Social Science & Medicine 97 (2013) 307–315

Contents lists available at SciVerse ScienceDirect

Social Science & Medicine

journal homepage: www.elsevier.com/locate/socscimed

Screening for developmental disabilities in developing countries

Marc H. Bornstein*, Charlene Hendricks

Child and Family Research, Eunice Kennedy Shriver National Institute of Child Health and Human Development, National Institutes of Health, Public Health Service, USA

ARTICLE INFO

Article history:
Available online 14 December 2012

Keywords:
Child development
Developmental disabilities
Developing countries
Risk factors
Policy making
Human development index

ABSTRACT

Despite waxing international interest in child disability, little information exists about the situation of children with disabilities in developing countries. Using a culture-free screen for child disability from the 2005–2007 Multiple Indicator Cluster Survey, this study reports percentages of children in 16 developing countries who screened positive for cognitive, language, sensory, and motor disabilities, covariation among disabilities, deviation contrasts that compare each country to the overall effect of country (including effects of age and gender and their interactions), and associations of disabilities with the Human Development Index. Developmental disabilities vary by child age and country, and younger children in developing countries with lower standards of living are more likely to screen positive for disabilities. The discussion of these findings revolves around research and policy implications.

Published by Elsevier Ltd.

Introduction

Early childhood is a critical period in ontogeny, and early physical, cognitive, and socioemotional growth constitute foundations of future development. In consequence, disabilities sustained in early childhood can have lasting effects. In this study, we investigate four domains of developmental disabilities in under-researched and underserved populations in developing countries, paying special attention to their distributions by child age.

Developmental disability

The UN Convention on the Rights of Persons with Disabilities (UN CRPD) defines disabilities as "long-term physical, mental, intellectual or sensory impairments which in interaction with various barriers may hinder [a person's] full and effective participation in society on an equal basis with others" (United Nations Enable, 2009a, 2009b). Thus, developmental disabilities are impairments to functioning attributable to physical and/or mental delays or deficiencies usually beginning in early life (Leonardi et al., 2006). Moreover, the International Classification of Functioning, Disability and Health (ICF) regards disability as an interaction between individual health conditions or abilities and contextual factors, such as national setting and cultural constructions of disability (WHO, 2002). In some developed Western societies like the United States and the United Kingdom, legislation, such as the Americans with Disabilities Act (P.L. 101-336) and the Equality Act 2010, respectively, make it unlawful to discriminate against, and call for community inclusion and self-determination of, people with disabilities. In other developed countries like South Korea, the concept of disability is still emerging (Jung, 2007). From a broader international perspective, disability appears to depend importantly on its social and economic contexts.

International efforts to obtain reliable information and inform policy specific to persons with disabilities were enacted in 2008 with UN CRPD (www.un.org/disabilities). People with developmental disabilities are believed to approximate 1.4% worldwide, with 80% living in the developing world (WHO, 2006). Thus, upwards of 93 million children 0–14 years are estimated to have moderate to severe disabilities, and 200 million children are believed to be cognitively or socioemotionally delayed (WHO, 2011). However, estimates of the prevalence of children with disabilities vary widely depending on definition and measurement standards. Moreover, the prevalence of developmental disabilities is likely to be higher where poverty and deprivation are common (UK Secretary of State for Health, 2001). The prevalence of child disabilities in low- and middle-income countries (LMIC) varies from 0.4% to 12.7% depending on the study and assessment tool (Maulik & Darmstadt, 2007). However, such estimates are founded on scarce and poor quality data. Identifying and characterizing disability in LMIC is challenging due to the lack of cultural and

* Corresponding author. Child and Family Research, *Eunice Kennedy Shriver* National Institute of Child Health and Human Development, Suite 8030, 6705 Rockledge Drive, Bethesda, MD 20892-7971, USA. Tel.: +1 301 496 6832; fax: +1 301 496 2766.
E-mail address: Marc_H_Bornstein@nih.gov (M.H. Bornstein).

0277-9536/$ – see front matter Published by Elsevier Ltd.
http://dx.doi.org/10.1016/j.socscimed.2012.09.049

language-specific tools for assessment (Hartley & Newton, 2009), and so accurate data on disability especially in the developing world are lacking (WHO, 2011).

Consequently, most of what is currently known about developmental disabilities comes from studies of children in the developed world, and much of what is known from developing countries comes from studies of small samples in single locales. However, nearly 90% of the world's children reside in LMIC (UNICEF, 2008). Standardized and population-based multinational data from the developing world are needed to identify countries where children are at greatest risk and which domains of development are broadly susceptible to disabilities in children of different ages in those countries. The results promise to leverage better-informed national and global policies for early childhood disabilities.

Country-level development and developmental disability

Disability is linked to poverty: disability may increase the risk of poverty, and poverty may increase the risk of disability (Sen, 2009). People with disabilities and their families often experience economic and social disadvantage. A study of 56 developing countries reported that the poor generally experience worse health than the non-poor (Gwatkin et al., 2007). The *Young Lives* project, a multi-national longitudinal study of child poverty, revealed that children living in low-resource contexts tend to exhibit high rates of cognitive and socioemotional impairments (Dercon & Krishnan, 2009). Thus, the context within which a developmental disability occurs shapes its attribution and outcome, and a person's environment impacts the experience and extent of disability. A child with a cognitive disability in one context might have a poor long-term outcome, whereas a child with the same disability in another context might fare better. Although a learning (cognitive) disability constitutes a developmental risk, the significance and meaning of the risk depend on contextual factors (Morrison & Cosden, 1997). The nations investigated in this study all constitute developing countries (UNICEF, 2006), defined with reference to the World Bank's system of classification of economies based on gross national incomes (GNI) per capita, quality of life (life expectancy, literacy rates), and economic diversification (labor force, consumption).

The multiple indicator cluster survey, disabilities module, and ten questions screen

The World Summit for Children held in 1990 adopted the World Declaration on the Survival, Protection and Development of Children and its Plan of Action. In response, UNICEF developed the Multiple Indicator Cluster Survey (MICS; http://www.childinfo.org/mics3.html), a nationally representative and internationally comparable household survey of standardized methods and questions (among other things) to collect comparable health data on children in LMIC around the world (UNICEF, 2006).

UNICEF recognized that unique efforts would need to be made for children with disabilities in their State of the World's Children Report (UNICEF, 2005). To address this need, UNICEF recommended inclusion of a disabilities module, the Ten Questions Screen (TQS), in the MICS. The TQS was originally developed as part of the International Pilot Study of Severe Childhood Disability (Belmont, 1986) and designed to be applicable across cultural settings (Durkin et al., 1995; Thorburn et al., 1992; Zaman et al., 1990). The TQS is a relatively easy, inexpensive, culture-free screening instrument to provide robust, comparable, and multidomain data on young children with developmental disabilities or delays. The MICS can also be seen as part of the larger effort of the WHO ICF (2002) with disability used as one component for impairment, activity participation, and restrictions. In this framework, a child's disability is seen as an interaction between functioning and contextual factors – a shift from a medical model to a social model of disability. The goal of the TQS was to produce estimates of child disability and their associations with data related to the contextual factors in the ICF framework.

The present study analyzed internationally comparable screening information on children with cognitive, language, sensory, and motor disabilities across 16 developing countries using a standardized metric in a developmental framework that focuses on child age, on disability, and on context. Each country was compared to the overall effect (in a deviation contrast) because we were interested in the relative ordering among countries (rather than individual country contrasts). The Human Development Index was used as a measure of the social and economic status of countries to gain additional insight into associations between the prevalence of developmental disabilities across the developing world and national indicators.

Method

Participants

Approximately 172,000 families in 16 developing countries provided data. (Bosnia did not provide data for one cognitive indicator question.) If there was more than one child between the ages of 2 and 9 years in a family, we randomly selected a target child.

The sample used for analyses comprised 101,250 children, approximately equal numbers of girls and boys, averaging 5 years of age (Table 1). For full details for MICS sampling, training, and household selection see Bornstein et al. (2012).

The MICS3 and the TQS

This study used the TQS of the Household Questionnaire of the third round of the MICS (2005–2007) which asked about

Table 1
Descriptive statistics for sample characteristics.

Country		Child age (years)		Child gender
	n	*M*	SD	% Female
High HDI				
Montenegro	940	5.11	2.22	46.1
Serbia	3065	4.87	2.22	48.3
Macedonia	3266	4.49	1.93	50.5
Albania	1636	5.93	2.24	45.8
Bosnia and Herzegovina	2526	4.56	2.20	49.5
Medium HDI				
Thailand	12911	5.75	2.30	48.3
Belize	830	5.60	2.23	50.5
Jamaica	1630	5.64	2.29	47.8
Mongolia	3478	5.19	2.28	48.0
Uzbekistan	4933	5.62	2.32	48.3
Yemen	2512	5.43	2.27	48.6
Ghana	3240	5.53	2.24	48.5
Bangladesh	36987	5.50	2.25	48.6
Low HDI				
Central African Republic	6825	5.21	2.20	50.5
Sierra Leone	5308	5.46	2.17	49.6
HDI N/A				
Iraq	11163	5.45	2.32	48.0
TOTAL	101,250	5.43	2.27	48.7

Note. High HDI = 0.80–1.00, Medium HDI = 0.50–0.79, and low HDI = 0.00–0.50. N/A = not available.