Preplanned Studies

Burden of Skin Disease — China, 1990–2019

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Summary

What is already known about this topic?

Skin diseases are common, affect society and individuals, and have high incidences to relapse, which reduces the quality of life. In 2019, skin diseases were the seventh leading global causes of years lived with disability (YLDs).

What is added by this report?

All-age disability-adjusted life years (DALYs) and YLDs from skin diseases have been steadily increasing in China from 1990 through 2019, although with a decline in the standardized rate of years of life lost (YLLs). In 2019, dermatitis was the leading cause of YLLs among people over the age of 15 years, while viral skin diseases had the greatest burden among people under 15 years. Acne vulgaris increased significantly among people aged 15–49 years, and psoriasis increased among people over 50 years. The male: female ratio of DALYs lost due to skin disease did not change between 1990 and 2019.

What are the implications for public health practice?

The lack of data on the total skin disease burden in China called for additional research. The Global Burden of Disease provided a reference for skin disease control and prevention in China.

To date, there has been no national-level epidemiological survey of skin diseases and their burden in China. Using data from the 2019 Global Burden of Disease (GBD 2019) and China's 2010 national census as the standard population, this study estimated age-standardized incidence, prevalence, mortality, and burden of skin disease in 1990 and 2019. In 2019, there were an estimated 5,393 deaths, 369,127,390 cases of skin diseases, 8,264,702 personyears of disability adjusted life years (DALYs) lost, 8,167,678 person-years of years living with disability (YLDs), and 97,024 person-years of years of life lost (YLLs) caused by skin diseases. In 2019, the age group of 15-49 years had the most number of cases of skin disease, DALYs and YLDs, whereas people over 70

years had the highest incidence, prevalence, and mortality for skin disease. DALYs steadily increased between 1990 and 2019, while DALYs rate declined. The ranking of DALYs by skin disease varied by age group, indicating that the specific disease burdens varied by age.

The GBD provided estimates of incidence, prevalence, mortality, YLLs, YLDs, and DALYs lost due to 369 diseases or injuries in 204 countries and territories (1). GBD divided skin and subcutaneous tissue diseases into 12 categories: 1) dermatitis; 2) psoriasis; 3) scabies; 4) fungal skin diseases; 5) viral skin diseases; 6) acne vulgaris; 7) alopecia areata; 8) pruritus: 9) urticaria: 10) decubitus ulcers: 11) bacterial skin diseases; and 12) other skin and subcutaneous diseases (1-2). In China, skin disease data were obtained from epidemiological surveillance, disease registries, scientific literature, and other surveys such as the China National Health Services Survey 2008. Information from Chinese data sources can be found online at the Global Health Data Exchange website (3).

Specific mortality data were available for 6 skin and subcutaneous diseases using the Cause of Death Ensemble model (CODEm) and spatiotemporal Gaussian process regression, aimed to predict best agespecific and sex-specific mortality estimates by etiology, while considering temporal and spatial trends with the use of predictive covariates, age of death and agespecific standard life expectancy data were used to determine YLLs (1-2). A Bayesian meta-regression modelling tool, DisMod-MR 2.1, was used to calculate the prevalence of each skin disease using historical data on incidence, prevalence, remission, mortality, and disease duration. Prevalence estimates were multiplied by disability weights to calculate YLDs by specific cause (4). From GBD, sex-specific indicators of incidence, prevalence, mortality, and burden of skin diseases were obtained for 1990 and 2019 and were expressed in numbers (cases) and rates (per 100,000 population). Age-standardized rates of these indicators were calculated using the 2010 population in the national census as the standard population. Percent change (%) was calculated by dividing the difference

between 2019 and 1990 values by the 1990 value and multiplying by one hundred. Statistical analyses were performed with SAS (version 9.4, SAS Research Institute, Inc., Cary, USA).

Table 1 shows that standardized skin disease DALYs and YLDs were stable in China between 1990 and 2019, while YLLs rate decreased significantly. DALYs rate and YLDs rate of females were slightly higher than that of males.

Supplementary Table S1 (available in weekly. chinacdc.cn) shows that in 2019, DALYs and YLDs due to skin disease were highest among people aged 15–49 years, while rates of DALYs and YLDs were highest in the 5–14 age group. People over 70 years ranked first among all age groups on YLLs and YLLs rate. Compared with 1990, DALYs and YLDs increased in age groups over 15 years. However, YLLs due to skin disease decreased in all age groups except for the people aged over 70 by years old 2019, and DALYs rate decreased in all age groups except for the 5–14 age group.

In Figure 1, it showed that there was an increase for DALYs and YLDs of skin disease in China from 1990 to 2019, while the rates of DALYs and YLDs decreased slowly. Compared with males, females had higher numbers of DALYs and YLDs, and higher rates of DALYs and YLDs of skin disease.

Supplementary Table S2 (available in weekly. chinacdc.cn) indicated that for DALYs and rate of DALYs, viral skin diseases was the largest contributor among people under 15 years compared with other age groups. Dermatitis contributed the highest number of DALYs and the highest DALY rate among people over 15 years old. As for the ranking of the skin disease burden, acne vulgaris increased significantly in people aged 5–14 years, while in the groups aged over 50 years or above, fungal skin disease and scabies showed a rapid increase.

DISCUSSION

This study used data from the GBD to estimate trends of the burden of skin diseases in China between 1990 and 2019 by age group and sex. These estimates can serve as reference data for China's population that are otherwise unavailable due to the absence national-level skin disease burden surveys in China.

The incidence of skin disease is high. GBD-based estimates show that were 784,395,261 new cases of skin disease in China in 2019, representing an incidence of 53.78%. The prevalence of skin diseases

	Incidence	Jce	Prevalence	nce	Dea	Deaths	DALYS	Ys	YLLs	Ls	YLDs	SC
Groups	Number of cases	Rate* (1/100,000)	Number of cases	Rate* (1/100,000)	Number of cases	Rate* (1/100,000)	Number of person-years	Rate* (1/100,000)	Number of person-years	Rate* (1/100,000)	Number of person-years	Rate* (1/100,000)
Males												
1990	311,782,134	53,257.99	142,257,295	23,376.97	3,238	0.92	3,455,241	554.89	128,804	23.67	3,326,437	531.22
2019	395,228,276	53,753.19	177,940,599	24,623.91	2,613	0.33	3,910,417	545.94	55,039	96.9	3,855,379	538.97
Increase (%)	26.76	0.93	25.08	5.33	-19.31	-64.31	13.17	-1.61	-57.27	-70.59	15.90	1.46
Females												
1990	294,727,431	53,089.72	147,866,780	25,892.05	3142	0.78	3,747,176	634.60	98,168	18.08	3,649,008	616.52
2019	389,166,985	53,803.06	191,186,791	27,337.99	2,780	0.27	4,354,285	641.26	41,986	4.59	4,312,299	636.67
Increase (%)	32.04	1.34	29.30	5.58	-11.52	-65.86	16.20	1.05	-57.23	-74.60	18.18	3.27
Total												
1990	606,509,566	53,166.61	290,124,075	24,598.30	6,380	0.85	7,202,417	593.54	226,972	20.90	6,975,445	572.64
2019	784,395,261	53,776.32	369,127,390	25,951.95	5,393	0.30	8,264,702	592.08	97,024	5.77	8,167,678	586.31
Increase (%)	29.33	1.15	27.23	5.50	-15.47	-65.03	14.75	-0.25	-57.25	-72.41	17.09	2.39

Abbreviations: DALYs=disability-adjusted life years; YLLs=years of life lost; YLDs=years lived with disability.
★. Standardized rates were calculated using the 2010 national census as the standard population, expressed as 1/100,000. The percentage change (※) was calculated as the difference between 2019 and 1990 divided by the amount in 1990

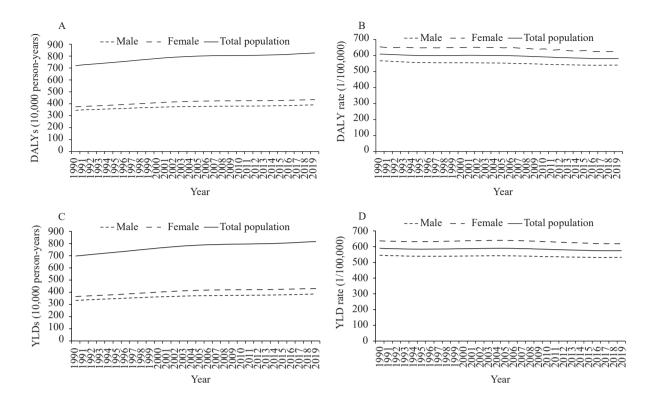


FIGURE 1. DALYs and YLDs by sex for skin disease in China, 1990–2019. (A) DALYs by sex for skin disease in China, 1990–2019; (B) DALY rate by sex for skin disease in China, 1990–2019; (C) YLDs by sex for skin disease in China, 1990–2019; (D) YLD rate by sex for skin disease in China, 1990–2019. Abbreviations: DALYs=disability-adjusted life years; YLDs=years lived with disability.

was 5.5% higher in 2019 than 1990. Although there have been no national epidemiological studies of skin diseases in China, there have been studies conducted in local areas or for specific skin diseases. For example, in 2008, You Yanming et al. randomly selected 2,345 people in a community in Haidian district of Beijing to conduct a skin diseases survey (5), they found that the prevalence of skin disease was 52.22%. Ding Xiaolan et al. conducted an epidemiological survey of psoriasis in 6 cities in China and found that the crude prevalence was 0.59% (6). The burden of skin disease is also large and significantly affects quality of life. In 2019, there were 8,264,702 DALYs lost due to skin disease and 97,024 YLLs and 8,167,678 YLDs; 98.83% of DALYs lost from skin disease were YLDs. Compared with 1990, YLLs decreased by 57.25% while YLDs increased by 17.09%. These results can be used to provide guidance on resource allocation and health system responses for skin diseases in China. In 2010, skin conditions were the fourth leading cause of non-fatal conditions, expressed as years lost due to disability. Considering health loss due to premature death, expressed as DALYs, skin diseases are the eighteenth leading cause of disease burden worldwide Xu Rongbin et al. found that skin and

subcutaneous diseases had the largest number of DALYs lost among Chinese adolescents aged 10–19 years (7).

GBD 2019 showed that the disease burden from acne was higher in young and middle-aged groups. Acne is common and affects approximately 9.4% of the global population, making it the eighth most prevalent disease worldwide (8). A meta-analysis assessed the prevalence of acne among 83,008 people from 12 provinces in the mainland of China and found that the pooled prevalence of acne was 39.2%. The prevalence of acne among primary and secondary school students (7–17 years old) was 50.2%, and the prevalence among undergraduates (18–23 years old) was 44.5% (9).

Psoriasis is also common that an estimated 29.5 million adults across the world suffered from psoriasis in 2017. In China, 2.3 million adults suffer from psoriasis, third in rank by country, after the USA and India (10). A systematic review of 76 epidemiological studies of psoriasis from 20 countries found that the estimated prevalence of psoriasis among children was less than 1.37%; among adults, the prevalence ranged from 0.51% to 11.43% (11). GBD-based estimates suggest that psoriasis plays a more important role in

overall disease burden among people over 50 years of age, and that it is an important disease among middle-aged and elderly people, often requiring intervention.

The study was subject to some limitations. First, GBD analyses is lack of availability of original data. Due to the absence of the original data, the results depend on out-of-sample predictive effectiveness of modeling. Second, misclassification of disease was possible, especially when classifications were deriving from administrative data coded diagnoses (4).

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SUPPLEMENTARY TABLE S1. Disease, death and burden of dermatology by age group in China, 1990 and 2019.

Continue		954		Incidence	ence	Prevalence	ence	Dea	Deaths	DALYS	-Ys	 - -	YLLs	\ 	YLDs
-55 1990 32,185,307 52,822,33 12,446,246 20,426,70 595 0.98 352,984 579,28 579,28 55,833 58,89 30,0632 2019 22,821,916 52,018,74 2,343,445 21,286,82 39 0.09 224,187 511,00 3,442 764 220,746 11990 46,641,784 43,792,87 13,824 21,286,82 39 0.09 244,187 511,00 3,442 764 220,746 15-49	Gender	group (years)	Year	Number of cases	Rate (1/100,000)	Number of cases	Rate (1/100,000)	Number of cases	Rate (1/100,000)	Number of person-years	Rate (1/100,000)	Number of person-years	Rate (1/100,000)	Number of person-years	Rate (1/100,000)
-5 1990 32.165.307 52.822.33 12.446.246 20.426.70 596 0.98 582.844 517.08 3.442 7.84 20.0432 2.24.167 1990 2.24.167 51.00 3.44.2 7.84 2.07.46 2.26.86 2.26.4167 51.00 3.44.2 7.84 2.07.46 2.26.87 2.26.87 2.26.4167 2.26.87 2.26.4167 2.26.87 2.26.4167 2.2	Males														
House Fig. House		~													
Increase (%)			1990	32,185,307	52,822.33	12,446,246	20,426.70	595	0.98	352,964	579.28	52,332	85.89	300,632	493.40
Horses (W) 1904 1,150			2019	22,821,916	52,018.74	9,343,445	21,296.82	39	0.09	224,187	511.00	3,442	7.84	220,746	503.15
5-14 1904 46,41,76 43,379.00 26,830,822 24,023.66 90 0.06 689,316 641.10 7,116 6.62 682,199 120 24,50 120 33,477,464 43,726.01 25,416.55 120 26,026 680,316 641.10 7,116 6.62 682,199 120 120 13,120 120,120,101 120,120,120 120,120			Increase (%)	-29.09	-1.52	-24.93	4.26	-93.41	-90.84	-36.48	-11.79	-93.42	-90.87	-26.57	1.98
1900 46,641,768 43,379,00 25,809,0822 24,023 66 90 0.08 689,316 641.10 7,118 6.62 662,199 665,07 25,146 65 12,020,010 25,416.55 12 0.02 516,009 665,07 374 975 126 516,034 15,034 12,035 13,035		5–14													
15-49			1990	46,641,768	43,379.00	25,830,822	24,023.86	06	0.08	689,316	641.10	7,118	6.62	682,199	634.48
15-49 1990 172,392,977 49,905.84 29,640,815 23,055,13 591 0.17 1,860,206 538.61 31,983 9.26 1,826,222 1,826,289 49,932.36 8,400,134 2,3375,03 2.65 6.847 2.61 4.10 6.86,86 6.89 4.99,31.86 4.			2019	33,977,464	43,792.57	19,720,010	25,416.55	12	0.02	516,009	665.07	975	1.26	515,034	663.81
15-49 1900 172,392,377 49,905.84 79,640,815 23,055.13 591 0.17 1,860,206 538.51 31,983 9.26 1,828,222 2019 184,562,889 49,932.36 86,400,134 23,375.03 263 0.07 1,908,765 516.40 13,158 3.56 1,895,608 50-69 1 100 rease (%) 7.06 0.05 8.49 1,339 23.82 86,400,134 23,375.03 263.92 0.07 1,908,765 516.40 13,158 3.56 1,895,608 10 rease (%) 1900 145,531,610 17,266,705 30,664.9 1,337 17,13,578 688.0 10.07,15.08,748 1.39 1.00,031,109 18,510,48 10.08,11,09 18,510,48 10.08,11,09 18,510,48 10.08,14,02,08 18,390,45 1.39 1.39 1.39 1.39 1.39 1.39 1.39 1.39			Increase (%)	-27.15	0.95	-23.66	5.80	-86.26	-80.95	-25.14	3.74	-86.30	-81.02	-24.50	4.62
1990 172,392,977 49,905.84 79,440,815 23,055.13 591 0.17 1,860,206 538.51 31,983 9.26 1,828,222 1,896,228 96,400,134 23,375.03 263 0.07 1,908,765 516.40 13,168 3.56 1,896,208 96,400,134 23,375.03 263.6 264.7 2.61		15–49													
50-69 Increase (%)			1990	172,392,977	49,905.84	79,640,815	23,055.13	591	0.17	1,860,206	538.51	31,983	9.26	1,828,222	529.25
50-69 1900 45.531,610 67.064.45 18.849,289 23.623.68 689 0.86 439,177 550.42 20,305 25.45 418.872 2019 106.742.919 57.866.42 45.210,305 24.504.74 562 0.86 439,177 550.42 20,305 20,305 23.628 3.628 270 1900 45.531,610 57.084.45 18.849,289 23.623.68 689 0.86 439,177 550.42 20,305 20,305 25.45 418.872 21019 106.742.919 57.866.42 31.928 33.257.60 1.273 7.71 13.578 688.02 17.066 103.89 96.543 1900 45.531,610 47.123,087 95.701.01 17.266,705 35.066.49 17.72 3.53 307.152 623.79 21.108 22.10 8.357.40 18.510.48 18.510.48 2.24.27 17.04.3 30.942 55.24.2 38.866 71.36 28.24.2 18.314 1900 12.366,820 50.249,73 10.081,109 18.510.48 29.30 19.74 23.84 492.70 2.210 5.87 183.134 1900 12.366,820 2.286,820 7.066,653 18.785,11 25 42.30 19.24.3			2019	184,562,889	49,932.36	86,400,134	23,375.03	263	0.07	1,908,765	516.40	13,158	3.56	1,895,608	512.85
50-69 1990 45,531,610 57,064.45 18,849,289 23,623.68 689 0.86 439,177 550.42 20,305 25.45 418,872 2019 106,742,919 57,856.45 45,210,305 24,504.74 562 0.30 954,303 517.25 16,356 8.87 937,948 Increase (%)			Increase (%)	7.06		8.49	1.39	-55.56	-58.47	2.61	-4.10	-58.86	-61.55	3.69	-3.10
1990 45,531,610 57,064,45 18,849,289 23,623,68 689 0.86 439,177 550,42 20,305 25,45 418,872 2019 106,742,919 57,856,45 45,210,305 24,504,74 562 0.30 954,303 517.25 16,356 8.87 937,948 Increase (%)		20-69													
2019 106.742,919 57.856.45 45.210,305 24,504,74 562 0.30 954,303 517.25 16.356 8.87 937,948 1.39			1990		57,064.45	18,849,289	23,623.68	689	0.86	439,177	550.42	20,305	25.45	418,872	524.97
Increase (%) 134.44 1.39 139.85 3.73 -18.50 -64.75 117.29 -6.03 -19.45 -65.16 123.92 123.92 1990 15,030,473 1,050.33 5,490,123 33.257.60 1,777 3.53 307,152 688.02 17,066 103.38 96,512 2019 47,123,087 95,701.01 17,266,705 35,066,49 1,777 36,42 -54.27 170.43 -9.34 23.68 -58.53 196.38 19			2019	106,742,919		45,210,305	24,504.74	562	0.30	954,303	517.25	16,356	8.87	937,948	508.38
2019 15,030,473 91,050.33 5,490,123 33,257.60 1,273 7.71 113,578 688.02 17,066 103.38 96,512 2019 47,123,087 95,701.01 17,266,705 35,066.49 1,737 3.53 307,152 623.79 21,108 42.87 286,044 Increase (%) 213.62 5.11 214.50 5,249.73 10,081,109 18,510.48 444 0.81 300,942 552.58 38,866 71.36 262,076 2019 18,357,407 48,799.05 7,066,653 18,785.11 25 0.07 185,344 492.70 2,210 5.87 183,134 Increase (%) -32.92 -2.89 -29.90 1.48 -94.30 -91.74 -38.41 -10.84 -94.31 -91.77 -30.12 5-14 1990 44,022,080 44,024.06 25,093,539 25,094.67 62 0.06 694,620 694,65 4909 4.91 689,711			Increase (%)	134.44		139.85	3.73	-18.50	-64.75	117.29	-6.03	-19.45	-65.16	123.92	-3.16
1990 15,030,473 91,050.33 5,490,123 33,257.60 1,273 7.71 113,578 688.02 17,066 103.38 96,512 2019 47,123,087 95,701.01 17,266,705 35,066.49 1,737 3.53 307,152 623.79 21,108 42.87 286,044 Increase (%) 213.52 5.11 214.50 25,093,539 18,785.11 25-14 Increase (%) -32.92 -2.89 -29.90 1.48 -94.30 -91.74 -38.41 -10.84 99.70 5.40 694,620		>70													
2019 47,123,087 95,701.01 17,266,705 35,066.49 1,737 3.53 307,152 623.79 21,108 42.87 286,044 Increase (%) 213.52 5.11 214.50 5.44 36.42 17 17 17 17 17 17 17 17 18 18,357,407 48,799.05 7,066,653 18,785.11 25 193.4 1990 27,366,820 2.2.89 -2.89 1.38			1990		91,050.33	5,490,123	33,257.60	1,273	7.71	113,578	688.02	17,066	103.38	96,512	584.64
-5 Increase (%) 213.52 5.11 214.50 5.44 36.42 -54.27 170.43 -9.34 23.68 -58.53 196.38 196.3			2019	47,123,087		17,266,705	35,066.49	1,737	3.53	307,152	623.79	21,108	42.87	286,044	580.92
-5 1990 27,366,820 50,249,73 10,081,109 18,510,48 444 0.81 300,942 552.58 38,866 71.36 262,076 2019 18,357,407 48,799.05 7,066,653 18,785.11 25 0.07 185,344 492.70 2,210 5.87 183,134 Increase (%) -32.92 -2.89 -29.90 1.48 -94.30 -91.74 -38.41 -10.84 -94.31 -91.77 -30.12 5-14 1990 27,366,820 50,249,73 10,081,109 18,510,48 4,90,04,02 5,094,67 62 0.06 694,620 694,65 4,909 4.91 689,711			Increase (%)	213.52	5.11	214.50	5.44	36.42	-54.27	170.43	-9.34	23.68	-58.53	196.38	-0.64
1990 27,366,820 50,249.73 10,081,109 18,510.48 444 0.81 300,942 552.58 38,866 71.36 262,076 2019 18,357,407 48,799.05 7,066,653 18,785.11 25 0.07 185,344 492.70 2,210 5.87 183,134 lncrease (%) -32.92 -2.89 -29.90 1.48 -94.30 -91.74 -38.41 -10.84 -94.31 -91.77 -30.12 1990 44,022,080 44,024.06 25,093,539 25,094.67 62 0.06 694,620 694,65 4,909 4.91 689,711	Females														
1990 27,366,820 50,249.73 10,081,109 18,510.48 444 0.81 300,942 55.58 38,866 71.36 262,076 2019 18,357,407 48,799.05 7,066,653 18,785.11 25 0.07 185,344 492.70 2,210 5.87 183,134 lncrease (%) -32.92 -2.89 -29.90 1.48 -94.30 -91.74 -38.41 -10.84 -94.31 -91.77 -30.12 1990 44,022,080 44,024.06 25,093,539 25,094.67 62 0.06 694,620 694,65 4,909 4.91 689,711		^													
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Increase (%) -32.92 -2.89 -29.90 1.48 -94.30 -91.74 -38.41 -10.84 -94.31 -91.77 -30.12 -10.90 44,022,080 44,024.06 25,093,539 25,094.67 62 0.06 694,620 694.65 4,909 4.91 689,711			2019	18,357,407	48,799.05	7,066,653	18,785.11	25	0.07	185,344	492.70	2,210	5.87	183,134	486.82
1990 44,022,080 44,024.06 25,093,539 25,094.67 62 0.06 694,620 694,65 4,909 4.91 689,711			Increase (%)	-32.92	-2.89	-29.90	1.48	-94.30	-91.74	-38.41	-10.84	-94.31	-91.77	-30.12	1.17
44,022,080 44,024.06 25,093,539 25,094.67 62 0.06 694,620 694.65 4,909 4.91 689,711		5–14													
			1990	44,022,080	44,024.06	25,093,539	25,094.67	62	0.00	694,620	694.65	4,909	4.91	689,711	689.74

<	9		Incidence	auce	Prevalence	ence	Deaths	ths	DAI	DALYs	YLLs	Ls Ls	¥	YLDs
Gender gr (ye	Age group (years)	Year	Number of cases	Rate (1/100,000)	Number of cases	Rate (1/100,000)	Number of cases	Rate (1/100,000)	Number of person-	Rate (1/100,000)	Number of person-years	Rate (1/100,000)	Number of person-	Rate (1/100,000)
		2019	29,675,277	45,167.98	17,752,601	27,020.78	80	0.01	486,051	739.81	999	1.01	485,386	738.79
		Increase (%)	-32.59	2.60	-29.25	7.68	-86.42	-79.33	-30.03	6.50	-86.44	-79.36	-29.62	7.11
~	15-49													
		1990	160,120,328	49,569.05	85,476,708	26,461.35	346	0.11	2,171,382	672.20	19,057	5.90	2,152,324	666.30
		2019	175,139,182	49,883.08	93,905,959	26,746.26	112	0.03	2,277,382	648.64	5,654	1.61	2,271,728	647.03
		Increase (%)	9.38	0.63	9.86	1.08	-67.73	-70.31	4.88	-3.50	-70.33	-72.71	5.55	-2.89
Ū	50-69													
		1990	43,031,108	57,944.37	19,434,464	26,169.85	476	0.64	421,056	566.98	13,649	18.38	407,407	548.60
		2019	108,384,018	58,780.94	50,233,993	27,243.88	351	0.19	1,012,801	549.28	9,985	5.42	1,002,817	543.87
		Increase (%)	151.87	1 .	158.48	4.10	-26.16	-70.26	140.54	-3.12	-26.84	-70.54	146.15	-0.86
	>70													
		1990	20,187,095	92,812.64	7,780,960	35,773.91	1,815	8.34	159,175	731.83	21,687	99.71	137,488	632.12
		2019	57,611,102	98,103.27	22,227,585	37,850.32	2,284	3.89	392,706	668.72	23,472	39.97	369,234	628.75
		Increase (%)	185.39	5.70	185.67	5.80	25.81	-53.40	146.71	-8.62	8.23	-59.91	168.56	-0.53
Total	ı													
•	~													
		1990	59,552,127	51,608.15	22,527,355	19,522.31	1,039	0.90	653,906	566.68	91,199	79.03	562,708	487.65
		2019	41,179,323	50,532.44	16,410,098	20,137.35	65	0.08	409,531	502.55	5,651	6.94	403,880	495.61
		Increase (%)	-30.85	-2.08	-27.15	3.15	-93.79	-91.20	-37.37	-11.32	-93.80	-91.23	-28.23	1.63
5	5–14													
		1990	90,663,848	43,689.83	50,924,361	24,539.85	151	0.07	1,383,937	06.999	12,027	5.80	1,371,910	661.11
		2019	63,652,741	44,423.22	37,472,611	26,152.12	21	0.01	1,002,061	699.34	1,641	1.15	1,000,420	698.19
		Increase (%)	-29.79	1.68	-26.42	6.57	-86.32	-80.19	-27.59	4.86	-86.36	-80.24	-27.08	5.61
15	15-49													
		1990	332,513,305	49,743.09	165,117,523	24,701.14	936	0.14	4,031,587	603.11	51,041	7.64	3,980,547	595.48
		2019	359,702,071	49,908.36	180,306,093	25,017.32	374	0.05	4,186,147	580.82	18,812	2.61	4,167,336	578.21
		Increase (%)	070	0		•			0	1				Ċ

TABLE S1. (Continued)

	Age		Incidence	nce	Prevalence	ence	Deaths	ths	DALYs	.Ys	YLLs	-S	YLDs)s
Gender	group (years)	Year	Number of cases	Rate (1/100,000)	Number of cases	Rate (1/100,000)	Number of Rate cases (1/100,0	umber of Rate cases (1/100,000)	Number of person-	Rate (1/100,000)	Number of person-years	Rate (1/100,000)	Number of person-	Rate (1/100,000)
	50–69													
		1990	88,562,718 57,488.63	57,488.63	38,283,753 24,851.09	24,851.09	1,165	0.76	860,233	558.40	33,954	22.04	826,279	536.36
		2019	215,126,937 58,318.56	58,318.56	95,444,298 25,873.90	25,873.90	913	0.25	1,967,105	533.26	26,341	7.14	1,940,764	526.12
		Increase (%)	142.91	1.44	149.31	4.12	-21.63	-67.27	128.67	-4.50	-22.42	-67.60	134.88	-1.91
	>70													
		1990	35,217,567 92,052.23	92,052.23	13,271,082 34,688.16	34,688.16	3,088	8.07	272,753	712.93	38,753	101.29	234,001	611.63
		2019	104,734,189 97,007.66	99.700,76	39,494,290 36,580.69	36,580.69	4,020	3.72	699,858	648.23	44,580	41.29	655,278	606.94
		Increase (%)	197.39	5.38	197.60	5.46	30.19	-53.87	156.59	-9.08	15.04	-59.24	180.03	-0.77
Jote: Derce	do enetur	lato: Descentance observe (2) was calculated as the difference value between 2010 and 1000 divided by the amount in 1000	off or potelinal	difformum v	, accorded or le	2010 and 100	על בסבייוב סנ	the ome	1000					

Note: Percentage change (%) was calculated as the difference value between 2019 and 1990 divided by the amount in 1990. Abbreviations: DALYs=disability-adjusted life years; YLLs=years of life lost; YLDs=years lived with disability.

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SUPPLEMENTARY TABLE S2. Disease burden by age group and skin disease in China, 1990 and 2019.

A	Name of disc.	DA	LYs	DALY	rate	YL	Ls	YLL	rate	YL	_Ds	YLD	rate
Age group (years)	Name of disease	1990	2019	1990	2019	1990	2019	1990	2019	1990	2019	1990	2019
<5											-		
	Viral skin diseases	145,832	105,866	126.38	129.91	_	-	-	-	145,832	105,866	126.38	129.91
	Scabies	145,518	101,351	126.11	124.37	_	-	_	-	145,518	101,351	126.11	124.37
	Dermatitis	123,694	90,382	107.19	110.91	_	-	_	-	123,694	90,382	107.19	110.91
	Urticaria	71,845	51,083	62.26	62.69	_	-	_	-	71,845	51,083	62.26	62.69
	Other skin diseases	41,791	33,286	36.22	40.85	2,373	1,256	2.06	1.54	39,418	32,030	34.16	39.31
5–14													
	Viral skin diseases	342,676	238,625	165.13	166.54	_	-	-	-	342,676	238,625	165.13	166.54
	Acne vulgaris	250,397	232,490	120.66	162.25	_	-	_	-	250,397	232,490	120.66	162.25
	Dermatitis	252,691	174,975	121.77	122.12	_	-	_	-	252,691	174,975	121.77	122.12
	Scabies	258,973	174,780	124.80	121.98	_	-	_	-	258,973	174,780	124.80	121.98
	Urticaria	113,030	77,519	54.47	54.10	_	-	_	-	113,030	77,519	54.47	54.10
15–49													
	Dermatitis	932,108	1,064,399	139.44	147.68	_	-	_	-	932,108	1,064,399	139.44	147.68
	Scabies	841,859	815,752	125.94	113.18	-	-	-	-	841,859	815,752	125.94	113.18
	Acne vulgaris	622,315	640,193	93.10	88.83	-	-	-	-	622,315	640,193	93.10	88.83
	Viral skin diseases	434,253	423,647	64.96	58.78	-	-	-	-	434,253	423,647	64.96	58.78
	Psoriasis	322,404	299,176	48.23	41.51	-	-	-	-	322,404	299,176	48.23	41.51
50–69													
	Dermatitis	263,624	636,608	171.13	172.58	_	-	_	-	263,624	636,608	171.13	172.58
	Scabies	119,613	282,625	77.64	76.62	-	-	-	-	119,613	282,625	77.64	76.62
	Psoriasis	143,758	260,602	93.32	70.65	-	-	-	-	143,758	260,602	93.32	70.65
	Other skin diseases	68,987	193,016	44.78	52.32	1,381	2,459	0.90	0.67	67,606	190,557	43.89	51.66
	Viral skin diseases	76,616	182,333	49.73	49.43	-	-	-	-	76,616	182,333	49.73	49.43
≥70													
	Dermatitis	72,207	202,583	188.74	187.64	-	-	-	-	72,207	202,583	188.74	187.64
	Scabies	31,093	88,233	81.27	81.72	-	-	-	-	31,093	88,233	81.27	81.72
	Fungal skin diseases	28,945	86,131	75.66	79.78	-	-	-	-	28,945	86,131	75.66	79.78
	Psoriasis	34,727	73,871	90.77	68.42	-	-	-	-	34,727	73,871	90.77	68.42
	Other skin diseases	22,861	72,807	59.75	67.44	1,824	3,179	4.77	2.94	21,037	69,628	54.99	64.49

Abbreviations: DALYs=disability-adjusted life years; YLLs=years of life lost; YLDs=years lived with disability.