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Original article

Temporal Trends of Physical Fights and Physical Attacks Among Adolescents Aged 12–15 years From 30 Countries From Africa, Asia, and the Americas

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A B S T R A C T

Purpose: There is a scarcity of literature on temporal trends in physical fighting and physical attacks among the global adolescent population. Therefore, we aimed to examine these trends in a nationally representative sample of school-going adolescents aged 12–15 years from 30 countries in Africa, Asia, and the Americas, for which temporal trends of physical fighting and physical attacks are largely unknown.

Methods: Cross-sectional data from the Global School-based Student Health Survey 2003–2017 were analyzed. Self-reported data on past 12-month physical fights and physical attacks were collected. For each survey, the prevalence and 95% confidence interval of physical fights and physical attacks were calculated. Linear regression models were used to examine crude linear trends.

Results: Data on 190,493 students aged 12–15 years were analyzed [mean (standard deviation) age 13.7 (1.0) years; 48.9% boys]. The mean prevalence of past 12-month physical fight and physical attack was 36.5% and 37.2%, respectively. Significant decreasing trends in physical fights were observed in 16/30 countries, while significant increasing trends were found in 2/30 countries. For physical attacks, significant decreasing and increasing trends were observed in 13/26 and 1/26 countries, respectively. The remaining countries showed stable trends.

IMPLICATIONS AND CONTRIBUTION

This study found, among adolescents, decreasing trends in physical fighting in 16 countries, increasing trends in two, and no change in 12. Findings were similar for physical attacks. Decreasing trends are encouraging. Increasing trends in some countries highlight the need for international effort via policy and

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Discussion: It is encouraging that decreasing trends in physical fighting and physical attacks were observed across a large number of countries. However, stable trends were also common, while increasing trends also existed, suggesting that global efforts to address adolescent violence are still required.

Physical violence is defined as intentional physical force against others, which can have serious consequences such as injury or death [1,2]. Physical fighting and physical attacks are important domains of physical violence among adolescents. Physical fighting may be defined as when two or more people of about the same strength or power choose to fight each other. Physical attacks may be defined as when one or more people hit or strike another, or when one or more people hurt another with a weapon (such as a stick, knife, or gun). Although similar, it is clear that physical fighting and physical attacks are conceptually different.

Physical violence prevalence has been reported to range from 34.5% to 63.3%, depending on the country [3,4]. Such a high prevalence of physical violence among adolescents is a public health concern. For example, interpersonal violence in adolescents is a major cause of youth morbidity and mortality, and between 1990 and 2013, this accounted for approximately 4% of all deaths among those aged 10–19 years globally [5]. Moreover, physical fighting and physical attacks are associated with unhealthy behaviors such as alcohol and drug consumption [6–9]. Importantly, physical fights and physical attacks may impact the health of adolescents in different ways. For example, physical fights may be associated with greater risk-taking behaviors [3], whereas physical attacks may be associated with worsening psychosocial outcomes such as depression and suicidality [10]. Worryingly, youth violence also tends to track into adulthood [11,12].

It is essential to understand the prevalence and temporal trends of physical fighting and physical attacks among adolescents for policy-making and service-planning. However, despite the important health outcomes in relation to violence in adolescents, there is little literature on its temporal trends. For example, in a repeated cross-sectional study carried out in school settings and including 493,874 adolescents aged 11–15 years from 30 mainly European and North American countries, it was observed that between 2002 and 2010, adolescent physical fighting declined in most countries, although increasing trends were observed in three countries [13]. Declining trends have also been reported from studies on physical violence among adolescents in the period from 1991 to 2017 in Norway [14], Sweden [15], and the United States [16].

However, the major limitations of previous studies are that most studies were conducted in high-income Western settings, while multicountry studies on this topic are also scarce. Studies particularly from low-income and middle-income countries (LMICs) are important as violence is often linked with poverty [17], while certain sociopolitical environments, such as political unrest or state of war, which could be more common in LMICs, may contribute to the occurrence of violence [18]. Finally, multicountry studies using standard questionnaires across countries can provide information on whether trends are context-specific, and may also provide clues on what country-level intervention is effective. Moreover, while temporal trend literature does exist on physical fighting and physical violence, no literature to date has specifically focused on the temporal trends of physical attacks.

Given this background, the aim of the present study was to examine the temporal trend of physical fighting and physical attacks in a sample of 190,493 students aged 12–15 years from 30 countries in Africa, Asia, and the Americas (predominantly LMICs) for which temporal trends of physical fighting and physical attacks are largely unknown.

Methods

The survey

Secondary data analysis of the Global School-based Student Health Survey (GSHS) was conducted. Details on this survey can be found at https://www.who.int/teams/noncommunicable-diseases/surveillance/data and http://www.cdc.gov/gshs. Briefly, the GSHS was jointly developed by the World Health Organization and the U.S. Centers for Disease Control and Prevention, and other U.N. allies. This survey aimed to assess and quantify risk and protective factors of major noncommunicable diseases. The survey used a standardized two-stage probability sampling design to select participants within each country. For the first stage, schools were selected with probability proportional to size sampling. The second stage involved the random selection of classrooms which included students aged 13–15 years within each selected school. All students in the selected classrooms were eligible to participate in the survey regardless of age. Thus, the survey was not restricted to those aged 13–15 years. Data collection was conducted during one regular class period. The questionnaire was translated into the local language and consisted of multiple choice response options. Students recorded their response on computer scannable sheets. All GSHS surveys were approved, in each country, by both a national government administration (most often the Ministry of Health or Education) and an institutional review board or ethics committee. Student privacy was protected through anonymous and voluntary participation, and informed consent was obtained as appropriate from the students, parents, and/or school officials. Data were weighted for nonresponse and probability selection.

From all publicly available data, we selected all nationally representative datasets that included the variables pertaining to our analysis, and for which, data on at least two waves were available from the same country. A total of 30 countries were included in the present study. The characteristics of each country including the survey year, country income level, response rate, and sample size are provided in Table S1 of the Appendix. The surveys included in the present study were conducted between 2003 and 2017, and the majority of the countries were LMICs.

Table 1
Trends in prevalence (%) of physical fights in 30 countries

Country	Year	Overall				Boys				Girls			
		%	[95% CI]	Beta	[95% CI]	%	[95% CI]	Beta	[95% CI]	%	[95% CI]	Beta	[95% CI]
AFR													
Benin	2009	32.2	[27.8, 37.0]	−0.24	[−1.25, 0.77]	35.0	[29.4, 41.0]	−0.41	[−1.69, 0.87]	26.8	[22.9, 31.1]	0.09	[−1.05, 1.22]
	2016	30.6	[25.8, 35.8]			32.1	[26.1, 38.8]			27.4	[21.4, 34.3]		
Mauritius	2007	41.1	[34.8, 47.7]	−0.86*	[−1.68, −0.04]	56.5	[53.5, 59.5]	−1.29***	[−1.85, −0.74]	27.5	[23.2, 32.2]	−0.42	[−1.15, 0.32]
	2011	34.5	[28.7, 40.8]			48.0	[42.9, 53.2]			21.4	[17.9, 25.4]		
	2017	31.9	[27.1, 37.1]			43.0	[38.8, 47.3]			22.5	[17.5, 28.5]		
Namibia	2004	50.6	[47.9, 53.4]	−1.68***	[−2.23, −1.12]	57.9	[55.3, 60.5]	−1.62***	[−2.26, −0.97]	44.8	[40.8, 48.8]	−1.71***	[−2.37, −1.06]
	2013	35.6	[31.6, 39.7]			43.4	[38.3, 48.5]			29.3	[25.3, 33.7]		
Swaziland	2003	27.7	[25.0, 30.5]	−0.81***	[−1.17, −0.44]	37.3	[34.7, 40.1]	−0.97***	[−1.47, −0.46]	22.5	[20.5, 24.8]	−0.80***	[−1.13, −0.46]
	2013	19.6	[17.4, 22.1]			27.7	[23.7, 32.0]			14.6	[12.2, 17.3]		
AMR													
Anguilla	2009	36.1	[36.1, 36.1]	−0.97**	[−1.53, −0.40]	45.0	[45.0, 45.0]	−1.21**	[−1.97, −0.44]	27.0	[27.0, 27.0]	−0.73	[−1.61, 0.15]
	2016	29.3	[25.6, 33.3]			36.6	[31.5, 41.9]			21.9	[16.5, 28.4]		
Argentina	2007	29.9	[26.3, 33.7]	0.83	[−0.00, 1.66]	43.0	[38.2, 48.0]	0.27	[−0.86, 1.39]	18.5	[14.7, 23.2]	1.18*	[0.26, 2.10]
	2012	34.0	[32.3, 35.8]			44.4	[41.6, 47.1]			24.4	[22.8, 26.2]		
Guyana	2004	34.0	[29.8, 38.4]	0.69	[−0.24, 1.61]	46.8	[41.7, 52.0]	0.75	[−0.36, 1.87]	22.3	[17.6, 27.8]	0.45	[−0.63, 1.53]
	2010	38.1	[35.0, 41.2]			51.3	[47.6, 55.1]			25.0	[21.5, 28.8]		
Jamaica	2010	50.5	[44.0, 57.0]	−2.29***	[−3.51, −1.07]	60.8	[53.6, 67.4]	−2.34***	[−3.60, −1.08]	39.6	[32.8, 46.9]	−2.06**	[−3.34, −0.77]
	2017	34.5	[29.6, 39.6]			44.4	[39.6, 49.3]			25.2	[20.6, 30.5]		
Suriname	2009	20.4	[16.9, 24.6]	−0.05	[−0.81, 0.70]	30.9	[27.4, 34.6]	−0.51	[−1.33, 0.31]	11.9	[8.9, 15.7]	0.25	[−0.51, 1.01]
	2016	20.1	[17.0, 23.5]			27.3	[23.4, 31.6]			13.7	[10.3, 17.9]		
Trinidad and Tobago	2007	42.0	[38.2, 46.0]	−0.92***	[−1.41, −0.42]	55.7	[51.4, 59.9]	−1.15***	[−1.73, −0.57]	28.8	[24.5, 33.6]	−0.66*	[−1.22, −0.09]
	2011	35.9	[31.4, 40.8]			45.8	[40.3, 51.5]			25.9	[22.2, 30.1]		
	2017	32.7	[29.6, 35.9]			43.8	[39.8, 47.8]			22.3	[18.9, 26.0]		
Uruguay	2006	31.7	[29.7, 33.9]	−0.97***	[−1.48, −0.46]	46.8	[43.5, 50.0]	−1.45***	[−2.19, −0.72]	19.4	[16.8, 22.3]	−0.66*	[−1.25, −0.07]
	2012	25.9	[23.8, 28.1]			38.0	[35.2, 41.0]			15.4	[13.4, 17.7]		
EMR													
Egypt	2006	54.1	[47.8, 60.3]	−1.66	[−3.50, 0.19]	65.2	[59.9, 70.1]	−0.65	[−2.34, 1.03]	42.4	[33.6, 51.8]	−2.38*	[−4.67, −0.09]
	2011	45.9	[39.5, 52.4]			61.9	[55.2, 68.1]			30.5	[24.6, 37.2]		
Jordan	2004	46.6	[41.6, 51.6]	0.01	[−3.76, 3.77]	65.8	[62.7, 68.8]	−0.26	[−2.26, 1.74]	28.7	[23.4, 34.6]	0.50	[−2.46, 3.46]
	2007	46.6	[37.3, 56.2]			65.0	[60.1, 69.7]			30.2	[24.2, 36.8]		
Kuwait	2011	44.8	[40.7, 48.9]	−0.43	[−2.45, 1.59]	60.9	[56.4, 65.2]	−1.18	[−3.01, 0.66]	28.1	[25.2, 31.2]	0.51	[−0.98, 2.00]
	2015	43.0	[36.6, 49.8]			56.2	[50.6, 61.5]			30.1	[25.6, 35.1]		
Lebanon	2005	46.1	[44.0, 48.2]	−0.56***	[−0.87, −0.25]	64.7	[62.0, 67.3]	−0.66**	[−1.05, −0.28]	29.2	[27.2, 31.4]	−0.46***	[−0.73, −0.19]
	2011	49.1	[45.9, 52.4]			69.9	[67.0, 72.7]			31.0	[27.6, 34.6]		
	2017	39.7	[36.7, 42.8]			57.2	[53.5, 60.9]			24.0	[21.7, 26.5]		
Morocco[a]	2006	43.2	[39.8, 46.6]	−0.40	[−0.85, 0.04]	63.0	[58.9, 66.9]	−0.94**	[−1.49, −0.39]	20.8	[18.0, 23.8]	0.28	[−0.18, 0.75]
	2010	41.8	[39.1, 44.6]			56.9	[53.1, 60.7]			24.5	[21.9, 27.3]		
	2016	39.2	[36.4, 42.1]			53.1	[49.4, 56.8]			24.2	[20.9, 27.8]		
Oman	2005	41.7	[38.3, 45.3]	0.70**	[0.18, 1.21]	47.6	[44.0, 51.3]	0.83**	[0.24, 1.42]	35.3	[31.4, 39.4]	0.71*	[0.07, 1.36]
	2010	49.9	[45.6, 54.2]			54.0	[48.8, 59.2]			46.0	[41.1, 50.9]		
	2015	48.0	[44.5, 51.6]			55.6	[51.0, 60.1]			41.6	[36.7, 46.7]		
United Arab Emirates	2005	43.1	[40.5, 45.7]	−0.13	[−0.59, 0.34]	57.7	[56.0, 59.4]	−0.28	[−0.70, 0.14]	29.4	[27.5, 31.4]	−0.02	[−0.48, 0.44]
	2010	46.5	[42.3, 50.6]			62.3	[58.2, 66.2]			35.9	[32.5, 39.5]		
	2016	42.0	[37.9, 46.2]			55.1	[51.0, 59.2]			29.8	[25.7, 34.4]		
Yemen	2008	55.7	[48.3, 62.8]	−1.88*	[−3.39, −0.37]	69.5	[65.3, 73.4]	−2.10*	[−3.66, −0.53]	30.8	[20.4, 43.6]	−0.47	[−2.67, 1.74]
	2014	44.4	[39.8, 49.1]			56.9	[48.8, 64.7]			28.0	[23.6, 32.9]		
SEAR													
Indonesia	2007	33.7	[30.4, 37.1]	−1.08***	[−1.60, −0.56]	47.8	[43.7, 52.0]	−1.40***	[−2.06, −0.73]	20.1	[17.1, 23.5]	−0.78**	[−1.27, −0.29]
	2015	25.1	[22.8, 27.5]			36.7	[33.6, 39.9]			13.8	[11.9, 16.1]		

(*continued on next page*)

Table 1
Continued

Country	Year	Overall				Boys				Girls			
		%	[95% CI]	Beta	[95% CI]	%	[95% CI]	Beta	[95% CI]	%	[95% CI]	Beta	[95% CI]
Maldives[a]	2009	30.6	[26.8, 34.8]	0.30	[−0.77, 1.37]	45.5	[40.5, 50.5]	−0.86	[−2.27, 0.54]	16.6	[13.0, 21.0]	1.28*	[0.18, 2.38]
	2014	32.1	[28.7, 35.7]			41.2	[36.4, 46.1]			23.0	[19.5, 26.9]		
Myanmar	2007	16.0	[12.0, 21.0]	0.97**	[0.28, 1.65]	22.3	[17.8, 27.5]	1.00**	[0.27, 1.74]	9.8	[6.3, 14.9]	0.95**	[0.24, 1.65]
	2016	24.7	[20.9, 28.9]			31.3	[27.3, 35.6]			18.3	[14.2, 23.3]		
Sri Lanka	2008	47.2	[43.1, 51.2]	−0.07	[−0.91, 0.78]	60.0	[56.4, 63.5]	−0.36	[−1.12, 0.40]	34.1	[30.6, 37.8]	0.28	[−0.64, 1.19]
	2016	46.7	[41.6, 51.8]			57.2	[52.5, 61.8]			36.3	[30.4, 42.6]		
Thailand[a]	2008	33.7	[29.6, 38.2]	−0.76	[−1.60, 0.08]	46.2	[42.0, 50.5]	−1.31**	[−2.21, −0.40]	22.0	[18.3, 26.3]	−0.30	[−1.05, 0.44]
	2015	28.4	[24.8, 32.3]			37.0	[32.7, 41.6]			19.9	[16.9, 23.3]		
WPR													
Cook Islands	2011	41.3	[41.3, 41.3]	−2.70***	[−4.11, −1.30]	48.1	[48.1, 48.1]	−3.37**	[−5.33, −1.42]	33.8	[33.8, 33.8]	−1.93*	[−3.76, −0.10]
	2015	30.5	[25.3, 36.2]			34.6	[27.4, 42.5]			26.0	[19.6, 33.8]		
Fiji	2010	47.7	[43.0, 52.5]	−2.34***	[−3.49, −1.18]	59.9	[52.8, 66.6]	−2.77**	[−4.46, −1.08]	36.1	[30.4, 42.2]	−2.01**	[−3.38, −0.63]
	2016	33.7	[29.2, 38.5]			43.3	[36.7, 50.1]			24.1	[19.2, 29.7]		
Philippines[a]	2003	51.0	[47.5, 54.4]	−0.66**	[−1.06, −0.26]	51.0	[46.7, 55.2]	−0.25	[−0.72, 0.21]	50.9	[46.6, 55.3]	−1.07***	[−1.53, −0.61]
	2007	36.7	[33.4, 40.2]			40.8	[36.5, 45.3]			33.3	[29.8, 37.0]		
	2011	38.1	[34.2, 42.2]			44.6	[39.9, 49.4]			32.1	[28.0, 36.4]		
	2015	39.3	[36.1, 42.6]			44.5	[40.7, 48.4]			34.4	[31.0, 38.1]		
Samoa	2011	67.8	[64.2, 71.2]	−3.26***	[−4.50, −2.03]	73.6	[68.9, 77.8]	−2.67**	[−4.49, −0.84]	62.0	[57.1, 66.6]	−3.73***	[−4.87, −2.58]
	2017	48.2	[41.9, 54.6]			57.6	[47.7, 66.9]			39.6	[34.9, 44.5]		
Tonga[a]	2010	48.8	[45.7, 51.9]	−1.43***	[−2.04, −0.82]	47.5	[42.6, 52.3]	0.29	[−0.61, 1.18]	49.9	[46.1, 53.7]	−3.23***	[−3.94, −2.52]
	2017	38.8	[35.9, 41.8]			49.5	[45.6, 53.4]			27.3	[24.3, 30.6]		
Vanuatu	2011	51.5	[44.7, 58.2]	−1.95*	[−3.58, −0.33]	60.0	[51.0, 68.3]	−0.99	[−3.03, 1.05]	43.1	[34.3, 52.3]	−2.87**	[−4.90, −0.85]
	2016	41.7	[37.7, 45.9]			55.0	[50.2, 59.8]			28.7	[25.0, 32.8]		

The beta is based on linear regression including survey year as a continuous variable. The beta can be interpreted as the average percentage point change in prevalence per year.
CI = Confidence interval; AFR = African Region; AMR = Region of the Americas; EMR = Eastern Mediterranean Region; SEAR = South-East Asia Region; WPR = Western Pacific Region.
*p for trend $< .05$, **p for trend $< .01$, ***p for trend $< .001$.
[a] Significant interaction by sex ($p < .05$).

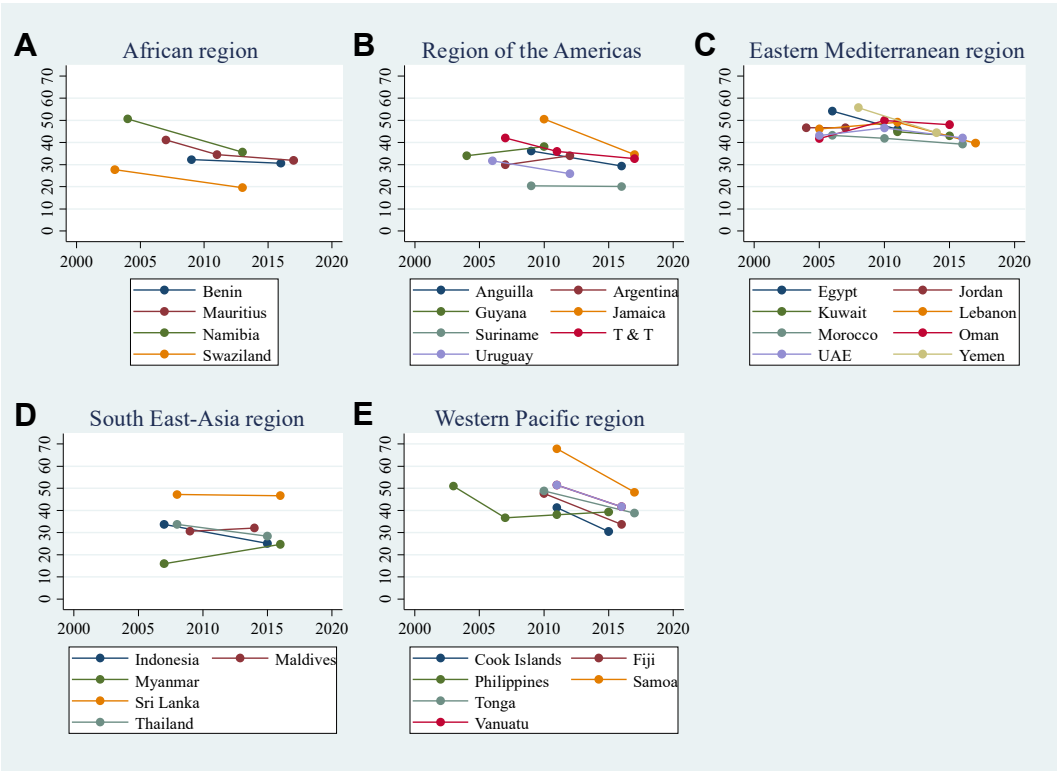

Figure 1. Prevalence of physical fights (%) across years by region and country. T & T = Trinidad & Tobago; UAE = United Arab Emirates.

Physical fight

Students were provided an explanation that a physical fight occurs when two or more students of about the same strength or power choose to fight each other. Physical fight was assessed with the question "During the past 12 months, how many times were you in a physical fight?" Physical fight was defined as having been in a physical fight at least once [19].

Physical attack

Students were first provided with the following explanation on physical attacks: A physical attack occurs when one or more people hit or strike someone, or when one or more people hurt another person with a weapon (such as a stick, knife, or gun). It is not a physical attack when two students of about the same strength or power choose to fight each other. Subsequently, they were asked "During the past 12 months, how many times were you physically attacked?" Physical attack was defined as having been attacked at least once [19]. Temporal trends for Guyana, Jordan, Namibia, and Swaziland could not be calculated as data on physical attack from at least two surveys were not available.

Statistical analysis

Only those aged 12–15 years were included in the analysis as most students were within this age group, while information on the exact age outside of this age range was not available. The prevalence and 95% confidence interval (CI) of physical fights and physical attacks was calculated for the overall sample and sex-stratified samples for each survey. Crude linear trends in physical fights and physical attacks were assessed by linear regression models across surveys within the same country to estimate regression coefficients (beta) and 95% CI for every one-year change [20]. *p* for trends was estimated using the survey year as a continuous variable. We also conducted interaction analysis to assess whether there are differing trends among boys and girls by including an interaction term (survey year X sex) in the model. Sampling weights and the clustered sampling design of the surveys were taken into account in all analyses. Statistical analyses were done with Stata 14.2 (Stata Corp LP, College station, Texas).

Results

A total of 190,493 students aged 12–15 years were included in the analysis. The mean (standard deviation) age was 13.7 (1.0) years and 48.9% were boys. The mean prevalence of past 12-month physical fight and physical attack across all surveys was 36.5% (boys 47.0% and girls 26.6%) and 37.2% (boys 44.6% and girls 29.9%), respectively. The prevalence varied widely between countries, with the lowest prevalence of physical fight being observed in Myanmar in 2007 (16.0%) and the highest in Samoa in 2011 (67.8%). The corresponding figures for physical attacks were 15.0% in Uruguay in 2012 and 71.1% in 2011 in Samoa. The trends in the prevalence of physical fights are shown in Table 1 and Figure 1. Of the 30 countries, significant decreasing trends were observed in 16 countries (Mauritius, Namibia, Swaziland, Anguilla, Jamaica, Trinidad and Tobago, Uruguay, Lebanon, Yemen, Indonesia, Cook Islands, Fiji, Philippines, Samoa, Tonga, and Vanuatu). The average

Table 2
Trends in prevalence (%) of physical attacks in 26 countries

Country	Year	Overall				Boys				Girls			
		%	[95% CI]	Beta	[95% CI]	%	[95% CI]	Beta	[95% CI]	%	[95% CI]	Beta	[95% CI]
AFR													
Benin	2009	38.3	[35.4, 41.3]	−1.83***	[−2.83, −0.83]	41.2	[38.1, 44.4]	−1.87**	[−3.05, −0.69]	32.8	[27.5, 38.5]	−1.78**	[−3.02, −0.55]
	2016	25.5	[19.9, 32.1]			28.1	[21.4, 36.0]			20.3	[14.7, 27.3]		
Mauritius	2007	26.5	[22.0, 31.4]	−0.01	[−0.61, 0.60]	36.9	[33.4, 40.6]	−0.51	[−1.04, 0.03]	17.3	[12.7, 23.1]	0.45	[−0.41, 1.31]
	2011	22.9	[18.8, 27.6]			30.1	[24.3, 36.6]			15.8	[12.1, 20.3]		
	2017	25.7	[22.2, 29.7]			31.0	[27.4, 34.9]			21.2	[15.5, 28.3]		
AMR													
Anguilla	2009	29.4	[29.4, 29.4]	−0.21	[−0.75, 0.32]	35.1	[35.1, 35.1]	−0.31	[−1.13, 0.52]	23.3	[23.3, 23.3]	−0.13	[−0.73, 0.46]
	2016	27.9	[24.4, 31.7]			32.9	[27.6, 38.7]			22.3	[18.6, 26.6]		
Argentina	2007	25.3	[21.9, 29.0]	−0.08	[−0.86, 0.70]	31.5	[27.0, 36.4]	−0.22	[−1.25, 0.81]	20.0	[16.4, 24.1]	−0.06	[−0.89, 0.78]
	2012	24.9	[23.4, 26.5]			30.4	[28.5, 32.5]			19.7	[18.2, 21.3]		
Jamaica	2010	43.8	[39.0, 48.8]	−2.40***	[−3.29, −1.52]	47.1	[40.5, 53.9]	−1.75**	[−2.99, −0.51]	40.1	[34.3, 46.3]	−2.95***	[−3.98, −1.93]
	2017	27.0	[23.7, 30.5]			34.9	[30.1, 40.0]			19.5	[16.3, 23.1]		
Suriname	2009	23.1	[20.3, 26.1]	0.05	[−0.66, 0.76]	28.4	[23.4, 33.9]	−0.04	[−1.10, 1.02]	18.8	[16.0, 22.1]	0.08	[−0.72, 0.87]
	2016	23.5	[19.9, 27.4]			28.1	[23.7, 33.0]			19.4	[15.4, 24.1]		
Trinidad and Tobago[a]	2007	39.2	[34.9, 43.6]	−0.99***	[−1.52, −0.46]	48.4	[43.8, 53.0]	−1.38***	[−1.92, −0.84]	30.0	[25.9, 34.5]	−0.59	[−1.18, 0.01]
	2011	33.1	[29.5, 37.0]			40.6	[36.5, 45.0]			25.5	[22.4, 28.8]		
	2017	29.1	[26.0, 32.4]			34.4	[31.6, 37.4]			24.0	[20.0, 28.4]		
Uruguay[a]	2006	19.1	[17.6, 20.8]	−0.69**	[−1.10, −0.29]	25.0	[23.2, 27.0]	−1.32***	[−1.87, −0.76]	14.2	[12.1, 16.6]	−0.19	[−0.71, 0.33]
	2012	15.0	[13.3, 16.8]			17.1	[14.7, 19.9]			13.1	[11.1, 15.3]		
EMR													
Egypt	2006	59.2	[52.9, 65.2]	−0.61	[−2.44, 1.23]	62.0	[53.8, 69.5]	0.19	[−2.31, 2.68]	56.1	[50.0, 62.0]	−1.27	[−3.72, 1.19]
	2011	56.2	[49.6, 62.5]			62.9	[53.3, 71.6]			49.7	[39.6, 59.9]		
Kuwait	2011	33.4	[30.3, 36.7]	−0.99	[−2.65, 0.66]	42.2	[38.0, 46.6]	−1.02	[−3.01, 0.97]	24.2	[20.1, 28.8]	−0.83	[−2.49, 0.82]
	2015	29.4	[24.2, 35.2]			38.2	[32.1, 44.6]			20.9	[16.7, 25.8]		
Lebanon	2005	41.8	[39.7, 43.8]	−1.70***	[−1.98, −1.41]	50.8	[48.0, 53.5]	−1.91***	[−2.26, −1.55]	33.7	[31.2, 36.3]	−1.51***	[−1.86, −1.16]
	2011	40.7	[37.6, 43.9]			46.8	[43.0, 50.6]			35.4	[31.8, 39.2]		
	2017	22.0	[19.5, 24.7]			28.4	[25.2, 31.8]			16.2	[13.4, 19.5]		
Morocco[a]	2006	38.0	[34.6, 41.4]	−1.34***	[−1.75, −0.94]	51.9	[48.2, 55.6]	−2.16***	[−2.68, −1.65]	22.3	[19.1, 26.0]	−0.44*	[−0.84, −0.03]
	2010	28.2	[25.4, 31.1]			34.5	[31.4, 37.8]			20.7	[17.6, 24.3]		
	2016	23.6	[21.3, 26.0]			28.5	[25.2, 32.0]			18.0	[15.8, 20.4]		
Oman	2005	39.0	[35.3, 42.8]	−0.82**	[−1.40, −0.23]	44.2	[39.4, 49.2]	−0.73	[−1.49, 0.02]	33.3	[29.3, 37.6]	−0.79*	[−1.42, −0.15]
	2010	40.8	[36.1, 45.6]			43.2	[38.2, 48.3]			37.9	[32.4, 43.6]		
	2015	30.0	[25.9, 34.5]			36.5	[31.1, 42.2]			24.5	[20.4, 29.0]		
United Arab Emirates	2005	32.4	[30.5, 34.4]	−0.35*	[−0.67, −0.02]	41.9	[40.1, 43.7]	−0.38	[−0.77, 0.02]	23.5	[22.0, 25.2]	−0.34*	[−0.66, −0.02]
	2010	33.1	[30.3, 36.0]			41.8	[37.8, 46.0]			27.1	[23.7, 30.8]		
	2016	28.9	[26.1, 31.8]			37.9	[34.1, 41.8]			20.3	[17.5, 23.5]		
Yemen	2008	50.8	[42.8, 58.7]	−1.80*	[−3.44, −0.16]	60.4	[53.8, 66.6]	−2.13*	[−3.81, −0.45]	32.4	[23.8, 42.5]	−0.53	[−2.35, 1.29]
	2014	40.0	[35.1, 45.0]			47.6	[40.5, 54.8]			29.2	[25.1, 33.8]		
SEAR													
Indonesia	2007	39.8	[37.4, 42.3]	−0.70**	[−1.14, −0.25]	51.7	[48.0, 55.4]	−0.96**	[−1.60, −0.31]	28.4	[25.8, 31.0]	−0.44*	[−0.86, −0.01]
	2015	34.3	[31.8, 36.8]			44.0	[40.6, 47.5]			24.9	[22.9, 27.0]		
Maldives	2009	36.0	[32.3, 39.9]	−0.92	[−1.92, 0.09]	44.8	[41.2, 48.5]	−1.20*	[−2.27, −0.12]	27.9	[22.9, 33.5]	−0.85	[−2.11, 0.42]
	2014	31.5	[28.3, 34.8]			38.9	[35.0, 42.8]			23.6	[20.4, 27.2]		
Myanmar	2007	22.9	[17.1, 30.0]	1.17**	[0.33, 2.01]	29.2	[22.3, 37.1]	1.29*	[0.30, 2.27]	16.9	[11.9, 23.4]	1.14**	[0.35, 1.93]
	2016	33.5	[30.1, 37.1]			40.8	[36.4, 45.3]			27.1	[23.4, 31.1]		
Sri Lanka	2008	48.3	[44.3, 52.3]	−1.27**	[−2.07, −0.48]	55.1	[50.0, 60.0]	−0.98*	[−1.88, −0.07]	41.4	[37.5, 45.4]	−1.60***	[−2.38, −0.82]
	2016	38.1	[33.5, 42.9]			47.3	[42.4, 52.2]			28.6	[24.2, 33.3]		
Thailand	2008	33.6	[29.6, 37.9]	−0.55	[−1.38, 0.27]	44.6	[39.8, 49.6]	−0.68	[−1.64, 0.28]	23.3	[20.0, 27.0]	−0.52	[−1.28, 0.25]
	2015	29.8	[26.1, 33.7]			39.9	[35.6, 44.3]			19.7	[16.1, 23.8]		

Table 2
Continued

Country	Year	Overall				Boys				Girls			
		%	[95% CI]	Beta	[95% CI]	%	[95% CI]	Beta	[95% CI]	%	[95% CI]	Beta	[95% CI]
WPR													
Cook Islands	2011	43.1	[43.1, 43.1]	−1.22	[−2.76, 0.31]	46.2	[46.2, 46.2]	−1.50	[−3.82, 0.82]	39.6	[39.6, 39.6]	−0.82	[−2.73, 1.09]
	2015	38.2	[32.4, 44.3]			40.2	[31.6, 49.4]			36.4	[29.3, 44.1]		
Fiji	2010	45.3	[41.1, 49.6]	−1.80**	[−2.91, −0.69]	52.3	[47.4, 57.1]	−2.11**	[−3.52, −0.69]	38.7	[33.1, 44.6]	−1.68*	[−2.93, −0.43]
	2016	34.5	[30.0, 39.4]			39.6	[33.3, 46.3]			28.6	[24.6, 33.0]		
Philippines	2007	37.7	[34.8, 40.6]	0.31	[−0.21, 0.83]	42.7	[39.2, 46.3]	0.18	[−0.40, 0.76]	33.7	[30.2, 37.3]	0.35	[−0.26, 0.97]
	2011	32.3	[28.9, 35.7]			36.4	[32.0, 41.0]			28.3	[24.8, 32.1]		
	2015	38.5	[35.7, 41.3]			42.2	[39.5, 44.9]			35.0	[31.9, 38.2]		
Samoa	2011	71.1	[67.4, 74.6]	−7.91***	[−8.76, −7.07]	73.3	[69.9, 76.4]	−7.13***	[−8.33, −5.92]	68.3	[63.4, 72.7]	−8.47***	[−9.62, −7.31]
	2017	23.7	[20.4, 27.2]			30.5	[24.6, 37.1]			17.4	[13.0, 23.0]		
Tonga[a]	2010	50.9	[48.1, 53.8]	−0.24	[−0.81, 0.32]	48.3	[44.2, 52.3]	0.98*	[0.21, 1.74]	53.3	[49.4, 57.3]	−1.49***	[−2.26, −0.72]
	2017	49.2	[46.5, 51.9]			55.1	[51.6, 58.5]			42.9	[39.4, 46.6]		
Vanuatu	2011	55.0	[50.8, 59.1]	−0.61	[−1.83, 0.62]	58.0	[51.7, 64.1]	0.07	[−1.62, 1.76]	51.5	[43.8, 59.2]	−1.15	[−3.04, 0.73]
	2016	52.0	[47.7, 56.2]			58.4	[52.9, 63.7]			45.8	[40.9, 50.8]		

The beta is based on linear regression including survey year as a continuous variable. The beta can be interpreted as the average percentage point change in prevalence per year.
CI = Confidence interval; AFR = African Region; AMR = Region of the Americas; EMR = Eastern Mediterranean Region; SEAR = South-East Asia Region; WPR = Western Pacific Region.
*p for trend $< .05$, **p for trend $< .01$, ***p for trend $< .001$.
[a] Significant interaction by sex ($p < .05$).

percentage point decrease in prevalence per year (beta) was largest in Samoa between 2011 (67.8%) and 2017 (48.2%; beta = −3.26; 95% CI = −4.50, −2.03), followed by Cook Islands between 2011 (41.3%) and 2015 (30.5%; beta = −2.70; 95% CI = −4.11, −1.30), and Fiji between 2010 (47.7%) and 2016 (33.7%; beta = −2.34; 95% CI = −3.49, −1.18). Significant increasing trends were found in two countries; Oman between 2005 (41.7%) and 2015 (48.0%; beta = 0.70; 95% CI = 0.18, 1.21) and Myanmar between 2007 (16.0%) and 2016 (24.7%; beta = 0.97; 95% CI = 0.28, 1.65). No significant increasing or decreasing trends were found in the remaining 12 countries. Interaction analysis showed that there are significant differences in the trends between boys and girls in five countries. Specifically, significant decreasing trends were only observed among boys in Morocco and Thailand, while these were only observed among girls in Philippines and Tonga. In Maldives, significant increasing trends were found only among girls.

The trends in the prevalence of physical attacks are shown in Table 2 and Figure 2. Of the 26 countries, significant decreasing trends were observed in 13 countries. The average percentage point decrease in prevalence per year was largest in Samoa between 2011 (71.1%) and 2017 (23.7%; beta = −7.91; 95% CI = −8.76, −7.07), Jamaica between 2010 (43.8%) and 2017 (27.0%; beta = −2.40; 95% CI = −3.29, −1.52), and Benin between 2009 (38.3%) and 2016 (25.5%; beta = −1.83; 95% CI = −2.83, −0.83). Significant increasing trends were observed only in one country: Myanmar between 2007 (22.9%) and 2016 (33.5%; beta = 1.17; 95% CI = 0.33, 2.01). No significant increasing or decreasing trends were found in the remaining 12 countries. Interaction analysis showed that trends were significantly different between sexes in four countries. Specifically, in Trinidad and Tobago and Uruguay, significant declining trends were only observed among boys, while in Morocco, significant decreasing trends were observed in both boys and girls but the decline was more pronounced among boys. Finally, in Tonga, a significant increasing trend was found among boys, but a significant decreasing trend was found among girls.

Discussion

Main findings

In the present study including large representative samples of adolescents from 30 countries across multiple continents, which were predominantly LMICs, decreasing trends in physical fighting were observed in 16 countries, increasing trends in two countries, and no change in trends were observed in the remaining 12 countries. The greatest decreasing trend was observed in Samoa between 2011 (67.8%) and 2017 (48.2%), while the greatest increasing trend was observed in Myanmar between 2007 (16.0%) and 2016 (24.7%). In terms of physical attacks, decreasing trends were observed in 13 of 26 countries, increasing trends in one country, and stable trends in the remaining 12 countries. The greatest decreasing trend in physical attacks was observed in Samoa between 2011 (71.1%) and 2017 (23.7%) and an increasing trend was observed in Myanmar between 2007 (22.9%) and 2016 (33.5%). Differing trends were observed between boys and girls for physical fights (five countries) and physical attacks (four countries). To the best of our knowledge, this is the first multicountry trend study on physical fights and physical attacks that included non-Western high-income countries and LMICs.

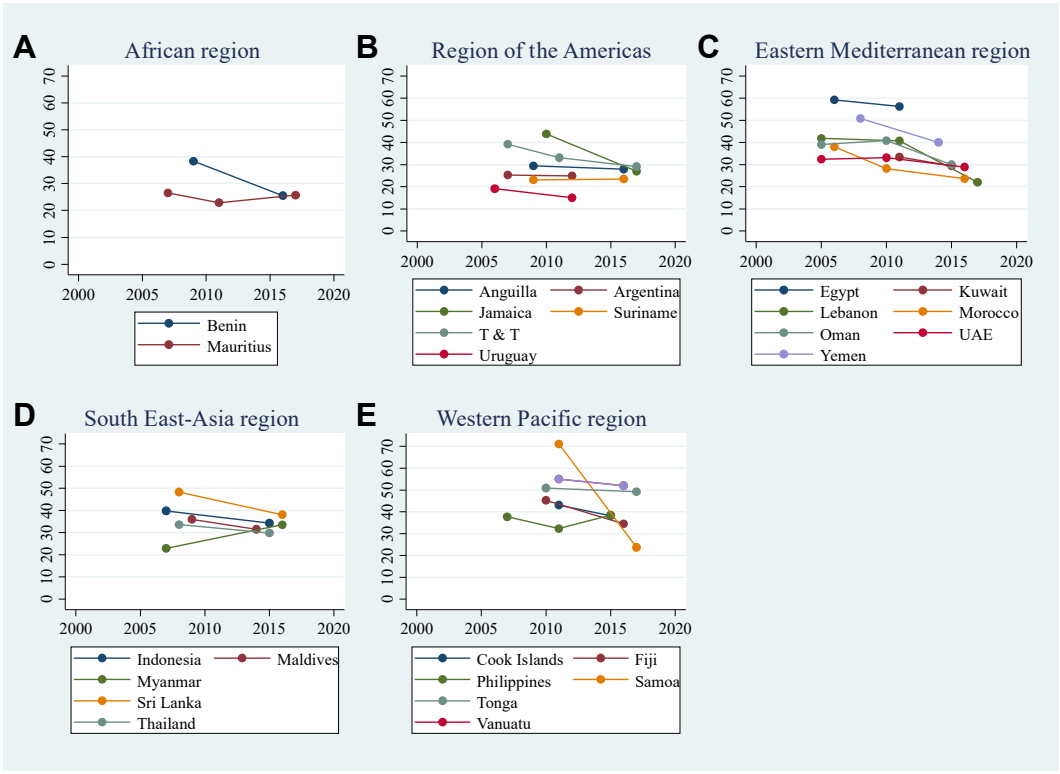

Figure 2. Prevalence of physical attack (%) across years by region and country. T & T = Trinidad & Tobago; UAE = United Arab Emirates.

Interpretation of findings

The encouraging decreasing trends in physical violence observed in 16 countries may be owing to country-specific initiatives. For example, in Samoa, during the study period, the Ministry of Police and Prisons carried out educational awareness programs for children in schools on preventing alcohol and drug abuse, bullying, street fights, and cybercrime. In addition, the Samoa Victim Support Group provided awareness programs in schools regarding antibullying and violence against children [21]. Whereas in Fiji, a child's right to live free from violence and to be protected from all forms of violence, abuse, and exploitation was enshrined in the 2013 Constitution's Bill of Rights, which states 'Every person has the right to security of the person, which includes the right to be free from any form of violence from any source, at home, school, work, or in any other place' [22].

However, increasing trends in physical fighting (Oman and Myanmar) and physical attacks (Myanmar) were observed in some countries. Such increasing trends may be owing to civil unrest in such countries, an ongoing issue in Myanmar, a time at which physical violence may be perceived as common or even acceptable. Indeed, exposure to violence in youth is a significant risk factor for subsequent youth violent offending [23].

The country-specific sex differences in trends of physical fighting and physical attacks should also be noted. For example, in Tonga, a significant increasing trend was found among boys, but a significant decreasing trend was found among girls, and this may be owing to country-specific culture. Specifically, in Tongan culture, men are supposed to be physically and mentally strong, and thus, physical fighting may manifest owing to a 'masculinity challenge' in which young males feel questioned or deprived of their masculine status [24]. Whereas a decreasing trend in physical violence in girls in Tonga may be owing to the introduction of country-specific policies to address sexual violence against girls, and policies that address cultural attitudes that assign women a lower status [25]. However, the exact reasons behind the sex differences observed in our study are elusive, and further research of a qualitative nature is required.

Policy implications

Taken together, it is encouraging to observe that most countries included in the study are experiencing decreasing trends in physical fighting and physical attacks. However, increasing trends were observed in some countries, while many countries showed stable trends. This highlights the need for more international effort via policy and intervention to address such violence. For example, the Global status report on violence prevention 2014 jointly published by World Health Organization, the United Nations Development Program, and the United Nations Office on Drugs and Crime, reviewed the current status of violence prevention efforts in countries, and called for a scaling up of violence prevention programs; stronger legislation and enforcement of laws relevant for violence prevention; and enhanced services for victims of violence [26]. Moreover, The Global Partnership and Fund to End Violence Against Children was launched in July 2016 by the U.N. Secretary-General. The partnership is focused solely on Sustainable Development Goal 16.2: ending all forms of violence against children by 2030. The End Violence

Partnership is a platform for collective, evidence-based advocacy and action. The work with a coalition of more than 700 organizations including governments, U.N. agencies, research institutions, international nongovernmental organizations, foundations, local Civil Society Organisations, private sector groups, and faith networks connect and convene partners to raise awareness, catalyze leadership commitments, mobilize new resources, promote evidence-based solutions, and support those working to end all forms of violence, abuse, and neglect of children [27]. Importantly, in the present study, country-specific sex differences in trends of physical fighting and physical attacks were also observed suggesting country-specific and sex-specific policies may also be required.

Strengths and limitations

The large representative samples of adolescents from 30 countries from Africa, Asia, and the Americas, which were predominantly LMICs, are clear strengths of the present study. However, findings must be interpreted in light of the study limitations. First, data on physical fighting and physical attacks were self-reported, potentially introducing recall and social desirability bias into the findings. Second, the results of our study are only applicable to school-going adolescents as this was the target population. However, school attendance rates are known to be high in the countries included in the study. Third, surveys were conducted in different years depending on the country and some countries provided more data points than others. Thus, the beta-coefficients observed in our study are not totally comparable across countries. Finally, the GSHS has a complex study design, and this hampered the use of multilevel analyses. The main reason why multilevel modelling was not employed was because the use of multilevel analyses with a complex sample design has been reported to lead to biased estimates [28]. This is especially true for publicly available survey datasets which typically only include one sampling weight where multilevel analysis ideally should employ different sampling weights at different levels to obtain unbiased estimates.

Conclusion

Our first multicountry trend study including LMICs and non-Western high-income countries showed that physical fighting and physical attacks among school-going adolescents are decreasing in about half of the countries, while very few countries showed increasing trends, and the rest stable trends. Taken together, the data are encouraging as we are observing decreasing trends across many countries. However, the fact that the level of decrease was modest in most countries, and stable trends were common, with some countries showing increasing trends suggest that global efforts to address adolescent violence are still required. Such global efforts will likely require the bolstering of existing global coalitions or task forces with the focus to end youth violence such as The Global Partnership and Fund to End Violence Against Children.

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Supplementary Data

Supplementary data related to this article can be found at https://doi.org/10.1016/j.jadohealth.2023.12.005.

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