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Child Injury Risks are Close to Home: Parent Psychosocial Factors Associated with Child Safety

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Abstract

Objective: In several populations, maternal depression has been associated with reduced child safety. In an urban pediatric Emergency Department, we examined the relationship between parental depression, social support, and domestic conflict and child safety behaviors.

Methods: We studied consecutive patients in an Emergency Department. Trained interviewers used a structured instrument to assess patient, primary caregiver, and household demographics, socio-economic status, psychosocial factors, child safety behaviors (whether a gun was in the home, poisons were locked, a functioning smoke detector was present, and use of carseats or seatbelts), and whether the home was smoke-free. 1,116 patients provided adequate data.

Results: Depression was associated with a modest and *not* statistically significant reduction in child safety behaviors in this population. Lack of social support and the presence of domestic conflict were robustly, independently, and statistically significantly associated with less safe homes. Domestic conflict was associated with more smoking in the home.

Conclusion: In our population, child safety was associated less with depression and more with parental lack of social support and domestic conflict. These can be assessed in a Emergency Department and may be amenable to intervention.

Keywords

social support, depression, emergency room, child safety, domestic violence, injury prevention

Comments

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Keywords Social support · Depression · Emergency room · Child safety · Domestic violence · Injury prevention

Maternal depression is associated with less safe home environments for children. Depressed mothers are less likely to engage in a range of child protective behaviors considered important by the American Academy of Pediatrics, including: use car seats [1, 2], cover electrical outlets [1], have smoke detectors [3], avoid corporal punishment [3], and use “back-to-sleep” positioning [3]. Depressed mothers are less likely to provide a smoke-free home [2] or read to their children daily [1]. They are less likely to provide age-appropriate well-child visits [4]. Children of depressed mothers are more likely to be injured [4]. One study suggested that depressed fathers have a synergistic negative impact [5].

The literature on parental mental health and child safety has largely focused on maternal depression. With only one exception [5], there has been little look at paternal effects. The literature on depression has carefully controlled for traditional socio-economic risk factors, but has paid less attention to other comorbid conditions that might be related to depression but imply different interventions. Although exposure to maternal intimate partner abuse has been shown to negatively impact children’s health and school performance, it has not been independently assessed in the above studies [6]. Likewise, despite the large literature on social support, its protective mental and physical health benefits [7, 8], and its direct impact on maternal depression [9], social support has not been assessed in the maternal depression/child safety studies. Recent work even suggests that social support may moderate the negative impacts of domestic violence on children’s emotional health [10].

The parental depression literature has focused on national databases or recruiting from low-income general clinics. Emergency Department visits may represent a distinct

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population in greater need of preventive interventions [11], but also amenable to such interventions [12–15]. Given the important role of the Emergency Departments in providing “general medical care” to a distinctive subset of the population, it is not clear that the same relationships between parental depression and child outcomes apply. Before adding yet another “non—emergent” responsibility to already overburdened ED staff, data seem warranted.

Therefore, we sought to test the following hypotheses. First, that an urban pediatric Emergency Department population would mirror other populations in the relationship between parental mental health and child safety behaviors. Second, that not only depression, but also social support and domestic conflict would have measurable impacts on child safety behaviors. Third, that these three domains would both be related and have independent effects on child safety behaviors.

Methods

Setting and data collection

This study was done in conjunction with a larger multi-site Child Health Insurance Plan (CHIP) trial [16]. The purpose of the larger study was to determine whether simple outreach (displaying the national toll-free CHIP outreach phone number on discharge paperwork and posters, and/or handing out CHIP application materials) would significantly increase insurance enrollment among uninsured children presenting to the ED. With permission of the principal investigator of the multi-site study, we added questions to the interview (at our site only) about child-injury-prevention and parent psychosocial risks.

We conducted a cross-sectional survey of adults who brought non-emergent children to an urban pediatric ED. Data were collected 24 hours per day over 2 15-day intervals during the period December 2001–January 2002. Research assistants collected data via personal interview with those adults who brought children to the ED; therefore, the person interviewed was usually the child’s parent or primary care giver. Parents were recruited for interviews on the basis of their consecutive arrival in the ED. All parents who could speak and read English were eligible to be interviewed, but only after their children had been evaluated by a physician. Parents of critically-ill patients were not approached. While the goal was for research assistants to approach consecutive parents during data collection periods, not all parents were approached due to ED flow patterns and the need to maximize the number of interviews done by a single research assistant. Instead, consecutive parents were approached based on simultaneous availability of parent and research assistant.

Data collectors were trained to avoid any interference with patient care and ED flow. Privacy and sensitivity were additional concerns, and were emphasized in the training process and monitored throughout the project – although the majority of the data collectors were graduate students in social work and thus already sensitive to conducting interviews on issues such as depression and abuse.

Parents were informed that participation involved screening for insurance status, injury-prevention behaviors, and their own emotional and physical health. If more than one parent was present, the interviewer asked if one parent (preferably the mother) would be willing to be interviewed in private. If only one parent was present, interviews were done while children remained in the room.

The section regarding the parent’s own psychosocial risks was introduced as such, and parents were told they could skip any questions they felt uncomfortable answering. (As discussed below, less than 5% of interviewees skipped even one of the outcomes questions; rates of non-response to other questions are presented in Table 1.) All potentially sensitive questions were administered in a written format on a laminated card. Parents pointed to their responses (yes, no, or not sure), and confirmed correct reporting of the data by observing the research assistant’s recording of their responses.

A written consent form specifically indicated that the parent would be asked about sensitive issues and that answers were confidential, with the exception that any disclosure of potential harm (suicidal intent or child abuse) would require the research assistant to notify the treating physician, who would assess the situation and potentially take appropriate protective action, including involuntary hospitalization and/or notification of child protective services. The study was approved by the University of Chicago Institutional Review Board.

Cohort under study

During the sampling period, 2994 children were brought to the ED. 284 patients were ineligible: 158 left without being seen, 73 were older than 18 or had no recorded age, and 53 were not accompanied by a parent to the ED. 432 patients were approached and declined to participate. 1169 visit forms were collected, the remainder of patients were missed by the data collectors due to ED patient flow. 1116 (41.2% of 2,710 eligibles; 95.4% of conducted interviews) had full data on the five key outcomes variables of interest to us, and were included in our cohort.

Key variable definitions

A safe home was a home in which none of the following behaviors were self-reported to occur: gun ownership, absence of smoke detectors, unsecured poisons, inconstant

Table 1 Description of cohort

Child characteristics	N	
Age	1116	4.41 +/- 4.3 y
African-American	1108	94.5%
Male	1116	54.3%
Primary care giver characteristics		
Female	1112	89.2%
Did not complete high school or equivalent	1115	15.6%
High school degree	1115	40.3%
Household characteristics		
Total Income >\$20,000/year	1054	49.0%
Foodstamp recipient	1071	50.0%
Medicaid	1072	64.2%
Public housing	1069	23.5%
Supplemental social security	1070	23.7%
Welfare	1072	41.0%
Primary care giver psycho-social risks		
PCG suffering from mild depression	1115	11.1%
PCG suffering from major depression	1116	2.2%
PCG suffered from any depression this year	1103	18.6%
PCG with less than full social support	1116	22.9%
PCG household with domestic conflict	1116	26.0%
Household safety measures		
Gun in the home	1116	10.9%
Not all poisons are locked	1116	4.3%
No working smoke detector	1116	5.1%
Does not always use carseats/seatbelts	1116	8.6%
Missing 1 or More Safe Home Measures	1116	24.8%
Smoker in the Home	1116	44.6%

seatbelt use. These are in accordance with current American Academy of Pediatrics recommendations [17–22]. A smoke-free home was defined as homes in which the answer was zero to the question “How many people in your home smoke tobacco?”

Severe depression was defined in accordance with DSM-IV as “feeling sad most of the time for the last two weeks,” plus 4 of the following 5 symptoms: loss of focus, loss of energy, change in appetite, change in sleep habits or increased guilt. Mild depression was defined as self-report of “feeling sad most of the last two weeks” plus at least 1 vegetative symptom. Any depression was evaluated by asking if in the last 12 months, the respondent had felt sad for greater than 2 weeks at a time. The depression scale had a Cronbach’s alpha of 0.70 in this population.

Social support questions were derived from the Social Support Scale developed from focus group work done with primarily low income minority women; it was used as part of the Chicago Women’s Health Risk Study, 1995–1998 [23, 24]. Social Support was evaluated as a sum of whether the respondent had someone to talk to, borrow money from, and stay with in an emergency. A domestic conflict index aggregated partner behaviors of jealousy, control, isolation,

insults, and fear of disagreeing with the partner, using questions developed from Abuse Assessment Screen [25], Partner Violence Screen [26], and from those suggested in the Family Violence Prevention Fund [27]. For inclusion in the regression, the social support index and domestic conflict index were scaled so that a 1 unit change represented a change from the least to the most severe category. Our regression results were robust to alternative specifications of the support and conflict variables.

All questions were extensively pretested for validity in our specific population with 143 patients and family members from the Emergency Department site of the study. This detailed cognitive interviewing was done in close consultation with survey design experts at NORC in Chicago, Illinois [28, 29].

Data analysis

Logistic regression to control for multiple demographic and socio-economic characteristics were performed, to better isolate the unique contribution of psychosocial risks. Because these multiple indicators were (a) structurally related and (b) not of primary interest, their individual coefficients are not independently interpretable and so are not presented. (Collinearity diagnostic indicated sufficient independence to allow effective regression analyses.) All analyses were conducted using Stata 8.0.

Results

As shown in (Table 1), the subjects of this study were drawn from an urban Emergency Room in a predominantly African-American area. The mean age of patients was 4.4 years, spanning from newborns through 17 year olds. 54% were male. Most of the primary care givers were woman with at least a high school degree. Most received some form of government support.

Prevalence of child safety and psychosocial risks

Child safety was not universal. (See Table 1.) 10.9% had a gun in the home; only 4 respondents reported keeping it unlocked and loaded. 4.3% reported that poisons were not all secured. 5.1% reported no working smoke detector. 8.6% reported intermittent failure to use carseats or seatbelts. 24.8% of homes reported at least one of these deficits. 44.6% of homes of patients of this pediatric ED reported the presence of a smoker.

Psychosocial risk factors were quite common in this population. 2.2% of primary care givers in the ED reported currently suffering from enough symptoms to meet a DSM-IV definition of depression; 11.1% reported mild depression,

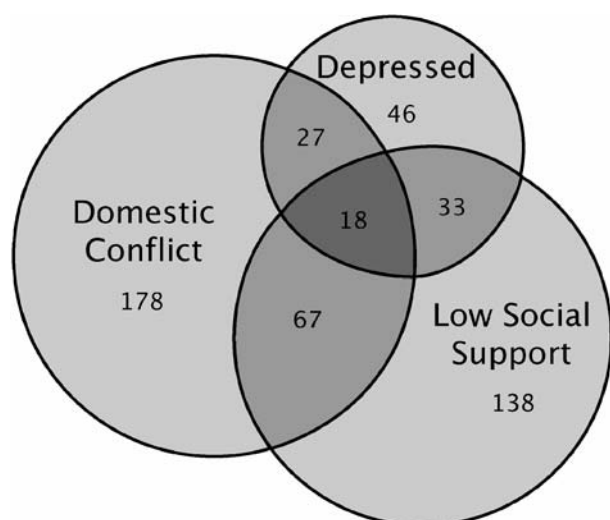


Fig. 1 Interrelationship between Depression, Social Support, and Domestic Conflict Numbers denote the number of primary care givers in each group. Thus, 18 caregivers were at least mildly depressed, had low social support, and reported domestic conflict. Depression indicates mild depression; low social support indicates lacking at least 1 of 3 forms of social support, and domestic conflict indicates reporting at least 1 of the 5 conflict indicators. 608 (55%) of primary care givers met none of these 3 definitions

and 18.6% reported some depression in the last year. 22.9% of patients reported not having full social support, defined as having all three of: someone to talk to, someone to borrow money from, and someone to stay with in an emergency. 26.0% reported at least some degree of domestic conflict with a current intimate partner. (See Table 1.)

As shown in Fig. 1, the psychosocial risk factors were related. In unadjusted comparisons, caregivers who reported less than full support had a 2.78 times greater odds of reporting at least mild depression (95% CI: 1.86–4.13). Those who reported conflict in the home had a 1.78 times greater odds of reporting at least mild depression (95% CI: 1.18–2.66). Those who reported conflict in the home were 5.99 more likely to report less than full social support (95% CI: 4.41 – 8.09).

Impact on safe home measures

Similar patterns were obtained when reviewing the impact of each psychosocial risk factor on the odds of having a safe home and of having a smoke-free home. These results, reported in (Table 2), are from a multivariable regression controlled for patient age, race, and gender, primary care giver gender and education, and household income, Food Stamp receipt, Medicaid receipt, public housing residence, Supplementary Social Security Receipt, and welfare receipt.

Lack of social support was statistically significantly associated with lower odds of having a safe home. (See Table 2.) Domestic conflict was associated with having a

Table 2 Separate multivariate relationships of psychosocial risk factors and home safety

	Odds ratio	Lower bound	Upper bound
On the likelihood of having a “Safe home” from separate regressions 95% Confidence interval			
Any depression	0.82	0.58	1.19
Mild depression	0.72	0.47	1.12
Severe depression	0.48	0.21	1.13
Lack of social support	0.41**	0.22	0.75
Domestic conflict	0.31**	0.14	0.70
On the likelihood of having a smoke-free home from separate regressions 95% Confidence interval			
Any depression	0.74	0.53	1.03
Mild depression	0.86	0.57	1.29
Severe depression	0.98	0.42	2.32
Lack of social support	0.72	0.40	1.30
Domestic conflict	0.22**	0.10	0.51

Note. Each odds ratio is from a *separate* regression that also controlled for patient age, race, and gender, primary care giver gender and education, and household income, Food Stamp receipt, Medicaid receipt, public housing residence, Supplementary Social Security Receipt, and welfare receipt.

p* < 0.05, *p* < 0.01.

less safe home and with lower odds of a smoke-free home. In this Emergency Department, none of the three definitions of depression was statistically significantly associated with decreased safety. Of note, however, the confidence intervals from these regressions were sufficiently wide that *some* association of potential public health significance cannot be ruled out; the point estimates were consistent with a modest adverse effect of depression, but the confidence intervals overlap “no effect.”

We also conducted a multivariable analysis including depression, lack of social support and domestic conflict all in a single regression. (See Table 3.) For the safe home measure, social support and domestic conflict remained significant and with quite similar odds ratios; the odds ratio for depression, in contrast, was significantly attenuated when social support and domestic conflict were also in the regression. For smoking in the home, only domestic conflict remained significant, with both depression and social support heavily attenuated. This suggests that the modest effects of depression that we have seen were better explained by social support and domestic conflict for the case of safe homes; smoking in homes seemed primarily related to domestic conflict.

Sensitivity analyses

Our results were robust to multiple alternative specifications. Treating social support or domestic conflict as dichotomous

Table 3 Combined multivariate relationship of psychosocial risk factors and home safety

	Odds ratio	Lower bound	Upper bound
On the likelihood of having a “Safe Home” from combined regression 95% Confidence interval			
Severe depression	0.88	0.56	1.37
Lack of social support	0.43**	0.23	0.81
Domestic conflict	0.36*	0.16	0.84
On the likelihood of having a smoke-free home from combined regression 95% Confidence interval			
Severe depression	0.96	0.64	1.47
Lack of social support	0.86	0.47	1.56
Domestic conflict	0.23**	0.10	0.53

Note. Each table is from a *single* regression that also controlled for patient age, race, and gender, primary care giver gender and education, and household income, Food Stamp receipt, Medicaid receipt, public housing residence, Supplementary Social Security Receipt, and welfare receipt.

* $p < 0.05$, ** $p < 0.01$.

variables produced similar results. Subset analyses were conducted by primary care giver history of sexual abuse, primary care giver gender, ongoing drug use in the home, and whether the primary care giver had a current romantic partner; all were consistent with the results presented in detail here, although limited in some cases by small sample size.

Discussion

In an urban pediatric Emergency Department, we demonstrated that there is a substantial prevalence of unsafe children’s home environments. Further, the odds of these unsafe environments are related to readily measurable psychosocial risk factors for parents. In our population, there was a weak (and not statistically significant) association between primary care giver depression and unsafe environments. The major associations of an unsafe home environment were with lack of social support and domestic conflict.

This work is in keeping with an emerging body of research and practice recommendations seeking to define ways to keep children safe and healthy. As the set of potential home safety risks proliferates, pediatricians may question what the high yield targets of preventive care are. It has been argued that pediatricians need to take seriously what the best pediatricians have long espoused—that their practice fundamentally involves not just physician-patient dyads, but triads of physician-patient-parent [30]. Rather than viewing the parent as only a therapeutic ally to be mobilized on the child’s behalf, it becomes necessary to take the needs of parents into account.

There are at least two opposing views on this. One argues that pediatricians have no particular expertise at dealing with the health issues of adult parents – particularly not their mental health. It argues that physicians should spend their time putting out each of the “fires” of unsafe home environments as they come up, since that is what they know how to do and have time for. An alternative view argues that instead, pediatricians should partner with parents to give the parents the resources to create safe home environments [30]. By investing in the underlying parental psychosocial milieu, the pediatrician then effectively removes the “spark” from the environment. This may be not only more effective overall, but more efficient.

Clearly taking this broader view is somewhat difficult. Physicians for adults have been documented to be quite resistant to viewing the abuse of their own patients as a medical issue. Nonetheless, nearly every major medical organization now argues that domestic violence screening and appropriate intervention is a core competency for physicians, including the American Academy of Pediatrics [18, 31] and the American College of Emergency Physicians [32]. Similarly, there is clearly resistance to screening for parental domestic violence among pediatricians. One recent survey of Midwestern practitioners found that only 8.5% routinely screened [33]; a nationwide survey found the overall self-reported prevalence at 5%, with little improvement among recent cohorts [34]. The cited reasons are similar to those for practitioners treating adults: feelings of inadequate education and too little time, and concern about offending patients [34, 35]. Of note, focus groups fail to bear out the latter concern, as parents seem to acknowledge that these problems exist and have medical implications [36]. Alternatives to face-to-face screening have been found to be well-accepted and effective [37–40].

If one is going to address psychosocial issues, the question becomes which issues to address. Most past studies have either looked at the relationship of any given psychosocial risk factor and child outcomes, or the interrelationship of factors – and provide only modest guidance. Our single-site cross-sectional study is likewise limited. Lack of social support is likely a significant risk factor for maternal depression [9]. Social support influence the impact of domestic and community violence on children’s emotional outcomes [10, 41]. Social isolation—the removal of social support from the victim—remains a textbook mechanism of domestic violence [42]. Simply put, the processes of lack of social support, depression, and domestic conflict are complicated—they likely have reciprocal and recursive interactions that defy simplistic linear modeling strategies. Research needs to take these interactions into account. This mesh of interaction suggests that intervention trials need to be studied, not just assumed – in complex systems, whether any particular intervention will be amplified or damped cannot necessarily be predicted in

advance. Moreover, small interventions may prove to be unexpectedly effective in such settings [16].

Our single site cross-sectional study has certain important limitations for clearly delineating the causal pathways (and intervenable sites) along which depression, lack of social support, and domestic conflict lead to unsafe home environments. Our study is strongly suggestive that depression should not be studied in isolation, but longitudinally in the context of other psychosocial risks. Of note, our sample size let us study the cross-sectional impact of domestic conflict (primarily emotional) whereas most research has focused on domestic violence (primarily physical); the exact relationship between these constructs needs to be clarified in future studies. Similarly, it is important to acknowledge the crucial role of poverty and social deprivation in unsafe home environments [43]. Our study population came from a sufficiently homogenous population that we did not explore the interaction between socio-economic factors and psychosocial risk factors (which could well be significant) although we did control for them in our models. Further, we studied self-reported safety risks, not injuries per se. The limitations of self-report are well-known, and may tend to underestimate the true prevalence of these non-normative behaviors. As any given risk does not guarantee an injury, a much larger sample would be necessary to conclusively link our psychosocial risks through child safety risk behaviors to particular adverse outcomes for children. Finally, we must note that we did not use rigorous random sampling. As such, our results may not be generalizable to the full population of urban emergency department users. While it is not obvious to us why our sampling procedure would result in differential sampling that might confound the results reported here, such confounding can not be ruled out.

Given these limitations, imperfect but workable options exist for the pragmatic clinician desiring to address core psychosocial risk factors of his or her patients. Domestic violence screening has been prominently advocated on the basis of both severity of impact and high prevalence. Questions remain about the efficacy of physician interventions [44, 45], although practical experience is being accrued [34, 46]. We might speculate that some of the attraction of maternal depression as a pediatric psychosocial risk factor is that the concept is already familiar to most physicians and has well-developed and commonly accepted interventions [47]. Again, questions remain as to the effectiveness of treating depression, not per se, but as an approach to improving other medical problems in patients' lives [48]. Social support is a concept that is perhaps less familiar to physicians. However, randomized trials of the provision of social support to new parents have shown lasting positive impacts for children, at least when done by nurses [49–51]. At this point, it seems reasonable to recommend an opportunistic approach of awareness, screening as much as possible, and intervening

where leverage is available, based on physician, patient, and local resources.

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