

Why is suicide the leading killer of older adolescent girls?

In May and June, 2015, media outlets around the world reported a devastating new finding that shocked the public and public health researchers alike. The *Telegraph*, *Guardian*, and National Public Radio all published articles highlighting the fact that suicide had surpassed maternal mortality as the leading cause of death among girls aged 15–19 years globally.^{1–3}

These findings, which had been somewhat buried within WHO's 2014 *Health for the World's Adolescents* report, surprised many experts in global health and development. Why? The statistics expose two blind spots in global health and development: mental health and adolescent health. Although global attention toward each field is growing, data at the intersection of the two are scarce and skewed heavily towards developed country contexts. Of the 109 national health policies reviewed for the WHO report, 84% made some mention of adolescents, but only a quarter discussed mental health.⁴ Even WHO's own report on suicide, issued only months after the adolescent health report, gave scant attention to adolescents as a key affected population.⁵

Those of us working in global health must begin to shed some light on these blind spots. Improvement of vital registration and school-based and hospital-based systems and surveys would go a long way towards improving our understanding of actual epidemiological trends across regions.⁵ Are deaths from homicides, accidents, or burns misreported as suicide, or vice versa? How significant is adolescent morbidity from self-harm and suicide attempts, and why do lethality rates generally appear to be higher in low-income than in high-income settings?

New research is needed to understand the drivers of self-harm and suicide in girls across different settings, to inform programme design and policy dialogue that can ameliorate this grave situation. But the evidence we already have suggests strongly that rigid and exploitative gender norms play a harmful part. From neuroscience, we know that adolescence is a dynamic phase of brain development, profoundly modulated by environmental factors, including social determinants such as gender norms.⁶ We know that, after the onset of puberty, the risk of depressive disorders increases substantially among girls, who will remain 1.5 to 2 times more likely than boys to be diagnosed with depression,

a gap that will persist over their life course.⁶ For girls who experience victimisation in early adolescence, mental health outcomes are particularly adverse.⁷

From social science research, we understand that adolescents experience increased gender role differentiation and, in many cases, exaggerated forms of gender-based discrimination. Such discrimination can take the form of violence; sexual abuse and exploitation; limitations on reproductive control; child marriage; exclusion from education, employment, and decision making; and unequal chore burdens and caretaking responsibilities. Rigid gender norms can profoundly and negatively affect both girls and boys, but can particularly constrain girls' aspirations and opportunities.

Some links between gender-based violence and mental health have already been established. About 30% of girls aged 15–19 years around the world experience violence by a partner.⁸ A recent meta-analysis⁹ showed that women's experience of intimate partner violence was associated with increased depression and suicide attempts.

We need to understand better the relationships between adolescent mental health and sexual and reproductive health and rights. 11% of all births worldwide are among girls aged 15–19 years; almost all occur in low-income and middle-income countries, and many of them are unintended.¹⁰ In societies where access to education about sexuality, contraception, and

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Women protest against child marriage in Dhaka, Bangladesh

safe abortion are restricted, girls who become pregnant outside marriage might believe that self-harm or suicide are their only alternatives.^{11,12}

Related to the phenomenon of early pregnancy is child marriage, which affects around 40 000 girls under the age of 18 years every day.¹³ Child brides are typically removed from their families, peers, and educational opportunities, and face higher rates of unintended pregnancy, domestic violence, and sexually transmitted infections than their unmarried peers. Although few studies have assessed the mental health effects of child marriage, one study in the USA found that child marriage was associated with high rates of long-term psychiatric disorders.¹⁴

Donor funding structures and the manner in which global health is currently addressed do not support the type of cross-cutting and multidisciplinary research that is needed to truly understand and stem the scourge of suicide among adolescent girls. Funding must be made available to catalyse research, programmes, and policy dialogues addressing the many sided nature of the challenge, with a particular focus on the role that harmful gender norms might have. We need improved monitoring and documentation of suicides and suicide attempts, and greater innovation in promoting mental health among adolescents. And as we move toward a new global development agenda and a new global strategy on the health of women, children, and adolescents, we must address the full range of health needs for adolescent girls, a crucial and previously neglected population.

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We declare no competing interests.

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Spironolactone for resistant hypertension—hard to resist?

Published Online
September 21, 2015
[http://dx.doi.org/10.1016/S0140-6736\(15\)00264-0](http://dx.doi.org/10.1016/S0140-6736(15)00264-0)
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Resistant hypertension is characterised by failure to achieve a blood pressure of less than 140/90 mm Hg while on maximum tolerated doses of three different classes of antihypertensive drugs, including a diuretic appropriate for kidney function.¹ While often ascribed to medication non-adherence,² true resistant cases of hypertension are linked to non-adherence to lifestyle modifications to control blood pressure, including low sodium diet, reduced alcohol ingestion, and weight reduction.³

Several pharmacological regimens to treat such patients have inconsistent outcomes. It has been posited that

the sympathetic nervous system and excess sodium intake are the principal drivers of resistant hypertension.⁴ Despite this, targeted therapies, based on both pharmacological approaches (ie, α - β blockers) and devices (ie, renal denervation), have generated disappointing results.⁴ Other adjuvant therapies include aldosterone antagonists such as spironolactone.⁵ These drugs have a plausible physiological basis because the prevalence of hyperaldosteronism is higher than previously appreciated and the phenomenon of aldosterone so-called escape exists after long-term renin-angiotensin system blockade.⁶ Although spironolactone has proven