about the indication and side effects were assessed for each prescribed drug. The answers regarding indications were graded on a three-level ordinal scale: "Knowledge"; "Knowledge from written information" or "No knowledge". **For a participant to be assessed as having "Knowledge" they should be able to state the indication for using the drug. It could for instance mean stating that a certain analgesic was for back pain or that a hypotensive drug was used against high blood pressure.** Answers regarding knowledge about side effects were graded as "Yes" or "No".

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2 The county council in the region of Skåne has two similar patient administration systems,
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4 PASiS for publicly organised inpatient and outpatient care and PrivaStat for privately
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6 organised outpatient care. Individually based data about all consumption in the region are
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8 registered in the systems. Variables in the systems include contact date, length of stay (LOS)
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10 in hospital, acute or planned contact, responsible staff group (physicians, nurses,
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12 physiotherapists etc), diagnoses and medical specialty within which the contact occurred. A
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14 registered outpatient contact could be either a visit (face to face) or take some other form, e.g.
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16 a telephone conversation or a letter. In this study data about inpatient and outpatient contacts,
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18 LOS and inpatient diagnoses were used. The data were collected between 2004 and 2008 and
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20 information concerning healthcare consumption during the two years prior to the RCT
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22 baseline was assembled and used in the analysis.
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26 *Data analysis*

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28 The responses to the questions concerning knowledge about prescribed drugs was
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30 dichotomised into “Having” or “Not having” knowledge. Having knowledge was defined as
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32 being able to state the indications without reading them from a list. The number of drugs the
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34 participants knew about was summarised and then divided by their total amount of prescribed
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36 rugs in order to arrive at a percentage for knowledge. Those with less knowledge were
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38 defined as those who had knowledge concerning 50 percent or fewer of their drugs. Those
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40 with knowledge about 51 percent or more were defined as having more knowledge. These two
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42 groups were used in further analysis. Data about health complaints were dichotomised into
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44 Yes/No. The data about public outpatient care could be, and therefore were, divided into
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46 contacts in primary care and other specialist care (i.e somatic and psychiatric care). Student’s
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48 t-test was used in comparing ratio data. The Chi-square test was used for comparing nominal
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2 data and the Mann Whitney U-test was used for comparing ordinal data and when comparing
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4 healthcare consumption data since these were assumed to be skewed.
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8 Two regression analyses were conducted. A multiple logistic regression analysis (backward
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10 likelihood ratio) was performed to detect factors associated with having more (coded as 1) or
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12 less (coded as 0) knowledge about prescribed drugs. A multiple linear regression analysis
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14 (backward stepwise) was performed using the percentage of knowledge as the dependent
15
16 variable. The number of acute hospital stays, bed days, number of drugs, total visits to
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18 physicians and other staff groups in outpatient care (public and privately organised) and
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20 whether or not the participant received help with distributing the drugs, were entered as
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22 independent variables in both models. The goodness-of-fit of the logistic regression analysis
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24 was assessed using the Hosmer and Lemeshow goodness-of-fit test [19] and Nagelkerkes R^2 ,
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26 while adjusted R^2 was used for the linear regression model. In the linear regression analysis,
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28 the Kolmogorov-Smirnov test and histogram was used to test the residuals for normality and
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30 variation inflation factor (VIF) and tolerance were used to identify multicollinearity. The tests
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32 showed normal distributed residuals and no multicollinearity was detected. The data were
33
34 analysed using SPSS 14.0. The study was approved by the Regional Ethics Committee (no
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36 342/2006; 499/2008).
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39 **RESULTS**

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41 In the total sample (n=63), 43 were women, 38 were widowed and 32 received care and/or
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43 services at home (Table 1). With regard to healthcare consumption for the two years
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45 investigated in the total sample, the median number of hospital stays was 2 and the median
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47 number of bed days 9. The median number of visits to outpatient physicians were 19 and the
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49 corresponding figures for other staff groups were 15 (Table 2). The participants had a mean of
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2 7.3 (range 0-18) prescribed drugs and had knowledge about 3.7 (range 0-17); 79 percent of
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4 the sample did not have any knowledge about any side effects regarding any of their drugs. In
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6 total, 21 received help with distribution of the drugs. (Table 1).
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10 *Please, insert Table 1 about here.*
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14 Thirty-three had knowledge about 51% or more of their drugs and 28 had knowledge about
15
16 fewer. Those with more knowledge had in mean 6.7 and reported knowledge about 6 drugs
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18 compared with 8.4 (P= 0.124) and 1.2 (P <0.001) for those with less knowledge. Those with
19
20 less knowledge significantly more often received help with distributing their drugs. No
21
22 significant differences were found with regards to marital status, educational level, functional
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24 dependency, living arrangements or home care and/or social services (Table 1).
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28 **The five most common health complaints for both groups were difficulty walking (n=49),**
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30 **pain in extremities (n=48), dizziness (n=36), difficulty hearing (n=35) and memory**
31
32 **problems (n=34). No differences were found between those with more versus less**
33
34 **knowledge in this respect. The five most common self-reported diseases in the total**
35
36 **sample were diseases of the circulatory system (n=48), diseases of the eye and adnexa**
37
38 **(n=30), diseases of the respiratory system (n=16), certain infectious and parasitic**
39
40 **diseases (n=13) and endocrine, nutritional and metabolic diseases (n=13). No differences**
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42 **in this respects, however, were found between the groups (Table 3).**
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45 *Please insert Table 3 about here*
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2 Those with less knowledge about their prescribed drugs had more acute hospital admissions
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4 (median 2 vs. 0; $P=0.004$), more total hospital admissions (median 3 vs. 1; $P=0.01$) and more
5
6 bed days in hospital (median 18 vs. 3; $P=0.002$) during the two years investigated. No
7
8 significant differences were found regarding any other healthcare consumption variable
9
10 (Table 1). However, those with less knowledge had fewer visits to outpatient physicians
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12 (median 19 vs. 23) and more visits to other outpatient staff groups (20 vs. 11). With regard to
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14 total outpatient contacts (visits and other contacts), those with more knowledge had more
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16 contacts with physicians (median 37 vs. 32) and fewer contacts with other staff groups
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18 (median 26 vs. 30).

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22 Those with more knowledge had in total 69 acute hospital admissions compared to 33 among
23
24 those with less knowledge. Those with less knowledge had more acute hospital admissions
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26 and also a rapid increase in such admissions in the months prior to inclusion in the case
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28 management study, compared to those with more knowledge who exhibited the same
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30 tendency with less rapidity. Seventy one percent of the acute hospital admissions occurred
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32 within 6 months prior to baseline measure for those with less knowledge compared with 46%
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34 for those with more knowledge (Figure 1).

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37 *Please, insert Figure 1 about here.*
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42 The logistic regression analysis showed that acute inpatient care ($OR= 0.49$) was associated
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44 with having less knowledge and visits to outpatient physicians ($OR= 1.07$) was associated
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46 with more knowledge about prescribed drugs (Table 4). The multiple linear regression
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48 analysis showed that bed days in hospital ($B= -1.23$) and visits to other staff groups in
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2 outpatient care (B= -0.77) were associated with decreasing knowledge whilst visits to
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4 outpatient physician (B=1.63) were associated with increased knowledge (Table 5).
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8 *Please, insert Table 4 and 5 about here.*
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10 11 12 **DISCUSSION**

13
14 **Approximately 50% of the sample had less knowledge about their prescribed drugs.**

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16 **They had more acute admissions, more bed days in hospital and more often received**
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18 **help with distributing their drugs. Having more knowledge was associated with more**
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20 **contacts with physicians in outpatient care.**
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24 The sample in this study represents a frail group of older people with high healthcare
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26 consumption, functional dependency and polypharmacy. It is of great importance that they
27
28 receive adequate drug treatment and integrated care with interpersonal continuity. The
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30 regression analysis showed that having more contacts with outpatient physicians was related
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32 to having more knowledge (Tables 4 & 5). This could occur because those with more
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34 outpatient contacts also have a more stable health and less need of inpatient care. It could also
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36 be a matter of continuity. It is well known that physicians play an important role in educating
37
38 patients. Physicians who communicate with the patients and inform them about the prescribed
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40 drugs used may increase adherence [12]. It is possible that outpatient visits – especially in
41
42 primary healthcare – imply that the patient meets the same physician and this in turns
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44 produces interpersonal continuity, more informed patients and greater drug knowledge. **The**
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46 **findings from the regression models were however not supported in the group**
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48 **comparisons (Table 2). This may be explained by that in regression analyses possible**
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2 **confounders are hold constant. In addition, the sample was small and it may have**
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4 **affected power in the group comparisons.**
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8 One striking finding was that the vast majority did not have any knowledge about any side
9 effects of their treatment. Such knowledge is important for the patient since it gives them the
10 possibility of recognising abnormal symptoms and side effects and knowing when to seek
11 help. There is apparently a need not only to inform the patient about the drug indications but
12 also about potential harm the treatment entails.
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19 **Approximately fifty percent of the sample was judged to have less knowledge about**
20 **their prescribed drug which is in line with the study by Barat et al [6]. However they did**
21 **not use the same measure as this present study. Less knowledge in this present study was**
22 **defined as being able to state the indications of less than 50% of the drugs used. This cut**
23 **off was arbitrary and to our knowledge a similar measure has not been used before in**
24 **previous research. Thus, more knowledge is needed about aspects related to the validity**
25 **and reliability and the result has to be interpreted in the light of this. However the**
26 **participants had in mean 7.3 prescribed drugs and the group defined as having less**
27 **knowledge knew about in mean 1.2 drugs compared to 6 in the group with more**
28 **knowledge indicating that the overall measure discriminated well between the groups**
29 **and hence could be seen as a useful measure (Table 1).**
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43 **Those with less knowledge seemingly had a different healthcare consumption pattern**
44 **during the two investigated years in terms of their having more bed days in hospital and**
45 **more acute admissions (Table 3). In addition a large proportion of these admissions**
46 **occurred a few months prior to when their knowledge was investigated (Figure 1). The**
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2 regression models (Tables 4 & 5) further confirmed that acute inpatient care appears to **be**
3 **associated with** less knowledge. This study does not reveal any information about changes in
4 knowledge during the two years when healthcare utilization was investigated and this is a
5 weakness. The results, however, indicate that those with less knowledge had experienced a
6 more turbulent health situation compared to those with more knowledge in the months prior to
7 inclusion in the RCT. Less knowledge was not explained by having more drugs or a high
8 ADL dependency. It is well known that the healthcare delivered to frail elderly people may be
9 fragmented as several agents are involved [4 and it is possible that repeated acute admissions
10 cause discontinuity and repeated changes in medication regime, which in turn cause the
11 patients to lose control over their drugs. Having less knowledge was also more common
12 among those who received help distributing their drugs.

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26 It has been acknowledged that the transfer between secondary and primary care is a critical
27 point in healthcare delivery to older people and efforts have been made to improve various
28 aspects of this process [20]. It is also important to include and inform the patient in this
29 process and not only focus on eliminating errors in the treatment. Educational interventions
30 may improve patient knowledge and this study indicates that they might be needed when the
31 patient's are acutely admitted. **There are many reasons behind why frail older people seek**
32 **health care and thus an intervention programme targeting health care consumption**
33 **must have a broad approach. It is possible that increased knowledge about drugs is one**
34 **important aspect that may have an impact on health care consumption. For example,**
35 **Blue et al [21] investigated the effects of a nurse intervention in a sample (n=165) of**
36 **older people with heart failure on mortality and healthcare consumption. The**
37 **intervention comprised home visits and education about heart failure and treatment**
38 **optimisation (drugs etc). The results showed a significant decrease of readmissions to**
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2 **hospital. The intervention was complex and comprised more than drug education.** It is
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4 however possible that **the current** methods to provide information in acute care are not in
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6 accordance to the need of frail older people with a great need for medical care and that a
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8 different pedagogical approach is needed. It is possible that they need more follow ups and
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10 extensive verbal and also individual written information not only about the drug indication but
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12 also about effects and side effects. It might also be valuable to include the patients' outpatient
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14 physician in this process and to make efforts to put in place mechanisms for transferring
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16 information between caregivers. This might be especially important for frail older people.
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18 19 20 *Study limitations*

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22 The sample in this study were recruited from an RCT and this narrows the possibilities of
23
24 generalizing the findings, since the inclusion criteria aimed at targeting a frail group with high
25
26 healthcare consumption. **Diseases and symptoms were based on self-reported data.**
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28 **However the risk for recall bias was reduced by that the questions investigated**
29
30 **complaints and diseases suffered during the last three months, which is a relatively short**
31
32 **time period. The participants did not have any cognitive impairment and no differences**
33
34 **were found regarding functional dependency. The study was cross-sectional and the**
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36 **design does not allow any conclusions about causal relationship.** In addition the sample
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38 was small and this may have affected power. Thus generalisations have to be made with
39
40 caution. However, the study still contains unique information about a group of frail people
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42 since data sets were combined and cross-sectional data may reveal relevant relationships
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44 between variables.
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46 47 **CONCLUSIONS**

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2 The results indicates that there is a need for the health system to create mechanisms which
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4 will ensure that patients do not lose knowledge about their drugs when admitted to hospital
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6 and there is an apparent a need for educational interventions starting when the patient is
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8 acutely admitted. Close to 80% of the participants did not have any knowledge about any
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10 potential side effects, indicating a need for healthcare staff to focus on this in the drug
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12 administrating process.
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For Peer Review

Table 1. Demographics and drugs among those with high vs. low knowledge

Group	Total ¹ (n=63)	Less Knowledge (n=28)	More Knowledge (n=33)	P
Age, mean (SD), range	82.8 (6.3) 69-94	83.8 (6.0) 74-93	82.5 (6.4) 69-94	0.590 ³
Women ,n (%)	43 (68)	16 (57)	26 (78)	0.069 ⁴
Municipal care, n (%)	32 (51)	12 (43)	18 (55)	0.363 ⁴
Drugs				
- number, m (SD), range	7.3 (3.9) 0-18	8.4 (3.6) 1-18	6.7 (3.8) 0-17	0.124 ³
- Knowledge about n of drugs, m (SD), range	3.7 (3.7) 0 -17	1.2 (1.7) 0-5	6.0 (3.5) 2-17	<0.001 ³
Help with distribution from, n (%) ²				0.009 ⁴
- Next of kin	8 (15)	6 (21)	1 (3)	
- Homecare staff	13 (21)	9 (32)	4 (12)	
- No help	36 (57)	12 (43)	24 (73)	
- Apodos	7 (11)	5 (18)	2 (6)	0.249 ⁴
Marital status, n (%)				0.751 ⁴
- married	15 (24)	8 (29)	6 (18)	
- widow/er	38 (60)	17 (61)	20 (61)	
- unmarried	5 (8)	2 (7)	3 (9)	
- children	55 (87)	26 (4)	4 (12)	
Living conditions, n (%)				0.355 ⁴
- House	18 (29)	9 (32)	8 (24)	
- Rented apartment	27 (40)	12 (43)	12 (36)	
- Private apartment	19 (30)	9 (32)	13 (39)	
- other	1 (2)	1 (4)	0 (0)	
Educational level (%)				0.347 ⁴
- Primary <8 years	36 (57)	13 (46)	23 (70)	
- Secondary >8 years	26 (41)	14 (50)	10 (30)	
- Third level/University	1 (2)	1 (4)	0 (0)	

¹⁾ 2 are missing in group comparisons; ²⁾ 6 are missing; ³⁾ Students t-test; ⁴⁾ Chi-square test.

Table 2: Healthcare consumption over two years among those with knowledge about less vs. more than 50% of their prescribed drugs

Variable	Total (n=63 ¹)			Less knowledge (n=28)			More knowledge (n=33)			P ²
	median	(q1-q3)	range	median	(q1-q3)	range	median	(q1-q3)	range	
<i>Inpatient care</i>										
Acute	1	(0-3)	0-9	2	(1-3)	0-5	0	(0-2)	0-4	0.008
Planned	0	(0-1)	0-6	0	(0-1)	0-2	0	(0-1)	0-6	0.911
Total	2	(0-3)	0-11	2	(1-3)	0-5	1	(0-3)	0-9	0.011
Bed days	9	(0-24)	0-91	18	(9-25)	0-43	3	(0-9)	0-62	0.002
<i>Outpatient care</i>										
Physicians (visits)										
Primary care (public)	7	(5-12)	0-32	8	(4-12)	0-24	8	(5-12)	0-32	0.581
Other specialist (public)	6	(3-9)	0-65	7	(3-9)	0-33	6	(4-8)	1-27	0.561
Privately organized	4	(1-6)	0-27	3	(1-6)	0-27	5	(2-8)	0-19	0.180
Total	19	(14-26)	4-77	19	(13-24)	4-77	23	(16-26)	5-48	0.218
Total contacts (visits+other)	37	(26-51)	8-106	32	(25-57)	8-106	37	(26-49)	10-91	0.937
Other staff groups (visits)										
Primary care (public)	9	(3-28)	0-65	16	(4-35)	0-65	7	(3-17)	0-42	0.171
Other specialist (public)	0	(0-2)	0-18	1	(0-2)	0-12	0	(0-3)	0-8	0.881
Privately organized	0	(0-3)	0-114	0	(0-3)	0-114	0	(0-4)	0-29	0.778
Total	15	(6-33)	0-160	20	(6-47)	0-160	11	(6-25)	2-45	0.149
Total contacts (visits+other)	27	(16-54)	3-177	30	(15-64)	7-177	26	(18-50)	3-80	0.734

1) 2 are missing in group comparisons; 2) Mann Whitney *U*-test

Table 3: Self reported diagnostic groups, health complaints among those with less vs. more knowledge about their prescribed drugs.

Sample	Total ¹ (n=63)	Less knowledge (n=28)	More knowledge (n=33)	P ²
Number of diagnostic groups, m(SD), range	3.1 (1.7) 0-8	3.9 (1.9) 1-8	3.1 (1.5) 0-6	0.205
Number of complaints, median m(SD), range	12 (4.9) 2-22	11 (5.0) 2-22	12 (4.7) 3-22	0.755
Most common diagnostic groups, n (%)				
- Certain infectious and parasitic diseases	13 (21)	6 (21)	6 (18)	0.751
- Endocrine, nutritional and metabolic diseases	13 (21)	4 (14)	9 (27)	0.217
- Diseases of the eye and adnexa	30 (48)	13 (48)	17 (52)	0.795
- Diseases of the circulatory system	48 (76)	24 (86)	23 (78)	0.138
- Diseases of the respiratory system	16 (26)	7 (25)	8 (24)	0.945
Most common complaints, n (%)				
- Difficulty controlling urine	30 (48)	12 (43)	18 (55)	0.363
- Pain	48 (76)	22 (79)	25 (76)	0.795
- Oedema in the legs	32 (51)	13 (46)	18 (55)	0.527
- Memory problems	34 (54)	16 (57)	17 (52)	0.660
- Difficulty hearing	35 (56)	15 (54)	19 (58)	0.754
- Dizziness	36 (59)	16 (57)	19 (58)	0.973
- Breathlessness	39 (56)	18 (64)	20 (61)	0.768
- Fatigue	38 (60)	16 (57)	21 (64)	0.605
- Low mood and depressed	29 (46)	13 (46)	14 (42)	0.754
- Difficulty walking	49 (78)	22 (79)	25 (76)	0.795

¹⁾ 2 are missing in the group comparisons; ²⁾ Chi-square test.

Table 4: Logistic regression (backward LR) model regarding variables associated with more (1) or less (0) knowledge about prescribed drugs. (n=56).

Variable	OR	95% CI for OR	P
Acute inpatient care	0.490	0.296 – 0.809	0.005
Outpatient physician visits	1.066	1.001 – 1.136	0.047

Variables with no significance and therefore excluded from the model were no of bed days in hospital, no of visits to other outpatient staff groups, total number of drugs, and receiving help with distributing the drugs. With a Hosmer and Lemeshov goodness of fit test= p 0.824 and Nagelkerke R square = 0.301 for the model.

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Table 5: Multiple linear regression (backward stepwise) model regarding variables associated with percentage of knowledge (n=56).

Variable	B	95% CI for B	P
Bed days in hospital	-1.23	-2.04 – -0.41	0.004
Visits outpatient physician	1.63	0.37 – 2.88	0.012
Visits outpatient other staff	-0.77	-1.32 – -0.21	0.008

Variables with no significance and therefore excluded from the model were, acute inpatient care, total number of drugs, and receiving help with distributing the drugs. With R square = 0.212 for the model.

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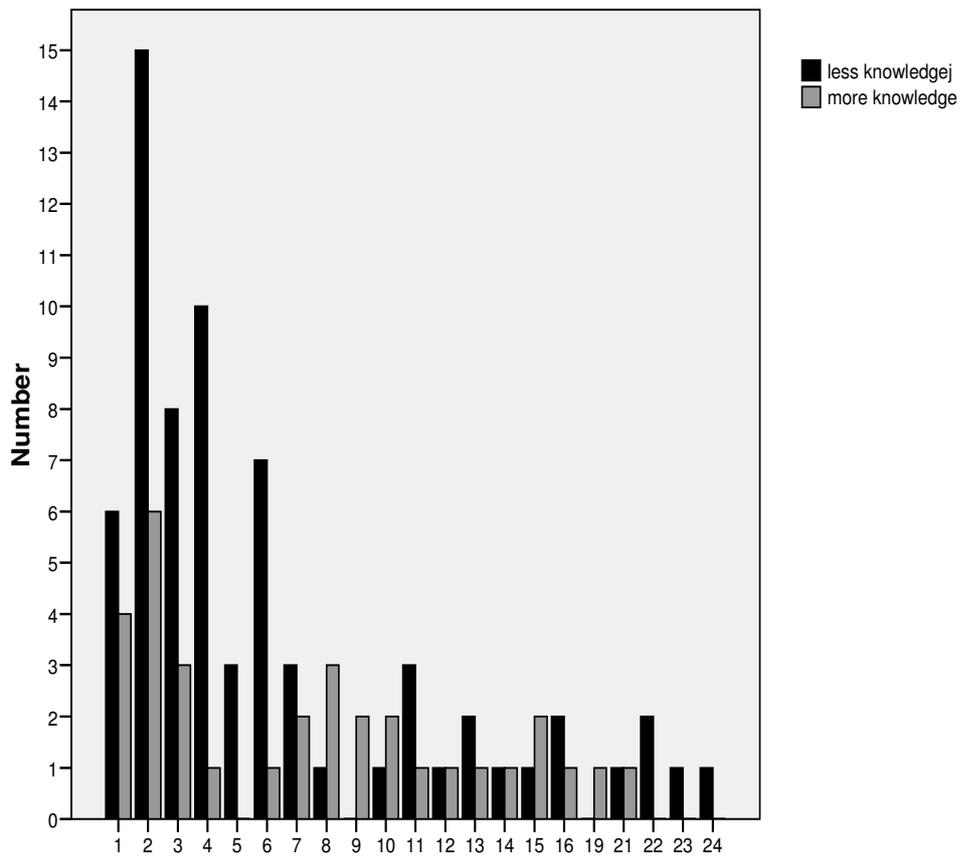


Figure 1: Acute hospital admissions 24 months prior to baseline among those with more versus less knowledge about prescribed drugs.

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