

Adolescent Health in the Caribbean: Risk and Protective Factors

Robert W. Blum, MD, PhD, Linda Halcón, PhD, MPH, Trish Beuhring, PhD, Ernest Pate, MD, Sheila Campell-Forrester, MD, MPH, and Anneke Venema, MD

Until recently, we have known relatively little about the health status of youths residing in the Caribbean. Isolated reports, often in unpublished manuscripts, give glimpses of reproductive health concerns in one country or of substance abuse issues in another. From these snapshots, there is a cause for concern. In a study of a clinical population of young people in Jamaica, Smikle et al.¹ found that the mean age at onset of sexual intercourse among males was 12.5 years; 4% of sexually active males reported using condoms consistently, and 60% reported marijuana use. Soyibo and Lee^{2,3} reported, among a general population of Jamaican school-attending adolescents, rates of marijuana, cocaine, and heroin use of 10.2%, 2.2%, and 1.13%, respectively; the alcohol use rate was 50.2%, and the tobacco use rate was 16.6%.

In addition, violence is on the rise among youths throughout the Caribbean.⁴ Soyibo and Lee, in another study involving their sample of Jamaican youths, found that 78.5% of these young people had witnessed violence in their communities; 60.8%, in their schools; and 44.7%, in their homes.⁵ Also, 29% reported that they had injured someone else. Suicide appears to be of increasing concern in the Caribbean as well; for example, Hutchinson and Simeon⁶ reported a 319% increase in the male suicide rate in Trinidad and Tobago between 1978 and 1992 (4.96 to 20.76 per 100 000).

The data just described present a very limited portrait of youth health in the Caribbean, and none of these studies have provided an understanding of the factors that protect Caribbean youths and those that predispose them to poor health and health risk behaviors. We focused on these issues in the present study.

Objectives. This study sought to identify, among youths, factors associated with characteristics such as poor health status, substance use, and suicide risk and to explore the extent to which the risk and protective factors identified cut across health-compromising behaviors.

Methods. A survey was administered to representative samples of young people from 9 Caribbean countries.

Results. Physical/sexual abuse and having a friend or relative who had attempted suicide were associated with an increased prevalence of health-compromising behaviors. Connectedness with parents and school and attendance at religious services were associated with fewer health risk behaviors.

Conclusions. When the identified risk and protective factors were compared with those seen among young people in the United States, similarities as well as important differences were found. (*Am J Public Health.* 2003;93:456–460)

METHODS

Instrument Development

The survey instrument used in the present study contained 87 multiple-choice questions with a total of 246 options. The items covered the following areas: school, substance use, sexual and reproductive health, physical and sexual abuse, honesty, violence, mental health, family, general health, health care and nutrition, and relationships. The initial questionnaire was primarily based on the Minnesota Adolescent Health Survey⁷; however, Youth Risk Behavior Survey⁸ provided further questions.

An initial instrument draft was developed after a meeting of maternal and child health directors from the 19 target countries of the Anglophone Caribbean. Each of these individuals reviewed the draft, and a revised version was tested among 105 school-attending adolescents in Barbados, St. Lucia, and Antigua. The instrument was subsequently revised, and the revised version was once again reviewed by the maternal and child health directors before finalization.

Sampling

We used a random sampling procedure involving school classrooms. We based our pro-

cedure on Ministry of Education rosters within each country so as to identify representative national samples of young people aged 10 to 18 years. Average classroom size was estimated at 30 pupils. In determining sample sizes, we used a power of 0.80 and 20% oversampling within each country so that we would have sufficient numbers of respondents to allow within-country comparisons by age and sex as well as aggregate analyses (Table 1).

The study required approval of multiple ministries within each participating country, as well as personnel commitment in the areas of sample design, sample selection, data collection, and data entry. Of the 19 Caribbean countries eligible for participation, 9 chose to take part. No differences were noted between participating and nonparticipating countries according to either population size or school enrollment percentage. As a result of the substantial between-country variations in population size, samples of comparable size were used to obtain better overall regional representation.

More than 16 000 youths aged 10 to 18 years participated in the survey, which took place during 1997–1998. Questionnaires missing more than one third of responses were excluded from the final sample, as were

TABLE 1—Unweighted and Weighted Sample Sizes: Caribbean Youth Health Survey, 1998.

Country	Final Sample, No. (%)	Weighted % of Total
Antigua	2158 (13.7)	1.5
Bahamas	1787 (11.4)	5.6
Barbados	1819 (11.6)	6.5
British Virgin Islands	400 (2.5)	0.4
Dominica	2719 (17.3)	1.9
Grenada	1255 (8.0)	2.4
Guyana	1396 (8.9)	17.6
Jamaica	2635 (16.8)	60.7
St. Lucia	1526 (9.7)	3.5
Total	15 695 (100)	100

questionnaires with more than 3 inconsistent responses, 2 or more clearly invalid responses, or endorsement of the use of bogus drugs. Two percent of all questionnaires were removed from the analysis, leaving a final usable sample of 15 695.

Data Analysis

Data were coded and entered either within each country or through a central data processing firm in Barbados, based upon a protocol book developed by the World Health Organization Collaborating Center on Adolescent Health at the University of Minnesota. Once data were entered, a data tape was sent to the University of Minnesota for cleaning, merging, and analysis.

The study involved 9 predictor variables. Six were based on single variables: how hard the young person tries at schoolwork, attendance at religious services, thinking about hurting or killing someone, parents' problems with violence, parents' history of mental health problems, and having family members or friends who had attempted suicide. Three predictors included multiple items: connection to parents and family, physical and sexual abuse, and substance abuse.

The scale assessing parent and family connectedness (Cronbach $\alpha=0.80$) included the following items: feels parents care, can tell parents about problems, feels other family members care, feels people in the family un-

derstand, and family pays attention to you. As a result of their high intercorrelation ($r=0.32$), physical abuse and sexual abuse were combined into a single scale. The combined variable had a stronger relationship with the outcomes studied than did either physical or sexual abuse alone (Cronbach $\alpha=0.76$). The parent substance abuse scale included items focusing on parental drinking problems and drug problems.

Five outcome variables were included, 3 of which were based on single items: general health, ever had sexual intercourse, and ever attempted suicide. Two variables were based on multiple items: violence was composed of 4 items (Cronbach $\alpha=0.79$), and problems due to alcohol or drugs was composed of 10 items (Cronbach $\alpha=0.80$).

In conducting the analyses for this study, we used multivariate methods, primarily logistic and linear regression, depending on whether the variable was categorical or continuous. A conservative significance level of $P<.01$ was used to compensate for the large sample size.

To ensure the validity of the results, we reviewed each survey in regard to completeness, internal consistency, and invalid responses (e.g., endorsing use of bogus drugs). Thirteen percent of the sample was deleted owing to incomplete responses (i.e., more than a third of responses left blank), and 2% was deleted as a result of inconsistent responses. Those failing to complete the survey were disproportionately at the young end of the age spectrum (10–12 years).

RESULTS

General Health

Nearly 20% of our Caribbean youth participants reported fair or poor health. Examination of the factors associated with poor self-assessed health status showed that the most consistent factor was having experienced physical or sexual abuse. Parental mental health problems were associated with poorer self-assessed health status among the youngest adolescents, and parental problems with violence were associated with poorer health status among those aged 13 to 15 years. By the older teen years, parental factors seemed to have a diminished influence; none were

significant correlates of poor self-assessed health status.

Conversely, connectedness with parents was strongly associated with a lower likelihood of rating one's health as fair or poor. Two other factors that were protective against poor self-rated health were connectedness with other adults and trying hard in school (Table 2).

Tobacco, Alcohol, and Other Substance Use

As do their peers elsewhere, teens in the Caribbean live in cultures that often celebrate the use of tobacco, alcohol, marijuana, and other substances. When we examined the factors associated with increased use of substances and those associated with diminished involvement, a few factors stood out. Across all age groups, both parental substance abuse and parental mental health problems were associated with increased substance use. In addition, rage, abuse, parental violence, and having a family member or friend who had attempted suicide were found to correlate with higher levels of substance use among teens in most of the age groups studied (Table 2).

Emotional Well-Being

Suicide attempts. Although generally happy, approximately 15% of our respondents reported significant emotional distress, and about 12% reported ever having attempted suicide. Among the risk factors associated with ever having attempted suicide, history of a friend or family member's suicide was the strongest across all age groups, followed by rage and history of physical abuse, sexual abuse, or both. Across all age groups, girls were consistently more likely than boys to report suicide attempts. Conversely, parental connectedness was strongly protective against suicide attempts in all of the age groups (odds ratios between 0.33 and 0.42). No other factors were found to be protective (Table 2).

Rage. The rage variable was based on an item in which respondents were asked whether they were sufficiently angry some or most of the time that they "could kill someone." This feeling was shown to be rel-

TABLE 2—Risk and Protective Factors Among Youths, by Age Group: Caribbean Youth Health Survey, 1998.

Risk or protective factor	Poor Health ^a			Substance Use ^a			Suicide Risk ^a			Rage ^a			Violence ^a			Sexual Initiation ^a			
	<12 y	13-15 y	16-18 y	<12 y	13-15 y	16-18 y	<12 y	13-15 y	16-18 y	<12 y	13-15 y	16-18 y	<12 y	13-15 y	16-18 y	<12 y	13-15 y	16-18 y	
Risk factors																			
Rage	1.27	1.21	...	...	1.24	1.63	2.46	1.97	1.54	...	...	2.44	2.53	3.23	1.70	1.47	1.80	...
Abuse (physical or sexual)	1.47	1.17	1.23	1.59	1.40	...	1.68	1.82	1.91	1.53	1.40	1.45	1.44	...	1.68	1.45	1.46	...	
Parent mental health problem	1.56	...	...	2.13	2.40	2.15	...	...	...	...	...	...	...	1.73	...	1.46	...	...
Parent violence	...	1.46	...	...	1.90	2.23	...	1.47	...	...	1.81	1.73	1.38	...	...	...	...	...
Parent substance abuse	...	...	...	3.58	1.89	2.08	2.33	...	...	...	...	...	...	...	3.28	...	...	...
Skipping school	...	...	...	...	1.56	1.37	...	...	...	...	...	2.36	1.76	1.56	1.47	1.51	1.59	...
Friend/family suicide	...	...	...	1.38	...	1.26	2.16	1.96	1.81	1.67	1.48	1.33	1.32	...	...	...	...	...
Concern about drugs/violence in community	...	...	...	...	...	...	...	...	...	1.12	1.08	1.05	...	...	...	...	...	...
Protective factors																			
Parent/family connectedness ^b	0.53	0.46	0.44	0.67	0.78	...	0.37	0.42	0.32	0.44	0.48	0.51	0.83	...	0.62	0.76	...	...
Other adult connectedness ^b	0.78	0.79	...	0.78	0.79	...	...	...	0.63	...	0.77	...	...	...	...	...	...	...
Trying hard in school	0.72	0.84	0.75	...	...	...	...	...	...	...	...	...	...	...	...	0.88	...	...
Religious beliefs ^c	...	...	...	0.86	0.86	...	...	...	...	...	0.91	0.78	0.92	...	1.13	0.90	...	...
Attend religious services ^c	...	...	...	...	0.87	0.86	...	...	...	1.12	...	...	...	0.84	...	0.92	0.87	...
Control variable: sex	0.92	0.78	0.63	1.21	1.38	2.26	0.87	0.71	0.71	1.49	1.21	1.62	2.37	2.96	3.03	4.39	3.17	2.50	

^aOdds ratio at $P < .01$. An odds ratio greater than 1 indicates lower involvement with outcome; an odds ratio less than 1 indicates greater involvement with outcome.

^bParent family connectedness and other adult connectedness: $r_s = 0.40$ to 0.50 across age groups.

^cReligious beliefs and attend religious services: $r_s = 0.30$ across age groups.

actively common, with 40.1% of the participating teenagers reporting such emotions. Consistently, male respondents reported rage significantly more often than their female counterparts in each age group. One of the factors associated with rage was having a friend or family member who had attempted or committed suicide.

Physical and sexual abuse experiences were also associated with rage among all of the groups of teens. In the case of older youths (13 years or above), parental violence was associated with a significantly greater risk of rage. Conversely, when teenagers reported connectedness to parents, they were significantly less likely (half as likely or less) to report experiencing rage. In addition, connectedness to other adults was protective among some groups of teenagers, as was having religious beliefs (Table 2).

Examination of the factors related to emotional distress showed a very strong association with abuse. Specifically, whereas 9.1% of young people who did not indicate an experience of sexual abuse reported ever having attempted suicide, 23.1% who had experienced sexual abuse reported having done so. Similar relationships were observed for physical abuse. Strong associations were also observed between both types of abuse and depression as well as rage (Table 3).

Violence

There is mounting concern in many countries of the Caribbean regarding youth violence. In examining the factors associated with violence, it is not surprising that respondents who reported rage were much more likely than their peers to report involvement in violence (odds ratios ranged from 2.44 for the youngest group to 3.23 for those aged 16–18 years). Male respondents were much more likely than female respondents to report involvement in violence (odds ratios were 2.37 for the 10- to 12-year group, 2.96 for the 13- to 15-year group, and 3.03 for the 16- to 18-year group). Among respondents younger than 16 years, parental connectedness was protective against violence; among those older than 16 years, self-reported attendance at religious services was

TABLE 3—Relationships Between Experiences of Abuse and Emotional Distress: Caribbean Youth Health Survey, 1998.

Type of Emotional Distress	No Abuse, %	Physical Abuse, %	Sexual Abuse, %	Both Types of Abuse, %
Depression (50.4% ^a)	45.7	65.4	61.9	69.7
Rage (40.1% ^a)	37.8	54.7	53.5	51.2
Suicide attempt (12.1% ^a)	9.1	20.1	23.1	28.9

^aPercentage of total sample reporting.

associated with lower rates of violence (Table 2).

Sexual Intercourse

Early initiation of sexual intercourse is of mounting concern in the Caribbean because of pregnancy risks as well as the rising prevalence of HIV among young people. Male respondents were more than twice as likely as their female counterparts to report having had sexual intercourse. Both rage and physical or sexual abuse experiences were associated with early sexual intercourse among all of the age groups. As was true for violence and substance abuse, there was a strong association between early initiation of sexual activity and skipping school.

Regarding factors associated with delay of sexual activity, connectedness to parents was strongly protective among teenagers younger than 16 years. Among respondents who were 13 years or older, attendance at religious services was associated with a lower rate of reporting ever having had intercourse than the rate among those who did not attend services (Table 2).

DISCUSSION

When we look across risk behaviors—whether in the form of violence, substance use, or early sexual intercourse—certain factors are associated with much lower rates of involvement, whereas other factors are associated with significantly higher rates. Specifically, youths who report rage, having experienced physical or sexual abuse, or having a friend or family member who has attempted or completed suicide are at significantly greater risk than their peers of reporting involvement in health risk behaviors and experiences of emotional distress. In addition,

many of these same young people report skipping school more frequently than their peers.

Conversely, young people who report connectedness to their parents are much less likely than others to report involvement in or experiencing of these negative health outcomes. Likewise, attendance at religious services is associated with less involvement in a range of risk behaviors. The same is true for school connectedness (as measured via “trying hard in school”), which we found to be associated with better self-assessed health status and less sexual intercourse among youths aged 13 to 15 years. When these risk and protective factors are compared with those seen among young people in the United States, a number of similarities as well as important differences arise.

For example, in the Caribbean, as in the United States, family is central to the health and well-being of young people. Specifically, in both the Caribbean and the United States, young people are at increased risk for negative health outcomes and emotional distress when they have a family history of suicidal thoughts and attempts. In addition, in both regions violence has been found to be associated with a history of family suicide, as have adolescent emotional distress and suicidality.⁹

Conversely, family connectedness has been shown to be associated with lower risk involvement, better self-assessed health status, and fewer reported suicidal attempts. Borowsky et al.,¹⁰ in their study of US adolescents, found that parent/family connectedness was protective against suicidality across both sexes and across all ethnic groups examined. This result was consistent with Borowsky et al.’s¹¹ findings among Native American youths and Guiao and Esparza’s¹² findings for Mexican American teenagers. In terms of violence involvement, Blum and

Rinehart¹³ reported positive parent/family relationships to be associated with lower rates of violence among all of the groups of adolescents they studied except White females. Although important differences in family structure can be found between the Caribbean and the United States, it is clear that, in both contexts, family matters.

School matters in both settings as well. Specifically, in both the United States¹⁴ and the Caribbean, school connectedness is associated with significantly fewer reported instances of emotional distress, suicidality, and early sexual intercourse. Resnick et al.¹⁵ found such associations in a population of youths residing in Minnesota, and Steinberg¹⁶ and Hawkins et al.¹⁷ suggested that creating bonds with the school is critically important to positive youth outcomes. The current findings suggest that this North American association is not unique.

Finally, in terms of factors specific to individuals, physical abuse and sexual abuse have consistently been found to produce devastating effects in both the Caribbean and US contexts. In the United States, abuse has been associated with increased rates of tobacco use, interpersonal violence, and emotional distress and suicidality among almost all groups of adolescents.¹³ Similar associations have been revealed in the Caribbean.

A characteristic that seems to be less consistent between the 2 settings is rage. In our study, 2 of every 5 respondents endorsed an item related to feeling homicidal rage some or nearly all of the time. There was a clear sex bias, with males more likely to report experiencing such rage; however, there was a comparable sex bias in regard to interpersonal violence. Few data are available on the prevalence of rage among US adolescents. However, the factors shown to be associated with lower rates of reported rage in the Caribbean context (e.g., parent connectedness) and those that seem to exacerbate such emotions (parental violence, physical/sexual abuse) would presumably be similar in the United States.

CONCLUSIONS

A number of serious health issues are faced by young people in the Caribbean.

What is clear, however, is that many of the factors associated with lower rates of participation in risk behaviors in the United States are the same in the Caribbean. This similarity is not surprising, in that many of the factors identified relate to the establishment of human bonds. What this finding does suggest, however—if US experiences provide any guide—is that interventions that strengthen the protective factors present in the lives of young people tend to be more effective than those focused on risk reduction alone.¹⁸ We must apply our understanding of risk and protective factors to developing interventions that improve the outcomes experienced by all young people. ■

About the Authors

Robert W. Blum and Trish Beuhring are with the Division of General Pediatrics and Adolescent Health, University of Minnesota, Minneapolis. Linda Halcón is with the School of Nursing, University of Minnesota. Ernest Pate is with the Department of Family Health, Pan American Health Organization, Washington, DC. Sheila Campell-Forrester is with the Ministry of Health, Montego Bay, Jamaica. Anneke Venema is with the Department of Family Health, Pan American Health Organization, Bridgetown, Barbados.

Requests for reprints should be sent to Robert W. Blum, MD, PhD, University of Minnesota, 200 Oak St SE, Suite 260, Minneapolis, MN 55455 (e-mail: blumx001@umn.edu).

This article was accepted June 3, 2002.

Contributors

R. W. Blum was the principal investigator on this study and the lead author. L. Halcón wrote sections of the article and coordinated the data analysis. T. Beuhring developed the sampling frame, participated in the in-country training, and worked with national-level statisticians to ensure the representativeness of the samples. E. Pate conceptualized the original study, coordinated the nine countries collaborating in the project, and wrote sections of the article. S. Campbell-Forrester had a key role in instrument development, participated in ensuring support from the participating countries' ministries of health, and reviewed the article. A. Venema coordinated the sample selection, oversaw data entry and management at the country level, and reviewed the article.

Acknowledgments

This study was completed under the auspices of the World Health Organization Collaborating Center on Adolescent Health, University of Minnesota Center for Adolescent Health and Development, in conjunction with the Pan American Health Organization. The study was supported in part by the government of Italy, which provided funds supporting maternal and child health. Additional support came from the Pan American Health Organization country funds and the Graduate School of the University of Minnesota.

Human Participant Protection

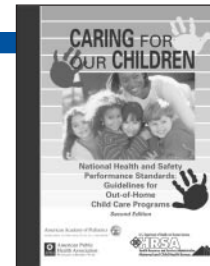
The consent protocol followed community standards requiring passive notification of parents by the school principal or senior administrator, who sent letters home by mail or with the students. The study was approved by the institutional review board of the University of Minnesota.

References

- Smikle MF, Dowe G, Hylton-Kong T, Williams E, Baum M. Risky behaviour in Jamaican adolescent patients attending a sexually transmitted disease clinic. *West Indian Med J.* 2000;49:327–330.
- Soyibo K, Lee MG. Use of alcohol, tobacco and non-prescription drugs among Jamaican high school students. *West Indian Med J.* 1997;46:111–114.
- Soyibo K, Lee MG. Domestic and school violence among high school students in Jamaica. *West Indian Med J.* 2000;49:232–236.
- Kirsch TD, Beaudreau RW, Holder YA, Smith GS. Pediatric injuries presenting to an emergency department in a developing country. *Pediatr Emerg Care.* 1996;12:411–415.
- Soyibo K, Lee MG. Use of illicit drugs among high-school students in Jamaica. *Bull World Health Organ.* 1999;77:258–262.
- Hutchinson GA, Simeon DT. Suicide in Trinidad and Tobago: associations with measures of social distress. *Int J Soc Psychiatry.* 1997;43:269–275.
- Harris L, Blum RW, Resnick M. Teen females in Minnesota: a portrait of quiet disturbance. *Women Ther.* 1991;11:119–135.
- Kann L. The Youth Risk Behavior Surveillance System: measuring health-risk behaviors. *Am J Health Behav.* 2001;25:272–277.
- Resnick MD, Bearman PS, Blum RW, et al. Protecting adolescents from harm: findings from the National Longitudinal Study on Adolescent Health. *JAMA.* 1997;278:823–832.
- Borowsky IW, Ireland M, Resnick MD. Adolescent suicide attempts: risks and protectors. *Pediatrics.* 2001; 107:485–493.
- Borowsky I, Resnick MD, Ireland M, Blum RW. Suicide attempts among American Indian and Alaska Native youth: risk and protective factors. *Arch Pediatr Adolesc Med.* 1999;153:573–580.
- Guiño IZ, Esparza D. Suicidality correlates in Mexican American teens. *Issues Ment Health Nurs.* 1995;16:461–479.
- Blum RW, Rinehart PM. *Protecting Teens: Beyond Race, Income and Family Structure.* Minneapolis, Minn: Division of General Pediatrics and Adolescent Health, University of Minnesota Adolescent Health Program; 2000.
- McNeely C, Nonnemaker J, Blum RW. School connectedness: the untapped power of schools to diminish risk behaviors. *J Sch Health.* 2002;72:138–146.
- Resnick MD, Harris LJ, Blum RW. The impact of caring and connectedness on adolescent health and well-being. *J Paediatr Child Health.* 1993;29(suppl 1): 83–89.
- Steinberg L. *Beyond the Classroom: Why School Reform Has Failed and What Parents Need to Do.* New York, NY: Simon & Schuster; 1996.

17. Hawkins JD, Shavel D, Catalano RF, Chappell PJ. *Communities That Care Data Workbook: Indicators of Risk Factors for Preventing Adolescent Problem Behaviors.* Seattle, Wash: Developmental Research & Programs Inc; 1993.

18. Kirby D. *Emerging Answers.* Washington, DC: National Campaign to Prevent Teen Pregnancy; 2001.



2nd Edition



Caring For Our Children: National Health and Safety Performance Standards for Out-of-Home Child Care

Caring for Our Children is the most comprehensive source of information available on the development and evaluation of health and safety aspects of day care and child care centers. The guidelines address the health and safety needs of infants to 12-year-olds. This field-reviewed book provides performance requirements for child care providers and parents, as well as for regulatory agencies seeking national guidelines to upgrade state and local child care licensing.

The second edition is extensively revised based on the consensus of ten technical panels each focused on a particular subject. The book includes eight chapters of 658 standards and a ninth chapter of 48 recommendations for licensing and community agencies and organizations.

ISBN 0-97156-820-0
2002 ■ 544 pages ■ Softcover
\$24.50 APHA Members
\$34.95 Nonmembers
plus shipping and handling

American Public Health Association



Publication Sales
Web: www.apha.org
E-mail: APHA@TASCO1.com
Tel: (301) 893-1894
FAX: (301) 843-0159

CAR0211