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1 **Maximizing Use of Available Population-Based Data on Cardiometabolic Diseases**

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36 The absolute worldwide burden of adult cardiometabolic diseases such as hypertension,  
37 diabetes, obesity, and dyslipidemia continues its relentless ascent. Scaling up the prevention,  
38 management, and control of cardiometabolic diseases is cost-effective but requires strong  
39 health systems.<sup>14</sup> Building these strong health systems requires data that are accurate, timely,  
40 and transparent, as we have previously argued in this journal.<sup>2</sup> In particular, data from high-  
41 quality population-based surveys are critical, as they reflect the spectrum of community-dwelling  
42 adults in a particular geography, including those who are not reached by the health system.

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44 There of late, there has been tremendous progress in making population-based survey data  
45 available for cardiometabolic diseases. Emblematic of this has been the release in 2018 of the  
46 World Health Organization (WHO) Noncommunicable Disease (NCD) Microdata Repository.<sup>3</sup>  
47 This hosts over 130 surveys conducted using the STEPwise approach to NCD surveillance  
48 (STEPS) methodology that are now available after to users who submit a brief application. Most  
49 STEPS surveys are conducted in low- and middle-income countries (LMICs) where a majority of  
50 the cardiometabolic disease burden occurs. Thus, this resource fills a critical gap in openly  
51 accessible population-based survey data on cardiometabolic risk factors and health care access  
52 in these settings.

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54 Yet, there is more work to be done. The availability of population-based data, while necessary,  
55 is insufficient by itself to ensure their effective use to shape programs, strategies, and policies  
56 addressing cardiometabolic diseases. In this Comment, we highlight three other crucial actions  
57 needed to maximize the use of population data: harmonization, alignment with monitoring  
58 indicators to benchmark health system performance, and capacity-building initiatives to  
59 democratize data use.

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61 Our perspective is informed by our experience in the Global Health and Population Project on  
62 Access to Care for Cardiometabolic diseases (HPACC), an international research consortium  
63 with collaborators in more than 30 countries. ~~HPACC has created a dynamic repository of~~  
64 ~~harmonized, nationally representative survey data currently~~ representing 1.3 million individuals  
65 ~~in more than 75 LMICs (including more than 50 STEPS surveys.)~~ ~~to address questions of~~  
66 ~~relevance to health system planning and evaluation for cardiometabolic diseases.~~

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68 First, while population-based data ~~can and~~ should be used at the national level, these data also  
69 should be harmonized to maximize its use by international advocacy organizations,  
70 policymakers, and researchers. Harmonization refers to the process of bringing together distinct  
71 data sources into a single comparable format. Harmonized survey data are available in the area  
72 of maternal and child health<sup>4</sup> but no such resource exists for cardiometabolic diseases. Such  
73 harmonized data allows for assessing health system effectiveness ~~and responsiveness~~, as our  
74 study of the state of hypertension care in 44 LMICs illustrates.<sup>55</sup> ~~Harmonization also~~ provides  
75 larger and more diverse samples, giving added power to study variations in cardiometabolic risk  
76 factors, including biological measures such as blood glucose and behavioral risk factors such as  
77 physical activity and diet. Understanding these variations is important, as it cannot be assumed  
78 that epidemiologic patterns of clinical relevance observed in well-studied high-income countries  
79 will be conserved in LMICs. Indeed, we have found that the association between diabetes and  
80 body mass index (BMI) is highly variable across world regions, implying that BMI thresholds  
81 generated using European or North American data cannot simply be applied ~~elsewhere in other~~  
82 ~~world regions.~~<sup>6</sup> ~~Harmonization also allows for the construction of sophisticated clinical and policy~~  
83 ~~models for the prevention, treatment, and control of cardiometabolic diseases.~~<sup>1,76</sup> Importantly, to  
84 ensure that data are useful for cross-country comparisons, prior to data collection, time should  
85 be spent ensuring survey instruments and data collection are standardized and aligned with the  
86 highest priority global health metrics.

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88 Second, population data on cardiometabolic diseases should be harnessed to benchmark and  
89 monitor health system performance. At present, these data are underutilized for this purpose.

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90 Harmonized data from STEPS and ~~similar non-STEP~~ surveys can reveal progress on  
91 monitoring indicators in the NCD Global Monitoring Framework<sup>7</sup> and inform new targets such as  
92 those proposed by the WHO Global Diabetes Compact, a recently established initiative to  
93 improve global diabetes care.<sup>88</sup> To show global variation in health system performance,

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94 harmonized data ideally should include not only LMICs but also high-income countries, though  
95 unfortunately data from high-income countries are currently less available.

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97 Third, given limited research capacity in many LMICs, there is a need to build capacity to ensure  
98 the wide usability of population data on cardiometabolic diseases, ~~most especially~~ by those who  
99 have collected it. Local researchers—especially those in LMICs—who design and conduct  
100 surveys should be empowered to use harmonized data to answer their policy-relevant  
101 questions, conduct independent analyses, and publish in lead-author roles.<sup>9</sup> In addition to this  
102 being a step towards decolonialization of global health, these collaborators add critical  
103 contextual interpretation that may not be fully perceived or appreciated by those outside their  
104 settings.

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106 While we focus on maximizing use of available population data on cardiometabolic diseases, it  
107 is important to continue data-sharing efforts. Many STEPS and comparable ~~non-STEP~~  
108 household surveys remain unavailable, as are more than two dozen nationally representative  
109 health facility surveys conducted using the WHO Service Availability Readiness Assessment  
110 (SARA) methodology.<sup>10</sup> Additionally, many other data sources, for example, from subnational  
111 research studies, remain inaccessible. Finally, cardiometabolic disease epidemiology is rapidly  
112 evolving, but data are often historical. As ~~is done~~ for HIV, data collection for cardiometabolic

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113 diseases needs to be ongoing to assess temporal trends in disease prevalence and health  
114 system performance.

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116 The staggering burden of cardiometabolic diseases brings ~~with it~~ an imperative to maximize the

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117 use of ~~these~~ data. Many ~~countries and individuals~~ LMICs already have invested substantial

118 resources in producing these ~~data~~, which are a global public good. However, while they are

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119 increasingly available, in practice, ~~they~~ ~~these data~~ are still too sparse and underutilized given the

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120 toll these diseases are taking on people worldwide. We call on funders and international health

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121 organizations to invest in efforts to collect, harmonize and make available these data with an

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122 urgency befitting the magnitude of the global burden of cardiometabolic diseases.

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