

Burden of Skin and Subcutaneous Diseases in Indonesia 1990 to 2019

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Skin and subcutaneous diseases place a significant burden on people of all ages and socioeconomic backgrounds in Asia and may have a significant impact on the quality of life of patients. The burden of diseases within the Asian population vary between countries, especially in countries in the Southeast Asian region, which are reported to have emerging infectious diseases. Furthermore, the burden of skin diseases varies greatly regarding socioeconomic and geographical distributions. It is crucial that efforts to reduce the burden of skin diseases are country-specific (1).

Indonesia, as the world's largest island nation (approximately 6,000 inhabited islands) and the fourth most populated country, lacks studies on the quantitative impact of skin diseases, more specifically the epidemiology and burden of skin diseases at the regional level (1–3). By focusing on the Indonesian population, the burden of skin and subcutaneous diseases can be explored from a tropical country's perspective. Moreover, skin diseases associated with neglected tropical diseases have become an even bigger problem since the emergence of COVID-19 (SARS-CoV-2) and need to be reviewed as a major public health problem in Indonesia (2, 4).

Interventions aimed at skin and subcutaneous diseases should be directed to areas with high disability-adjusted life years (DALYs). Reviewing the DALYs of skin and subcutaneous diseases over time is useful as a guide in healthcare planning, identifying root causes, improving health disparities, and even initiating action at the policy-maker level (1).

This observational study aimed to assess the regional burden of skin and subcutaneous diseases in Indonesia by trend analysis of the burden, in DALYs, of skin diseases in Indonesia from 1990 to 2019 (Fig. 1 and Fig. S1).

MATERIALS AND METHODS

This cohort study comprised a secondary data analysis of the Global Burden of Disease Study 2019 (GBD 2019). GBD 2019 was used to obtain data on DALYs of skin and subcutaneous diseases in Indonesia from 1990 to 2019. The data collection methods of GBD are explained in detail in the GBD 2019 publication (5). For this study, the selected disease categories were acne vulgaris, alopecia areata, atopic dermatitis, cellulitis, contact dermatitis, decubitus ulcer, fungal skin diseases, leprosy, malignant skin melanoma, non-melanoma skin cancer (basal cell carcinoma), non-melanoma skin cancer (squamous cell carcinoma), pruritus, psoriasis, pyoderma, scabies, seborrhoeic dermatitis, urticaria, viral skin diseases, and other skin and subcutaneous diseases, each

selected with the consideration of the data availability. Other skin and subcutaneous diseases classified various skin conditions that are less common or lack data availability (Table S1). Neglected tropical diseases with cutaneous manifestations were also included because Indonesia is heavily burdened by tropical diseases (6).

DISCUSSION

Skin and subcutaneous diseases were the fourth largest cause of non-fatal disease burden and disability worldwide in 2010 and 2013 (7). In 2016, skin diseases were known to be one of the 3 leading diseases contributing to DALYs for the age group 5–14 and 10–19 years in Indonesia (8). These data showed the significant impact of skin and subcutaneous diseases burden worldwide.

DALY rates varied in every province and can be affected by numerous factors, such as socioeconomic status, access and quality of dermatological care, insurance coverage, public health screening and prevention programmes, demographic characteristics, migration patterns, weather and climate, and environmental exposures (9). The need for targeted interventions in regional and provincial levels to manage health inequality is justified by large disparities in DALYs despite the establishment of national health insurance (10).

Differences in age-standardized DALY rates between men and women were significant in several diseases. Skin cancers were found to have higher DALY rates in men than women, which may be associated with poor sun-protective behaviours (sunscreen application, wearing wide brim hats, limiting outdoor activity, and seeking shade), outdoor work, delayed screening and diagnosis, and less concern about recurrence (9).

Indonesia was also faced with the problem of neglected tropical diseases. Skin-associated tropical diseases can cause disability, disfigurement, stigmatization, and other socioeconomic problems (6). Diseases observed in the neglected tropical diseases category were scabies, leprosy, and fungal skin diseases. Each disease had a very different impact on the population compared with the other neglected tropical diseases. Scabies was observed to have the second highest DALY rate, followed by fungal skin diseases on the fourth highest DALY rate, while leprosy's DALY rates were on the lowest 5 rank across the years (Table SII). The progress of each neglected tropical disease was widely different; therefore interventions unique to each disease and disease group are necessary to achieve the desired outcome in every disease (6).

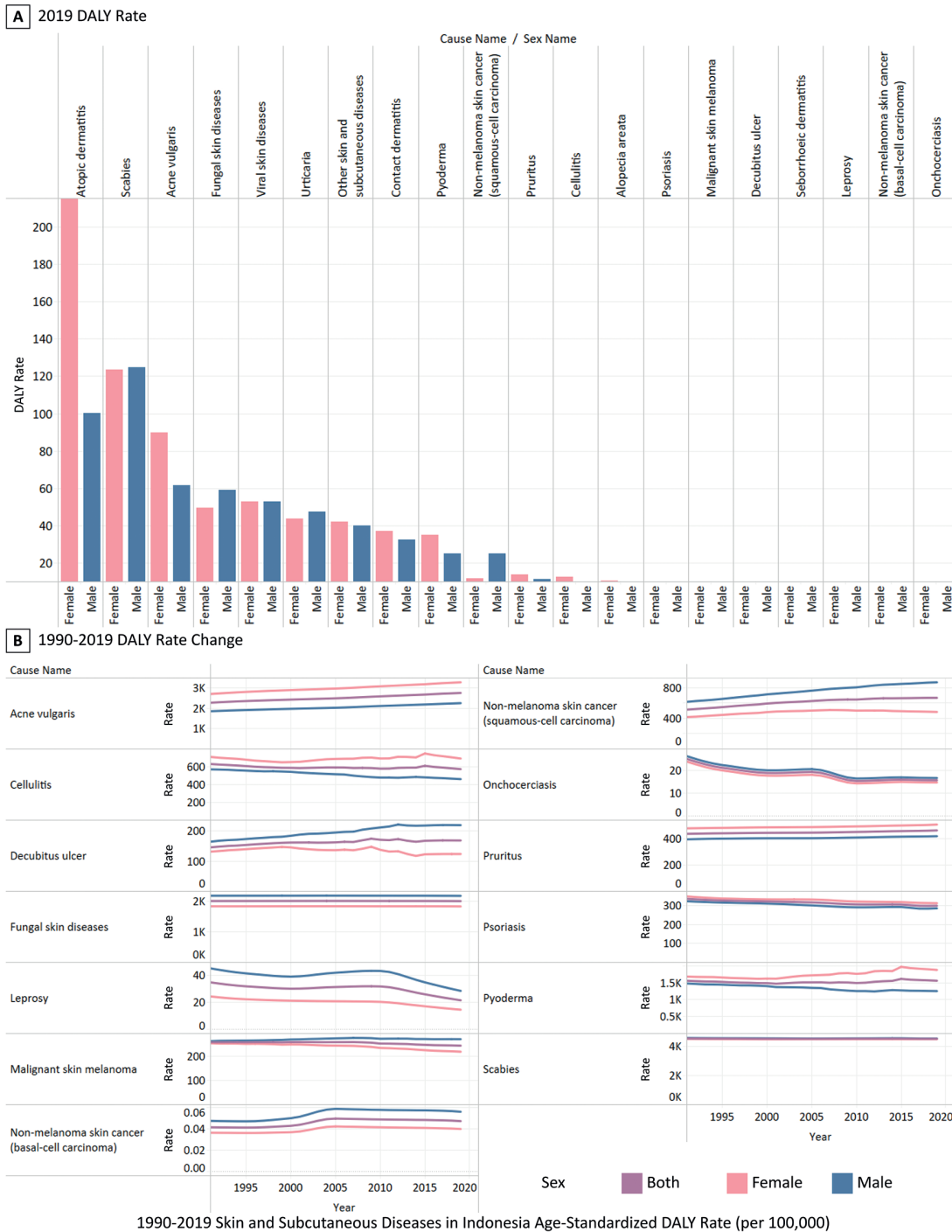


Fig. 1. Age-standardized disability-adjusted life year (DALY) rate (per 100,000) for selected skin and subcutaneous disease subcategories by sex in Indonesia. (A) DALY rate in 2019. (B) Change in DALY rate from 1990 to 2019.

Papua had the highest burden of skin and subcutaneous diseases in the country. Poorer health outcomes may be associated with poorer economic status (11). Papua has a low socioeconomic status, from having the highest percentage of urban slum households, the lowest percentage of decent sanitation access, and the fifth lowest access to decent and sustainable drinking water services (12). The lack of decent living standards, sanitation, and clean

water greatly affected health outcomes and is associated with poor health (7).

These results have implications for public health officials and medical professionals to better understand the overall health status and disease burden in Indonesia. Differences were also found in health burdens between provinces, highlighting the need for integrated policies at the provincial and district levels to close the gaps in

health outcomes. Improving the quality, reliability, and availability of data at the provincial levels is necessary to increase the accuracy and usefulness of health estimates in addressing health inequalities. Targeted interventions can be developed by examining health variations within provinces at finer geospatial levels (10). Dermatoses with the highest burden in each area (Table SII) should be the main focus of interventions (7). The current study helps identify gaps in dermatology disease conditions and will further reinforce health priority decisions and public policy efforts in Indonesia.

Since it is part of the GBD study, all of the limitations of the GBD methodology affected this study (10). This study was limited by the availability of the latest data, as the data source only provided data up to 2019. The accuracy of the estimates depends on the availability of data by period. The sparsity of data on numerous skin and subcutaneous diseases showed inadequate data reporting and deficiencies in the implementation of the healthcare database in Indonesia, which can alter the DALY rates (9).

In conclusion, the burden of skin and subcutaneous diseases in Indonesia varies by geographical and sex distribution. Gaps in medical interventions for different diseases still exist. Access to healthcare is also an important aspect in controlling the burden of diseases. Provinces in Indonesia had different socioeconomic backgrounds that differently affected the health focus; therefore, interventions should be tailored to the unique geographical and socioeconomic varieties of each province, in order to tackle inequalities at the regional level. Data reporting on skin and subcutaneous diseases in Indonesia was still inadequate and needs to be improved to increase the accuracy and usefulness of health estimates.

The authors have no conflicts of interest to declare.

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