

# Data Issues in the Study of Non-Communicable Disease Risk Factors Among Youth in Low and Middle Income Countries

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## Introduction

In 2011, the United Nations hosted its second ever high-level Summit for Heads of State on a health-related topic: the global epidemic of chronic non-communicable diseases (NCDs). The World Health Organization has set its sights on four main NCDs – cardiovascular diseases, cancers, diabetes and chronic respiratory diseases – which are all related to four main modifiable risk factors: tobacco use, insufficient physical activity, harmful use of alcohol and unhealthy diet.<sup>1</sup> In June, 2011, the World Health Assembly adopted the first ever global target on chronic disease: to reduce by 25% premature mortality from NCDs by 2025.<sup>2</sup>

NCDs cause almost two thirds of deaths globally, and are a major contributor to poor health and morbidity.<sup>3</sup> Due to the widespread reach of the tobacco and processed food industries, urbanization and increasingly sedentary lifestyles, NCDs are not only a public health concern in the rich developed world, but increasingly in poorer nations.<sup>4</sup> Low- and middle-income countries (LMICs) experienced 80% – or 36 million – of the 57 million global NCD deaths in 2008. Both morbidity and mortality from chronic diseases occur earlier in developing countries, reducing productivity and threatening recent gains in health and development indicators (Figure 1).

And chronic disease is pricy. It can require expensive treatments (e.g. cancer drugs) and/or long-term management of diseases (e.g. diabetes care), characteristics that beg the public health community to focus on prevention. Indeed, the World Bank estimates that half of the NCD burden could be avoided with a focus on health promotion and disease prevention.<sup>5</sup> This is where a focus on youth can help. Educating young people about what constitutes nutritious food and an active lifestyle and then enabling them to consume a healthy diet, take part in sports activities, and live in a safe and sustainable environment has the potential to avert billions of dollars in spending on chronic diseases further down the road.<sup>6</sup> A focus on youth is also important because adolescence is the time during which NCD risk behaviors develop and solidify; the longer they go unaddressed, the harder they are to change.

But the public health community must first know in which countries, communities, schools – in short *where* – to focus its efforts. Where are the levels of overweight among teenagers the highest? What types of environments best encourage physical activity? In which countries do adolescents start smoking the earliest? Where are levels of underage drinking highest? To answer these questions we need data and surveillance on NCD risk factors in youth and adolescents.

## Data Issues

Data on NCD risk factors in youth and adolescents are only available for some countries and the available data are uneven, making comparative and trend analyses a challenge. Given the public health community's emphasis on sexual and reproductive issues when dealing with adolescent health, it is not surprising that most data on adolescents (aged 10-19) and youth (aged 15-24)<sup>7</sup> maintain that focus. We present here some issues that arose during a large-scale data compilation exercise we conducted on the current status of NCD risk factors among youth in Latin America and the Caribbean.<sup>8</sup> We find that even when data are collected on NCDs and their risk factors, they may not be publicly available. Publicly available data may not be

standardized. Standardized data may not be nationally representative, and nationally representative data may already be out of date or have too small a sample size to be reliable.

For example, the Global School-Based Student Health Survey (GSHS) is one of the only surveys in LMICs to provide information on 13-15 year olds' alcohol use, dietary behaviors, physical activity, and tobacco use, among other health behaviors (Table 1).<sup>9</sup> However, out of the 90 countries that developed questionnaires, only 73 collected data and for only 44 countries is that data publicly available.<sup>10</sup> Where data are available, some of the survey contents are country-specific, thus, making cross-country comparisons a challenge. For example, the Guatemala survey contains no questions on tobacco use. And although some surveys were carried out throughout the country and provide weighting schemes to ensure representativeness, others, like those from Venezuela and Colombia only collected data in select cities or provinces and are therefore not representative. Finally, most recent data collection in some of the countries was conducted as early as 2004; those 13-15 year-olds may already now have children of their own.

More generally, the use of different age ranges and survey content make comparability across studies, contexts and countries challenging. The GSHS focuses on ages 13-15 but the Demographic and Health Surveys, which contain information on tobacco use, body mass index, and in some cases alcohol use, starts data collection at age 15. Finally, since some adolescents are not enrolled in school or do not attend school regularly, the use of school-based sampling does not result in representative sample of adolescents.

Much of the data on behavioral NCD risk factors in young people is also elicited through self-report, a method well known to result in misreporting and other reliability and validity concerns.<sup>11</sup> Ensuring data confidentiality is critical to reducing underreporting of risk behaviors in youth. Using short time frames in which respondents are asked to recall their behaviors can also help. There are multiple ways to collect information on tobacco use, for example, such as any consumption in the last 7 or 30 days, average number of cigarettes smoked per day, type of tobacco consumed, etc. Direct measurements can clearly improve the accuracy of data collection, but are currently only feasible for a limited number of risk factors, such as height and weight.

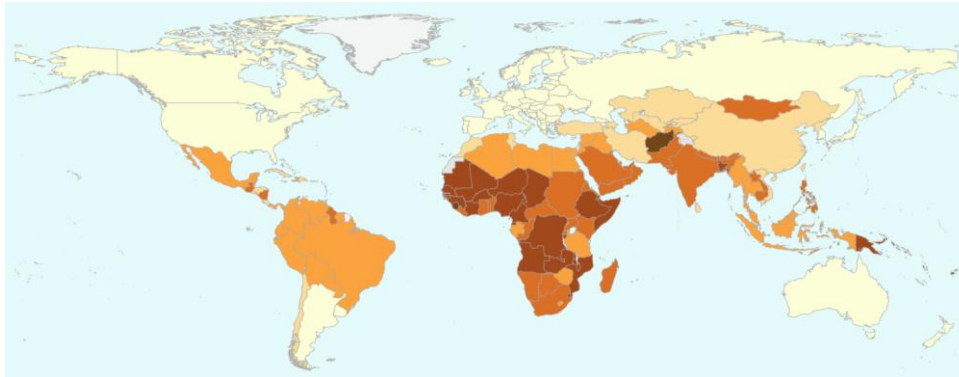
Complex gender differentials in physical activity are often overlooked as well. The STEPS Survey by the World Health Organization is one of the few data sources on NCD risk factors to report overall physical activity levels by first collecting data on physical activity broken down by its purpose and location: vigorous or moderate exercise at work, as a leisure activity, or as a mode of travel, e.g. biking or walking (Figure 2).<sup>12</sup> More detailed measurement like this as well as improved consistency in the use of current measures is sorely needed. One pioneer initiative is the Global Adult Tobacco Survey (GATS), which surveys adults age 15 and above, employs detailed standardized questionnaires, asking about a range of characteristics of users and products used, and has as its sampling frame over half of the world's population!<sup>13</sup>

## **Conclusions**

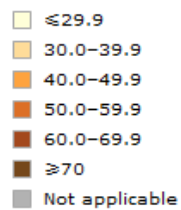
A stronger focus on standardized data collection and surveillance for NCD risk factors among youth in developing countries is essential for understanding NCD risk and disease burden and for developing policies and programs to reduce future chronic disease levels. Some Arab countries have met the challenge, having already begun collecting standardized anthropometric measurements, physical activity, sedentary behavior, sleep duration, and dietary habits as part of the Arab Teens Lifestyle Study (ATLS). They intend for the survey to enable the development of evidence-based "public health policies and regional strategies for health promotion and disease prevention".<sup>14</sup> Indeed, given the high and rising levels of NCDs in LMICs and the

role of youth in prevention, it is essential that researchers and policymakers have robust tools to assess risk, promote resilience, and develop and evaluate rigorous interventions.

**Figure 1. A high proportion of NCD deaths are premature (under age 70) in low and middle income countries**



Legend (proportion of NCD deaths that are premature):



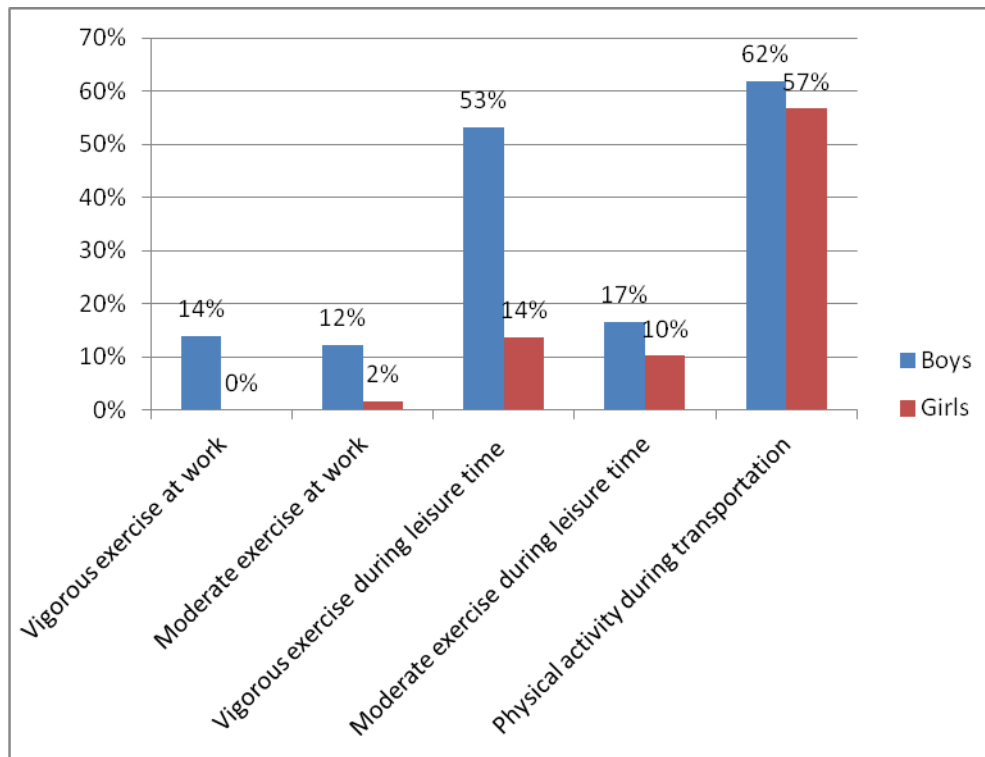
**Source:** World Health Organization. Global Health Observatory. Accessible at [http://www.who.int/gho/ncd/mortality\\_morbidity/ncd\\_premature/en/index.html](http://www.who.int/gho/ncd/mortality_morbidity/ncd_premature/en/index.html)

**Table 1. Examples of highest and lowest levels of risk factors among youth (approximately age 13-15) in select countries from the most urbanized developing region, Latin America and the Caribbean**

Country	Risk Factor						
	% who had any alcoholic drink in the past month		% using cigarettes or other tobacco product at least once in past month		% overweight or obese (BMI of 25 or higher)	% students NOT physically active for 60 min or more/day on at least 5 days a week	
	Boys	Girls	Boys	Girls	Girls	Boys	Girls
Argentina	47.8	45.3	26.1	29.7	19.9	70.8	85.1
Brazil	No data	No data	17.2	15.7	21.6	43.8	68.7
Chile	35.6	35.5	29.8	39.8	26.7	72.6	87.4
Costa Rica	18.6	19.2	15.9	13.1	No data	64.1	81.0
Venezuela	19.9	16.2	15.3	13.9	No data	86.0	94.9

**Source:** *Noncommunicable Diseases in Latin America and the Caribbean: Youth are Key to Prevention 2013*. Population Reference Bureau. Washington, DC.

**Figure 2. Large differences in type and location of physical activity among girls and boys age 15-24 in Santander, Colombia**



**Source:** Secretaría de Salud de Santander y Observatorio de Salud Pública de Santander. 2011. Factores de riesgo para enfermedad crónicas en Santander, método STEPwise. Santander, Colombia

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