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Epidemiological landscape of esophageal cancer in Asia: Results from GLOBOCAN 2020

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Abstract

Background: Esophageal cancer (EC) is a global health problem. Asia represents a huge burden of EC globally, and incidence and mortality vary considerably across different Asian regions.

Methods: Data on incidence, mortality, and preference were extracted from GLOBOCAN 2020. Age-standardized incidence and mortality rates were calculated overall by sex, age, country, region, and continent. The predicted burden of incidence and mortality in 2040 was calculated based on global demographic projections.

Results: It was estimated there were 481 552 new cases of and 434 363 deaths from EC in Asia in 2020, accounting for 79.7% and 79.8% of world EC cases and deaths, respectively. EC incidence and mortality in Asia ranked the highest among all continents. Eastern Asia represents the highest age-standardized world incidence rate (ASWIR) of 12.3 per 100 000 for all Asian regions. Western Asia represents the lowest ASWIR of 1.7 per 100 000, accounting for 0.7% of the globe. There exist obvious differences in epidemiological features in Asian countries, including incidence, mortality, prevalence, and mortality incidence ratio. There is forecast to be up to 781 000 new cases of EC in Asia by 2040, with increasing rates of 63% for incidence and 72% for mortality from 2020.

Conclusions: Asia has an increasing number of EC cases and deaths. Strategies for targeting in high-incidence areas, the elderly, and survival should be prioritized to reduce the global EC burden, especially in low- and middle-income countries in Asia.

Hongcheng Zhu, Zezhou Wang, and Bingbin Deng contributed equally to this study.

KEYWORDS
Asia, epidemiology, esophageal cancer, gastrointestinal cancer

INTRODUCTION

Esophageal cancer (EC) is the seventh most common and the sixth most deadly cancer in the world.[1] According to a large amount of statistical data, the burden of EC has been increasing in recent years, and the corresponding mortality rate has also increased significantly, which has brought some pressure on patients, families, and communities, and caused many social problems.[2] In different countries and populations, the pressure caused by EC varies.[3] Asia is traditionally considered a high-incidence area[4] and represents nearly 80% of the global burden of EC. However, the endemiological features of EC vary considerably across different Asian regions.

Many health systems in low- and middle-income countries (LMICs) are under great pressure in coping with the burden of cancer.[5] Asian countries have reported various EC survival rates by CONCORD-3, with 5-year age-standardized net survival rates of 4.1–42.2% in 2010–2014.[6] Previous publications have put forward a number of EC indicators,[7–9] based on accurate and comprehensive EC data from countries around the world. This paper provides the latest estimated data for EC health measures in Asian countries derived from research covering 60% of the world's population and 80% of world EC incidence.

METHODS

The Global Cancer Observatory includes facilities for the tabulation of the GLOBOCAN database, including Cancer Today 2020, Cancer Overtime, and Cancer Tomorrow. The methods used for estimating EC incidence, mortality, and prevalence are specific to each country, and the accuracy of estimates is contingent on the completeness, accuracy, and timeliness of the data recorded in each country.[10] Age-standardized rates (ASRs) were calculated using the World Standard Population based on the Segi[11] standard, modified by Doll et al.[12] The country-specific prevalence estimates for 2020 were first computed using sex-, site-, and age-specific ratios of incidence to 1-, 3-, and 5-year prevalence from Nordic countries for the period 2006–2015, then scaled using Human Development Index ratios. The annual percentage change, which describes the average annual rate of change in the ASR of incidence, mortality, and prevalence over time, was calculated by fitting a regression line to the natural logarithm of the ASR using the calendar year as a regressor variable. The expected number of new cancer cases or deaths in a country or region in 2040 was computed by multiplying the age-specific incidence/mortality rates estimated for 2020 by the corresponding expected population for 2040.

Cancer type coded C15-Esophagus according to the International Statistical Classification of Diseases 10th Revision (ICD-10) was defined as EC in the current analysis.[13] Four Asian regions were defined for the analysis. Eastern Asia: China, Japan, Korea (Democratic Republic of), Korea (Republic of, Mongolia); South-Central Asia: Afghanistan, Bangladesh, Bhutan, India, Iran (Islamic Republic of), Kazakhstan, Kyrgyzstan, Maldives, Nepal, Pakistan, Sri Lanka, Tajikistan, Turkmenistan, Uzbekistan; South-Eastern Asia: Brunei Darussalam, Cambodia, Indonesia, Lao (People's Democratic Republic), Malaysia, Myanmar, Philippines, Singapore, Thailand, Timor-Leste, Viet Nam; Western Asia: Armenia, Azerbaijan, Bahrain, Gaza Strip and West Bank, Georgia, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, Turkey, United Arab Emirates, Yemen.

RESULTS

EC of Asia in the world

Incidence

A total of 481 552 new cases of EC in Asia was estimated by GLOBOCAN 2020, accounting for 79.7% of 604 100 new EC cases worldwide. The age-standardized rate of incidence by world population (ASRIW) for Asia was reported to be 8.5 per 100 000, ranking it the highest of all the continents. It was 2.36-fold incidence rate of the second highest continent of Africa, and 3.54-fold of the lowest continent of Latin America and Caribbean.

Mortality

A total of 434 363 EC deaths in Asia was estimated by GLOBOCAN 2020, accounting for 79.8% of 544 076 world EC deaths. The age-standardized rate of mortality by world population (ASRMW) of Asia was reported to be 7.6 per 100 000, ranking it the highest of all the continents. It was 2.23-fold mortality rate of the second highest continent of Africa, and 3.45-fold of the lowest continent of Latin America and Caribbean.

Prevalence

A total of 523 122 EC cases of 5-year prevalence was estimated for Asia by GLOBOCAN 2020, accounting for 78.5% of 666 388 world 5-year prevalence EC cases. Asia reported the highest 5-year prevalence proportion of 11.27 per 100 000, which was 1.32-fold of the second highest

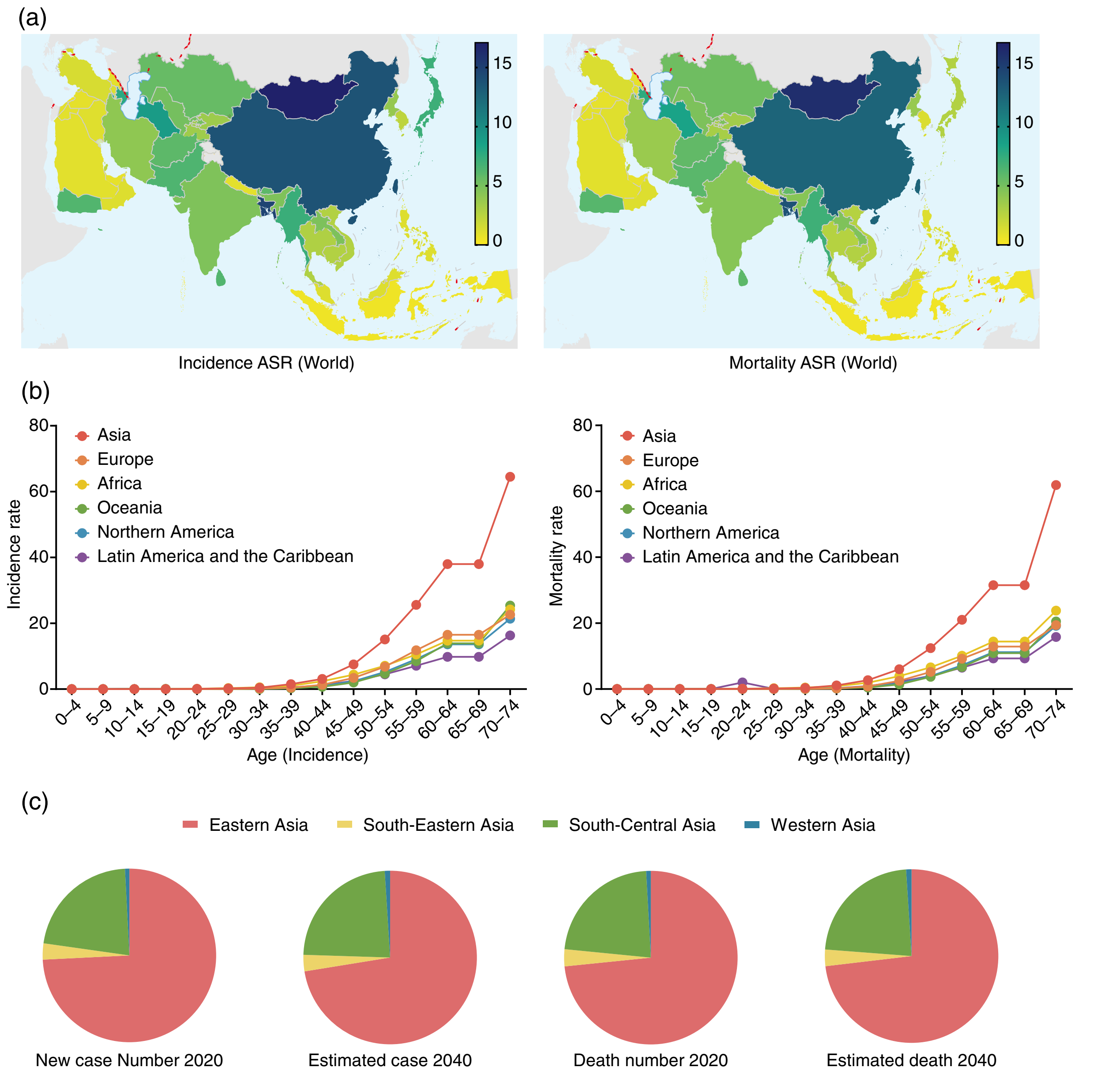

FIGURE 1 Incidence and mortality of esophageal cancer (EC) in Asia. (a) Age-standardized world incidence rate (ASWIR) and age-standardized world mortality rate (ASWMR) of EC in Asia by country. (b) Incidence and mortality of EC in Asia and other continents by age range. (c) Estimated number of EC cases and deaths in Asia in 2020 and 2040.

continent of Europe, and 4.49-fold of the lowest continent of Africa (Figure 1 and Table 1).

EC in Eastern Asia

Incidence

Eastern Asia had the highest ASRIW (12.3 per 100 000) of all Asian regions, accounting for 59.2% of world incidence. Mongolia had the highest EC incidence of all Asian countries, with an age-standardized world incidence rate (ASWIR) of 17.1 per 100 000. The cumulative risk was as high as 1.97, and 398 new EC cases were estimated in the total population of 3 278 292 in Mongolia. China had the largest number of new EC cases (324 422), accounting for 67.37% of new cases in Asia and 53.70% in the world. The ASWIR for China was as high as 13.8 per 100 000 and the cumulative risk was 1.71. The ASWIR for Japan was 7.2 per 100 000 with 26 262 new cases and a cumulative risk of 0.95. The Democratic Republic of Korea and the Republic of Korea reported ASWIRs of 3.9 and 2.4 per 100 000, with 1443 and 2615 cases, respectively.

Mortality

Eastern Asia had the highest ASRMW of 10.7 per 100 000, accounting for 58.7% of world mortality. Mongolia had the

TABLE 1 Estimated EC incidence and mortality in Asia and other continents in 2020

Region	Percentage of world incidence (%)	Incidence ASR (/10^5)	Percentage of world mortality (%)	Mortality ASR (/10^5)	MIR	5-year prevalence (/10^5)
Asia	79.7	8.5	79.8	7.6	0.89	11.27
Eastern Asia	59.2	12.3	58.7	10.7	0.87	23.17
South-Central Asia	17.4	5.6	17.9	5.2	0.93	2.33
South-Eastern Asia	2.4	2.0	2.5	1.9	0.95	5.66
Western Asia	0.7	1.7	0.8	1.7	1.00	1.71
Africa	4.6	3.6	4.8	3.4	0.94	2.26
Europe	8.8	3.3	8.4	2.7	0.82	8.55
Oceania	0.4	3.1	0.3	2.5	0.81	6.20
North America	3.4	2.9	3.4	2.4	0.83	/
Latin America and Caribbean	3.1	2.4	3.3	2.2	0.92	3.07
World	100	5.3	100	5.6	0.89	8.55

Abbreviations: ASR, age standardized rate; EC, esophageal cancer; MIR, mortality incidence ratio.

highest EC mortality among all Asian countries, with an age-standardized world mortality rate (ASWMR) of 16.2 per 100 000. The cumulative risk was as high as 1.81 and 373 EC deaths were estimated in Mongolia. China had the largest number of EC deaths at 301 135, accounting for 69.33% of deaths in Asia and 55.34% in the world. The ASWMR of China was as high as 12.7 per 100 000 and the cumulative risk was 1.53. The ASWMR of Japan was 2.8 per 100 000 with 12 270 new deaths and a cumulative risk of 0.34. The Democratic Republic of Korea and the Republic of Korea reported ASWMRs of 3.8 and 1.8, with 1387 and 1571 deaths, respectively.

Prevalence

Eastern Asia had the highest 5-year EC prevalence in Asian regions (including Eastern Asia, Central-Southern Asia, South-Eastern Asia, Western Asia), while Japan had the highest in Asian countries, while China ranked second with 24.04 per 100 000. China had the largest number of 347 912 EC cases of 5-year prevalence, accounting for 66.5% of 5-year prevalence proportion in Asia and 52.21% of the globe (Figure 2).

EC in South-Central Asia

Incidence

South-Central Asia had an ASRIW of 5.6 per 100 000, accounting for 17.4% of world incidence. Bangladesh reported the second-highest EC incidence among all Asian countries, 14.8 per 100 000 of ASWIR and 1.69 of cumulative risk. A total of 21 745 new cases was estimated, raking the first in all cancer sites among Bangladesh. There was a total of 63 180 new cases estimated in India, representing the second-largest number of EC cases in Asia and the world, with an ASWIR of 4.7 per 100 000. Pakistan reported an ASWIR of 6.5 per 100 000, with 10 117 new cases. The ASWIRs (per 100 000) of the other countries in this region were Turkmenistan 9.1, Pakistan 6.5, Sri Lanka 6.4, Bhutan 6, Afghanistan 6, Kazakhstan 5.6, Uzbekistan 5.1, Iran 4.1, Kyrgyzstan 3.6, Tajikistan 3.5, and Nepal 0.92. The Maldives reported no new cases of EC in GLOBOCAN 2020 (Figure 1).

Mortality

South-Central Asia had the highest ASRMW of 5.2 per 100 000, accounting for 17.9% of world mortality. Bangladesh reported the second-highest EC mortality among all Asian countries, 13.9 per 100 000 of ASWMR. A total of 20 319 deaths was estimated, raking the first in all cancer sites among Bangladesh. There was a total of 58 342 new deaths estimated in India, representing the second-largest number of EC cases in Asia and the world, with an ASWMR of 4.4 per 100 000. Pakistan reported an ASWMR of 6.1 per 100 000, with 9443 new deaths. The ASWMRs (per 100 000) of other countries in this region were Turkmenistan 8.6, Pakistan 6.5, Sri Lanka 6, Bhutan 5.8, Afghanistan 5.8, Kazakhstan 5.3, Uzbekistan 4.8, Iran 3.7, Kyrgyzstan 3.4, Tajikistan 3.2, and Nepal 0.88. The Maldives reported no EC deaths in GLOBOCAN 2020 (Figure 1).

Prevalence

South-Central Asia had a 5-year EC prevalence of 2.33 per 100 000 in Asian regions. Bangladesh reported a 5-year EC prevalence of 14.19 per 100 000, with 23 372 cases and India reported 4.97 per 100 000 with 68 607 prevalent cases. The Maldives reported no EC prevalence in GLOBOCAN 2020 (Figure 1).

EC in South-Eastern Asia

Incidence

South-Eastern Asia had an estimated ASWIR of 2 per 100 000, accounting for 2.4% of world incidence. Myanmar had the highest ASWIR of 7.3 per 100 000, as well as the largest number of new cases at 3981. Other countries with EC ASWIR (per 100 000) report as Lao People's Democratic Republic 4.8, Thailand 2.9, Cambodia 2.8, Viet Nam 2.8, Singapore 2.1, Brunei Darussalam 1.4, Malaysia 1.2, Philippines 1.2, Timor-Leste 0.81, and Indonesia 0.49.

Mortality

South-Eastern Asia had an estimated ASWMR of 1.9 per 100 000, accounting for 2.5% of world mortality. Myanmar had the highest ASWMR of 7.1 per 100 000, as well as the largest number of new deaths at 3823. Other countries with EC ASWMR report as Lao People's Democratic Republic 4.7, Cambodia 2.8, Thailand 2.7, Viet Nam 2.7, Singapore 2, Malaysia 1.2, Philippines 1.2, Brunei Darussalam 1.1, Timor-Leste 0.81, and Indonesia 0.48.

Prevalence

South-Eastern Asia had an estimated 5-year EC prevalence of 5.66 per 100 000 in Asian regions. Myanmar had the highest 5-year EC prevalence of 7.84 per 100 000, while Indonesia reported the lowest prevalence of 0.52 per 100 000.

EC in Western Asia

Incidence

Western Asia had the lowest ASWIR of 1.7 per 100 000, accounting for 0.7% of world. Eastern Asia is 7.23-fold of Western Asia in incidence rate and 84.5-fold of Western Asia in incidence percentage (Table 1). Azerbaijan and Yemen reported high ASWIRs of 7.9 and 6.4 per 100 000, respectively. The Western Asian countries with the lowest EC ASWIRs of ≤ 1 per 100 000 were Israel 1, Jordan 1, Saudi Arabia 1, Georgia 0.93, Gaza Strip and West Bank 0.93, Syrian Arab Republic 0.90, United Arab Emirates 0.86, and Lebanon 0.56.

Mortality

Western Asia had the lowest ASWMR of 1.7 per 100 000, accounting for 0.8% of world. Eastern Asia is 6.29-fold of Western Asia in mortality rate and 73.4-fold of Western Asia in mortality percentage (Table 1) Yemen and Azerbaijan reported high ASWIRs of 7 and 6.6 per 100 000, respectively. The Western Asian countries with the lowest EC ASWMRs of <1 per 100 000 were Saudi Arabia 0.98, Jordan 0.97, Israel 0.94, Gaza Strip and West Bank 0.89, Georgia 0.86, Syrian Arab Republic 0.85, United Arab Emirates 0.8, and Lebanon 0.54.

Prevalence

Western Asia had an estimated 5-year EC prevalence of 1.71 per 100 000 in Asian regions. The highest EC 5-year EC prevalence was found for Azerbaijan (9.17 per 100 000). The Western Asian countries with the lowest EC 5-year prevalence of <1 per 100 000 were Saudi Arabia 0.88, Bahrain 0.88, Oman 0.84, Syrian Arab Republic 0.75, Kuwait 0.75, Jordan 0.75, Iraq 0.69, Lebanon 0.64, Qatar 0.62, Gaza Strip and West Bank 0.47, and the United Arab Emirates 0.36.

Sex, age, and mortality incidence ratios

Sex

The observed difference in EC incidence (ASWIR) by sex in Asia was 2.37-fold male to female. This was much less than for the other continents (Europe 4.46, North America 4.36, Latin America and Caribbean 4.00, Oceania: 3.00) except Africa (1.35).

The male to female ratios (MFR) of incidence in Western Asia (1.33) and South-Central Asia (1.69) were close to that of Africa, while the ratio for South-Eastern Asia (4.85) was close to that for the other continents. Most Asian countries demonstrated a higher incidence of EC in males than in females. The country with the highest MFR of incidence was Lao (12.74), followed by Viet Nam (11.43), the Republic of Korea (10.44), the Democratic Republic of Korea (7.70), Japan (6.14), Thailand (6.09), Singapore (6.07), Philippines (4.23), Cambodia (3.77), Armenia (3.56), and Indonesia (3.39). The most similar incidence by sex was found in Iraq (1.09), Oman (1.08), and Pakistan (1.03). A lower incidence rate in females than in males was seen in the United Arab Emirates (0.88), Qatar (0.83), and Yemen (0.74). The MFR of incidence was 2.4 in the most heavily EC burden country of China. Sex difference was also detected in the mortality from and prevalence of EC in the Asian population. The highest MFR for mortality was found in the Republic of Korea (14.27).

Age

EC incidence and mortality rates increased with age, and the aged group incidence and mortality are shown in Figure 3.

Mortality incidence ratio

The EC mortality incidence ratio (MIR) in Asia was 0.89, higher than in North America (0.83), Europe

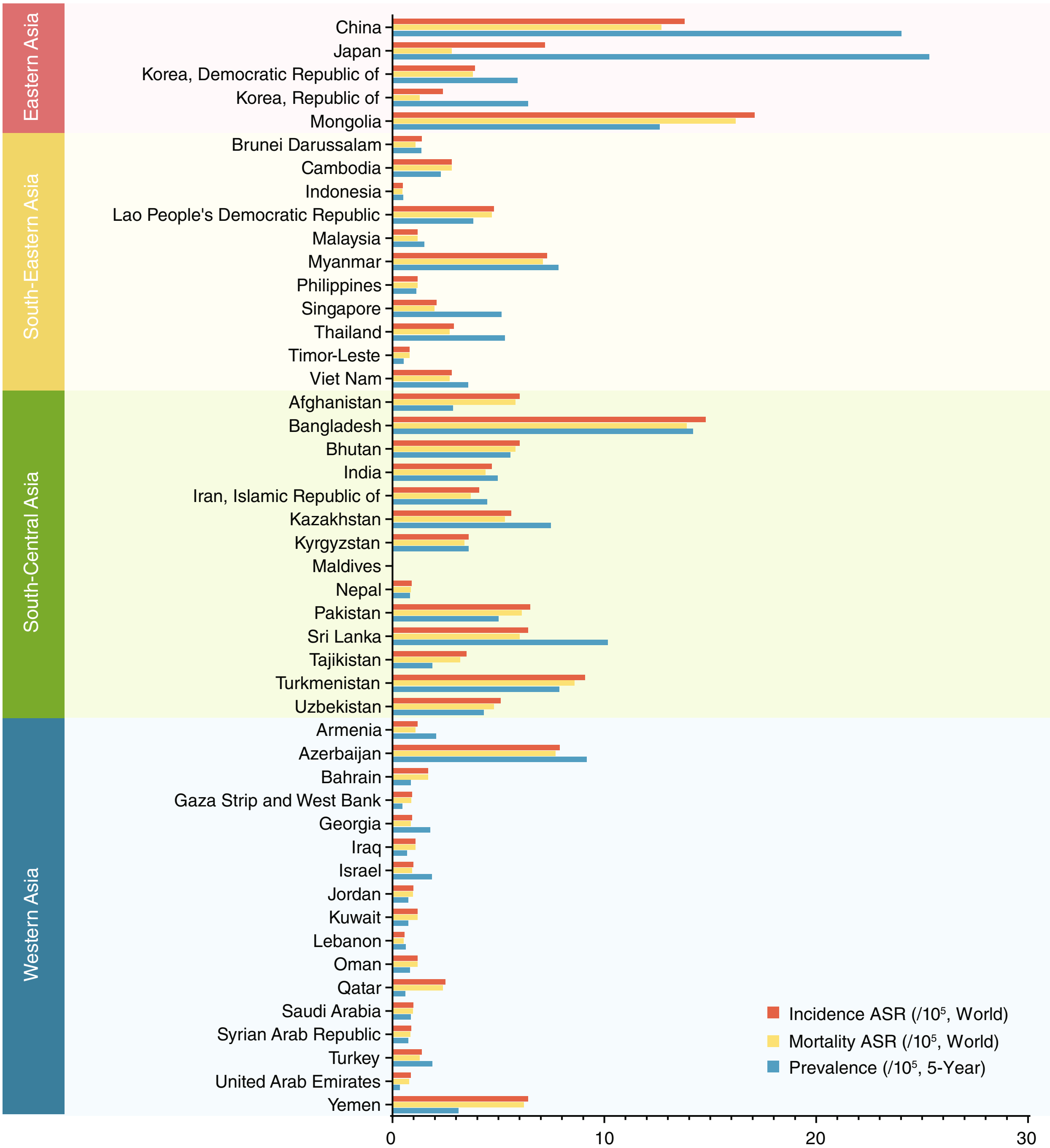

FIGURE 2 Incidence, mortality, and prevalence of esophageal cancer in Asian countries. ASR, age-standardized rate.

(0.82), and Oceania (0.81), and lower than in Africa (0.94) and Latin America and the Caribbean (0.92). Western Asia demonstrated the highest MIR (1), followed by South-Eastern Asia (0.95), South-Central Asia (0.93), and Eastern Asia (0.87) in all Asian regions. Japan reported the lowest EC MIR (0.39), followed by the Republic of Korea (0.54), while the EC MIR was 1 in Bahrain, Cambodia, Iraq, Kuwait, Malaysia, Oman, Philippines, and Timor-Leste.

EC Trends in Asia

Totals of 781 000 new EC cases and 747 000 EC deaths in Asia for 2040 were estimated by GLOBOCAN Cancer Tomorrow, with the increasing rate of 63% in incidence and 72% in mortality from 2020. The Syrian Arab Republic was estimated to have highest increases in incidence (188%) and mortality (193%) from 2020 to 2040, followed by Saudi Arabia (incidence 171%, mortality 183%), Tajikistan

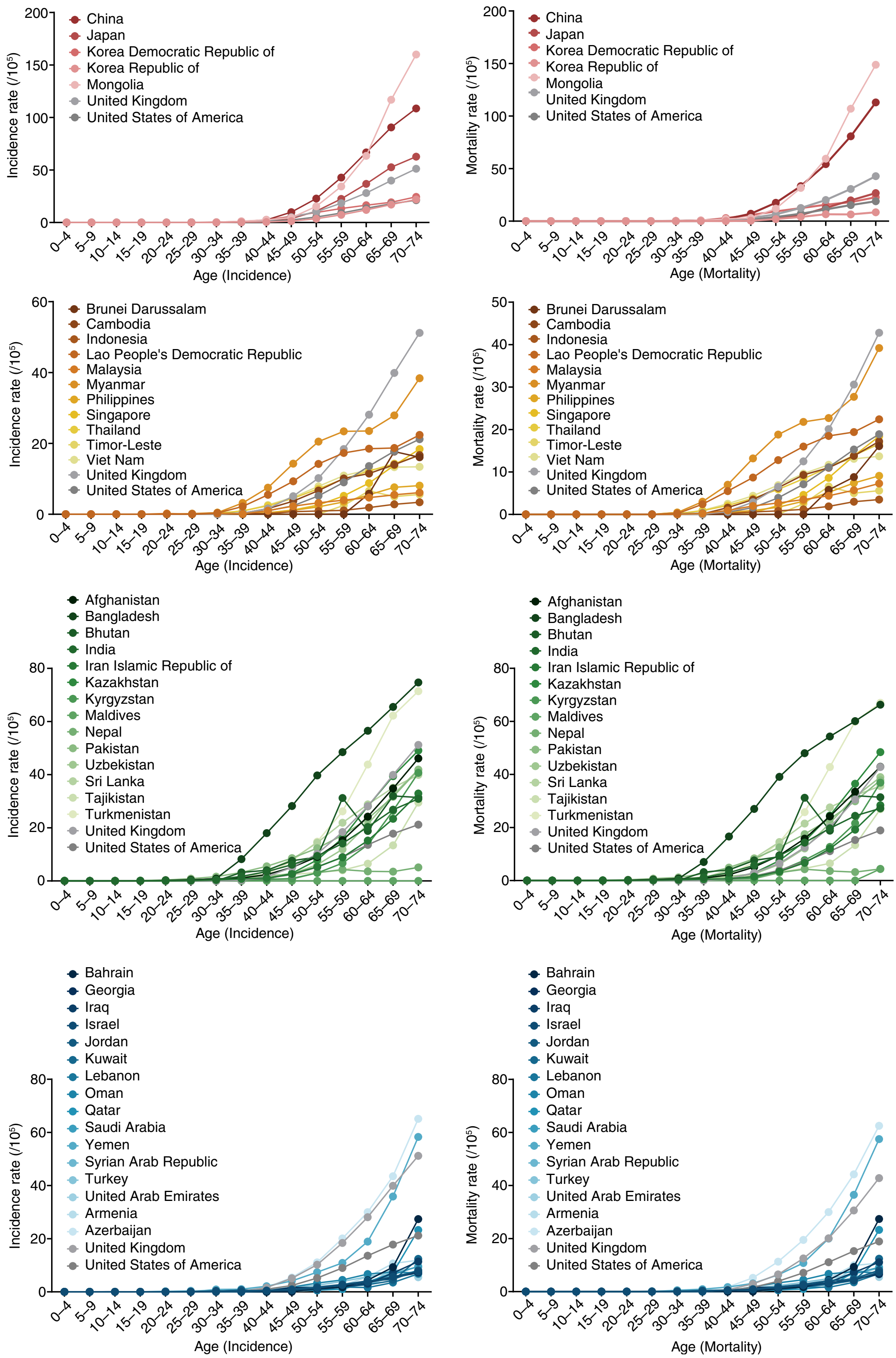

FIGURE 3 Incidence and mortality of esophageal cancer in Asian countries by age range groups.

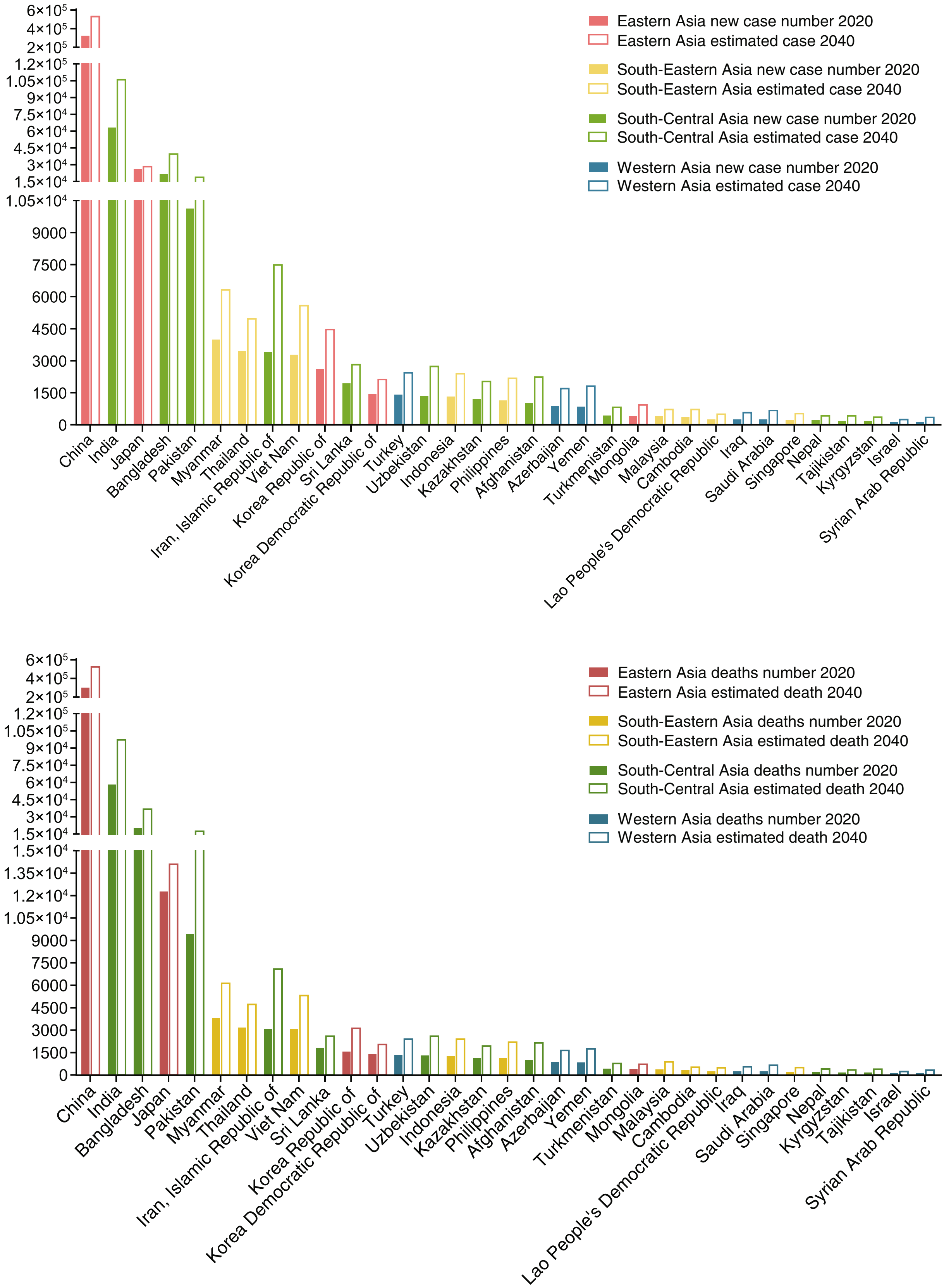

FIGURE 4 Estimated number of esophageal cancer cases and deaths in Asian countries in 2020 and 2040.

(incidence 137%, mortality 141%), and Mongolia (incidence 132%, mortality 136%). Japan was expected to have the lowest increases in incidence (8%), from 26 262 new cases in 2020 to 28 300 new cases in 2040, and mortality (15%), from 12 270 deaths in 2020 to 14 100 deaths in 2040. China and India were estimated to have average increases in incidence (China 63%, India 67%) and mortality (China 74%, India 66%) compare with the rest of the world (incidence 64%, morality 68%). However, due to the large population base of these two nations, the heavy burden of EC in China (estimated number of new cases 530 000, estimated number of deaths 525 000) and in India (estimated number of new cases 106 000, estimated number of deaths 97 200) in the year of 2040 (Figure 4).

DISCUSSION

This study examined in detail the EC incidence rate and mortality in Asian countries in 2020, and found that there were obvious differences between countries. Although EC is considered a relatively rare disease in western countries, it still accounts for 3% of all cancer cases worldwide. In terms of cancer causes of death, it ranks sixth, with a corresponding proportion of 6% of cancer-related deaths. There is also a significant difference in the geographical distribution of EC in Asia.[14,15]

EC risk and protective factors include a range of lifestyle and environmental considerations. The International Agency for Research on Cancer established that there is sufficient evidence to class alcoholic drinks, betel quid, tobacco smoking, radiation (X/γ ray), and body fatness as carcinogenic agents, and that dry cleaning, rubber production, pickled vegetables, hot drinks, and tetrachloroethylene are agents with limited evidence for EC worldwide.[16] Asia varies greatly in geography and cultures, and etiologic research in Asia has provided is evidence of population groups with increased exposure to EC. The highest incidence of and mortality from EC are found in East and Central Asia countries, extending from China and Mongolia to Central Asia,[17] and nearly 90% of EC cases in Asia are of the squamous cell carcinoma (SCC) type. This area is along the path of the Silk Road, therefore some researchers believe that the genes transmitted along this path are closely related to the high incidence of EC.[18] Recent prospective cohort studies in Asia have established with slight modifications to categories to include newly emerged factors, and two recent large prospective cohort studies have established the major risk factors (Supporting Information Figure S1).[19,20] Genetic susceptibility and Genome-Wide Association studies from China and Japan have revealed genetic risk factors.[21–26] Smoking and alcohol abuse are closely related to the risk of oral squamous cell carcinoma, and studies have found that in economically developed countries, smoking and drinking are the most important influencing factors for oral squamous cell carcinoma. However, tobacco and alcohol consumption are not strong risk factors in that belt. Other studies that suggested EC risk factors in Asian populations reported heterogeneous results from retrospective or case–control studies, and from cohort studies conducted decades ago, when environmental factors and lifestyles were very different.[27–31] There are obvious differences between risk factors and survival rates. The survival rate of SCC is lower than that of adenocarcinoma, so it is necessary to conduct a detailed comparative analysis of histological differences.[32]

The EC survival rate is also closely related to the diagnosis stage, and many EC cases are diagnosed at a late stage. This means there are relatively few treatment options, so the survival rate is generally low.[33] A high MIR generally indicates a poor prognosis of EC, so for the general population a wide range of screening processes is also required.[34,35] When treating patients with precancerous lesions and early cancer, the choice is more flexible, such as low cost and less trauma. According to the relevant statistical results, the EC mortality rate in Japan is far lower than that in other countries with similar incidence rates, which is similar to Japan's economically developed and endoscopic screening program. The main purpose of this program is to screen cancer patients as early as possible and provide support and help for treatment.[36] In East Asia, the incidence rate of EC and gastric cancer (GC) has also reached a high level.[37,38] Early detection of EC is conducive to early detection of GC. The accuracy of endoscopic screening is high, but there may be related complications and the screening cost is also high, which significantly restricts its promotion and application in underdeveloped countries.[39]

To improve the EC survival rate, it is necessary to choose an appropriate treatment plan. A scientific and reasonable medical and health plan is required, along with the establishment of a scientific team of health workers to manage this information and deal with possible problems. In high-income countries, neoadjuvant radiotherapy technology has begun to receive widespread attention and has achieved significant results in improving the EC survival rate,[40] while in many LMICs the lack of radiotherapy equipment and professionals prevent such advances.[41] Expanding global access to radiotherapy is in progress and has been supported by global efforts such as the International Atomic Energy Agency's Rays of Hope Initiative and World Health Organization programs.[42] Novel immunotherapy therapeutic agents have provided new way forward for EC therapy and there are promising results for new EC chemotherapy treatments.[43,44] A high proportion of patients are recruited in Asia, while the majority are from China.[45–48] Taking this into account, future work should pay more attention to the treatment of severe cases in other parts of Asia and the inequality in survival of patients in areas with poor treatment programs. It is necessary to select the national essential medicine list for EC in Asian countries.[49,50]

High-quality evidence plays an important role in supporting the formulation of nursing plans for such patients. However, investigations have found that in many Asian countries with high EC incidence rates, the quality of the relevant research evidence is not high and there is little of it. A comparison of published results and clinical trials in countries with the heaviest EC burden in Asia is shown in Figure 5. [Correction added on 22 March 2023, after first online publication: the citation for 'Figure S2' was amended to 'Figure 5'. Figure S2 has also been removed from the Supporting information section.] This demonstrates that measures should be taken to increase the participation of Asian EC patients in clinical trials to ensure that reasonable treatment can be obtained. At the same time, clinical trials should be carried out to compare and analyze data related to pharmacogenomics, therapeutic efficacy and toxicity to formulate specific treatment plans for different types of patients. EC is the main cause of cancer death. Comparative analysis shows that the incidence of EC in Asian countries is high, so there are certain advantages in clinical patient data registration. However, most of the current research in this field is based on data from developed countries and the results may not be applicable to underdeveloped countries. It is therefore necessary to carry out population-based cancer registration and innovative therapy research in underdeveloped countries, and collect and statistically analyze the resulting patient data in detail to provide support for the formulation of scientific treatment plans.[51,52] [Correction added on 22 March 2023, after first online publication: in the preceding sentence, the citation for 'Figure 5' has been removed.]

This study has the following limitations. In practical work, the availability constraints of the monitoring system mean it should be used with caution, and the accuracy of

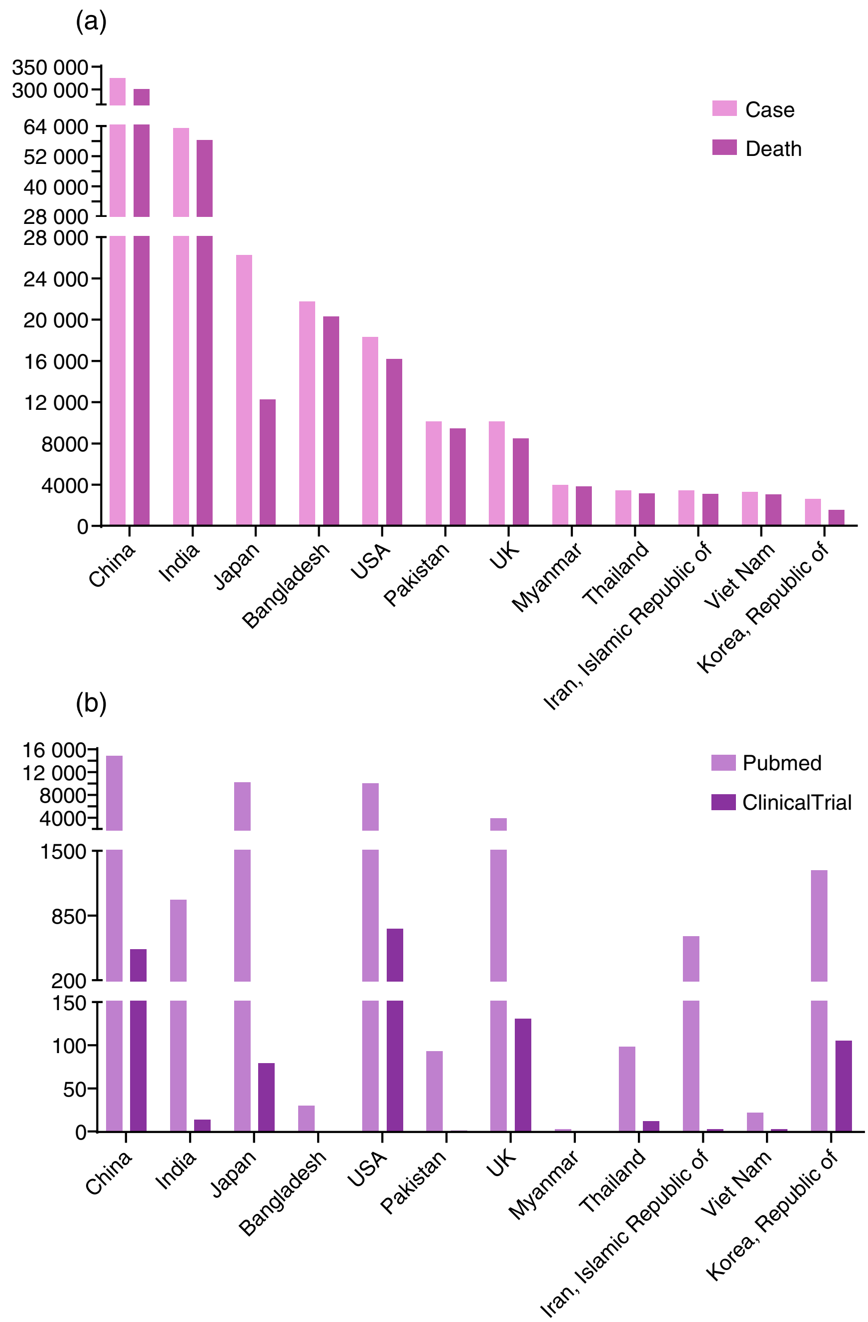

FIGURE 5 Esophageal cancer (EC) research in the heaviest EC burden countries in Asia. (a) The top 10 Asian countries with the highest estimated number of EC cases and deaths in 2020. (b) The number of publications related to EC from PubMed and the number of EC clinical trials registered on clinicaltrail.gov by September 2022.

some LMIC estimates is low. The research data also did not include the impact of COVID-19 on cancer diagnosis, which reduced the reference of the obtained results.[53,54] When predicting the burden of EC in 2040, the changing factors of background incidence rate in the process of time change were not taken into account, and only population growth and aging factors were considered. Finally, the cancer registry data collected in the research process are from countries where data can be collected, and it is not clear if there is heterogeneity in these countries' data.

This study comprehensively discussed the issues of the EC burden in Asia, compared and analyzed the geographical differences of EC incidence rates in Asian countries in 2020, and predicted the future development trend of EC. The results provide support for the governments to estimate the burden of EC in Asia, and also serve as a reference for the formulation of cancer control programs. The Asian region has the highest EC incidence rate in the world, so it is of great practical significance to select this region for research. In the future, we should also study epidemiology and clinical treatment, increase investment in EC control and primary prevention, and scientifically control the main EC risk factors.

AUTHOR CONTRIBUTION

HZ, ZW, BD, KZ planed the study. HZ, ZW, BD, MM, HW collected data. HZ, ZW, BD, KC, HW, YT analysed the data. All authors worte the manuscript. All authors approved the manuscript.

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CONFLICT OF INTEREST STATEMENT

None.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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