

Annex 18A. Methods

Supplemental material for: Reavley, N., G.C. Patton, S.M. Sawyer, E. Kennedy, and P. Azzopardi. 2017. "Health and Disease in Adolescence." In *Disease Control Priorities* (third edition), Volume 8, *Child and Adolescent Health and Development*, edited by D.A.P Bundy, N. de Silva, S. Horton, D.T. Jamison, and G.C Patton. Washington DC: World Bank.

We conducted a series of systematic reviews to assess current knowledge on the effectiveness for preventive interventions outside formal health care settings across nine areas of health: infectious and vaccine-preventable diseases, undernutrition, human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS), sexual and reproductive health, unintentional injuries, violence, physical disorders, mental disorders, and substance abuse disorders. We included both specific health outcomes and health risks. Some responses (for example, policy measures such as taxation or legislation such as gun control) are not directly targeted at young people but may have particular benefits for them compared to other age groups. Other actions target adolescents directly.

We searched the following databases from March 15 to March 30, 2015: Cumulative Index to Nursing and Allied Health Literature (CINAHL), Education Research Complete, Education Resources Information Center (ERIC), MEDLINE with Full Text, PsycINFO, and Cochrane Database of Systematic Reviews. To ensure adequate coverage of the literature and avoid duplication, we also systematically searched the websites of the World Health Organization, United Nations Children's Fund, United Nations Population Fund, the World Bank, the International Centre for Research on Women, Family Health International, and the Population Council.

Inclusion and Exclusion Criteria

The inclusion criteria were as follows:

- Review published in 2000 or later
- Synthesized results focusing on the outcomes of interest defined above
- Reported results focusing predominantly on ages 10–24 (more than 50 percent of the included interventions had to focus on this age group)
- Synthesized interventions focusing on health education and counseling, health communication, promotion of help-seeking behavior, delivery of services, and legislative or regulatory approaches.

The exclusion criteria were as follows: studies of efficacy of clinical interventions, studies of interventions not reporting health outcomes of interest, studies in languages other than English, and studies not focusing on or reporting age-disaggregated data for ages 10–24 years.

Levels of Evidence

Levels of evidence were classified according to the following criteria:

- *Mixed evidence.* Less than 50 percent of studies in systematic review show benefit
- *Some evidence.* 50 percent or more of studies show benefit
- *Significant but minimal benefit.* Meta-analysis with trivial effect size (lower limit of Hedges g or Cohen's $d = 0.1$ or OR = 1.3)
- *Significant small benefit.* Meta-analysis with small effect size (lower limit of Hedges g or Cohen's $d = 0.2$ or OR = 1.68)
- *Moderate benefit.* Meta-analysis with medium effect size (lower limit of Hedges g or Cohen's $d = 0.5$ or OR = 3.47)

- *Strong benefit.* Meta-analysis with large effect size (lower limit of Hedges g or Cohen's $d = 0.8$ or $OR = 6.71$).

Highly recommended interventions are those with at least 50 percent of review studies reporting positive outcomes. Interventions with some positive evidence not reaching this threshold have a moderate recommendation, but further research is needed. Other actions are unlikely to be effective in isolation but are recommended as part of multicomponent interventions.

Appraisal of Quality

We used the assessing the quality of systematic reviews (AMSTAR) checklist to assess the quality of systematic reviews and meta-analyses,¹ which evaluates scientific quality with 11 questions. It assigns 1 mark for “yes” and 0 marks for “no,” “can’t answer,” and “not applicable” (Shea, Grimshaw, and others 2007). However, as the AMSTAR includes questions specific to meta-analysis (questions 9 and 10), we used adjusted cut-off scores to reflect that reviews cannot be assessed on these two questions. Thus, a score of 0–3 is deemed low quality, 4–7 is deemed moderate quality, and 8–9 is deemed high quality. The AMSTAR has been shown to have excellent reliability ($R^2 = 0.96$) and construct validity (Shea, Bouter, and others 2007).

Synthesis Methods

In each health area, reviews were grouped into general themes based on their setting: legislative or structural, school, family, community, health service, media, or online. The notes were combined by first identifying the highest-quality review within a given health area and setting and elaborated into a narrative or tabulated summary according to health area. They were then compared and contrasted with findings and conclusions from the other reviews. The summaries were then reworded to reflect the reviews narratively synthesized within them. This

approach allowed us to develop an overall narrative synthesis of reviews with particular emphasis on those of higher quality.

References

- Shea, B. J., Bouter, L. M., Peterson, J., Boers, M., Andersson, N., Ortiz, Z., Ramsay, T., Bai, A., Shukla, V. K., & Grimshaw, J. M. (2007). External validation of a measurement tool to assess systematic reviews (AMSTAR). *PLoS One*, 2, e1350. doi: 10.1371/journal.pone.0001350
- Shea, B. J., Grimshaw, J. M., Wells, G. A., Boers, M., Andersson, N., Hamel, C., Porter, A. C., Tugwell, P., Moher, D., & Bouter, L. M. (2007). Development of AMSTAR: a measurement tool to assess the methodological quality of systematic reviews. *BMC Med Res Methodol*, 7, 10. doi: 10.1186/1471-2288-7-10

1. For further information, see <http://amstar.ca/>.