Chapter 2.3 - Disease Burden: Generating Evidence, Guiding Policy

Hello and welcome to this podcast in our audio series for the *WHO Guidance on Research Methods for Health Emergency and Disaster Risk Management*. My name is Shuhei Nomura and I'm one of the authors of Chapter 2.3 - titled *Disease Burden: Generating Evidence, Guiding Policy.* Over the next few minutes, I'll introduce you to the burden of disease concept and its relevance to Health EDRM.

Burden of disease is a framework to quantify and compare population health. The concept allows comparisons to be made between health losses due to mortality and disability and those due to different diseases or injuries. This is done using the disability-adjusted life year, or DALY, which is a summary measure of both mortality and disability. DALYs can be used to determine which diseases and injuries make the greatest contribution to health loss within a population group at a given time. They are also useful for understanding key health problems and prioritizing policy concerns.

DALYs measure the difference between the actual situation and an ideal situation where everyone lives to the standard life expectancy and is in perfect health. In a hazard context, DALY's include direct effects, such as injuries or death, and indirect health effects, such as the impacts of hazards on deteriorating health resources and social capital. One DALY represents one year of healthy life lost because of disease or injury. DALYs can be calculated as the sum of Years of Life Lost, or YLL, and Years Lived with Disability, or YLD. When calculated for different socioeconomic groups or geographic areas, a DALY provides an important perspective on the effects of emergencies and disasters, making it a valuable tool for Health EDRM policy and decision-making.

A substantial source of information on DALYs is the Global Burden of Disease report, or GBD, which is produced by a global network of more than 8,000 collaborators from low- and middle-income countries. The GBD synthesizes various data sources to estimate the burden of disease and GBD 2019 assessed more than 200 countries using DALYs to calculate the impact of diseases and injuries from 1990 to 2019.

The data from GBD can be used to apply the burden of disease concept in Health EDRM, and we used the Great East Japan Earthquake of March 2011 as a relevant case study for this in the chapter. This magnitude 9.0 earthquake and the resulting tsunami killed more than 16,000 people. The Miyagi Prefecture had the greatest number of fatalities, accounting for 60% of total deaths due to the tsunami. When studying the impact of the disaster, it was noted that people aged 90 years and above had the highest mortality rates, which was 5 to 10 times higher than for people under 50. However, when measured using DALYs, the burden of the disaster was found to be highest in children under 5 years of age, followed by older age groups. These findings illustrate the importance of using DALYs rather than simply mortality rates to capture the magnitude of health losses due to a particular cause, such as a major health emergency or disaster.

Thanks for listening to this brief introduction of Chapter 2.3. If you would like to find out more about the burden of disease concept, please do read this chapter, which can be accessed for free on the WHO Knowledge Hub website. Thank you and goodbye for now.