The relationship of childhood sexual abuse and depression with somatic symptoms and medical utilization


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ABSTRACT

Background. Previous research suggests that childhood sexual abuse is associated with high rates of retrospectively reported medical utilization and medical problems as an adult. The goal of this study was to determine if abused females have higher rates of medical utilization using self-report and objective measures, compared with non-abused females. A further goal was to determine whether findings of prior research would be replicated when childhood physical abuse level was controlled. This study also examined the moderating impact of depressed mood on current health measures in this population.

Methods. Six hundred and eight women recruited from a health maintenance organization completed self-report measures of health symptoms for the previous month and doctor visits for the previous year. Objective doctor records over a 2 year period were examined for a subset of 136 of these women.

Results. Results showed significantly more self-reported health symptoms and more self-reported doctor visits in abused participants compared with those who reported no childhood history of sexual abuse. Objective doctor visits demonstrated the same pattern with abused participants exhibiting more visits related to out-patient surgery and out-patient internal medicine. In addition, persons who were both sexually abused and depressed tended to visit the emergency room more frequently and to have more in-patient internal medicine and ophthalmology visits than sexually abused participants who reported low depressed mood and non-abused controls.

Conclusions. These results replicate prior studies and suggest that current depression may moderate the relationship between sexual abuse and medical problems in adulthood.

INTRODUCTION

Numerous studies suggest that women who were sexually abused often experience long-term psychological consequences (Browne & Finkelhor, 1986). Such consequences can include depression, anxiety, eating disorders, substance abuse and interpersonal problems (Browne & Finkelhor, 1986; Beitchman et al. 1992; Briere & Runtz, 1993). In spite of the overwhelming psychological impact of sexual abuse, some research suggests that such victims are unlikely to seek mental health services for assault-related distress (Kilpatrick et al. 1987; Burnam et al. 1988). On the other hand, data indicate that sexually abused individuals are high utilizers of other medical services (Drossman et al. 1990; Leserman et al. 1996).

Studies examining somatic complaints of persons who were sexually abused at some point in their lives indicate that they report more recurrent gastrointestinal symptoms (Golding, 1994; Talley et al. 1994), pain (Golding, 1994; Leserman et al. 1996), chronic pelvic pain (Haber & Roos, 1985; Walker et al. 1988; Drossman et
al. 1990; Reiter & Gambone, 1990; Walling et al. 1994a), cardiopulmonary (Golding, 1994) and illness symptoms (Waigandt et al. 1990; Leserman et al. 1996). In addition, retrospective self-report studies indicate that those who were sexually abused visit their physicians more frequently (Golding et al. 1988; Reiter & Gambone, 1990; Waigandt et al. 1990; Kimerling & Calhoun, 1994; Talley et al. 1994), report more non-gynaecological surgeries (Reiter & Gambone, 1990), and more lifetime surgeries (Drossman et al. 1990; Leserman et al. 1996).

Research focused on persons sexually abused during childhood has found results similar to studies using lifetime sexual abuse samples. These studies find that adults who had been childhood sexual abuse victims report more pain (Bendixen et al. 1994; Leserman et al. 1996), headaches (Felitti, 1991; Bendixen et al. 1994), gynaecological complaints (Cunningham et al. 1988; Springs & Friedrich, 1992; Bendixen et al. 1994), chronic pelvic pain (Cunningham et al. 1988; Walker et al. 1988; Lechner et al. 1993), gastrointestinal symptoms (Cunningham et al. 1988; Felitti, 1991; Lechner et al. 1993; Longstreth & Wolde-Tsadick, 1993), musculoskeletal symptoms (Bendixen et al. 1994), respiratory symptoms (Cunningham et al. 1988; Felitti, 1991; Lechner et al. 1993), neurological symptoms (Lechner et al. 1993) and more overall physical problems (Springs & Friedrich, 1992; Lechner et al. 1993; Longstreth & Wolde-Tsadick, 1993; Moeller et al. 1993). Studies also show more self-reported hospitalizations for illness (Moeller et al. 1993), abdominal surgery (Longstreth & Wolde-Tsadick, 1993) and both self-reported (Bendixen et al. 1994) and objective (Felitti, 1991) doctor visits.

Although there is support for the association between childhood sexual abuse and health outcomes, many studies have been criticized for not ruling out the possibility that a history of childhood physical abuse, rather than sexual abuse, was responsible for high rates of medical problems found in the sexually abused sample (e.g. Walling et al. 1994a, b). This critique is based on evidence that childhood physical abuse is highly correlated with childhood sexual abuse (Drossman et al. 1990; Longstreth & Wolde-Tsadik, 1993; Walling et al. 1994b) as well as findings that persons with a history of physical abuse report more pain, gastrointestinal symptoms, non-gastrointestinal symptoms and lifetime surgeries (Rapkin et al. 1990; Longstreth & Wolde-Tsadik, 1993; Walling et al. 1994a, b; Leserman et al. 1996) than non-abused persons. However, only two studies have controlled for childhood physical abuse in their analyses of the relationship between childhood sexual abuse and health (Walling et al. 1994b; Leserman et al. 1996). One of these studies found that childhood sexual abuse failed to predict self-reported health symptoms when physical abuse was controlled (Walling et al. 1994b) whereas the other found that childhood sexual abuse continued to be linked to self-reports of adult pain, somatic symptoms, and lifetime surgeries even when physical abuse was controlled (Leserman et al. 1996). Differences between the examined populations may account for these divergent findings. Although both of these studies used female participants referred for chronic medical problems, one sample consisted of persons with chronic pelvic pain (Walling et al. 1994b) whereas the other study focused on persons referred for gastrointestinal disorders (Leserman et al. 1996). The present study attempted to further examine this issue by controlling for childhood physical abuse in the examination of a general health maintenance organization (HMO) sample.

It is also important to note that most studies of childhood sexual abuse sequelae have relied solely on retrospective self-report measures to assess medical utilization over the prior 6 months (Cunningham et al. 1988), or 1 year (Longstreth & Wolde-Tsadik, 1993; Bendixen et al. 1994). Only one published study, (Felitti, 1991) measured objective visits. However, rather than examine total visits, this study examined dichotomized utilization (less than or greater than ten visits). Although there is support for the validity of self-reported medical care (Koons, 1973; Turkat, 1982), as the time-frame that individuals are asked to remember increases, higher medical utilizers may be more likely to under-estimate the number of visits made (Roberts et al. 1996; Weissman et al. 1996). Therefore, retrospective self-report measures assessing a time-period greater than a few months may lead to an under-estimate of doctor visits in a high utilization abused sample, and may bias results toward null findings. This may explain why some self-report
studies have failed to find a greater number of doctor visits in an abused sample (Cunningham et al. 1988; Longstreth & Wolde-Tsadik, 1993). The present study examined differences between persons sexually abused as children and non-abused participants based on a 2-year period of objective computer records recorded at the time of each visit. Furthermore, we also examined the relationship between objective records and retrospective self-reports in this sample.

Researchers have also suggested that over-use of medical services in a sexual abuse population may be specific to certain types of doctors. For example, self-report studies (Lechner et al. 1993; Longstreth & Wold-Tsadik, 1993; Lesserman et al. 1996) showed that sexually abused participants were more likely to visit a surgeon than non-abused persons and were also more likely to seek mental health treatment (Golding et al. 1988; Bendixen et al. 1994). To examine this issue further, the present study measured objective doctor visits by out-patient and in-patient visit type. Such types included ear, nose, and throat (ENT), ophthalmology, gynaecology, internal medicine, psychology/psychiatry, surgery and emergency room visits.

Finally, no study has previously investigated the potential role of depressed mood as a moderator of the perceived health and objective medical utilization of patients with a history of childhood sexual abuse. Such an investigation may be indicated since depression is the most common long-term psychological consequence of childhood sexual abuse (Browne & Finkelhor, 1986; Walker et al. 1992). Furthermore, depression has been linked to a variety of somatic symptoms, reduced immunity, and high medical utilization (Katon et al. 1986; Weisse, 1992; Herbert & Cohen, 1993).

The purpose of the current study was to replicate and extend previous research on the relationship between childhood sexual abuse and adult medical utilization. This study investigated somatic complaints as well as both self-reported and objective doctor visits of adult females who were recruited from a sample of HMO members. Sexually abused participants were compared with non-abused participants on self-report measures of somatic complaints over the prior month and number of doctor visits over the previous year. In addition, a subset of sexually abused participants were compared to a subset of controls on objective doctor visits over a 2-year period. For the same subsets, we also examined the extent to which symptom reporting and objective visits were moderated by depression as well as the relationship between objective and self-reported doctor visits. In addition, all analyses controlled for age, income, marital status and childhood physical abuse. It was predicted that sexually abused adults would exhibit more health symptoms, and more self-reported and objectively assessed doctor visits than non-abused persons. It was also predicted that sexually abused persons with depressed mood would have more doctor visits and more self-reported somatic symptoms than non-depressed sexually abused participants.

METHOD
Participants
The sample represented 602 adult female members of Kaiser Permanente, a large HMO in California. Although participants were recruited from the Redwood City facility, members were free to visit any of the California sites. Participants ranged in age from 18 to 88 with a mean age of 45. Education level ranged from part high school (2.8%), high school (22.6%), part college (32.7%), college (26.6%) and graduate school (15.2%). Of the total sample, 67.8% reported that they were currently employed, 14.2% housewives, 11.4% retired and 4.7% were students. Participants were asked to provide yearly household income in one of eight ranges (i.e. $0–$10000, $10000–$20000, $21000–$30000, $31000–$40000, $41000–$50000, $51000–$60000, $61000–$70000 and over $70000). Income ranged from under $10000 to over $70000 with average income in the $41000–$60000 dollar range.1

Procedure
During recruitment periods, experimenters approached all women in all internal medicine clinic waiting rooms who appeared to be 18 years of age or older. Potential subjects were then asked to complete a brief self-report questionnaire with no incentive. The initial questionnaire included a question to determine

1 Although we failed to assess the ethnicity of our sample, the ethnic breakdown of participants recruited in a similar manner from the same site for another study was 81% Caucasian, 12% Hispanic, 6% African American and 1% other (Taylor et al. 1991).
if participants would be willing to return on a separate day to complete an hour-long self-report packet. No incentive was offered. Those who consented to return were asked to write down their phone number. Upon return, participants completed a consent form that allowed experimenters access to their medical records.

**Measures completed by all participants**

**Health Symptom Checklist** (Vickers & Hervig, 1988; Watson & Pennebaker, 1989)

This 23-item checklist consists of yes/no items that query whether the participant had experienced each somatic complaint during the previous month. The last 13 items were found to have high internal consistency and demonstrated validity through strong correlations with other health measures and measures of somatization (Watson & Pennebaker, 1989). The full checklist had high test–retest reliability ($r = 0.81$) over a 2-week period in an unpublished undergraduate sample (Newman, 1998) and has demonstrated convergent validity by showing a high correlation with the SCL-90 somatization subscale ($r = 0.55$) in the current data-set. It assessed upper respiratory symptoms (dry cough, earache, fever, hoarseness, sneezing, sore throat, stuffy nose, productive cough/phlegm), gastrointestinal symptoms (bloating, abdominal pain, constipation, diarrhoea, indigestion, vomiting) and pain (bone pain, headache, migraine, muscle ache, muscle pain, sinus pain).

**Activity restriction measure** (Verbugge, 1980)

This measure of activity restriction due to health symptoms consists of three yes/no items. The items assessed whether health symptoms experienced during the past month caused the participant to: (1) stay in bed; (2) miss work/school; or (3) cut down on leisure or social activities. This measure has been found to have high test–retest reliability ($r = 0.87$) over a 2-week period (Newman, 1998) and was highly correlated with the Health symptom checklist ($r = 0.52$) in the current data-set.

**Doctor visits**

This five-item Likert scale assessed number of retrospectively self-reported doctor visits during the previous year. Each item represented a range of visits (1 = 1–3 visits, 2 = 4–6 visits, 3 = 7–9 visits, 4 = 10–12 visits, 5 = >12 visits). This measure has been found to have high test–retest reliability ($r = 0.82$) over a 2-week period (Newman, 1998).

**Brief sexual and physical abuse screen** (Drossman et al. 1990)

This sexual and physical abuse screen has good levels of test–retest reliability and criterion validity (Lesserman et al. 1995) and has been used in a number of prior studies (Drossman et al. 1990; Longstreth & Wolde-Tsadik, 1993; Scarinci et al. 1994; Toomey et al. 1993; Talley et al. 1994). The sexual abuse questions employed a definition of childhood sexual abuse used by prior researchers (e.g. Browne & Finkelhor, 1986; Longstreth & Wolde-Tsadik, 1993; Moeller, Bachmann & Moeller, 1993). The questions asked ‘During your childhood (prior to 14 years old) did anyone 5 or more years older than you ever: (1) Inappropriately display the sex organs of their body to you?; (2) Threaten to have sex with you?; (3) Touch the sex organs of your body; (4) Make you touch the sex organs of their body; (5) Try forcefully or succeed in having sex when you didn’t want this?’ Participants responded on a 4-point Likert scale (1 = never, 2 = seldom, 3 = occasionally, 4 = often). Consistent with Drossman et al. (1995) a participant was considered to have experienced contact childhood sexual abuse if she gave a positive response to items 3, 4, or 5. Only participants who reported contact abuse were included in this category because research suggests that it is the severe forms of sexual trauma that are most significantly associated with harmful and lasting effects (Briere, 1988). All contact sexual abuse participants were labelled ‘abused’ and non-contact participants were labelled ‘non-abused’.

The physical abuse item on this screen was developed from population-based survey research on physical abuse (Briere & Runtz, 1988). The item asked ‘When you were a child, did an older person hit, kick, or beat you?’. Participants responded to this question using the same scale as was used in the sexual abuse screen.

**Measures obtained for a subset of participants**

As mentioned above, additional questionnaire and objective medical utilization data was gathered from a subset of participants ($N = 136$).
Objective medical utilization

Objective medical utilization was obtained through Kaiser HMO computer records. Physicians and nurses recorded this data at the time of each visit and data reflected all out-patient and in-patient visits to all Kaiser Permanente sites. Out-patient clinics included ear, nose, and throat (ENT), gynaecology, internal medicine, psychology/psychiatry, out-patient surgery visits, as well as emergency room visits. In-patient clinics included gynaecology, internal medicine, ophthalmology and surgery. We were also able to obtain information about number of visits of patients referred to physicians outside of the Kaiser system and thus incorporated these visits as well. For the purpose of the analyses, data were combined into total medical out-patient (excluding psychology/psychiatry) or total in-patient medical visits, as well as separately analysed by visit type. Visits were obtained for a previous 2-year period (1992–1993).

Beck Depression Inventory (BDI) (Beck et al. 1961)

The BDI has demonstrated high internal consistency in psychiatric and non-psychiatric patient samples. It also has high concurrent validity with other measures of depression and there is evidence that it discriminates psychiatric from non-psychiatric patients (Beck et al. 1988). To examine the hypothesis that depression would have a moderating effect on physical health and medical service utilization of persons who reported a history of contact childhood sexual abuse, we dichotomized the BDI. Based on recommendations of Beck & Beamserfer (1974), participants who scored > 10 on this questionnaire were rated as high depressed mood (1) whereas those who scored ≤ 10 were rated as low depressed mood (0). Using this cut-off, 84 of our participant subset (66 non-abused and 18 abused) had low depressed mood, whereas 51 (35 non-abused and 16 abused) had high depressed mood.

RESULTS

Demographic and descriptive information

Twenty per cent of the waiting-room participants refused the initial four-page questionnaire, returned it uncompleted or were called in to see their doctor before completing it, making the completion rate 80%. Thus, 602 women who were approached completed the initial questionnaire. One hundred and twelve of these women (18%) reported having experienced contact childhood sexual abuse, 46 (7.6%) participants reported a history of non-contact sexual abuse and 444 (74%) reported an absence of sexual abuse during childhood. Therefore, a total of 25.8% of the sample reported some type of childhood sexual abuse. This finding is comparable to other studies conducted within a primary-care setting, which generally find that between 17–40% of women report childhood sexual abuse (e.g. Friedman et al. 1992). Of the 602 participants, 51% (57/118) of abused and 36% (158/444) of the non-abused participants indicated a willingness to return on a separate day to fill out additional questionnaires. Of these, 30% (34/112) reporting contact childhood sexual abuse, 60% (34/57) of abused participants who indicated a willingness to return) and 25% (111/444) of non-abused participants (70% (111/158) of non-abused persons who indicated a willingness to return) completed this part of the study.

Chi-square analyses found no differences in employment status or education between abused and non-abused groups. However, there was a difference with respect to marital status. Abused participants were more likely to be married than were non-abused persons (64% v. 57%). ANOVAs also determined that the non-abused group was significantly older (M = 46 v. 42) than the abused group. There were no significant differences with respect to income. Within the subgroup, chi-square analyses determined that there were no differences between sexually abused and non-abused participants in employment, or education and ANOVAs revealed no difference in age or income. There was a difference in marital status with non-abused participants more likely to be married (64% v. 44%) than abused participants. Participants in the subgroup (N = 145) were also compared to those in the larger group (N = 349) who did not participate in this part of the study. The compared groups did not differ significantly in employment status, education, or income. The subgroup was younger in mean age (M = 41 v. 46). However, when analyses were controlled for
Table 1. Average number of symptom types and self-reported doctor visits of childhood sexually abused and non-abused participants

<table>
<thead>
<tr>
<th>Measure</th>
<th>Not abused</th>
<th>Abused</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gastrointestinal symptoms</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$M$ (S.D.)</td>
<td>1.45 (1.44)</td>
<td>2.21 (1.67)</td>
<td>9.88***</td>
</tr>
<tr>
<td>LSM</td>
<td>1.57</td>
<td>2.09</td>
<td></td>
</tr>
<tr>
<td>Pain symptoms</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$M$ (S.D.)</td>
<td>2.85 (1.69)</td>
<td>3.62 (1.54)</td>
<td>8.03**</td>
</tr>
<tr>
<td>LSM</td>
<td>2.98</td>
<td>3.49</td>
<td></td>
</tr>
<tr>
<td>Upper respiratory symptoms</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$M$ (S.D.)</td>
<td>3.04 (2.25)</td>
<td>3.74 (2.25)</td>
<td>3.73*</td>
</tr>
<tr>
<td>LSM</td>
<td>3.21</td>
<td>3.61</td>
<td></td>
</tr>
<tr>
<td>Total number of symptoms</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$M$ (S.D.)</td>
<td>8.14 (4.44)</td>
<td>10.58 (4.66)</td>
<td>8.57***</td>
</tr>
<tr>
<td>LSM</td>
<td>8.64</td>
<td>10.10</td>
<td></td>
</tr>
<tr>
<td>Range of self-reported doctor visits</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$M$ (S.D.)</td>
<td>2.23 (1.35)</td>
<td>2.96 (1.67)</td>
<td>18.47****</td>
</tr>
<tr>
<td>LSM</td>
<td>2.26</td>
<td>2.93</td>
<td></td>
</tr>
</tbody>
</table>

$M$, Mean; and, (S.D.), standard deviation, these represent values prior to transformation for skewness. $F$ values and significance levels represent effects of all analyses following skewness transformations. LSM = means adjusted for age, income, marital status, and childhood physical abuse level. Means for self-reported doctor visits represent the mean range of visits per group (e.g. 2 = 4–6 visits and 3 = 7–9 visits).

Not abused, not sexually abused during childhood; Abused, childhood sexually abused.

* $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$, **** $P < 0.0001$.

age, the abused subgroup did not differ significantly from the larger abused group in total health symptoms, self-reported doctor visits, or disability from illness. Similarly, the non-abused subgroup did not differ from the larger non-abused group on any of these measures.

Rates of physical abuse were as follows: of non-abused participants, 68% (N = 305) responded ‘never’, 18% (N = 81) responded ‘seldom’, 9% (N = 42) responded ‘occasionally’ and 5% (N = 20) responded ‘often’ to the item assessing being hit kicked or beaten as a child. Of abused participants 43% (N = 48) reported that they had ‘never’ been physically abused, 20% (N = 22) reported ‘seldom’ 17% (N = 19) reported ‘occasionally’ and 20% (N = 23) reported that they had been physically abused ‘often’ as a child. Chi-square analyses indicated that sexually abused participants were significantly more likely to report that they were physically abused ‘occasionally’ or ‘often’ than non-abused individuals, $\chi^2(1, N = 561) = 51.80$, $P < 0.00001$, with the relative risk for such physical abuse 5.51 times greater in the abused sample (confidence intervals: 3.35–9.07).

Overall statistical approach

Data were checked for skewness and significantly skewed data were transformed prior to all parametric analyses as recommended by Tabachnick & Fidell (1996). Dependent measures were arranged into three conceptually related groups for use in multivariate analyses: (a) self-report measures (total gastrointestinal symptoms, total upper respiratory symptoms, total pain symptoms and range of self-reported medical doctor visits); (b) objective out-patient visit types (e.g. internal medicine, ear, nose and throat (ENT), gynaecology, internal medicine, psychology/psychiatry, out-patient surgery, emergency room and total medical visits (excluding psychology/psychiatry)); and (c) objective in-patient medical visit types (e.g. internal medicine, surgical, ophthalmology, gynaecology and total visits). Obstetrics, allergy and physical therapy visits were deleted from analyses. Conceptually related groups were first analysed with multivariate analyses of covariance controlling for age, income, marital status and childhood physical abuse level. Subsequent univariate analyses of covariance (controlling for age, income, marital status and childhood sexual abuse) were only conducted on individual variables when significant multivariate effects were found to reduce the risk of Type I error. Covariates were selected based on significant demographic differences between abused and non-abused groups in this study (i.e. age, marital status) as well as data from prior studies suggesting a strong relationship between health and income (e.g. Ostrove & Adler, 1998) and health and physical abuse (e.g. Leserman et al.
Disability

The relationship of childhood sexual abuse

Upper respiratory
gastrointestinal, pain and total symptoms over
abused participants reported significantly more
multivariate effect on self-report measures,
as dependent variables. There was a significant
independent variable and self-report measures
ducted with level of childhood sexual abuse:
A multivariate analysis of covariance was con-
differences between abused and non-abused
analyses showed that abused participants had
significantly more gastrointestinal, pain and total symptoms over
the previous month as well as more self-reported
doctor visits over the previous year than non-
abused participants. There was also a marginally
significant effect of abuse level on upper respira-
tory symptoms in the same direction (Table 1).

1996). Similar to univariate analyses, chi-square
analyses of individual symptoms were conducted
only if both the multivariate and univariate
analyses of total symptom subscales showed
significant differences between two groups. Dis-
ability from illness was analysed using only chi-
square due to the nominal nature of these
variables.

Differences between abused and non-abused
participants

Self-reported health problems and
consequences of illness

A multivariate analysis of covariance was con-
ducted with level of childhood sexual abuse: non-abused (N = 452), abused (N = 112), as the
independent variable and self-report measures
as dependent variables. There was a significant
multivariate effect on self-report measures,
F(5, 581) = 5.72, P < 0.0005. As shown in Table
1, subsequent univariate analyses showed that
abused participants reported significantly more
gastrointestinal, pain and total symptoms over

Table 2. Percentage of childhood sexually abused and non-abused participants reporting somatic
symptoms and disability in the previous month

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Not abused (%)</th>
<th>Abused (%)</th>
<th>χ²</th>
<th>Odds ratio</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bone/joint pain</td>
<td>58</td>
<td>66</td>
<td>2.65</td>
<td>1.43</td>
<td>0.93-2.21</td>
</tr>
<tr>
<td>Headache</td>
<td>58</td>
<td>71</td>
<td>5.77*</td>
<td>1.73</td>
<td>1.10-2.71</td>
</tr>
<tr>
<td>Sinus pain</td>
<td>41</td>
<td>57</td>
<td>8.80***</td>
<td>1.88</td>
<td>1.23-2.85</td>
</tr>
<tr>
<td>Migraine</td>
<td>13</td>
<td>30</td>
<td>19.19****</td>
<td>2.87</td>
<td>1.77-4.67</td>
</tr>
<tr>
<td>Muscle pain</td>
<td>51</td>
<td>65</td>
<td>7.24**</td>
<td>1.80</td>
<td>1.77-2.77</td>
</tr>
<tr>
<td>Muscle aches</td>
<td>64</td>
<td>73</td>
<td>3.34</td>
<td>1.54</td>
<td>0.97-2.44</td>
</tr>
<tr>
<td>Gastrointestinal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bloating</td>
<td>37</td>
<td>48</td>
<td>4.05*</td>
<td>1.53</td>
<td>1.01-2.33</td>
</tr>
<tr>
<td>Constipation</td>
<td>19</td>
<td>30</td>
<td>7.08**</td>
<td>1.87</td>
<td>1.17-2.99</td>
</tr>
<tr>
<td>Diarrhoea</td>
<td>21</td>
<td>40</td>
<td>17.29****</td>
<td>2.51</td>
<td>1.61-3.91</td>
</tr>
<tr>
<td>Indigestion</td>
<td>29</td>
<td>44</td>
<td>10.02***</td>
<td>1.98</td>
<td>1.29-3.03</td>
</tr>
<tr>
<td>Vomiting</td>
<td>10</td>
<td>18</td>
<td>6.06*</td>
<td>2.02</td>
<td>1.14-3.56</td>
</tr>
<tr>
<td>Abdominal pain</td>
<td>29</td>
<td>41</td>
<td>5.86*</td>
<td>1.69</td>
<td>1.10-2.60</td>
</tr>
<tr>
<td>Upper respiratory</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Earache</td>
<td>19</td>
<td>20</td>
<td>0.11</td>
<td>1.09</td>
<td>0.65-1.84</td>
</tr>
<tr>
<td>Fever</td>
<td>19</td>
<td>29</td>
<td>5.98*</td>
<td>1.79</td>
<td>1.12-2.86</td>
</tr>
<tr>
<td>Hoarse</td>
<td>30</td>
<td>39</td>
<td>2.97</td>
<td>1.46</td>
<td>1.04-2.50</td>
</tr>
<tr>
<td>Sore throat</td>
<td>43</td>
<td>49</td>
<td>1.38</td>
<td>1.28</td>
<td>0.85-1.94</td>
</tr>
<tr>
<td>Sneezing</td>
<td>65</td>
<td>74</td>
<td>3.41</td>
<td>1.55</td>
<td>0.97-2.47</td>
</tr>
<tr>
<td>Stuffy nose</td>
<td>63</td>
<td>71</td>
<td>2.40</td>
<td>1.43</td>
<td>0.91-2.24</td>
</tr>
<tr>
<td>Dry cough</td>
<td>37</td>
<td>47</td>
<td>3.62</td>
<td>1.50</td>
<td>0.99-2.28</td>
</tr>
<tr>
<td>Productive cough</td>
<td>29</td>
<td>45</td>
<td>10.00***</td>
<td>1.97</td>
<td>1.29-3.01</td>
</tr>
<tr>
<td>Disability</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cut down activities</td>
<td>44</td>
<td>62</td>
<td>12.30****</td>
<td>2.13</td>
<td>1.39-3.26</td>
</tr>
<tr>
<td>Miss work/school</td>
<td>21</td>
<td>32</td>
<td>6.30*</td>
<td>1.79</td>
<td>1.13-2.82</td>
</tr>
<tr>
<td>Stay in bed</td>
<td>24</td>
<td>38</td>
<td>7.81**</td>
<td>1.86</td>
<td>1.20-2.89</td>
</tr>
</tbody>
</table>

Not abused, not sexually abused during childhood; Abused, childhood sexually abused; CI, confidence interval.

* P < 0.05; ** P < 0.01; *** P < 0.005; **** P < 0.0001.
participants had a greater likelihood to experience fever, and productive cough, than non-abused participants. Abused participants did not differ from controls on earache, sore throat, hoarseness, sneezing, dry cough, or stuffy nose. Chi-square analyses of disability symptoms showed that abused participants had a greater likelihood to cut down on activities, to miss work, and to stay in bed, than non-abused participants (see Table 2 for odds ratios and confidence intervals).

**Objective medical utilization**

Two additional MANCOVAs were conducted comparing the subgroup of abused \((N = 34)\) participants to controls \((N = 102)\) on objective doctor out-patient and in-patient visits over a 2-year period. Results showed a significant multivariate effect of sexual abuse on out-patient doctor visits, \(F(8,126) = 3.10, P < 0.005\). As shown in Table 3, subsequent univariate analyses found a significant main effect of level of sexual abuse on total medical doctor visits (excluding psychology/psychiatry), total internal medicine visits, and total out-patient surgical visits. For each of these analyses, abused individuals had significantly more visits than non-abused individuals. There was no significant difference between abused and non-abused groups on emergency room, ENT, gynaecology, or psychology/psychiatry visits (Table 3). There was also no significant multivariate effect of abuse on in-patient visits, which may have been due to a very small number of such visits.

**The relationship between self-reported and objective doctor visits**

To determine the relationship between retrospective self-reports and objective doctor records, Pearson correlations were conducted between these two measures. Total objective doctor visits from the previous year were compared to self-reported range of visits from the same time period. To reduce the likelihood that a ceiling effect arising from differences between self-reported ranges (e.g. 1 = 1–3 visits, 2 = 4–6 visits, 3 = 7–9 visits, 4 = 10–12 visits, 5 = > 12 visits) and total objective visits would
reduce the magnitude of the correlation, total objective visits were recoded to match the self-report coding system. Results showed low moderate correlations between these two measures in the overall sample, \( r = 0.45, P < 0.0001 \). The correlation was similar when assessed only within the sexually abused group, \( r = 0.49, P < 0.005 \). When over and under-estimates of retrospective visits were calculated, 46% of the sample under-estimated the number of doctor visits, whereas only 18% over-estimated the number (36% were accurate). Participants were significantly more likely to under-estimate the number of visits than to over-estimate them, \( \chi^2(1, N = 93) = 18.08, P < 0.0005 \), with no difference between abused and non-abused participants. Moreover, when number of large inaccuracies (deviating by 2 or more on the 5 point scale) were assessed, abused and non-abused participants were also equally likely to make errors. In addition, participants were significantly more likely to largely under-estimate their doctor visit reports than to largely over-estimate them, \( \chi^2(1, N = 93) = 18.08, P < 0.0005 \).

The moderating effect of depression on abuse

Self-reported health problems and disability from illness

To examine the interaction between depressed mood and sexual abuse on self-report health measures we conducted a two-way MANCOVA with two levels of sexual abuse (abused vs. non-abused) and two types of depressed mood (high vs. low) as independent variables. For this analysis, the dependent measures included total number of self-reported symptoms, and range of self-reported doctor visits. There was neither a multivariate interaction nor subsequent univariate interactions between depression and sexual abuse on these dependent measures.

Objective medical utilization

To examine the interaction between depressed mood and sexual abuse on objective out-patient medical utilization we conducted a multivariate ANCOVA. Results showed a significant multivariate interaction between childhood sexual abuse and depressed mood, \( F(8, 126) = 2.36, P < 0.05 \). Subsequent univariate ANCOVAs showed a significant interaction between depressed mood and level of abuse on emergency department visits, \( F(1, 133) = 9.20, P < 0.005 \). As can be seen in Fig. 1, depressed mood interacted with level of abuse such that being sexually abused and depressed increased the likelihood that these individuals would visit the emergency room compared to non-depressed sexually abused participants or depressed non-abused participants. There were no significant interactions between childhood sexual abuse and depression on ENT, gynaecological, internal medicine, psychiatric, surgical or total outpatient visits.

There was also a significant multivariate interaction between depressed mood and level of abuse on in-patient visits, \( F(5, 130) = 2.80, P < 0.05 \). Subsequent univariate analyses showed a significant interaction on inpatient internal medicine visits, \( F(1, 134) = 6.68, P = 0.01 \) and in-patient ophthalmology visits, \( F(1, 134) = 8.38, P < 0.005 \). As can be seen in Figs. 2 and 3, persons who reported prior childhood sexual abuse and who were also depressed had significantly more in-patient medical visits.
Fig. 2. Interaction between sexual abuse (☐, not abused, not sexually abused during childhood; □, abused, childhood sexually abused) and depression level (Low Dep v. High Dep) on total days as an in-patient in the Internal Medicine Clinic. Means are adjusted for age, income, marital status and childhood physical abuse level.

Fig. 3. Interaction between sexual abuse (☐, not abused, not sexually abused during childhood; □, abused, childhood sexually abused) and depression level (Low Dep v. High Dep) on total days as an in-patient in the Ophthalmology Clinic. Means are adjusted for age, income, marital status and childhood physical abuse level.

internal medicine and in-patient ophthalmology visits than sexually abused non-depressed and depressed non-abused participants.

DISCUSSION

This study found numerous differences between sexually abused and control participants on health measures. Similar to previous studies we found that sexually abused participants reported more somatic symptoms than controls including more headache, sinus pain, muscle pain, migraines, and gastrointestinal symptoms of bloating, constipation, diarrhoea, indigestion, vomiting and abdominal pain. In addition, abused participants reported more fever, and productive cough than non-abused participants did. The report of somatic symptoms did not seem to be related to over-reporting of all symptoms as we did not find any group
The relationship of childhood sexual abuse

Differences for reports of bone pain, muscle aches, earache, hoarseness, dry cough, sore throat, sneezing, or stuffy nose. In addition to experiencing more somatic symptoms than controls, abused participants reported more disability from illness than non-abused participants. Greater disability has also been found in studies with participants who experienced sexual abuse at any point during their lifetime (Scarinci et al. 1994; Leserman et al. 1996). Similar to Leserman and associates (1996), we found a link between abuse and self-reported medical problems even after controlling for physical abuse. Moreover, the present study extends this finding to a general HMO sample.

The current study also examined the relationship between retrospective and prospective doctor visits in an abused sample. Correlations between these two measures were only moderately related. There was also a significant tendency for participants to err on the side of under-estimating the number of doctor visits they had made irrespective of their abuse category. This finding replicates prior research showing that self-report measures assessing a category. This finding replicates prior research that self-report measures assessing a category. This finding replicates prior research showing that self-report measures assessing a longer time period, may under-estimate the number of visits in a group suspected of high utilization (Roberts et al. 1996). However, this also suggests that self-report may be biased toward under-estimating the differences between abused and control participants and therefore more likely to support the null hypothesis.

Despite the tendency to under-estimate differences between abused and control participants, the present study did find significantly more self-reported doctor visits from the previous year in abused participants compared to controls. The same pattern was found when a subgroup of sexually abused participants was compared to controls on objective measures. These results replicated a previous study showing more self-reported doctor visits in abused than non-abused participants (Bendixen et al. 1994). Moreover, by measuring total objective visits over a 2 year period, this study also extends a prior study (i.e. Felitti, 1991) that used objectively measured doctor visits over a 3 month period with a sample of abused participants. On the other hand, the present study did not find a significant difference in objective in-patient hospitalization days between persons who had been sexually abused and non-abused persons. This objective result is contrary to a self-report study (Moeller et al. 1993) that found that persons sexually abused as children had more lifetime hospitalizations for illness than non-abused persons. The low rates of hospitalization found in both groups suggest the possibility that limiting the assessment period to 2 years may have reduced the likelihood of finding a significant difference in in-patient hospital days.

In addition to examining overall objective visits, the current study examined whether sexually abused participants tended to visit more of certain types of doctor clinics compared to non-abused participants. These findings showed substantially more objective out-patient internal medicine and out-patient surgical visits for abused participants. The result for objective out-patient surgical visits is consistent with prior studies that have found that sexually abused participants had more self-reported lifetime surgeries than non-abused participants (Drossman et al. 1990; Reiter & Gambone, 1990; Leserman et al. 1996). Interestingly, we did not find differences between abused and non-abused participants in out-patient ENT, emergency room, or gynaecological visits. The failure to find a difference between abused and non-abused participants in objective gynaecological visits is contrary to prior studies finding that sexual abuse victims had more self-reported doctor visits for genital pain and infections (Cunningham et al. 1988; Lechner et al. 1993; Bendixen et al. 1994). However, similar to prior studies, we did find that abused participants reported more abdominal pain (Cunningham et al. 1988; Walker et al. 1988; Lechner et al. 1993) than controls. It is possible that even though abused participants may report a greater number of gynaecological symptoms than non-abused participants, they may feel some reluctance to seek treatment from gynaecologists and may find such visits particularly traumatic. A fear of gynaecological treatment has been found in studies of crime or rape victims (Kilpatrick et al. 1987; Burnam et al. 1988; Kimerling & Calhoun, 1994). However, this result is discrepant from...
prior research of childhood sexual abuse victims (Lechner et al. 1993; Bendixen et al. 1994).

There are several differences between current study and these prior studies that may account for the different results. The current study used objective measures, controlled for demographic variables, and controlled for childhood physical abuse level whereas prior studies used retrospective self-report measures and did not control for any of these variables (Lechner et al. 1993; Bendixen et al. 1994).

Of note, the authors of the current study offered all sexually abused participants the option of receiving free time-limited group therapy that would specifically focus on sexual abuse issues through Stanford University. Only one person (out of 112) was willing to pursue this option. This response, in conjunction with the objective psychology/psychiatry visit data, suggests possible reluctance to pursue psychotherapy for resolution of issues related to sexual abuse.

In addition to examining differences between sexually abused and control participants, we hypothesized that depressed mood would have a moderating effect on physical health and medical service utilization of persons with a history of childhood sexual abuse. This hypothesis had never been studied with sexually abused participants. Results of this line of enquiry found that abused participants who had higher scores on the BDI had significantly more emergency room, in-patient internal medicine and in-patient ophthalmology visits, whereas there was no difference in medical utilization between depressed and non-depressed non-sexually abused participants. On the other hand, this analysis did not find that depression moderated somatic symptom reporting or disability from illness in abused participants. In addition, depression did not moderate psychiatry/psychology visits. Thus, whereas depressed sexually abused participants did not tend to report more symptoms and were not more likely to pursue psychotherapy, they did visit the emergency room more and required more in-patient hospitalizations than non-depressed sexually abused participants. What is particularly interesting about these results is that the types of visits moderated by depression (ER and in-patient visits) were different than the types of visits that differentiated sexually abused participants from controls (e.g. out-patient surgical, out-patient internal medicine visits). As in-patient hospitalization and emergency room visits are more costly than out-patient visits, this suggests that higher depression may lead to more expensive forms of medical utilization in sexually abused participants.

The results of the present study provide further evidence that persons who have experienced childhood sexual abuse exhibit higher medical utilization and report more somatic symptoms during adulthood. The higher utilization pattern of sexually abused participants observed in this study, as well as the finding that depression may moderate emergency room and in-patient visits, points to the importance of standard screening of sexual abuse history and depression, and potential therapy referral by physicians. Future research should examine the extent to which therapy intervention for this population reduces medical utilization.

Several potential limitations of this study should be noted. First, because participants were recruited from waiting rooms, rather than by sampling from the total HMO membership, there is a possibility that the sample was biased toward higher medical utilizers in general. However, 25% of our sample indicated that they were at Kaiser to accompany another person to a doctor visit. Another 17% indicated that they were there for a check-up. Furthermore, our sample was demographically similar to the overall HMO. In addition, Kaiser statistics suggest that less than 20% of patients do not visit Kaiser in any 1 year, and the mean total of those who do visit is about 4.8 visits per year (T. Debley, Director of Public Affairs, Kaiser Foundation Health Plan, personal communication, 9 February, 1998). Thus, the mean overall Kaiser visits is similar to what we found in our control group. Although our results do not generalize to the 20% who never use the system, this data suggests that the data may generalize to the other 80%. Nonetheless, our recruitment method increased the likelihood that we could have included higher medical utilizers in all groups. Secondly, many more people completed the initial self-report measures compared to the number for whom we obtained BDI and objective medical data. The much higher initial recruitment rate was likely due to the convenience of filling out a brief measure when
participants were already in the waiting room. However, for ethical reasons, we were required to ask that participants return on a separate day to complete a consent form for access to medical records along with additional measures. A number of participants were unwilling to take additional time to do this. In addition, we put more effort toward recruiting sexually abused participants for inclusion in this analysis and stopped recruiting non-abused participants as it became clear that 2/3 of abused participants were unwilling to return. It is possible that the subsample systematically differed from the larger sample. However, as reported in the result section, the only difference between the subgroup and the larger group was that the subgroup tended to be younger and when age differences were controlled, no differences were found on self-reported somatic symptoms and doctor visits. Finally, due to the cross-sectional design of this study, our results cannot establish a causal association between childhood sexual abuse and adult medical problems. There may be additional childhood or adulthood factors not assessed in the present study (e.g. adult rape, adult abuse, adult life stressors, childhood emotional abuse, etc.) that may have caused or contributed to this association.

Although not addressed by the present study, reasons for more medical complaints in abused individuals have been suggested by previous studies. For example, Springs & Friedrich (1992) found that sexual abuse victims were more likely than non-abused persons to engage in health risk behaviours. Such health risk behaviours may place the individual at greater risk for illness. Another study (Scarinci et al. 1994) found that sexually abused persons had a lower pain threshold for judging stimuli as noxious. This result is consistent with the theory that sexual assault may lead to greater self-focused attention to one’s bodily symptoms (Barsky & Klerman, 1983; Pennebaker, 1982). Also consistent with this theory is the suggestion that sexually abused persons are more likely to have somatization disorder than non-abused persons, though research in this area has been equivocal. Whereas some studies have found that somatizers are more likely than persons diagnosed with affective disorders to report a history of childhood sexual abuse (e.g. Morrison, 1989a), other studies have found that persons with somatization disorder are as likely as non-somatizing controls to report a history of childhood sexual abuse (e.g. Bass & Murphy, 1990). Furthermore, one study found no relationship between age at molestation and age of onset of somatization disorder (Morrison, 1989b). Other theories for why persons who experienced childhood sexual abuse have physical health problems in adulthood have included psychodynamic theories of repressed guilt and anger related to sexual assault (Gross et al. 1980–1981), direct and indirect stress from sexual assault leading to illness (e.g. Koss et al. 1990), as well as theories of indirect effects of psychological distress on illness (see Golding, 1994 for a more complete discussion of aetiological theories). It is also possible that childhood sexual abuse may set in motion an interpersonal pattern in which such individuals are more likely than non-abused persons to encounter ongoing stressful and traumatic experiences. Future research should examine these issues.

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REFERENCES


