Figure S1. Characteristics of the selected studies

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Abraham, Varughese, Mathew, John, and Sam (2015)	India	Retrospective cross-sectional study	≥65 yrs	Tertiary care teaching hospital	*n* = 205 65.4% ♂; 34.6% ♀ 65-74: 151 75-84: 39 85-94: 14 95-105: 1	N.R.	*Nb. of comorbidities* 1: 27.8% 2: 22.9% 3: 14.6% 4: 3.4% 5: 1.5%
Advinha, de Oliveira-Martins, Mateus, Pajote, and Lopes (2014)	Portugal	Cross-sectional study 03/2009 to 06/2009	≥65 yrs taking at least one drug a day	Nursing homes	*n* = 415 39.8% ♂; 60.2% ♀ 65-74: 207.1 75-84: 168.1 ≥85: 39.	83.9 (6.6)	N.R.
Aged Care Branch of the Department of Human Services (Victoria) (2004)	Australia	Report - Quality of Care Performance Indicator Project	Elderly	Nursing homes	N.A.	N.A.	N.A.
Ahmed, Nanji, Mujeeb, and Patel (2014)	Pakistan	Longitudinal cohort study Follow-up: 6 weeks 04/2012 to 03/2013	≥65 yrs	Ambulatory care clinics of Tertiary Care Hospital	*n* = 1 000 48.5% ♂; 51.5% ♀ 65-70: 507 71-80: 401 ≥81: 92	N. R.	N.R.
All Wales Medicines Strategy Group	United Kingdom	Guidance documents	Elderly	N.A.	N.A.	N.A.	N.A.

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Anpalahan and Gibson (2008)	Australia	Longitudinal cohort study Follow-up: 3 months	≥75 yrs	Teaching hospital	*Non-geriatric syndrome* *n* = 56 37.5% ♂; 62.5% ♀ *Geriatric syndrome* *n* = 54 25.9% ♂; 74.1% ♀	*Non-geriatric syndrome* 82.5 (5.7) *Geriatric syndrome* 84.1 (4.1)	*Non-geriatric syndrome* Heart failure 42.9% COPD/pneumonia 19.6% Arrhythmias 8.9% Urosepsis 5.4% Anaemia 3.6% CIRS mean (SD): 8.4 (2.9) *Geriatric syndrome* Fall 22.2% Urosepsis 18.5% COPD/Pneumonia 16.7% Heart failure 16.7% Delirium 5.6% CIRS mean (SD): 8.4 (2.5)
Anthierens, Tansens, Petrovic, and Christiaens (2010)	Belgium	Qualitative study	GP	Community	N.A.	N.A.	N.A.
Antonio, Saldana, Fernandez, and Navarro (2013)	Spain	Prospective study (poster)	≥75 yrs with colorectal or lung cancer	N.R.	*n* = 393 70.5% ♂; 29.5%	79 [75-97]	*Nb. of comorbidities* ≤3: 52.8% >3: 47.2%
Akazawa, Imai, Igarashi, and Tsutani (2010)	Japan	Longitudinal cohort study Follow-up: 1 yr 04/2006 to 09/2007	≥65 yrs with at least 2 pharmacy claims	Claims from hospital & Community settings	*n* = 6 628 28.8% ♂; 71.2% ♀ 65-69: 2 342 70-74: 1 825 75-79: 922 80-84:798 85-89: 487 ≥90: 254	N.R.	*Nb. of comorbidities* 1: 27.8% 2: 22.9% 3: 14.6% ≥4: 3.4%

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Azana Fernandez and Davila Barboza (2015)	Spain	Retrospective study (poster) 10/2014 to 11/2014	Elderly	Hospital: Geriatric department	*n* = 100 28% ♂; 72% ♀	85.3 (5.4)	CCI mean: 2.0
Azana Fernandez and Davila Barboza (2013)	Spain	Retrospective study (poster) 09/2012 to 10/2012	Elderly	Hospital: Geriatric department	*n* = 112 36.7% ♂; 63.3% ♀	86.3 (6.3)	CCI mean: 2.2 CIRS mean (SD): 9.8 (7.1)
Badgwell et al. (2013)	United States	Longitudinal cohort study Follow-up: 90 days 10/2010 to 04/2012	≥65 yrs, with abdominal cancer	Hospital	*n* = 111 55% ♂; 45% ♀	[65-89] Median: 72	*CCI score* <3: 36% ≥3: 64%
Bahat et al. (2014)	Turkey	Cross-sectional study	>60 yrs, female outpatient only	Geriatrics outpatient clinics (community dwelling)	*n* = 515 0% ♂; 100% ♀ ≥75: 222 ≥80: 111	73.4 (6.9) [60-95]	Hypertension 75.3% Depression 45.5% Dementia 39.4% Diabetes mellitus 27.8% Hyperlipidemia 18.6% *Nb. of diseases* Mean (SD) [range]: 2.8 (1.3) [0-7]
Bahat et al. (2013)	Turkey	Cross-sectional study	>60 yrs, male outpatient only	Geriatrics outpatient clinics (community dwelling)	*n* = 274 100% ♂; 0% ♀ ≥65: 249 ≥75: 130 ≥80: 66 ≥85: 24	74.4 (7.1) [60-95]	Hypertension 65% Depression 41.1% Dementia 32.8% Diabetes mellitus 24.2% CVD 14.6%

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Bain et al. (2008)	United States	Conceptual model	Geriatric patients	All	N.A.	N.A.	N.A.
Baker et al. (2014)	United Kingdom	Retrospective cohort study 01/2000 to 12/2012	Hip fracture population	Hospital	*2000* *n* = 740 76% ♂; 24% ♀ *2012* *n* = 810 69% ♂; 31% ♀	*2000* Median: 81 IQR:75-87 *2012* Median: 82 IQR: 75-87	Cardiovascular disease 48% Chronic obstructive airways disease 17% CVD 14% Diabetes mellitus 12% Malignancy 12% *Note: information about the entire study cohort (n= 10 044)*
Balducci, Goetz-Parten, and Steinman (2013)	United States	Narrative review	Older cancer patient	N.A.	N.A.	N.A.	N.A.
Ballentine (2008)	United States	Narrative review	Elderly	N.A.	N.A.	N.A.	N.A.
Banerjee, Mbamalu, Ebrahimi, Khan, and Chan (2011)	United Kingdom	Cross-sectional study 06/2008 to 07/2008	≥75 yrs	Hospital: emergency department	*n* = 467 43.3% ♂; 56.7% ♀	88 [75-101]	Fall 22% Shortness of breath 12% Being unwell 7.7% Chest pain 5% Abdominal pain 4%

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Baranzini et al. (2009)	Italy	Retrospective observational study 07/2004 to 12/2007	≥65 yrs with falls	Nursing homes	*n* = 293 24.6% ♂; 75.4% ♀ 65-75: 37 75-85: 107 85-95: 132 ≥95: 17	*Injured fallers* 84.6 (8.2) *Not Injured fallers* 84.8 (7.7)	Cognitive impairment 72.4% Depression 25.6% Anxiety 19.7% Bipolar mood 17.7% Schizophrenic 5.4% Mean of somatic comorbidities: 9.9
Barnett and Oboh (2008)	N.R.	Expert opinion	Elderly	N.A.	N.A.	N.A.	N.A.
Beauplet and Martin (2015)	France	Retrospective study (abstract) 2013	≥70 yrs with multiple myeloma	Hospital	*n* = 96 50% ♂; 50% ♀ ≥80: 34	77.7 Median: 76.5	Diabetes 23.5% Cardiac disease 18% Vascular disease 14% Respiratory disease 12.5% *CCI score* 0: 41% 1:21% 2: 25% ≥3: 13% CCI mean: 1.1
Beer et al. (2011)	Australia	Prospective, observational cohort study 2001-2004 Follow-up: 4.5 yrs	65-88 yrs, men only	Community	*n* = 4 260 100% ♂; 0% ♀	77 (3.6)	*No marker* *CCI score* 1-2: 21% 3-4: 2.5% ≥5: 1.1%

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Belfrage, Koldestam, Sjoberg, and Wallerstedt (2015)	Sweden	Experimental study - RCT 2009	≥65 yrs with hip fracture	Hospital	*n* = 200 33% ♂; 67% ♀	84.5 [65-98]	Impaired cognition 45%
Bell et al. (2015)	United States	Case study, expert opinion	Older cardiovascular patient	Geriatric cardiology	*Case study* *n* = 1 man	*Case study* 81 yrs	*Nb. of chronic conditions* ≥2: >70% ≥5: 50%
Bell and Saraf (2014)	United States	Narrative review	>80 yrs	N.A.	N.A.	N.A.	N.A.
Beloosesky, Nenaydenko, Gross Nevo, Adunsky, and Weiss (2013)	Israel	Cross-sectional study 11/2011 to 02/2012	≥65 yrs, institutionalized for at least 1 month	Nursing homes	*n* = 993 28.7% ♂; 71.3% ♀ 65-74: 103 75-84: 324 ≥85: 566	85.4 (7.6) [65-108]	CCI mean (SD): 2.45 (1.59)
Bennett et al. (2014)	Australia	Prospective cohort study 05/2012 to 03/2013	≥60 yrs with fall	Hospital: emergency, aged care or general medicine departments	*n* = 204 35% ♂; 65% ♀	80.5 (8.3)	CCI mean (SD): 3.3 (1.8)

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Best, Gnjidic, Hilmer, Naganathan, and McLachlan (2013)	Australia	Cohort study 01/2011 to 06/2011	≥65 yrs	Hospital: geriatric medicine or rehabilitation teams	*n* = 329 37.7% ♂; 62.3% ♀	84.6 (7)	CCI median [range]: 2 [0-12] Dementia 33.4%
Best Practice Advocacy Centre	New Zealand	Clinical guidance review	Elderly	N.A.	N.A.	N.A.	N.A.
Blanco-Reina, riza-Zafra, Ocana-Riola, Leon-Ortiz, and Bellido-Estevez (2015)	Spain	Cross-sectional study	≥65 yrs	Community-dwelling	*n* = 407 42.8% ♂; 57.2% ♀	79.3 (8) [65-100]	Hypertension 57.2% Osteoarticular disease 53.3% Heart disease 40% Peripheral vascular 31.7% Gastrointestinal 31.7% CCI mean (SD): 1.95 (1.7)
Blanco-Reina, Ariza-Zafra, Gonzalez-Correa, and Leon-Ortiz (2011)	Spain	Cross-sectional study (poster)	≥65 yrs	Public primary care centers	*n* = 407 42.8% ♂; 57.2% ♀	79.3	N.R.

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Boffin, Moreels, Vanthomme, and Van Casteren (2014)	Belgium	Nationwide cross-sectional study 01/2009 to 12/2010	≥65 yrs with new fall-related injuries	Community-dwelling	*n* = 1 503 27% ♂; 73% ♀ 65-69: 116 70-74: 210 75-79: 317 80-84: 390 85-89: 348 ≥90: 99	Median: 81 IQR: 75-86	N.R.
Bokhof and Junius-Walker (2016)	Switzerland	Systematic review	Elderly (≥65 yrs) and GP	Community dwelling, primary care	*n* = 14 studies	N.A.	N.A.
Boparai, Korc-Grodzicki, Mahmoudzadeh Pournaki, and Shahrokni (2015)	United States	(abstract) 10/2009 to 12/2012	≥65 yrs with intra-abdominal cancer	Hospital	*n* = 592	N.R.	N.R.
Boparai and Korc-Grodzicki (2011)	United States	Narrative review	Elderly	N.A.	N.A.	N.A.	N.A.
Bowling et al. (2014)	United States	Longitudinal study Follow-up: 2.3 yrs 01/2003 to 10/2007	≥75 yrs with chronic kidney disease	Community	*n* = 3557 44.5% ♂; 55.5% ♀	Mean varying from79.0 to 80.6	*Nb. of nondisease-specific problems* 1: 30.5% to 34.6% 2: 13% to 21.5% 3-6: 8.2% to 14%

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Bradley et al. (2012)	Ireland	Cross-sectional study 07/2009 to 06/2010	≥70 yrs registered with GP	Primary care	*n* = 166 108 40.8% ♂; 59.2% ♀ ≥75: 105 147	N.R.	N.R.
Brandt (2006)	United States	Narrative review	Elderly	N.A.	N.A.	N.A.	N.A.
Bregnhøj, Thirstrup, Kristensen, Bjerrum, and Sonne (2009)	Denmark	Experimental study - RCT	GP & elderly (>65 yrs) on PP	Primary health care	*Combined Tx* Elderly, *n* = 79 31.6% ♂; 68.4% ♀ *Single Tx* Elderly, *n* = 61 37.7% ♂; 62.3% ♀ *Control group* Elderly, *n* = 72 33.3% ♂; 66.7% ♀	*Combined Tx* Elderly: 77.1 (6.9) [65-90] Median: 77 *Single Tx* Elderly: 75.4 (7) [65-97] Median: 74 *Control group* Elderly: 77 (7.8) [65-92] Median: 76	N.R.
Brito, Menezes, Mesquita, and Lyra Jr (2009)	Brazil	Experimental study 01/2007 to 08/2008	60-75 yrs with hypertension, ≥2 drugs, ≥3 comorbidities	Primary health care unit	*n* = 30 10% ♂; 90% ♀ 60-65: 10 65-70: 7 70-75: 13	69 (4)	Cardiovascular system 100% Musculoskeletal system 90% Endocrine system 83.3% Nervous system 73.3% Sensory organs 63.3%

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Bronskill et al. (2012)	Canada	Cross-sectional study 09/2015 to 12/2016	≥66 yrs	Long-term care homes	*n* = 64 394 27.5% ♂; 72.5% ♀ 66-74: 6 621 75-84: 24 460 ≥85: 33 313	≥9 drugs: 82.6 (6.9) <9 drugs: 84.8 (7.5)	*Group with ≥9drugs* Circulatory disease 82% Endocrine & metabolic 55% Musculoskeletal 54.4% Mental disorders 53.6% Neurological motor 37.5% *CCI score* 0: 16% 1: 23.1% ≥2: 57%
Bushardt, Massey, Simpson, Ariail, and Simpson (2008)	United States	Literature review, conceptual model 01/1997 to 05/2007	≥65 yrs	N.A.	N.A.	N.A.	N.A.
Burkhardt and Wehling (2010)	Germany	Continuing education	Elderly	N.R.	N.R.	N.R.	N.R.
Cadogan et al. (2015)	Ireland	Qualitative study 05/2014 to 102/2014	GP & community pharmacists for older people	Primary care (Health and Social Care Trust areas)	N.A.	N.A.	N.A.
Cahir et al. (2010)	Ireland	Longitudinal cohort study Follow-up: 1yr 01/2007 to 12/2007	≥70 yrs	Community	*n* = 338 801 43% ♂; 57% ♀ 70-74: 128 286 ≥75: 210 515	N.R.	N.R.

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Cakmur (2015)	Turkey	Cross-sectional study 04/2014 to 09/2014	≥65 yrs	Data from Health Services Executive Primary Care Reimbursement Services: Community	*n* = 168 46.4% ♂; 53.6% ♀ 65-79: 140 ≥80: 28	72.7 (7.7)	Generalized pain 58.3% Urinary incontinence 51.2% Arthritis 48.3% Hypertension 45.2% Heart disease 17.3%
Canadian Institute for Health Information (2011)	Canada	Study using drug claims data from National Prescription Drugs Utilization Information System (2009)	≥65 yrs	Community & Long-term facilities	*N.R.*	N.R.	N.R.
Carneiro, Azevedo-e-Silva, and Ramos-e-Silva (2011)	Brazil	Narrative review	Elderly with cutaneous adverse reactions to drugs	N.A.	N.A.	N.A.	N.A.
Carrasco-Garrido, Lopez De Andres, Barrera, Jimenez-Trujillo, and Jimenez-Garcia (2013)	Spain	Cross-sectional pharmacoepidemiology study 01/2003 to 03/2010	≥65 yrs	Data from National Health Surveys: Community-dwelling	*n* = 12 228 interviews 42.7% ♂; 57.3% ♀	2003: 74.3 (12.6) 2006: 74.7 (10.6) 2009: 75.2 (11.3)	Depression 54.6% to 61.3% *Nb. of chronic conditions* 1-4: 14.6% to 22% >4: 29.2% to 47%

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Castro-Alvirena, Verdejo-Bravo, Gil Gregorio, and Lebreault Polanco (2014)	Spain	Cross-sectional study (poster) 06/2012 to 07/2012	N.R.	Outpatient geriatric service	*n* = 108 24.1% ♂; 72.9% ♀	83.8	CCI percentile 50th: 2
Caughey, Vitry, Gilbert, and Roughead (2009)	Australia	Retrospective cohort study (abstract)	≥65 yrs, veterans	N.R.	*n* = 198 681	N.R.	N.R.
Chan, Hao, and Wu (2009)	Taiwan	Longitudinal cohort study Follow-up: 1 yr 07/2001 to 06/2002	≥65 yrs	Community	*n* = 11 788 41.9% ♂; 58.1% ♀ 65-74: 4 161 75-85: 5 104 ≥85: 2 534	N.R.	*Chronic conditions* 0-2: 45.7% 3-4: 35.8% ≥5: 13.5%
Chang, Chan, Kuo, Hsiung, and Chen (2011)	Taiwan	Cross-sectional study / telephone survey + evaluations	65-79 yrs	Community-dwelling	*n* = 275 46.2% ♂; 53.8% ♀ 65-68: 87 69-73: 112 74-79: 76	71.1 (3.8)	Memory impairment 57.5% Pain 29.8% Depression 16.7% Urinary incontinence 14.5% *Nb. of comorbidities* Mean (SD): 3.4 (2.0)
C. B. Chang et al. (2011)	Taiwan	Interventional study	≥65 yrs on PP or visited ≥3 different physicians	Database from the MSRC-Taiwan study: Hospital	*n* = 193	76.2 (6.2)	*Nb. of chronic conditions* Mean (SD): 9 (2.6)

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Chen, Kenefick, Tang, and McCorkle (2004)	United states	Narrative review 1980 to 2003	Elderly with cancer	N.A.	N.A.	N.A.	N.A.
Cherubini et al. (2012)	Italy	Longitudinal cohort study Follow-up: 1 yr 02/2004	≥65 yrs	Nursing home	*n* = 1 466 28.8% ♂; 71.2% ♀	Median: 83.3 IQR: 77.7	Cognitive impairment 70% Severe dementia 42% IHD 25.9% COPD 22.9% Arrhythmias 12% CCI median: 9
Chung (2014)	Korea	Narrative review	Elderly	N.A.	N.A.	N.A.	N.A.
Classen et al. (2007)	United States	Cross-sectional study 1993 to 2010	≥60 yrs with stroke	Home-based	*n* = 191 60-75: 91 76-85: 71 ≥86: 29	N.R.	Heart disease 88.0% Musculoskeletal disorder 77.6% Eye disease 47.9% Urinary disorder 39.1% Endocrine disorder 37.0% *Nb. of comorbidities* Mean (SD): 8.7 (4.7)
Clyne, Bradley, Hughes, Fahey, and Lapane (2012)	Ireland, United Kingdom, United States,	Systematic review	≥65 yrs	Ambulatory care, hospital, nursing home	*Ambulatory care* *n* = 6 studies *Hospital* *n* = 4 studies *Nursing home* *n* = 4 studies	N.R.	N.A.

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Collerton et al. (2016)	United Kingdom	Cohort study 2006-2007	≥85 yrs with physical functioning difficulty	Care homes	*n* = 710 40.1% ♂; 59.9% ♀	85.5 (0.4)	Hypertension 57.8% Osteoarthritis 57.0% IHD 36.1% Renal impairment 23.8% CVD 21.1%
Crentsil, Ricks, Xue, and Fried (2010)	United States	Cross-sectional study 1992 to 1995	≥65 yrs with cognitive impairment	Community-Dwelling	*n* = 975 0% ♂; 100% ♀ 65-74: 376.3 75-84:306.2 ≥85: 292.5	78.3 (8.1) [65-100]	Osteoarthritis 57.5% CHF 25.8% Angina 25.2% Diabetes mellitus 16.3% COPD 16.3% *Nb. of chronic diseases* 1: 22% 2: 29.3% 3: 21.4% ≥4: 21.7%
Cronin et al. (2011)	United States	Survey, experimental study 09/2009 Follow up: 2, 30 days	≥65 yrs, undergoing major inpatient general or vascular surgery operations.	Hospital	*n* = 64 394 27.5% ♂; 72.5% ♀ 66-74: 6 621 75-84: 24 460 ≥85: 33 313	76.8 [65-92]	*≥3 comorbidities* Pre-intervention: 51.4% Post-intervention: 52.8%
Dalleur et al. (2012)	Belgium	Cohort study 12/2007 to 11/2008	≥75 yrs, positive frailty profile	Hospital	*n* = 302 37.4% ♂; 62.6% ♀	Median: 84 IQR: 81-88	Hypertension 55% Ischemic disease 40.7% Renal failure 37.4% Osteoporosis with fracture 25.8% Atrial fibrillation 25.5%

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Davila Barboza and Azana Fernandez (2013a)	Spain	Retrospective study (congress of the EUGMS)	≥70 yrs with hip fracture	Hospital: acute ortho-geriatric unit	*n* = 108 13.4% ♂; 86.6% ♀	87 [70-100]	CCI mean: 2.16
Davila Barboza and Azana Fernandez (2013b)	Spain	Cross-sectional study (abstract) 09/2012 to 10/2012	Elderly	Hospital: geriatric department	*n* = 112 36.7% ♂; 63.3% ♀	86.3 (6.3)	CCI mean: 2.16
De Groot et al. (2016)	Netherlands	Cross-sectional study 10/2010 to 04/2013	≥65 yrs, outpatient, could walk safely for at least 3 minutes	Geriatric outpatient clinic	*n* = 80 37% ♂; 63% ♀ ≥80 yrs: 41	79 (5.6)	Dementia 28% Myocardial infarct 26% PVD 10% COPD 10% CVD 6% ≥2 comorbidities: 36%
De Saint-Hubert, Schoevaerdts, Poulain, Cornette, and Swine (2009)	Belgium	Narrative review 1970 to 2007	≥65 yrs	Hospital	*n* = 21 studies	[71-85]	N.A.
Denneboom, Dautzenberg, Grol, and De Smet (2007)	Netherlands	Experiential study – RCT Follow-up: 6,9 months 01/2004 to 05/2004	GP, pharmacists, elderly (≥ 75 yrs) on PP	Community pharmacy, primary care	*Elderly* *n* = 738 37.8% ♂; 62.2% ♀	*Elderly* 81	N.R.

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Denneboom, Dautzenberg, Grol, and De Smet (2006)	Netherlands	Expert opinion 11/2001 to 12/2002	GP, geriatric specialists, pharmacists	102 community-dwelling older patients on PP (≥75 yrs, ≥4 medicines)	*Elderly* *n* = 102 38% ♂; 62% ♀	*Elderly* 81	N.A.
Divakaran and Murugan (2008)	United States	Letter to the editor	Elderly	N.A.	N.A.	N.A.	N.A.
Diez-Manglano et al. (2015)	Spain	Longitudinal cohort study Follow up: 1yr 03/2011 to 06/2011	Poly-pathological patient	Hospital: internal medicine departments or acute geriatric units	*n* = 457 45.5% ♂; 54.5% ♀	81 (8.8)	Heart diseases 59.1% Nervous system 47.3% Lung disease 34.6% Autoimmune / Kidney disease: 31.5% Anemia and neoplasias 27.6% CCI mean (SD): 3.8 (2.1)
Diez-Manglano et al. (2014)	Spain	Cross-sectional study (letter to the Editor) 01/2007 to 12/2008	Patient with chronic obstructive pulmonary disease	Hospital	*n* = 398 88.7% ♂; 11.3% ♀	73.7 (8.9)	*CCI score* With PP: 2.8 Without PP: 2.3

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Doan, Zakrzewski Jakubiak, Roy, Turgeon, and Tannenbaum (2013)	Canada	Prospective cohort study 09/2010 to 03/2011	≥65 yrs on PP, newly admitted to the nonsurgical wards	Community-based hospital	*n* = 275 44% ♂; 56% ♀	83 (8.3) [65-103]	*Nb. of comorbidities* Mean (SD): 6.7 (3.4)
Doran, Hirdes, White, Baker, Blais, Pickard, Jantzi (2009)	Canada	Secondary analysis of data collected through the Canadian Home Care reporting system, 2003-2007	Home care clients who received an assessment	Community	238,958	83% aged 65+	Decline in physical function: 55.9%; Decline in cognition: 16.8%
Doupe, Brownell et al (2006)	Canada	Analysis of administrative data, 1999-2004	Residents of personal care homes with dependency levels 1-4	Nursing homes	23,048	85+: 55.2% 75-84: 31.9% 65-74: 8.7%	2 or more chronic diseases: 70.0% Dementia: 65.3%
Doupe, Finlayson, Khan et al (2016)	Canada	Cohort study, April 1, 2006-Marc 31, 2011	Long stay residents of personal care homes	Nursing homes	5,267	<75: 10.5% 75-84: 33.5% 85+: 56.0%	N.R.

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Drenth-van Maanen, van Marum, Knol, van der Linden, and Jansen (2009)	Netherlands	Evaluation of a tool to enhance prescription quality based on the study of cases	GPs of geriatric patients	Hospital geriatric outpatient clinic (case histories)	N.A.	N.A.	*Nb. of problems treated* Mean (SD): 7.9(1.2)
Duerden, Avery & Payne (2013)	United Kingdom	Review document on polypharmacy	N.A.	N.A.	N.A.	N.A.	N.A.
Dwyer, Han, Woodwell, and Rechtsteiner (2010)	United States	Cross-sectional study 01/2004 to 12/2004	Nursing home resident	Data from the 2004 National Nursing Home Survey	*n* = 13 403 28.8% ♂; 71.2% ♀ ≤64: 1 568 65-74: 1 555 75-84: 4 208 ≥85: 6 072	N.R.	*Nb. of comorbidities* ≤3: 17.5% 4-6: 40.6% 7-9: 26.7% ≥10: 15.2%
Eckardt, Steinhagen-Thiessen, Kampfe, and Buchmann (2014)	Germany	Literature review	Elderly	N.A.	N.A.	N.A.	N.A.
Egan, O'Connor, Conde, Fitzgerald, and O'Toole (2012)	Ireland	Cross-sectional study (Abstract)	Elderly	Long-term care home	*n* = 115	[66-102]	N.R.

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Eijsink, Zeeman, Van Wijngaarden, Badings, and Van'T Riet (2015)	Netherlands	Longitudinal retrospective cohort study (abstract)	≥65 yrs with heart failure	Hospital	*n* = 114	N.R.	N.R.
Elliot et al. (2014)	United States	Longitudinal cohort study Follow-up: 60 days 01/2004 to 12/2009	≥60 yrs treated for acute myelogenous leukemia	Hospital	*n* = 150 61% ♂; 39% ♀	[61-87] Median: 69	CAD 17% Diabetes 19% CCI score ≥1: 45% *Nb. of comorbidities* Median [range]: 3 [0-10]
Ervin (2014)	Australia	Expert opinion (letter to the editor)	Elderly	N.A.	N.A.	N.A.	N.A.
Espino et al. (2006)	United States	Longitudinal cohort study Follow-up: 8 yrs 0/1993 to N.R.	65-99 yrs, Mexican-American	Community-based population	*n* = 3 050 42.4% ♂; 57.6% ♀	73	Hypertension 41.9% Diabete 23.7% CVD 9.3% Stroke 6.3% Neoplasms 5.3%
Farrell, Shamji, Monahan, and French Merkley (2013)	Canada	Expert opinion	Elderly	Geriatric Day Hospital	N.A.	N.A.	N.A.

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Fastbom & Johnell (2015)	Sweden	Description of National indicators of quality of drug therapy	People aged 75 years and over	All settings	N.A.	N.A.	N.A.
Fialova and Onder (2009)	Italy, Czech Republic	Narrative review	Elderly	N.A.	N.A.	N.A.	N.A.
Finkelstein, Friedman, Hripcsak, and Cabrera (2016)	United States	Case-control study 01/2011 to 12/2015	≥65 yrs with PP and CVD	Hospital: acute and outpatient care	*n* = 12 67% ♂; 33% ♀	77 (5) [69-83]	*Chronic diseases* mean (SD): 7.8 (1.2) *Geriatric syndromes* mean (SD): 4.0 (1.7)
Flood, Carroll, Le, and Brown (2009)	United states	Prospective study 12/2005 to 02/2006	≥65 yrs or <65 yrs if referred by nursing staff, with cancer	Hospital: oncology-acute care for elders' unit	*n* = 47 40% ♂; 60% ♀	73.5 (7.5) [60-94]	N.R.
Flood, Rohlfing, Le, Carr, and Rich (2007)	United States	Prospective cohort study 01/2003 to 12/2003	≥70 yrs with cardiovascular disease	Hospital	*n* = 100 39% ♂; 61% ♀	79.2 (5.5)	Hypertension 83% CAD 67% Hyperlipidemia 53% Atrial fibrillation 50% Heart failure 46%
Franchi et al. (2016)	Italy	Longitudinal cohort study Follow-up: 2 yrs 01/2001 to 12/2010	65-95 yrs	Community-dwelling	*2001* *n* = 1 567 575 39.7% ♂; 60.3% ♀ 65-74: 917 693 75-84: 495 722 ≥85: 154 110 *2009*	N.R.	N.R.

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
					n = 1 800 257 41.7% ♂; 58.3% ♀ 65-74: 998 898 75-84: 623 121 ≥85: 178 238		
Franchi et al. (2013)	Italy	Cohort study 01/2000 to 12/2010	65-95 yrs	Community	*2000* *n* = 1 554 004 *2005* *n* = 1 767 428 *2010* *n* = 1 917 646	N.R.	N.R.
Franchini, Pieroni, Fortunato, Molinaro, and Liebman (2014)	Italy	Social Network Analysis 01/2010 to 12/2010	≥75 yrs with type 2 diabetes	Health care structures	*n* = 1 976 42.8% ♂; 57.2% ♀ 75-79: 783 80-84: 614 ≥85: 579	N.R.	Diabetes 100% CVD 95.1% Hypertension 73.2% DSD 47.1% Endrocrine, nutritional & metabolic disease 38.8% *Nb. of comorbidities* 1: 17.8% 2: 32.6% 3: 26.6% 4: 15.7% ≥5: 5.0%
Frank (2014)	Canada	Editorial	Elderly	N.A.	N.A.	N.A.	N.A.

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Frazier (2005)	United States	Systematic review 1995 to 2003	Elderly	Community, hospital, home care	*n* = 16 studies	N.R.	N.A.
Fried et al. (2014)	United States	Systematic review 1946 to 05/2014	≥65 yrs	Community	*n* = 58 studies	N.R.	N.A.
Frohnhofen, Michalek, and Wehling (2011)	Germany	Pilot study, before-after study	Geriatric	Hospital	*n* = 46 26% ♂; 74% ♀	84 (6)	Dementia 48% Musculoskeletal disease 22% CVD 15% Pulmonary disease 9%
Frutos Bernal, Martín Corral, and Galindo Villardón (2011)	Spain	Survey 2006	≥65 yrs, non-institutionalised	Community	*n* = 458 35.8% ♂; 64.2%	75.3 [65-101]	Chronic illness 93.9% Arthrosis, arthritis or rheumatism 53.5% Hypertension 48.3%
Fulton and Allen (2005)	United States	Systematic review 01/1991 to 10/2003	≥60 yrs	Primary care	*n* = 16 studies	N.R.	N.A.
Fustinoni, Renard, Santos-Eggimann, and Seematter-Bagnoud (2015)	Switzerland	Survey nested into a population-based cohort (71% participation)	≥69 yrs	Community	*n* = 3 133 73% ♂; 27% ♀	77	N.R.

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Galazzi et al. (2016)	Australia, Italy	Survey 2015	≥65 yrs on PP	Hospital: geriatric and internal medicine wards	*n* = 100 53% ♂; 47% ♀ 65-74: 36 75-84: 46 ≥85: 18	[65-93] Median: 79 IQR: 73-83	Cardiovascular 87% Metabolic 40% Osteoarticular 40% Respiratory 33% Renal 30% *Nb. of comorbidities* Median (IQR): 4 (4-5)
Gallagher et al. (2011)	Switzerland, Spain, Belgium, Italy, Czech Republic, Ireland	Cross-sectional prospective study 08/2008 to 12/2008	≥65 yrs with acute illness	Hospital: acute geriatric medicine units	*n* = 900 39% ♂; 61% ♀ 65-74: 174 75-84: 420 ≥85: 333	Median: 82 IQR: 77-87	Dementia 29% CVD 29% IHD 22% Cardiac failure 18% Diabetes mellitus 18% *CCI score* 0: 12% 1:21% ≥2: 66%
Gamble et al. (2014)	Canada	Longitudinal cohort study and methodological study Follow-up: 90 days, 1 yr 2000 to 2002	≥65 yrs with community-acquired pneumonia, survived at least 1 yr	Hospital and emergency departments	*n* = 2 105 50% ♂; 50% ♀ 65-74: 784 75-84: 886 ≥85: 435	78 (8)	Heart disease 51% COPD 30% CVD 13% Mental illness 13% Neoplasm 12%

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Garcia-Baztan et al. (2014)	Spain	Retrospective study 01/2009 to 11/2010	Elderly	Acute general hospital, convalescence geriatric unit, community	*n* = 334 39.5% ♂; 60.5% ♀	77.9 (11.2)	Osteoarticular fracture 28.3% to 55.1% Neurological 13.2% to 29.3% Circularoty 5.8% to 8.5% Cardiology 3.5% to 3.8% Respiratory 3.2% to 7.4% CCI mean (SD): 1.8 to 2.3 (1.6 to 1.7) * According to the group with/without BZD
Garfinkel, Ilhan, and Bahat (2015)	Israel, Turkey	Narrative review, Expert opinion	Elderly	N.A.	N.A.	N.A.	N.A.
Garfinkel, Zur-Gil, and Ben-Israel (2007)	Israel	Experimental study 2004 to 2005 Follow up: 1 yr	Elderly	Nursing departments	*n* = 190 31.1% ♂; 68.9% ♀	*Study group (GPA)* 81.2 (8.3) *Control group* (82 (8.7)	Double incontinence 93% Hypertension 41% to 46% Previous stroke 39% Diabetes mellitus 24% to 30% Recurrent infections 29% * According to the study group (GPA) or control group

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Garrido-Garrido et al. (2011)	Spain	Cross-sectional study 06/2009 to 07/2009	≥65 yrs with PP	Primary care center	*n* = 305 34.4% ♂; 65.6% ♀ 64-74: 131 75-84: 134 ≥85: 40	N.R.	Hypertension 78% Arthrosis 73% Dyslipemia 45.5% Osteoporosis 45.5% Anxiety 38.5% Average nb. of diseases: 5.56
Gentes, Hertzog, Vogel, and Lang (2015)	France	Cross-sectional study 01/2012 to 04/2012	≥65 yrs, ≥ 2 comorbidities	Day-care hospital, short or rehabilitation ward, nursing home	*n* = 100 40% ♂; 60% ♀ 65-74: 11 75-80: 19 ≥81: 70	*N.R.*	Atherosclerosis 69% Hypertension 52% Type 2 diabetes 25% Falls (last 3 months) 24% Depression 19%
Girones, Torregrosa, and Diaz-Beveridge (2010)	Spain	Cross-sectional study 01/2005 to 06/2006	≥70 yrs, female outpatient (breast cancer survivors)	Outpatient clinics of the Medical Oncology unit	*n* = 91 0% ♂; 100% ♀	*At diagnosis* 76 [70-92] *At interview* 80 [71-95]	Hypertension 34% PVD 26% Diabetes 13% Heart failure 8% Coronary syndrome 7% CCI score ≥2: 61%
Gnjidic et al. (2015)	Australia	Longitudinal cohort study Follow-up: 1 yr	≥70 yrs, ambulant	Residential aged care facilities	*n* = 540 27.6% ♂; 72.4% ♀ 70-79: 100 80-89: 288 ≥90: 152	85.5 (6.4)	CCI mean (SD): 2.5 (1.7)
Gnjidic, Hilmer, Blyth, Naganathan, Cumming, et al. (2012)	Australia	Longitudinal cohort study Follow-up: 2 yrs	≥70 yrs, male only	Community-dwelling	*n* = 1 662 100% ♂; 0% ♀	76.9 (5.4)	*Nb. of comorbidities* Mean (SD): 1.9 (1.6)

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Gnjidic, Hilmer, Blyth, Naganathan, Waite, et al. (2012)	Australia	Methodology study 01/2005 to 05/2011	≥70 yrs, male only	Community-dwelling	*n* = 1 705 100% ♂; 0% ♀	76.9 (5.5) [70-97]	Dementia or MCI 12.5% *Nb. of comorbidities* Mean (SD): 1.8 (1.5)
Gomez et al. (2015)	Spain	Cohort study Follow-up: 13 yrs 01/1994 to 05/2007	≥65 yrs	Community	*n* = 5 052 42.2% ♂; 57.8% ♀	74.4 (6.9)	*Comorbidity index [2], mean (SD) [median]* 0 drug: 0.6 (1.2) [0] 1-5 drugs: 1.2 (1.5) [1] ≥6 drugs: 2.4 (1.9) [2]
Gomm et al. (2016)	Germany	Cohort study 2004-2011	≥75 yrs, inpatient and outpatient without dementia at baseline	Data from Germany statutory health insurer	*n* = 73 679 22.1% ♂; 77.9% ♀	83.58 (5.4)	≥*2* different type of dementia: 59% *With Dementia* IHD 40.7% Diabetes 32.9% Depression 17% Stroke 4.5%
Greene, Steinman, McNicholl, and Valcour (2014)	United States	Cohort study (retrospective chart review) 2008 to 2011	>60 yrs with or without immuno-deficiency virus infection (HIV)	Community-dwelling	*n* = 117 92.3% ♂; 7.7% ♀	*Positive HIV* Median: 63 IQR: 60-82 *Negative HIV* Median: 65 IQR: N.R.	Hyperlipidemia 61% Cognitive disorder 46% Hypertension 39% to 43% Depression 18% to 37% Diabetes mellitus 11%
Haefeli (2014)	Germany	Literature review (abstract)	Elderly	N.A.	N.A.	N.A.	N.A.

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Haider, Johnell, Weitoft, Thorslund, and Fastbom (2009)	Sweden	Cross-sectional study 1998-10/2005	75-89 yrs filled at least one drug prescription	Data from National registers	*n* = 626 258 39.7% ♂; 60.3% ♀ 77-79: 258 836 80-84: 226 105 ≥85: 141 317	80.9	CVD 10% Myocardial infraction 6% Cancer 6% CAD 4%
Haider, Johnell, Thorslund, and Fastbom (2008)	Sweden	Cross-sectional study 2002	≥77 yrs	Data from SWEOLD: Community, group living for the demented, long-term care facilities	*n* = 621 40.7% ♂; 59.3% ♀ 77-79: 158 80-84: 243 ≥85: 220	83.3	≥*2* comorbidities: 50.9%
Hajjar, Cafiero, and Hanlon (2007)	Unites States	Literature review 1986 to 06/2007	>65 yrs	N.R.	*n* = 5 to 21 studies according to the objective	N.R.	N.A.
Halling, Fridh, and Ovhed (2006)	Sweden	Cohort study 04/2001 to 05/2003	≥60 yrs	Community	*n* = 1 144 41.7% ♂; 58.3% ♀	[60-96]	N.R.
Hamaker et al. (2014)	Netherlands	Experimental study Median follow-up: 32 months 04/2007 to 09/2011	≥65 yrs, female only with metastatic breast cancer	Hospital	*n* = 78 0% ♂; 100% ♀ 65-69: 17 70-74: 16 75-80: 30 ≥81: 10	75.5 [66-87]	Mild depression 29% Severe depression 4% *CCI score* 0-1: 88% ≥2: 12%
Haque (2009)	United States	Conceptual model	Elderly	N.A.	N.A.	N.A.	N.A.

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Harugeri, Joseph, Parthasarathi, Ramesh, and Guido (2010a)	India	Prospective observational study 01/2008 to 06/2009	≥60 yrs with at least one medication at admission or during hospital stay	Hospital	*n* = 814 60.9% ♂; 39.4% ♀ 60-64: 234 65-69: 254 70-74: 144 75-79: 111 ≥80: 71	[60-95] Median: 66	Hypertension 41.5% Diabetes mellitus 34% COPD 18.5% *Nb. of diseases* 1: 19% 2: 32.6% 3: 26% ≥4: 22.4%
Harugeri, Joseph, Parthasarathi, Ramesh, and Guido (2010b)	India	Prospective study 01/2008 to 06/2009	60-95 yrs	Tertiary care hospital	*n* = 814 60.6% ♂; 39.4% ♀ 60-69: 488 70-79:255 ≥80: 71	[60-95] Median: 66	Hypertension 42.4% Diabetes mellitus 35.7% COPD 18.8% Angina pectoris 9.2% *Nb. of diagnoses* 1-2: 51.6% 3-4: 41.5% ≥5: 6.9%
Health Quality & Safety Commission (2017)	New-Zealand	Methodology paper for Polypharmacy Atlas	65 years and over	All	N.A.	N.A.	N.A.

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Heppner et al. (2012)	Germany	Descriptive cohort 2006 to 2009	≥70 yrs	Hospital: Clinical geriatrics, Poison information center Nuremberg, Toxicological intensive care unit	*n* = 292 70-80: 173 ≥81: 119	N.R.	N.R.
Hernandez Perella et al. (2013)	Spain	Cross-sectional study 2010	≥65 yrs with active clinical history	Urban clinics	*n* = 363 43.3% ♂; 56.7% ♀	75.2 (7.0)	CVD 76.9% Osteoarticular 57.6% Urogenital 31.4%
Hernandez, Ceballos, Martin, and Salazar (2011)	Spain	Cross-sectional analysis of cohort (Abstract - congress of the EUGMS) 2010	Elderly	Hospital: acute geriatric unit	*n* = 150 38% ♂; 62% ♀	87 (5.8)	Cause of hospitalisation: Infectious disease 51.3% Heart failure 16% Stroke 4.66% Electrolyte disturbances 4% CCI score ≥4: 81.3%
Hilmer, Gnjidic, and Le Couteur (2012)	Australia	Narrative review	Elderly	Primary care	N.A.	N.R.	N.A.
Hilmer and Gnjidic (2009)	Australia	Narrative review	Elderly	N.A.	N.A.	N.A.	N.A.
Hofer-Duckelmann (2012)	Germany	Book chapter	Elderly	N.A.	N.A.	N.A.	N.A.

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Hoffmann et al. (2011)	Germany	Cohort study 03/2005 to 03/2006	Outpatient with a first diagnosis of dementia	Outpatient care	*n* = 1 848 52.4% ♂; 47.6% ♀ 64-74: 566 75-84: 870 ≥ 84: 412	78.7 (7.4)	Disturbance, hearing loss 47.7% Pain 46.1% High risk of complication 35.9% Depression, anxiety 32.9% Incontinence 24.0%
Hofmann and Hach (2011)	Germany	Descriptive cross-sectional study (abstract)	1) ≥65 yrs inpatients; 2) new patients of the department of traumatology and orthopedy	Hospital	*Inpatients* *n* = 677 *New patients* *n* = 390 (≥ 65 yrs: *n* = 121)	*Inpatients:* N.R. *New patients ≥ 65 yrs:* 72.5	N.R.
Hopcroft et al. (2014)	Australia	Cohort study 07/2005 to 05/2010	≥70 yrs, minimum hospital stay of 48 h	Acute care hospital	*n* = 206 31.1% ♂; 68.9% ♀	84.8 (6.8)	*Nb. of comorbidities* Mean (SD): 6 (2.2)
Hovstadius, Petersson, Hellström, and Ericson (2014)	Sweden	Population-based cohort study 2006-2013	≥65 yrs	Entire population	*2013* *n* = 1 828 283 65-69: 595 931 70-74: 422 593 75-79: 311 611 80-84: 245 180 85-89: 161 736 90-94: 73 675 95-99: 15 721 ≥100: 1 836	N.R.	N.R.

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Hovstadius and Petersson (2012)	Sweden	Narrative review	Elderly	N.A.	N.A.	N.A.	N.A.
Hovstadius, Astrand, and Petersson (2010)	Sweden	Cohort study 07/2006 to 09/2006	Entire Swedish population Information collected for ≥70 yrs	Community Data from: Swedish Prescribed Drugs Register	*n* = 2 287 428 41.8% ♂; 58.2% ♀	N.R.	N.R.
Hovstadius, Hovstadius, Astrand, and Petersson (2010)	Sweden	Cohort study 07/2005 to 09/2008	Entire Swedish population Information collected for ≥60 yrs	Community, Data from: Swedish Prescribed Drugs Register	2005: 9 029 750 2006: 9 080 505 2007: 9 146 092 2008: 9 219 637	N.R.	N.R.
Hubbard et al. (2015)	Australia	Longitudinal cohort 06/2005 to 05/2010	≥70 yrs, admitted to general medical units with expected hospital stay > 48 hours	Acute care hospital	*n* = 1 216	81.3 (6.8)	Circulatory system: 21.4% Respiratory system: 20.9% Nervous systems: 10.3% Kidney / urinary tract: 7.9%

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Hudhra et al. (2016)	Spain	Cross-sectional cohort study 04/2011 to 06/2012	≥75 yrs	Hospital	*n* = 624 55% ♂; 45% ♀	77.7	CCI mean: 3.2
Huiart et al. (2013)	France	Cohort study 10/2006 to 06/2011	≥65 yrs, women with breast cancer	Community	*n* = 382 0% ♂; 100% ♀ 65-74: 223	71.8 (4.2)	Comorbidities: 50.6% Depression 11.2%
Hurria et al. (2012)	N.R.	Clinical practice guidelines	Elderly with cancer	N.A.	N.A.	N.A.	N.A.
Inventor et al. (2005)	United States	Expert opinion	Elderly, inpatient with both medical and psychiatric illness	Geriatric psychiatry unit	N.A.	N.A.	N.A.
Jensen, Andersen, Hallin, and Petersen (2014)	Denmark	Longitudinal observational study Follow-up: 30 days 10/2011 to 12/2011	≥65 yrs	Hospital: acute medical unit	*n* = 71 54.9% ♂; 45.1% ♀	78.7 [65.3-100.9]	*CCI score* 0: 52.1% 1: 35.2% ≥2: 12.7%

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Jimenez Paez, Ariza Fuentes, Cardona Pelaez, Monterde Perez, and Salas Becerra (2011)	Spain	Retrospective study (abstract) 2010-2012	Elderly	Residential environment	*n* = 313 28.4% ♂; 71.6% ♀	82	Dementia 66.7% Hypertension 65.5% Articular pathology 53.7% Diabetes mellitus 28.7% Cardiac disease 18.0%
Jorgensen, Herrstedt, Friis, and Hallas (2012)	Denmark	Case-control study 1996-2006	Person with or without cancer	Data from Danish cancer registry and Odense pharmaco-epidemiologic: Community	*n* = 124 037 48.3% ♂; 51.7% ♀ 0-49: 14 874 50-59: 20 550 60-69: 30 440 70-79: 34 220 80-89: 20 905 ≥90: 3048	Median: 68 IQR: 58-77	N.R.
Jorgensen, Hallas, and Herrstedt (2010)	Denmark	Case-control study (abstract) 1996-2006	Elderly with cancer	Community	*n* = 150 607 *Cancer cases* ≥70: 12 832 *Controls* ≥70: 51 298	N.R.	N.R.
Jorgensen, Hallas, Land, and Herrstedt (2010)	Denmark	Narrative review	Elderly with cancer	Community	N.A.	[63-101] Median: 61 to 75 yrs	N.A.

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Junius-Walker, Theile, and Hummers-Pradier (2007)	Germany	Cohort study	≥70 yrs	Primary care	*n* = 466 28.5% ♂; 71.5% ♀	♂: 77 ♀: 76.3	Incontinence 61.3% Anxiety 52.6% High cholesterol 49.4% Hypertension 37.2% Diabetes 28.9%
Jyrkkä, Enlund, Lavikainen, Sulkava, and Hartikainen (2011)	Finland	Longitudinal prospective cohort study Follow-up: 3 yrs 11/2003 to 2007	≥75 yrs	Population based	*n* = 294 31% ♂; 69% ♀	2004: 81.4 2007: 84.1	*FCI, mean* 2004: 2.7 2007: 2.7
Jyrkka, Enlund, Korhonen, Sulkava, and Hartikainen (2009)	Finland	Longitudinal population-based cohort study Follow-up: 4 yrs 1998-2007	≥75 yrs	Community	*n* = 332 25.1% ♂; 74.9% ♀ 80-84: 171 ≥85: 168	84.9 (3.5)	N.R.
Jyrkkä, Enlund, Korhonen, Sulkava, and Hartikainen (2009)	Finland	Cross-sectional analysis of a cohort study 01/1998	≥75 yrs	Population-based	*n* = 523 26% ♂; 73% ♀ 80-84: 171 ≥85: 168	81 [75-93]	Hypertension 63.7% Heart disease 62.7% Pain 54.5% Depression 22.0% Diabetes 19.7%
Jyrkka, Vartiainen, Hartikainen, Sulkava, and Enlund (2006)	Finland	Prospective longitudinal cohort study Follow up: 5 yrs 01/1998 to 12/2003	≥75 yrs	At home, in institution	*n* = 339 25.1% ♂; 74.9% ♀ 70-79: 171 80-84: 116 ≥85: 52	80	N.R.

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Kenig, Olszewska, Zychiewicz, Barczynski, and Mitus-Kenig (2015)	Poland	Methodology study Follow up: 30 days 06/2013 to 05/2014	≥65 yrs qualified for abdominal surgery due to solid cancer	Tertiary referral hospital	*n* = 75 56% ♂; 44% ♀ 65-74: 48 75-84: 25 ≥85: 2	73 (5.8)	CCI score ≥3: 71%
Klarin, Wimo, and Fastbom (2005)	Sweden	Population-based study longitudinal Follow-up: 3 yrs 09/1995 to 06/1998	≥75 yrs	Community	*n* = 785 42% ♂; 58% ♀ 75-79: 263 80-84: 307 ≥85: 215	82.2	*CCI score* 0: 28.9% 1: 27.1% 2: 22.8% ≥3: 21.2%
G. Kojima et al. (2012)	United States	Experimental study – pre-post treatment 10/2007	Residents with PP	Hospital-affiliated long term care facility	*n* = 70 27.1% ♂; 72.9% ♀	82.7 [47-104]	N.R.
T. Kojima et al. (2012)	Japan	Longitudinal observational study, methodological study Follow-up: 2 yrs 2006 to 2007	≥65 yrs, outpatient receiving treatment for chronic disease	Clinic of the research institute of aging science	*n* = 172 26.2% ♂; 73.3% ♀	77 (7)	Hypertension 62% Dyslipidemia 44% Osteoporosis 34% Diabetes 13% History of cancer 5%
Kristjansson et al. (2010)	Norway	Longitudinal cohort study Median follow-up: 20 months 11/2006 to 06/2008	≥70 yrs with confirmed or suspected colorectal cancer	Hospital	*n* = 182 43% ♂; 57% ♀ 70-74: 43 75-79: 47 80-84: 58 85-89: 24 ≥90: 10	[70-94] Median: 80	Depression 11% *CIRS score*[3] Mild comorbidity: 26% Moderate comorbidity: 52% Severe comorbidity: 23%

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Kronfly Rubiano et al. (2015)	Spain	Cross-sectional study 06/2009 to 07/2010	≥75 yrs	Primary health care	*n* = 290 35.1% ♂; 64.9% ♀	79.4 (3.2)	*Comorbidities most common among depressed elderly* Thyroid disease 58.8% Cancer 57.1% Valvulopathies 52.9% Hypertrophic cardiomyopathy 50.0% AVD 48.6%
Kuhn-Thiel, Weis, Wehling, and members (2014)	Germany, Austria	Expert opinion, survey	Geriatric internists / geriatricians, geriatric psychiatrists	N.R.	*n* = 20	N.R.	N.A.
Kuijpers, van Marum, Egberts, and Jansen (2008)	Netherlands	Review of medical and pharmacy records 09/2004 to 02/2005	Geriatric population	Department of geriatric medicine of the University Medical Centre Utrecht	*n* = 150 36% ♂; 64% ♀	79.6 (7.3) [65-100]	N.R.
Lai et al. (2012)	Taiwan	Case-control study 2000 to 2008	≥65 yrs with or without newly dementia	Outpatient clinics	*n* = 35 675 48% ♂; 52% ♀ 65-74: 15 018 75-84: 16 900 ≥85: 3 757	*No dementia* 76.5 (5.7) *Dementia* 78.9 (6.8)	Hypertension 69.1% CVD 41.1% Hyperlipidemia 29.3% Diabetes mellitus 26.8% CKD 8.2%

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Lai et al. (2011)	Taiwan	Case-control study 2000 to 2008	≥65 yrs with or without Parkinson disease	*Parkinson* Ambulatory care *No Parkinson* National health insurance dataset	*n* = 14 135 51.8% ♂; 48.2% ♀ 65-74: 6 342 75-84: 6 485 ≥85: 1 308	76.5 (6)	Hypertension 68.6% Stroke 40.8% Hyperlipidemia 29.3% Diabetes mellitus 26.9% CKD 7.4%
Lai et al. (2010)	China, Taiwan	Population-based case-control study 2005-2007	≥65 yrs with or without newly diagnosed hip fracture	National health insurance dataset	*n* = 11 640 47.8% ♂; 52.2% ♀ 65-74: 5 772 75-84: 4 416 ≥85: 1 452	N.R.	N.R.
Lakhanpal et al. (2015)	Australia	Observational study (audit) 10/2009 to 03/2010	≥70 yrs with cancer	Medical oncology clinic	*n* = 304 61% ♂; 39% ♀	76 [70-95]	*Geriatric syndrome* Files review: 24% Multidisciplinary meeting: 10% *Any mention of comorbidity* Files review: 92% Multidisciplinary meeting: 84%
Lalic et al. (2016)	Australia	Longitudinal cohort study Follow-up: 1 yr 04/2014 to 08/2015	≥65 yrs, with or without dementia	Long-term care facilities	*n* = 383 22% ♂; 78% ♀	Median: 88 IQR: 84-92	CCI median (IQR): 2 (1-3)

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
M. P. S. Lam, Cheung, and Wong (2015)	China	Cross-sectional study 01/2013 to 12/2013	≥65 yrs	Acute care tertiary hospital	*n* = 254 49.2% ♂; 50.8% ♀	81.4 (8.6)	N.R.
D. P. Y. Lam et al. (2010)	China	Cross-sectional study (letter to the editor) 01/2007 to 12/2007	≥65 yrs, outpatient	Medical general or medical geriatrics specialist clinics	*n* = 400 43.3% ♂; 56.7% ♀	77.2 (7)	Hypertension 63.3% Diabetes mellitus 33% Stroke 30%
Lapi et al. (2009)	Italy	Survey 2 waves: 1995, 1999	≥65 yrs	Community-dwelling	*n* = 568 40.1% ♂; 59.9% ♀	72.7 (0.2)	CAD or stroke 5.8% to 17% Heart failure 9.3% to 19.7% *Nb. of comorbidities, mean (SD)* 1995: 1.97 (0.06) 1999: 2.59 (0.06)
Le Couteur, Hilmer, Glasgow, Naganathan, and Cumming (2004)	Australia	Narrative review	Elderly	N.A.	N.A.	N.A.	N.A.
Leavy et al. (2013)	Sweden	Population-based observational study 06/2009 to 06/2010	≥50 yrs with hip fracture	Community dwelling, residential care facility	*n* = 484 30.2% ♂; 69.8% ♀	81.7 (9.6) [51-104]	*Pre-fracture comorbidities* CVD 6.9% to 17.2% IHD 16.3% to 23.2% Hypertension 36.4% to 50.4% Dementia 3.5% to 55.6%

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Le Cossec (2015)	France	Methodology study using administrative data (2013)	Individuals aged 75 years and over	Community	*n*=43 619 32% ♂; 68% ♀	*82 (5.28)* *(75-84y:74%; 85-115y:26%)*	*Number of diseases: 1:35.8%; 2:13.9%; 3:3.9%; >3:0.8%*
Leendertse, Egberts, Stoker, and van den Bemt (2008)	Netherlands	Case-control study 09/2005 to 06/2006	*Study group* Patient with unplanned hospitalization *Control group* Patients admitted for elective surgery	Hospital	*Study group* *n* = 332 50.6% ♂; 49.4% ♀ ≥65: 226 *Control group* *n* = 714 50.5% ♂; 49.5% ♀ ≥65: 221	*Study group* 70 (17) *Control group* 67 (16)	*Study group* Nb. of diseases 1-3: 39.2% ≥4: 55.7% *Control group* Nb. of diseases 1-3: 43.4% ≥4: 39.8%
Lees (2013)	Australia	Expert opinion	Elderly with cancer	N.A.	N.A.	N.A.	N.A.
Lees and Chan (2011)	Australia, Singapore	Narrative review	Elderly with cancer	N.A.	N.A.	N.A.	N.A.
Lees (2009)	Australia	Expert opinion (abstract COSA's annual	Elderly with cancer	N.A.	N.A.	N.A.	N.A.

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
		scientific meeting)					
Leiss et al. (2015)	Switzerland	Prospective longitudinal cohort study Follow-up: 2 yrs 09/2009 to 09/2012	≥65 yrs with Venous Thromboembolism	Hospital, community	*n* = 830 53% ♂; 47% ♀	[65-97] Median: 75	Hypertension 65.3% Anemia 33.9% Cardiac disease 24% Chronic renal disease 18.4% Diabetes mellitus 15.8%
Lichtman and Boparai (2008)	United States	Expert opinion	Elderly with cancer	N.A.	N.A.	N.A.	N.A.
Linnebur et al. (2014)	United States	Cross-sectional study 2011 to 2012	65-89 yrs with depression	Ambulatory clinics	*n* = 200 21.5% ♂; 78.5% ♀	*California* 74.3 (7.4) *Colorado* *79.7 (6.1)*	Diabetes mellitus 18% Cancer 17% COPD 35% Cancer 30%
Liu, Leung, and Chi (2011)	China, United Kingdom, Unites States	Cohort study Follow-up: 1 yr 1999 to 2000	≥65 yrs	Primary care	*n* = 457 48.4% ♂; 51.6% ♀	73.6	N.R.
Loffler (2014)	Germany	Protocol of an experimental study Follow-up 1 yr 08/2014	≥65 yrs with chronic diseases and multi-morbidity, ≥5 drugs	Hospital	*n* = 1 626	N.R.	N.R.

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
López Molina et al. (2012)	Spain	Cross-sectional study 01/2006	≥65 yrs	Primary Health Care Districts	*n* = 2914 39.2% ♂; 60.8% ♀ 65-69: 792 70-74: 804 75-79: 580 ≥80: 738	75.2	Vascular risk 90.2%
Lowthian et al. (2016)	Australia	Longitudinal cohort study Follow-up: 6 months 07/2012 to 11/2013	≥65 yrs triaged as categories 2-5 on ATS	Tertiary hospital: Emergency department	*n* = 959 44% ♂; 56% ♀ 65-74: 396 75-84: 350 ≥85: 213	Median: 77 IQR: 70-84	Depression 27% Cognitive impairment 26% Falls history 23% *Nb. of comorbidities* Median (IQR): 0 (0-1)
Lu, Wen, Chen, and Hsiao (2015)	Taiwan	Longitudinal cohort study Follow-up: 10 yrs 01/2002 to 12/2011	≥65 yrs	Data from National Health insurance research database	*n* = 59 042 51.2% ♂; 48.8% ♀ 65-74: 39 358 75-84: 16 903 ≥85: 2 781	N.R.	Hypertension 39.4% Arthritis 28.2% CAD 20.9% Diabetes 17.9% CVD 13.4% CCI mean (SD): 1.2 (1.3)
Luzny, Bellova, and Donek (2010)	Czech Republic	Cross-sectional study 02/2009 to 06/2009	Patients hospitalized in geronto-psychiatric wards	Psychiatric hospital	*n* = 304 33.2% ♂; 66.8% ♀	71.2 (9.2)	Hypertension 59.9% Visual or hearing disturbances 40.8% Hyperlipidemia 39.8% Cervicalgia, thoracalgia, lumbalgia or sacralgia 32.2% Diabetes mellitus 28.9%

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Maggiore et al. (2014)	United Stated	Prospective longitudinal cohort study	≥65 yrs with any type of solid-tumor malignancy	Secondary analysis of collected data of adults ≥65 yrs with cancer undergoing chemotherapy	*n* = 500 44% ♂; 56% ♀ 65-69: 175 70-74: 127 75-79: 105 80-84: 73 85-91: 20	73 (6.2) [65-91]	Hypertension 52% Arthritis 46% Heart disease 20% Stomach disorder 19%
Maggiore, Gross, and Hurria (2010)	United States	Literature review	Elderly with cancer	N.A.	N.A.	N.A.	N.A.
Maher, Hanlon, and Hajjar (2014)	United States	Literature review, expert opinion 01/1986 to 06/2013	>65 yrs	Ambulatory care, Hospital, nursing home	*n* = 6 observational studies & 10 RCT	N.A.	N.A.
Mamun, Lien, Goh-Tan, and Ang (2004)	Singapore	Cross-sectional study	≥65 yrs	Nursing homes	*n* = 454 33.3% ♂; 66.7% ♀	80 Median: 80	N.R.
Mannucci and Nobili (2014)	Italy	Review REPOSI registry 2008, 2010, 2012	Elderly	Medical of geriatric hospital	*n* = 4 035 48.2% ♂; 51.8% ♀ 65-74: 1 242 75-84:1 840 ≥85: 953	79	*CCI mean (SD)* Admission REPOSI 2010: 2.9 (1.7) REPOSI 2012: 3.1 (1.9) Discharge REPOSI 2010: 3.0 (1.8) REPOSI 2012: 3.2 (2.0)

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Mansur, Weiss, and Beloosesky (2008)	Israel	Longitudinal cohort study Follow-up: 129 days 07/2004 to 06/2005	≥65 yrs, received chronic medications	Hospital: Acute geriatric ward	*n* = 212 38.2% ♂; 61.8% ♀ 65-74: 41 75-84: 106 ≥85: 65	81.1 (7.3) [66-103]	*Chronic diseases* Mean (SD): 6.3 (2.6) 1-4: 23.6% 5: 18.9% 6: 16.5% ≥7: 41.0%
Maraldi et al. (2009)	Italy	Narrative review	Elderly	N.A.	N.A.	N.A.	N.A.
Marcum et al. (2012)	United States	Retrospective cohort 10/2003 to 12/2006	≥65 yrs, veterans	Departments of Veterans Affairs Medical Centers: Ambulatory care	*n* = 678 98.5% ♂; 1.5% ♀ 65-74: 273 75-84: 334 ≥85: 71	76.4	Chronic comorbid conditions mean: 4 ≥1 psychiatric condition: 25%
Marcum and Gellad (2012)	United States	Systematic review and conceptual model 1998 to 07/2011	Elderly	N.R.	*n* = 9 studies	N.R.	N.A.
Marshall (2012)	United States	Narrative review	Elderly with gait disturbance	N.A.	N.A.	N.A.	N.A.
Martinez-Selles, Gomez Huelgas, bu-Assi, Calderon, and Vidan (2016)	Spain	Consensus statement 6/2015 to 10/2015	Elderly with chronic IHD	N.A.	N.A.	N.A.	N.A.

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Martens et al (2008)	Canada	Study with administrative data (1996-2004)	≥65 yrs	Community-dwelling	N.R.	N.R.	N.R.
Mastromarino et al. (2014)	Italy	Narrative review	Patient with heart failure	N.A.	N.A.	N.A.	N.A.
Mazzone et al. (2016)	Italy	Retrospective cohort study 09/2012 to 01/2014	≥65 yrs with atrial fibrillation	Hospital	*n* = 399 40.6% ♂; 59.4% ♀	Median: 85	CHF 29.3% to 42.4% COPD 12.2% to 33.3% CVD 22.2% to 32.8% Myocardial infarction 17.1 to 30.6% Hemiplegia 2.8% to 26.8% CCI median: 2 to 3 * According to the medicines consumed
McGory, Shekelle, Rubenstein, Fink, and Ko (2005)	United States	Systematic review, expert opinion	Elderly with undergoing abdominal operations	N.R.	N.R.	N.R.	N.A.
McMahon, Cahir, Kenny, and Bennett (2014)	Ireland	Before and after design Follow up: 1 yr	≥70 yrs with fall	Hospital: emergency department	*n* = 1 016 30.3% ♂; 69.7% ♀	82.7 (6.1) Median: 82.7 IQR 77.9-86.8	*Nb. of comorbidities* Median: 3 to 6
Meloni, Vetrano, Bernabei,	Italy	Narrative review	Elderly with dementia	N.A.	N.A.	N.A.	N.A.

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
and Onder (2015)							
Min et al. (2013)	United States	Development and validation phase Follow-up: 1 yr 2002	≥75 yrs with at least one of 3 geriatric conditions (urinary incontinence, impaired memory or falls)	Ambulatory care	*n* = 644 33.6% ♂; 66.4% ♀	81.2 (4.8) [75-100]	New falls 66.0% Smoking past 44.7% CKD stage 2 43.8% Mild stable anemia 40.8% Chronic pain 40.5% CCI mean (SD): 3.7 (2.6)
Mira et al. (2013)	Spain	Cross-sectional study 11/2011 to 12/2011	≥65 yrs with at least one condition (CVD, respiratory, endocrine or digestive disorders), ≥5 drugs	Health centres	*n* = 382 57.3% ♂; 42.7% ♀	74.6 (6.4) [65-93]	*Nb. of comorbidities* 2: 42.1% 3: 4.7% 4: 4.7%
Mirk, Kemp, Echt, and Perkins (2013)	United States	Experimental study (poster) 2012	Elderly veterans taking ≥10 drugs	Geriatrics primary care clinic	*n* = 27 11% ♂; 89% ♀	89 [85-94]	Dementia 55.6% CCI mean: 8.96
Mizokami et al. (2016)	Japan	Cross-sectional study 10/2010 to 12/2013	Elderly with cancer	Hospital	*n* = 3 351 35.5% ♂; 64.5% ♀	78.9 (6.3) [65-103]	CCI mean (SD): 1.2 (1.5)

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Mizokami, Koide, Noro, and Furuta (2012)	Japan	Cohort study 01/2009 to 12/2009	>65 yrs with ≥1 prescribed drugs	Hospital: National Center for Geriatrics and Gerontology	*n* = 1 768 51.5% ♂; 48.5% ♀	78.2 (7.7) [65-100] 65-69: 308 7074: 346 75-79: 425 80-84: 330 ≥85: 359	Hypertension 41% Hyperlipidemia 28% Gastric ulcer 26% Previous stroke 26% Reflux esophagitis 23% CCI mean (SD) [range]: 2.6 (2.6) [0-12]
Modig, Kristensson, Ekwall, Hallberg, and Midlov (2009)	Sweden	Questionnaires 09/2006 to 10/2007	≥65 yrs, need help for at least 2 ADL	Hospital, primary care, outpatient	*n* = 34 41.2% ♂; 58.8% ♀	♂: 86 [76-95] ♀: 81.5 [72-94]	N.R.
Monégat, Sermet, Perronnin & Rococo (2014)	France	Methodology paper (2012-2013)	≥75 years with at least one medication	Community	*n*=69,324	N.R.	N.R.
Montero-Balosa et al. (2015)	Spain	Experimental study (poster)	≥65 yrs, ≥5 drugs with potential safety problems[4]	Primary care centres	*n* = 420 31% ♂; 69% ♀	74	N.R.
Morandi et al. (2013)	Italy	Retrospective longitudinal cohort study Follow-up: 30 days 01/2004 to 06/2011	≥65 yrs with an acute hospitalization	Rehabilitation hospital	*n* = 2 735 29% ♂; 71% ♀	Median: 80 IQR: 74-85	CIRS median (IQR): 1.62 (1.46-1.84)

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Moriarty et al (2015)	Ireland	Repeated cross-sectional study using administrative data (1997, 2002, 2007 and 2012)	All population covered by the General Medical Services scheme	Community	*n 338,025 (1997) to 539,752 (2012)* *n 65y+: 78,489 (1997) to 133 884 (2012)*	N.R.	*N.R.*
Moulis et al. (2015)	France	Cross-sectional study and methodology study (letter to the editor) 01/2013 to 10/2013	≥65 yrs consulting for the first time at the Geriatric frailty clinic	Mostly community dwelling	*n* = 437 37.3% ♂; 62.7% ♀	83 (6.1)	*CCI score* 1-2: 46.2% 3-4: 20.1% ≥5: 12.6%
Munger (2010)	United States	Narrative review	Elderly with hypertension and comorbid diabetes	N.A.	N.A.	N.A.	N.A.
Naveiro-Rilo et al. (2014)	Spain	Cross-sectional study	≥67 yrs on PP	Community	*n* = 369 44.6% ♂; 55.6% ♀ <80: 187 ≥80: 182	79.9	Hypertension 79.3% Hyper cholesterol 63.2% Diabetes 34.4% Ischemic disease 21.5% CVD 10.8% ≥4 comorbidities: 74%
Neuner-Jehle (2013)	Switzerland	Literature review	Elderly	N.A.	N.A.	N.A.	N.A.
Nguyen, Fouts, Kotabe, and Lo (2006)	United States	Cohort study 10/1998 to 09/1999	≥65 yrs	Nursing home	*n* = 335 37.6% ♂; 62.4% ♀	72 [65-100]	N.R.

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
NHS Highland (2015)	United Kingdom	Practice guideline	Frail adults	N.A.	N.A.	N.A.	N.A.
Nightingale, Hajjar, Guo, et al. (2015)	United States	Cross-sectional cohort study 01/2011 to 06/2013	Patients who received an initial comprehensive geriatric Oncology assessment	Data from electronic medical record	*n* = 234 36% ♂; 64% ♀	79.9	Oncology patients: 87% with solid tumor CCI, mean: 7.69
Nightingale, Hajjar, Swartz, ndrel-Sendecki, and Chapman (2015)	United States	Retrospective study 01/2011 to 06/2013	Elderly, outpatient with cancer	Oncology ambulatory center	*n* = 248 36% ♂; 64% ♀ 60-69: 16 70-79: 91 80-89: 122 90-99: 19	79.9 (6.8) [61-98]	*Prevalence of comorbidities by disease* Hypertension 75.4% Dyslipidemia 59.3% Osteoarthritis 51.2% Anemia 33.1% Diabetes 31.1%
Noale et al. (2016)	Italy	Survey 09/2010 to 10/2011	≥65 yrs, type 2 diabetes mellitus, receiving oral antidiabetic treatment	Community	*n* = 1 342 52.5% ♂; 47.5% ♀	73.3 (5.5)	1 oral antidiabetic drug: 49.6% ≥3 oral antidiabetic drugs: 12.5%
Nobili, Franchi, et al. (2011)	Italy	Longitudinal cohort study Follow-up: 1 yr 01/2005 to 12/2005	≥65 yrs	Community Data from Administrative database of Lombardy Region	*n* = 1 767 239 45.8% ♂; 54.2% ♀ 65-69: 545 595 70-74: 540 170 75-79: 361 859 82-84: 251 832 85-89: 99 046 90-94: 55 737	74.7 (6.9)	N.R.

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Nobili, Licata, et al. (2011)	Italy	Prospective longitudinal cohort study 01/2008 to 12/2008	≥65 yrs, participating in the REPOSI 2008	Hospital	*n* = 1 332 41.4% ♂; 58.6% ♀	79.4 (7.5)	Hypertension 57.8% Diabetes mellitus 24.0% CHD 23.0% Atrial fibrillation 20.6% COPD 20.0%
Nobili, Marengoni, et al. (2011)	Italy	Cross-sectional study 01/2008 to 12/2008	≥65 yrs, participating in the REPOSI 2008	Hospital	*n* = 1 155 46.1% ♂; 53.6% ♀	79.2	Hypertension 58.8% Diabetes mellitus 24.3% CHD 22.9% CVD 20.1 Atrial fibrillation 20%
Nomura and Akazawa (2012)	Japan	Cross-sectional study (abstract) 04/2009 to 03/2010	≥60 yrs	Community	*n* = 34 608 45% ♂; 55% ♀	N.R.	N.R.
Nomura (2011)	Japan	Cross-sectional study 10/2009 to 12/2009	≥65 yrs	Community	*n* = 453 34% ♂; 66% ♀	76 [65-97]	Hypertension 60.8% Hyperlipidemia 34.7% Gastric abnormal 24.1% Eye disorder 20.3% Heart failure 19.5%
Oh et al. (2015)	United States	Systematic review N.R. to 04/2013	≥18 yrs with postoperative delirium following hip fracture surgery	Hospital	*n* = 10 studies	Average age ranging from 77 to 86	N.A.

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Olsson, Runnamo, and Engfeldt (2011)	Sweden	Longitudinal cohort study Follow-up: 1 yr 09/2006 to 05/2008	≥75 yrs, ≥5 drugs	Community	*n* = 140 37.9% ♂; 62.1% ♀	83.4 (5)	N.R.
Onder et al. (2013)	Czech Republic, England, Finland, France, Germany, Italy, Netherlands	Longitudinal cohort study Follow-up: 1 yr	Residents with advanced cognitive impairment	Nursing home	*n* = 822 23.6% ♂; 76.6% ♀	84.6 (8]	IHD 19.8% Stroke 16.3% Diabetes 15.7% Heart failure 11.1% Cancer 8.3% *Nb. of diseases* Mean (SD): 2.5 to 3.5 (1.3 to 1.9)
Onder et al. (2012)	Czech Republic, England, Finland, France, Germany, Italy, Netherlands, Israel	Cohort study 01/2009 to 12/2011	Older residents	Nursing home	*n* = 4 023 26.8% ♂; 73.2% ♀	83.5 (9.4)	IHD 26.3% Stroke 22.1% Diabetes 21.7% Heart failure 17.7% Cancer 10.7% *Nb. of disease* Mean (SD): 2.3 (1.5)
Orfila, Garrofe, Tajada, Pavon, and Cegri (2014)	Spain	Cohort study Ongoing follow-up: 7 yrs 2005-2012	≥70 yrs	Primary health care	*n* = 691 42.5% ♂; 57.5% ♀ 70-74: 281 75-79: 229 80-84:147 ≥85: 40	76.9 (4.5) [70-91]	Hypertension 65.2% Arthritis 36.1% Diabetes 23.5%

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
O'Sullivan et al. (2013)	United Kingdom	Cross-sectional study 12/2009 to 09/2010	≥65 yrs	Long-term care including nursing homes and long-stay community hospitals	*n* = 732 29.8% ♂; 70.2% ♀ 65-74: 98 75-84: 266 ≥85: 368	83.9 (7.7) [65-102] Median: 85 IQR: 79-89	Hypertension 46.5% Dementia 43% Incontinence 33.5% CVD 32% Depression 31.6%
Pan, Li, Chen, Su, and Wang (2014)	Taiwan	Nested case-control study Follow-up: 1 yr 01/2007 to 12/2008	≥65 yrs hospitalised, with or without a discharge diagnosis code of fracture along with accidental fall	Data from National Health Insure Research Database	*Fracture & fall* *n* = 5 933 30.9% ♂; 69.1% ♀ 65-74: 1 956 75-84: 2 671 ≥85: 1 306 *No fracture & fall* *n* = 29 655 49.5% ♂; 50.5% ♀ 65-74: 17 082 75-84: 10 270 ≥85: 2 313	*Fracture & fall* 78.3 (7.5) *No fracture & fall* *73.9 (6.7)*	*CCI score* 0: 31.5% to 41.8% 1: 40.4% to 43.7% 2: 12.8% to 17.4% ≥3: 5.0% to 7.4%
Parian and Ha (2015)	United States	Longitudinal cohort study 01/2006-12/2012	≥65 yrs with inflammatory bowel disease (Ulcerative colitis or Crohn's disease)	Inflammatory bowel disease referral clinics	*n* = 190 49.5% ♂; 50.5% ♀	*Age at last clinic follow-up* Crohn's disease 70.4 (5.4) Ulcerative disease 70.0 (14.4)	*CCI score* Crohn's disease 0-2: 26.3% 3-4: 34.7% ≥5: 38.9% Ulcerative disease 0-2: 25.3% 3-4: 43.2% ≥5: 31.6%
Park et al. (2016)	Korea	Longitudinal cohort study 01/2008 to 12/2013	≥65 yrs with neck and neck squamous cell carcinoma	N.R.	*n* = 229 83.8% ♂; 16.2% ♀	[65-87] Median: 73	N.R.

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Patterson et al. (2014)	New Zealand, United Kingdom	Systematic review ≥ 11/2013	≥65 yrs with >1 long-term medical condition and PP	Hospital, nursing homes, home care, community, primary care	*n* = 12 studies 22 438 participants 34.4% ♂; 65.6% ♀	76.4	N.A.
Payne and Avery (2011)	United Kingdom	Expert opinion	Inaccurate	N.A.	N.A.	N.A.	N.A.
Pedone et al. (2005)	Italy	Survey 1991-1997	≥65 yrs	Hospital	*n* = 9 061 47.7% ♂; 52.3% ♀	77.4 (7)	Cognitive impairment 21%
Pervin (2008)	N.R.	Expert opinion	Elderly	N.A.	N.A.	N.A.	N.A.
Pimenta and Oparil (2012)	Australia, United States	Narrative review 1934 to N.R.	Elderly	N.A.	N.A.	N.A.	N.A.
Pire, Fournier, Schoevaerdts, Spinewine, and Swine (2009)	Belgium	Narrative review	Elderly	N.A.	N.A.	N.A.	N.A.
Poudel et al. (2015)	Australia	Cohort study 01/2013 to 08/2014	Elderly with frailty	Residential aged care facilities	*n* = 153 35.9% ♂; 64.1% ♀	83 (8.1) Median: 83	Dementia 67.3% Depression 46.4% Hypertension 35.9% Under nutrition 32% Diabetes 20.9%

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Pozzi et al. (2010)	Italy	Longitudinal cohort study Follow-up: 8 yrs 01/1995 to 12/2003	≥65 yrs	Community-dwelling	*n* = 1 022 42.9% ♂; 57.1% ♀	73 (6.8)	*Self-reported disease* Mean (SD): 2.3 (1.6)
Prithviraj et al. (2012)	United States	Cross-sectional study nested within a longitudinal study 02/2008 to 09/2009	≥65 yrs with new cancer diagnosis	Ambulatory oncology clinics	*n* = 117 17% ♂; 83% ♀ 65-74: 65 ≥ 75: 52	74.6 (6.9)	*Nb. of comorbidities* 0-4: 55% ≥5: 45%
Prithviraj, Bagai, Koroukian, Berger, and Owusu (2010)	United States	Cohort study (abstract) 04/2008 to 09/2009	≥65 yrs with breast, colon and lung cancers	N.R.	*n* = 91	Median: 74	N.R.
J. A. Pugh et al. (2014)	United States	Longitudinal retrospective cohort study Follow-up: 30 days 10/2005 to 09/2006	≥65 yrs who received veterans affairs care	Hospital	*n* = 129 400 97.9% ♂; 2.1% ♀ 65-74: 59 145 75-84: 57 167 ≥85: 13 088	N.R.	*CCI mean (SD)* No readmission: 4.4 (3) Readmission: 5.9 (3.3)

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
M. J. V. Pugh et al. (2007)	United States	Longitudinal cohort study 1993 to 1994 with 3 waves every 2 yrs	65-99 yrs	Community	*n* = 3 050 42% ♂; 58% ♀	73.1 (6.8)	Hypertension 42% Arthritis 36% Diabetes 24% CVD 9% Stroke 6%
Puts et al. (2009)	Canada	Prospective pilot study 03/2007 to 05/2008	≥65 yrs with new cancer diagnosis	Hospital	*n* = 112 30.4% ♂; 69.6% ♀	74.2 (6.0)	Nutrition problems 40.2% Cognitive impairment 25.0% Vision impairment 23.2% Anxiety 21.4% Hearing impairment 13.4% *Nb. of comorbidities* 1-2: 48.2% ≥3. :31.2%
Ramage-Morin (2009)	Canada	National Population Health Survey (1998-1999)	≥65 yrs	All settings	N.R.	N.R.	N.R.
Ramirez-Duque et al. (2014)	Spain	Longitudinal cross-sectional study 02/2009 to 19/2010	≥18 yrs with non-reversible chronic organ failure	Hospital, home hospitalization or palliative care	*n* = 1 847 51% ♂; 49% ♀ ≥65: 1 709	78.7 (10)	≥2 chronic diseases: 70%
Reason, Terner, Moses McKeag, Tipper, and Webster (2012)	Canada	Survey 04/2008 to 06/2008	≥65 yrs	Data from Canadian Survey of Experiences, community	*n* = 3 132 65-74: 1 750 75-84: 1 809 ≥85: 293	N.R.	*Nb. of chronic conditions* 1: 13% 2: 33% ≥3: 62%

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Reboredo-Garcia, Mateo, and Casal-Llorente (2014)	Spain	Experimental study	Chronic polymedicated patients	Health centers	*n* = 20 319 40% ♂; 60% ♀ 0-18: 17 19-30: 61 31-40: 202 41-50: 493 51-60: 1 429 61-70: 3 457 71-80: 6 931 81-90: 6 734 91-103: 995	N.R.	N.R.
Reddy, Gosavi, and Varma (2012)	India	Narrative review	Elderly	N.A.	N.A.	N.A.	N.A.
Regroupement des Unités de courte durée régiatriques et des services hospitaliers de gériatrie du Québec (2015)	Canada	Clinical guidelines	Elderly	Nursing homes	N.A.	N.A.	N.A.
Riccio, Solinas, Astara, and Mantovani (2007)	Ireland	Cross-sectional cohort study 09/2005 to 11/2009	≥65 yrs, women with Alzheimer disease or other types of dementia	Hospital	*n* = 47 0% ♂; 100% ♀ ≥65: 47 65-79: 9 ≥80: 38	N.R.	N.R.

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Rich (2014)	United States	Clinical recommendations (narrative review)	Elderly with cardiovascular disease	N.A.	N.A.	N.A.	N.A.
Richardson, Ananou, Lafortune, Brayne, and Matthews (2011)	United Kingdom	Longitudinal prospective cohort study Follow-up: 18 yrs 1991-12/2008	≥65 yrs	Community	*n* = 12 423 40.3% ♂; 59.7% ♀ 65-69: 3 132 70-74: 3 088 75-79: 2 819 80-84: 2 097 ≥85: 1 287	N.R.	Heart attack 34% Angina pectoris 34% Parkinson's disease 33% Asthma 31% Epilepsy 29%
Riker and Setter (2012)	United States	Continuing Edudcation	Elderly	Community	N.A.	N.A.	N.A.
Rohrer, Garrison, Oberhelman, and Meunier (2013)	United states	Cross-sectional study	≥65 yrs, rehospitalized or not within 30 days	Hospital	*n* = 142	N.R.	N.R.
Romana, Kamath, Sarda, Muraraiah, and Jayanthi (2012)	India	Prospective cross-sectional study 06/2010 to 07/2010	≥60 yrs on PP	Tertiary care hospital	*n* = 100 62% ♂; 38% ♀ 60-69: 66 70-79: 24 80-89: 10	N.R.	N.R.

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Rozenfeld, Fonseca, and Acurcio (2008)	Brazil	Cross-sectional study 03/2003 to 08/2003	≥60 yrs	Institute of social security	*n* = 577 39% ♂; 61% ♀ 60-69: 237 70-79: 231 ≥80: 109	N.R.	Hypertension 59.9% Bone/articular disease 42.6% Diabetes 17.0% *Nb. of diseases* 1-2: 29.7% 3-4: 42.2% ≥5: 22.9%
Ruberu and Fitzgerald (2012)	United stated	Expert opinion	N.R.	N.A.	N.A.	N.A.	N.A.
Ruggiero et al. (2010)	Italy	Longitudinal cohort study Follow-up: 1yr 02/2004 to 12/2005	≥65 yrs	Nursing home	*n* = 1 716 28.3% ♂; 71.7% ♀	83.6 (8.1)	Dementia 46.2% Hypertension 44.3% Chronic constipation 37.9% Insomnia 36.8% COPD 23.0% *Nb of diseases* Mean (SD): 4.0 (2.3) CIRS mean (SD): 10.1 (6.2)
Runganga, Peel, and Hubbard (2014)	Australia	Prospective cohort study 11/2009 to 09/2010	≥70 yrs or ≥50 yrs, indigenous population entering the *Transition Care Program*	Transition from hospital to home	*n* = 347 34.3% ♂; 65.7% ♀	78.9 (8.8)	CHD 34.1% Diabetes 26.3% Depression 21.4% COPD 13.1%

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Salahudeen (2015)	New Zealand	Cohort study 01/2011 to 12/2011	≥65 yrs	Community	*n* = 537 387 45.1% ♂; 54.9% ♀ 65-74: 296 100 75-84: 172 501 ≥85: 68 786	74.7 (7.6)	N.R.
Saarelainen et al. (2014)	United Kingdom	Cohort study 01-2009 to 07/2010	≥70 yrs	Hospital	*n* = 385 59% ♂; 41% ♀ ≥70: 385 70-74: 147 75-79: 132 ≥80: 106	76.7	Hypertension 58.4% Hypercholesterolemia 32.5% Arthritis 29.4% Diabetes 25.5% Airways disease 24.6% CCI 0-2: 66.5% CCI ≥3: 33.5%
Salazar, Poon, and Nair (2007)	United States	Expert opinion	Elderly	N.A.	N.A.	N.A.	N.A.
Salwe, Kalyansundaram, and Bahurupi (2016)	India	Cross-sectional study (prescription audit) 04/2013 to 06/2013	≥70 yrs	Tertiary care hospital	*n* = 100 62% ♂; 38% ♀ 65-74: 70 75-84: 21 ≥85: 9	71.6 (6.5)	N.R.

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Sanglier, Saragoussi, Milea, and Tournier (2015)	United States	Cohort study 01/2003 to 12/2006	*Elderly:* ≥65 yrs with a new episode of depression and without antidepressant claims during the previous 3 months *Non-elderly:* 25-64 yrs with the same characteristic as the elders	Community	*n* = 6 316 29.7% ♂; 70.3% ♀ ≥65: 4 440 25-64: 25 264	77	*Elderly* Treated depression 16.7% Untreated depression 12.7% Anxiety 12.0%
Santibáñez Beltrán et al. (2013)	Mexico	Study evaluating costs	≥70 yrs with polypharmacy, chronic degenerative disease and ≥1 medical visit per year	Primary health care	*n* = 131 50.4% ♂; 49.6% ♀	69.21	Hypertension 89.3% Diabetes 59.5% Degenerative joint disease 23.7% Chronic obstructive pulmonary disease 3.8% Hypothyroidism 3.1%
Sato and Akazawa (2013)	Japan	Retrospective cohort study 1981-1999	≥65 yrs with hypertension	Community	*n* = 61 661 41.8% ♂; 48.2% ♀ 65-74: 21 643 ≥75: 40 018	N.R.	N.R.
Scheidt-Nave et al. (2013)	Germany	Speaker presentation, (Survey results 1998 to 11/2008)	65-79 yrs	Community Data from national health interview surveys	N.R.	N.R.	N.R.
Schonenberger et al. (2011)	Switzerland	Longitudinal cohort	Elderly in nursing homes	Nursing home	*n* = 1249	N.R.	N.R.

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Schrijver, Toppinga, de Vries, Kramer, and Nanayakkara (2013)	Netherlands	Cohort study 11/2011 to 01/2012	≥70 yrs	Hospital: emergency department	*n* = 100 35% ♂; 65% ♀	[70-97] Median: 81	*Nb. of comorbidities,* mean (SD): 3.04 (1.9) ≥3 comorbidities: 47% Cardiovascular 85 Malignancy 30 CVD 29 Endocrine disorder 20 Neuropsychiatric 16
Schuler et al. (2008)	Austria	Prospective cohort study 02/2007 to 05/2007	≥75 yrs	Hospital: departments of gastroenterology and cardiology	*n* = 543 39.8% ♂; 60.2% ♀	82.6 (5)	CCI mean (SD): 3.2 (2) *Nb. of diagnoses* 1: 61.5% 2: 33% ≥3: 5.5%
Scott et al. (2012)	Australia	Conceptual framework for minimising inappropriate medications	Elderly	N.A.	N.A.	N.A.	N.A.
Scott et al. (2015)	Australia	Literature review	Elderly	N.A.	N.A.	N.A.	N.A.
Scottish Govern. Polypharmacy Guidance (2015)	Scottland	Guidance paper		N.A.	N.A.	N.A.	N.A.
Segal, Staum, and Munshi (2009)	United States	Cohort study (abstract)	Elderly with diabetes	Geriatric diabetes clinic	*n* = 139	78.8 (6.5)	Hypoglycemia 44% to 69% Under nutrition 7% to 63% Depression 31% to 53% Cognitive dysfunction 25% to 53%

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Sehgal et al. (2013)	United States	Retrospective nested case-control study 01/2008 to 12/2009	Patients readmitted to the hospital within 30 days of discharge	Hospital	*n* = 414 41.1% ♂; 58.9% ♀	79.25	N.R.
Sengstock and Zimmerman (2014)	United States	Book chapter	Elderly	N.A.	N.A.	N.A.	N.A.
Sergi, De Rui, Sarti, and Manzato (2011)	Italy	Expert opinion, narrative review	Elderly	N.A.	N.A.	N.A.	N.A.
Sganga et al. (2015)	Italy	Longitudinal cohort study Follow-up: 1 yr 06/2010 to 05/2011	≥65 yrs	Hospital: geriatric and internal medicine acute care	*n* = 480 47.3% ♂; 52.7% ♀	78.6 (6.8)	Diabetes 32.5% IHD 31.5% Heart failure 25.6% Stroke 7.3% Dementia 7.1% CCI mean (SD): 2.1 (1.7)

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Sganga et al. (2014)	Italy	Prospective cohort study 06/2010 to 05/2011	≥65 yrs	Geriatric and internal medicine acute care wards Date from CRIME project	*n* = 1 123 44% ♂; 56% ♀	81.5 (7.4)	Ischemic heart failure 31.7% Diabetes 29.7% Heart failure 27.3% Dementia 20.5% Cancer 13.8% *Nb of diseases* Mean (SD): 5.7 (3.1)
Shah and Hajjar (2012)	United States	Narrative review	Elderly	N.A.	N.A.	N.A.	N.A.
Sharifi, Hasanloei, and Mahmoudi (2014)	Germany	Review 01/2001 to 12/2011	N.A.	N.A.	N.A.	N.A.	N.A.
Shastry, Ullal Sheetal, Sowjanya, Bethi, and Kumar (2015)	India	Retrospective cross-sectional study	≥60 yrs with cardiovascular disease, outpatient	Outpatient department of a tertiary care hospital	*n* = 204 50% ♂; 50% ♀ 60-65: 63 66-70: 57 71-75: 44 76-80: 29 ≥80: 11	69.7 (6.7)	Diabetes mellitus 53.4%
Shimizu et al. (2014)	Japan	Cross-sectional study (abstract)	≥65 yrs, functionally independent	Community-dwelling	*n* = 2 044 49.6% ♂; 50.4% ♀	N.R.	N.R.
Silvestre (2015)	Portugal	Multicentered randomized controlled trial (abstract)	≥65 yrs on PP	Nursing home	*n* = 126	N.R.	N.R.

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Singler et al. (2014)	Germany	Prospective cohort study 03/2010 to 04/2010	≥75 yrs	Hospital: emergency department	*n* = 133 39.8% ♂; 60.2% ♀	Median: 83.2	CCI score ≥3: 49.6% Delirium 14.3%
Skoldunger, Fastbom, Wimo, Fratiglioni, and Johnell (2015)	Switzerland	Cohort study 01/2001 to 12/2004	≥60 yrs	Data from Swedish National study on aging and care	*n* = 4 108 37.2% ♂; 62.8% ♀ 60-69: 1 559 70-79: 1 127 80-89: 872 ≥90: 550	74.8 (11.1) [60-105]	CCI score 0: 58.8% CCI score 1: 18.2% CCI score 2: 15.6% CCI score ≥3 : 7.5% Dementia 7.8%
Slabaugh, Maio, Templin, and Abouzaid (2010)	Italy	Retrospective cohort study Follow-up: 1 yr 01/2007 to 12/2007	≥65 yrs with at least one prescription filled during the study year	Community Data from Emilia-Romagna outpatient prescriptions database	*n* = 887 165 41.7% ♂; 58.3% ♀ 65-74: 437 275 75-84: 334 327 ≥85: 115 563	75.5 (7.5)	N.R.
Sokol, Knudsen, and Li (2007)	United States	Retrospective cohort study	≥70 yrs, outpatient undergoing chemotherapy	Community-dwelling, primary care facility	*n* = 100 55% ♂; 45% ♀	78 IR: 70-90	*Nb. of comorbidities* Mean: 3
Soleymani (2010)	Iran	Cross-sectional household survey (abstract) 01/2007 to 12/2007	≥60 yrs	Community	*n* = 1 054 49.4% ♂; 50.6% ♀	N.R.	N.R.

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Sonnichsen et al. (2016)	United Kingdom	Study protocol for RCT Follow-up: 2yrs Recruitment: 01/2015 to 09/2015	≥75 yrs on PP	Community	N.A.	N.A.	N.A.
Srinivasan et al. (2016)	United States	Cohort study 01/2006 to 04/2014	Patients with ruptured abdominal aortic aneurysm	Vascular surgical center	*n* = 184 85% ♂; 15% ♀	Median: 77	N.R.
Stauder, Spross, and Augscholl (2015)	Australia	Cohort study (pilot) (abstract)	Elderly with myelodysplastic syndromes, acute myeloid leukemia or chronic myelomonocytic leukaemia	N.R.	*n* = 64 56.3% ♂; 43.7% ♀	Median: 78.5	CCI score >2: 40.6%
Stawicki and Gerlach (2009)	United States	Narrative review	Elderly	N.A.	N.A.	N.A.	N.A.
Steinman (2007)	United States	Editorial	Elderly	N.A.	N.A.	N.A.	N.A.
Steinman et al. (2006)	United States	Cross-sectional study 01/2001 to 12/2003	≥65 yrs on PP	Outpatient in Veterans Affairs Medical Center	*n* = 196 99% ♂; 1% ♀	74.6 (5.4)	Hypertension 89% IHD 57% Diabetes mellitus 45% COPD 26% Heart failure 12%

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Strehblow, Smeikal, and Fasching (2014)	Austria	Cohort study 01/2010 to 12/2012	≥80 yrs	Hospital	*n* = 948 33% ♂; 67% ♀	87.2 (4.5)	*CCI mean (SD)* 80-84 yrs: 2.2 (1.7) 85-89 yrs: 2.2 (1.7) 90-94 yrs: 2.0 (1.6) ≥95 yrs: 1.7 (1.1)
Sumukadas, McMurdo, Mangoni, and Guthrie (2014)	Scotland	Cohort study 03/1995 to 03/2010	≥65 yrs registered with a Tayside General Practice	Entire population	*1995* *n* = 67 608 38.9% ♂; 60.1% ♀ *2010* *n* = 73 465 43.2% ♂; 56.8% ♀	*1995* 74.6 (7.2) *2010* 75.1 (7.4)	N.R.
Tam-McDevitt (2008)	N.R.	Narrative review	Elderly with cancer	N.A.	N.A.	N.A.	N.A.
Tan et al. (2015)	USA	Prospective cohort study	≥65 yrs with no dementia and candidates for elective colon surgery	Hospital	*n* = 44 66% ♂; 34% ♀	75.5	Hypertension 45.5% Dyslipidemia 27.3% Colon/rectal cancer 18.2% Gastroesophageal reflux 13.6%

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Thai, Hilmer, Pearson, Reeve, and Gnjidic (2015)	Australia	Cross-sectional study 07/2014 to 10/2014	≥65 yrs, prescribed a statin	Hospital: cardiovascular, geriatric, orthopaedic or general medicine	*n* = 180 52.8% ♂; 47.2% ♀	Median :78 IQR: 14	CCI, median (IQR): 2 (3)
Thurmann (2013)	Germany	Narrative review	Elderly	N.A.	N.A.	N.A.	N.A.
Torrance, Powell, and Griffiths (2015)	United Kingdom	Narrative review	Elderly	N.A.	N.A.	N.A.	N.A.
Tulner et al. (2010)	Netherlands	Cross-sectional analysis of cohort study	≥1 following conditions: hypertension, angina pectoris, CVD, ischemic attack, atrial disease or fibrillation, myocardial infraction, heart failure, diabetes, osteoporosis	Community	*n* = 516 47% ♂; 53% ♀	81.5	CCI, mean (SD): 2.3 (1.4)

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Tulner et al. (2009)	Netherlands	Survey 05/2004 to 08/2004	≥60 yrs with ≥1 prescription after hospital discharge	Community	*n* = 40 65% ♂; 35% ♀	82.1	N.R.
Turner et al. (2016)	Australia	Methodology study 01/2009 to 07/2010	≥70 yrs, attending the geriatric oncology outpatient multi-disciplinary clinic	Hospital: geriatric oncology multi-disciplinary clinic	*n* = 385 59% ♂; 41% ♀	76.7 (4.8) [70-92]	Hypertension 58.4% Hypercholesterolemia 32.5% Arthritis 29.4% Diabetes 25.5% Airways disease 24.6%
Turner et al. (2014)	Australia	Cohort study 01/2009 to 07/2010	≥70 yrs, outpatient with cancer	Medical oncology clinic	*n* = 385 59% ♂; 41% ♀	76.7 (4.8) [70-92]	CCI, mean (SD): 1.2 (1.4) Hypertension 62.0% Hypercholesterolemia 34.4% Arthritis 31.1% Diabetes 27.0% Airways disease 26.2%
Ussai, Casetta, Bresigar, Barbone, and Pisa (2013)	Italy	Longitudinal cohort study (abstract) 11/2012 to 04/2013	≥65 outpatient	External care	*n* = 180 42.7% ♂; 57.3% ♀	76.6 (9.4)	CVD 33.9% Diabetes 14.4% Cancer 4.4% Depression 3.9%
van der Marck et al. (2014)	United Kingdom	Expert opinion	Patient with Parkinson	N.A.	N.A.	N.A.	N.A.

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Vande Walle et al. (2014)	England	Prospective cohort study 10/2009 to 07/2011	≥70 yrs with cancer	Hospital	*n* = 937 36.5% ♂; 63.5% ♀	[70-95] Median: 76	New cancer 61% Congestive heart failure 18.4% Diabetes without complication 13.4% CCI 1: 24.8% CCI ≥2: 29.1%
Vass and Hendriksen (2005)	Denmark	Expert opinion	GP of older people	N.A.	N.A.	N.A.	N.A.
Venturini et al. (2011)	Brazil	Retrospective cohort study 01/2006 to 05/2007	≥60, able-bodied	Community	*n* = 438	N.R.	N.R.
Vetrano et al. (2013)	Czech Republic, England, Finland, France, Germany, Italy, Netherlands	Cross-sectional study 2009 to 2010	Elderly with severe cognitive impairment	Nursing homes	*n* = 1 449 25% ♂; 75% ♀	84.2 (9)	IHD 24.6% Stroke 24.2% Diabetes mellitus 19.6% Heart failure 14.6% Cancer 9.2% *Nb. of diagnoses* Mean (SD): 2.6 (1.5)
Vigouroux, Bastard, and Capeau (2014)	France	Expert opinion	HIV-infected individual	N.A.	N.A.	N.A.	N.A.

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Viktil, Blix, Moger, and Reikvam (2007)	Norway	Prospective cohort study 05/2002 to 12/2002	Patients	Hospital	*n* = 827 41.4% ♂; 58.6% ♀	<5 drugs 75.4 (12.8) [21-98] ≥5 drugs 66.7 (19.4) [15-98]	Cardiac failure 18.0% Diabetes mellitus 11.2% Reduced renal function 18.9% Reduced liver function 1.9%
Viktil, Blix and Reikvam (2008)	Norway	Expert review	Individuals with polypharmacy, often elderly	N.A.	N.A.	N.A.	N.A.
Vivas-Consuelo, Uso-Talamantes, Trillo-Mata, and Mendez-Valera (2015)	Spain	Expert review	Elderly	N.A.	N.A.	N.A.	N.A.
Walsh and Cussen (2010)	Ireland	Before-after study without control group Follow-up: 4 weeks	≥65 yrs receiving repeat prescriptions for ≥2 drugs, living at home	Community	*n* = 50 44% ♂; 56% ♀	73 [65-86]	N.R.

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Wang et al. (2015)	China	Longitudinal cohort study Follow-up: 4yrs 2009-2014	≥80 yrs, men only	Hospital	*n* = 1 562 100% ♂; 0% ♀	85.2 [80-104]	Hypertension 52.1% IHD 33.5% Pain 28.7% Diabetes 24.5% Frail 18.9%
Wauters, Elseviers, Vaes, Degryse, Dalleur, Vander Stichele, Van Bortel, et al. (2016)	Belgium	Prospective cohort study 11/2008 to 09/2009	≥80 yrs, non-institutionalised with drugs records, able to visit their GP	Population-based	*n* = 503 38.8% ♂; 61.2% ♀	83.9 (3.6) [80-102]	Hypertension 70.4% Osteoarthritis 57.1% Hyperlipidaemia 44.1% Heart failure 38.4% Diabetes 18.9% *Multimorbidity* Median (SD) [range]: 3.9 (1.6) [1-9]
Wauters, Elseviers, Vaes, Degryse, Vander Stichele, et al. (2016)	Belgium	Prospective longitudinal cohort study Follow-up: 1.5 yrs 10/2008	≥80 yrs without known dementia and not in acute or palliative care	Community	*n* = 503 38.8% ♂; 61.2% ♀	84.4 [80-102]	Hypertension 70.4% Osteoarthritis 57.1% Hyperlipidaemia 44.1% Heart failure 38.4% Diabetes 18.9% *Multimorbidity* Median [range]: 4 [1-9]

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Wauters, Elseviers, Vaes, Degryse, Dalleur, Vander Stichele, Christiaens, et al. (2016)	Belgium	Longitudinal cohort study Follow-up: 1.5 yrs 11/2008 to 09/2009	≥80 yrs, primary care patients	Community-dwelling	*n* = 503 38.8% ♂; 61.2% ♀	84.4 [80-102]	Hypertension 70.4% Osteoarthritis 57.1% Hyperlipidaemia 44.1% Heart failure 38.4% Obesity 27.9%
Wawruch, Fialova, et al. (2008)	Slovakia	Retrospective cohort study 12/2003 to 03/2005	≥65 yrs	Hospital	*n* = 600 41.5% ♂; 58.5% ♀: 65-74: 245 ≥75: 355	76.6	N.R.
Wawruch, Zikavska, et al. (2008)	Slovakia	Retrospective cohort study 12/2003 to 03/2005	≥65 yrs	Hospital	*n* = 600 41.5% ♂; 58.5% ♀	76.6 (6.5)	*Without PP* ≥4 diseases: 35.3% IHD 76.1% Hypertension 69.3% Osteoporosis and arthritis 42.0% Heart failure 24.4% Diabetes mellitus 25.1 *With PP* ≥4 diseases: 53.6% IHD 82.3% Hypertension 81.8% Diabetes mellitus 44.8% Osteoporosis and arthritis 42.3% Heart failure 40.6%

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Wehling and Throm (2015)	Germany	Narrative review /expert opinion	Elderly	N.R.	N.R.	N.R.	N.R.
Wehling (2009)	Germany	Letter to the editor	Elderly	N.R.	N.R.	N.R.	N.R.
Wehrberger, Madersbacher, Jungwirth, Fischer, and Tragl (2012)	Austria	Population-based cohort study Follow-up: 10 yrs 01/2010 to 12/2010	≥75 yrs, likely to survive for 10 yrs	Community	*n* = 262 63.4% ♂; 36.6% ♀ ≥75: 262	85	Urinary incontinence 32.4% Neurovascular disease 16.8% Coronary heart disease 13.7% Alzheimer' dementia 10.3% Diabetes 11.1%
Westerholm (2013)	Sweden	Narrative review	Elderly	N.A.	N.A.	N.A.	N.A.
Williams et al. (2004)	United States	Experimental study - RCT 06/1993 to 11/1995	≥65 yrs, cognitively intact, ≥5 drugs	Health center ambulatory clinic	*n* = 140 42.9% ♂; 57.1% ♀	74 (5.6 to 5.9)	N.R.
Wilson et al. (2011)	Australia	Cohort study Follow-up: 1 yr	≥70 yrs, likely to survive for 12 months	Community	*n* = 602 29.1% ♂; 70.9% ♀	85.7	Nb. od comorbidities, mean (SD): 0.95 (0.91) Arthritis 39.0% Stroke 21.3% Osteoporosis 16.6% Diabetes 14.3% Parkinson 3.5%

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Wimmer, Dent, Bell, et al. (2014)	Australia	Cohort study Follow-up: 1yr 10/2010 to 12/2011	≥70 yrs	Hospital: Geriatrics evaluation and Management unit	*n* = 163 27.6% ♂; 72.4% ♀	84.9 (6.2)	CCI score range 0-10
Wimmer, Dent, Visvanathan, et al. (2014)	Australia	Prospective cohort study 10/2010 to 12/2011	≥70 yrs	Hospital: Geriatric evaluation and Management unit	*n* = 163 27.6% ♂; 72.4% ♀	85.2 (6.4)	Cardiovascular disease 82.2% Gastrointestinal 47.2% Arthritis 36.8% Diabetes 33.1% Urinary tract Infection/urological disorders 28.8%
Wise (2013)	England	Expert opinion	All	N.A.	N.A.	N.A.	N.A.
Womack, Brandt, and Justice (2015)	United States	Review	Women aging with HIV	N.A.	N.A.	N.A.	N.A.
Wong, Marr, Kwan, Meiyappan, and Adcock (2014)	Canada	Cross-sectional retrospective chart review 04/2010 to 03/2011	≥65 yrs, >4 visits to an emergency department associated with the hospital network	Primary care clinic	*n* = 46 50% ♂; 50% ♀ 65-74: 18 75-84: 24 ≥85: 4	76.3 (6.6)	CCI, mean (SD): 3.7 (2.6)

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]
Wright et al. (2009)	United States	Cross-sectional analysis of cohort study 08/1995 to 01/1999	≥65 yrs, hospitalized in a medical or surgical ward for >48 hours, and meet criteria for frailty	Community	*n* = 384 97.4% ♂; 2.6% ♀ 65-74: 206 75-85: 165 >85: 13	N.R.	CCI mean (SD): 2.44 (1.93) Depression 9.6%
Wu et al. (2006)	Hong Kong	Experimental study – RCT 10/1998 to 06/2001	Patients on ≥5 drugs on at least 2 consecutives visits to the clinic	Hospital medical clinic	*n* = 442	N.R.	N.R.
Wyles and Rehman (2005)	United Kingdom	Expert opinion	Elderly	N.A.	N.A.	N.A.	N.A.
Yang, Lee, Huang, Shih, and Chang (2015)	Taiwan	Longitudinal cohort study	≥65 yrs	Community	*n* = 2 415 52.9% ♂; 47.1% ♀	N.R.	Hypertension 41.74% Cataract 38.22% Impaired cognition 26.69% Depression 24.76% Heart disease 23.60%
Yong, Lau, Li, Hakendorf, and Thompson (2012)	Australia	Cohort study 03/2009	Elderly	Medical centre	*n* = 200 39.5% ♂; 60.5% ♀ ≤64: 42 65-84: 74 ≥85: 84	74.9 (17.2)	Hypertension 41% Hypercholesterolemia 25% Type 2 diabetes 20% COPD 19% Gastroesophageal reflux disease 11%

Study	Country	Design & Study period	Subjects	Setting	Sample size	Mean age (SD) [range]	Morbidities or comorbidities[1]

Notes: [1] Morbidities or comorbidities reported by the autrhors; [2] The comorbidity index was calculated based on the presence of the following conditions: atrial fibrillation, cancer, chronic obstructive pulmonary disease, depression, dementia, diabetes, epilepsy (treated), heart failure, myocardial infarction, other psychiatric disorders (psychosis, schizophrenia, or bipolar affective disorder), renal disease, and stroke;[3] *mild comorbidity* when there was no comorbidity higher than grade 2 and less than three grade 2 comorbidities, *moderate comorbidity* when there were a maximum of two grade 3 comorbidities and no grade 4 comorbidities, or *severe comorbidity* when there were three grade 3 comorbidities or any grade 4 comorbidity; [4] Patients should at least have one of the following potential safety problems: a) concomitant use of an antihypertensive drug with a non-steroidal anti-inflammatory drug, anticoagulant or antitrombotic drug; b) use of two or more benzodiazepines;
(BZD).

Abbreviations: ADL: activities of daily living; ATS: Australasian Triage System; BZD: benzodiazepine; CAD: coronary artery disease; CCI: charlson comorbidity index; CHD: coronary heart disease; CHF: congestive heart failure; CIRS: cumulative Illness rating scale; CKD: chronic kidney disease; COPD: chronic obstructive pulmonary disease; CRIME: CRiteria to Assess Appropriate Medication Use among Elderly Complex Patients; CVD: cerebrovascular disease; DSD: digestive system disease; FCI: functional comorbidity index; GP: general practitioners; GPA: geriatric-palliative approach; IHD: Ischemic heart disease; IQR: interquartile range; MCI: mild cognitive impairment; *n* : number of participants; nb: number; N.R.: not reported; PP: polypharmacy; PSM: potentially suboptimal medicines; PVD: peripheral vascular disease; RCT: randomized controlled trial; RSD: respiratory system disease; REPOSI: Registro Politherapie SIMI; SD: standard deviation; SWEOLD: Swedish Panel Study of Living Condition of the Oldest; tx, treatment; yr : year

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