

Supplementary material

Piotrowicz K, Pac A, Skalska A, et al. Patterns of multimorbidity in 4588 older adults: implications for a nongeriatrician specialist. Pol Arch Intern Med. 2021; 131: 16128. doi:10.20452/pamw.16128

Please note that the journal is not responsible for the scientific accuracy or functionality of any supplementary material submitted by the authors. Any queries (except missing content) should be directed to the corresponding author of the article.

Supplementary on-line material.

Supplemental Figure 1: The flow of participants in the PolSenior study.

Supplemental Figure 2. The prevalence and co-occurrence of the examined chronic diseases (%) in those 55-59 years old. Different colors were used to denote participants with one to five and more chronic diseases.

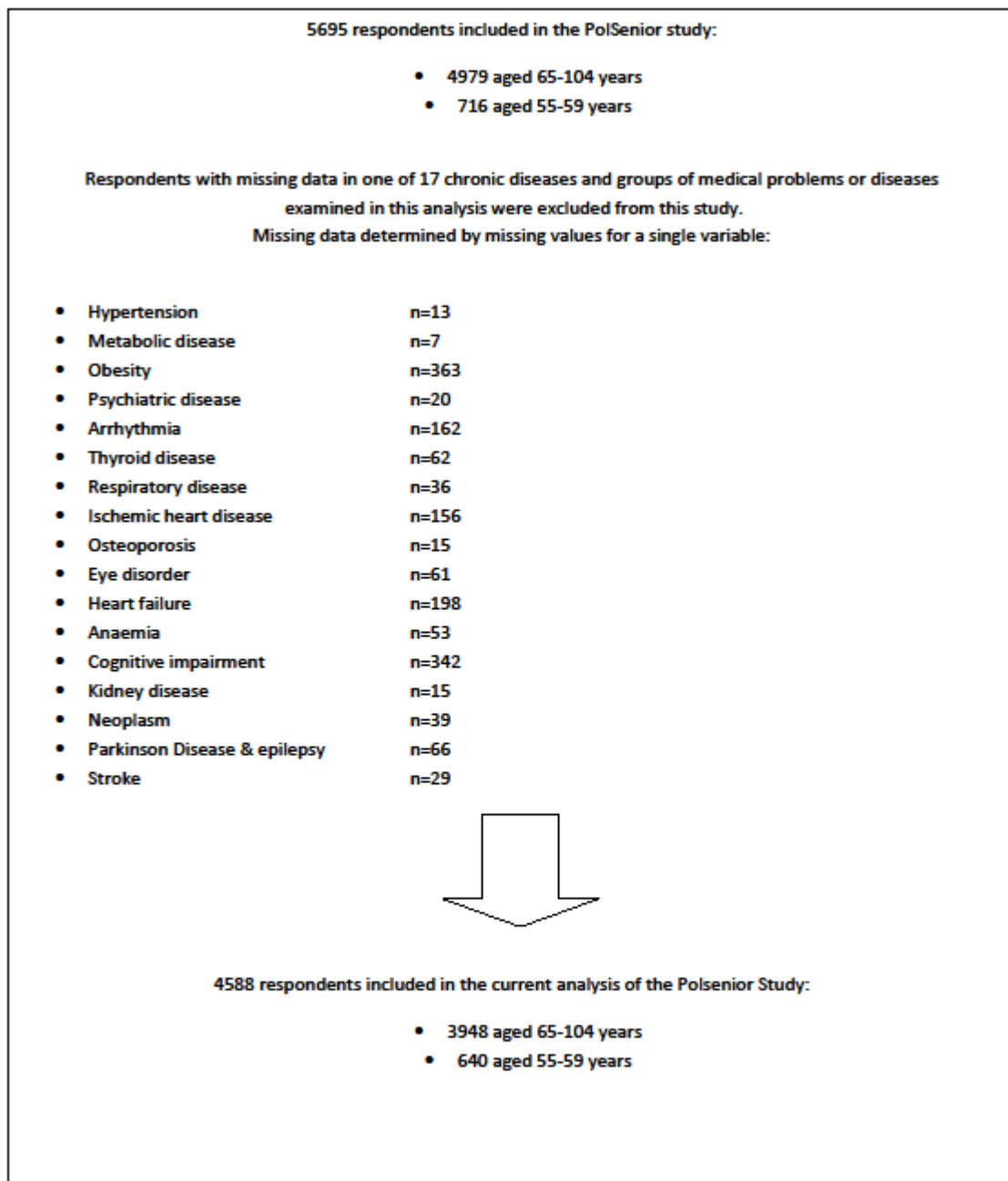
Supplemental Figure 3. The prevalence and co-occurrence of the examined chronic diseases (%) in those 65-79 years old. Different colors were used to denote participants with 1 to five and more chronic diseases.

Supplemental Figure 4. The prevalence and co-occurrence of the examined chronic diseases (%) in those 80+ years old. Different colors were used to denote participants with 1 to five and more chronic diseases.

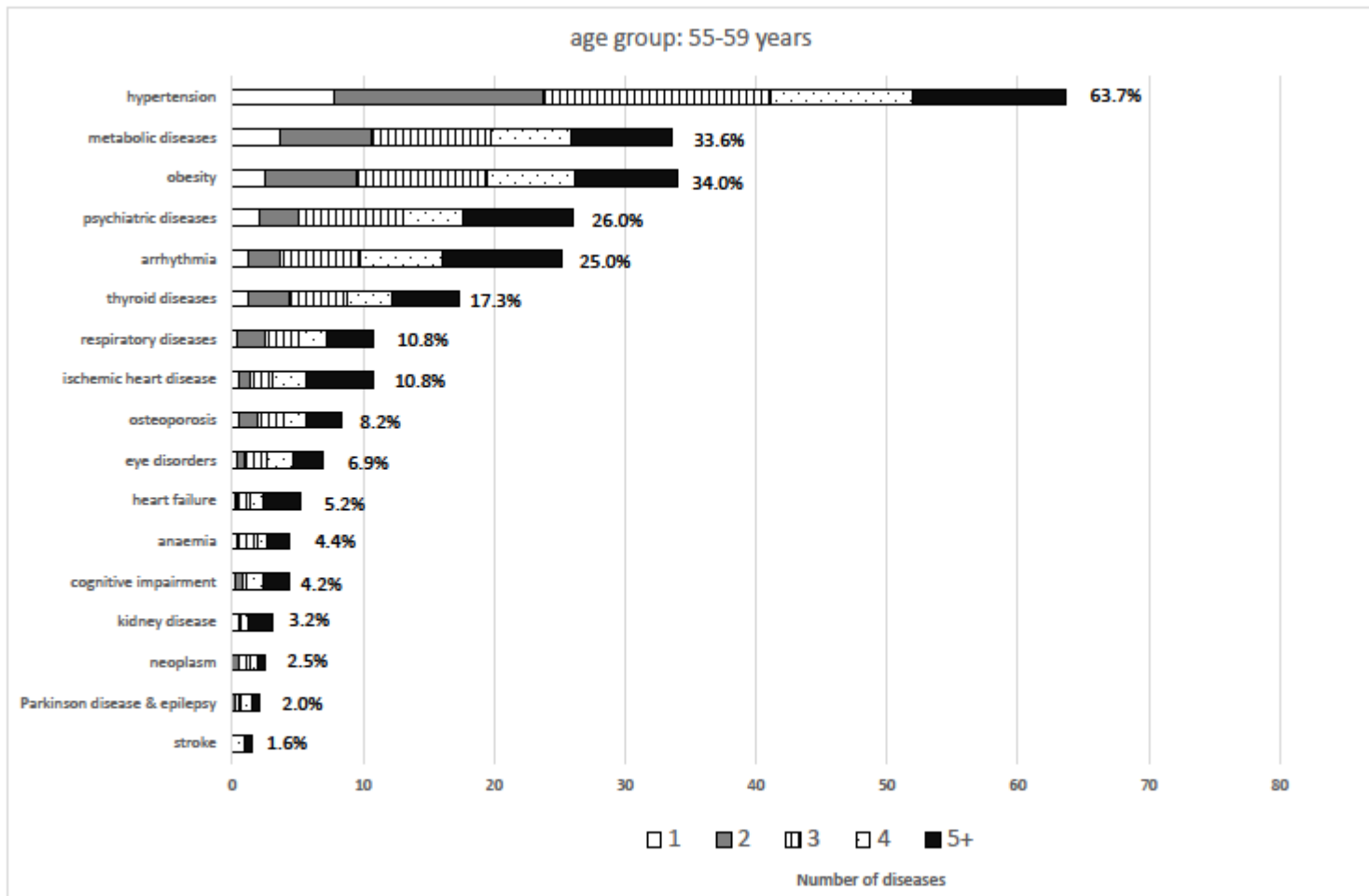
Table S1. The odds ratios (95% CI)* for co-existence of two diagnoses.

* adjusted for sex and age.

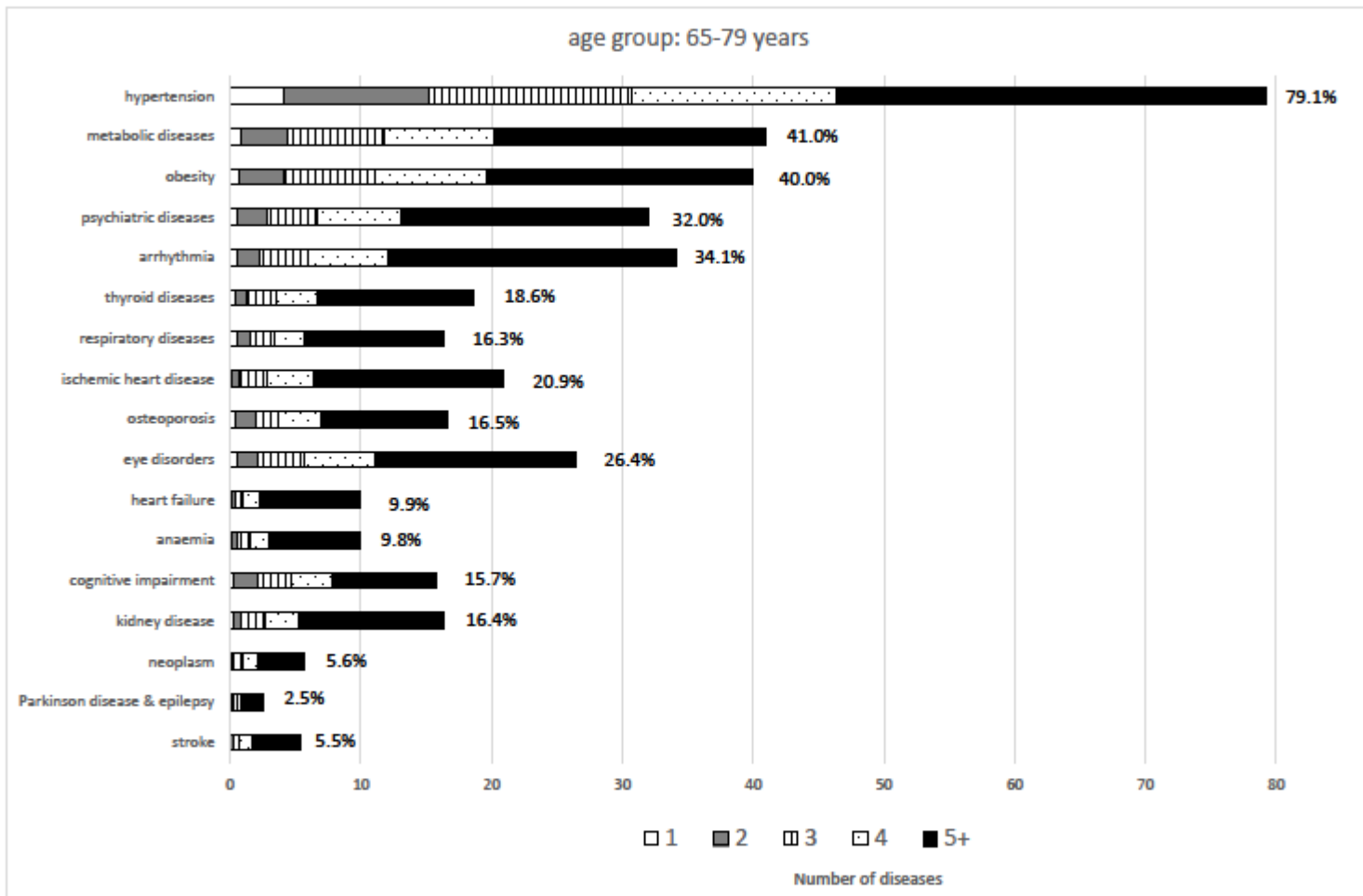
Table S2. The prevalence rates of each examined chronic disease, calculated for the whole analyzed cohort* (n=4588), and for each disease separately** (calculation based on all data available). Data was weighted according to age and sex.



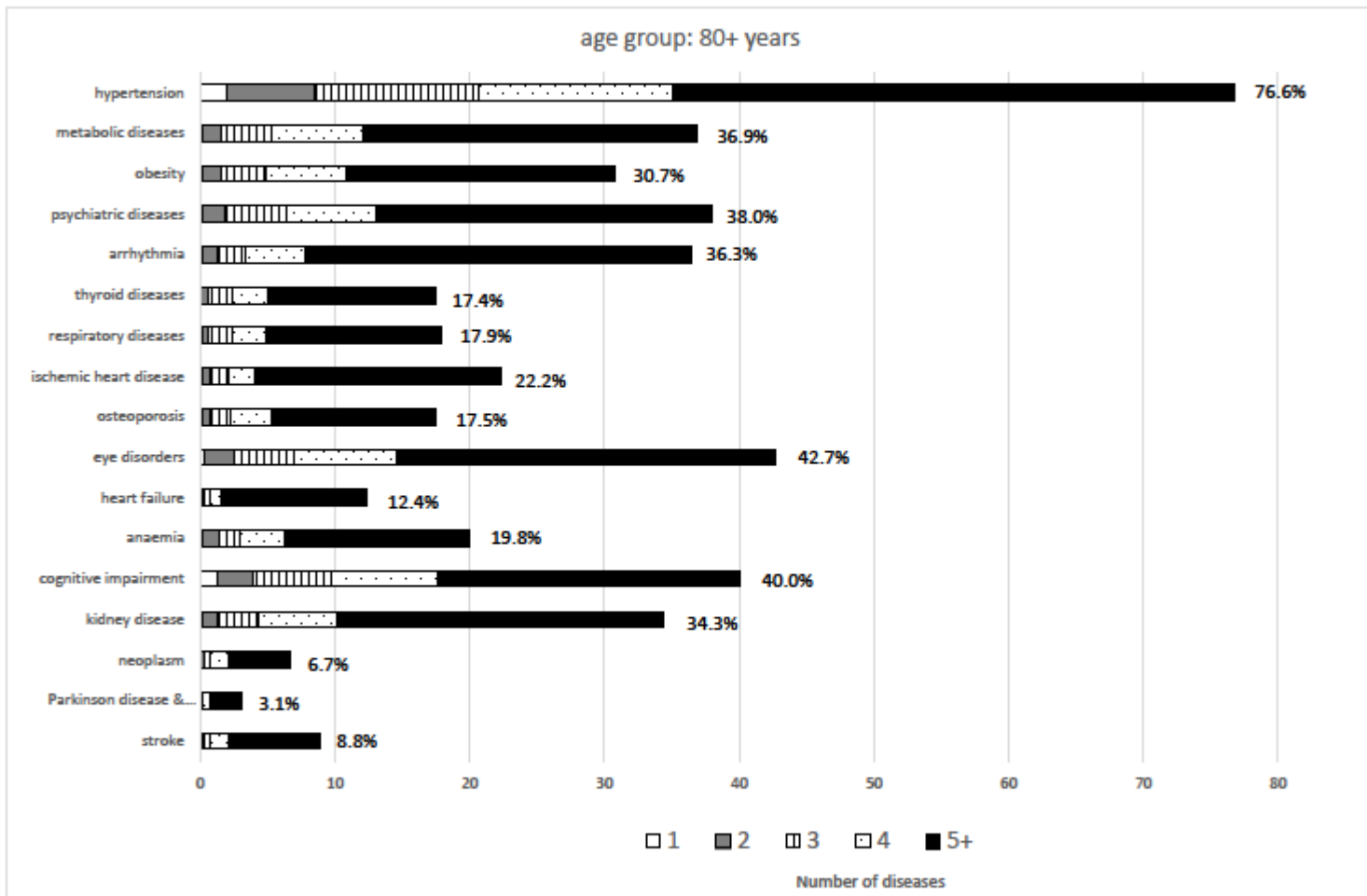
Supplemental Figure 1: The flow of participants in the PolSenior study.



Supplemental Figure 2. The prevalence and co-occurrence of the examined chronic diseases (%) in those 55-59 years old. Different colors were used to denote participants with one to five and more chronic diseases.



Supplemental Figure 3. The prevalence and co-occurrence of the examined chronic diseases (%) in those 65-79 years old. Different colors were used to denote participants with 1 to five and more chronic diseases.



Supplemental Figure 4. The prevalence and co-occurrence of the examined chronic diseases (%) in those 80+ years old. Different colors were used to denote participants with 1 to five and more chronic diseases.

	55-59 years old n=640	65-79 years old n=2191	80+ years old n=1757
Hypertension			
Metabolic diseases	1.48 (1.04-2.10)	1.65 (1.33-2.04)	1.58 (1.26-1.98)
Obesity	2.09 (1.46-3.00)	2.11 (1.68-2.65)	1.62 (1.25-2.10)
Psychiatric diseases	1.48 (1.01-2.16)	1.33 (1.06-1.68)	0.95 (0.77-1.18)
Arrhythmia	1.80 (1.22-2.67)	1.74 (1.38-2.19)	1.61 (1.28-2.02)
Thyroid diseases	1.16 (0.76-1.78)	1.27 (0.95-1.69)	1.07 (0.80-1.44)
Ischemic heart disease	1.67 (0.95-2.94)	1.95 (1.47-2.60)	1.47 (1.13-1.90)
Respiratory disease	1.58 (0.91-2.75)	0.95 (0.72-1.24)	0.91 (0.70-1.18)
Osteoporosis	1.27 (0.70-2.31)	1.08 (0.80-1.44)	1.20 (0.87-1.66)
Eye disorders	1.78 (0.88-3.59)	1.52 (1.18-1.95)	1.11 (0.90-1.37)
Heart failure	2.69 (1.09-6.61)	2.00 (1.33-3.01)	1.49 (1.07-2.09)
Anemia	1.03 (0.47-2.27)	1.35 (0.93-1.94)	0.75 (0.59-0.95)
Cognitive impairment	0.97 (0.44-2.16)	0.85 (0.65-1.11)	0.75 (0.61-0.93)
Kidney disease	11.36 (1.51-85.42)	2.02 (1.46-2.81)	1.37 (1.10-1.70)
Neoplasm	0.73 (0.27-1.99)	0.86 (0.56-1.31)	0.67 (0.45-1.01)
Parkinson disease & epilepsy	0.66 (0.22-1.99)	0.64 (0.36-1.12)	0.87 (0.50-1.52)
Stroke	2.32 (0.49-11.00)	2.48 (1.38-4.45)	1.44 (0.96-2.15)
Metabolic diseases			
Obesity	2.05 (1.46-2.89)	2.16 (1.81-2.57)	2.30 (1.84-2.88)
Psychiatric diseases	0.78 (0.53-1.15)	0.93 (0.77-1.11)	1.08 (0.88-1.33)
Arrhythmia	1.13 (0.78-1.65)	1.39 (1.16-1.67)	1.42 (1.16-1.74)
Thyroid diseases	0.72 (0.46-1.12)	1.14 (0.91-1.43)	1.26 (0.96-1.66)
Ischemic heart disease	1.80 (1.08-2.99)	1.63 (1.33-2.01)	1.98 (1.57-2.48)
Respiratory disease	0.74 (0.42-1.29)	1.09 (0.87-1.37)	1.03 (0.81-1.33)
Osteoporosis	0.55 (0.28-1.06)	0.75 (0.59-0.96)	1.17 (0.87-1.56)
Eye disorders	0.93 (0.48-1.80)	1.16 (0.95-1.41)	1.05 (0.86-1.28)
Heart failure	1.15 (0.56-2.39)	1.42 (1.07-1.88)	1.90 (1.43-2.53)
Anemia	0.95 (0.42-2.13)	1.14 (0.86-1.51)	1.18 (0.94-1.47)
Cognitive impairment	1.40 (0.64-3.07)	0.93 (0.74-1.17)	0.99 (0.81-1.20)
Kidney disease	2.53 (1.03-6.20)	1.45 (1.16-1.83)	1.74 (1.42-2.12)
Neoplasm	0.91 (0.31-2.65)	1.07 (0.74-1.55)	0.63 (0.41-0.99)
Parkinson disease & epilepsy	0.89 (0.27 – 2.92)	0.43 (0.23-1.78)	0.67 (0.37-1.19)
Stroke	0.50 (0.10-2.36)	1.13 (0.79-1.63)	1.58 (1.12-2.22)

Obesity			
Psychiatric diseases	1.04 (0.72-1.51)	1.26 (1.05-1.52)	1.09 (0.87-1.37)
Arrhythmia	1.01 (0.69-1.47)	1.28 (1.07-1.54)	1.41 (1.13-1.77)
Thyroid diseases	1.35 (0.89-2.06)	1.21 (0.96-1.52)	1.28 (0.95-1.72)
Ischemic heart disease	1.41 (0.84-2.35)	1.33 (1.08-1.64)	1.47 (1.15-1.89)
Respiratory disease	0.90 (0.52-1.53)	1.10 (0.87-1.38)	0.96 (0.73-1.27)
Osteoporosis	0.66 (0.35-1.23)	0.79 (0.62-1.02)	1.07 (0.77-1.49)
Eye disorders	1.11 (0.59-2.11)	1.07 (0.88-1.30)	0.87 (0.70-1.09)
Heart failure	1.27 (0.62-2.61)	1.07 (0.80-1.42)	1.48 (1.09-2.01)
Anemia	0.63 (0.27-1.51)	0.93 (0.69-1.24)	0.59 (0.45-0.78)
Cognitive impairment	1.58 (0.73-3.44)	0.90 (0.71-1.14)	0.98 (0.78-1.22)
Kidney disease	1.04 (0.41-2.66)	1.36 (1.08-1.72)	1.02 (0.81-1.28)
Neoplasm	0.64 (0.20-2.00)	0.88 (0.60-1.28)	0.66 (0.40-1.09)
Parkinson disease & epilepsy	0.57 (0.16-2.11)	1.00 (0.59-1.69)	0.34 (0.15-0.80)
Stroke	1.30 (0.36-4.64)	0.97 (0.67-1.40)	1.34 (0.92-1.94)
Psychiatric diseases			
Arrhythmia	1.70 (1.15-2.51)	1.51 (1.25-1.83)	1.40 (1.14-1.72)
Thyroid diseases	1.34 (0.86-2.09)	1.55 (1.23-1.96)	1.14 (0.87-1.50)
Ischemic heart disease	1.64 (0.96-2.79)	1.45 (1.16-1.80)	1.21 (0.97-1.53)
Respiratory disease	2.12 (1.27-3.56)	1.52 (1.20-1.92)	1.50 (1.18-1.90)
Osteoporosis	2.70 (1.53-4.75)	1.49 (1.16-1.91)	1.26 (0.94-1.68)
Eye disorders	2.08 (0.93-3.94)	1.42 (1.16-1.74)	1.36 (1.12-1.65)
Heart failure	1.91 (0.93-3.94)	1.70 (1.28-2.68)	1.46 (1.09-1.94)
Anemia	1.89 (0.87-4.13)	1.35 (1.01-1.81)	1.07 (0.85-1.34)
Cognitive impairment	2.01 (0.92-4.43)	2.33 (1.84-2.94)	1.42 (1.17-1.73)
Kidney disease	2.39 (0.97-5.88)	1.43 (1.13-1.82)	1.05 (0.86-1.28)
Neoplasm	1.30 (0.44-3.79)	1.34 (0.92-1.95)	1.51 (1.02-2.24)
Parkinson disease & epilepsy	3.41 (1.13-10.28)	3.12 (1.86-5.25)	1.47 (0.88-2.47)
Stroke	4.37 (1.22-15.68)	2.24 (1.56-3.22)	1.49 (1.06-2.10)
Arrhythmia			
Thyroid diseases	1.75 (1.13-2.71)	1.90 (1.51-2.38)	1.25 (0.95-1.65)
Ischemic heart disease	6.62 (3.88-11.28)	4.22 (3.40-5.23)	4.98 (3.93-6.31)
Respiratory disease	2.10 (1.25-3.53)	2.00 (1.59-2.52)	2.18 (1.72-2.77)
Osteoporosis	2.62 (1.48-4.64)	1.32 (1.03-1.68)	1.82 (1.37-2.43)
Eye disorders	1.13 (0.57-2.24)	1.45 (1.19-1.77)	1.87 (1.53-2.29)

Heart failure	7.82 (3.63-16.82)	5.91 (4.35-8.05)	6.79 (4.95-9.32)
Anemia	1.70 (0.77-3.75)	1.56 (1.18-2.08)	1.10 (0.88-1.39)
Cognitive impairment	1.80 (0.81-4.02)	0.93 (0.73-1.18)	0.73 (0.60-0.90)
Kidney disease	3.83 (1.56-9.42)	1.82 (1.44-2.29)	1.45 (1.18-1.78)
Neoplasm	1.82 (0.65-5.08)	1.92 (1.33-2.76)	1.42 (0.96-2.11)
Parkinson disease & epilepsy	2.61 (0.86-7.88)	1.42 (0.84-2.39)	1.41 (0.83-2.38)
Stroke	2.01 (0.56-7.21)	1.48 (1.03-2.14)	1.56 (1.11-2.20)
Thyroid diseases			
Ischemic heart disease	0.69 (0.33-1.43)	1.12 (0.86-1.47)	1.07 (0.78-1.46)
Respiratory disease	1.62 (0.90-2.92)	1.40 (1.06-1.86)	1.13 (0.82-1.57)
Osteoporosis	2.12 (1.14-3.96)	2.20 (1.67-2.90)	1.25 (0.85-1.83)
Eye disorders	0.87 (0.38-2.02)	1.51 (1.19-1.93)	1.05 (0.80-1.37)
Heart failure	0.45 (0.14-1.51)	1.28 (0.90-1.82)	1.28 (0.87-1.86)
Anemia	1.29 (0.51-3.25)	1.33 (0.94-1.88)	0.96 (0.70-1.31)
Cognitive impairment	0.57 (0.17-1.93)	0.83 (0.61-1.14)	0.94 (0.72-1.23)
Kidney disease	1.17 (0.38-3.57)	1.40 (1.05-1.86)	1.26 (0.96-1.65)
Neoplasm	3.80 (1.38-10.43)	1.56 (1.01-2.40)	1.29 (0.77-2.16)
Parkinson disease & epilepsy	0.38 (0.05-2.98)	1.25 (0.66-2.37)	0.53 (0.21-1.34)
Stroke	2.03 (0.52-7.96)	0.94 (0.58-1.54)	1.18 (0.74-1.86)
Ischemic heart disease			
Respiratory disease	2.44 (1.27-4.67)	1.71 (1.33-2.20)	1.76 (1.35-2.28)
Osteoporosis	0.47 (0.14-1.55)	0.94 (0.70-1.26)	0.93 (0.66-1.31)
Eye disorders	0.60 (0.18-1.99)	1.43 (1.14-1.79)	1.36 (1.09-1.70)
Heart failure	6.52 (3.08-13.83)	6.55 (4.89-8.77)	6.42 (4.77-8.65)
Anemia	1.89 (0.70-5.16)	1.76 (1.29-2.40)	0.89 (0.68-1.16)
Cognitive impairment	1.98 (0.73-5.42)	0.74 (0.55-1.00)	0.85 (0.67-1.06)
Kidney disease	2.95 (1.04-8.38)	2.36 (1.84-3.03)	1.70 (1.35-2.13)
Neoplasm	0.55 (0.07-4.26)	1.38 (0.91-2.08)	0.86 (0.53-1.40)
Parkinson disease & epilepsy	2.59 (0.70-9.67)	1.14 (0.62-2.09)	1.60 (0.92-2.80)
Stroke	3.73 (0.94-14.76)	1.55 (1.04-2.31)	2.20 (1.54-3.14)
Respiratory disease			
Osteoporosis	1.50 (0.68-3.32)	1.52 (1.13-2.04)	1.29 (0.92-1.81)
Eye disorders	1.07 (0.41-2.80)	1.54 (1.21-1.97)	1.39 (1.09-1.75)
Heart failure	3.42 (1.52-7.69)	1.77 (1.26-2.47)	2.41 (1.77-3.28)
Anemia	0.63 (0.15-2.70)	1.00 (0.69-1.46)	1.24 (0.95-1.62)

Cognitive impairment	0.65 (0.15-2.81)	0.90 (0.66-1.23)	1.04 (0.82-1.32)
Kidney disease	1.48 (0.42-5.19)	1.41 (1.06-1.88)	1.00 (0.78-1.28)
Neoplasm	1.19 (0.26-5.34)	1.23 (0.78-1.95)	1.25 (0.79-1.99)
Parkinson disease & epilepsy	0.69 (0.09-5.35)	1.28 (0.67-2.43)	1.51 (0.84-2.71)
Stroke	0.92 (0.11-7.36)	0.90 (0.55-1.49)	1.37 (0.92-2.03)
Osteoporosis			
Eye disorders	1.80 (0.73-4.48)	2.39 (1.87-3.06)	2.36 (1.76-3.15)
Heart failure	1.54 (0.52-4.55)	1.55 (1.08-2.20)	1.18 (0.78-1.77)
Anemia	1.87 (0.63-5.61)	1.05 (0.71-1.55)	0.99 (0.71-1.39)
Cognitive impairment	0.86 (0.20-3.75)	0.81 (0.57-1.13)	0.80 (0.60-1.07)
Kidney disease	1.21 (0.27-5.38)	0.83 (0.59-1.17)	1.02 (0.76-1.36)
Neoplasm	2.59 (0.72-9.40)	0.86 (0.50-1.47)	1.67 (1.00-2.77)
Parkinson disease & epilepsy	0.90 (0.12-7.08)	1.48 (0.78-2.82)	1.81 (0.95-3.46)
Stroke	1.21 (0.15-9.73)	0.98 (0.59-1.64)	0.92 (0.54-1.55)
Eye disorders			
Heart failure	0.41 (0.05-3.07)	1.28 (0.95-1.74)	1.37 (1.03-1.82)
Anemia	2.38 (0.79-7.20)	1.23 (0.90-1.68)	1.26 (1.01-1.57)
Cognitive impairment	2.49 (0.82-7.55)	0.97 (0.75-1.26)	1.02 (0.84-1.23)
Kidney disease	3.63 (1.16-11.35)	1.37 (1.07-1.76)	1.39 (1.14-1.69)
Neoplasm	1.98 (0.44-9.00)	1.35 (0.92-2.00)	1.82 (1.23-2.70)
Parkinson disease & epilepsy	2.53 (0.54-11.80)	1.47 (0.85-2.53)	1.57 (0.94-2.63)
Stroke	x	1.29 (0.87-1.91)	0.96 (0.68-1.35)
Heart failure			
Anemia	1.44 (0.33-6.35)	1.13 (0.72-1.77)	1.12 (0.81-1.55)
Cognitive impairment	2.43 (0.69-8.52)	1.18 (0.82-1.70)	0.99 (0.74-1.32)
Kidney disease	7.05 (2.39-20.77)	2.35 (1.71-3.23)	1.63 (1.22-2.16)
Neoplasm	1.23 (0.16-9.63)	1.36 (0.79-2.35)	0.95 (0.52-1.72)
Parkinson disease & epilepsy	1.55 (0.20-12.29)	1.61 (0.78-3.33)	1.98 (1.05-3.72)
Stroke	2.08 (0.26-16.89)	1.91 (1.17-3.11)	1.73 (1.11-2.68)
Anemia			
Cognitive impairment	2.94 (0.83-10.42)	1.23 (0.86-1.77)	1.14 (0.91-1.42)
Kidney disease	4.20 (1.16-15.27)	2.43 (1.77-3.34)	2.36 (1.89-2.95)
Neoplasm	1.47 (0.19-11.57)	1.82 (1.10-2.99)	1.12 (0.72-1.75)
Parkinson disease & epilepsy	1.85 (0.23-14.77)	1.85 (0.92-3.70)	1.06 (0.58-1.92)
Stroke	x	1.92 (1.17-3.13)	1.21 (0.82-1.77)

Cognitive impairment			
Kidney disease	9.06 (3.02-27.16)	1.22 (0.91-1.64)	1.08 (0.89-1.31)
Neoplasm	x	0.76 (0.44-1.30)	0.54 (0.36-0.83)
Parkinson disease & epilepsy	7.54 (1.95-29.17)	3.15 (1.84-5.39)	1.03 (0.61-1.72)
Stroke	10.82 (2.63-44.44)	2.33 (1.56-3.48)	1.53 (1.09-2.14)
Kidney disease			
Neoplasm	x	1.27 (0.80-2.02)	0.68 (0.44-1.04)
Parkinson disease & epilepsy	2.67 (0.33-21.57)	1.32 (0.69-2.51)	0.79 (0.45-1.37)
Stroke	8.50 (1.68-42.90)	2.05 (1.36-3.10)	1.53 (1.09-2.15)
Neoplasm			
Parkinson disease & epilepsy	x	0.87 (0.27-2.83)	1.41 (0.55-3.59)
Stroke	x	0.99 (0.45-2.17)	1.00 (0.49-2.01)
Parkinson disease & epilepsy			
Stroke	5.72 (0.67-48.81)	1.88 (0.79-4.45)	1.00 (0.39-2.53)

Table S1. The odds ratios (95% CI)* for co-existence of two diagnoses.

* adjusted for sex and age

	Number of patients with the analyzed disease*	Prevalence rate* (%)	Number of data available**	Number of patients with the analyzed disease**	Prevalence rate** (%)
Hypertension	3373	73.5	5682	4144	72.9
Metabolic diseases	1728	37.7	5688	2116	37.2
Obesity	1481	32.3	5332	1703	31.9
Psychiatric diseases	1464	31.9	5675	1847	32.6
Arrhythmia	1495	32.6	5533	1808	32.7
Thyroid diseases	734	16.0	5633	869	15.4
Respiratory diseases	775	16.9	5659	965	17.1
Ischemic heart disease	931	20.3	5539	1147	20.7
Osteoporosis	592	12.9	5680	736	13.0
Eye disorders	1353	29.5	5634	1685	29.9
Heart failure	473	10.3	5497	564	10.3
Anaemia	667	14.5	5642	876	15.5
Cognitive impairment	1131	24.7	5353	1524	28.5
Kidney disease	1019	22.2	5680	1290	22.7
Neoplasm	248	5.4	5656	303	5.4
Parkinson Disease & epilepsy	133	2.9	5629	190	3.4
Stroke	282	6.2	5666	439	7.8

Table S2. The prevalence rates of each examined chronic disease, calculated for the whole analyzed cohort* (n=4588), and for each disease separately** (calculation based on all data available). Data was weighted according to age and sex.