

Urban Jamaican Children's Exposure to Community Violence

ME Samms-Vaughan¹, MA Jackson¹, DE Ashley²

ABSTRACT

Exposure to violence in childhood is associated with aggression in adulthood. The high level of community violence in Jamaica is likely to expose Jamaican children to violence. There has been no detailed study of the exposure of Jamaican children to violence in their daily lives. Some 1674 urban 11-12-year-old children, previously part of a national birth cohort study, completed a questionnaire detailing their exposure to violence as witnesses, victims and aggressors. Their parents completed a socio-economic questionnaire. Jamaican children had high levels of exposure to physical violence. A quarter of the children had witnessed severe acts of physical violence such as robbery, shooting and gang wars, a fifth had been victims of serious threats or robbery and one in every twelve had been stabbed. Children reported being least exposed to sexual violence and to being shot at. Robbery was an almost universal experience affecting children from all schools and socio-economic groups. The single commonest experience as a victim of violence was the loss of a family member or close friend to murder, affecting 36.8% of children. Children's experiences of witnessing violence occurred chiefly in their communities but their personal experiences of violence occurred at school. Boys and children attending primary school had greater exposure to violence as witnesses and victims. Socio-economic status discriminated exposure to physical violence as witnesses but not as victims. Intervention strategies to reduce children's exposure to violence should include community education on the impact of exposure to violence on children, particularly the loss of a significant person, and the development of a range of school-based violence prevention programmes.

Niños Jamaicanos en Zonas Urbanas Expuestos a la Violencia de las Comunidades

ME Samms-Vaughan¹, MA Jackson¹, DE Ashley²

RESUMEN

La exposición a la violencia en la niñez se halla asociada con la agresión en la edad adulta. El alto nivel de violencia comunitaria en Jamaica, tiende a exponer a los niños jamaicanos a la violencia. Hasta el momento no ha habido un estudio detallado de la exposición de los niños jamaicanos a la violencia en sus vidas diarias. Unos 1 674 niños urbanos de 11 a 12 años de edad, quienes previamente formaban parte de un estudio de cohorte de nacimientos a escala nacional, respondieron a una encuesta dando detalles de su exposición a la violencia como testigos, víctimas y agresores. Sus padres respondieron una encuesta socio-económica. Los niños jamaicanos presentaban altos niveles de exposición a la violencia física. Una cuarta parte de los niños había sido testigo de serios actos de violencia física, tales como robo con fuerza, tiroteos y guerras entre pandillas rivales. Una quinta parte de ellos había sido víctima de serias amenazas o de robo, y uno de cada doce había sido apuñalado. Los niños informaron haber estado menos expuestos a la violencia sexual y a los disparos. El robo fue casi una experiencia universal que afectó a los niños de todas las escuelas y grupos socio-económicos. La experiencia más común en cuanto a ser víctimas de la violencia estuvo dada por la pérdida de algún miembro de la familia o algún amigo cercano por asesinado, lo cual afectó al 36.8% de los niños. Las experiencias de los niños en relación con haber sido testigos de hechos violentos, tuvieron lugar principalmente en sus comunidades, pero sus experiencias personales de violencia ocurrieron en la escuela. Los niños que asistían a la escuela primaria estuvieron más expuestos a la violencia como testigos y como víctimas. El estatus socio-económico resultó un criterio discriminante en cuanto a la exposición a la violencia física en forma de testigo, pero no como la víctima. Las estrategias de intervención para reducir este problema deben incluir la educación de la comunidad respecto al impacto de la exposición de los niños a la violencia - particularmente con respecto a la pérdida de alguna persona importante para ellos - así como el desarrollo de una serie de los programas de prevención de la violencia en las propias escuelas.

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From: Department of Obstetrics, Gynaecology and Child Health, Section of Child Health, The University of the West Indies, Kingston 7 and Ministry of Health, Kingston, JamaicaII, West Indies.

Correspondence: Dr M Samms-Vaughan, Department of Obstetrics, Gynaecology and Child Health, Section of Child Health, The University of the West Indies, Kingston 7, Jamaica, West Indies. Fax: (876) 927-1446, e-mail: msamms@cwjamaica.com.

INTRODUCTION

The increase in crime and violence in many nations, including Caribbean countries, has been a cause of concern particularly over the last decade. Indeed, this led the 49th World Health Assembly meeting in 1996 to adopt Resolution WHA49.25, who declared violence to be a leading and growing public health concern (1). In particular, the increase in incidence of intentional injuries against children was noted.

Violence in Jamaica has been pervasive, with a murder rate of 40 per 100 000 persons for the year 2002. The scientific study of violence in Jamaica, a necessary prerequisite for developing intervention strategies to reduce violence, is a recent phenomenon, and has been largely based on adult populations who access health or allied services. The impact of violence on the health service, the development of a hospital-based injury surveillance system and intimate partner violence among women have recently been reported (2-4).

Exposure to violence in childhood has been associated with aggressive and antisocial behaviour in childhood and with offending in adulthood (5, 6). Yet there has been little research on violence in Jamaica as it relates to children. Soyibo *et al* used an eight-item questionnaire, which reported on 16-17-year-old children's exposure to community, domestic and school violence as victims or witnesses and as aggressors by virtue of injuring persons (7). In Soyibo's study, students reported high levels of exposure to violence, with three-quarters of students witnessing violence and just under a third reporting injuring persons. However, details of the nature and extent of the exposure to violence in children's daily lives, particularly younger children, have not been reported previously as has been done for developed countries (8).

This population based study reports in detail on Jamaican children's exposure to violence in their daily experiences. Associations with gender, social class and school type are analyzed to suggest possible strategies for intervention. Exposure to violence in the form of corporal punishment is reported on elsewhere (Samms-Vaughan *et al*, personal communication).

SUBJECTS AND METHODS

A total of 1720 11-12-year-old Jamaican children was evaluated as part of a larger study of child development and behaviour in Jamaica (9). The children form a geographical sub-group of a national birth cohort of 10 000 children identified during the Jamaican Perinatal Mortality and Morbidity Study 1986-1987 (10). The birth cohort comprised all children born in the months of September and October 1986 (n = 10 500) and the 11-year-old study included all cohort children resident or attending school in the two most urban parishes in Jamaica: Kingston and St Andrew.

Children were identified by their date of birth from the Ministry of Education and school records. Parents and

children were interviewed at school. Parents completed a socio-economic questionnaire and children completed an "Exposure to Violence" questionnaire. Questionnaires were administered by interview by trained research assistants. Socio-economic status was measured by the occupation of the major wage earner in the home using a modified version of the Revised Classification of Occupations of the Statistical Institute of Jamaica. Children's exposure to violence was measured by a locally developed questionnaire which enquired of children's exposure in three different situations: as witnesses, victims and aggressors. Lifetime exposure, as well as recent exposure (within the past month), was documented.

Though questionnaires on childhood exposure to violence have been developed for other societies (11), they are not culturally relevant to Jamaican society, as they fail to enquire of common and /or unique methods of inflicting violence in Jamaica such as throwing stones and use of acid.

Descriptive statistics (means and standard deviations) were computed for continuous data and frequencies for categorical variables. Differences in children's exposure to violence were tested by the chi-square test, Mann-Whitney U or t-test as appropriate. Multivariate analyses (multiple linear regression) were performed to identify the independent associations of gender, socio-economic status and school type with experiences of violence. Statistical significance was achieved when $p < 0.05$. Data were analyzed using SPSS.

Ethical approval for the study was obtained from the Ethical Committees of the Faculty of Medical Sciences of The University of the West Indies and the Ministry of Health, Jamaica. The Ministry of Education, Jamaica, gave consent for the research to be conducted in schools. Parents/guardians gave consent for their children to participate.

RESULTS

Of an estimated 2048 children born in September and October 1986 and resident or attending school in Kingston (personal communication, Statistical Institute of Jamaica), 1720 (83.9%) were seen. Of these, 1172 parents or guardians (68.1%) participated and completed a socio-economic questionnaire. A total of 1674 children (97.3%) completed the Exposure to Violence questionnaire.

The mean age of the children was 11.7 ± 0.3 years and the gender distribution was 51.4% females and 48.6% males, consistent with that of the general population. Of that total, 63.4% of children were attending public primary/all-age schools, 4.1% private primary (preparatory) and 32.5% high or secondary school. Children whose parents or guardians participated in the study had a similar mean age and gender distribution to those who did not, but significantly more parents of children attending preparatory and high schools participated ($p < 0.01$), suggesting a bias towards the higher social classes. However, for the two-thirds of the sample for whom socio-economic information was available, the

majority of children lived in homes where the head of the household had an occupation in the skilled (22.9%), semi-skilled (24.7%) or unskilled category (23.5%). Approximately 14.6% and 14.3%, respectively, lived in homes where the household head was in a professional or technical and clerical occupation. The potential parental response bias was not supported by the socio-economic distribution. Additionally, the large sample size ensured adequate representation of each socio-economic group.

Lifetime Exposure as Witnesses

The proportion of children reporting lifetime exposure to specific violent incidents as witnesses or victims is presented in Table 1. The six leading lifetime exposures witnessed by children were fights (92.5%), stone-throwing (65.7%), arrests by policemen (60.4%), serious threats (54.6%), viewing of dead bodies (45.6%) and stab-wounding (43.9%). The mean number of exposures to the 11 violent events as witnesses was 4.1 ± 2.2 , with a median of 4.0. With the exceptions of witnessing robbery, acid injury and sexual assault, boys reported a significantly higher lifetime prevalence of witnessing all exposures.

More boys (51.0%) than girls (40.6%) had viewed a dead body, other than at funerals, in their lifetime (Table 1). On average, children had seen three dead bodies and boys reported seeing more bodies than girls (boys 3.5 ± 7.4 , median=2.0; girls 2.4 ± 2.8 , median = 1.0; $p < 0.05$). The

majority of bodies that had been viewed by children met a violent death. The principal causes of death were: shooting (58.7%), illness (25.8%), stabbing or chopping (21.5%), motor vehicle accidents (14.7%) and beating (3.7%). Some 2.2% reported viewing bodies after accidental deaths, other than motor vehicles, with the majority of accidents caused by drowning and burns. Eight children reported viewing deaths from suicide and four children each reported viewing deaths following rape and from obeah (witchcraft).

Lifetime Exposure as Victims

The pattern of exposure as victims of physical violence was similar to that of exposure as witnesses. Children most commonly reported being victims of fights (34.8%), stone-throwing (23.4%), threats (22.3%), robbery (19.4%) and stab-wounding (12.6%). The mean number of exposures to the eight physical violent events as victims was 1.2 ± 1.3 , with a median of 1.0. Fewer children reported being victims of sexual assault or shooting (Table 1). Significantly more boys than girls were victims of all forms of violence, with the exceptions of sexual assault, where girls reported more experiences as victims ($p < 0.01$).

Children also became victims of violence when they suffered the loss of family members or friends as a result of murder. Overall, 36.8% had this experience, with 2.6%, 0.3% and 1.9% losing their father, mother and brother or sister, respectively. A greater proportion of children had lost more distant relatives, such as aunts and uncles (13.1%), cousins (8.4%) and grandparents or great grandparents (3.4%) to murder. As many as 9.0% of children reported the murder of close family friends; 4.4% of these were neighbours, friends of their relatives or adults within their community but 4.6% were reported simply as friends. Three children, however, reported the loss of their classmates or best friend.

Lifetime exposure as Aggressors

Fighting and weapon-carrying behaviour were used to identify children's exposure to violence as aggressors. Almost three-quarters (73.4%) of children stated that they had participated in fights over their lifetime and this was significantly higher in boys (82.0%) than in girls (65.5%) ($p < 0.001$). The carrying of weapons during their lifetime was reported by 8.1% of children, with boys (11.2%) reporting more weapon-carrying than girls (5.2%) ($p < 0.01$). Girls favoured stones, scissors and pencil sharpener blades while boys preferred knives, sticks and broken bottles. Three per cent of boys and girls carried ice picks.

Socio-Economic Status

As shown in Table 2, children from the highest socio-economic groups had a much lower lifetime prevalence of witnessing all violent events. In comparison, as victims, they were just as likely as children of the lower socio-economic groups to experience threats and robbery. Children from the

Table 1: Lifetime exposure as witnesses or victims of violent incidents by gender

Incident	Males (814)	Females (860)	Total (1674)
Children as Witnesses			
Fights	95.3 (776)	89.8 (773)	92.5 (1549) ***
Stoning	70.8 (576)	60.9 (524)	65.7 (1100) ***
Police arrests	66.7 (541)	54.5 (469)	60.4 (1010) ***
Threats	60.8 (494)	48.8 (419)	54.6 (913) ***
Dead bodies	51.0 (414)	40.6 (349)	45.6 (763) ***
Stabbing	48.5 (395)	39.5 (340)	43.9 (735) ***
Robbery	30.0 (244)	29.6 (255)	29.8 (499)
Shooting	31.2 (253)	21.4 (184)	26.2 (437) ***
Gang wars	28.2 (229)	23.1 (198)	25.5 (427) *
Acid injury	8.6 (70)	11.1 (95)	9.9 (165)
Sexual assault	3.8 (31)	4.3 (37)	4.1 (68)
Children as Victims (Physical)			
Fights (Beaten up)	47.4 (385)	22.9 (197)	34.8 (582)***
Stoning	31.5 (256)	15.8 (136)	23.4 (392)***
Threats	29.9 (243)	15.1 (130)	22.3 (373)***
Robbery	22.4 (182)	16.6 (143)	19.4 (325)**
Stabbing	18.0 (146)	7.4 (64)	12.6 (210)***
Police harassment	3.7 (30)	1.9 (16)	2.8 (46)*
Sexual assault	1.2 (10)	3.3 (28)	2.3 (38)**
Shooting	1.5 (12)	0.5 (4)	1.0 (16)*
Children as Victims of Violence (Loss)			
Murder of family/friend	36.0 (291)	37.5 (322)	36.8 (613)

*** $p < 0.0001$; ** $p < 0.001$; $p < 0.05$

Table 2: Lifetime exposure as witnesses or victims of violent incidents by socio-economic status

Incidents	Socio-Economic Status					
	Unskilled	Semi-skilled	Skilled	Technical	Professional	All
Witnesses						
Fights	96.2 (229)	96.5 (248)	93.0 (226)	86.2 (131)	81.5 (119)	92.0 (953)***
Stone throwing	71.0 (169)	63.4 (163)	65.8 (160)	53.9 (82)	49.3 (72)	62.4 (646)***
Police arrests	70.0 (166)	59.4 (152)	60.2 (145)	53.3 (81)	37.0 (54)	57.9 (598)***
Threats	61.3 (146)	58.2 (149)	56.6 (137)	41.4 (63)	34.9 (51)	52.8 (546)***
Dead bodies	50.6 (120)	48.0 (123)	46.5 (113)	35.5 (54)	27.4 (40)	43.5 (450)***
Stab wounding	48.3 (115)	47.3 (121)	47.7 (116)	30.3 (46)	18.5 (27)	41.1 (425)***
Robbery	32.4 (77)	34.6 (89)	31.7 (77)	16.4 (25)	15.8 (23)	28.1 (291)***
Shooting	32.4 (77)	31.9 (82)	25.9 (63)	19.1 (29)	11.0 (16)	25.8 (267)***
Gang wars	31.2 (74)	28.8 (74)	25.5 (62)	13.8 (21)	4.1 (6)	22.9 (237)***
Acid injury	13.5 (32)	9.8 (25)	9.5 (23)	4.0 (6)	4.1 (6)	92 (8.9)**
Sexual assault	4.6 (11)	6.2 (16)	2.1 (5)	2.6 (4)	0.7 (1)	37 (3.6)*
Victims (Physical)						
Fights	36.1 (86)	34.0 (87)	37.9 (92)	21.7 (33)	26.7 (39)	32.6 (337)**
Stone-throwing	33.3 (79)	21.2 (54)	20.2 (49)	14.5 (22)	14.4 (21)	21.8 (225)***
Threats	23.9 (57)	19.9 (51)	21.4 (52)	15.1 (23)	15.8 (23)	19.9 (206) NS
Robbery	17.6 (42)	18.4 (47)	19.8 (48)	23.2 (35)	18.5 (27)	19.2 (199) NS
Stab wounding	12.2 (29)	16.1 (41)	10.7 (26)	9.9 (15)	4.1 (6)	11.3 (117)**
Police harassment	2.1 (5)	4.3 (11)	3.3 (8)	2.0 (3)	0.7 (1)	2.7 (28) NS
Sexual assault	1.3 (3)	1.6 (4)	1.2 (3)	2.6 (4)	3.4 (5)	1.8 (19) NS
Shooting	1.3 (3)	1.6 (4)	0.4 (1)	1.3 (2)	–	1.0 (10) NS
Victims (Loss)						
Murder of family/friend	44.7 (106)	39.2 (100)	37.2 (90)	27.3 (41)	23.3 (34)	36.0 (371) ***
Aggressors						
Weapon	7.1 (17)	6.3 (16)	6.2 (15)	5.3 (8)	5.5 (8)	6.2 (64) NS
Fighting	80.3 (191)	73.3 (187)	76.5 (186)	59.2 (90)	61.0 (89)	71.9 (743)***

***p < 0.0001; **p < 0.001; p < 0.05

Table 3: Lifetime exposure as witnesses or victims of violent incidents by school category

Incident	School Type			
	Primary/All-Age	Preparatory	High	Total
Witnesses				
Fights	95.2 (1000)	91.3 (63)	81.3 (482)	92.5 (1545) ***
Stoning	72.2 (758)	52.2 (36)	55.1 (304)	65.7 (1098) ***
Police arrests	67.3 (705)	47.1 (32)	49.0 (270)	60.4 (1007) ***
Threats	60.7 (636)	39.1 (27)	45.0 (248)	54.6 (911) ***
Dead bodies	53.2 (558)	34.8 (24)	32.7 (180)	45.7 (782) ***
Stabbing	53.8 (565)	20.3 (14)	27.9 (154)	43.9 (733) ***
Robbery	34.6 (363)	13.0 (9)	22.6 (125)	29.7 (497) ***
Shooting	32.6 (342)	14.5 (10)	15.1(83)	21.1 (435) ***
Gang wars	32.9 (344)	8.7 (6)	13.6 (75)	25.5 (425) ***
Acid injury	12.9 (135)	2.9 (2)	4.9 (27)	9.8 (164) ***
Sexual assault	4.9 (51)	2.9 (2)	2.5 (14)	4.0 (67) *
Victims (Physical)				
Fights	40.7 (427)	24.6 (17)	24.8 (137)	34.8 (581) ***
Stoning	28.1(294)	14.5 (10)	15.8 (87)	23.4 (391) ***
Threats	25.5 (267)	15.9 (11)	17.2 (95)	22.3 (373) ***
Robbery	18.9 (198)	15.9 (11)	21.1 (116)	19.5 (325) NS
Stabbing	14.5 (152)	4.3 (3)	9.8 (54)	12.5 (209) **
Police harassment	3.2 (33)	2.9 (2)	1.8 (10)	2.7 (45) NS
Sexual assault	1.8 (19)	2.9 (2)	3.1 (17)	2.3 (38) NS
Shooting	1.4 (15)	0.0 (0)	0.2 (1)	1.0 (16) NS

***p < 0.0001; **p < 0.001; p < 0.05

lower socio-economic groups were significantly more likely to experience beatings, stone-throwing and stab-wounding and were also more likely to report a relative or family friend murdered ($p < 0.001$). No significant differences were noted between the social classes for relatively rare events such as being shot at, being raped or being harassed by the police.

As aggressors, children from the lower socio-economic groups were more frequently involved in fighting and weapon-carrying to school; significance was only attained for fighting ($p < 0.01$).

School Type

Children attending primary schools reported the highest prevalence of lifetime experiences as witnesses of violence for all incidents, including viewing of dead bodies (Table 3). There was little difference in witnessing violence between preparatory and high school attendees.

Primary school attendees also had the highest prevalence rates of victimization as a result of beatings, stone-throwing, stab-wounding and threats. Experiences of robbery were similar among children attending all school types. For the more rare events of police harassment, sexual assault and shooting, there were no significant differences by school type.

Recent Exposure to Violence and Location of Occurrence

Children were asked to provide details of their experiences within the previous month. Table 4 lists the past-month prevalence of violent incidents and the locations in which they occurred. Apart from witnessing fights, where two-thirds of those reporting lifetime exposure indicated an

experience within the previous month, approximately one-half of those reporting lifetime exposure had witnessed a violent event in the previous month. Witnessing of violence occurred chiefly in the child's own community or in another community. An exception to this was fighting which was most prevalent in the school environment. Many children also witnessed stone-throwing and stab-wounding in their school environment.

A third of children reporting lifetime exposure as victims had an experience within the past month. Unlike witnessing events, children's exposure to violence as victims of beating, robbing, stab-wounding and receiving threats occurred chiefly in their school environment. Being a victim of stone-throwing was most common in the children's own communities but their home and school environments also offered substantial exposure to this form of violence. Almost a third of children were threatened in their own communities. More serious occurrences, such as being a victim of shooting or sexual assault occurred chiefly within home environments.

When questioned about the frequency of recent fights, just over one-quarter of the children (26.4%) reported fighting once; while 6% and less than 1%, respectively, reported fighting 2 or 3 or more times during the preceding month. Children fought with their hands and feet in over 90% of fights.

Repetitive Violent Experiences

Nine to fifteen per cent of children who were victims of violence in the past month experienced repetitive trauma of individual events (*ie* incident occurred two or more times).

Table 4: Frequency and place of occurrence of exposure to violence during the past-month

Incidents	Prevalence	Place of Occurrence				
		Home	Own Community	School	Other Community	Other ^a
Witnesses						
Fights	61.6 % (1049)	6.2 (65)	24.4 (256)	37.1 (389)	8.0 (84)	24.4 (255)
Stoning	39.3 % (669)	6.7 (45)	43.2 (289)	19.3 (129)	20.9 (140)	9.7 (68)
Police arrests	30.4 % (517)	3.1 (16)	57.1 (295)	0.8 (4)	32.5 (168)	6.6 (3.4)
Threats	32.1 % (546)	7.7 (42)	44.0 (240)	18.5 (101)	18.3 (100)	11.6 (63)
Dead bodies						
Stabbing	26.0 % (442)	7.1 (30)	37.9 (160)	22.7 (96)	24.2 (102)	7.9 (34)
Robbery	14.1 % (240)	6.3 (15)	30.8 (74)	4.6 (11)	39.2 (94)	19.2 (46)
Shooting	12.0 % (204)	6.4 (13)	57.8 (118)	2.5 (5)	29.4 (60)	4.0 (8)
Gang wars	12.1 % (206)	0.5 (1)	52.9 (109)	8.3 (17)	28.2 (58)	9.3 (21)
Acid injury	3.4 % (58)	8.6 (5)	55.2 (32)	3.4 (2)	29.3 (17)	3.4 (2)
Sexual assault	1.7 % (29)	10.3 (3)	69.0 (20)	3.4 (1)	17.2 (5)	–
Victims						
Fights	12.0 % (205)	23.9 (49)	12.7 (26)	56.1 (115)	2.0 (4)	5.5 (11)
Stoning	10.5 % (178)	22.5 (40)	32.6 (58)	23.6 (42)	12.9 (23)	8.5 (15)
Threats	9.0 % (152)	11.0 (17)	29.9 (46)	42.2 (65)	10.4 (16)	6.4 (10)
Robbery	7.9 % (135)	5.9 (8)	3.7 (5)	62.2 (84)	11.1 (15)	17.0 (23)
Stabbing	4.5 % (77)	6.5 (5)	13.0 (10)	74.0 (57)	5.2 (4)	1.3 (1)
Police harassment	0.6 % (11)	36.4 (4)	36.4 (4)	–	18.2 (2)	9.1 (1)
Sexual assault	0.7 % (12)	25.0 (3)	41.7 (5)	–	16.7 (2)	–
Shooting	0.3 % (5)	–	60 (3)	20 (1)	–	20.0 (1)

These events included beating (12%), robbery (13%), stabbing (9%) and stone-throwing (15%). Boys and girls had similar repetitive experiences.

Multivariate Analyses

Table 5 presents the step-wise multiple regression analyses of the factors shown to be significant on univariate analysis, with each variable within the model controlling for the others. The outcome variables were the likelihood of exposure to violence as witnesses or victims as measured by the total number of events experienced. In these models, boys and primary school children were significantly more likely to witness violence and also be victims of violence. Children residing in homes in which the head of the household was employed in a lower occupational category, such as unskilled employment, were more likely to witness violence but had no greater likelihood of being a victim. The percentages of the variance (r^2) explained by these exposures were modest (exposures as witness, 16.9%; exposure as victims 10.2%).

Table 5: Multiple regression analyses of gender, socio-economic status and school type on children's experiences of violence

Variables a	Witness to violence		Victim of violence	
	B + SE	Sig t	B + SE	Sig t
Gender	0.498 + 0.125	0.001	0.614 + 0.075	0.001
Occupation of the head of household	-0.298 + 0.50	0.001	-0.045 + 0.030	0.136
School	-0.629 + 0.75	0.001	-0.238 + 0.045	0.001
r^2	0.169		0.102	

Variables entered as indicated: gender (0 = female, 1 = male), occupation of the head of household (unskilled / semi-skilled / skilled / technical / professional; 1-5), school (primary / all-age = 1; preparatory = 2; high = 3)

DISCUSSION

Jamaican children have extremely high levels of exposure to violence as witnesses and victims at an early age. A quarter of children had witnessed severe acts of physical violence such as robbery, shooting and gang wars, a fifth had been victims of serious threats or robbery and one in every twelve had been stabbed. Children reported being least exposed to sexual violence as witnesses and victims and to being shot or shot at as victims.

At the time of this study, there were 589 homicides in the Kingston and St Andrew region with a population of 703 700, giving a homicide rate of 83.7 per 100 000 persons. In 1994, the relatively high crime city of Richmond, Virginia, had 160 homicides and a similar homicide rate of 79.1 per 100 000 persons (8). Eight- to twelve-year-old children (mean age 11 years) in the most violent areas of Richmond reported similar experiences of witnessing threats (57%) and

shooting (28%) as Jamaican children but fewer experiences of witnessing persons being stabbed (25%). In inner city Chicago, 15-19-year-olds reported witnessing more shooting (46% in 1994 and 36% in 1996) but only a quarter reported witnessing stabbing with a knife (5). Jamaican children were six times as likely to report being stabbed and twice as likely to report being robbed as children in Richmond where these experiences were reported by only 2% and 10%, respectively. Children in both communities reported similar low rates of being shot or shot at. Differences in exposure would be more pronounced if comparisons were made with Jamaican children from the most violent areas of Kingston and St Andrew only or with inner-city children in Europe where rates of exposure are lower than those in the United States of America (12).

The differences in children's experiences across nations suggest cultural differences in expression of violence. Stab-wounding appears to be particularly common to Jamaican society and the practice begins at an early age. Children witnessed stab-wounding in many different environments but their personal experiences occurred chiefly at school, suggesting peer violence. In Richmond, children were asked to report on stabbing events associated with knives which are likely to be the only implements used in that society. However, in Jamaican society, many different objects may be used to inflict a stab wound as evidenced by the weapons children reported carrying. Knives, as well as scissors, pencil sharpener blades, broken bottles and ice picks, were implements used to inflict wounds by stabbing.

There were some unique expressions of physical violence that occurred in Jamaica but which have not been previously reported in the literature and do not appear in standardized questionnaires of exposure to violence: stone-throwing and the use of acid. Stone-throwing was the second most commonly witnessed and experienced form of violence. A tenth of children witnessed acid being thrown at someone but no child had this personal experience.

The only physically violent exposure that occurred more frequently among children in Richmond was witnessing sexual assault (11%). However, no child reported being a victim of sexual assault in Richmond while over 2% of Jamaican children did. Sexual violence against children appears to be more prominent in Jamaican society.

Probably the most important finding of this study is the potential emotional impact of violence on children, both as witnesses and victims. Almost a half of children had viewed a dead body with the majority of deaths occurring as a result of violence. In comparison, in Richmond, only a tenth of children had this experience and only a quarter had heard of a body being present in their community. Further, the loss of a family member or close friend due to a homicide was the single most common experience as a child victim in Jamaica, affecting more than a third of children overall and almost a half of children from lower socio-economic backgrounds. Many researchers have focussed on the witnessing of murder

by children and this question is included in standard exposure to violence questionnaires (11). For example, 17% of children in Richmond reported witnessing a murder. However, the emotional victimization due to loss of a significant person in a child's life does not appear on standardized questionnaires and has not been well studied.

Although there was generally a high level of exposure to violence among urban Jamaican children, there were some groups that had exceptionally high levels of exposure. Boys had significantly higher exposure than girls to almost all forms of violence as witnesses and victims. The disparity was greater as victims, with boys experiencing twice as many episodes of physical violence as girls. The only exceptions were sexual assault, where girls were more likely to be victims, and loss of family members or close friends where boys and girls had similar experiences. A similar pattern was noted among children 14 to 19 years old in Cleveland and Colorado, where boys were twice as likely to experience different forms of physical violence in their community but girls were two to four times more likely to report sexual assault (13). This may occur because boys spend more time within the community, both observing and interacting with others, while girls spend much of their time indoors assisting with domestic chores. Multivariate analyses supported the importance of gender as an independent factor in being a witness to, or victim of, physical violence.

Children from the lowest socio-economic group were two to three times more likely to witness violent events, with the exception of stone-throwing, than children from the highest socio-economic group. Socio-economic status remained an independent factor for exposure to violence as witnesses, after controlling for gender and school type, with children from the lowest socio-economic groups having more exposure. In comparison, socio-economic status was not significant for exposure to a number of violent events as victims on univariate analysis and failed to be an independently associated factor on multivariate analysis. In the USA, children living in cities were three to five times more likely to witness or experience violence in their communities but children attending urban schools were also two to three times more likely to experience robbery or stab-wounding (13, 14).

In Jamaica, children of higher socio-economic status are relatively protected from episodes of witnessing violence because of their safer communities and their generally protected lifestyle. For example, they are unlikely to take public transport to and from school. However, unlike the USA, where children of all social classes attend schools within their own communities, few schools in Jamaica are located in communities where children from the higher social classes live. Children from the higher social classes are therefore less protected from experiences of personal violence which chiefly occur at school.

School type was a significant and independent factor for exposure to violence in both forms. Children who

attended public primary or All-Age schools were more likely to witness and experience violence than those attending private primary (preparatory) or secondary school. Differences in school structure may account for the importance of school type. Larger class sizes, higher student-teacher ratios and less direct supervision of students are known to occur in the primary environment and may be the operative factor

The consequences of childhood exposure to violence, including antisocial behaviour, aggression, anxiety, depression, drug use and suicide have been well documented for other societies (8, 13, 14). Another important consequence of exposure to violence as witness or victim in the early years is the intention to use violence to resolve inter-personal conflict in later adolescence (15). The long-term goal for Jamaica must be to scientifically study the causes of violence in communities and to develop appropriate interventions to reduce the incidence through primary prevention. The recently introduced injury surveillance system will assist this process tremendously (3). This paper was not designed to address this long-term goal but has suggested some interventions to reduce children's exposure to violence within their communities and its likely effects.

Members of violence-prone communities will need to be educated on the negative emotional impact of witnessing violence and losing significant persons on the children of their own community. So common is this experience of loss that programmes to help children adjust emotionally will need to be developed for delivery through schools, with specialized training for guidance counsellors and/or teachers. Children who continue to have emotional difficulties despite first-line intervention will need referral to secondary and tertiary level health services. There needs to be a special focus on preventive violence programmes in schools of all types. The pervasive nature of the problem suggests that multiple approaches, such as anger management, assertion, social skills and empathy training, peer mediation and parent training may be necessary. Many of these interventions have been shown to be effective in secondary prevention of aggressive and violent behaviour (16). The protection of children, particularly girls, from sexual assault also needs to be addressed within communities. A child abuse programme should be developed for schools that includes education of teachers and children about different forms of abuse and offers advice to children on where and how to report abuse.

In view of the modest amount of the variance explained by the factors studied, further studies are needed which consider other factors such as child-rearing practices and family violence on children's exposure to violence as these experiences have been found to be predictors of adolescent aggression and adult violence (17). The identification of risk and protective factors and the impact of exposure to violence are other important areas of study.

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