



## 2023년 결핵환자 신고현황

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### 초 록

2023년에 신고된 우리나라 결핵 전체환자수는 19,540명(10만 명당 38.2명)으로 2022년(20,383명, 10만 명당 39.8명) 대비 4.1% 감소하였다. 이는 최고치를 기록한 2011년부터 연평균 7.6%씩 12년 연속 감소하여 61.3% 감소한 수준이다. 또한, 2023년 65세 이상 결핵 전체환자수는 11,309명(10만 명당 119.5명)으로 2022년(11,298명, 10만 명당 125.4명) 대비 0.1% 증가하였고, 65세 이상 결핵 전체환자 비율은 57.9%로 2000년 이후 매년 증가하고 있다. 외국인 결핵 전체환자수는 1,107명으로 2022년(1,072명) 대비 3.3% 증가하였고, 외국인 결핵 전체환자 비율도 5.7%로 2022년(5.3%)보다 소폭 증가하였다. 항결핵약제 내성이 있어 치료가 어려운 다제내성/리팜핀내성결핵환자는 551명으로 2022년(560명) 대비 1.6% 감소하였고, 다제내성/리팜핀내성결핵 비율은 2.8%로 나타났다. 질병관리청은 2023년 3월 “2027년까지 결핵 발생률 인구 10만 명당 20명 이하”라는 목표 하에 「제3차 결핵관리종합계획(2023-2027)」을 수립하였다. 2024년에도 인구 고령화와 외국인 유입이 가속화되고 있는 국내 여건에 적극 대응하기 위해, 결핵 발병 고위험군 대상 찾아가는 결핵검진사업을 지속 추진하며, 65세 이상 잠복결핵감염 예방 및 치료 여건을 개선하고, 결핵환자 치료 및 관리를 강화하는 등 종합 계획의 추진 과제들을 철저히 이행해 나가겠다.

**주요 검색어:** 결핵; 결핵 신고; 결핵 환자율

### 서 론

결핵(Tuberculosis, TB)은 결핵균(*Mycobacterium tuberculosis*)에 의해 발생하는 호흡기 감염병으로, 세계보건기구

(World Health Organization)에 따르면 2022년 한 해 동안 전 세계적으로 약 1,060만 명의 결핵환자가 발생하였고 160만 명이 사망하였다. 그 중 우리나라는 경제협력개발기구(Organization for Economic Cooperation and Development)

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### 핵심요약

#### ① 이전에 알려진 내용은?

2022년에 신고된 우리나라의 결핵 전체환자수는 20,383명(10만 명당 39.8명)으로, 2021년(22,904명, 10만 명당 44.6명) 대비 11.0% 감소하였다.

#### ② 새로이 알게 된 내용은?

2023년에 신고된 우리나라의 결핵 전체환자수는 19,540명(10만 명당 38.2명)으로, 2022년(20,383명, 10만 명당 39.8명) 4.1% 감소하였다. 65세 이상 노인 결핵 전체환자수는 11,309명(10만 명당 119.5명)으로 2022년(11,298명, 10만 명당 125.4명) 대비 0.1% 증가하였다.

#### ③ 시사점은?

신고된 우리나라 결핵 전체환자수는 매년 감소 추세이나 2023년에는 전년 대비 감소세가 다소 둔화되었고, 65세 이상 노인, 외국인 등 취약계층이 차지하는 비율이 전년 대비 증가하였다. 이에, 질병관리청은 전 세계와 우리나라 결핵 퇴치를 위해, 「제3차 결핵관리 종합계획(2023-2027)」의 추진과제를 결핵 관리 전 주기(예방-조기발견-환자관리)에 걸쳐 철저히 이행해 나갈 것이다.

38개 회원국 중에서 결핵 발생률은 2위, 사망률은 4위를 차지하였다[1,2]. 또한, 2022년 우리나라에서 결핵은 법정감염병 중 코로나바이러스감염증-19(코로나19), 카바페넴내성장내세균속균종, 수두에 이어 네 번째로 환자수가 많고[3], 코로나19 다음으로 사망자수가 많은 감염병이다[4]. 이 글에서는 2023년 우리나라 결핵환자 신고현황 및 추이를 살펴보려 한다.

## 방 법

질병관리청은 2002년부터 매년 「결핵환자 신고현황 연보」를 발간하고 있으며, 본 원고는 「2023 결핵환자 신고현황 연보」를 바탕으로 작성되었다. 「2023 결핵환자 신고현황 연보」의 자료원은 2023년 1월 1일부터 2023년 12월 31일까지

신고·보고된 결핵환자 및 결핵의사환자의 신고서 27,802건으로, 이를 정제·분류하여 2023년에 신고된 결핵 전체환자수를 산출하였다[5]. 또한, 결핵환자율은 결핵 전체환자수와 통계청 「인구동향조사」의 2023년 주민등록연앙인구를 활용하였다[6]. 연령표준화 결핵환자율은 2005년 주민등록연앙인구를 표준인구로 활용하였다. 2023년 결핵 전체환자의 의료보장 유형은 국민건강보험공단의 2023년 12월 31일 기준 의료보장 자격 정보로 확인하였고, 2023년 의료보장 유형별 결핵환자율을 산출하기 위해 기준인구로 2022년 의료보장 적용인구를 사용하였다[7]. 외국인의 결핵환자율을 산출하기 위해 기준인구로 2022년 이전은 연도별 체류 외국인 수를, 2023년은 2023년 12월 기준 체류 외국인 수를 활용하였다[8,9].

## 결 과

### 1. 2023년 결핵환자 신고현황

2023년에 신고된 결핵 전체환자수는 19,540명(10만 명당 38.2명)으로, 2022년(20,383명, 10만 명당 39.8명) 대비 4.1% (843명) 감소하였다. 이는 2011년 최고치를 기록한 후 연평균 7.6%씩 감소하여, 2011년 대비 61.3% 감소한 수준이다. 또한, 2023년 결핵 신환자수는 15,640명(10만 명당 30.6명)으로, 2022년(16,264명, 10만 명당 31.7명) 대비 3.8% (624명) 감소하였다(표 1, 그림 1).

2023년 결핵 전체환자 중 남성이 61.8% (12,078명, 10만 명당 47.4명), 여성이 38.2% (7,462명, 10만 명당 29.1명)를 차지하였다(표 1). 연령별 결핵 전체환자수는 65세 이상을 제외한 모든 연령대에서 감소하였다. 그 중 65세 이상 노인 결핵 전체환자수는 11,309명(10만 명당 119.5명)으로 65세 미만 전체환자수(8,231명, 10만 명당 19.7명)보다 1.4배 많았고, 전체환자율은 6.1배 높았다. 또한, 65세 미만 전체환자수는 2022년 대비 9.4% 감소하였으나, 65세 이상 노인의 결핵 전체환자수는 2022년 대비 0.1% 증가하였다(표 1).

표 1. 결핵 전체환자 특성, 2021-2023년

구분	2021년		2022년				2023년			
	환자수	환자율 (비율 <sup>a)</sup> )	환자수	환자율 (비율 <sup>a)</sup> )	증감		환자수	환자율 (비율 <sup>a)</sup> )	증감	
					수	율			수	율
전체환자	22,904	44.6	20,383	39.8	-2,521	△(11.0)	19,540	38.2	-843	△(4.1)
성별										
남	13,893	54.3	12,520	49.0	-1,373	△(9.9)	12,078	47.4	-442	△(3.5)
여	9,011	35.0	7,863	30.6	-1,148	△(12.7)	7,462	29.1	-401	△(5.1)
연령										
0-4세	5	0.3	6	0.4	1	(20.0)	1	0.1	-5	△(83.3)
5-19세	204	2.9	149	2.2	-55	△(27.0)	115	1.7	-34	△(22.8)
20-49세	5,071	23.5	3,918	18.5	-1,153	△(22.7)	3,414	16.4	-504	△(12.9)
50-64세	5,954	47.5	5,012	39.5	-942	△(15.8)	4,701	36.8	-311	△(6.2)
65세 미만	11,234	26.3	9,085	21.5	-2,149	△(19.1)	8,231	19.7	-854	△(9.4)
65세 이상	11,670	136.0	11,298	125.4	-372	△(3.2)	11,309	119.5	11	(0.1)
지역										
서울	3,854	40.8	3,424	36.5	-430	△(11.2)	3,351	35.9	-73	△(2.1)
부산	1,623	48.5	1,340	40.4	-283	△(17.4)	1,285	39.0	-55	△(4.1)
대구	1,095	45.9	928	39.2	-167	△(15.3)	953	40.2	25	(2.7)
인천	1,185	40.6	1,037	35.3	-148	△(12.5)	1,017	34.3	-20	△(1.9)
광주	541	37.6	438	30.6	-103	△(19.0)	453	31.9	15	(3.4)
대전	504	34.8	450	31.2	-54	△(10.7)	407	28.3	-43	△(9.6)
울산	448	39.9	365	32.8	-83	△(18.5)	317	28.7	-48	△(13.2)
세종	100	27.6	75	19.9	-25	△(25.0)	82	21.3	7	(9.3)
경기	5,111	38.1	4,570	33.8	-541	△(10.6)	4,339	32.0	-231	△(5.1)
강원	954	62.3	899	58.7	-55	△(5.8)	788	51.6	-111	△(12.3)
충북	758	47.6	633	39.8	-125	△(16.5)	651	41.0	18	(2.8)
충남	1,094	51.9	1,044	49.4	-50	△(4.6)	1,017	48.0	-27	△(2.6)
전북	883	49.4	812	45.8	-71	△(8.0)	788	44.8	-24	△(3.0)
전남	1,286	70.2	1,183	65.0	-103	△(8.0)	1,047	57.9	-136	△(11.5)
경북	1,684	64.3	1,610	61.8	-74	△(4.4)	1,554	60.7	-56	△(3.5)
경남	1,527	46.1	1,322	40.2	-205	△(13.4)	1,254	38.5	-68	△(5.1)
제주	257	38.3	253	37.6	-4	△(1.6)	237	35.2	-16	△(6.3)
결핵종류										
폐결핵	17,858	(78.0)	15,746	(77.3)	-2,112	△(11.8)	15,391	(78.8)	-355	△(2.3)
도말양성 <sup>b)</sup>	6,316	(27.6)	5,722	(28.1)	-594	△(9.4)	5,305	(27.1)	-417	△(7.3)
폐외결핵	5,046	(22.0)	4,637	(22.7)	-409	△(8.1)	4,149	(21.2)	-488	△(10.5)
외국인 <sup>c)</sup>	1,242	63.5	1,072	47.7	-170	△(13.7)	1,107	44.1	35	(3.3)
연령										
0-19세	10	7.4	12	6.7	2	(20.0)	13	6.2	1	(8.3)
20-29세	302	71.2	204	39.8	-98	△(32.5)	245	41.5	41	(20.1)
30-39세	321	60.0	270	44.9	-51	△(15.9)	258	39.0	-12	△(4.4)
40-49세	182	55.7	147	40.1	-35	△(19.2)	167	41.8	20	(13.6)
50-59세	188	62.7	194	60.3	6	(3.2)	160	47.8	-34	△(17.5)
60세 이상	239	101.3	245	92.3	6	(2.5)	264	85.0	19	(7.8)

단위: 명, (10만 명당 환자수), (%). △=감소. <sup>a)</sup>전체환자수 중 폐결핵, 도말양성 폐결핵, 폐외결핵 비율(%). <sup>b)</sup>폐결핵환자 중 객담도말검사상 양성인 환자. <sup>c)</sup>결핵환자 중 국적이 대한민국이 아닌 외국인을 말하며, 환자율은 체류외국인 수를 기준인구로 산출하였으며, 2023년 전체환자율은 2023년 12월말 기준 연령별 체류외국인 수를 기준인구로 산출함. Reused from the report of Korea Immigration Service, Ministry of Justice [9].

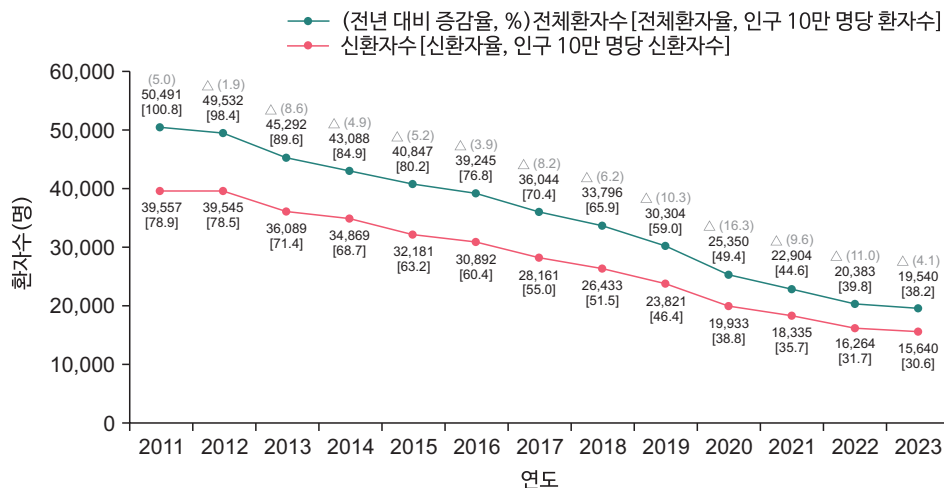


그림 1. 연도별 결핵 (신)환자수 및 율, 전년 대비 증감율 2011-2023

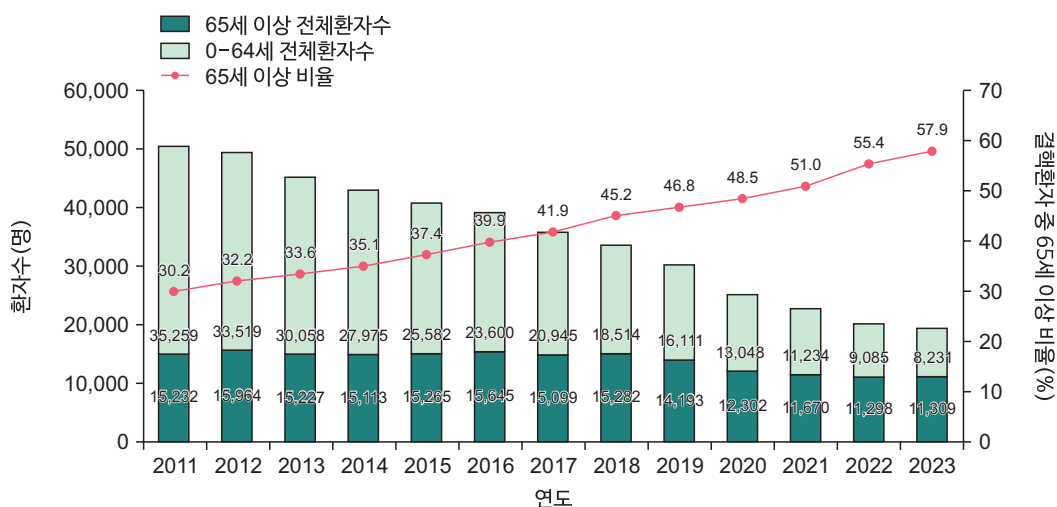


그림 2. 65세 이상/미만 결핵 전체환자수 및 65세 이상 결핵환자 비율, 2011-2023

2023년 폐결핵 환자수는 15,391명으로 전년(15,746명) 대비 2.3% (355명) 감소하였으며, 전체환자 중 78.8%를 차지하였으며 그 중 도말양성은 27.1% (5,305명)을 차지하였다. 폐외결핵 환자수는 4,149명으로 전년(4,637명) 대비 10.5% (488명) 감소하였으며, 전체환자 중 21.2%를 차지하였다(표 1).

지역별 2023년에 신고된 결핵 전체환자수는 대구, 광주, 세종, 충북을 제외한 모든 지역에서 2022년 대비 감소하였다. 17개 시·도 중에서 세종(82명, 10만 명당 21.3명)의 전체환자수가 2022년(75명, 10만 명당 19.9명) 대비 가장 큰 폭(9.3%)으로 증가하였다. 2023년 결핵 전체환자율은 경북(10

만 명당 60.7명), 전남(10만 명당 57.9명), 강원(10만 명당 51.6명) 순으로 높으며(표 1), 질병관리청에서 발간한 '2023년 결핵환자 신고현황 연보' [5]에 따르면, 연령표준화 전체환자율은 경북(10만 명당 28.2명), 충남(10만 명당 26.8명), 전남(10만 명당 25.3명) 순으로 높았다.

2023년에 신고된 65세 이상 결핵 전체환자수는 11,309명(10만 명당 119.5명)으로 2022년(11,298명, 10만 명당 125.4명) 대비 0.1% (11명) 증가하였다. 전체환자 중 65세 이상 연령층이 차지하는 비율 또한 매년 꾸준히 증가하여 최초 절반 이상을 돌파한 2021년(51.0%) 이후, 2022년 55.4%, 2023년 57.9%로 계속 증가하고 있다(그림 2).

2023년에 신고된 외국인 결핵 전체환자수는 1,107명으로 2022년(1,072명) 대비 3.3% (35명) 증가하였고, 신환자수 또한 919명으로 2022년(877명) 대비 4.8% (42명) 증가하였다. 2023년 결핵 전체환자 중 외국인 비율 5.7%로 2022년(5.3%)보다 0.4%p 증가하였다(그림 3). 연령대별 외국인 결핵 전체환자수를 살펴보면, 20-29세가 245명(10만 명당 41.5명)으로 2022년(204명, 10만 명당 39.8명) 대비 20.1% (41명) 증가하여 증가폭이 가장 컸다(표 1).

2022년 의료보장 적용인구 중 의료급여 수급권자 비율은 2.9% (1,522천 명)를 차지하였으나[7], 2023년 결핵 전체환자 중 의료급여 수급권자 비율은 11.2% (2,155명)로 2022년 의료보장 적용인구 대비 의료급여 수급권자 비율에 비해 높게 나타났다. 2022년 의료보장 적용인구로 2023년 의료보장 유형별 결핵 전체환자율을 산출한 결과, 2023년 의료급여 수급

권자 결핵 전체환자율(10만 명당 141.6명)은 건강보험 가입자(10만 명당 33.4명)보다 4.2배 높았다(표 2).

항결핵약제 내성이 있어 치료가 어려운 다제내성/리팜핀 내성결핵(multidrug-resistant/rifampicin-resistant tuberculosis, MDR/RR-TB) 환자수는 2023년 551명으로 결핵 전체환자수 19,540명 중 2.8%를 차지하여 2022년(2.7%) 대비 0.1%p 증가하였다. 2023년 과거 치료력별 MDR/RR-TB 환자 비율을 살펴보면, 신환자(1.8%)보다 재치료자 등(6.8%)에서 3.8배 높았다. 2023년 MDR/RR-TB 신환자수는 284명으로 2022년(308명) 대비 7.8% (24명) 감소하였고, MDR/RR-TB 재치료자 등은 267명으로 2022년(252명) 대비 6.0% (15명) 증가하였다(표 3).

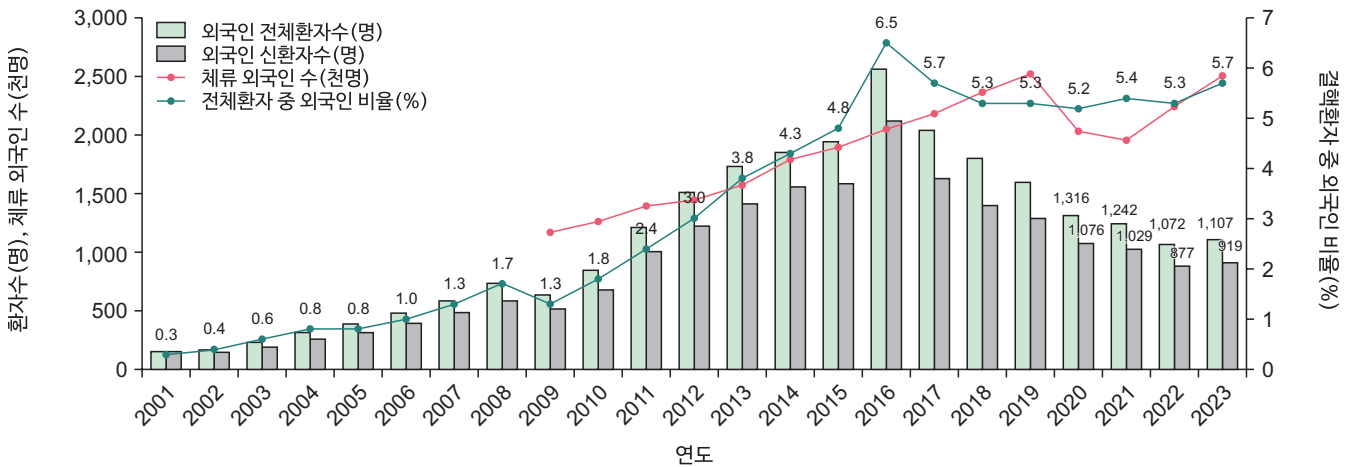


그림 3. 외국인 결핵 (신)환자수 및 전체환자 중 외국인 비율, 2001-2023

**표 2. 의료보장 유형별 2022년 의료보장 적용인구, 2023년 결핵 전체환자수 및 율**

구분	의료보장					불명 <sup>a)</sup>
	계	건강보험		의료급여		
		소계	직장	지역	소계	
2022년 의료보장 적용인구 <sup>b)</sup>	52,932 (100.0)	51,410 (97.1)	36,633 (69.2)	14,777 (27.9)	1,522 (2.9)	
2023년 결핵 전체환자수	19,310 (100.0)	17,155 (88.8)	10,092 (52.3)	7,063 (36.6)	2,155 (11.2)	230
결핵 전체환자율	36.5	33.4	27.5	47.8	141.6	

단위: (천)명(%), 10만 명당 환자 수. <sup>a)</sup>2023년 12월 31일 기준 의료보장 가입이력이 없는 경우. Reused from the report of Korea Disease Control and Prevention Agency [5]. <sup>b)</sup>2022년 기준 의료보장 적용인구. Reused from the report of Health Insurance Review & Assessment Service [7].

표 3. 과거 결핵 치료력별 다제내성/리팜핀내성결핵환자수 및 항결핵약제 내성 종류별 결핵환자수, 2022-2023

구분	계	다제내성/ 리팜핀 내성결핵 <sup>(b)+(c)+(d)+(e)</sup>	내성 비율 <sup>a)</sup>	항결핵약제 내성 종류별				
				광범위 약제내성 결핵 <sup>b)</sup>	광범위 약제내성 전 단계 결핵 <sup>c)</sup>	다제내성 결핵 <sup>d)</sup>	리팜핀 단독내성 결핵 <sup>e)</sup>	
계	2022	20,383	560	(2.7)	3	66	314	177
	2023	19,540	551	(2.8)	1	71	296	183
	전년대비증감율	△(4.1)	△(1.6)		△(66.7)	(7.6)	△(5.7)	(3.4)
신환자	2022	16,264	308	(1.9)	0	29	172	107
	2023	15,640	284	(1.8)	0	28	146	110
	전년대비증감율	△(3.8)	△(7.8)		-	△(3.4)	△(15.1)	(2.8)
재치료자 등 <sup>f)</sup>	2022	4,119	252	(6.1)	3	37	142	70
	2023	3,900	267	(6.8)	1	43	150	73
	전년대비증감율	△(5.3)	(6.0)		△(66.7)	(16.2)	(5.6)	(4.3)

단위: 명(%). △=감소. <sup>a)</sup>결핵환자 중 다제내성/리팜핀내성결핵환자 비율. <sup>b)</sup>리팜핀내성결핵 또는 다제내성결핵이면서 한 가지 이상의 퀴놀론계 약제(레보플록사신[levofloxacin], 모시플록사신[moxifloxacin], 오픈플록사신[ofloxacin], 가티플록사신[gatifloxacin])에 내성이고, 그 외 A군 약제(베다퀼린[bedaquiline], 리네졸리드[linezolid]) 한 가지 이상에 내성을 보이는 결핵. <sup>c)</sup>리팜핀내성결핵 또는 다제내성결핵이면서 한 가지 이상의 퀴놀론계 약제에 내성을 보이는 결핵. <sup>d)</sup>리팜핀과 이소니아지드 약제에 모두 내성을 보이는 결핵. <sup>e)</sup>리팜핀 약제에 내성을 보이며, 이소니아지드 약제에 감수성이거나 감수성을 확인할 수 없는 결핵. <sup>f)</sup>재발자, 실패 후 재치료자, 중단 후 재치료자, 이전 치료결과 불명확, 과거 치료여부 불명확, 기타환자.

## 논 의

2023년 우리나라 결핵 전체환자수는 19,540명(10만 명당 38.2명)으로 2022년(20,383명, 10만 명당 39.8명) 대비 4.1% 감소하였다[5]. 이는 2011년 최고치를 기록한 후 연평균 7.6%씩 12년 연속 감소하여 2011년 대비 61.3% 감소한 수준이다. 전 세계 결핵 발생자수는 코로나19 유행의 영향으로 2020년부터 2022년까지 증가세를 보이고 있으나[1,2], 우리나라의 결핵 전체환자수는 연속 감소하고 있다. 이는 2011년부터 정부와 민간의료기관이 협력체계를 구축하여 민간·공공협력(public-private mix, PPM) 결핵관리사업을 코로나19 유행 중에도 지속 추진해 온 성과로 볼 수 있다[10,11]. 다만, 결핵 전체환자수 감소세라는 성과에도 불구하고, 2023년 결핵 전체환자수의 전년 대비 감소율(4.1% 감소)은 이전 연도(11.0% 감소) 대비 다소 둔화되었다(그림 1). 우리나라의 결핵 발생 감소폭이 다소 둔화된 이유는 결핵 발병 위험이 높은 고령 인구의 증가, 코로나19 방역 조치 완화로 인해 의료 접근성 회복, 국내 체류 외국인 증가 등에 기인한 것으로 보인다[12]. 2016년 3월 결핵고위험국가 외국인 대상 사증 신청 시

결핵검진 제도를 도입한 이후 외국인 결핵 환자수는 지속 감소하였으나, 2023년 외국인 결핵 전체환자수는 2022년 대비 3.3% 증가하였다. 또한, 2023년 65세 이상 결핵 전체환자수는 2022년 대비 0.1% 증가하였고, 결핵 전체환자 중 차지하는 비율 또한 증가하였다. 우리나라의 고령화 속도를 감안할 시, 고령층의 결핵 발생 및 사망 비중은 더욱 증가할 가능성이 있다[12]. MDR/RR-TB 환자수는 551명으로, 그 중 신환자는 284명으로 전년 대비 7.8% 감소했으나, 재치료자 등(재발자, 실패 후 재치료자 등) 환자수는 267명으로 전년 대비 6.0% 증가했다. 또한, 전체환자(19,540명) 중 다제내성/리팜핀내성결핵인 재치료자의 비율(6.8%)이 신환자(1.8%) 비율보다 더 높았다. 또한, 2023년 의료급여 수급권자의 결핵 전체환자율이 건강보험 가입자에 비해 4배 이상 높았다. 이는 사회경제적 수준에 따른 건강불평등 현상을 보여주는 결과 중 하나이며, 어떠한 사회경제적 요인들이 의료접근성 저하, 결핵 발병 증가를 유도할 수 있는지 추가적으로 연구 또한 필요한 상황이다.

질병관리청은 이러한 정책적 환경 변화와 결핵환자 발생 특성에 적극적으로 대응해나갈 것이다. 특히, 65세 이상 노인

(의료급여수급, 재가와상) 및 사회경제적 취약계층(노숙인 등) 대상으로 '찾아가는 결핵검진사업'을 지속·확대 추진하여 검진 사각지대에 있는 결핵환자를 조기에 발견하고 지역사회 내 결핵 전파를 예방할 것이다. 또한 잠복결핵감염률이 높은 65세 이상 연령층의 잠복결핵감염 예방 및 치료가 가능하도록, 2024년 1월 「결핵 진료지침」 개정을 통해 근거를 마련하였다 [13]. 또한, 잠복결핵감염 치료가 어려운 기저질환, 약물 부작용 등의 고령층을 대상으로 검진, 추적관리 독려 등 접촉자 관리 방안을 수립하고 65세 이상 잠복결핵감염 관리 모델을 마련하여 치료 모니터링을 철저히 할 계획이다. 2024년 하반기에는 질병관리청과 법무부가 공동으로 「결핵고위험국가 결핵검진 지정병원 운영 안내서」를 발간·시행하여, 결핵고위험국가 외국인 대상 입국 전 결핵 검진 질을 보다 철저하게 관리하여 결핵 해외유입을 차단해나갈 것이다. 아울러, 치료가 어려운 MDR/RR-TB 환자 관리를 위하여 다제내성결핵 전문의료기관을 중심으로 전문적 치료를 지원하고 있으며, 다제내성/리팜핀내성결핵환자의 치료기간을 18-20개월에서 6개월로 단축할 수 있는 단기 치료요법의 요양급여 적용이 2024년 4월 1일부터 가능하게 되었다. 앞으로는 다제내성/리팜핀내성결핵환자의 치료부담이 낮아져 결핵 치료성공률도 향상될 것으로 기대된다[14]. 더불어 질병관리청은 보다 철저한 결핵환자 관리를 위해 결핵 치료 장애요인을 파악하여 지역사회 자원·서비스를 연계하는 「결핵환자 맞춤형 사례관리」 사업을 확대하여 취약성 평가 결과에 따라 개인별 맞춤 복약관리를 하는 「맞춤형 복약관리」 등을 통하여 체계적인 환자 관리를 해나갈 것이다[15].

질병관리청은 2023년 3월에 수립한 「제3차 결핵관리종합계획(2023-2027)」 [15]을 보다 안정적으로 수행하기 위하여 국제사회, 범부처, 지역사회 및 시민사회와 유기적인 협력 체계를 갖추고, 정기적으로 평가·보완해 나갈 것이다. 이를 통해 “2027년까지 우리나라 결핵 발생률 인구 10만 명당 20명 이하” 목표 달성과 더불어 “2030년까지 결핵 퇴치”라는 국제

사회 목표에 도달하도록 결핵 전주기(예방-조기발견-환자관리) 지원을 지속할 것이다.

## Declarations

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JNP, SKO, IMK, JYL, YJP, HYL, JIY, YMK, JSL, MJL.  
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## Characteristics of Notified Tuberculosis Cases in the Republic of Korea, 2023

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### ABSTRACT

In 2023, the total number of notified tuberculosis (TB) cases was 19,540 cases (38.2 cases per 100,000 population), down 4.1% from 2022 (n=20,383, 39.8 cases per 100,000 population). This represents a decrease of 61.3% over 12 consecutive years, with an annual average decrease of 7.6% after reaching the highest level in 2011. In addition, the total number of TB cases for people aged 65 years and older in 2023 was 11,309 cases (119.5 cases per 100,000 population), a 0.1% increase compared to 2022 (n=11,298), and the proportion of TB cases aged 65 years and older was 57.9%. This proportion has been increasing every year since 2000. Furthermore, the total number of foreign TB cases was 1,107 cases, an increase of 3.3% compared to 2022 (n=1,072), and the proportion of foreign TB cases was 5.7%, a slight increase from 2022 (5.3%). In 2023, the number of multidrug-resistant/rifampicin-resistant TB (MDR/RR-TB) cases was 551 and represented a decrease of 1.6% compared to 2022 (n=560), and the proportion of MDR/RR-TB cases among total TB cases was 2.8%. In March 2023, the Korea Disease Control and Prevention Agency (KDCA) established the Third National Strategic Plan for TB Control (2023–2027), which continues TB control projects for TB screening among vulnerable populations, people-centered TB case management, and the operation of a MDR-TB consortium, aiming to decrease the TB incidence rate to less than 20 cases per 100,000 population by 2027.

**Key words:** Tuberculosis, TB notification, TB notification rate

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### Key messages

#### ① What is known previously?

The number of total TB cases in 2022 was 20,383 cases (39.8 cases per 100,000 population), representing a decrease of 11.0% from 2021 (n=22,904, 44.6 cases per 100,000 population).

#### ② What new information is presented?

In 2023, the number of total TB cases in the Republic of Korea was 19,540 cases (38.2 cases per 100,000 population), representing a decrease of 4.1% from 2022. The number of TB cases aged 65 years and older was 11,309 cases (119.5 cases per 100,000 population), representing an increase of 0.1% from 2022.

#### ③ What are the implications?

Although the total number of TB cases is decreasing every year the decline slowed down in 2023 compared to that in 2022 and the proportion of foreigners or people aged 65 years and older among TB cases increased compared with the previous year. Therefore, the Korea Disease Control and Prevention Agency will thoroughly implement tasks of the Third National Strategic Plan for TB Control (2023–2027) throughout the entire TB prevention, diagnosis, and treatment continuum.

## Introduction

Tuberculosis (TB) is a respiratory infectious disease caused by *Mycobacterium tuberculosis*, and according to the World Health Organization, an estimated 10.6 million TB cases and 1.6 million TB-related deaths occurred globally in 2022. The Republic of Korea (ROK) ranks second in the TB incidence rate and fourth in the TB mortality rate among 38 Organization for Economic Cooperation and Development member countries [1,2]. Moreover, TB among infectious diseases had the fourth-highest notification after coronavirus disease 2019

(COVID-19), carbapenem-resistant Enterobacteriaceae infection, and varicella [3], with the second-highest deaths after COVID-19 in ROK in 2022 [4]. In this article, we examined the notification status and trends in TB cases in ROK in 2023.

## Methods

Since 2002, the Korea Disease Control and Prevention Agency (KDCA) has been publishing the “Annual Report on the Notified Tuberculosis in Korea” every year and this report was based on the “Annual Report on the Notified Tuberculosis in Korea, 2023.” The data source of this report consisted of 27,802 confirmed and suspected TB cases notified from January 1 to December 31, 2023. We calculated the total number of TB cases that were cleaned and classified this data [5]. In addition, TB notification rate was calculated from the total number of TB cases by KDCA and the 2023 resident registration central population by Statistics Korea [6]. To calculate the age-standardized TB notification rate, 2005 resident registration central population was used as the standard population. The type of national health insurance and medical aid beneficiaries among TB cases was confirmed using the National Health Insurance Service (NHIS) information as at 31 December 2023, and the TB notification rate by these types was calculated using the 2022 NHIS national health insurance and medical aid beneficiary population as the reference population [7]. To calculate the foreign TB notification rate in ROK, the number of foreign residents by year for the years up to 2022 and that as of December 2023 were used as the reference populations [8,9].

## Results

### 1. Status of Notified Tuberculosis in ROK, 2023

The total number of notified TB cases in 2023 was 19,540 cases (38.2 cases per 100,000 population), representing a 4.1% decrease (n=843) from 2022 (n=20,383, 39.8 cases per 100,000 population). The total number of TB cases decreased by an average of 7.6% per year since reaching a peak in 2011 and the number in 2023 represented a 61.3% decrease from 2011. Moreover, the number of new TB cases in 2023 was 15,640 cases (30.6 cases per 100,000 population), a decrease of 3.8% (n=624) from 2022 (n=16,264, 31.7 cases per 100,000 population; Table 1, Figure 1).

Among total TB cases in 2023, males accounted for 61.8% (n=12,078, 47.4 cases per 100,000 population) and females accounted for 38.2% (n=7,462, 29.1 cases per 100,000 population; Table 1). The total number of TB cases by age groups decreased in all age groups, except the  $\geq 65$  years group. The total number of TB cases among those aged  $\geq 65$  years was 11,309 cases (119.5 cases per 100,000 population), which was 1.4 times higher than the total number of TB cases aged  $< 65$  years (n=8,231, 19.7 cases per 100,000 population), while the total TB notification rate was 6.1 times higher. Moreover, the total number of TB cases aged  $< 65$  years decreased by 9.4% relative to the number of TB cases in 2022, whereas the total number of TB cases among those aged  $\geq 65$  years increased by 0.1% relative to the number of TB cases in 2022 (Table 1).

The total number of pulmonary TB cases in 2023 was 15,391 cases, a decrease of 2.3% (n=355) relative to the previous year (n=15,746). Pulmonary TB cases accounted for 78.8% of total TB cases, and smear-positive TB cases of these accounted for 27.1% (n=5,305). The total

number of extrapulmonary TB cases was 4,149, a decrease of 10.5% (n=488) relative to the previous year (n=4,637). Extrapulmonary TB cases accounted for 21.2% of total TB cases (Table 1).

By region, the total number of TB cases decreased in 2023 relative to 2022 in all regions except Daegu, Gwangju, Sejong, and Chungbuk. Among 17 provinces, the total number of TB cases in Sejong (n=82, 21.3 cases per 100,000 population) increased by the largest margin (9.3%) in 2023 compared to 2022 (n=75, 19.9 cases per 100,000 population). With respect to the total TB notification rate in 2023 by region, Gyeongbuk (60.7 cases per 100,000 population) had the highest rate, followed in order by Jeonnam (57.9 cases per 100,000 population) and Gangwon (51.6 cases per 100,000 population; Table 1). Moreover, according to the “Annual Report on the notified Tuberculosis in Korea, 2023” published by the KDCA [5], Gyeongbuk (28.2 cases per 100,000 population) had the highest age-standardized TB notification rate, followed in order by Chungnam (26.8 cases per 100,000 population) and Jeonnam (25.3 cases per 100,000 population).

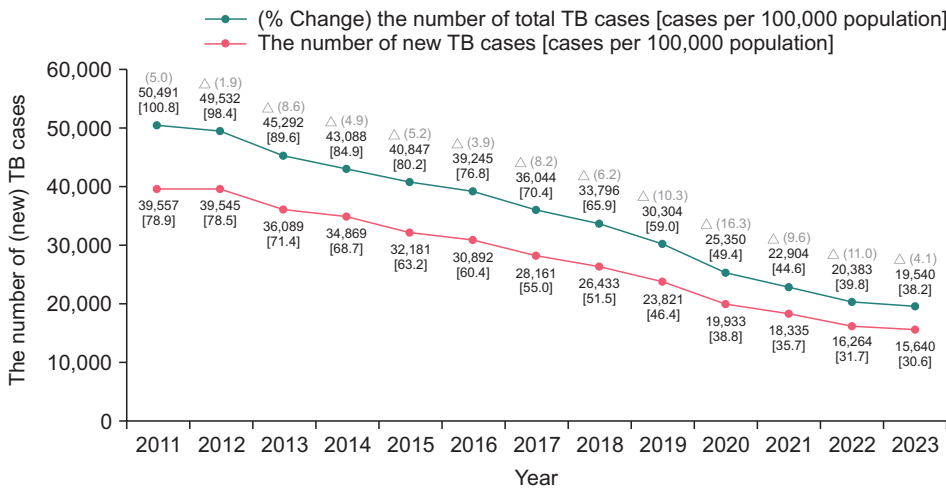
The total number of TB cases among those aged  $\geq 65$  years in 2023 was 11,309 cases (119.5 cases per 100,000 population), an increase of 0.1% (n=11) compared to 2022 (n=11,298, 125.4 cases per 100,000 population). The percentage of those aged  $\geq 65$  years among total TB cases also increased consistently each year, taking up more than half for the first time in 2021 (51.0%) and continuing to increase to 55.4% in 2022 and 57.9% in 2023 (Figure 2).

The total number of foreign TB cases in 2023 was 1,107 cases, an increase of 3.3% (n=35) compared to 2022 (n=1,072), while the number of new foreign TB cases was 919 cases, an increase of 4.8% (n=42) since 2022 (n=877). The

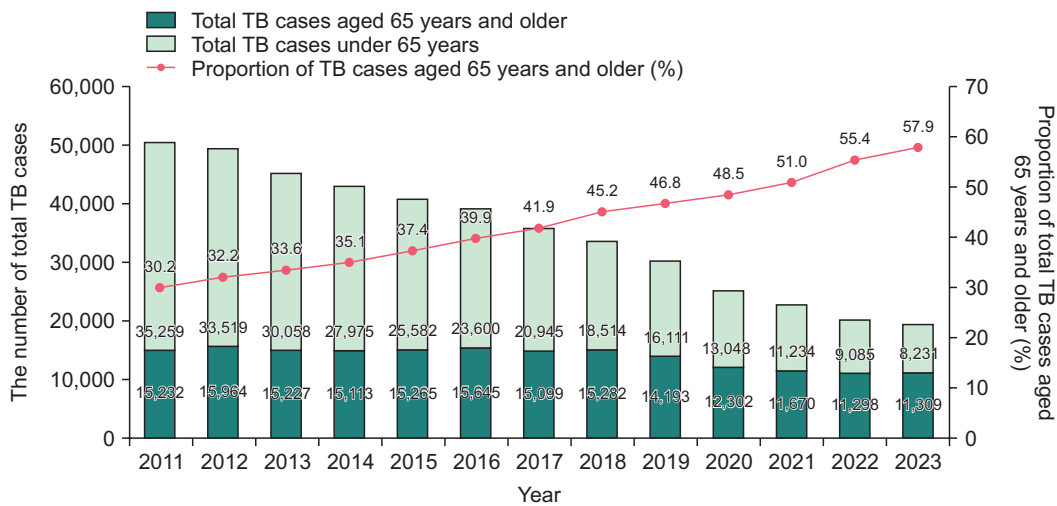
**Table 1.** Characteristics of tuberculosis notification cases, 2021–2023

	2021		2022				2023			
	Cases	Rate (proportion <sup>a)</sup> )	Cases	Rate (proportion <sup>a)</sup> )	Change		Cases	Rate (proportion <sup>a)</sup> )	Change	
					Difference	% Change			Difference	% Change
Total cases	22,904	44.6	20,383	39.8	-2,521	Δ(11.0)	19,540	38.2	-843	Δ(4.1)
Gender										
Male	13,893	54.3	12,520	49.0	-1,373	Δ(9.9)	12,078	47.4	-442	Δ(3.5)
Female	9,011	35.0	7,863	30.6	-1,148	Δ(12.7)	7,462	29.1	-401	Δ(5.1)
Age (yr)										
0–4	5	0.3	6	0.4	1	(20.0)	1	0.1	-5	Δ(83.3)
5–19	204	2.9	149	2.2	-55	Δ(27.0)	115	1.7	-34	Δ(22.8)
20–49	5,071	23.5	3,918	18.5	-1,153	Δ(22.7)	3,414	16.4	-504	Δ(12.9)
50–64	5,954	47.5	5,012	39.5	-942	Δ(15.8)	4,701	36.8	-311	Δ(6.2)
<65	11,234	26.3	9,085	21.5	-2,149	Δ(19.1)	8,231	19.7	-854	Δ(9.4)
≥65	11,670	136.0	11,298	125.4	-372	Δ(3.2)	11,309	119.5	11	(0.1)
Province										
Seoul	3,854	40.8	3,424	36.5	-430	Δ(11.2)	3,351	35.9	-73	Δ(2.1)
Busan	1,623	48.5	1,340	40.4	-283	Δ(17.4)	1,285	39.0	-55	Δ(4.1)
Daegu	1,095	45.9	928	39.2	-167	Δ(15.3)	953	40.2	25	(2.7)
Incheon	1,185	40.6	1,037	35.3	-148	Δ(12.5)	1,017	34.3	-20	Δ(1.9)
Gwangju	541	37.6	438	30.6	-103	Δ(19.0)	453	31.9	15	(3.4)
Daejeon	504	34.8	450	31.2	-54	Δ(10.7)	407	28.3	-43	Δ(9.6)
Ulsan	448	39.9	365	32.8	-83	Δ(18.5)	317	28.7	-48	Δ(13.2)
Sejong	100	27.6	75	19.9	-25	Δ(25.0)	82	21.3	7	(9.3)
Gyeonggi	5,111	38.1	4,570	33.8	-541	Δ(10.6)	4,339	32.0	-231	Δ(5.1)
Gangwon	954	62.3	899	58.7	-55	Δ(5.8)	788	51.6	-111	Δ(12.3)
Chungbuk	758	47.6	633	39.8	-125	Δ(16.5)	651	41.0	18	(2.8)
Chungnam	1,094	51.9	1,044	49.4	-50	Δ(4.6)	1,017	48.0	-27	Δ(2.6)
Jeonbuk	883	49.4	812	45.8	-71	Δ(8.0)	788	44.8	-24	Δ(3.0)
Jeonnam	1,286	70.2	1,183	65.0	-103	Δ(8.0)	1,047	57.9	-136	Δ(11.5)
Gyeongbuk	1,684	64.3	1,610	61.8	-74	Δ(4.4)	1,554	60.7	-56	Δ(3.5)
Gyeongnam	1,527	46.1	1,322	40.2	-205	Δ(13.4)	1,254	38.5	-68	Δ(5.1)
Jeju	257	38.3	253	37.6	-4	Δ(1.6)	237	35.2	-16	Δ(6.3)
Pathological location										
Pulmonary TB	17,858	(78.0)	15,746	(77.3)	-2,112	Δ(11.8)	15,391	(78.8)	-355	Δ(2.3)
Smear positive <sup>b)</sup>	6,316	(27.6)	5,722	(28.1)	-594	Δ(9.4)	5,305	(27.1)	-417	Δ(7.3)
Extra-pulmonary TB	5,046	(22.0)	4,637	(22.7)	-409	Δ(8.1)	4,149	(21.2)	-488	Δ(10.5)
Foreign TB cases <sup>c)</sup>	1,242	63.5	1,072	47.7	-170	Δ(13.7)	1,107	44.1	35	(3.3)
Age (yr)										
0–19	10	7.4	12	6.7	2	(20.0)	13	6.2	1	(8.3)
20–29	302	71.2	204	39.8	-98	Δ(32.5)	245	41.5	41	(20.1)
30–39	321	60.0	270	44.9	-51	Δ(15.9)	258	39.0	-12	Δ(4.4)
40–49	182	55.7	147	40.1	-35	Δ(19.2)	167	41.8	20	(13.6)
50–59	188	62.7	194	60.3	6	(3.2)	160	47.8	-34	Δ(17.5)
60≤	239	101.3	245	92.3	6	(2.5)	264	85.0	19	(7.8)

Unit: case (cases per 100,000 population), %. Δ=decrease. TB=tuberculosis. <sup>a)</sup>Proportion (%) of pulmonary TB cases among total TB cases, smear positive cases in pulmonary TB, extra-pulmonary TB cases among total TB cases. <sup>b)</sup>Smear positive cases in pulmonary TB. <sup>c)</sup>Foreign TB cases refer to TB patients who are not nationals of the Republic of Korea (ROK). When calculating the TB notification rate, the annual number of foreign residents staying in the ROK was used. For 2023, the number for foreign residents as of the end of December 2023 was utilized. Reused from the report of Korea Immigration Service, Ministry of Justice [9].



**Figure 1.** (New) tuberculosis notification cases and rates by notification year, 2011–2023  
TB=tuberculosis.



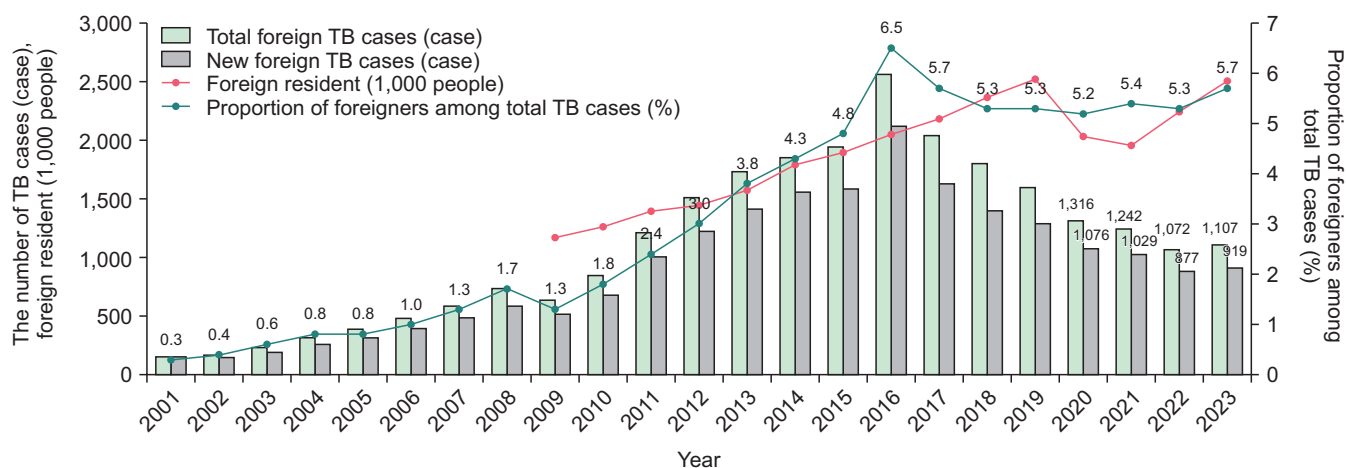
**Figure 2.** The number and proportion (%) of total tuberculosis cases aged 65 years and older and the number of total tuberculosis cases under 65 years, 2011–2023  
TB=tuberculosis.

proportion of foreigners among TB cases in 2023 was 5.7%, an increase of 0.4 percentage point (%p) since 2022 (5.3%; Figure 3). With respect to the total number of foreign TB cases by age group, those aged 20–29 years (n=245, 41.5 cases per 100,000 population) showed the largest margin of increase (20.1%, n=41) in comparison that in 2022 (n=204, 39.8 cases per 100,000 population; Table 1).

In 2022, beneficiaries of medical aid accounted for 2.9% (n=1,522,000) among beneficiaries of national health insurance and medical aid [7], but the proportion of beneficiaries of

medical aid among TB cases in 2023 was 11.2% (n=2,155), showing a higher percentage relative to that of beneficiaries of national health insurance and medical aid in 2022. The total TB notification rate was 4.2 times higher among beneficiaries of medical aid (141.6 cases per 100,000 population) than among those with national health insurance (33.4 cases per 100,000 population) in 2023 (Table 2).

The number of multidrug-resistant/rifampicin-resistant TB (MDR/RR-TB) cases that were difficult to treat owing to anti-TB drug resistance in 2023 was 551 cases, which accounted



**Figure 3.** The number of (new) tuberculosis cases and proportion (%) in foreigners among total tuberculosis cases, 2001–2023  
TB=tuberculosis.

**Table 2.** Beneficiaries of medical security (national health insurance or medical aid) in 2022, tuberculosis notification cases and rate (2023) by types of medical security

	Medical security					
	Total	National health insurance			Medical aid	Unknown <sup>a)</sup>
		Sub-total	I.W.	S.E.	Sub-total	
Beneficiaries <sup>b)</sup>	52,932 (100.0)	51,410 (97.1)	36,633 (69.2)	14,777 (27.9)	1,522 (2.9)	
Total TB cases	19,310 (100.0)	17,155 (88.8)	10,092 (52.3)	7,063 (36.6)	2,155 (11.2)	230
Total TB rates	36.5	33.4	27.5	47.8	141.6	

Unit: (1,000) cases (%), the number of cases per 100,000 population. TB=tuberculosis; I.W.=industrial workers; S.E.=self-employees. <sup>a)</sup>People with no history of national health insurance by December 31, 2023. Reused from the report of Korea Disease Control and Prevention Agency [5]. <sup>b)</sup>Beneficiaries of the national health insurance in 2022. Reused from the report of Health Insurance Review & Assessment Service [7].

for 2.8% of total TB cases (n=19,540) and an increase of 0.1%p compared to 2022 (2.7%). In 2023, the proportion of MDR/RR-TB cases among TB cases by previous TB treatment history was 3.8 times higher among previously treated TB cases (6.8%) than among new TB cases (1.8%). In 2023, the number of new MDR/RR-TB cases was 284 cases, an decrease of 7.8% (n=24) compared to 2022 (n=308), whereas the number of MDR/RR-TB cases with previous TB treatment history was 267 cases, an increase of 6.0% (n=15) compared to 2022 (n=252; Table 3).

## Discussion

In 2023, the total number of notified TB cases in ROK was 19,540 cases (38.2 cases per 100,000 cases per 100,000 population), representing a 4.1% decrease since 2022 (n=20,383, 39.8 cases per 100,000 population) [5]. The total number of TB cases has decreased for 12 consecutive years by an average of 7.6% per year since reaching the peak in 2011 and the total number of TB cases in 2023 represented a 61.3% decrease compared to that in 2011. Despite a global increase in TB cases between 2020 and 2022, influenced by the COVID-19 pandemic [1,2], the total number of TB cases in ROK has

**Table 3.** Tuberculosis notification cases (%) by types of drug-resistant tuberculosis and treatment history, 2022–2023

		Total	MDR-RR TB <sup>(d), (e), (f), (g)</sup>	Proportion <sup>(c)</sup>	Types of drug-resistant TB			
					Extensively drug-resistant TB <sup>(d)</sup>	Pre-extensively drug-resistant TB <sup>(e)</sup>	Multidrug-resistant TB <sup>(f)</sup>	Rifampicin-resistant TB <sup>(g)</sup>
Total	2022	20,383	560	(2.7)	3	66	314	177
	2023	19,540	551	(2.8)	1	71	296	183
	% Change <sup>(a)</sup>	△(4.1)	△(1.6)		△(66.7)	(7.6)	△(5.7)	(3.4)
New cases	2022	16,264	308	(1.9)	0	29	172	107
	2023	15,640	284	(1.8)	0	28	146	110
	% Change <sup>(a)</sup>	△(3.8)	△(7.8)		-	△(3.4)	△(15.1)	(2.8)
Previously treated cases etc <sup>(b)</sup>	2022	4,119	252	(6.1)	3	37	142	70
	2023	3,900	267	(6.8)	1	43	150	73
	% Change <sup>(a)</sup>	△(5.3)	(6.0)		△(66.7)	(16.2)	(5.6)	(4.3)

Unit: case (%). △=decrease. TB=tuberculosis; RR-TB=rifampicin-resistant tuberculosis; XDR-TB=extensively drug-resistant tuberculosis; MDR/RR-TB=multidrug-resistant/rifampicin-resistant tuberculosis. <sup>(a)</sup>% Change from the previous year. <sup>(b)</sup>Relapse patients, treatment after failure patients, treatment after loss to follow-up patients, other previously treated patients, patients with unknown previous TB treatment history, other patients. <sup>(c)</sup>Proportion of MDR/RR-TB cases among total TB cases (%). <sup>(d)</sup>Tuberculosis caused by *Mycobacterium tuberculosis* strains that fulfil the definition of MDR/RR-TB and that are also resistant to any fluoroquinolone (levofloxacin, moxifloxacin, ofloxacin, gatifloxacin) and at least one additional group A drug (bedaquiline, linezolid) (XDR-TB). <sup>(e)</sup>Tuberculosis caused by *M. tuberculosis* strains that fulfil the definition of MDR/RR-TB and that are also resistant to any fluoroquinolone (pre-XDR-TB). <sup>(f)</sup>Tuberculosis caused by *M. tuberculosis* strains that are resistant to at least both rifampicin and isoniazid (MDR-TB). <sup>(g)</sup>Tuberculosis caused by *M. tuberculosis* strains resistant to rifampicin. These strains may be susceptible or resistant to isoniazid (i.e. MDR-TB), or resistant to other first-line or second-line TB medicines (RR-TB).

continued to decline. This can be viewed as an outcome of the government and private healthcare institutions establishing a collaborative system in 2011 and continuing to implement a public-private mix TB control program, even during the COVID-19 pandemic [10,11]. However, despite achieving a decreasing trends in the total number of TB cases, the year-on-year decrease in the total number of TB cases in 2023 (4.1%) was slightly lower than that of the previous year (4.1%; Figure 1). This trend in the total number of TB cases in ROK may be attributed to an increase in the older adult population, the recovery of healthcare accessibility from the easing of COVID-19 quarantine measures, and an increase in the number of foreigners residing in ROK [12]. Since the implementation of TB screening when applying for visas by foreigners from high-risk TB countries in March 2016, the total number of foreign TB

cases has continued to decrease, but in 2023, the total number of foreign TB cases increased by 3.3% relative to 2022. Moreover, the total number of TB cases aged ≥65 years in 2023 increased by 0.1% relative to 2022, while the proportion of such cases among total TB cases also increased. Considering the rate of population aging in ROK, the proportion of TB cases aged 65 years and older among total TB cases is likely to increase even further [12]. The total number of MDR/RR-TB cases was 551 cases in 2023, and of these, there were 284 new MDR/RR-TB cases, a decrease of 7.8% relative to the previous year. However, the number of MDR/RR-TB cases with previous TB treatment history was 267 cases, an increase of 6.0% relative to the previous year. Moreover, the proportion of MDR/RR-TB cases among previously treated TB cases was 3.8 times higher than that among new TB cases. In addition, the

TB notification rate of beneficiaries of medical aid was more than 4.2 times higher than that of national health insurance. These findings represent one example of the phenomenon of health inequality based on socioeconomic status. Additional studies are needed to determine which socioeconomic factors are associated with lower healthcare accessibility and increased TB incidence.

The KDCA will actively respond to changes in the policy environment and the characteristics of TB incidence. In particular, the KDCA will continue to expand its “On-site TB Screening” targeting those aged  $\geq 65$  years (e.g., medical aid beneficiaries, homebound bedridden older adults, etc.) and socioeconomically vulnerable populations (e.g., homeless). This will allow early detection of TB patients who are not screened and help prevent the spread of TB within the community. Moreover, by revising the “Korean Guidelines for Tuberculosis” in January 2024 [13], the KDCA has laid the foundation for the prevention and treatment of latent TB infection (LTBI), which is prevalent in people aged  $\geq 65$  years. In addition, contact management measures will be established to encourage screening and follow-up management for older adults with adverse drug reactions or pre-existing conditions that make treatment of LTBI difficult, while a LTBI control model for those aged  $\geq 65$  years will be established for strict treatment monitoring. In the latter half of 2024, the KDCA and the Ministry of Justice will jointly publish and implement the “Operational Guideline for TB Screening for Long-term Visa at Hospitals designated by the Embassy of the Republic of Korea in High-Risk TB Countries” to strictly manage the quality of TB screening prior to the arrival of foreigners from high-risk TB countries in an effort to block the import of foreign TB cases.

Moreover, the KDCA is supporting medical institutions specializing in MDR-TB treatment to manage difficult-to-treat MDR/RR-TB cases, while shorter TB treatment regimens that can shorten the treatment period for MDR/RR-TB from 18 to 20 months for 6 months, are covered by national health insurance as of April 1, 2024. Moving forward, TB treatment success rates are expected to improve as the treatment burden of MDR/RR-TB patients decreases [14]. In addition, KDCA will expand the Comprehensive Case Management Program, which links community-based health and social resources and services, to identify barriers to TB treatment for more rigorous TB management, while implementing more comprehensive case management through the TB Medication Management Program for each TB patient based on their vulnerability assessment survey results [15].

For the more stable implementation of the “Third National Strategic Plan for TB Control (2023–2027),” established in March 2023 [15], the KDCA will continue to establish an organic cooperation system with the international society, various government ministries, local communities, and civil society. Through these efforts, the KDCA will continue to support the entire TB control cycle (prevention–early detection–patient care) to reach the national goal of a TB incidence rate of less than 20 cases per 100,000 population by 2027 and the international goal of ending TB by 2030.

## Declarations

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