·基础研究·

中国与全球溃疡性结肠炎疾病负担及趋势

张维晴[1,2]，梁艺钟[1,3]，莫梅兰[4]，吴驻林[2]，罗维军[2]，张　东[3]，林德荣[4]
（1. 广州中医药大学第四临床医学院，广东 深圳 518000；2. 深圳市龙华区人民医院中医科，广东 深圳 518000；3. 深圳市中医院脾胃病科，广东 深圳 518000；4. 广州中医药大学东莞医院针灸科，广东 东莞 523000）

摘　要：【目的】基于全球疾病负担研究 2023（GBD 2023）数据，评估 1990—2023 年中国与全球溃疡性结肠炎（UC）的发病、患病和伤残调整寿命年（DALY）负担及其变化，分析人口学驱动并预测未来趋势。【方法】从 GBD 2023 Results Tool 提取中国、全球及 204 个国家和地区的 UC 数据，获得年龄标准化发病率（ASIR）、年龄标准化患病率（ASPR）和年龄标准化 DALY 率（ASDR）及 95% 不确定区间（UI）。采用 Joinpoint 回归计算平均年度变化百分比（AAPC）及 95% 置信区间（CI）；采用 Spearman 秩相关、不平等与前沿分析、Das Gupta 分解和自回归积分滑动平均模型（ARIMA）分别评价与社会人口学指数（SDI）的相关性、国家间负担差异、人口学驱动及 2024—2035 年趋势。【结果】2023 年中国 ASIR、ASPR 和 ASDR 分别为 0.94/100 000、5.95/100 000 和 5.94/100 000，低于全球的 2.87/100 000、28.48/100 000 和 13.82/100 000。1990—2023 年，中国 ASIR 和 ASPR 上升，AAPC 分别为 2.720%（95% CI：2.133% ~ 3.309%）和 2.261%（95% CI：1.617% ~ 2.908%）；ASDR 下降，AAPC 为 −3.056%（95% CI：−3.449% ~ −2.662%）。全球 ASIR 轻度上升，ASPR 和 ASDR 下降。2023 年中国粗发病率、粗患病率和粗 DALY 率峰值分别位于 50 ~ 54 岁、60 ~ 64 岁和≥95 岁。ASIR 和 ASPR 与 SDI 呈正相关（r_s=0.579 4 和 0.617 7，均 P<0.001），ASDR 与 SDI 的相关性无统计学意义（r_s=0.066 6，P=0.343）。分解分析显示，中国发病数和患病数增加主要由流行病学变化贡献，DALYs 下降主要由年龄别率变化贡献；全球 DALYs 增加主要由人口增长和人口老龄化贡献。至 2035 年，中国 ASIR、ASPR 和 ASDR 预计分别为 1.23/100 000、6.37/100 000 和 2.55/100 000。【结论】1990—2023 年中国 UC 的发病和患病负担上升，年龄标准化健康损失负担下降，绝对量负担峰值总体向中老年年龄组迁移；预测结果显示上述变化方向可能延续。本研究结果可为 UC 长期管理和卫生资源配置提供参考。

关键词：溃疡性结肠炎；全球疾病负担；伤残调整寿命年；人口学分解；趋势预测
中图分类号：R574.62　　**文献标志码：**A　　**文章编号：**1672-3554（2026）05-0857-11
DOI：10.11714/jsysu.med.YX20260085

Burden and Trends of Ulcerative Colitis in China and Worldwide

ZHANG Weiqing[1,2], LIANG Yizhong[1,3], MO Meilan[4], WU Zhulin[2],
LUO Weijun[2], ZHANG Dong[3], LIN Derong[4]
（1. The Fourth Clinical Medical College of Guangzhou University of Chinese Medicine, Shenzhen 518000, China; 2. Department of Traditional Chinese Medicine, Shenzhen Longhua District People's Hospital, Shenzhen 518000, China; 3. Department of Spleen and Stomach Diseases, Shenzhen Traditional Chinese Medicine Hospital, Shenzhen 518000, China; 4. Department of Acupuncture, Dongguan Hospital of Guangzhou University of Chinese Medicine, Dongguan 523000, China）
Correspondence to: LIN Derong; E-mail: 1203344803@qq.com

收稿日期：2026-06-12　　**录用日期：**2026-08-26
基金项目：国家自然科学基金（82305105）；深圳市基础研究专项（自然科学基金）基础研究面上项目（JCYJ20240813114403005）
作者简介：张维晴，第一作者，研究方向：针药结合治疗消化系统疾病，E-mail：623440527@qq.com；林德荣，通信作者，研究方向：针灸治疗内科疾病，E-mail：1203344803@qq.com

Abstract:【Objective】To assess changes in the incidence, prevalence, and disability-adjusted life-year (DALY) burden of ulcerative colitis (UC) in China and worldwide from 1990 to 2023 using data from the Global Burden of Disease Study 2023 (GBD 2023), and to examine demographic drivers and future trends.【Methods】UC data for China, the world, and 204 countries and territories were extracted from the GBD 2023 Results Tool. Age-standardized incidence rate (ASIR), age-standardized prevalence rate (ASPR), and age-standardized DALY rate (ASDR), with 95% uncertainty interval (UI), were obtained. Joinpoint regression was used to estimate average annual percent change (AAPC) and 95% confidence interval (CI). Spearman rank correlation, inequality and frontier analyses, Das Gupta decomposition, and autoregressive integrated moving average (ARIMA) models were used to assess associations with the sociodemographic index (SDI), cross-country burden disparities, demographic drivers, and trends from 2024 to 2035, respectively.【Results】In 2023, the ASIR, ASPR, and ASDR in China were 0.94, 5.95, and 5.94 per 100 000 population, respectively, lower than the corresponding global estimates of 2.87, 28.48, and 13.82 per 100 000 population. From 1990 to 2023, China's ASIR and ASPR increased, with AAPCs of 2.720% (95% CI: 2.133%-3.309%) and 2.261% (95% CI: 1.617%-2.908%), whereas the ASDR decreased (AAPC=-3.056%, 95% CI: -3.449% to -2.662%). Globally, ASIR increased slightly, whereas ASPR and ASDR decreased. In China, the crude incidence, prevalence, and DALY rates peaked at ages 50-54 years, 60-64 years, and ≥95 years, respectively. ASIR and ASPR were positively correlated with SDI (r_s=0.5794 and 0.6177, both P<0.001), whereas the correlation between ASDR and SDI was not statistically significant (r_s=0.0666, P=0.343). In China, epidemiological change contributed most to increases in incident and prevalent cases, and changes in age-specific rates contributed most to the decline in DALYs; globally, population growth and population aging contributed most to the increase in DALYs. By 2035, China's ASIR, ASPR, and ASDR were projected to be 1.23, 6.37, and 2.55 per 100 000 population, respectively.【Conclusions】From 1990 to 2023, the age-standardized incidence and prevalence rates of UC increased in China, whereas the age-standardized DALY rate decreased, and peaks in absolute burden generally shifted toward middle-aged and older age groups. The projected directions may persist. These findings may provide reference for long-term UC management and health-resource planning.

Key words: ulcerative colitis; global burden of disease; disability-adjusted life-year; demographic decomposition; trend projection

[J SUN Yat-sen Univ(Med Sci),2026,47(5):857-867]

溃疡性结肠炎(ulcerative colitis,UC)是炎症性肠病(inflammatory bowel disease,IBD)的主要亚型,以结直肠黏膜连续性慢性炎症和反复发作—缓解病程为特征,可造成腹泻、便血、腹痛及生活质量下降[1-2]。UC治疗目标已由症状控制逐步扩展至临床缓解、内镜缓解和长期疾病控制,分层诊疗与持续随访的重要性随之提高[3]。患者存量增加、长期用药以及生物制剂和小分子药物的应用,使IBD相关直接医疗支出和间接社会经济负担增加[4]。部分接受先进治疗的中重度UC患者仍存在疾病活动、功能受限和健康相关生命质量受损[5];长期病程患者的结直肠癌风险亦需持续监测[6]。中国多中心队列显示,UC的疾病行为、治疗模式和长期结局存在时间变化[7-8]。全国医保人群研究显示,中国城市地区IBD发病率已接近部分新兴工业化国家的水平,且UC占较大比例[9]。全球人群研究表明,IBD正在由传统高收入地区向亚洲等新兴工业化地区扩展,并经历发病增加和患病存量累积的流行病学转变[10]。基于全球疾病负担研究2021(global burden of disease study 2021,GBD 2021)的研究显示,全球IBD年龄标准化发病率总体上升,而年龄标准化DALY率总体下降,不同国家和地区的趋势存在差异[11];中国IBD的新发病例和患病人数仍在增加[12]。现有研究多针对IBD总体,基于全球疾病负担研究2023(global burden of disease study 2023, GBD 2023)对UC开展中国与全球长期比较的证据仍有限[13-14]。本研究利用GBD 2023数据,评估1990—2023年中国与全球UC的发病、患病和伤残调整寿命年(disability-adjusted life-year,DALY)负担,分析年龄、性别、社会人口学指数(sociodemographic index,SDI)、不平等、前沿差距和人口学驱动,并预测中国未来趋势。

1　材料与方法

1.1　数据来源与研究对象

本研究数据来源于美国华盛顿大学健康指标与评估研究所（Institute for Health Metrics and Evaluation，IHME）发布的GBD 2023 Results Tool，提取1990—2023年中国、全球及204个国家和地区UC的发病数、患病数、DALYs及相应年龄标准化率，GBD估计指标均附95%不确定区间（uncertainty interval，UI）[13-14]。数据按年份、地区、性别和年龄分层。本研究基于公开汇总去标识化估算数据开展二次分析，未接触个体水平原始数据，不存在人体干预；无可识别个人信息。

1.2　指标与计算

采用发病数、患病数和DALYs及其年龄标准化率描述疾病负担，年龄标准化率包括年龄标准化发病率（age-standardized incidence rate，ASIR）、年龄标准化患病率（age-standardized prevalence rate，ASPR）和年龄标准化DALY率（age-standardized disability-adjusted life-year rate，ASDR）。年龄标准化率按GBD世界标准人口对年龄别率加权计算，以降低不同地区和年份人口年龄结构差异的影响[13]。DALY由过早死亡损失寿命年（years of life lost，YLL）和伤残生存年（years lived with disability，YLD）构成[13-14]。

1.3　趋势分析与不平等评估

对1990—2023年ASIR、ASPR和ASDR采用Joinpoint回归分析，计算年度变化百分比（annual percent change，APC）和平均年度变化百分比（average annual percent change，AAPC）及95%置信区间（confidence interval，CI）[15-16]。根据34个年度观测值，将候选模型的最大连接点数设为5；候选模型从0个连接点开始，采用Monte Carlo置换检验比较相邻模型并确定最终连接点数量。AAPC为各分段对数线性斜率按分段长度加权后的总体变化率，其中β_j为第j段回归斜率，w_j为相应分段长度。对2023年各国家和地区年龄标准化率与SDI进行Spearman秩相关分析（Spearman's rank correlation），报告r_s及95% CI。以ASDR开展不平等分析，采用斜率不平等指数（slope index of inequality，SII）和浓度指数（concentration index，CIX）分别描述绝对和相对不平等[17]。

$$APC_j=[\exp(\beta_j)-1]\times100\%$$

$$AAPC=\{\exp[(\Sigma w\beta_j)/(\Sigma w_j)]-1\}\times100\%$$

1.4　前沿分析

采用非参数方法拟合各SDI水平下观测到的较低ASDR边界[18]。前沿差距定义为某国家或地区实际ASDR与相同SDI水平前沿估计值之差；差值为正且数值越大，表示实际负担偏离低负担前沿越远。该指标用于描述相对差距。另绘制中国1990—2023年多时点轨迹。

1.5　分解分析

采用Das Gupta对称加法分解，将1990—2023年中国与全球发病数、患病数和DALYs的变化分解为人口增长、人口老龄化和流行病学变化（年龄别率变化）3个部分，并计算各部分相对于总体变化的贡献比例[19]。

1.6　疾病负担预测

基于1990—2023年中国年龄标准化率序列建立自回归积分滑动平均模型（autoregressive integrated moving average，ARIMA），预测2024—2035年ASIR、ASPR和ASDR。模型阶数（p,d,q）依据赤池信息准则（Akaike information criterion，AIC）和残差诊断确定，并采用残差自相关、偏自相关和白噪声检验评价拟合情况[20]。预测结果报告点预测值及95%预测区间（prediction interval，PI）。

1.7　统计学分析

Python用于数据清理、格式转换和结果汇总，R 4.4.2用于统计分析与绘图，Joinpoint Regression Program 5.4.0用于趋势分析。GBD估计指标报告点估计及95% UI；APC、AAPC、相关系数和不平等指标报告相应统计量及95% CI，预测结果报告95% PI。当APC或AAPC的95% CI不包含0时，判定相应趋势具有统计学意义。Spearman秩相关分析采用双侧检验，以$P<0.05$为差异有统计学意义。

2　结　果

2.1　总体及性别分层趋势

1990—2023年，中国ASIR和ASPR总体上升，AAPC分别为2.720%（95% CI：2.133%～3.309%）和

2.261%(95% CI:1.617%~2.908%);ASDR下降,AAPC为-3.056%(95% CI:-3.449%~-2.662%)。全球ASIR轻度上升(AAPC=0.272%,95% CI:0.200%~0.343%),ASPR和ASDR下降,AAPC分别为-0.142%(95% CI:-0.247%~-0.036%)和-0.403%(95% CI:-0.492%~-0.314%)。2023年中国ASIR、ASPR和ASDR分别为0.94/100 000、5.95/100 000和5.94/100 000,低于全球的2.87/100 000、28.48/100 000和13.82/100 000(表1;图1)。

性别分层显示,2023年中国和全球男性ASIR均高于女性。中国ASPR由1990年女性略高于男性(3.96/100 000比3.76/100 000)转为2023年男性略高于女性(6.01/100 000比5.89/100 000);全球两个时点均为男性较高。中国ASDR由1990年女性高于男性(15.32/100 000比13.02/100 000)转为2023年男性高于女性(6.87/100 000比5.04/100 000);全球两个时点均为男性较高。中国女性ASDR的AAPC为-3.833%(95% CI:-4.248%~-3.417%),男性为-2.248%(95% CI:-2.648%~-1.845%;表1;图1)。

表1 1990年和2023年中国与全球溃疡性结肠炎疾病负担及1990—2023年变化趋势

Table 1 Burden of ulcerative colitis in China and globally in 1990 and 2023 and temporal trends from 1990 to 2023

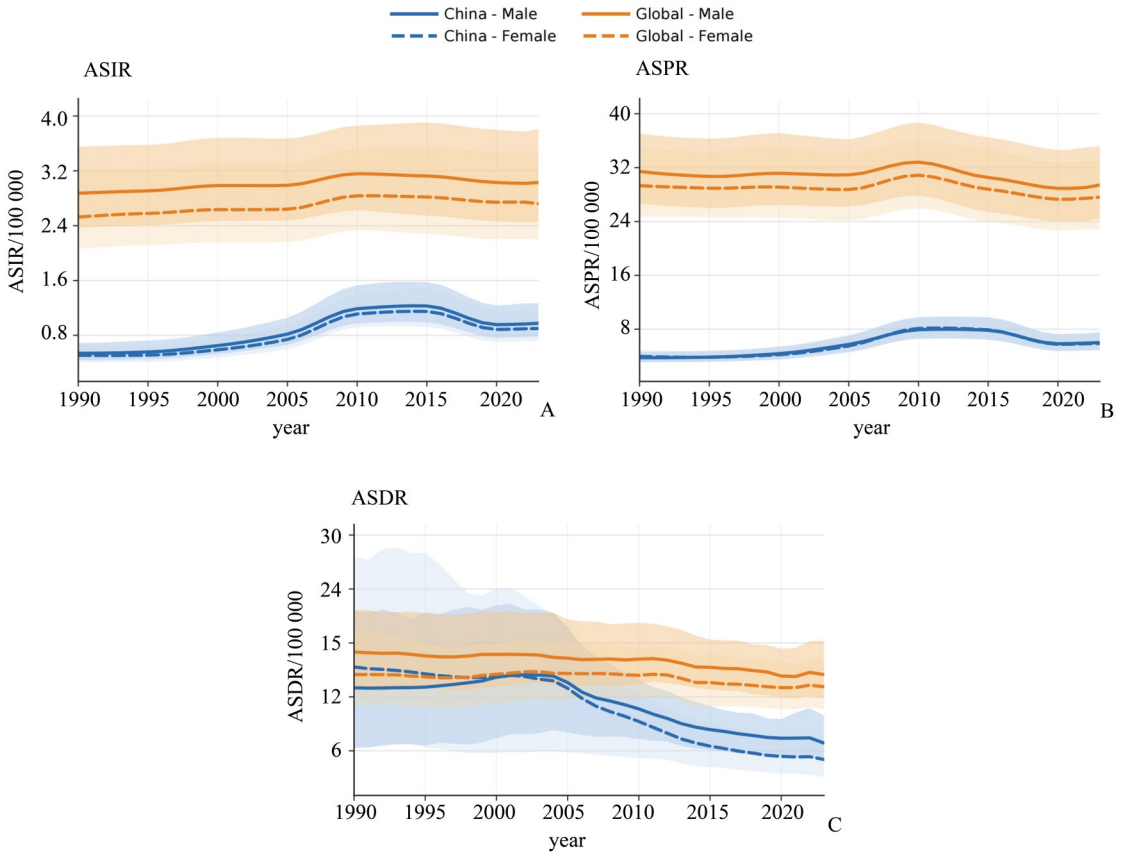
Sex	Location	Measure	1990	2023	1990—2023
			Estimate (95% UI)	Estimate (95% UI)	AAPC/% (95% CI)
Both	China	ASIR	0.52 (0.42,0.67)	0.94 (0.75,1.22)	2.720 (2.133,3.309)*
		ASPR	3.86 (3.14,4.74)	5.95 (4.89,7.45)	2.261 (1.617,2.908)*
		ASDR	14.35 (7.87,22.43)	5.94 (4.52,7.93)	-3.056 (-3.449,-2.662)*
	Global	ASIR	2.69 (2.21,3.36)	2.87 (2.32,3.62)	0.272 (0.200,0.343)*
		ASPR	30.31 (25.52,36.03)	28.48 (23.59,34.13)	-0.142 (-0.247,-0.036)*
		ASDR	15.74 (12.98,19.08)	13.82 (11.41,16.19)	-0.403 (-0.492,-0.314)*
Male	China	ASIR	0.54 (0.44,0.69)	0.98 (0.78,1.27)	2.705 (2.126,3.286)*
		ASPR	3.76 (3.08,4.64)	6.01 (4.92,7.55)	2.274 (1.650,2.901)*
		ASDR	13.02 (6.34,21.56)	6.87 (4.86,9.92)	-2.248 (-2.648,-1.845)*
	Global	ASIR	2.87 (2.37,3.55)	3.03 (2.46,3.81)	0.224 (0.154,0.294)*
		ASPR	31.44 (26.62,37.08)	29.43 (24.42,35.19)	-0.154 (-0.261,-0.048)*
		ASDR	17.00 (12.89,21.68)	14.49 (11.85,18.26)	-0.488 (-0.563,-0.413)*
Female	China	ASIR	0.51 (0.41,0.66)	0.90 (0.72,1.17)	2.742 (2.145,3.343)*
		ASPR	3.96 (3.21,4.91)	5.89 (4.86,7.36)	2.247 (1.581,2.918)*
		ASDR	15.32 (6.54,27.63)	5.04 (3.08,7.39)	-3.833 (-4.248,-3.417)*
	Global	ASIR	2.53 (2.06,3.18)	2.72 (2.19,3.44)	0.318 (0.245,0.392)*
		ASPR	29.33 (24.75,34.94)	27.62 (22.86,33.20)	-0.133 (-0.237,-0.029)*
		ASDR	14.48 (10.94,19.71)	13.14 (10.65,16.13)	-0.306 (-0.405,-0.206)*

Estimates are rates per 100 000 population. ASIR: age-standardized incidence rate; ASPR: age-standardized prevalence rate; ASDR: age-standardized disability-adjusted life-year rate; AAPC: average annual percent change; UI: uncertainty interval; CI: confidence interval. *The 95% CI does not include 0.

2.2 年龄别分布

2023年中国粗发病率峰值位于50~54岁[1.86/100 000(95% UI:1.22/100 000~2.71/100 000)],1990年峰值位于60~64岁[0.99/100 000(95% UI:0.69/100 000~1.46/100 000)];全球2个时点的峰值均位于75~79岁。发病例数峰值由1990年的35~39岁移至2023年的50~54岁(中国)和40~44岁(全球)(图2)。

中国粗患病率峰值在1990年和2023年均位于60~64岁,分别为7.77/100 000(95% UI:5.13/100



UC：ulcerative colitis; ASIR：age-standardized incidence rate; ASPR：age-standardized prevalence rate; ASDR：age-standardized disability-adjusted life-year rate; UI：uncertainty interval. Solid lines denote males, dashed lines denote females, and shaded bands indicate 95% UI.

图1　1990—2023年中国与全球溃疡性结肠炎年龄标准化发病率、患病率和伤残调整寿命年率的性别分层趋势

Fig. 1　Sex-specific trends in age-standardized incidence，prevalence，and disability-adjusted life-year rates of ulcerative colitis in China and globally from 1990 to 2023

000～10.84/100 000）和 13.10/100 000（95% UI：8.80/100 000～18.79/100 000）；全球峰值由≥95岁移至75～79岁。中国与全球粗DALY率峰值在两个时点均位于≥95岁。DALYs绝对数峰值由1990年的<5岁移至2023年的70～74岁（中国）和60～64岁（全球）（图2）。

2.3　与社会人口学指数的相关性

2023年204个国家和地区的Spearman秩相关分析显示，ASIR和ASPR与SDI呈正相关（r_s=0.5794，95% CI：0.457 3～0.671 0，P<0.001；r_s=0.617 7，95% CI：0.503 8～0.695 3，P<0.001）；ASDR与SDI的相关性无统计学意义（r_s=0.066 6，95% CI：−0.082 5～0.211 6，P=0.343；图3）。

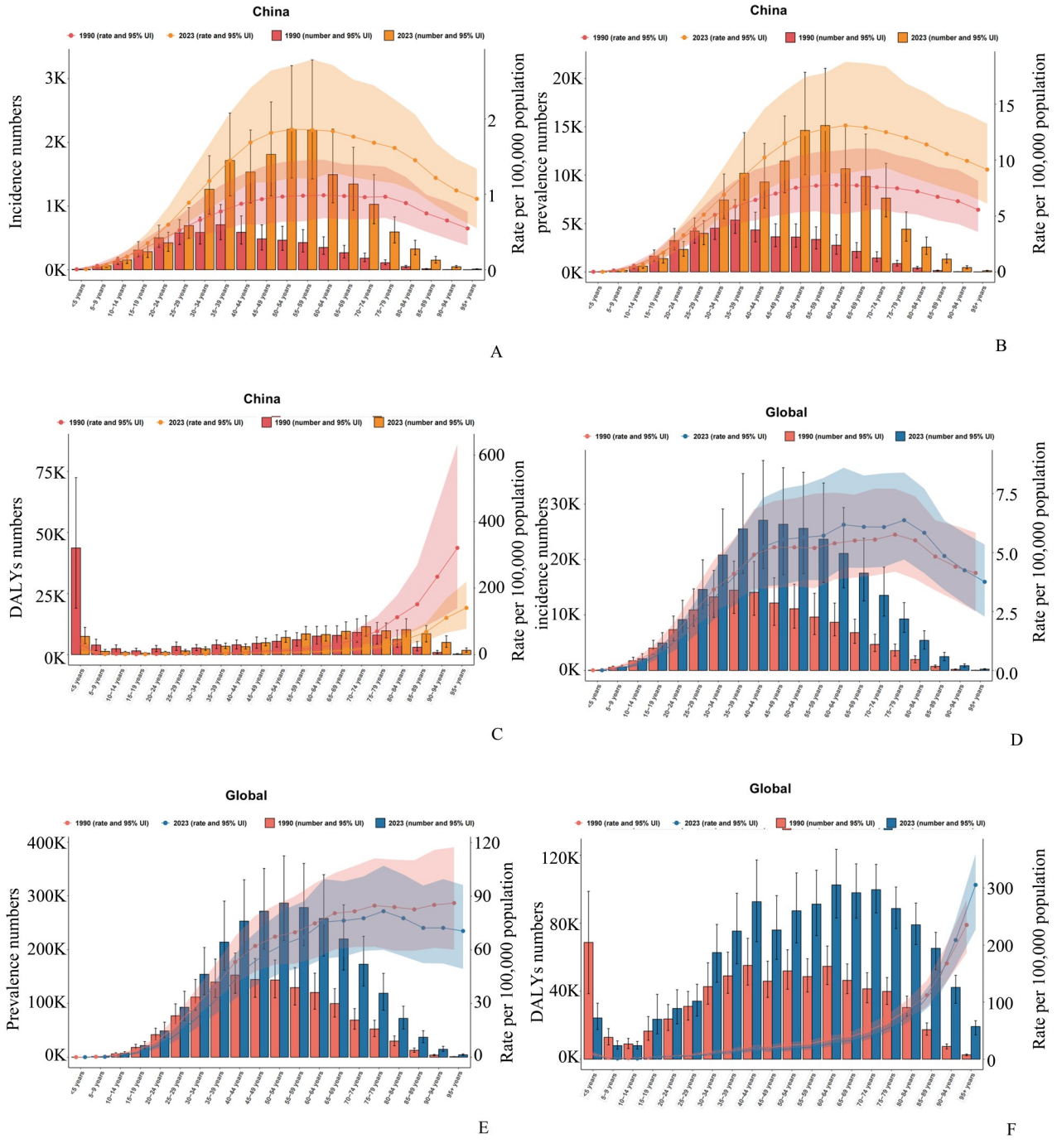
2.4　不平等与前沿差距

1990年和2023年CIX分别为0.022 1（95% CI：−0.029 1～0.072 9）和0.023 9（95% CI：−0.038 8～0.088 6）；SII分别为2.25（95% CI：−1.72～6.22）和0.93（95% CI：−2.18～4.05）。4个95% CI均包含0（图4）。

2023年中国SDI为0.728，ASDR为5.94/100 000，对应前沿估计值为1.71/100 000，前沿差距为4.23/100 000。1990—2023年中国SDI由0.465升至0.728，ASDR由14.35/100 000降至5.94/100 000，前沿差距由10.94/100 000缩小至4.23/100 000（图5）。

2.5　人口学分解

1990—2023年中国发病数增加11 530.04例，其中流行病学变化、人口增长和人口老龄化分别贡献6 117.23例（53.05%）、3 993.69例（34.64%）和1 419.12例（12.31%）；患病数增加71 331.98例，3项贡献分别为31 205.20例（43.75%）、26 992.56例（37.84%）和13 134.21例（18.41%）。中国DALYs



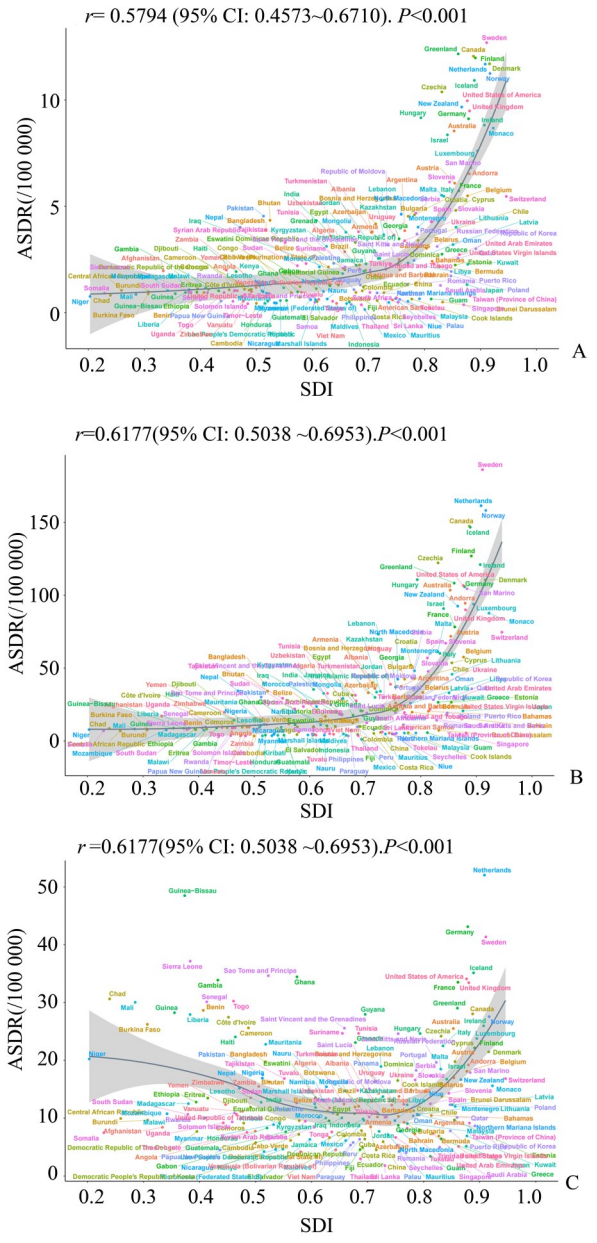
Panels A–C show incident cases, prevalent cases, and DALYs in China; panels D–F show the corresponding estimates globally. Points and bars denote estimates and 95% uncertainty intervals, respectively. DALYs: disability-adjusted life-year; UI: uncertainty interval.

图2 1990年和2023年中国与全球溃疡性结肠炎疾病负担的年龄分布

Fig. 2 Age-specific burden of ulcerative colitis in China and globally in 1990 and 2023

减少20 390.51人年,流行病学变化贡献-102 211.87人年,人口增长和人口老龄化分别贡献47 303.89和34 517.47人年(表2)。

全球发病数增加125 000.11例,人口增长、人口老龄化和流行病学变化分别贡献67 991.56例(54.39%)、45 228.53例(36.18%)和11 780.03例(9.42%);患病数增加1 174 864.45例,3项贡献分别为709 236.89例(60.37%)、584 435.60例



Each point represents one country or territory in 2023. The fitted line and shaded area denote the fitted trend and its 95% CI. SDI：sociodemographic index; ASIR：age-standardized incidence rate; ASPR：age-standardized prevalence rate; ASDR：age-standardized disability-adjusted life-year rate; CI：confidence interval; r_s：Spearman rank correlation coefficient; P：probability value.

图3　2023年溃疡性结肠炎年龄标准化发病率、患病率和伤残调整寿命年率与社会人口学指数的相关性

Fig. 3　Correlations of age-standardized incidence, prevalence, and disability-adjusted life-year rates of ulcerative colitis with the sociodemographic index in 2023

（49.74%）和－118 808.04例（－10.11%）。全球DALYs增加513 251.91人年，人口增长、人口老龄化和流行病学变化分别贡献348 649.62、293 026.29和－128 424.00人年（表2）。

2.6　未来趋势预测

ARIMA模型显示，2024—2035年中国总人群ASIR预计由0.96/100 000升至1.23/100 000，ASPR由5.99/100 000升至6.37/100 000，ASDR由5.53/100 000降至2.55/100 000。2035年男性ASIR、ASPR和ASDR预计分别为1.12/100 000、6.80/100 000和2.62/100 000，女性分别为1.09/100 000、5.89/100 000和2.48/100 000；95% PI随预测时间延长而增宽（图6）。

3　讨论

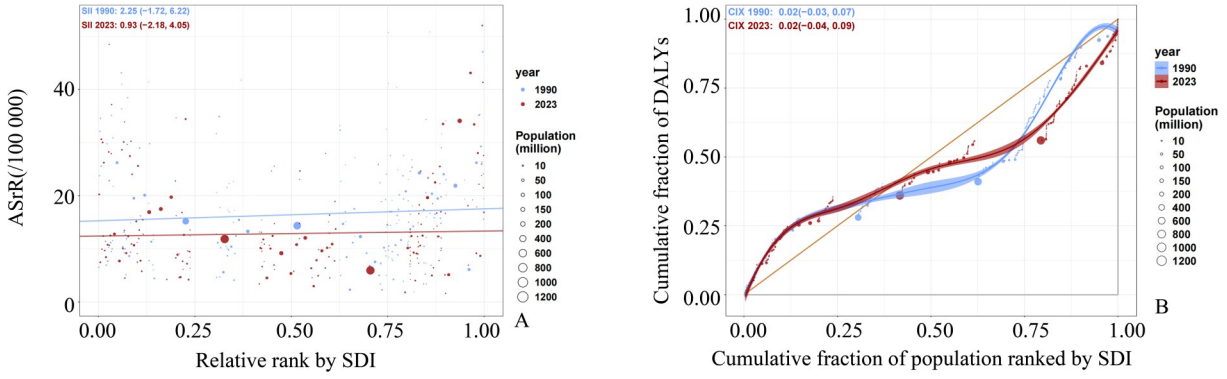
3.1　总体变化及年龄、性别特征

本研究显示，中国UC的ASIR和ASPR上升而ASDR下降，全球ASIR轻度上升、ASPR和ASDR下降。该变化与IBD由发病增长向患病存量累积转变的流行病学阶段基本一致[21-22]。中国各指标的绝对水平低于全球，但病例相关指标增幅较快。由于GBD为汇总模型估计，本研究不能区分真实发病变化、诊断可及性提高和生存期延长的相对作用。

ASDR下降可能与诊疗和长期管理改善有关，但不能据此推断具体干预的因果效应。当前UC管理强调临床缓解、内镜愈合和功能恢复[23]，并依据疾病活动和预后风险优化治疗[24]。中国队列观察到治疗模式、疾病范围和长期结局发生变化[25-26]，为病例增加与健康损失下降并存提供了临床背景。年龄别结果显示，绝对量负担峰值向中老年迁移；老年起病IBD患者的合并症和不良结局风险较高[27]。性别差异随指标和年份变化，与女性、老年及工作年龄人群研究所示的异质性一致[28-30]。

3.2　社会发展水平、不平等与前沿差距

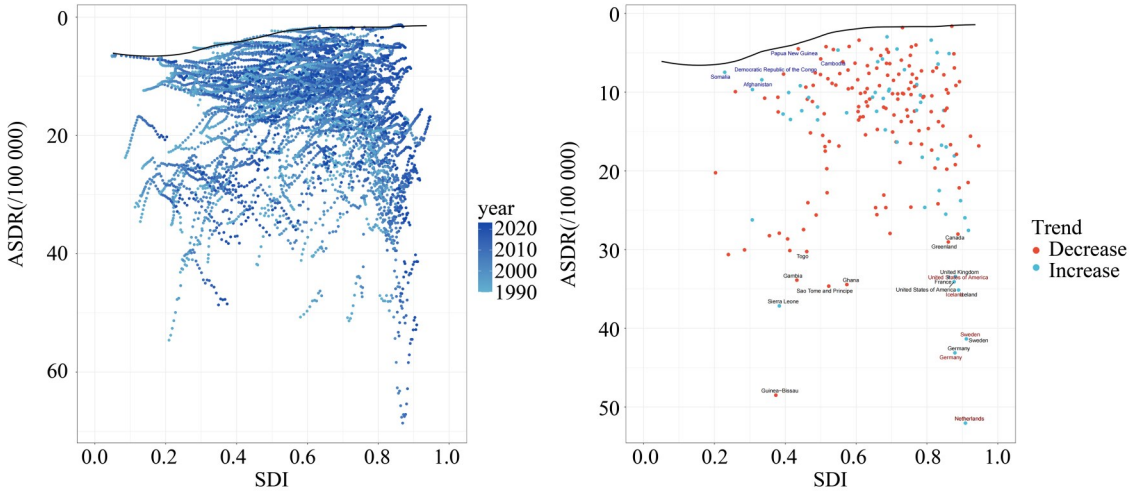
ASIR和ASPR与SDI呈正相关，而ASDR与SDI的相关性无统计学意义，表明病例相关负担与健康损失同发展水平的关联模式并不相同。既往全球研究亦观察到IBD患病负担与SDI相关，而DALY负担的方向并不完全一致[31]。诊断、客观监测和先进治疗的可及性可能影响国家间差异[32]，但本研究的生态学分析不能用于个体层面因果推断。



SII quantifies absolute inequality, and CIX quantifies relative inequality across countries and territories ranked by SDI. ASDR: age-standardized disability-adjusted life-year rate; SII: slope index of inequality; CIX: concentration index; SDI: sociodemographic index; CI: confidence interval.

图4 1990年和2023年溃疡性结肠炎年龄标准化伤残调整寿命年率的不平等分析

Fig. 4 Inequality analysis in the age-standardized disability-adjusted life-year rate of ulcerative colitis in 1990 and 2023



The frontier curve represents the estimated low-burden boundary at each SDI level. The frontier gap is calculated as the observed ASDR minus the corresponding frontier estimate; a larger positive value indicates a greater distance from the low-burden frontier. The measure is descriptive and should not be interpreted causally. ASDR: age-standardized disability-adjusted life-year rate; SDI: sociodemographic index.

图5 1990—2023年溃疡性结肠炎年龄标准化伤残调整寿命年率的前沿轨迹及2023年前沿差距

Fig. 5 Frontier trajectories from 1990 to 2023 and frontier gaps in 2023 for the age-standardized disability-adjusted life-year rate of ulcerative colitis

1990年和2023年的SII及CIX的95% CI均包含0,未观察到明确的绝对或相对不平等。中国前沿差距由10.94/100 000缩小至4.23/100 000,但2023年实际ASDR仍高于同等SDI水平的前沿估计值。该结果仅表示相对于低负担前沿的距离,不能直接等同于可避免负担或具体干预效果。

3.3 人口学驱动及未来趋势

中国发病数和患病数增加主要由流行病学变化贡献,而DALY下降主要由年龄别率变化贡献;全球DALY增加则主要由人口增长和人口老龄化贡献。中国自然病程和真实世界研究提示,疾病识别、治疗暴露及疾病范围演变均可能影响年龄别率[25-26],但分解分析不能进一步识别这些机制。工作年龄、儿童青少年和育龄女性人群的GBD研究显示,人口结构和特定年龄人群变化可影响长期负担[30,33-34]。

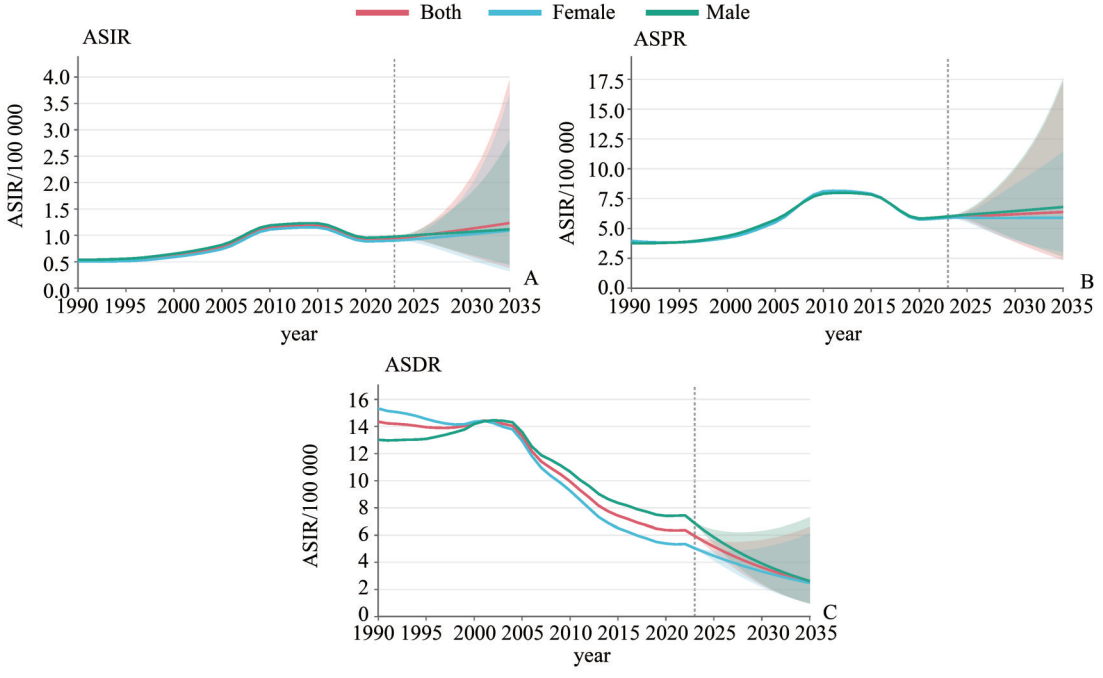
ARIMA预测显示,中国ASIR和ASPR可能继续缓慢上升,而ASDR可能下降。该结果是在既有时间趋势延续条件下的外推,不包含诊疗技术、政策或数据体系突变的影响。患病存量增长与残余

表2　1990—2023年中国与全球溃疡性结肠炎发病数、患病数和伤残调整寿命年变化的分解

Table 2　Decomposition of changes in incident cases, prevalent cases, and DALYs of ulcerative colitis in China and globally from 1990 to 2023

Country/Region	Burdenmetric	Overalldifference	Aging	Population-growth	Epidemiologicalchange	Aging/%	Population-growth/%	Epidemiological-change/%
China	Incidentcases	11 530.04	1 419.12	3 993.69	6 117.23	12.31	34.64	53.05
	Prevalentcases	71 331.98	13 134.21	26 992.56	31 205.20	18.41	37.84	43.75
	DALYs	−20 390.51	34 517.47	47 303.89	−102 211.87	−169.28	−231.99	501.27
Global	Incidentcases	125 000.11	45 228.53	67 991.56	11 780.03	36.18	54.39	9.42
	Prevalentcases	1 174 864.45	584 435.60	709 236.89	−118 808.04	49.74	60.37	−10.11
	DALYs	513 251.91	293 026.29	348 649.62	−128 424.00	57.09	67.93	−25.02

All estimates are for both sexes. Percentages are calculated relative to the overall difference. Negative values indicate effects acting in the opposite direction to the overall change; percentages may be negative or exceed 100% when component effects offset each other. Minor discrepancies may occur because of rounding. DALYs: disability-adjusted life-years.



Historical estimates are shown before the vertical dashed line, and model projections are shown thereafter. Shaded bands indicate 95% prediction intervals. ARIMA: autoregressive integrated moving average; ASIR: age-standardized incidence rate; ASPR: age-standardized prevalence rate; ASDR: age-standardized disability-adjusted life-year rate; PI: prediction interval.

图6　中国溃疡性结肠炎年龄标准化发病率、患病率和伤残调整寿命年率的性别分层预测

Fig. 6　Sex-specific projections of age-standardized incidence, prevalence, and disability-adjusted life-year rates of ulcerative colitis in China

症状负担并存的现实世界证据[35]，以及先进治疗应用增加、结肠切除率下降和更深层愈合与较好结局相关的研究[36-37]，提示未来评价可同时关注病例数量、疾病控制和患者报告结局。

3.4　数据解释与研究局限

GBD 2023采用统一定义、标准人口和建模框

架,适合比较长期趋势和地区差异;但模型估计受原始数据覆盖、疾病编码和地区代表性影响[38]。中国UC绝对水平仍需与全国登记、医保数据库和多中心随访资料交叉验证。

本研究尚有以下局限:其一,未纳入归因危险因素分析,不能解释具体暴露驱动;其二,SDI相关、不平等和前沿分析为国家层面生态学比较;其三,分解分析仅将变化归为人口增长、人口老龄化和年龄别率变化;其四,ARIMA预测未纳入潜在结构性变化。因此,结果主要用于描述负担格局和趋势,不宜作个体因果或确定性预测。

综上所述,1990—2023年,中国UC的ASIR和ASPR上升,ASDR下降,绝对量负担峰值总体向中老年年龄组迁移。中国病例相关负担增加主要由流行病学变化贡献,健康损失下降主要由年龄别率变化贡献;全球DALY增加主要由人口增长和人口老龄化贡献。中国ASIR和ASPR与SDI呈正相关,ASDR与SDI的相关性无统计学意义。预测结果显示,至2035年中国ASIR和ASPR可能继续上升,ASDR可能下降。

在持续提高诊断规范性的同时,可加强以临床和内镜缓解为目标的分层治疗与随访[23-24];针对中老年及长期病程患者,重视合并症、用药安全和功能状态管理[27-29];完善全国登记、医保数据联结和患者报告结局监测,以验证模型估计并评估地区差异和长期管理效果[31-32,35-37]。

参考文献

[1] Le Berre C, Honap S, Peyrin-Biroulet L. Ulcerative colitis[J]. Lancet, 2023, 402(10401): 571-584.

[2] 籍婧睿,崔怡,刘俊,等. 溃疡性结肠炎患者自我管理行为现状及影响因素分析[J]. 中华炎性肠病杂志(中英文),2026,10(3):294-300.
Ji JR, Cui Y, Liu J, et al. Analysis of the current status and influencing factors of self-management behaviors in patients with ulcerative colitis[J]. Chin J Inflamm Bowel Dis, 2026, 10(3):294-300.

[3] Inflammatory Bowel Disease Group, Chinese Society of Gastroenterology, Chinese Medical Association; Inflammatory Bowel Disease Quality Control Center of China. 2023 Chinese national clinical practice guideline on diagnosis and management of ulcerative colitis [J]. Chin Med J (Engl), 2024, 137(14): 1642-1646.

[4] Burisch J, Claytor J, Hernandez I, et al. The cost of inflammatory bowel disease care: how to make it sustainable [J]. Clin Gastroenterol Hepatol, 2025, 23(3): 386-395.

[5] Fumery M, Altwegg R, Aygalenq P, et al. Disease burden of patients with moderate to severe ulcerative colitis: a French multicenter real-life study (THEFAR) [J]. Dig Liver Dis, 2025, 57(1): 251-259.

[6] Wetwittayakhlang P, Golovics PA, Gonczi L, et al. Stable incidence and risk factors of colorectal cancer in ulcerative colitis: a population-based cohort between 1977-2020 [J]. Clin Gastroenterol Hepatol, 2024, 22(1): 191-193.e3.

[7] Liu X, Yang Q, Diao N, et al. Changes in the clinical course and prognosis of ulcerative colitis in Chinese populations: a retrospective cohort study [J]. Intest Res, 2024, 22 (3): 357-368.

[8] 中华医学会消化病学分会炎症性肠病学组,中华医学会外科学分会结直肠外科学组,中华医学会外科学分会胃肠外科学组. 中国溃疡性结肠炎外科治疗指南(2025·南京)[J]. 中华炎性肠病杂志(中英文),2026,10(1):23-39.
Inflammatory Bowel Disease Group, Chinese Society of Gastroenterology, Chinese Medical Association; Colorectal Surgery Group, Chinese Society of Surgery, Chinese Medical Association; Gastrointestinal Surgery Group, Chinese Society of Surgery, Chinese Medical Association. Chinese guideline of surgery in ulcerative colitis (2025, Nanjing) [J]. Chin J Inflamm Bowel Dis, 2026, 10(1): 23-39.

[9] Xu L, He B, Sun Y, et al. Incidence of inflammatory bowel disease in urban China: a nationwide population-based study [J]. Clin Gastroenterol Hepatol, 2023, 21(13): 3379-3386.e29.

[10] Hracs L, Windsor JW, Gorospe J, et al. Global evolution of inflammatory bowel disease across epidemiologic stages [J]. Nature, 2025, 642(8067): 458-466.

[11] Ruan G, Sun Y, Yu Z, et al. Global, regional, and national burden of inflammatory bowel disease from 1990 to 2021: findings from the global burden of disease 2021 [J]. Gastroenterol Rep (Oxf), 2025, 13: goaf082.

[12] Yu Z, Ruan G, Bai X, et al. Growing burden of inflammatory bowel disease in China: findings from the global burden of disease study 2021 and predictions to 2035[J]. Chin Med J (Engl), 2024, 137(23): 2851-2859.

[13] GBD 2023 Disease and Injury and Risk Factor Collaborators. Burden of 375 diseases and injuries, risk-attributable burden of 88 risk factors, and healthy life expectancy in 204

countries and territories, including 660 subnational locations, 1990-2023: a systematic analysis for the Global Burden of Disease Study 2023 [J]. Lancet, 2025, 406 (10513): 1873-1922.

[14] GBD 2023 Causes of Death Collaborators. Global burden of 292 causes of death in 204 countries and territories and 660 subnational locations, 1990-2023: a systematic analysis for the Global Burden of Disease Study 2023[J]. Lancet, 2025, 406(10513): 1811-1872.

[15] Clegg LX, Hankey BF, Tiwari R, et al. Estimating average annual per cent change in trend analysis[J]. Stat Med, 2009, 28(29): 3670-3682.

[16] Kim HJ, Fay MP, Feuer EJ, et al. Permutation tests for joinpoint regression with applications to cancer rates[J]. Stat Med, 2000, 19(3): 335-351.

[17] Wagstaff A, Paci P, van Doorslaer E. On the measurement of inequalities in health [J]. Soc Sci Med, 1991, 33 (5): 545-557.

[18] Aragon Y, Daouia A, Thomas-Agnan C. Nonparametric frontier estimation: a conditional quantile-based approach [J]. Econometric Theory, 2005, 21(2): 358-389.

[19] Das Gupta P. A general method of decomposing a difference between two rates into several components[J]. Demography, 1978, 15(1): 99-112.

[20] Chen C, Liu LM. Joint estimation of model parameters and outlier effects in time series[J]. J Am Stat Assoc, 1993, 88 (421): 284-297.

[21] Kaplan GG. The global burden of inflammatory bowel disease: from 2025 to 2045 [J]. Nat Rev Gastroenterol Hepatol, 2025, 22(10): 708-720.

[22] Kaplan GG, Windsor JW. The four epidemiological stages in the global evolution of inflammatory bowel disease [J]. Nat Rev Gastroenterol Hepatol, 2021, 18(1): 56-66.

[23] Turner D, Ricciuto A, Lewis A, et al. STRIDE-II: an update on the Selecting Therapeutic Targets in Inflammatory Bowel Disease (STRIDE) initiative of the International Organization for the Study of IBD (IOIBD): determining therapeutic goals for treat-to-target strategies in IBD [J]. Gastroenterology, 2021, 160(5): 1570-1583.

[24] Raine T, Bonovas S, Burisch J, et al. ECCO guidelines on therapeutics in ulcerative colitis: medical treatment [J]. J Crohns Colitis, 2022, 16(1): 2-17.

[25] Wan J, Shen J, Zhong J, et al. Natural course of ulcerative colitis in China: differences from the West? [J]. United European Gastroenterol J, 2024, 12(9): 1167-1178.

[26] Sun Y, Ruan G, Guo M, et al. Progressing or preserving, disease extent evolution in hospitalized patients with ulcerative colitis in China: a real-world study[J]. Ther Adv Gastroenterol, 2025, 18: 17562848251339878.

[27] Singh S, Poulsen GJ, Bisgaard TH, et al. Epidemiology of elderly onset IBD: a nationwide population-based cohort study[J]. Clin Gastroenterol Hepatol, 2025, 23(7): 1204-1215.e11.

[28] Danpanichkul P, Duangsonk K, Ho AHY, et al. Disproportionately increasing incidence of inflammatory bowel disease in female patients and the elderly: an update analysis from the Global Burden of Disease Study 2021 [J]. Am J Gastroenterol, 2025, 120(3): 675-680.

[29] Danpanichkul P, Pang Y, Vuthithammee C, et al. Older adults with inflammatory bowel disease epidemiology in the United States: 2000-2021 [J]. Dig Dis Sci, 2025, 70(7): 2318-2327.

[30] Zhang T, Bu S, Cheng X, et al. Trends in the disease burden of inflammatory bowel disease among the working-age population (20-64 years) from 1990 to 2021: a population-based study[J]. BMC Gastroenterol, 2026, 26(1): 44.

[31] Dou Z, Zheng H, Shi Y, et al. Analysis of global prevalence, DALY and trends of inflammatory bowel disease and their correlations with sociodemographic index: data from 1990 to 2019[J]. Autoimmun Rev, 2024, 23(11): 103655.

[32] Wan J, Zhou J, Wang Z, et al. Epidemiology, pathogenesis, diagnosis, and treatment of inflammatory bowel disease: insights from the past two years [J]. Chin Med J (Engl), 2025, 138(7): 763-776.

[33] Tan HQ, Li QK, Jiang MR, et al. Global burden of inflammatory bowel disease in children and adolescents, 1990-2021: trends, age-specific patterns and future projections[J]. Front Pediatr, 2025, 13: 1670440.

[34] Zhao J, Miao D, Xiao T, et al. Global disease burden of inflammatory bowel disease in women and women of childbearing age from 1990 to 2021 and its prediction to 2040 [J]. PLoS One, 2025, 20(9): e0331034.

[35] Burisch J, Hart A, Sturm A, et al. Residual disease burden among European patients with inflammatory bowel disease: a real-world survey [J]. Inflamm Bowel Dis, 2025, 31(2): 411-424.

[36] Elford AT, Constantine-Cooke N, Jenkinson PW, et al. Twenty-year trends in colectomy rates and advanced therapy prescribing in Lothian, Scotland [J]. Aliment Pharmacol Ther, 2025, 62(7): 699-709.

[37] Lim CT, Teichert C, Pruijt M, et al. Transmural healing in ulcerative colitis patients improves long-term outcomes compared to endoscopic healing alone [J]. J Crohns Colitis, 2025, 19(9): jjaf149.

[38] Murray CJL. The global burden of disease study at 30 years [J]. Nat Med, 2022, 28(10): 2019-2026.

(编辑 孙慧兰)