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Children's physical health complaints after exposure to intimate partner violence

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Objectives. A clear association between exposure to intimate partner violence (IPV) and children's physical health is still not well determined, because adverse effects might be explained by the confounding detrimental effects of other traumatic experiences. This study investigated whether children exposed to IPV have higher risks for physical health complaints compared to children in a general population sample. Second, health complaint differences were explored between IPV witnesses and those who in addition experienced other forms of abuse or neglect.

Design. Risk estimates for 21 everyday physical health complaints were made for children exposed to IPV compared to a general population sample using odds ratios.

Methods. Primary caregivers of 275 child witnesses of IPV (6–12 years of age) referred to several specialized mental health or child welfare institutes throughout the Netherlands (2004–2009) reported on children's somatic complaints using 21 items of the Child Behaviour Checklist (CBCL; Achenbach & Rescorla, 2001) reflecting sleeping, eating, pain complaints, and self-harm.

Results. Compared to a population sample ($n = 903$), child witnesses more often experienced health complaints, in particular, more eating, sleeping, and pain problems and more self-harm. Few differences in health complaints were found between child witnesses with and without additional adverse experiences of maltreatment.

Conclusions. The degree of physical health complaints in children exposed to IPV is considerable, whether or not they were also victims of other forms of abuse. Early attention to everyday health complaints in children exposed to IPV might prevent more serious health problems in adolescence and adulthood.

Although exposure to intimate partner violence (IPV) increases the likelihood of under-immunization and risk-taking behaviours during adolescence, a clear association between exposure to IPV and children's physical health, such as general health outcomes, use of health services or health complaints is still not well determined (Bair-Merritt, Blackstone,

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& Feudtner, 2006). Three study limitations can be identified from previous studies. First, studies did not always include a contemporaneous control group. Second, several studies compared children exposed to violence with non-exposed children without differentiating between IPV and violence towards the child (Bair-Merritt *et al*., 2006). Children who witnessed IPV and were also victims of violence might be differentially at risk to develop health complaints compared to children who only witnessed IPV. Third, studies focusing on the comparison between child witnesses and non-witnesses might overestimate the effect of IPV because other adverse experiences have not been taken into account. In particular, studies have shown that co-occurrence of IPV and child physical abuse or neglect in children ranges between 30 and 60% (Casanueva, Martin, & Runyan, 2009; Edleson, 1999; Herrenkohl, Sousa, Tajima, Herrenkohl, & Moylan, 2008). The adverse effects of IPV on children's physical health that have been found might therefore be explained by the confounding detrimental effects of other traumatic experiences.

In studies with children as well as adults, various physical health problems have been linked with experiences of abuse and neglect. A recent study showed a relationship between (any) childhood adversities and somatic complaints and serious illnesses at age 12 (Flaherty *et al*., 2009). The Adverse Childhood Experiences Study showed that exposure to childhood maltreatment (such as witnessing IPV, neglect, and abuse) leads to increased health risks in adulthood, including severe obesity, sleep disturbances, somatic problems such as pain, and risk-taking behaviour (Anda *et al*., 1999, 2006; Chapman *et al*., 2011; Drossman *et al*., 1990; Dube, Anda, Felitti, Edwards, & Williamson, 2002; Felitti *et al*., 1998; Greenfield & Marks, 2009). Furthermore, Anda *et al*. (1999), Chapman *et al*. (2011), Dube *et al*. (2002), and Greenfield and Marks (2009) reported on the association between IPV exposure in early childhood and various health problems in adulthood. More particularly, associations with severe obesity, sleep disturbances, somatic symptoms, and health risk-taking behaviours were found. Although childhood exposure to IPV increases the likelihood of health problems in adulthood, immediate or short-term effects on children's physical health after exposure are still not well determined.

Studies on child health outcomes after adverse experiences usually focus on health service use or illness. This study is focused on children's everyday health complaints that might or might not come to the attention of physicians. A range of complaints were assessed within the domain of sleep, pain, eating, and self-harm in children referred for treatment after exposure to IPV. These four domains of health problems may be seen as precursors of adult health problems after childhood exposure to IPV, in particular obesity, sleep disturbances, somatic complaints, and risk-taking behaviour (Anda *et al*., 1999; Chapman *et al*., 2011; Dube *et al*., 2002; Greenfield & Marks, 2009). The first aim was to compare IPV-exposed school age children with children from a population sample on the occurrence of everyday health complaints. It was hypothesized that IPV-exposed children would have a higher risk for physical health complaints compared to children in the general population. Second, we compared whether degrees of health complaints are different in child witnesses of IPV who had or had not experienced other forms of abuse or neglect. We expected that child witnesses of IPV with additional exposure to abuse and neglect would be more likely to have physical health complaints compared to child witnesses without additional exposure. Furthermore, we expected that child witnesses with additional exposure to abuse and neglect might show higher risks for health complaints compared to children in a general population sample.

Method

Design

Risk estimates for 21 everyday physical health complaints were made for children exposed to IPV compared to a general population sample using odds ratios.

Participants

Clinical sample

In the IPV sample, primary caregivers (98% mothers) of 275 child witnesses of IPV (53% boys) between 6 and 12 years of age (mean age = 8.62, *SD* = 1.70) participated. Between 2004 and 2009, these children had been referred for intervention to four urban outpatient child mental health institutes specializing in the treatment of traumatic stress in children, and eight child welfare institutes specializing in the treatment of IPV victims. The study sites represent different regions across the Netherlands. In 5% of the sample, children were living in intact biological families. For nearly all children (95.6%), the biological mother was the primary caregiver. The majority of children were Dutch, 19% had a mother not born in the Netherlands. Mothers' highest education was coded into three levels: 33% of the mothers had a low educational background (primary or secondary education, lower level), 52% a middle educational background (secondary education, middle and higher level, or middle vocational education), and 16% a high educational background (high vocational education and university).

General population sample

Data on a general population sample of 6- to 12-year-old children were provided by Erasmus MC, Department of Child and Adolescent Psychiatry in Rotterdam, the Netherlands (Tick, van der Ende, & Verhulst, 2007). Primary caregivers (95% mothers) of 903 children (49% boys) were included (mean age = 9.12, *SD* = 1.96). Data of the general population sample were collected between December 2003 and April 2005. Tick *et al*. (2007) randomly selected 2,567 6- to 18-year olds from municipal registers of 35 municipalities in the Dutch province of Zuid-Holland. Parents were sent letters, explaining the survey, contacted by telephone or at home, and asked to participate in the study. Of the 2,567 children, parents of 2,536 children could be contacted and 2,286 parents were eligible (exclusion criteria among others: parents did not speak Dutch, physical or mental disabilities, not living in the study area). Of the remaining 2,286 eligible respondents, 1,710 (74.8%) parents filled out the Child Behaviour Checklist (CBCL), 903 were between 6 and 12 years of age. Children of the responding versus the non-responding parents did not differ with regard to sex of the child.

For 18% of the children, mothers' education was low, for 57% middle, and for 25% high. Most children were Dutch, 18% had a mother not born in the Netherlands.

Procedure

In the Netherlands, IPV can be reported either to the police or to Domestic Violence Service Centres (DVSC's). Reporting can be done by nearly everybody: the partners themselves, family of the partners, child victims, neighbours, a physician or dentist, teachers, etc. Both the police and the DVSC are obliged to report to a Youth Care Office when children are involved. While the primary task of the police or the DVSC's is to

verify whether the violence really happened, the Youth Care Office, by law, is responsible for screening of the involved children and for referral of children (and their non-violent parent) to mental health or youth welfare services. Referral was based on broad screening and identification of exposure to interparental violence, but not on trauma assessment. Because referral is based on broad screening of exposure to interparental violence and not trauma assessment, it could be assumed that all children exposed to interparental violence were referred to mental health or youth welfare services. However, it is not known how many families exposed to IPV were not given a referral to trauma-focused services by the Youth Care Offices. Whether a child is referred to either a mental health or a youth welfare services depends on the availability of such services in the region in which a child resides. A priority of the Youth Care Offices is to motivate caregivers to accept intervention for their children on a voluntary basis. All services of welfare, health, and mental health organizations are free of charge in the Netherlands.

Children with mental retardation, pervasive developmental disorders, psychotic symptoms, or a serious medical illness were excluded from the intervention. Other exclusion criteria were on-going IPV, presence of serious mental health disorder (parent), or active substance abuse by the primary caregiver. Exclusion criteria were applied by the Youth Care Offices. Therefore, the exact number of children excluded could not be calculated.

All mothers and children who were referred to the outpatient mental health centres or youth welfare services were interviewed at intake at the outpatient child mental health centres or the youth welfare services, and primary caregivers were asked to take part in the research. Caregivers provided written informed consent, and children assented to participate. Parents were highly motivated to participate in the research. Less than 5% in each subsample of local treatment services did not take part in the study. We do not know the reasons for declining participation. When informed consent was given, primary caregivers completed questionnaires about demographic characteristics, adverse experiences, and the CBCL (Achenbach & Rescorla, 2001). These primary caregivers most often were biological mothers. If available, reports of Child Protection Agencies and/or the Offices of the Confidential Doctors and/or the police were screened for additional information about children's exposure to trauma. For the clinical sample, each participating institute obtained approval from their local institutional review board.

Measures

Health complaints

Health complaints of the children were derived from the CBCL (Achenbach & Rescorla, 2001) completed by the primary caregiver. The CBCL is a standardized questionnaire that is known for assessing children's behavioural and emotional problems and has shown good reliability and validity (Verhulst, Ende, & van der Koot, 1996). The Somatic Complaints Scale within the CBCL includes common physical complaints of uncertain origin, in particular tiredness, dizziness, headaches, nausea, eye problems, aches, skin problems, stomach aches, and vomiting. All nine items of the somatic complaint scale were included as well as 12 other items from the CBCL. These other items reflect health complaints in the domain of eating and bowel movement (does not eat well, eats too much, overweight, bowel movement outside toilet, constipation), sleeping (trouble sleeping, sleeps less, sleeps more, nightmares, and wets bed), and physical harm to oneself (self-harm, talks about suicide). Items were rated on a 3-point scale from 0

(*complaint is not present*) to 2 (*complaint occurred often*). These 21 items reflect complaints in the broad domains of problems with eating, with sleeping, with pain, and with self-harm. Problems in these domains may be seen as precursors of adult health problems after childhood exposure to IPV, in particular obesity, sleep disturbances, somatic complaints, and risk-taking behaviour. Items were dichotomized: presence of a health complaint was indicated when it occurred often in the past 6 months (score 2 on the item). When a health complaint occurred never or only sometimes in the past 6 months (score 0 or 1), a value was assigned that there was no complaint. Analyses were carried out on both individual items and composite scores. Apart from identifying differences in single everyday health complaints, we summarized the varying health complaints into three clusters and an overall score. Composite scores were computed for number of eating complaints, sleeping complaints, pain complaints, and total number of health complaints (with a maximum of 7, 6, 6, or 21 complaints, respectively). The correlation between the three scales, eating, sleeping, and pain complaints ranged between .31 and .39 in the total group and between .26 and .48 in the child witness group.

Exposure to abuse and neglect

In addition to witnessing IPV, four categories of adverse experiences were included (1) physical abuse by a primary caregiver, (2) contact sexual abuse, (3) emotional abuse (recurrent humiliation), and (4) neglect. Data on experiences of abuse and neglect were collected from several informants. Primarily, the parent reported on a large range of potentially stressful and/or traumatic experiences the child may have had by completing the Parent Report of Traumatic Impact (Friedrich, 1997). To ensure that all traumatic events that have occurred in the life of the referred children were recorded, the parents were extensively interviewed during the first contact. Finally, reports from other agencies were screened for indications about possible traumatic experiences not reported during intake or therapy. Each of the four categories was dichotomized: no differentiation was made between multiple events within a category.

More than half of the IPV witnesses also experienced physical abuse (53%, $n = 145$), 11% ($n = 30$) experienced sexual abuse, 36% ($n = 97$) experienced emotional abuse, and 36% ($n = 99$) experienced neglect. To make comparisons on health complaints in witnesses with and without additional experiences of abuse or neglect, we made three groups. In the first group, 74 children (27%) were included who were child witnesses of IPV and had experienced no other abuse or neglect. In the second group, 50 (18%) children were included who were both IPV witnesses and victims of physical abuse but had experienced no other abuse or neglect. The third group of 151 children (55%) was labelled as a mixed group: children who were IPV witnesses, and also victims of sexual abuse, emotional abuse, or neglect were included in this group. In addition, children in this group may also have been a victim of physical abuse (95 children). Within this third group of 151 IPV witnesses, 107 children (71%) had experienced more than one other form of abuse or neglect.

Mother's psychological status and abuse history

By definition, all parents who were referred to the treatment centres were victims of IPV. In the Netherlands, outpatient child mental health centres or youth welfare services are not allowed to diagnose psychological (mental health) status of parents. Therefore,

limited possibilities within standard procedures are available to gather information about parents' mental health status. During the intake at the outpatient child mental health centres and youth welfare services, parents are asked about their own mental health problems now and in the past. Because of validity problems in reports of mother's mental health status (for only 165 mothers a value could be given to this variable), this dichotomous variable (psychiatric problems vs. no psychiatric problems) was only included in preliminary analyses.

Analyses

To compare IPV-exposed children with a population-based sample on the presence of each health complaint, logistic regression analyses were used with each health complaint as dependent variable. Adjusted odds ratios, including confidence intervals, were reported after age and gender of the child as well as mothers' education and ethnicity were entered in the equation. *T*-test was used to examine differences in the number of eating, sleep, pain, or total health complaints between child witnesses and the population sample. Within the group of child witnesses, chi-square tests were used to analyse differences in percentages of health complaints between children who were only witnesses and children who were also victims of child abuse and neglect.

Results

Sample characteristics and health complaints

Differences in reported health complaints between male and female child witnesses were analysed. Girls more often had stomach aches (20.3%) than boys (7.5%) ($p < .01$). No other sex differences were found. One significant difference was found in the degree of complaints between 6–8 year olds and 9–12 year olds. Mothers more often reported headaches in older (13.4%) compared to younger children (6.1%) ($p < .05$). No other age differences were found.

We also examined differences in reported health complaints between lower, middle, and higher educated mothers and between children from Dutch mothers and children from non-Dutch mothers. No significant differences on the 21 health items for educational background were found. Level of education was not associated with any of the four composite scores for health complaints.

One difference in reported health complaints and ethnicity of the mother was found: mothers with a Dutch background less often reported about their child eating too much (7.3%) compared to mothers with a non-Dutch background (17.3%, $p < .05$).

No differences in health complaints were found between child witnesses with mothers with reported psychiatric problems compared to children with mothers without reported psychiatric problems ($p's < .11$).

Health complaints in IPV-exposed children: Comparison with a population-based sample

Table 1 presents the percentages of children with reported somatic complaints for both the IPV-exposed children and the population sample. After controlling for child age and gender as well as mothers' education and ethnicity, the percentage of children with somatic complaints is significantly higher in the group of IPV-exposed children,

Table 1. Percentage somatic complaints of children exposed to intimate partner violence (IPV) compared with a Dutch population sample (age 6–12)[a]

Somatic complaint	% (mean [*SD*] composite score) IPV-exposed children	% (mean [*SD*] composite score) population sample	Chi-square[b]	Adjusted odds ratio[c]	95% confidence interval	*t*-test
Eating						
24. Does not eat well	15.8	6.9	14.18***	2.42	1.55–3.78	
53. Eat too much	9.1	3.4	7.47***	2.41	1.31–4.44	
55. Overweight	7.3	3.4	4.42*	2.05	1.07–3.92	
06. Bowel movement outside toilet	2.6	0.9	2.07	2.40	0.76–7.55	
49. Constipation	5.5	1.1	17.19***	6.05	2.60–14.06	
56c. Nausea	5.6	0.7	27.26***	11.61	4.36–30.90	
56g. Vomit	0.7	0.0	7.77**	-	-	
Total eating complaints	.47 (.81)	.16 (.45)				$t = -5.93$***
Sleeping and nightmares						
54. Overtired	8.4	1.8	27.61***	6.21	3.14–12.30	
100. Trouble sleeping	23.8	4.7	75.61***	7.08	4.56–11.00	
76. Sleep less	16.2	6.9	22.31***	2.94	1.89–4.56	
77. Sleep more	1.1	1.1	0.30	1.47	0.39–5.59	
47. Nightmares	14.3	1.4	64.63***	12.55	6.45–24.41	
108. Wets bed	7.0	2.3	7.35**	2.74	1.36–5.52	
Total sleep complaints	.71 (1.07)	.18 (.51)				t = -7.84***
Aches, pains						
56a. Aches, pains	7.7	1.4	18.99***	5.49	2.58–11.70	
56b. Headache	9.9	3.2	21.58***	4.00	2.27–7.03	
56f. Stomach ache	13.5	2.7	48.00***	7.26	4.14–12.72	
56d. Eye problems	2.2	0.9	1.74	2.41	.70–8.26	
56e. Skin problems	6.7	5.1	1.47	1.48	.80–2.73	
51. Dizzy	3.7	.2	20.36***	20.82	4.37–99.22	
Total pain complaints	.43 (.93)	.14 (.43)				$t = -5.04$***
Self-harm						
18. Self-harm	1.8	0.0	14.24***	-		
91. Talk about suicide	3.3	0.1	19.47***	30.01	3.73–241.46	
Total health complaints	1.66 (2.27)	.48 (.96)				$t = -8.35$***

*$p < .05$; **$p < .01$; ***$p < .001$.

[a]Percentage of parents reporting considerable child health complaints (category 2 on original CBCL item); data from the population-based sample kindly provided by Erasmus MC, Department of Child and Adolescent Psychiatry in Rotterdam, the Netherlands.

[b]Chi-square for the second block after age and sex of child, education mother, and ethnicity of mother were entered in the first block of each logistic regression analysis.

[c]The odds ratio estimates are adjusted for age and sex of child, education mother, and ethnicity of mother using logistic regression analyses.

except for three items ('sleeps more', 'eye problems', and 'skin problems'). In particular, IPV-exposed children more often had eating complaints (does not eat well, eats too much, overweight, constipation, bowel movement outside toilet, nausea, vomit), sleep complaints (trouble sleeping, tiredness, sleeps less, nightmares, wets bed), aches (stomach aches, headaches, dizziness), and more often had hurt themselves and talked more about suicide. The odds ratios for all significant differences were higher than 2 (Table 1), indicating considerable risk increase for these health complaints when children experience IPV. For total number of reported health complaints, and total number of eating, sleep, or pain complaints, differences between the two groups were in the same direction indicating more complaints for IPV-exposed children (Table 1).

Comparison of health complaints in child witnesses with and without additional experiences of abuse and neglect

Few differences were found between child witnesses with and without additional experiences of abuse and neglect. First, we compared children who were only witnesses and children who were both witnesses and victims of physical abuse. Two significant differences on individual items were found: physically abused witnesses more often had stomach aches (26.0%) and talked more about suicide (6.0%) than witnesses only (11.1 and 0.0%, respectively). No significant differences were found between the two groups on total number of health complaints, and total number of eating, sleep, or pain complaints.

Second, we compared children who were only witnesses and children who were both witnesses and victims of other forms of abuse (sexual abuse, emotional abuse, and/or neglect, with, or without physical abuse. No significant differences were found between the IPV only group and this mixed group on individual somatic complaints, on total number of health complaints, and total number of eating, sleep, or pain complaints.

Health complaints in IPV-exposed children with and without additional experiences of abuse and neglect: Comparison with a population-based sample

We compared the degree of health complaints for each of the trauma groups (IPV only, witness and victim of physical abuse, and a mixed group) in comparison with the population-based sample. In general, the results were similar to the analyses of the total IPV sample compared with the population-based sample. In all three groups, more complaints were reported about constipation, nausea, overtired, trouble sleeping, nightmares, headache, stomach-ache, dizziness, compared to the population-based sample. The odds ratios for all significant differences were higher than 2. For some items, no odds ratio could be calculated due to absence of the complaints in one of the subsamples. Details of the analyses for each trauma group are described below and can be found in Table 2.

In children exposed to IPV but not to other experiences of abuse and neglect, more often somatic complaints were reported compared to a population-based sample. The results were in the same direction as in the comparison of the total IPV-exposed group. In particular, IPV-exposed children more often had complaints in the domain of sleeping – except for 'wets bed' and a trend that was found for 'sleep less', in the domain of aches and pains, and in the domain of eating – except for 'does not eat well' and a trend in 'bowel movement outside toilet'.

Table 2. Percentage somatic complaints of children exposed to intimate partner violence for child witnesses only, for child witnesses and child victims of domestic violence and for child witnesses with other trauma, each group compared with a Dutch population sample (age 6–12)[a]

Somatic complaint	% IPV witnesses only	Adjusted odds ratio[b]	% physically abused IPV witnesses[c]	Adjusted odds ratio[b]	% IPV witnesses with other trauma[d]	Adjusted odds ratio[b]
Eating						
24. Does not eat well	12.2	1.07	16.0	2.46*	17.4	3.17***
53. Eat too much	9.5	3.13*	14.0	4.73**	7.3	1.34
55. Overweight	8.1	3.07*	6.0	2.08	7.3	1.57
06. Bowel movement outside toilet	2.7	4.40†	2.0	1.87	2.7	1.62
49. Constipation	5.4	5.77**	6.0	6.95**	5.3	5.06**
56c. Nausea	5.6	9.93**	14.3	35.41***	2.7	4.76*
56g. Vomit	1.4	-	2.0	-	.0	-
Sleeping and nightmares						
54. Overtired	8.2	6.08**	14.0	10.72***	6.6	4.56***
100. Trouble sleeping	20.3	4.34***	28.0	10.61***	24.2	7.40***
76. Sleep less	12.2	2.13†	22.0	4.29 **	16.2	2.90***
77. Sleep more	.0	-	4.0	5.83*	.7	.91
47. Nightmares	14.9	16.20***	22.0	20.24***	11.4	9.10***
108. Wets bed	8.1	2.56	8.0	3.99*	6.0	2.09
Aches, pains						
56a. Aches, pains	8.3	4.40*	16.0	15.25***	4.7	2.54†
56b. Headache	9.5	3.92**	20.0	7.54***	6.7	2.60*
56f. Stomach ache	11.0	4.78**	26.0	16.88***	10.6	5.39***
56d. Eye problems	2.7	2.47	6.0	6.28*	.7	1.04
56e. Skin problems	8.2	1.99	8.0	1.96	5.4	1.08
51. Dizzy	4.1	23.54**	8.0	55.93***	2.0	7.71*
Self-harm						
18. Self-harm	1.4	-	2.0	-	2.0	-
91. Talk about suicide	.0	-	6.0	69.55***	4.1	34.47**

†$p < .10$. *$p < .05$; **$p < .01$; ***$p < .001$.

[a]Percentage of parents reporting considerable child health complaints (category 2 on original CBCL item); mean scores for the population sample are presented in Table 1.

[b]The odds ratio estimates are adjusted for age and sex of child, education mother, and ethnicity of mother using logistic regression analyses; significance is reported of the chi-square test for the second block after these four variables were entered in the first block of each logistic regression analysis;

[c]and no exposure to other trauma;

[d]either being physically abused or not.

Table 3. Total number of eating, sleeping or pain complaints and total number of reported health complaints for child witnesses only, for child witnesses and child victims of domestic violence and for child witnesses with other trauma, each group compared with a Dutch population sample (age 6–12)[a]

	Mean (*SD*)	*t*-test[b]	Mean (*SD*)	*t*-test[b]	Mean (*SD*)	*t*-test[b]
Total eating complaints	.47 (.78)	−3.10**	.60 (.95)	−3.25**	.43 (.78)	−4.11***
Total sleep complaints	.64 (1.13)	−3.42***	.98 (1.27)	−4.42**	.65 (.95)	−5.87***
Total pain complaints	.43 (1.05)	−2.40*	.84 (1.33)	−3.73***	.29 (.63)	−2.90**
Total health complaints	1.54 (2.36)	−3.84***	2.51 (2.93)	−4.86***	1.44 (1.90)	−6.02***

*$p < .05$; **$p < .01$; ***$p < .001$.
[a]Mean score for total number of health complaints reported by parents; [b]mean scores for the population sample are presented in Table 1.

In the second column of Table 2, a similar comparison is made between children exposed to IPV as well as physical abuse on the one hand and the population-based sample on the other hand. More health complaints were found in children exposed to IPV who were also victims of physical abuse compared to a normative sample. In particular, these witnesses and victims of domestic violence more often had troubles with sleeping, with aches and pains – except for skin problems, with eating problems – except for 'eat too much', 'overweight', and 'bowel movement outside toilet', and they more often talked about suicide compared to a population-based sample.

In the third column of Table 2, a comparison is made between a mixed group of children who were witnesses of IPV as well as victims of sexual abuse, emotional abuse, or neglect on the one hand, and the population-based sample on the other hand. More health complaints were found for children exposed to IPV and other early experiences of sexual, emotional abuse, or neglect. In particular, in this mixed group, children more often had complaints in the domain of sleeping – except for 'wets bed', aches and pains – except for a trend in the item 'aches and pains', and in the domain of eating and bowel movement – except for 'eat too much', 'overweight', and for 'bowel movement outside toilet'.

Using *t*-test to compare groups, we found a larger average of total number of health complaints as well as a larger average of total number of eating, sleeping, or pain complaints as well as for total health complaints for each of these three trauma groups compared with the Dutch population sample (see Table 3).

Discussion

IPV-exposed children, according to their mothers, experience considerable health complaints in everyday functioning. Compared to a population sample of children, children who were referred for intervention after being exposed to IPV, according to their mothers, more often have eating problems (do not eat well, eat too much, have overweight, have bowel movement outside the toilet, constipation, nausea, vomit), sleeping problems (are overtired, have trouble sleeping, sleep less, have nightmares, wet their bed), ache and pain complaints (have aches, headaches, stomach aches, are dizzy),

and more often harm themselves or talk about suicide. For nine items, the odds ratio was even higher than 5: constipation, nausea, overtired, trouble sleeping, nightmares, aches/pains, stomach aches, dizziness, and talks about suicide. Although these reported complaints do not by themselves reflect illness or disease in children, experiencing these complaints suggest a considerable psychological and physiological burden for child functioning. When these complaints are often present, they are likely to negatively affect children's psychological and physiological functioning.

In general, no differences were found in degree of individual as well as total number of health complaints between the three subgroups of IPV child witnesses: IPV witnesses and victims of physical abuse; IPV witnesses and victims of sexual abuse, emotional abuse, or neglect; and IPV witnesses with no exposure to other abuse or neglect. For most of the individual items and for all composite scores, comparison with a population-based sample resulted in a similar pattern of higher prevalence of health complaints in each of the trauma subgroups compared to the population-based sample. These results do not suggest an increased risk for children who were exposed to more trauma in addition to witnessing IPV compared to children who were only IPV witnesses.

These results are comparable to results of studies with similar design that focused on health problems in children with adverse experiences such as physical or sexual abuse (Flaherty *et al*., 2009; Lanier, Jonson-Reid, Stahlschmidt, Drake, & Constantino, 2010; Whitaker, Phillips, Orzol, & Burdette, 2007). By including a contemporaneous control group, we were able to draw conclusions about differences in physical health complaints between exposed and non-exposed children. These health complaints might result from elevated levels of arousal in regulatory systems due to exposure to trauma (Perry, 2003).

A striking finding of our study was that already in middle childhood, IPV-exposed children appeared to talk far more often about suicide than children from the population sample. These exposed children also show more self-harm behaviour. Recently, similar findings were reported when comparing a group of maltreated and non-maltreated children on suicidal ideation (Cicchetti, Rogosch, Sturge-Apple, & Toth, 2010). These health indicators may reflect precursors of 'health risk taking behaviour' in adulthood, which is an important indicator of negative health outcomes in adult studies on Adverse Childhood Experiences (ACEs) and on IPV in particular (Anda *et al.*, 2006; Dube *et al*., 2002). Furthermore, comparable to adult studies on ACEs (Felitti *et al.*, 1998; Greenfield & Marks, 2009), the exposed children in our study were significantly more obese, and had more pain and sleep complaints than non-exposed children.

Our results within the domain of sleep complaints, marked by high odds ratios, indicate considerable risk for inadequate sleep, short sleep duration, and nightmares in child witnesses of IPV. Previous studies have found an association between parental conflicts and sleep problems. Chronic dysregulation of sleep may have considerable impact on child functioning (Buckhalt, Wolfson, & El-Sheik, 2009; El-Sheikh, Buckhalt, Keller, Cummings, & Acebo, 2007; Smaldone, Honig, & Byrne, 2009).

We found no differences in the degree and number of health complaints of IPV-exposed children with and without additional maltreatment experiences. This suggests that exposure to IPV incorporates a risk for the onset of health complaints that is similarly high to that of additional exposure to abuse and neglect. Our results could not reveal whether the child's physical abuse was aimed directly at the child or part of the incident(s) of IPV, through attempts to intervene in the fight (Christian, Scribano, Seidl, & Pinto-Martin, 1997). Overall, these results underscore the need to address health concerns in all IPV-exposed children.

Two health complaints were more prevalent in physically abused child witnesses compared to witnesses only: stomach aches and talking about suicide. Higher risk for stomach aches might be a direct consequence of anxiety and stress linked to the perceived life-threatening experience of physical abuse (Perry, 2003). The higher risk for suicide thoughts in physically abused witnesses might be the result of cumulative exposure to life-threatening situations in the caregiving environment and the life-threatening experience of their own physical abuse. However, these cumulative effects were not found in a comparison between children who were only IPV witnesses and children who were both witnesses and victims of sexual abuse, emotional abuse, and/or neglect (with or without physical abuse). Furthermore, caution in interpreting these results is needed, because the subsample of child witnesses and victims of domestic violence is relatively small.

Since the focus of our study was on everyday complaints, we relied on primary caregivers' report of health complaints. We could not rely on medical reports to test for the reliability of parents' report since children exposed to IPV are seldom seen by a physician in the Netherlands. On the other hand, it is not likely that all everyday complaints of children will come to the attention of physicians. A limitation of this study is that the information about children's somatic complaints in some cases may have been influenced by primary caregivers' limited awareness of the child's health complaints, psychological problems of the parent/mother as well as by the degree to which health complaints are revealed by children. Furthermore, with these informants, it is not possible to differentiate complaints that may have an organic cause (f.i. nausea, constipation, abdominal pain) from complaints that may origin from psychological, trauma-related problems. However, the parental report provided an opportunity to make a comparison with a general population sample. In future studies, child interviews, physicians' reports, and a multimethod approach in both the IPV and the general population sample may consolidate and refine our findings. This study described the presence of health problems in a sample of children referred because of IPV. Future studies are needed to identify the degree of health problems in a population-based IPV sample. We found few differences in health complaints in IPV-exposed children related to education of the primary caregiver, which is in line with previous research (Graham-Bermann & Seng, 2005).

Professionals working with children need to be aware that young children who witnessed IPV may experience considerable health complaints. An implication of our results is that in (suspected) cases of IPV, family physicians or paediatricians need to make a comprehensive assessment of children's everyday health, in addition to the evaluation of immediate harm. To prevent the onset of problems in children, primary health care and community-based health services might consider to routinely screen for family violence and other adversities, especially when children present with unexplained health problems.

Conclusion

This study indicates that in middle childhood, a diverse set of everyday health complaints may become manifest in IPV-exposed children. The degree of somatic complaints in the domain of eating, sleeping, aches and pains, and self-harm in these children is considerable. In general, our results indicate no cumulative risk for health complaints for child witnesses who were also victims of other forms of abuse and neglect, except for physical abuse.

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