



Incremental Cost Burden of Major Depressive Disorder in Patients with Rheumatoid Arthritis in Korea

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INTRODUCTION

Rheumatoid arthritis (RA) is a chronic inflammatory autoimmune disease characterized by persistent inflammation in the synovial membrane of joints. In proportion to inflammation, it is often accompanied by cognitive disorders such as depression and memory loss. Psychological distress can lead to reduced physical activity, resulting in accelerated muscle loss and osteoporosis.

OBJECTIVES

The aim of this study is to assess the increased economic burden of major depressive disorder (MDD) in adult RA patients.

METHODS

- This study was conducted as a retrospective cross-sectional analysis using insurance claim data from the 2018 Health Insurance Review and Assessment Service-National Patient Sample (HIRA-NPS).
- We defined adult RA patients as those aged ≥ 20 years old who had ≥ 1 claim record with diagnosis of RA. RA patients with MDD were defined as RA patients who had ≥ 2 claim records with diagnoses of MDD (ICD 10 code: M05, M06) and prescriptions for antidepressants. RA patients without MDD were defined as those who had no diagnosis of MDD and no prescription for antidepressants.
- RA patients without MDD matched by propensity score according to age, gender, and type of national security program were defined using a 1:2 greedy matching method [Figure 1].
- From the insurer's perspective, all healthcare expenses covered by the National Health Insurance (NHI) were estimated. The ratio of medical costs between RA patient with MDD and matched-RA patient without MDD was adjusted for Charlson Comorbidity Index in the generalized linear model.

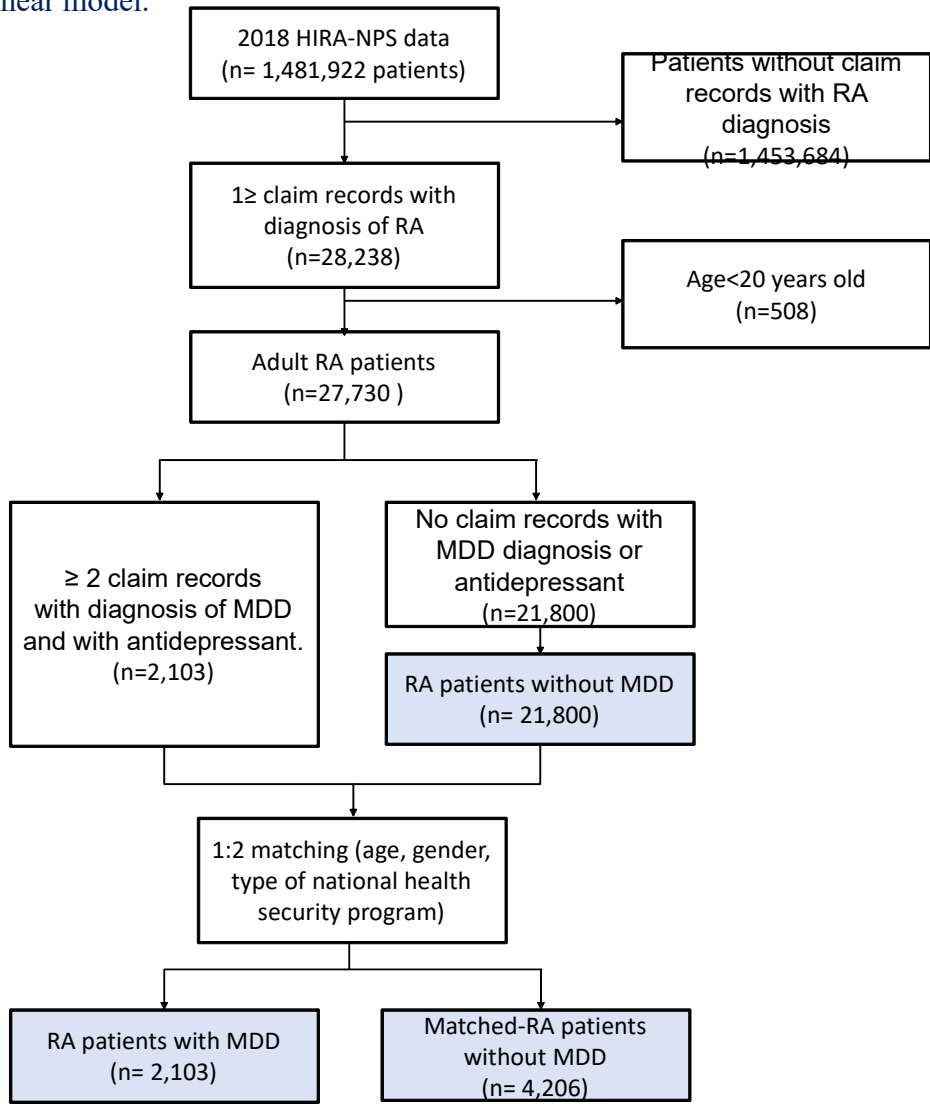


Fig 1. Flow chart for selection of study population

RESULT

- Compared to RA patients without MDD (n=21,800), those with MDD (n=2,103) had significantly higher proportions of females (10.79% diff., $p<0.0001$), elderly aged ≥ 70 years (14.31% diff., $p<0.0001$), recipients of Medical Aid (10.89% diff., $p<0.0001$) and CCI (Charlson Comorbidity Index) score ≥ 2 (17.43%, $p<0.0001$) [Table 1].
- In the Comparison of common primary diagnosis other than RA, the top 5 diagnoses were the same in both groups Excluding the depressive episode%)[Table 2].
- RA patients with MDD had 1.73-fold higher total annual medical costs per person compared to patients without MDD [Fig 2].
- In the multivariate regression model, the medical cost per patient was 1.39-fold (95% CI: 1.33–1.45) higher for RA patient with MDD than matched-RA patient without MDD[Table 4].

CONCLUSION

This study demonstrates a significant economic burden of comorbid major depressive disorder in adult patients with rheumatoid arthritis. Therefore, there is a need to emphasize the prevention and treatment of depressive disorders in patients with rheumatoid arthritis.

Table 1. Baseline characteristics of the study population

Characteristics	RA with MDD (n=2103)	RA without MDD		P-value (RA with MDD vs. RA without MDD)	P-value (RA with MDD vs. Matched- RA without MDD)
		Before matching (n=21800)	After matching (n=4206)		
Sex				<.0001	0.6538
Male	532 (25.30)	7868 (36.09)	1086 (25.82)		
Female	1571 (74.70)	13932 (63.91)	3120 (74.18)		
Age group (yr)				<.0001	0.9986
20-29	54 (2.57)	1251 (5.74)	106 (2.52)		
30-39	93 (4.42)	2220 (10.19)	181 (4.30)		
40-49	247 (11.75)	3746 (17.19)	500 (11.89)		
50-59	447 (21.26)	5735 (26.31)	880 (20.92)		
60-69	563 (26.77)	4721 (21.65)	1143 (27.18)		
≥ 70	699 (33.24)	4127 (18.93)	1396 (33.19)		
Type of national health security program enrolled				<.0001	0.827
Health insurance	1773 (84.31)	20773 (95.29)	3546 (84.31)		
Medical aid	327 (15.55)	1015 (4.66)	651 (15.48)		
Veteran healthcare	3 (0.14)	12 (0.06)	9 (0.21)		
CCI score				<.0001	<.0001
0	424 (20.16)	6514 (29.88)	1101 (26.18)		
1	775 (36.85)	9717 (44.57)	1789 (42.53)		
2	525 (24.96)	4185 (19.20)	939 (22.33)		
≥ 3	379 (18.02)	1384 (6.35)	377 (8.96)		

Table 2. Comparison of common primary diagnosis other than RA

Rank	RA with MDD		Matched-RA without MDD	
	Diagnosis (ICD-10 code)	%	Diagnosis (ICD-10 code)	%
1	Low back pain (M545)	4.28	Other and unspecified primary hypertension (I109)	5.56
2	Depressive episode (F32)	4.12	Low back pain (M545)	4.49
3	Other and unspecified primary hypertension (I109)	3.95	Spinal stenosis (M480)	2.61
4	Spinal stenosis (M480)	2.75	Primary gonarthrosis, bilateral (M170)	2.61
5	Primary gonarthrosis, bilateral (M170)	2.26	Myalgia (M791)	2.10
6	Myalgia (M791)	1.67	Chronic periodontitis (K053)	1.74
7	Lumbago with sciatica (M544)	1.61	Pain in joint (M255)	1.59
8	Lumbar and other intervertebral disc disorders with radiculopathy (M511)	1.41	Lumbago with sciatica (M544)	1.49
9	Pain in joint (M255)	1.31	Gonarthrosis, unspecified (M179)	1.38
10	Chronic periodontitis (K053)	1.21	Other primary gonarthrosis (M171)	1.36

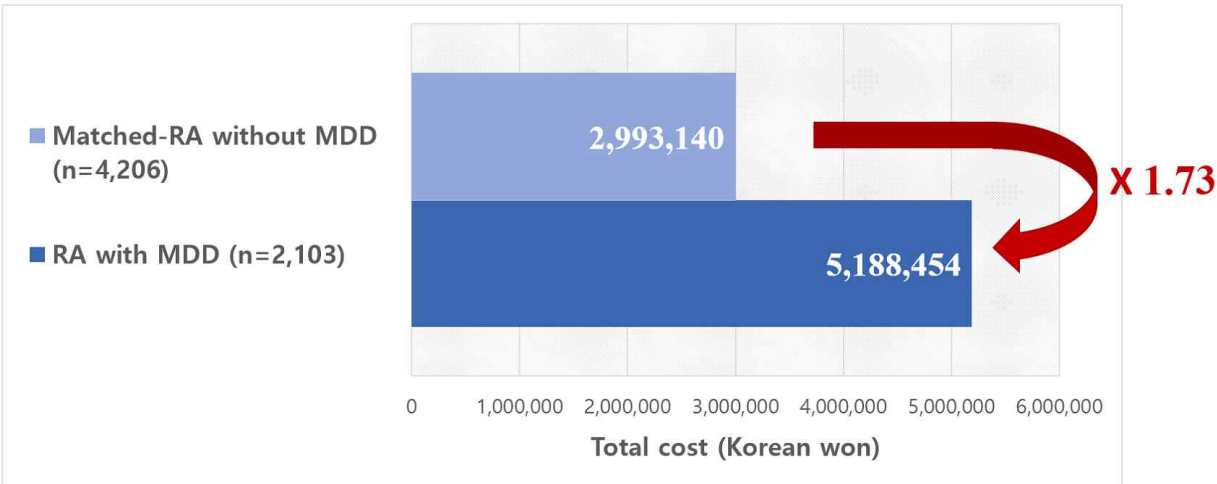


Fig 2. Comparison of Annual NHI-covered direct medical costs per patient according to accompany of MDD

Table 3. Gamma generalized linear model analysis results for the association between comorbid MDD and medical costs among RA patients

Variables	Coefficient estimate	Standard error	Ratio of costs (95% CI)	p-value
Intercept	14.3383	0.0236	-	-
MDD				
without	Reference	-	Reference	-
with	0.3268	0.0229	1.39(1.33-1.45)	<.0001
CCI				
0	Reference	-	Reference	-
1	0.2803	0.0285	1.32(1.25-1.40)	<.0001
2	0.3892	0.0319	1.48(1.39-1.57)	<.0001
≥ 3	0.8748	0.0374	2.40(2.23-2.58)	<.0001

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