APPENDIX E

Supporting Articles

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Abuse Histories, Severe Mental Illness, and the Cost of Care

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The past decade has witnessed a growing concern about the high rates of physical and sexual abuse in the lives of adults with serious mental illnesses. This concern is expressed, in large part, as a quality of care issue. That is, although studies show that 30 to 70 percent[1-6] of outpatients and 40 to 72 percent[4-13] of inpatients have histories of abuse, it is believed that few treatment providers are adequately trained to sensitively address the abuse histories of clients who enter their care.[14-17] Indeed, some critics of the mental health care system contend that abuse survivors are often revictimized by the care they receive, whether through a denial of the abuse history, inappropriate use of medications, excessive reliance on restrictive settings, or the inappropriate use of restraints to prevent self-destructive behaviors.[14-17]

Although such claims have been buttressed by individual case histories and/or anecdotal evidence,[15-17] few studies have investigated whether the course or quality of care for clients with histories of abuse is fundamentally different from that provided to clients with no abuse history. Moreover, there have been no attempts to investigate the cost

implications of the different care trajectories presumed to be associated with histories of abuse. The purpose of the present study is to pursue such an inquiry. Specifically, we investigate the link between histories of abuse and the course and cost of care for 1,600 men and women, all of whom met criteria for a diagnosis of severe mental illness and were being served in one of ten systems of care in Wisconsin at the time of the study.

We begin with a review of the literature on the link between histories of abuse and the course and cost of care for adults with serious mental illnesses, which forms the basis for our hypotheses. We subsequently describe our sample and data and the methods of analysis, structural equation modeling techniques, which will be used to investigate our hypotheses. A central assumption underlying this study is that a failure to attend to histories of abuse as part of the routine assessment and treatment planning for adults with serious mental illnesses is a widespread and potentially costly practice. Moreover, it is a practice that disadvantages disproportionate numbers of women, because they are more likely than men to be victims of abuse. Thus, we conclude with a discussion of the policy implications of our findings with a special focus on the implications for women's mental health services.

HISTORIES OF ABUSE AND THE COURSE AND COST OF CARE

Although a number of studies conducted in the past two decades have investigated the cost of care for persons with serious mental illnesses,[18-32] none has investigated the relationship between a history of sexual or physical abuse and cost of care in this population. There are, however, two distinct literatures that together form the basis for our hypotheses regarding the link between abuse histories and the course and cost of care. One focuses on the link between abuse histories and the course of care for adults with serious mental illnesses. The other focuses on the characteristics of clients or their patterns of use that drive up the cost of care for systems serving the seriously mentally ill. We review each of these literatures below.

Abuse Histories, Serious Mental Illness, and the Course of Care

A number of recent studies indicate that persons with abuse histories are not only more likely to end up in systems of care for adults with serious mental illness, but they are also more likely to present with a severe array of symptoms that increase the probability of (a) being treated with psychotropic medications, (b) being treated in emergency outpatient settings and/or hospitalized, and (c) having longer hospitalization stays than those with no abuse history.

For example, although community studies report rates of childhood sexual abuse ranging from 10 to 45 percent,[33-36] and childhood physical abuse ranging from 11 to 14 percent,[37] studies of rates of abuse among those consumers of mental health services who have a diagnosis of serious mental illness tend to be higher. Among six studies of severely mentally ill outpatient populations, histories of childhood sexual abuse ranging from 25 to 45 percent of the samples were reported.[1-6] Two of the studies reported rates of childhood physical abuse of 34 percent[4] and 31 percent.[5] Among five studies of inpatient populations, rates of childhood sexual abuse ranging from a low of 20 percent[11] to a high of 60 percent[7] have been reported with three studies reporting rates in the midrange of 40 percent.[8-10] Two of the inpatient studies reported rates of childhood physical abuse of 34.3 percent[9] and 38 percent.[11] Thus, we see, on average, a linear increase in rates of both physical abuse and sexual abuse as we move from community samples to treated samples of adults with serious mental illnesses, with the highest rates of all among the latter group who are in inpatient settings. Moreover, although few community studies investigate the co-occurrence of physical and sexual abuse, several studies of treated samples of adults with serious mental illness show disturbingly high rates of co-occurring forms of abuse. In one study of inpatients,[9] 59 percent of the subjects had been abused before their 16th birthday, almost half of whom had experienced both physical and sexual abuse. In a second study, also of inpatients, 43 percent had abuse histories, a quarter of whom had experienced both physical and sexual abuse.[11]

However, we must be cautious in generalizations we draw from these findings, since three of the six outpatient studies and five of the

seven inpatient studies were exclusively of women, whose rates of reported abuse tend to be substantially higher than reported abuse rates for males in community studies.[38] Thus, it is unclear whether the appearance of a trend is an artifact of (a) the greater selection of women into these settings, or (b) something about the abuse experiences of women that may place them at greater risk for serious mental disorders or more likely to end up in treatment, as opposed to the criminal justice system, than their male counterparts.

If we turn to the handful of studies that compare the abuse experiences of men and women with serious mental disorders, there is some basis for assuming that abuse may be a more salient treatment issue for women than for men. Here we review five studies, four noted above, and a fifth, larger study of the abuse histories of 947 men and women consecutively admitted to inpatient care in a military hospital.[2,4,11,12,39] Three gender differences in abuse experiences are noted in these studies.

First, reported rates of childhood abuse are generally higher for women with serious mental illnesses than for men, regardless of type of abuse, although the difference is greatest for sexual abuse experiences. Two studies that provide a breakdown of rates of physical abuse by gender both show a 7 percent excess in rates for females compared with males.[4,39] However, five studies providing a breakdown of sexual abuse histories by gender show excess rates for females ranging from 17 to 37 percent.[2,4,11,12,39]

A second finding is that women with serious mental illnesses are more likely than men to have experienced co-occurring physical and sexual abuse during childhood.[39] Brown and Anderson propose that the higher risk of women to a combined history of physical and sexual abuse may be linked to their greater risk of being abused by a male family member as a child, particularly a family member with a history of alcohol abuse. Although this is the only study to provide a gender breakdown by co-occurring forms of abuse during childhood, it echoes a theme noted in three other studies of the substantially higher risk of abuse in families with a substance abusing parent, usually a father.[2,9,11]

Third, several studies report a pattern of revictimization during adulthood for many adults with serious mental illnesses who have experienced childhood abuse,[6,7,9] a pattern that may be more characteristic of the life trajectories of women than of men. For example, Lipschitz and associates[4] found that childhood sexual assaults, which were much

more common for women than for men, were associated with an increased risk of adult assaults of both a physical and sexual nature. Childhood physical assaults, by contrast, were not related to adult victimization experiences. A similar finding was reported by Carmen and associates,[11] who observed that males were more frequently abused by parents during childhood and adolescence, while females were abused by parents, spouses, and strangers over a much longer period of time.

In sum, these findings suggest that although rates of abuse are generally higher among adults with serious mental illnesses receiving mental health care compared with adults living in the community, rate differentials may have been inflated due to the disproportionate number of studies that have focused exclusively on female outpatients or inpatients. What we can conclude is that abuse is a more common childhood experience among women with serious mental illnesses than among their male counterparts who enter systems of care. This is particularly true for histories of sexual abuse and for histories of co-occurring sexual and physical abuse. Moreover, women with serious mental illnesses who were victimized as children seem to be at higher risk than their male counterparts of being revictimized as adults.

An important question is, what evidence is there that a history of abuse is linked to different treatment experiences among adults with diagnoses of serious mental illness, particularly experiences that may contribute to a higher cost of care? Furthermore, what are the mechanisms or avenues through which different treatment experiences occur? Several studies have compared the symptom profiles and treatment experiences of adults with serious mental illnesses who have been abused as children with those who have not.[1-9,11] Interestingly, they provide a composite profile, much like the moving account Ann Jennings offers of her own daughter's mental anguish and multiple encounters with mental health care systems and providers over a 19-year period.[16]

A key characteristic of abuse survivors is that their diagnostic picture is often very complex, which is reflected in histories of having multiple diagnoses that have changed over time;[1,15,16] a higher probability of having both Axis I and Axis II diagnoses, the latter often including a diagnosis of borderline personality disorder;[1,9,10] and no clear or consistent pattern of an Axis I diagnosis.[10,11,13] However, several studies report that clients with abuse histories have significantly more symptoms than their nonabused counterparts, including more symptoms of sleep

disturbance,[13] depression,[3,8] anxiety, hostility and interpersonal sensitivity,[9] and more psychotic or psychotic-like symptoms.[3,5,8] In one study of inpatients with diagnoses of schizophrenia, Ross and his associates[5] found that patients who had had a history of childhood abuse had significantly higher scores on measures of dissociative symptoms and of positive symptoms of schizophrenia than their nonabused counterparts, but the two groups did not differ in levels of negative symptoms of schizophrenia. Finally, two behavioral characteristics that seem to distinguish adults with serious mental illnesses who are survivors of childhood abuse from those who are not are (1) a history of suicidality, along with a tendency to self-mutilate,[1,2,6,9,11] and (2) a pattern of abusing alcohol and other substances.[1,2,6,8]

As Carmen[15] and others[14,16,17,40,41] have noted, although such behaviors and symptoms are understandable reactions to histories of chronic abuse during childhood, rarely do case managers or other mental health professionals assess for the presence of an abuse history or explore its potential relation to the presenting problems of such individuals. Rather, the treatment of choice is likely to be psychotropic medications to quiet the more florid symptoms,[16] or, in circumstances of self-harm, suicidal threat, or danger to others, psychiatric hospitalization.[14,15,17]

Evidence in support of these claims is growing. Studies that compare rates of abuse among adults with serious mental illnesses based on chart review versus systematic exploration of histories of abuse find that from 50 to 100 percent of clients with histories of abuse were not so identified in their medical records.[1,2,13] Even under circumstances of mandated inquiry into abuse histories, Eilenberg and her colleagues[42] note that only one in ten charts of patients identified as having histories of trauma adequately incorporated the trauma history into the diagnostic assessment or treatment plans.

In an in-depth exploration of the meaning of childhood sexual abuse experiences in the lives of a sample of inpatients, Jacobson and Herald[12] found that 39 percent of those who were sexually abused said that the experience had had a major effect on their lives. Moreover, although almost a third of the patients said it still caused them shame or embarrassment, 44 percent had never revealed it to anyone and 56 percent of those who had been in therapy had not revealed the experience to their therapists.

These findings suggest that a failure to address clients' abuse experiences as part of an ongoing treatment plan may replicate an important component of the original abuse experience—that it did not happen and is not appropriate to feel bad about or talk about. Indeed, some argue that it is precisely the failure to address the abuse experience that may contribute to further despair and disorganization on the part of the victim, which then becomes the focus of more invasive treatments, such as an excessive use of psychotropic medications and/or repeated hospitalizations.[11,14,16,17]

Findings from three studies of inpatients provide some support for such claims. In one study of patients with intractable psychotic disorders who remained chronically hospitalized and actively psychotic despite psychopharmacological and psychosocial treatments, 46 percent were found to have histories of childhood incest.[8] In a second study, also of inpatients, those with histories of abuse had more severe and psychotic or psychotic-like acute symptoms, more borderline diagnoses and character features, and more suicidal symptoms than inpatients with no history of abuse. Moreover, they were more likely to receive medications for their symptoms than were their nonabused counterparts.[9] Finally, a third study of inpatients found that those with abuse histories tended to remain longer in the hospital, and to engage in more self-destructive behaviors during hospitalization, than their nonabused counterparts.[11]

Heavy Service Users and High-Cost Clients Among the Seriously Mentally Ill

Although the above studies provide support for the hypothesis that the cost of care for adults with serious mental illnesses who have had histories of childhood abuse is higher than the cost of care for adults with similar illnesses but no abuse histories, we were unable to locate any studies that show a link between histories of abuse and the cost of care. However, there are a growing number of cost-of-care studies, many spawned by a concern that a relatively small proportion of seriously mentally ill adults in systems of care are using a disproportionate share of mental health dollars.[18-32]

Cost-of-care studies have examined the impact of different treatment or financing approaches on reducing the cost of mental health

services,[18-22] strategies for estimating the total costs associated with community treatment of persons with serious mental illness,[23] and the characteristics of persons who are heavy users of services or are high-cost clients.[43-48] A consistent finding in this body of work is that higher costs are primarily related to a greater use of inpatient treatment. Thus, programs that have been successful in maintaining clients in the community and reducing inpatient use are generally less costly than those having higher rates of inpatient use.[19,21,22,24,26]

Studies that have identified characteristics of clients who either are heavy users of mental health services[43-48] or are more likely to use services that are particularly costly, such as inpatient services,[19,28,29,31,32] suggest several consistent themes. One theme is that these are largely socially disconnected individuals who either have never married or are divorced or separated and have few family ties or other social resources.[20,26,28,29,43,46] A second theme is that most have less than a high school education, are unemployed, poor, and often homeless.[20,26,28,46]

Like abuse survivors, the clinical profile of heavy services/high-cost users is complex.[43,44] Many have diagnoses of schizophrenia[19,28] or other psychotic illnesses, usually complicated with physical illnesses,[44] substance abuse,[14,31,32,43,44] and personality disorders.[21,43,44,46] Moreover, in contrast to low-cost individuals, high-cost or heavy services users are less engaged in ongoing outpatient services, are characterized as treatment resistant,[19,44] and tend to rely on emergency psychiatric care when in crisis situations.[29]

Finally, although some studies suggest that males are overrepresented in the heavy user/high-cost users group,[26,28,31,32] other studies reveal an overrepresentation of women.[19,21,29,43,45] Geller's findings suggest that both men and women fall into the heavy user/high-cost group, although their pathways to emergency care may be different.[46] Although similar in social and economic circumstances, Geller found that the vast majority of women who were rapid cyclers into a state hospital had diagnoses of borderline personality disorders, while the men had diagnoses of schizophrenia. Moreover, while men were readmitted because of danger to others (35 percent), danger to self (40 percent), and inability to care for self (20 percent), the vast majority of women were readmitted because of danger to self (70 percent). Third, what led to readmission for the male patients was often noncompliance with drug regimen and a recurrence of psychotic symptoms. By contrast, most of

the women were not on medications in the community, although many were abusing alcohol, suicidal, or were otherwise in crisis.

Summary and Hypotheses

One implication of the above literature review is that pathways to costly forms of mental health care, inpatient hospitalization in particular, may be different for men and women. Drawing on the above literatures, we offer three hypotheses regarding different pathways to higher cost of care for men and women:

H1: Women with serious mental illnesses are more likely than men with serious mental illnesses to have experienced a history of severe abuse, particularly sexual abuse, but also co-occurring sexual and physical abuse.

H2: Such abuse experiences are likely to increase the risk of being hospitalized in crisis situations and increase the risk of longer hospital stays, although they are unlikely to increase use of outpatient services.

H3: Controlling for abuse-related costs, which will be significantly higher for women than for men, men will have significantly higher cost of care that is related to the use of inpatient services, although not mediated by exposure to reported abuse experiences.

METHOD

Sample

The data for the present study come from a large naturalistic study of adults with chronic mental illness who were served by one of 43 mental health organizations within ten systems of care spanning 16 counties in Wisconsin. The state is noted for its innovative treatment of adults with serious mental illnesses, and programs were selected that were considered to provide quality care, albeit through different models of care.

Clients eligible for inclusion in the study were those persons who were 18 years of age or older and who met Wisconsin's definition of chronic mental illness, outlined below:

> "Chronic mental illness" means a mental illness which is severe in degree and persistent in duration, which causes a substantially diminished level of functioning in the primary aspects of daily living and an inability to cope with the ordinary demands of life, which may lead to an inability to maintain stable adjustment and independent functioning without long-term treatment and support and which may be of lifelong duration. (p. 345-a)[49]

A third criterion for inclusion is that all were identified as being the primary responsibility of one of the mental health organizations sampled in the study, referred to subsequently as the primary provider organization (PPO). Of the 2,528 eligible clients identified in the ten systems of care, 198 clients were not approached for consent for a variety of reasons (e.g., case managers thought they were too impaired to give informed consent). Consent was sought from the remaining 2,330, of whom 83 percent agreed to participate.

Data Sources

Each of the client's case managers completed a Client Assessment Questionnaire (CAQ), which was based on the National Institute of Mental Health's Uniform Client Data Instrument. It asks the key informant to provide a variety of information, including client's functioning, diagnosis, living situation, daily activities, and sociodemographic characteristics. Usable CAQs were completed for 1,571 clients, representing 67.4 percent of the clients from whom consent was sought and 81.2 percent of those clients who signed the consent form.

Although these data were cross-sectional in nature, they were eventually linked with three independent sources of data on the course, content, and cost of care over a period of one year. These sources included:

1. Data from the client's service provider, which detailed the specific types of services received by the client over the course of the year, the units of time, and the cost of services not covered by Medicaid;
2. All Medicaid claims files for those clients who were Medicaid-eligible for the same one-year period; and
3. Medicare reimbursement for eligible Medicaid clients.

Thus, the final data set is longitudinal by virtue of concatenating the four data sources.

Measures

In the concluding section of the CAQ, case managers were asked a series of questions about the client's life and functioning prior to entering the county's system of care and the case manager's particular program. These included questions about date of onset of illness, prior treatment history, and two questions about the client's abuse history: (1) Does the client have a history of being physically abused? (yes, no, don't know), and (2) Does the client have a history of being sexually abused? (yes, no, don't know). We constructed three categorical measures from these two items, PABUSE (coded "1" if a yes response to the physical abuse question, "0" if answered otherwise); SABUSE (coded "1" if a yes response to the sexual abuse question, "0" if answered otherwise), and DONTKNOW (coded "1" if either or both abuse histories were unknown, "0" if answered otherwise).

Case managers also provided information regarding the client's gender, age, medical assistance status, and most recent diagnosis as part of the CAQ. For the purposes of the present analysis, gender was coded 1 = female and 0 = male and will be referred to subsequently as GENDER. AGE is a continuous variable reflecting the actual age of each client. MAstatus is a categorical measure (coded 1 if client received Medicaid, otherwise 0), which reflects the client's eligibility for state Medicaid funds. Information on the services provided to clients by the various organizations and programs in their respective mental health systems was received from two independent sources. First, much of the data were provided by the individual systems on specific services used by each client over the course of the prior year. These were categorized into relevant service categories, such as counseling, medication checks, nursing home care, and vocational services, each associated with a time amount and specific cost of care. A second source of information was the Medicaid claims files for those clients who were Medicaid-eligible and who received reimbursable services during the index year. Data from both of the above sources were combined into a clients' services file, which was carefully checked to ensure against duplication of service information. These data were subsequently grouped into broader

service categories, including (a) outpatient service hours, (b) inpatient days, (c) nursing home days, and (d) residential days over the course of the index year.

OUTPATIENT HOURS are the actual hours of services received over the index year for each client for the following outpatient services: case management, counseling, evaluation, day treatment, community support, alcohol and other drug use treatment, crisis care, medication checks, daily living skills, and transportation services. INPATIENT DAYS are the actual number of days of inpatient psychiatric care the client received over the index year. These estimates do not include days in nursing homes, for which we constructed a separate measure, NURSING HOME DAYS. Finally, we constructed a measure of RESIDENTIAL DAYS for each client for the index year, which includes days spent in supported housing arrangements, such as group homes or supervised apartment living. The total COST OF CARE for mental health services for each client for the index year was constructed by combining direct cost information from the county service providers with data from the state Medicaid file.

Sample Characteristics

We turn first to a general description of client characteristics, which is presented in Table 13.1. Slightly over half of the clients in the sample are males (51.2 percent), reflecting very closely the gender makeup of the state as a whole. The client's ages ranged from 18 to 92 years with an average of 44.7. The vast majority are non-Hispanic White, and 70 percent have a high school diploma, GED, or higher. Yet almost 60 percent were unemployed during the past year and close to 70 percent are Medicaid-eligible. Indeed, the majority of clients received Supplemental Security Income (SSI) (51.2 percent) or Social Security Disability Insurance (SSDI) (40.7 percent) during the prior year (not presented in table) and had gross monthly incomes of $630.00.

The material resource deficits experienced by this sample of clients is matched by deficits in interpersonal resources and relationships. Over 50 percent of the clients have never been married and of those who have, 24 percent are separated or divorced and another 5.7 percent are widowed. Thirty-five percent live alone, 10.5 percent live with their

TABLE 13.1 Sociodemographic Characteristics of Clients, by Gender

Characteristic	*Female (n = 770)*	*Male (n = 801)*	*Total (N = 1,571)*
Age (average years)	47.5	42.0	44.7****
Race (%)			
Non-Hispanic White	98.5	98.1	98.3
African American	0.4	1.0	0.7
Native American	0.4	0.3	0.3
Hispanic	0.1	0.5	0.3
Other	0.3	0.2	0.3
Education (%)			
Less than high school	31.5	28.9	30.2
High school	42.7	42.4	42.5
Post high school	18.1	21.4	19.8
College	7.7	7.3	7.5
Marital status (%)			
Never married	36.1	71.9	54.4****
Separated or divorced	32.5	15.7	24.0
Widowed	10.6	1.0	5.7
Married	20.8	11.3	16.0
Living status (%)			
Alone	36.1	34.6	35.3****
Family of origin	4.3	16.5	10.5
Family of procreation	29.1	13.5	21.1
With other adults (independently)	11.9	15.4	13.7
Supported living	17.5	18.6	18.1
Other	1.0	1.5	1.3
Region (%)			
Urban	69.2	74.9	72.1**
Rural	30.8	25.1	27.9
Employment status (%)			
Unemployed	63.6	53.8	58.6***
Employed part of year	15.6	21.6	18.7
Employed all year	20.9	24.5	22.7
Income (gross monthly)	$611.00	$650.00	$630.00*
Medicaid-eligible (%)	70.3	64.5	67.3*

NOTE: *Ns* with complete data on each contrast range from 1,419 (income) to 1,571.
*$p < .05$. **$p < .01$. ***$p < .001$. ****$p < .0001$ for gender comparisons.

family of origin, and another 21 percent live with their families of procreation. Another 13.7 percent live independently, but with unrelated adults, while 18 percent live in supported housing or in inpatient settings. Finally, although the vast majority of clients live in urban areas, these are predominantly small to large towns, rather than large metro-

politan centers, which accounts for the relatively low numbers of clients of color.

The statistical tests for gender comparisons show patterns that are reflected in the larger population as well. Although there is no significant difference in education or in racial background, women are significantly older than men in this sample. Moreover, they are more likely than the men to have married and to have experienced marital disruption, whether through separation, divorce, or widowhood. Furthermore, more women than men are currently married and living with their spouse and/or children. The vast majority of men, by contrast, have never married (71.9 percent of men vs. 36.1 percent of women). Moreover, if they live with family members, they are more likely to live with their family of origin (16.5 percent) than with their family of procreation (13.5 percent). Men are also significantly more likely than women to reside in urban, rather than rural, areas of the state.

Women's greater economic disadvantage within this population of individuals with serious mental illness is reflected both in their gross monthly incomes, which are significantly lower than men's, and in the high proportion of women (63.6 percent) compared with men (53.8 percent) who have been out of the labor market for at least the full year prior to the study. Indeed, fully 70 percent of the women are Medicaid-eligible compared with 64.5 percent of the men, which is another indication of the extent to which this population, and particularly women, are impoverished.

In Table 13.2 we present additional client characteristics, including their abuse histories, age of illness onset, most recent diagnoses, and course and cost of care over the index year. Again, the data are broken down by gender and a statistical test of the gender comparison has been performed, using either a t test or χ^2 statistic.

The abuse reports show several interesting findings. First, almost a third of the clients' abuse histories are unknown to their case managers. Those that are known show that women are significantly more likely to have histories of abuse than men. Approximately 23 percent of women and 8.5 percent of men are reported to have had physical abuse in their histories, and 21.2 percent of women and 3.6 percent of men have known histories of sexual abuse. Moreover, a notable percentage of clients, women in particular, have histories of both forms of abuse (13.5 percent vs. 2.5 percent). Thus, women's known abuse rates are substan-

TABLE 13.2 Abuse Histories, Diagnoses, and the Course and Cost of Care, by Gender

Characteristic	*Female (n = 770)*	*Male (n = 801)*	*Total (N = 1571)*
Abuse histories (%)			
Physical abuse, any	23.0	8.5	15.6****
Sexual abuse, any	21.2	3.6	12.2****
Both abuses	13.5	2.5	7.9****
No abuse	44.7	62.9	53.9****
Unknown	33.5	32.1	32.8
Age of illness onset	29.1	25.6	27.0****
Diagnosis (primary) (%)			
Schizophrenia	48.8	65.0	57.0****
Schizoaffective	13.2	9.0	11.1**
Bipolar depression	12.8	11.5	12.2
Unipolar depression	15.5	6.5	10.5****
Organic brain syndrome	1.3	1.5	1.4
Borderline personality disorder	3.7	0.1	1.9
Other	22.4	16.8	19.5****
Outpatient services (average hours per year)	180	188.0	184
Residential care (average days per year)	34.6	28.8	31.6
Inpatient care			
Average days in nursing home.	4.85	5.19	5.02
Average days in psychiatric impatient	12.7	18.6	15.7*
Cost of care: Average cost of all care over past year	$6,610	$7,442	$6,987

NOTE: *Ns* with complete data on each contrast range from 1,408 (residential days) to 1,571.
*$p < .05$. **$p < .01$. ***$p < .001$. ****$p < .0001$ for gender comparisons.

tially higher than men's, although both rates are much lower than reported in several studies of adults with serious mental illness.[1-11] This is most likely because the abuse information came from case managers, who were not required to assess for abuse histories and, thus, were likely to underestimate true rates of abuse for their clients.

We noted earlier that the average age of these clients is 44.7 years. As shown in Table 13.2, the average age of illness onset is 27 years of age. Thus, this client population has, on average, a 15-year history of illness, although we do not know much about the course of their illnesses. What we do know is that all presumably meet the state's criteria for a chronic mental illness. Within this broad diagnostic category, the vast majority of clients suffer from symptoms of schizophrenia (57 per-

cent) or schizoaffective disorders (11 percent). Twelve percent are diagnosed as having a bipolar disorder, and 10.5 percent have major depressive disorders. Less than 2 percent have organic brain syndrome; another 2 percent are diagnosed as having borderline personality disorder. Other diagnostic categories account for the remaining 20 percent of the sample.

Gender differences in rates of the different disorders are largely specific to four diagnostic groups. That is, males are significantly more likely to have a diagnosis of schizophrenia than are females (65 percent vs. 49 percent). Females, by contrast, have significantly higher rates than males of schizoaffective disorders (13.2 percent vs. 9 percent), major depressive disorders (15.5 percent vs. 6.5 percent), and a group of disorders not specified (22.4 percent vs. 16.8 percent). They are also more likely to receive a diagnosis of borderline personality disorder (3.7 percent vs. 0.1 percent), although the differences are not significant due to the small numbers of persons in the sample with this diagnosis.

We turn now to the final section of the table that presents data on the course and cost of care. The average cost of care over the index year is somewhat higher for males ($7,442) than for females ($6,610), although these differences are not statistically significant. However, males do spend, on average, significantly more days in inpatient care (18.6 days vs. 12.7 days) than do females. In fact, there is no evidence that women receive services of any kind more frequently than do their male counterparts.

Plan of Analysis

In the analysis that follows, we used structural equation modeling to investigate the hypothesized links between gender, abuse histories, and the course and cost of care. Based on initial exploratory analyses, we chose to use separate measures of physical and sexual abuse, because they have different associations with other constructs in the model, despite their common co-occurrence for a number of participants. Thus, we will be examining each of their influences on the course and cost of care, independent of their common covariation in a portion of the sample.

The data screening and preparation were performed with PRELIS II,[50] with values imputed for missing data on RESIDENTIAL DAYS and NURSING HOME DAYS. Subsequently, a listwise deletion of data with missing values for any of the variables in the analyses yielded a final sample size of $N = 1{,}510$, representing 64.8 percent of clients from whom consent was sought and 78.1 percent of those who signed a consent form. A comparison of respondents and nonrespondents yielded no significant differences in the variables employed in the present analysis.

The analysis, which was performed with LISREL VIII,[51] proceeded in three steps. First, we estimated a model, Model 1, in which cost of care was regressed on abuse histories to determine if sexual abuse or physical abuse or both are associated with a significantly higher cost of care in contrast to those with no abuse history. A dummy variable was included for those whose histories are unknown to control for their costs without eliminating them from the analysis. In the second model, Model 2, we include gender, age, and Medicaid status to investigate the link between gender, abuse histories, and cost of care, controlling for age and Medicaid status. Finally, in Model 3, we added measures of course of care to the model to investigate hypothesized pathways to higher cost of care for men and women.

RESULTS

Model 1: Abuse Histories and Cost of Care

We begin our analysis with a test of the hypothesized link between abuse histories and cost of care. The model presented in Figure 13.1 shows the regression of cost of care on abuse histories of clients as reported by their case managers. We have included three measures of abuse in our model: physical abuse histories, sexual abuse histories, and abuse histories unknown. Thus, the coefficients for the model, which are presented in standardized form, represent a comparison of each type of abuse history with those with no abuse histories, which are the omitted category in the analysis.

This model reveals four noteworthy findings. First, clients with known sexual abuse histories have significantly higher service costs

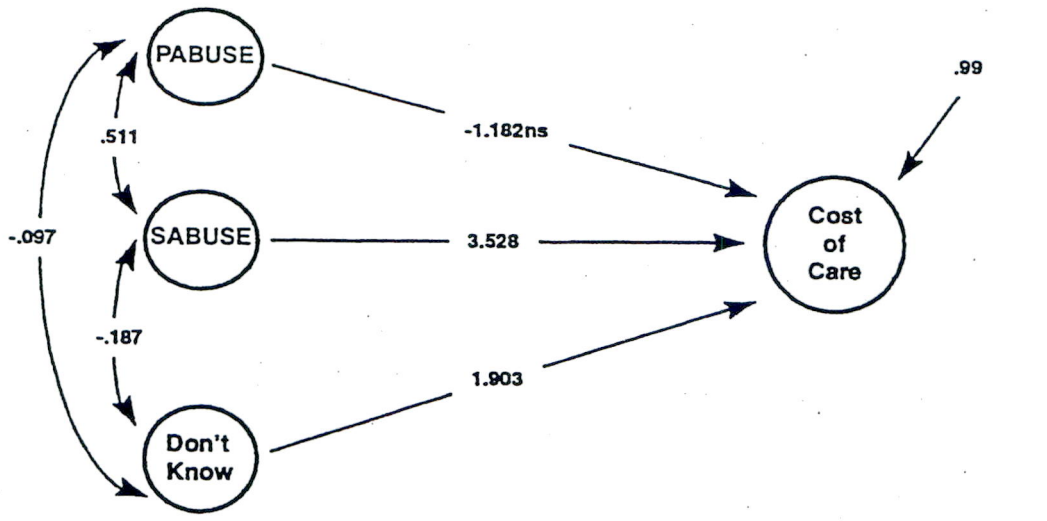

Figure 13.1. Model 1: Abuse Histories and Cost of Care
NOTE: $\chi^2 = 0$, $df = 0$, $p = 1.000$. PABUSE = yes response to physical abuse question; SABUSE = yes response to sexual abuse question.

over the course of the year than do clients with no history of abuse (the omitted category) by an average of $3,528.00 for the index year. Second, despite the fact that there is a strong positive association between having a history of both physical and sexual abuse (.511), physical abuse histories are not associated with a significantly higher cost of care. Indeed, if anything, physical abuse seems to suppress the cost of care, as shown by the negative, but nonsignificant, coefficient (–1.182 ns). By contrast, those whose abuse histories are unknown have significantly higher cost of care than those with no abuse history, averaging $1,903.00 for the index year. Finally, although we find support for the hypothesis that people with abuse histories have significantly higher mental health care costs than those who have no abuse histories, abuse histories account for only 1 percent of the variance in total cost of care.

To illustrate these associations in dollar terms, we display the average cost of care associated with each of the four groups of clients in Figure 13.2. These dollar amounts show rather dramatically the high average cost of care among clients with histories of sexual abuse ($9,701) compared with those with no known abuse history ($6,173). Moreover, they show a very similar, although less dramatic, pattern for those whose abuse histories are unknown, whose average cost of care was $8,076 for the index year. Interestingly, a history of physical abuse, de-

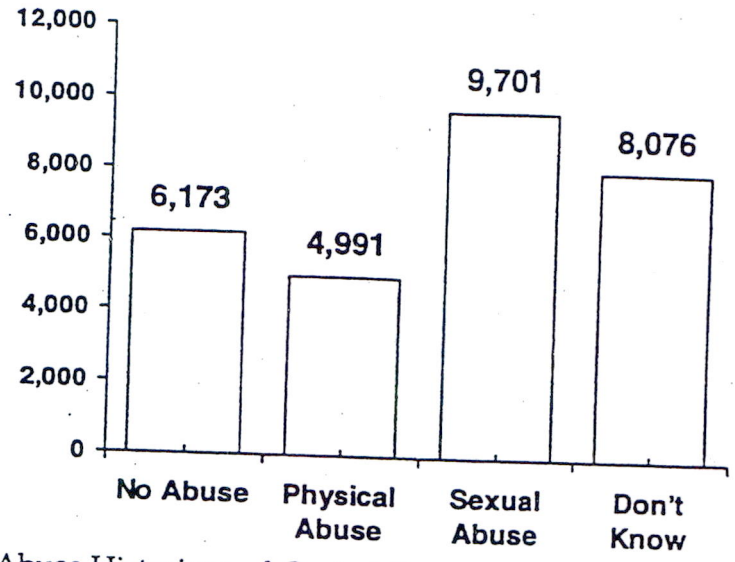

Figure 13.2. Abuse Histories and Cost of Care (in thousands of dollars)

spite the fact that it often accompanies sexual abuse, seems to have a suppressor effect on the cost of care. Indeed a statistical test of the differences in cost of care associated with physical and sexual abuse shows that the difference of $4,710 is statistically significant.

Why then, one might ask, do histories of abuse not account for more of the variance in cost of care, as shown in Model 1? The answer rests with the substantial variation in cost of care within the contrasting abuse categories. We turn now to Model 2, which incorporates other measures that may reduce some of the variability.

Model 2: Abuse Histories and Cost of Care, Controlling for Gender, Age, and Medicaid Status

In Model 2, presented in Figure 13.3, we show the link between abuse histories and cost of care, controlling for gender, age, and Medicaid status. We included the latter variable in the model because of its link to gender, as well as to cost of care, given that Medicaid benefits are an important source of money for services to adults with serious mental illness. We have also fixed all nonsignificant paths at zero.

First, the χ^2 (5, N = 1,510) = 8, p = .13, shows that the overall fit of the model to the data is very good. This is also shown by the adjusted goodness-of-fit index (AGFI) of .991. Thus, we can assume that paths fixed

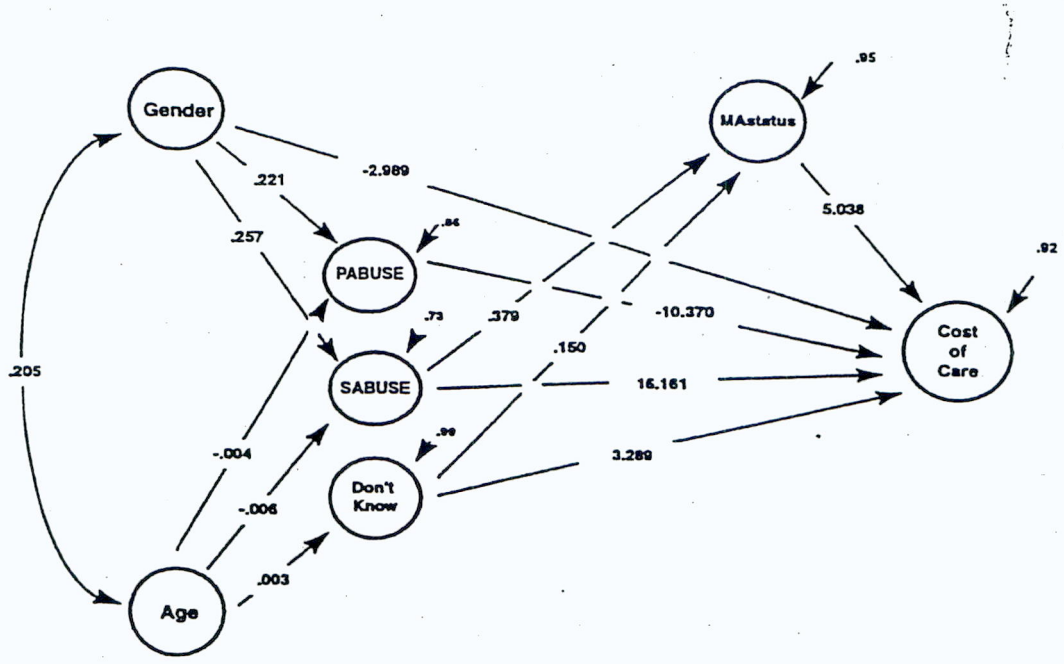

Figure 13.3. Model 2: Abuse Histories and Cost of Care, Controlling for Gender, Age, and Medicaid Status

NOTE: $\chi^2 = 8$, $df = 5$, $p = .13$. PABUSE = yes response to physical abuse question; SABUSE = yes response to sexual abuse question; MAstatus = Medicaid status.

at zero are plausible, as is the structure of the model. An important question is: Has the relation between abuse histories and cost of care been substantially altered with the addition of these variables to the model? The answer is a qualified yes.

Clients with sexual abuse histories, as well as clients whose abuse histories are unknown, have significantly higher costs of care than those with no abuse history, replicating the finding in Model 1. However, in this model, the relationships are even stronger than in the former and are mediated through two paths of influence. First, we find that clients with sexual abuse histories and unknown abuse histories are more likely than those with no abuse history to be Medicaid-eligible, which, in turn, is linked to a higher cost of care by an average of $5,038 for the index year in contrast to those who are not Medicaid-eligible. Second, independent of this path of influence, sexual abuse has a direct association with cost of care amounting to an average of $16,161 more for the index year than those with no known abuse history. A similar, albeit weaker association between abuse history and cost of care is shown for