Supplementary materials

Drugs & Aging

Title: Clinical and Economic Outcomes of Korea's National Polypharmacy Management Program for Hospitalized Older Adults: 90-Day Readmission and Healthcare Costs

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Supplementary Table 1 List of 46 chronic conditions defined in the NHIS Polypharmacy Management Program

No.	Chronic condition	No.	Chronic condition
1	Hypertension	24	Chronic cholecystitis/cholelithiasis
2	Dyslipidemia	25	Somatoform disorder
3	Chronic low back pain	26	Hemorrhoids
4	Severe visual impairment	27	Intestinal diverticulosis
5	Knee osteoarthritis	28	Rheumatoid arthritis
6	Diabetes mellitus	29	Valvular heart disease
7	Chronic ischemic heart disease	30	Neurological disorders
8	Thyroid disorders	31	Dizziness
9	Deep vein thrombosis	32	Dementia
10	Obesity	33	Urinary incontinence
11	Metabolic disorders/gout	34	Urolithiasis
12	Benign prostatic hyperplasia	35	Anemia
13	Varicose veins of the lower extremities	36	Anxiety
14	Liver disease	37	Psoriasis
15	Depression	38	Migraine/chronic headache
16	Asthma/chronic obstructive pulmonary disease	39	Parkinson's disease
17	Noninflammatory gynecologic disorders	40	Cancer
18	Atherosclerosis/peripheral arterial occlusive disease	41	Allergy
19	Osteoporosis	42	Chronic gastritis/gastroesophageal reflux disease
20	Renal insufficiency	43	Sexual dysfunction
21	Chronic stroke	44	Insomnia
22	Heart failure	45	Tobacco use disorder
23	Severe hearing loss	46	Hypotension

Supplementary Table 2 Comparison of health expenditures within three months

	Participants		Control		p-value*
	Median	IQR	Median	IQR	
Individuals with non-zero expenditure					
Hospitalization	6 400	2 975 – 12 418	6 740	2 136 – 10 081	0·005
ED	180	63 - 319	165	53 - 375	0·980
Outpatient	401	202 - 861	377	179 - 792	0·069
Medication	445	268 - 673	334	188 - 514	<·0001
All individuals					
Hospitalization	4 018†	0 – 5 278	3 894†	0 – 4 993	0·228
ED visit	21†	0 - 0	27†	0 - 0	0·186
Outpatient	378	180 - 830	343	149 - 741	0·013
Medication	419	227 - 651	297	140 - 491	<·0001

All costs are presented in USD.
* The p-value was determined using the Kruskal-Wallis test.
† The mean value is presented instead of the median as the number of included patients does not exceed 50% of the total.
ED, emergency department; IQR, interquartile range

Supplementary Table 3 Cost-benefit analysis of the polypharmacy management program

Variables	Per participant (USD)	Estimated annual impact (USD)
Costs (A)		
Direct Cost		
Intervention	95.6	8,559,786
Indirect Cost		
Patient time	2.7	243,925
Benefits (Avoided Costs) (B)		
Direct Benefit		
Avoided Inpatients Cost (Readmission)	364	32,565,337
Indirect Benefit		
Avoided Caregiver Costs	4.6	412,911
Avoided Transportation Costs	1.5	133,411
Net Benefit (B-A)		
Payer perspective	268.2	24,005,551
Societal perspective	271.5	24,307,947
B/C ratio (B/A)		
Payer perspective		3.80
Societal perspective		3.76

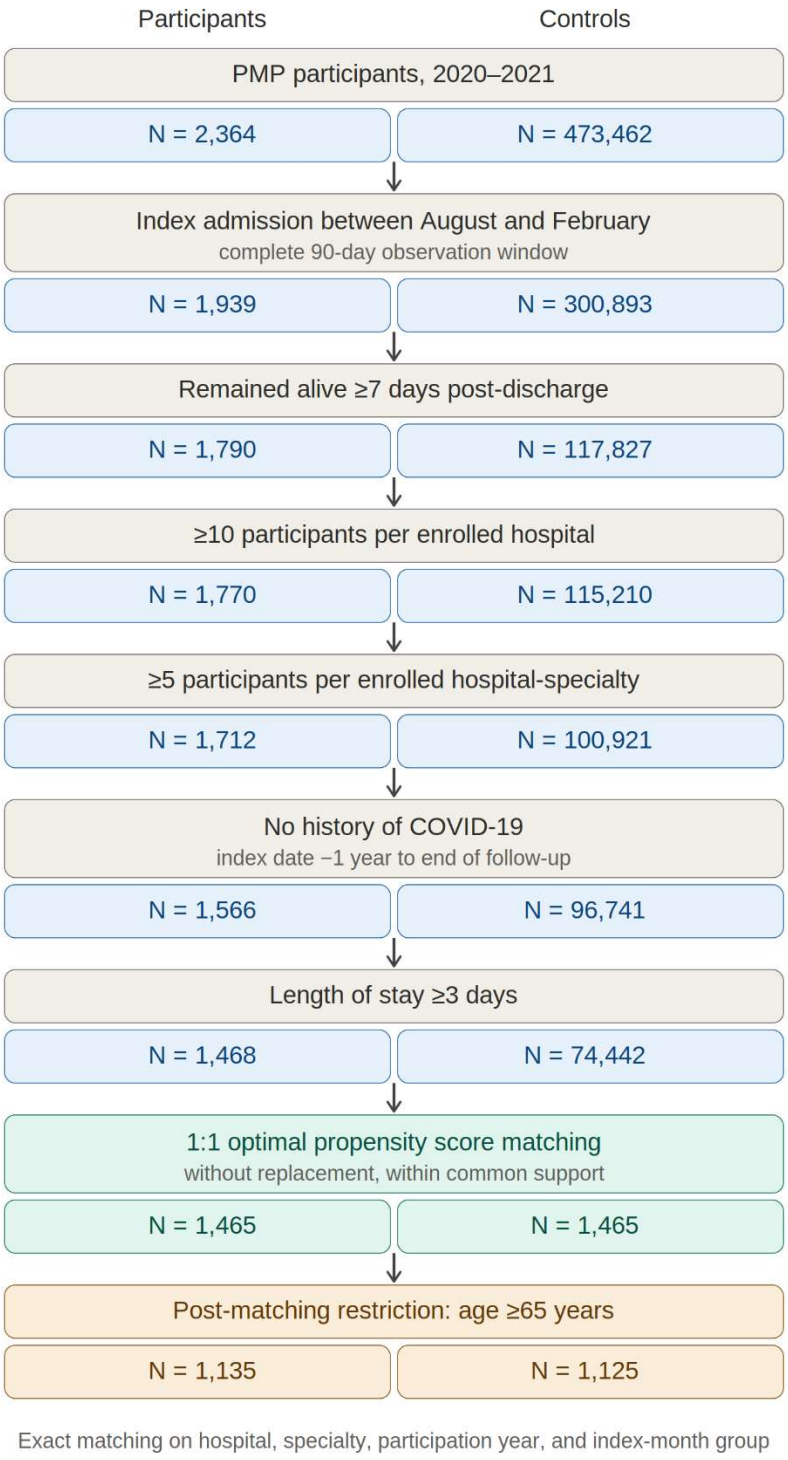
Estimated annual impact is calculated based on a hypothetical cohort of 89,520 participants per year (projected nationwide implementation)

Supplementary Table 4 Sensitivity analysis of cost-benefit analysis (estimated annual impact)

Variables		Payer perspective	Social perspective
Effects of the PMP			
Upper limits of 95% CI	Total cost (USD)	8,559,786	8,803,711
	Total benefit (USD)	10,855,112	11,234,092
	Net benefit (USD)	2,295,326	2,430,381
	Benefit/cost ratio	1.27	1.28
Lower limits of 95% CI	Total cost (USD)	8,559,786	8,803,711
	Total benefit (USD)	56,446,584	57,176,982
	Net benefit (USD)	47,886,798	48,373,270
	Benefit/cost ratio	6.59	6.49
Readmission expenditure			
+25%	Total cost (USD)	8,559,786	8,803,711
	Total benefit (USD)	40,706,671	41,252,993
	Net benefit (USD)	32,146,885	32,449,282
	Benefit/cost ratio	4.76	4.69
-25%	Total cost (USD)	8,559,786	8,803,711
	Total benefit (USD)	24,424,003	24,970,324
	Net benefit (USD)	15,864,217	16,166,613
	Benefit/cost ratio	2.85	2.84

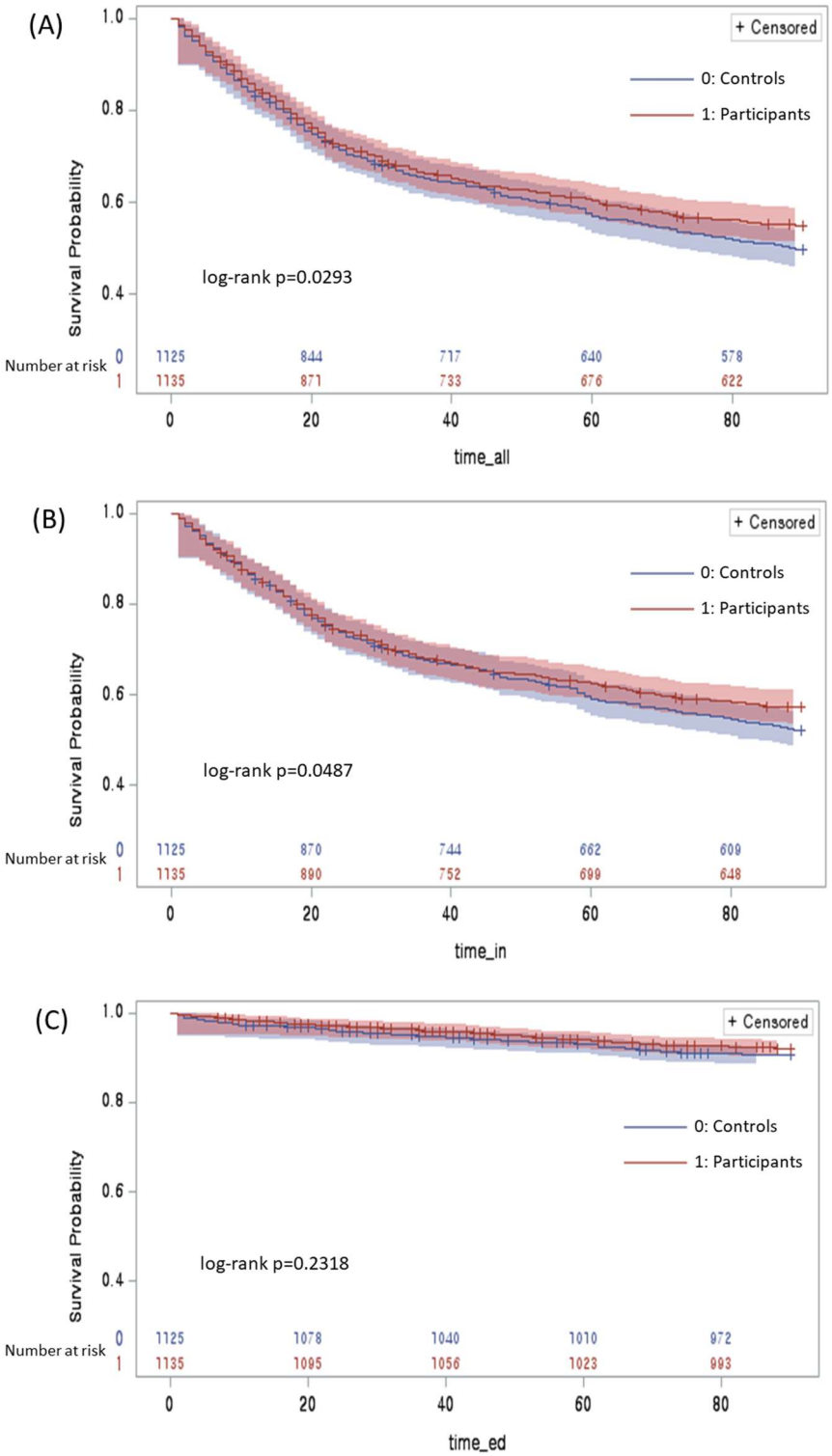
Estimated annual impact is calculated based on a hypothetical cohort of 89,520 participants per year (projected nationwide implementation)

Supplementary Fig. 1 Flowchart of subject selection



Supplementary Fig. 2 Comparison of Kaplan-Meier survival curve

(A) All outcomes (B) Readmission (C) Emergency department (ED) visit



+: censored; blue line=0: controls; red line=1: participants