

Medicines taking amongst older people (≥ 75 years) in the community in New Zealand

June Tordoff, Michael Bagge, Andrew Gray,
John Campbell, Pauline Norris

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On average older people:

- Suffer more chronic medical conditions¹
- Take more medicines²
- May have more problems with taking their medicines^{3,4,5}
 - Adverse effects?
 - Difficulty remembering?
 - Practical problems?

(1)Fortin M et al. Ann Fam Med. 2005; 3(3): 223-8. (2)DOH Statistics, 2008

(3)Gurwitz JH JAMA 2003; 289(9) 1107-16 (4)Balakrishnan R. Clin Ther. 1998; 20(4): 764-770.

(5)Kelly J et al. Dysphagia. 2009 Mar;24(1):49-56.

Examine medicine taking practices in people ≥ 75 years living in the community in New Zealand, to identify

- Any problems with taking medicines
- The range of prescription medicines and non-prescription medicines used

- Quantitative study
- Focus groups
- Questionnaire developed and piloted
- Recruitment for study
 - 810 (≥ 75 years) from electoral roll
 - 622 sent letters then telephoned
 - 524 met study criteria
 - 320 agreed to be interviewed
 - 4 practice interviews; 316 analysed

- Inclusion Criteria
 - People ≥ 75 years
 - Living in own homes in the community
 - Contactable by phone
 - Taking ≥ 1 prescribed medicine
- Exclusion Criteria
 - People < 75 years
 - Living in nursing home/rest home
 - Not contactable by phone (after ≥ 3 attempts)
 - Taking no prescribed medicine

Analysis	Variable 1	Variable 2
Univariate and multivariate logistic regression	<p>Age (effect of each year older) Age left school (effect of each year older) Number of local groups (effect of each extra group) Sex (effect of being male) Live alone Post-secondary education Born outside New Zealand Local groups (effect of any)* Worried about side effects More than one doctor Hospital admission in past 12 months Effectiveness ("medicines improve health") Memory Aid</p>	<p>Trouble remembering Ever forgetting Physical problems (swallowing, opening packets or bottles, breaking tablets, crushing tablets, measuring liquids, using inhalers, self-administering injection, reading labels, understanding labels, reading leaflets, understanding leaflets). Sources of medicines (Pharmacy, Supermarket, Health Food Shop).</p>
Univariate and multivariate linear regression	<p>Age (effect of each year older) More than one doctor Hospital admission in past 12 months Sex (effect of being male) Memory Aid Problems with cost</p>	<p>Numbers of medicines taken (all medicines, prescription medicines, non-prescription medicines).</p>

- Demographics
- Medicines taken
- Sources of medicines
- Knowledge
- Sources of information
- Beliefs
- Instructions
- Remembering/Forgetting
- Practical Problems
Collecting/Administering
- Disposing of medicines
- Paying for medicines
- Challenges

- 320/524 (61%) agreed → 316 participants; 4 practice
- Age range 75-98 years
- 141(45%) lived alone; 175 with spouse and/or relative
- NZ Eur/Eur=233(84%), N'Zealander=45(14%), Maori=6(2%)

	All participants	75-79 years	80-84 years	≥ 85 years
Male	172 (54%)	60 (55%)	64 (51%)	48 (59%)
Female	144 (46%)	50 (46%)	61 (49%)	33 (41%)
Total	316	110	125	81

- Education and training

Secondary school	190 (60%)
Tertiary Education	63 (20%)
Technical College/night school	38 (12%)
Apprenticeship	10 (3%)
Armed Services	5 (2%)
Others (Business College, Nursing, Radiography)	10 (3%)

- Community groups; and UO research

Involved in groups (social/sports/community/patient) (median 1, range 1-9)	247 (78%)
Involved in previous UO research	69 (22%)

- Hospital admission? More than one doctor?

Admitted to hospital in past 12 months	107 (34%)
Doctors seen other than those at GP practice	155 (49%)

- Doctors seen – all specialists
Total = 191; median 1 (range 1-3)

Ophthalmologist	47	Orthopaedic surgeon	15
Cardiologist	33	Endocrinologist	12
Dermatologist	19	Others	65

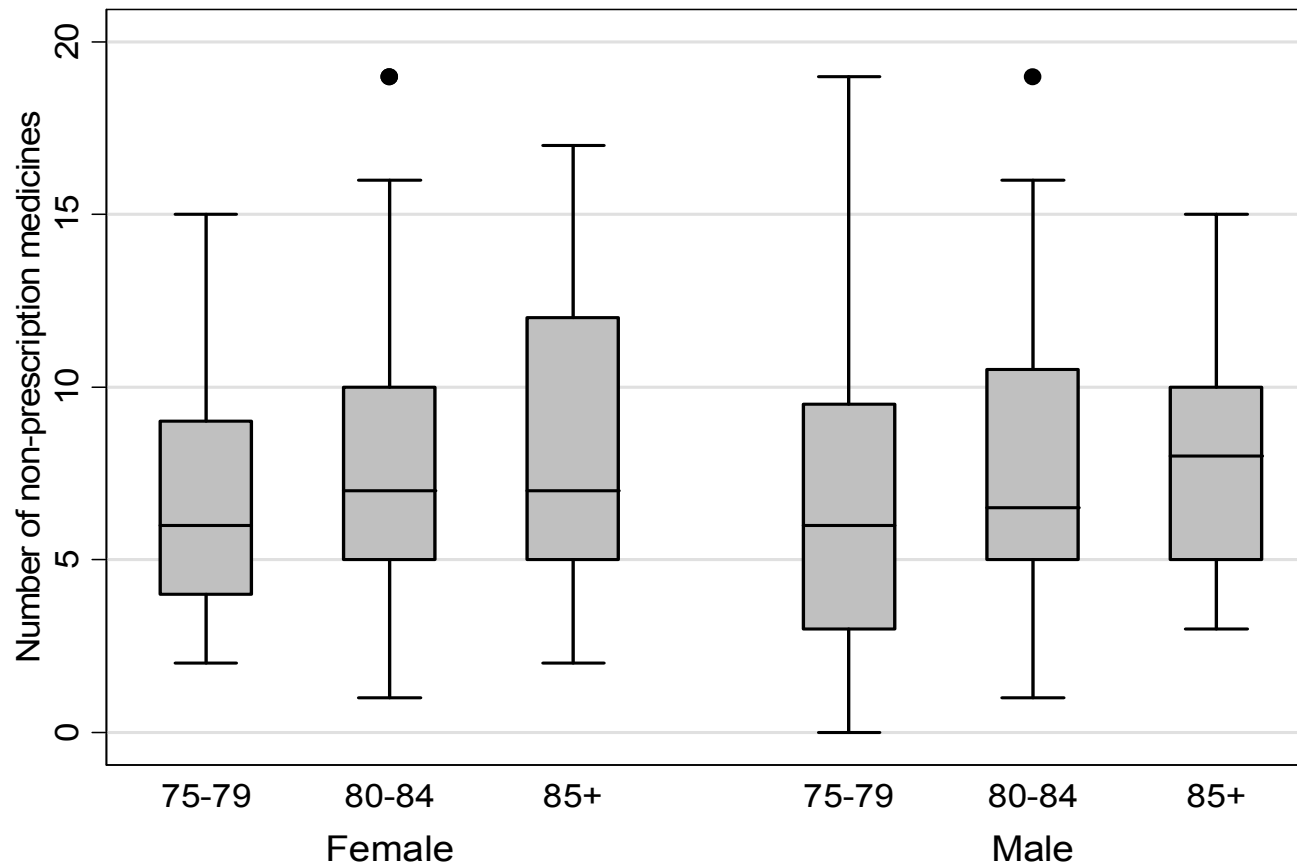
	All n = 316	Male n = 172	Female n = 144
All medicines	2,735	1,447	1,288
Prescription medicines	2,377	1,269	1,108
Non-Prescription medicines GP aware for 179 (50%) NP meds	358	178	180

Hosp admission <12m: associated ↑ all meds (p<0.001), & pres meds (p<0.001)

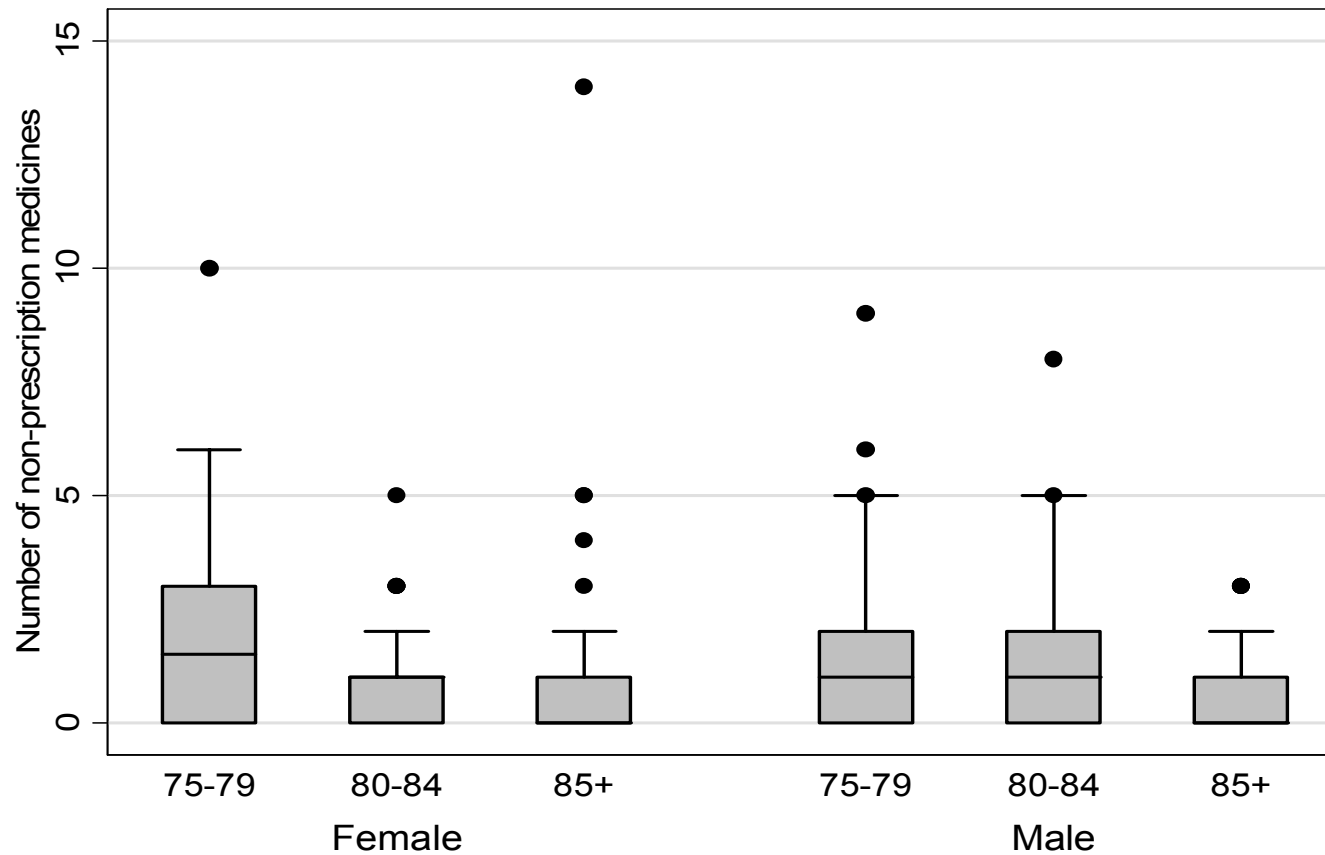
>1 Dr: associated ↑ all meds (p<0.005), and pres meds (p<0.01)

↑ age: associated with ↓ non-pres medicines (p=0.02)

Prescription medicines: median 7 (range 1-19)



Non-prescription medicines: median 1 (range 0-14)



	ATC category
Cardiovascular	766 (32%)
Nervous system	531 (22%)
Alimentary tract and metabolism	418 (18%)
Dermal	145 (6%)
Respiratory	125 (5%)
Musculoskeletal	121 (5%)
Blood and blood forming organs	100 (4%)
Sensory	72 (3%)
Hormones (not insulin/ sex hormones)	38 (2%)
Genito-urinary	34 (1%)
Antineoplastic or immunomodulating	12 (0.5%)
Anti- infectives for systemic use	10 (0.4%)
Various	5 (0.2%)

	n (% taking)
Aspirin	190 (60%)
Paracetamol	131 (41%)
Simvastatin*	110 (35%)
Metoprolol	98 (31%)
Cilazapril (± hydrochlorothiazide)	98 (31%)
Omeprazole	86 (27%)
Calcium Carbonate	61 (19%)
Glyceryl trinitrate spray	59 (19%)
Frusemide	53 (17%)
Cholecalciferol	45 (14%)
Total (represents ~40% of all prescription medicines)	931

* plus 22 atorvastatin = 42% on a “statin”

	n (% taking)
Paracetamol	53 (17%)
Glucosamine (\pm chondroitin/other nutrients)	44 (14%)
Fish oils (essential fatty acids)	35 (11%)
Multivitamins (\pm minerals/plant extracts)	22 (7%)
Aspirin	15 (5%)
Eye lubricants (hypromellose, polyvinyl alcohol, polyethylene glycol)	14 (4%)
Vitamin C (\pm echinacea/plant extracts)	12 (4%)
Garlic (\pm other nutrients)	11 (3%)
Calcium, VitD, magnesium, other minerals	6 (2%)
Arnica ointment/cream (\pm other ingredients)	5 (2%)
Total (represents ~61% of all NP medicines)	217

- 64 (20%) had worries about possible adverse effects
- Range of sources of information on adverse effects

Who do you ask?	
Doctor (GP)	295 (93%)
Pharmacist	103 (32%)
Health professional=friend	19 (6%)
Practice Nurse	18 (6%)
Hospital specialist	10 (3%)
Family/ friend	9 (3%)
Home help	4 (1%)
Specialist nurse	4 (1%)

Any other sources?	
Internet	24 (8%)
Family health book	12 (4%)
Patient support group	11 (4%)
Medicines book	7 (2%)
Friend	5 (2%)
Health professional=friend	5 (2%)
Newspaper/magazine	5 (2%)
Radio	5 (2%)

- 54 (17%) wanted to know more about their medicines

Purpose	15
Side effects	11
More in general (nothing particular specified)	6
More about a specific medicine	5
Any effective alternative	3
Source of ingredients (Organic? Chinese?)	3
Duration of course or effects; Interactions; any new information	2 each
Which is which; why people respond differently; medical condition; still needed; why brand change	1 each

- 179 (57%) knew the purpose of 100% of their medicines
- 236 (75%) knew the purpose of 75-100% of their medicines
- 1900 (80%) prescription medicines: purpose known

Answer	Prescription medicine	Non-prescription medicine
Correct	1649 (69.4%)	282 (78.8%)
Almost correct	251 (10.6%)	50 (14.0%)
Incorrect	30 (1.3%)	2 (0.6%)
Don't know	447 (18.8%)	22 (6.1%)

- Q: Do you believe that medicines improve your health?

Yes	Yes (less sure)	No	Don't know
182 (58%)	89 (28%)	14 (4%)	31 (10%)

“Worried SEs” less likely to believe medicines are effective (OR 0.45, $p < 0.01$)

<p>Positive</p> <p>They keep me well/alive They are necessary They help me/my symptoms Trust the Dr/expert</p>	<p>Accepting</p> <p>Don't mind/ used to it/ resigned to it/ part of life or routine Foolish if I don't If they help, I will take them.</p>
<p>Mixed</p> <p>Don't mind, but not too many Don't mind, <u>if</u> they are necessary</p>	<p>Negative</p> <p>Would prefer not to take them Don't like taking them Hate taking them</p>

Otago Taking differently from instructions



- 309 (98%) → tried to take their medicines as instructed

But when asked how they took each individual medicine

- 136 (43%) took 211 (9%) prescription medicines differently from instructions
- 52 (16%) took 60 (3%) differently - without Drs knowledge

	n=60	medicines
↓ Dose	17(28%)	Atorvastatin, calcipotriol, calcium carb, colestipol, docusate/senna, doxepin(2), mometasone cr, fluticasone inh, iron/vitC, multivitamins(2), omeprazole(2), paracetamol, salmeterol, terazosin
↑ Dose	1(2%)	Lactulose
Food	16(27%)	Allopurinol, aspirin, captopril, digoxin, gliclazide, metoclopramide, omeprazole(5), pantoprazole, thyroxine(3), verapamil
Timing	12(20%)	Aspirin, celiprolol, cilazapril, diclofenac, mucilag lax, omeprazole, pindolol, simvastatin(4), warfarin
Stopped	8(13%)	Doxepin, frusemide, gabapentin, isosorbide mononitrate, multivitamins, omeprazole, paracetamol, simvastatin
PRN	6(10%)	Asprin, beclomethasone n spray, budesonide inh, budesonide n spray, diclofenac, quinine sulph

	Yes	No
Do you <u>ever forget</u> to take your medicine? OR >1, p<0.05: males, group members OR 0.931, p=0.011: ↑ age	147 (53%)	169 (47%)
Do you have <u>trouble remembering</u> to take your medicine? OR 1.86, p<0.02: males	81 (26%)	235 (74%)
When you <u>feel better</u> do you sometimes <u>stop</u> taking your medicine? OR=3.2, p=0.04: worries SEs	14 (4%)	302 (96%)
Sometimes if you <u>feel worse</u> when you take your medicine, do you <u>stop</u> taking it?	18 (6%)	14 (4%) 284= NA

- Morisky score (MMAS-4): Yes=1; No=0
- 75% 0=high, 1-2=medium; 25% 3-4=low

	Yes	No
Are you <u>ever unsure</u> if you have taken a medicine?	72 (23%)	244 (77%)
Do you have any <u>way of remembering</u> what you should be taking and when? (10% Blister Pack, 20% Medication Box, 29% other. But 92% described a system/routine)	190 (60%)	126 (40%)
Can you think of a <u>situation</u> where it is <u>more difficult</u> for you to take your medicine correctly? *#	91 (29%)	225 (71%)

* **Certain times of day** e.g. lunch time/ evening.

Change of routine e.g. holiday/ meal out/ hospital stay/ visitors/ busy/ ill

	Yes	No	N/A
Swallowing	43 (14%)	273 (86%)	0
Opening packets or bottles OR>2, p<0.05: worried SEs, memory aid OR 0.42, p<0.05: males	37 (12%)	272 (87%)	7 (2%)
Breaking tablets (n=115) OR>4, p<0.05 born outside NZ, worried SEs OR 0.28, p<0.05: group members	17 (5%)	98 (31%)	201 (64%)
Crushing tablets (n=2)	1 (0.3%)	1 (0.3%)	314 (99%)
Measuring liquids (n=22)	1 (0.3%)	21 (7%)	294 (93%)
Using inhalers (n=48)	1 (0.3%)	48 (15%)	267 (85%)
Giving injections (n=13)	0	13 (4%)	303 (96%)

n=number of participants needing to break tablets/crush tablets/measure liquids etc

	Yes	No	N/A
Reading Labels OR 1.1, $p < 0.05$: ↑ age OR < 1, $p < 0.05$: group members, believe meds effective	28 (9%)	261 (83%)	27 (9%)
Understanding labels OR > 3, $p < 0.05$: males, hosp admission	11 (4%)	278 (88%)	27 (9%)
Reading leaflets OR 3.01, $p < 0.005$: worries SEs	38 (12%)	202 (64%)	76 (24%)
Understanding leaflets	19 (6%)	221 (70%)	76 (24%)

Self, always	206 (65%)
Self, sometimes	62 (20%)
Other, always (Spouse/Family)	15 (5%)
Delivery	33 (10%)

Self: OR 2.0, $p < 0.05$: males; OR 0.46, $p < 0.01$: ↑age, memory aid, hosp admission

Administering medicines

Self, always	268 (85%)
Self, sometimes	19 (6%)
Spouse	26 (8%)
Other (District nurse/Home help)	3 (1%)

- Q: How do you get rid of medicines you are no longer using?

Back to pharmacy	95 (30%)
Toilet	60 (19%)
Keep unsure what to do	35 (11%)
Throw out with rubbish	28 (9%)
Back to doctor	16 (5%)
Sink	15 (5%)
Fire	8 (3%)
Keep to re-use	4 (1%)
Don't know	1 (0.3%)
Not applicable	104 (33%)

Problems paying for own medicines in past 12 months

18 (6%)

OR>2, p<0.05: born outside NZ, believe meds effective

Problems

- Not subsidised/ from hospital pharmacy (out-patient)
- Drs fees and pharmacists charges
- One lady “The cost of living is exploding. I haven’t had enough disposable income since I started taking medicines.”

No problems

- Fortunate subsidised/ small cost/ “lucky to be golden oldies”
- No prescription charge after 20 items is helpful
- Some medicines are expensive, but we are managing the cost

- Generalisable?
 - Self-selection
 - Missed people with problems
 - Geographical area/ country specific
- Responses?
 - Socially acceptable?

- COUNSELING/ MEDICINES INFORMATION
- PRACTICAL PROBLEMS (e.g. suitable formulations)
- HOSPITAL DISCHARGE

One gentleman: Was given a lot of “new stuff” when he was last in and they didn't tell him anything about it. He had taken his own medicines but they still added some. This never happens with his own doctor or pharmacist. When he came back with his box of medicines there were ones in there that he had never taken before, mixed in with his usual medicines; so he took them back to the GP.

In this study (≥ 75 years)

- Participants were mainly positive/accepting in their beliefs about taking medicines
- They had routines/systems to help remember to take their medicines but tended to forget when → “change of routine”
- Three quarters of the participants were found to have a medium/high adherence score and a quarter had a low score
- Most common practical problems were: reading and understanding labels and leaflets, and difficulty swallowing tablets and capsules

- Participants were taking a median of 7 (range 1-19) prescription medicines, and 1 (0-14) non-prescription medicines
- Most common:
Prescription=aspirin, paracetamol and simvastatin;
Non-Prescription=paracetamol, glucosamine and fish oils
Therapeutic group=CVS, NS and GI tract
- Health professionals' challenges are to improve labelling, leaflets, and information/education on discharge medicines, and to address any practical problems.

- Focus group members
- Participants
- Team
 - Prof Pauline Norris
 - Prof John Campbell
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 - Michael Bagge
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