Title Work Organization and Health among Home Care Workers
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Table of Content

Important outcomes should be explained and classified in one of the following ways: 1) potential outcomes – findings, results, or recommendations that could impact workplace risk if used; 2) intermediate outcomes - how findings, results, or recommendations have been used by others to influence practices, legislation, product design, and so forth; and 3) end outcomes - how findings, results, or recommendations have contributed to documented reductions in work-related morbidity, mortality, and/or exposure.

List of Tables

List of Terms and Abbreviations

- Socioeconomic position. home care
- job demands
- work organization
- depressive disorder
- musculoskeletal disorders
- Physical demand
- Emotional demand
- Emotional suppression
- Abuse/violence
- Discrimination
- Work duration and schedule
- Control
- General health
- Sleep
- Depression
- Demographic
- Psychosocial.
- Social support

Abstract

The home care industry is the fastest growing industry in the United States. The number of elderly that will depend on long term care will double from about 7 to 14 million Americans by the year 2020. Many of these elders elect to stay at home and are able to avoid costly institutionalization when home care services are provided. Thus, the demand for a wide range of home care services has increased. Home care is defined as "an array of services that enables clients incapacitated in whole or in part to live at home,

often with the effect of delaying, or substituting for long term care or acute care alternatives". Home care includes both technical health care (nursing and therapy) as well as support services (such as personal care, homemaking, housekeeping). About 1.2 million home care aides provide the bulk of home care services in the US, up from 875,000 in 1995, thus constituting the key health service resource for millions of elderly.

Home care aides may experience multiple physical and emotional demands. These include lifting heavy patients in and out of bed or the bathtub without the support of lifting devices, attachment to ailing clients, bearing with the suffering of those who are very ill or near death, having to provide emotional support to lonely elderly clients who often suffer from mental disorders, and inability to provide emotional support to clients because of competing work demands. These work demands can result in workplace injuries (e.g. overexertion injuries from lifting, and psychiatric symptoms from emotional distress). The physical and emotional well being of home care clients is often dependent on the physical and mental health of home care aides.

Highlights/Significant Findings:

This cross sectional survey of 1663 home care workers found that:

- Workers had significant levels of physical and emotional demands on the job

- Abuse and violence rates were low

- Perceived discrimination was also low, but when it occurred it was because of pro-union attitude

- Although most workers did not work long days, they often work for successive days without a break. Many report significant levels of sleep deprivation

- Most workers report their general health status to be fair to good

- There are significant rates of musculoskeletal disorders of the back, with lesser but still significant neck and shoulder MSDs

- Depression afflicts 6 to 10% of home care workers

- Household income is quite low, with many avoiding medical care when it is needed

- There is a sense of job insecurity because workers fear that their health will not hold out

- The workforce is satisfied with their work, and expect to continue in the job in the near future

- Psychological Job demands is a weak predictor of depression and MSDs among home care workers (Hypothesis 1)

- Physical Job Demands is a predictor of MSDs among home care workers (Hypothesis 2)
- Job Control is a predictor of depression and MSDs among home care workers (Hypothesis 2)

Translation of Findings:

We recommend the following training and service initiatives:

- Training home care workers to prevent in-home violence. This can include all aspects of recognizing potentially violent situations, and providing care to patients in a way that minimizes risk to the worker.

- Training in limit-setting to reduce the emotional burden of overly dependent patients.

- Training in motivational interviewing techniques to facilitate consumers' cooperation with their medical plan of care

- Referrals to speech and language pathologists on admission to care when communication difficulties are apparent

- Facilitated support group services for workers who care for difficult patients over time; this could include telephone supportive services as well as in-person groups.

- Cases should be assessed realistically to ensure that workers have sufficient time to meet client emotional needs, and so that workers are not working for free.

- Lifting devices, sliding devices, and other ergonomic materials and training should be provided at the start of care to prevent unnecessary pain and disability among workers.

Outcomes/Relevance/Impact

1) potential outcomes- findings, results or recommendations that could impact workplace risk if used

Abuse and violence are associated with depression among home care workers. In order to prevent depression among home care workers, home care agencies need to ensure the workplace safety standards and training to reduce exposure to violence and abuse among home care workers. Preventive and early intervention measures to reduce the mental health consequences of abuse and violence (verbal, physical, active, passive) will improve the quality of care that elders receive in home care. Government policies that

regulate the workplace are also affected by these results. Abuse, violence and depression should be incorporated into health benefits and sick leave policies.

Workload indicators such as emotional demands, physical demands, schedule demands, and working overtime were direct predictors of poor health, excessive fatigue and low job satisfaction. Indicators of control over work such as decision latitude, and union involvement were both direct and mediated predictors of poor health, excessive fatigue and low job satisfaction. Indicators of employment conditions such as job security and financial strain were also predictors of poor health, excessive fatigue and low job satisfaction. These findings have implications for the government policies that determine health benefits, sick leave, wages and employment security. Workload factors such as extended work hours should be incorporated into health benefits and sick leave policies and regulated so as to ensure quality of care and worker health. Policy makers should at the same time ensure that consumer's needs for enough hours of care are met. Policy makers should also ensure that home care workers are provided with training and protective equipment to reduce the chance injury due to high workloads in the home care workplace.

The relative low prevalence of depression in the consumer directed model of home care in LA county suggests that the consumer-directed model of care is effective in advocating for worker's health.

Scientific Report

Background for the Project

The home care industry is the fastest growing industry in the United States. (Bureau of Labor Statistics, 1999; Kassner and Williams, 1997). The number of elderly that will depend on long term care will double from about 7 to 14 million Americans by the year 2020 (Robert Wood Johnson, 1996). Many of these elders elect to stay at home and are able to avoid costly institutionalization when home care services are provided. Thus, the demand for a wide range of home care services has increased. Home care is defined as "an array of services that enables clients incapacitated in whole or in part to live at home, often with the effect of delaying, or substituting for long term care or acute care alternatives" (Working Group on Home care, 1990). Home care includes both technical health care (nursing and therapy) as well as support services (such as personal care, homemaking, housekeeping). About 1.2 million home care aides provide the bulk of home care services in the US, up from 875,000 in 1995, thus constituting the key health service resource for millions of elderly (Bureau of Labor Statistics, 1995, 1999).

Home care aides may experience multiple physical and emotional demands. These include lifting heavy patients in and out of bed or the bathtub without the support

of lifting devices, attachment to ailing clients, bearing with the suffering of those who are very ill or near death, having to provide emotional support to lonely elderly clients who often suffer from mental disorders, and inability to provide emotional support to clients because of competing work demands (Aronson and Neysmith, 1996, 1997). These work demands can result in workplace injuries (e.g. overexertion injuries from lifting, and psychiatric symptoms from emotional distress). The physical and emotional well being of home care clients is often dependent on the physical and mental health of home care aides.

Specific Aims

This study assessed the relationship between work demands and control and the prevalence of major depression and musculoskeletal disorders among urban home care assistants. A cross sectional study was conducted of 1663 home care assistants in L.A. County, California, using a 30 minute computer assisted telephone interview. The specific aims of the study were:

Aim 1 To examine the association between **job demands** and the prevalence of symptoms of major **depressive disorder and musculoskeletal disorders** among home care assistants.

Aim 2 To examine the association between **control at work** and the prevalence of symptoms of major **depressive disorder and musculoskeletal disorders** among home care assistants.
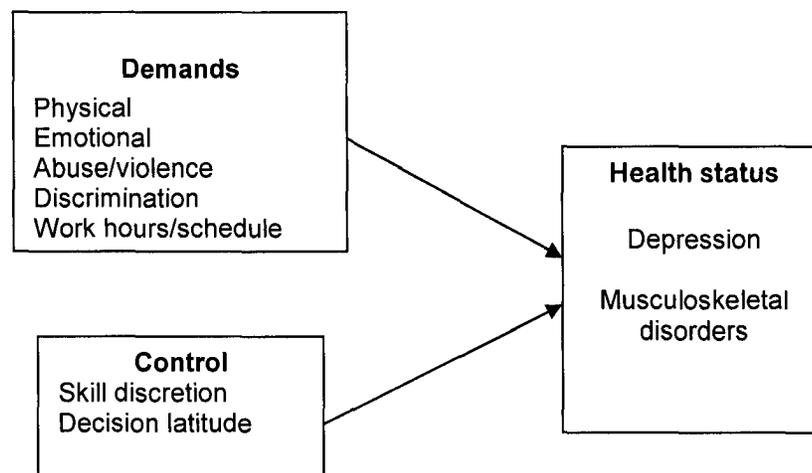
Procedures

The first phase of the project consisted of 3 focus groups with diverse samples of home care workers held in 2002 at the Local 434B SEIU Los Angeles office. From these focus groups, the researchers developed items to measure the specific job-related demands that home care workers described.

Phase two of this project was a cross sectional study of home care assistants. From the payroll list of 72,000 home care workers employed in March of 2003, a random sample

of 4500 workers was selected by the IT staff. Introductory letters were mailed to these workers; in this letter the project was described and the workers were provided with a stamped postcard to decline participation. We received 230 refusal postcards during the month following the mailing. In June 2003 we trained 4 home care workers and one back-up on the study protocol. These women (3 English-speaking, 2 bilingual Spanish speakers) learned the 30-minute computer-assisted interview, and basic telephone interviewing techniques, with assistance and supervision from the Home Care Worker Training Center director and staff. The protocol specified that the worker would receive five call attempts at various times of the day before a telephone number was abandoned. Also, a $10.00 incentive payment was provided to compensate for the 30 minute interview. The questions were structured, with forced choice responses for the majority of the interview. Calls commenced in June 2003 and were completed in September 2003. After 6 months a smaller version of the interview was administered to 1198 participants with identical methodology (see Figure below).

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┌─────────────────────────────────────────────┐
│ 72,000 Home Care Workers, L.A. County, 2003   │
└─────────────────────────────────────────────┘
                    │
                    ▼
┌─────────────────────────────────────────────┐        ┌─────────────────────────────────────────┐
│ Random sample 4,530 English or Spanish speakers│       │ 230  Postcard refusals                     │
└─────────────────────────────────────────────┘        │ 470  No answer after 5 attempts            │
                    │                                    │ 506  Not home after 5 attempts             │
                    │────────────────────────────────▶  │  70  Number was fax                        │
                    ▼                                    │  80  No longer doing home care             │
┌─────────────────────────────────────┐                 │ 1066 Wrong phone number given              │
│ 1,643 Achieved sample, Wave 1         │────────────▶   │ 218  Refused call when contacted           │
└─────────────────────────────────────┘                 │   6  Data lost                             │
                    │                                    │ 241  Phone number not used                 │
                    │                                    └─────────────────────────────────────────┘
   6 months         │──────────────────────────────┐
                    ▼                               │     ┌─────────────────────────────────────────┐
┌─────────────────────────────────────┐            └──▶  │ 82 Declined to be called for               │
│ 1,198 achieved sample, Wave 2         │                 │ wave 2 at end of first interview           │
└─────────────────────────────────────┘                 │ 34 No answer after 5 attempts              │
                                                         │ 84 Not home after 5 attempts               │
                                                         │ 99 Wrong phone number                      │
                                                         │ 7   Fax or beeper                          │
                                                         │ 12 No longer doing home care               │
                                                         │ 60 Did not complete the first              │
                                                         │ interview so question about                │
                                                         │ accepting second interview not             │
                                                         │ asked                                      │
                                                         │ 10 not called                              │
                                                         └─────────────────────────────────────────┘
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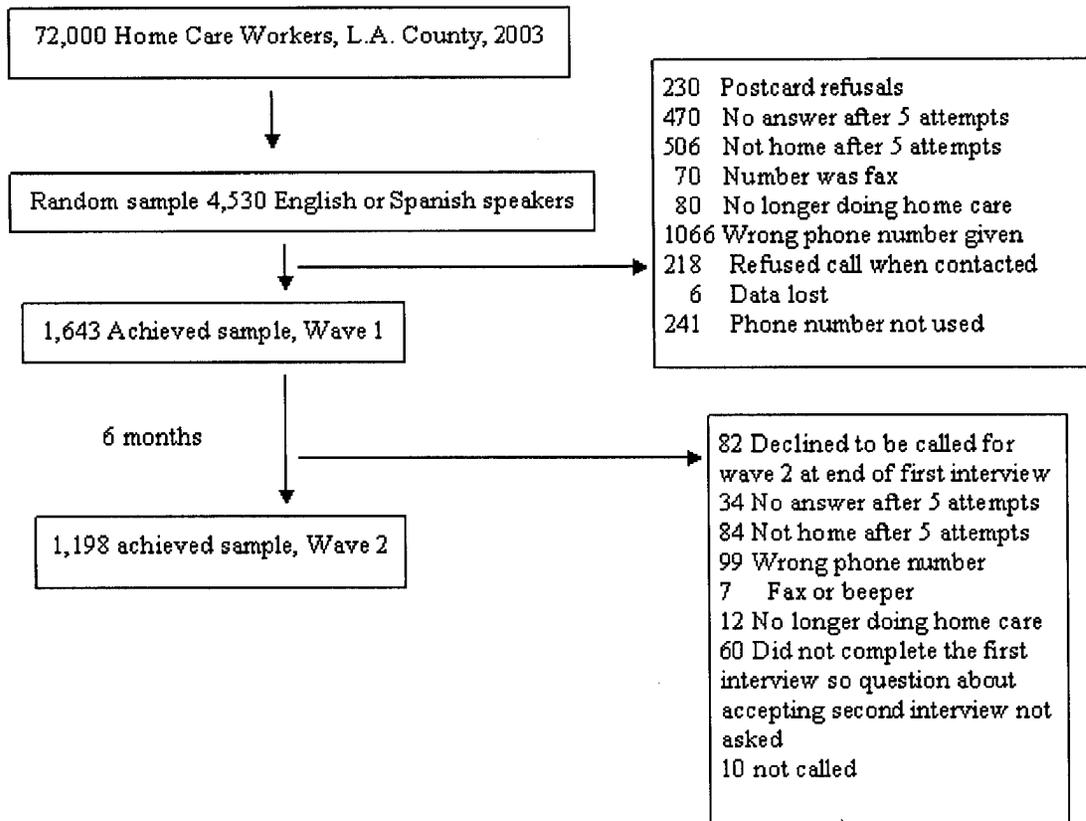
Figure1. Home care worker participation in two-waves of interviews

Methodology

Variables/Measures

Independent variables:

<u>Physical demands</u>
A summary single item introduced this topic (How often is your work physically very demanding?), then 12 items representing tasks that are common to home care work were asked. The stem "In a typical workday, how often do you" was used prior to each task, and responses were selected from a 4-point Likert scale of frequencies (never, sometimes, often, always). Tasks included lifting or transferring the consumer without help, bathing, putting on shoes and lifting legs, pushing wheelchair, supporting the consumer when walking, supporting the consumer when falling, cleaning the bathroom, moving boxes and furniture, carrying groceries, making beds, climbing stairs, and standing in one place for long periods.

<u>Emotional demands</u>
These items were derived from focus groups and previous items in the literature describing home care demands. After a normalizing statement (these are things that some home care workers have to deal with), the interviewer asked the worker to recall the frequency of the listed events in the past 6 months. Responses were selected from a 5-point Likert scale (never, seldom, sometimes, often, always). The emotional demands included dealing with consumers that hit or become violent, have a lot of physical pain, difficulty communicating, very sick, overly dependent, refusing needed medical care. In addition, the workers' perception of having insufficient time to talk with their client, comfort their client emotionally, or provide them with needed items like food, soap, towels, or clothing.

<u>Emotional suppression</u>
Two items were offered to assess the need for the worker to suppress their own emotions while caring for the client. These were "Does your work require that you do not state your opinion to your consumer? (yes/no), and "How often does your work require that you hide your feelings?" (never/seldom/sometimes/always).

<u>Abuse/Violence</u>
These items were of two varieties. Some items assessed witnessing abuse of the consumer by others, and some were about direct abuse or violence directed towards the worker from either the consumer or the family. This section was prefaced by one of two normalizing statements. If the consumer was not a family member, the interviewer read a simple statement stating that home care workers sometimes experience these unpleasant situations. When the consumer was a family member, a much more detailed normalizing statement was read, to give permission to admit these unpleasant events. We asked about witnessing a family member who was neglectful, verbally abusive, or physically abusive

to the consumer. Items also included verbal abuse or anger directed toward the worker from the consumer or the family. We then got more specific, asking about accusations of stealing, criticism, sexual harassment, and prejudicial remarks. We also asked about having to be around consumers or family members who were drunk or high, those asking for "extras" beyond the scope of work, and those making unreasonable demands. A 4-point Likert scale was used to record responses (never/seldom/sometimes/always).

Discrimination
Workers were asked to recall any event of discrimination based on pro-union attitude, gender, race, or sexual orientation in the past 6 months. A 4-point Likert scale was used to record frequency of these events (never/seldom/sometimes/always).

Work duration and schedule
Work duration items were recorded free-form from open-ended questions about "on average" the number of hours per day, hours per week, weekends per month, and the usual start and end time for work. The total number of hours for all paid jobs was recorded. We also asked about the number of hours of unpaid overtime worked each week, as well as how many hours the worker spent on their own household work. We asked if the household work was shared with a spouse or partner.

Control
Control over the work process was assessed using three scales from the Job Content Questionnaire: "skill discretion" (6 items) and "decision authority" (3 items) (Karasek, Pieper, Schwartz, 1994). Skill discretion assesses several aspects of jobs such as the opportunity for learning new things on the job or being creative. Decision authority items (including the macro scale) assess autonomy (e.g., independent decision making), supervisory responsibilities, and policy-making activities. All items are Likert scales leading to scales are measured as continuous variables.

Dependent variables:

General health
This was measured by a single item "In general, how would you say your health is?" with 5 possible responses (poor, fair, good, very good, excellent).

Sleep
This was measured by a single item "How do you feel about the amount of sleep you normally get?" Five responses were offered: nowhere near enough, could do with a lot more, could do with a little more, get the right amount, get plenty.

Depression
The main outcome for this study is major depressive disorder. Both the presence and severity of depressive symptoms were determined with the revised version of the Center for Epidemiologic Studies Depression Scale (RCES-D). This scale updates the most commonly used screening scale in large epidemiologic studies (CES-D), to include more current psychiatric nosology of major depression. The respondent is asked to indicate

how often they have thought or behaved in the past two weeks, using 35 items. The choice categories include < 1 day, 1-2 days, 3-4 days, 5-7 days, or nearly every day for 2 weeks.

Musculoskeletal disorders
Questions were asked about the presence of a relevant symptom (pain, aching, stiffness, burning, numbness, or tingling) in the neck, shoulders or back. Additional items include when the pain first started, the frequency, duration and intensity of the pain, and any non-work related accident or injury that may have caused the symptom. The case definition for a MSD included having report of a relevant symptom with a duration of at least 1 week, or occurring at least monthly in the past year; with a pain intensity of at least 3 (moderate) on a 5 point pain scale.

Other variables

Demographic
These include age of respondent (measured in years); gender of respondent (woman, man); race/ethnicity (Black, Hispanic, Asian, American Indian, White and other); Resident work status (Resident, green card, work permit), and place of birth.

Psychosocial.
Social support was measured with several items including marital status (married, cohabitating, separated, divorced, and single/never married) and partner support. The latter questions include "How much can you rely on your spouse, friends and relatives when things get tough at work", and "How much are your spouse, friends or relatives willing to listen to your personal problems"

Socioeconomic position. Finally, measures of social stratification will also be assessed. *Education* was measured in years as well as highest degree held using the question: "What is the highest grade in school or year of college that you completed?" The measure of education will additionally allow us to measure "skill underutilization" which is another confounder to be included in the analysis. Income was determined with a question on total annual household income. In addition we asked about how difficult it is for the worker's family to pay the bills, and about home ownership. We also asked about availability of medical coverage and if there had been a time in the past 12 months when they avoided needed medical care because of insurance coverage.

Data management

The interviewers recorded responses during the interview using a computer assisted telephone interview program with fail-safes to prevent errors in study identifier, and to avoid missing data. Each day the data were downloaded to the study computer via modem to prevent loss of data in case of loss or theft of a computer. The study analytic file was constructed from daily data files. This de-identified file was stored on a password-protected computer in a double-locked office suite.

Data analysis

Descriptive analyses appropriate to the level of measurement were conducted for each variable. To assess the association of demands on depression, we first conducted a series of bivariate logistic regression analyses to examine the odds of depressive symptoms by individual demand. We then summed items into scales (physical, emotional, abuse) and determined the degree of correlation between these demands. Lastly, we conducted multiple logistic regression models with all demands included stepwise in the analysis; covariates were added including recent stressors, degree of control, and demographics. A similar approach was used to examine musculoskeletal disorders. Each physical demand was examined in bivariate association to neck, shoulder and back MSD, and then the physical demand scale was entered into a logistic regression model to assess overall impact. Then covariates were added to the model including age, depression, household demands.

Results and Discussion

Description of the sample
The sample consisted largely of older women, with a large proportion of non-Caucasians. Most were, or had been married, and about ¾ had a high school education or less (Table 1).

Table 1 Description of the sample
Home care workers, Los Angeles, 2003

(N=1663)	N	%
Gender		
Female	1420	85.4
Race/Ethnicity		
African American	544	32.7
Caucasian	409	24.6
Hispanic	710	42.7
Marital Status		
Single never married	362	22.6
Single living as if married	29	1.8
Married	782	48.8
Separated	94	5.9
Divorced	175	10.9
Widowed	162	10.1
Highest education		
< HS	528	33.0
HS graduate	646	40.3
Some college	291	18.2
Completed college	105	6.6
Graduate school	31	1.9

Physical demands

More than half of home care worker stated that their work was often or always physically demanding. The most common demands were carrying groceries, moving boxes and furniture, cleaning the bathroom, bathing the consumer, and making beds. Nearly one-fifth of workers reported lifting or transferring the patient without assistance.

Table 2 Physical Demands for Home Care Workers

	% Often or Always
How often is your work physically demanding	56.3
Carry groceries	83.1
Move boxes and furniture	62.0
Clean the bathroom	37.7
Bathe the consumer	33.2
Make beds	28.2
Stand in one place for a long time	25.7
Support the consumer while walking	20.3
Put on shoes and lift legs	20.1
Lift or transfer without help	18.8
Support the consumer while falling	18.6
Climb stairs	12.0
Push wheelchair	11.8

Emotional demands

Table 3 shows the frequency of often/always reports by home care workers for experiencing emotionally demanding situations. Witnessing sickness and physical pain were highly prevalent, with over half of respondents reporting this. Frustrating situations such as dealing with an overly dependent client, or when clients have difficulty communicating were also common. Less common, but as important, 14% of home care assistants reported that their consumer hits or becomes violent.

Table 3 Emotional Demands for Home care workers

	% Often or Always
Is very sick	55.0
Has a lot of physical pain	54.0
Is overly dependent on me	21.4
Has difficulty communicating with me	16.5
Hits me or becomes violent	14.0
I don't have enough time to comfort the consumer	13.8
I cannot provide my consumer with things that they need such as food, soap, towels, clothing	12.7
I don't have time to talk to my consumer	12.3
Refused needed medical care	12.0

Emotional suppression

Nearly one-fourth of home care workers reported having to hide their own feelings while caring for consumers. Fewer reported having to suppress their own opinions during their workday.

Table 4 Emotional Suppression as a Work Demand for Home Workers

	% Often or Always
Does your work require that you do not state your opinion to your consumer?	10.0
How often does your work require that you hide your feelings?	24.3

Abuse/Violence

The reported prevalence of abuse during home care work was low. Most common was a report of bearing with a situation where the family was neglectful of the consumer, experiencing anger or verbal abuse from a consumer, and receiving critical remarks. Prejudicial remarks were less common. Physical abuse and sexual harassment reports were rare.

Table 5 Witnessing or Experiencing Abuse during Home Care Work

	% Often or Always
A family member who is neglectful of the consumer	4.1
A consumer who is angry or verbally abusive to you	4.0
A consumer or family member who criticizes you	3.9
A consumer or family member who makes prejudicial remarks about you	1.8
A consumer or family member who makes demands that seem unreasonable, for example doing very heavy cleaning	1.6
A family member who is verbally abusive to the consumer	1.4
A consumer or family member who accuses you of stealing	1.2
Families who request "extras" for themselves, such as cooking for them, doing their laundry, etc.	1.2
A family member who is angry or verbally abusive toward you	0.9
A consumer or family member who is drunk or high	0.3
A family member who is physically abusive to the consumer	0.2
A consumer or family member who sexually harasses you	0.1

Discrimination

The most common source of discrimination reported by home care workers was for a pro-union attitude. Two-percent experienced racial/ethnic discrimination on the job.

Table 6 Discrimination Experienced on the Job by Home Care Workers

	% Yes
Pro-union attitude	6.2
Race/ethnicity	2.2
Gender	1.5
Sexual orientation	0.7

Work Schedule

Responding to the question "How many hours do you work each day, on average", there was significant variation as shown in Table 7 below. Although most did not work sustained workdays, they often worked without days off, including most weekends. Workers put in a substantial number of hours of unpaid overtime, with two-thirds working more than 20 hours per week uncompensated.

Table 7 Hours per Day Reported by Home Care Workers

		Frequency	Valid Percent
	<=2	249	15.4
	2.1-4	625	38.8
	4.1-6	313	19.4
	6.1-8	237	14.7
	8.1-10	90	5.6
	10.1-12	51	3.2
	12.1-14	4	.2
	14.1-16	5	.3
	16.1-24	38	2.4
	Total	1612	100.0
Missing	System	51	
Total		1663	

Table 8 Days per Week, Home Care Assistants

		Frequency	Valid Percent
	2.00	9	.6
	3.00	30	1.9
	3.50	5	.3
	4.00	42	2.6
	4.50	2	.1
	5.00	320	20.2
	5.50	4	.3
	6.00	148	9.3
	7.00	1026	64.7
	Total	1586	100.0
Missing	System	77	
Total		1663	

Table 9 weekends per Month, Home Care Assiatants

		Frequency	Valid Percent
	0	231	15.0
	1	52	3.4
	2	199	12.9
	3	18	1.2
	4	1040	67.5
	Total	1541	100.0
Missing	System	122	
Total		1663	

Table 10 Hours per Week, Unpaid Overtime, Home Care Workers

		Number	Valid Percent
	< = 5	23	1.5
	5.1-10	90	6.0
	10.1-15	189	12.6
	15.1-20	239	16.0
	> 20	956	63.9
	Total	1497	100.0
Missing	System	166	
Total		1663	

Control

Home care workers indicated that they had significant skill discretion in their work with the exception of the repetitive nature of the job. When decision latitude was assessed, positively worded items showed similar prevalence to skill discretion, whereas the negatively worded item was inconsistent with the other items in the decision latitude subscale.

Table 11 Control at Work, Home Care Workers

Skill discretion	% Agree/Strongly Agree
My job requires that I learn new things	83.3
My job requires a lot of repetitive work (Reverse Scored)	7.7
My job requires me to be creative	88.4
My job requires a high level of skill	78.9
I get to do a variety of things on my job	93.1
Decision-latitude	
My job allows me to make a lot of decisions on my own	90.9
On my job, I have very little freedom to decide how to do my work (Reverse scored)	46.0
I have a lot of say about what happens to me on my job	89.3

General Health

A single item about general health revealed that home care workers vary considerably in their self-rated health. Nearly 1/3 rated their health only fair, and a quarter gave ratings of very good to excellent. The modal response was "good".

Table 12 In General, How Would You Say Your Health Is?

		Frequency	Valid Percent
	poor	48	3.0
	fair	505	31.1
	good	656	40.3
	very good	241	14.8
	excellent	176	10.8
	Total	1626	100.0
Missing		37	
Total		1663	

Sleep

Over half of respondents reported receiving sufficient sleep. Only about 12% indicated a perception of significant sleep deprivation, and about ¼ stated that they could do with a little more sleep, suggesting partial sleep loss.

Table 13 How Do You Feel about the Amount of sleep you Normally Get?

	Frequenc	Valid
nowhere near	104	6.4
could do with a lot	97	6.0
could do with a little	374	23.0
get right	932	57.3
	119	7.3
Total	1626	100.0
Missing	37	
	1663	

Depression

Two measures were used to assess depression. The prevalence of depressive symptoms using the original CES-D was 10.1%, and this was reduced to 6.4% when the more specific measure (RCES-D) was used to screen for depressive disorder.

Table 14 Positive Screen for Depression, CES-D, Home Care Workers

		Frequency	Valid Percent
	Not depresse	1363	89.9
	Depressed	153	10.1
	Total	1516	100.0
Missing	System	147	
Total		1663	

Table 15 Screen Positive for Depression, RCES-D

		Frequency	Valid Percent
	Not depressed	1481	93.6
	Depressed	102	6.4
	Total	1583	100.0
Missing	System	80	
Total		1663	

Musculoskeletal disorders of the neck, shoulder, and back

Musculoskeletal symptoms were classified using a three level variable. Those without symptoms were coded as asymptomatic, if there were symptoms but they were of insufficient intensity, duration or frequency to meet the case definition for a MSD, they were recorded as having symptoms, and a case was defined by meeting the full criteria. The case definition for a MSD included having report of a relevant symptom with a duration of at least 1 week, or occurring at least monthly in the past year; with a pain intensity of at least moderate on a 5 point pain scale. Workers who reported having had a non-work related accident or injury and related their pain to this event were coded as missing.

Back MSDs were the most prevalent among these workers, with 14.5% meeting the case definition, and 2.6% having symptoms but for insufficient frequency, duration or intensity to meet the case definition. Neck MSDs afflicted about 14% of these workers, with 10.7% meeting the case definition. Shoulder MSDs were the least common, with 9.5% meeting the case definition. The disabling nature of shoulder MSDs, however, make even this lower prevalence a significant finding of this study. These reported prevalence rates do not show the common finding of having multiple MSDs; with high levels of distress from combinations of these symptoms.

Table 16 Neck Musculoskeletal Disorders by Severity, Home Care Workers

		Frequency	Valid Percent
	Asymptomatic	1359	85.7
	Neck symptoms	57	3.6
	Neck case	170	10.7
	Total	1586	100.0
	Missing	77	
Total		1663	

Table 17 Shoulder Musculoskeletal Disorders by Severity, Home Care Workers

		Frequency	Valid Percent
	Asymptomatic	1194	87.3
	Shoulder symptoms	44	3.2
	Shoulder case	130	9.5
	Total	1368	100.0
	Missing	295	
Total		1663	

Table 18 Back Musculoskeletal Disorders by Severity, Home Care Workers

		Frequency	Valid Percent
	Asymptomatic	1138	82.9
	Back symptoms	36	2.6
	Back case	199	14.5
	Total	1373	100.0
	Missing	290	
Total		1663	

Social support

Only about a half to two-thirds of home care workers report that they receive significant levels of support from spouse, friends or relatives when needing support.

Table 19 Social Support Reported by Home Care Workers

	To some extent	To a large extent
How much can you rely on your spouse, friends, and relatives when things get tough at work?	32.5	25.1
How much are your spouse, friends, or relatives willing to listen to your personal problems?	43.7	31.0

Socioeconomic Position

Household wages of worker are low, with 2/3 of households making less than $15,000 per year. More than half state that it is very or somewhat difficult to pay the bills, this is especially concerning to the community, as more than half are home owners. Many express concern about becoming unemployed, especially for health reasons. A substantial proportion (40%) did not visit a doctor in the past year when they needed to because of cost. Despite these financial and job security concerns, most workers express

considerable loyalty to the job and expect to be doing home care work three years from now.

Table 20 household Income Past Year, Home Care Workers

	Frequency	Valid Percent
< 10,000	442	36.4
10,000-14,999	309	25.4
15,000- 19,999	133	10.9
20,000- 24,999	90	7.4
25,000- 29,999	48	4.0
30,000- 34,999	51	4.2
35,000-39,999	19	1.6
40,000 +	123	10.1
Total	1215	100.0
Missing	448	
Total	1663	

Table 21 How Difficult Is It for Your Family to Pay the Bills?

	Frequency	Valid Percent
Very difficult	295	18.6
Somewhat difficult	445	28.0
Not very difficult	440	27.7
Not difficult at all	409	25.7
Total	1589	100.0
Missing	74	
Total	1663	

Table 22 Do You Own home or Do You Rent?

	Frequency	Valid Percent
Own	655	41.2
Rent	933	58.8
Total	1588	100.0
Missing	75	
Total	1663	

Table 23 Job Security and Satisfaction

	Frequency	Percent
Are you worried about becoming unemployed?	872	53.9
Are you worried about having to give up your job for health reasons?	826	51.1
Has a consumer ever threatened to fire you?	83	5.1
Have you ever been fired by a consumer?	56	3.5
All in all, how satisfied are you with your job right now?		
Highly satisfied	952	59.2
Somewhat satisfied	619	38.5
Have you thought seriously about changing jobs since you became a home care assistant?		
Do you expect to be working in this job three years from now?	1436	92.8

Table 24 Was There a time during the Last 12 Months When You Needed to see Doctor but Could not because of the Cost?

	Frequency	Percent
No	970	60.0
Yes	643	39.8

Exploratory examination of relationships

Emotional demands and depression

In this analysis, the reference group consisted of those who reported never or seldom to a list of possible emotional demands encountered during home care work. Bivariate logistic regressions were conducted, comparing the reference group to sometimes, and often or always. The most potent depresogenic events were caring for a consumer who hit or became violent, needed to emotionally suppress feelings or comfort client emotionally, when a consumer refused needed medical care, overly dependent consumers, and those who had difficulty communicating their needs (Table 23).

Table 25 Odds of Depressive Symptoms(CESD) by Emotional Demands, Home Care Workers

		OR	95% CI		
Hits me or becomes violent					
	Sometimes	4.14	2.73	to	6.29
	Often/always	5.59	3.13	to	9.96
Has a lot of physical pain					
	Sometimes	1.24	0.80	to	1.92
	Often/always	1.24	0.82	to	1.87
Has difficulty communicating with me					
	Sometimes	2.20	1.38	to	3.52
	Often/always	2.99	1.95	to	4.58
Is very sick					
	Sometimes	1.08	0.71	to	1.65
	Often/always	1.35	0.90	to	2.03
Is overly dependent on me					
	Sometimes	2.89	1.42	to	5.87
	Often/always	1.85	1.02	to	3.35
Refuses needed medical care					
	Sometimes	2.24	1.35	to	3.73
	Often/always	5.03	2.99	to	8.48
I don't have time to talk to my consumer					
	Sometimes	2.07	0.55	to	7.86
	Often/always	0.73	0.21	to	2.48
Cannot provide consumer with needed items					
	Sometimes	0.94	0.40	to	2.21
	Often/always	0.56	0.29	to	1.09
Not enough time to comfort consumer emotionally					
	Sometimes	0.39	0.16	to	0.93
	Often/always	0.26	0.14	to	0.50
Work requires not state opinion					
	Sometimes	2.34	1.22	to	4.52
	Often/always	1.85	1.04	to	3.32
Work requires hide feelings					
	Sometimes	3.06	1.84	to	5.08
	Often/always	1.38	0.89	to	2.12

Physical demands and musculoskeletal disorders of the back

Bivariate logistic regressions were calculated to compare those who were asymptomatic (reference) to those workers reporting symptoms or meeting the case definition. Physical demands were dichotomized such that never/seldom were the reference category for the comparison. Results indicate that there is increased risk for back symptoms with nearly all of the activities that home care workers perform, however the highest odds appeared to be from lifting or transferring a consumer without help. As this is completely unnecessary with the advent of lifting devices, there is substantial opportunity to improve the health profile for home care workers who must care for consumers that are bed or chairbound.

Table 26 Physical Demands and Musculoskeletal Back Disorders

	OR	95% CI		
Work is physically demanding	1.52	1.13	to	2.03
Lift or transfer without help	1.68	1.22	to	2.32
Bathe the consumer	1.41	1.05	to	1.91
Put on shoes and lift legs	1.76	1.28	to	2.42
Push wheelchair	1.60	1.10	to	2.34
Support the consumer while walking	1.25	0.91	to	1.74
Support the consume while falling	1.58	1.15	to	2.17
Clean the bathroom	1.58	1.15	to	2.17
Move boxes and furniture	1.10	0.82	to	1.47
Carry groceries	0.91	0.63	to	1.31
Make beds	1.45	1.08	to	1.95
Climb stairs	1.16	0.78	to	1.74
Stand in one place for a long time	1.39	1.03	to	1.89

Note: Odds represent either symptom or case, reference group asymptomatic.
Indicator physical demand: never/seldom is reference category

Study limitations

The study results presented in this report represent responses from a substantial number of home care workers, drawn randomly from a large population. Because the interview could not be delivered in all available languages, there may be cultural differences in responding that we cannot account for with the need to limit survey administration to English or Spanish speakers. As our response rate was high, we feel confident that nonresponders will not prove to be substantially different from responders (data to follow). We had four to five interviewers conducting the survey, and have not yet analyzed any person effect for administration. Bivariate associations reported here have not been adjusted for variables that may substantially change the odds of outcomes (e.g. age, depression, income). Additionally, some significantly positive associations may be related to the large sample size, however the magnitude of the parameter estimates are likely to be quite stable.

Conclusions

Home care workers are a highly satisfied and committed group of workers, despite low pay and significant physical and emotional demands. These data suggest that there are areas where worker health could be significantly affected by both training initiatives, provision of supportive services, and supplying personal protective equipment such as lifting devices. We recommend the following training and service initiatives:

- Training home care workers to prevent in-home violence. This can include all aspects of recognizing potentially violent situations, and providing care to patients in a way that minimizes risk to the worker.

- Training in limit-setting to reduce the emotional burden of overly dependent patients.
- Training in motivational interviewing techniques to facilitate consumers' cooperation with their medical plan of care
- Referrals to speech and language pathologists on admission to care when communication difficulties are apparent
- Facilitated support group services for workers who care for difficult patients over time; this could include telephone supportive services as well as in-person groups.
- Cases should be assessed realistically to ensure that workers have sufficient time to meet client emotional needs, and so that workers are not working for free.
- Lifting devices, sliding devices, and other ergonomic materials and training should be provided at the start of care to prevent unnecessary pain and disability among workers.

More Details of the Project:

Summary of findings from papers in revision or in preparation.

Muntaner, C., Geiger Brown, J., Lipscomb, J., Trinkoff, A. Emotional demands of work and depression among home care workers.

Estimates of the odds of having a subthreshold depression or greater (possible, probable, or major depressive episode) at wave 1 were generated in relation to each emotional demand item using logistic regression, with adjustment for age and marital status. For these analyses, categories were collapsed to reduce small cell problems, with never and seldom forming the reference category, and often or always combined to form one of the indicators.

A principal components analysis was performed to assess the factor structure of the items, retaining those factors with eigenvalues over 1, and using a varimax rotation to improve interpretability. Factors were named, and factor scores predicting subscale depression or greater (wave 1) were generated for each subscale, using the regression method. The third factor (witnessing sickness) was not significantly associated with depression and was removed from subsequent analyses. Odds of depression were calculated for the three remaining factors for prevalent cases at wave 1 and 2, and for incident cases at wave 2. These odds were adjusted for age, marital status, and the presence of depression generating stressors.

At wave 1, 6.6% of the sample had subthreshold depression or greater (possible, probable, or major depressive episode) (Table 27). This was slightly reduced at wave 2, to 4.7%. The six-month incidence of subthreshold depression or greater was 2.6% for those who showed no clinically relevant symptoms at wave 1.

Four factors were identified with eigenvalues greater than one; the items contained in each factor are indicated in Table 28. The unmet needs factor had a satisfactory internal consistency reliability (alpha = .60) and accounted for 16.3% of the variability in the overall emotional demands scale. Dealing with frustrating situations was less reliable (alpha = .47), and accounted for 14.3% of the variance. Although the

witnessing sickness factor had good reliability (alpha= .63), it performed poorly in bivariate association to depression, and was not used in subsequent analyses. The fourth factor, emotional suppression, showed an alpha of .63, and accounted for 13.6% of the variance in emotional demand scale.

Over 10% of home care workers cared for clients who had unmet material needs, and being unable to provide for these needs was associate with depression (OR 1.9- 2.1). Home care workers who felt insufficient time to comfort their consumers had higher odds of depression (OR 2-1-4.2) when compared with those that had time enough. Having insufficient time to talk with the consumer was less common (< 7%) and not associated with depression. This suggests that providing for client physical and emotional needs are an important part of what home care workers value in their service to their consumer.

Home care workers indicated that dealing with frustrating situations was a common part of their workday. Eleven percent of workers indicated that they sometime got hit, and 4% indicated this occurred often or always, with these workers showing 4-9 times the odds of having a depression as compared to those not getting hit by their consumer. Other odds ratios ranged from 2-4 for when they had difficulty communicating with their consumer, when the consumer was overly dependent on them, and when the consumer refused needed medical care. About two-thirds of home care workers indicated that they witnessed sickness and pain regularly in their job, and this was not associated with depression.

About 14% of workers indicated that they suppressed their own opinions when caring for their consumer, and this was associated with 2-3 times the odds of depression when compared to those with free expression of their views. It was more common for workers to have to suppress their emotional reactions when with the consumer (24%), and this showed a higher association to depression (1.7-4.1 times the odds).

Three factor scores predicting wave 1 depression (unmet needs, frustrating situations, and emotional suppression) were entered together into a logistic regression model, where control variables were age, marital status, and the presence of a depression stressor (Table 29). All were significant predictors of depression at wave 2, with strongest association seen for dealing with unmet needs. When the association was made to incident cases at wave 2, only unmet needs remained statistically significant.

Table 27 Prevalence and incidence of depression (Revised CESD) among home care workers, 2003-4

	Wave 1 (N=1643)		Wave 2 (=1198)	
	N	%	N	%
Major depressive episode	3	.2	2	.2
Probable major depressive episode	11	.7	1	.1
Possible major depressive episode	3	.2	1	.1
Subthreshold depression	87	5.5	49	4.3
No clinically relevant symptoms	1469	93.4	1089	95.4
6 month- incidence of subthreshold depression or greater at wave 2 (n=1038)			29	2.6

Table 28 Prevalence of emotional demand items among home care workers and association with depression, Wave 1

		N	%	OR	95% CI	
Dealing with unmet needs						
I cannot provide my consumer with things they need	Sometimes	103	6.4	1.94	1.00	3.78
	Often-Always	88	5.4	2.07	1.03	4.17
I don't have time to talk to my consumer	Sometimes	76	4.7	1.37	0.84	2.24
	Often-Always	28	1.7	1.27	0.85	1.91
I don't have enough time to comfort my consumer	Sometimes	95	5.9	2.11	1.08	4.12
	Often-Always	53	3.3	4.37	2.16	8.84
Dealing with frustrating situations						
hits me or becomes violent	Sometimes	182	11.2	3.59	2.18	5.91
	Often-Always	66	4.1	8.99	4.85	16.66
has difficulty communicating with me	Sometimes	186	11.5	2.79	1.65	4.74
	Often-Always	181	11.2	3.45	2.08	5.70
is overly dependent on me	Sometimes	181	11.2	2.35	1.08	5.14
	Often-Always	1197	74.2	1.38	0.72	2.67
refused needed medical care	Sometimes	143	9.0	2.12	1.18	3.82
	Often-Always	83	5.2	4.55	2.49	8.31
Witnessing sickness						
has a lot of physical pain	Sometimes	482	29.8	1.19	0.71	2.01
	Often-Always	630	39.0	1.17	0.71	1.92
is very sick	Sometimes	542	33.5	0.82	0.50	1.36
	Often-Always	527	32.5	1.08	0.67	1.74
Emotional suppression						
Does your work require that you do not state your opinion to your consumer?	Sometimes	143	9.0	3.44	1.72	6.86
	Always	83	5.2	2.15	1.10	4.19
How often does your work require that you hide your feelings?	Sometimes	115	7.2	4.10	2.36	7.11
	Always	272	17.1	1.71	1.03	2.85

Reference categories: Emotional demands: never or seldom, Depression- no clinically relevant symptoms

Table 29

Factor	OR	95% CI	
	Wave 1 depression		
Dealing with unmet needs	1.31	1.11	1.55
Dealing with frustrating situations	1.63	1.36	1.96
Emotional suppression	1.45	1.22	1.73
	Wave 2 depression		
Dealing with unmet needs	1.50	1.21	1.85
Dealing with frustrating situations	1.34	1.05	1.71
Emotional suppression	1.29	1.01	1.65
	Incident depression, Wave 2		
Dealing with unmet needs	1.38	1.04	1.83
Dealing with frustrating situations	1.13	0.81	1.58
Emotional suppression	1.13	0.80	1.59

Adjusted for age, marital status and presence of depressogenic stressors.

Geiger-Brown, J., Muntaner, C., Trinkoff, A. Physical work demands in home care and incidence of musculoskeletal disorders of the neck, shoulder and back

Eight covariates were used in the analyses. Age was used as a continuous variable. As other psychosocial demands may have influenced MSDs, three emotional demand subscales used in previous analyses (frustrating situations, unmet needs, emotional suppression) (Muntaner & Geiger-Brown, 2004). Abuse by consumer or family was also included using a scale described elsewhere (Geiger Brown & Muntaner, 2004). The presence of workplace violence was indicated by a three level scale, based on a previous analysis (Geiger-Brown & Muntaner, 2004). Job strain was measured using Karasek's JCQ scales. A single item was used to measure work-related social support, to indicate a buffering factor in the relationship between workplace demands and MSDs.

Estimates of the odds of having a subthreshold depression or greater (possible, probable, or major depressive episode) at wave 1 were generated in relation to each emotional demand item using logistic regression, with adjustment for age and marital status. For these analyses, categories were collapsed to reduce small cell problems, with never and seldom forming the reference category, and often or always combined to form one of the indicators. This was repeated using the dichotomous CES-D as the criterion.

The sample of home care workers was primarily female, with mean age of 52 (Table 30). Half of the respondents were married, and one-fourth had additional education after high school. Racially, there was one-third African American, one-fourth Caucasian, and the remainder was Hispanic. Slightly over half were English speaking, with three fourths holding citizenship in the U.S.

At wave 1, 12.9% of the sample had symptoms of a musculoskeletal disorder in at least one body part (Table 31). Of those that met the case definition, back MSDs were more prevalent (10.6%) than neck (10.1%) or shoulder (7.7%). Six months later, 7.4% of respondents had MSD symptoms in one or more relevant body part. This was slightly reduced at wave 2, to 4.7%, with a similar pattern for back, neck and shoulder cases (8.9, 6.6, and 5.3% respectively). The six-month incidence of neck MSDs for those who were asymptomatic in all three body sites at wave 1 was 5.6%. There were fewer new back (4%) and shoulder (3%) cases at Wave 2.

Respondents who answered "always" to "How often is your work physically demanding" at wave 1 had 4-6 times the relative risk of having a MSD of the neck, shoulder or back compared to those responding "never" (Table 32), with a clear dose relationship based on perceived frequency of physically demanding work.

Table 30 Reported Musculoskeletal Symptoms among Home Care Workers, 2 Waves

	Wave 1 (N=1672)		Prevalent Wave 2 (N=1198)		6-month Incident [1] Wave 2 (N=1198)	
	N	%	N	%	N	%
Neck						
Asymptomatic	1350	80.7	1029	85.9	887	74.0
Symptoms	57	3.4	26	2.2		
MSD Case	169	10.1	79	6.6	67	5.6
Symptoms non-work related	11	.7	13	1.1		
Shoulder						
Asymptomatic	1185	70.9	1044	87.1	787	65.7
Symptoms	44	2.6	22	1.8		
MSD Case	129	7.7	63	5.3	36	3.0
Symptoms non-work related	9	.5	14	1.2		
Back						
Asymptomatic	1130	67.6	1007	84.1	740	61.8
Symptoms	34	2.0	14	1.2		
MSD Case	177	10.6	107	8.9	48	4.0
Symptoms non-work related	22	1.3	15	1.3		

1. Asymptomatic for body part at wave 1 and symptoms or case for body part at wave 2.

Table 31 Unadjusted rate ratios for musculoskeletal symptoms or case at 6 months, for those without musculoskeletal symptoms any body part at baseline, home care workers (N=1198 at Wave 2).

Factor	RR	95% CI
Frequency of physically demanding work at wave 1		
Neck		
Never	1.00	
Sometimes	1.95	.89 – 4.24
Often	2.89	1.27 – 6.56
Always	4.51	2.22 – 9.17
Shoulder		
Sometimes	2.26	.93-5.49
Often	3.36	1.32-8.55
Always	4.88	2.14-11.15
Back		
Sometimes	3.33	1.43-7.79
Often	4.63	1.91-11.18
Always	6.45	2.87-14.52

Table 32 Odds of Incident MSDs by Physical Demands, Home care workers (N=1198 at Wave 2).

Physical demand scale adjusted for	Neck MSD OR (95% CI)	Shoulder MSD OR (95% CI)	Back MSD OR (95% CI)
Age	1.14 (1.09 - 1.20)	1.15 (1.10 - 1.21)	1.15 (1.10 - 1.20)
Age + other work-related demands[1]	1.16 (1.10 - 1.21)	1.17 (1.11 - 1.23)	1.17 (1.11 – 1.22)
Age + other work-related demands + support	1.15 (1.10 - 1.21)	1.16 (1.10 - 1.23)	1.17 (1.11 – 1.22)

1. Other work related demands include: Consumer with many unmet needs, worker faces many frustrating situations during caregiving, worker must suppress own emotions, level of abusiveness of family and consumer, experience of work-related violence

Reference

Kuorinka, I., et al. "Standardised Nordic questionnaires for the analysis of

musculoskeletal symptoms." Applied.Ergonomics. 18.3 (1987): 233-37.

Delp L, Muntaner C, Geiger Brown J Wallace S Job stressors among home care workers in California's consumer-directed model of care: the impact of job satisfaction and health outcomes.

The need for long term care among the growing elderly population has stimulated interest in home care as a means to provide community-based services. This research examines conditions of work in California's In-Home Supportive Services Program (IHSS), the largest consumer-directed program in the country with over 200,000 predominantly female, ethnically diverse, low-wage workers. Data were analyzed from six focus groups with 71 Hispanic, African-American, Caucasian and Chinese workers and from 1,614 interviews with workers selected through a cross-sectional probability sample of English and Spanish speaking workers in Los Angeles County.

Results (see Table33) demonstrate that home care workers experience emotional, physical, schedule-related and financial stressors from the demands of home care and that these stressors affect their health, level of fatigue and job satisfaction. Workers also experience pride and rewards from home care work, and are actively engaged in transforming some physical and emotional demands into satisfying labor. Support mediates the relationship between physical demands and fatigue as hypothesized in existing occupational stress models. Decision latitude, however, magnifies the negative effect of overtime on level of fatigue, suggesting that greater control may become a burden for workers who confront overwhelming demands with insufficient resources. Differences by gender, race/ethnicity and family provider-living arrangement remained significant after controlling for job stressors and warrant further investigation.

Results demonstrate the importance of policies to improve wages, benefits and working conditions for home care providers and highlight the critical lack of adequate health benefits, respite care and sick leave; the need to address job insecurity; and the inadequacy of authorized service hours for consumer care, forcing providers to work unpaid overtime hours to meet consumers' needs. Findings also highlight the importance of the union as a voice for workers in the policy arena and as a mechanism to provide instrumental and emotional support. These results have implications for research models used to examine conditions of home care and for policies to alleviate the demands of home care. They will be of particular interest to occupational stress and long term care researchers, policy makers, unions that represent home care workers, and others interested in consumer-directed models of care.

Table 33 Comparison of Model Constructs across Outcome Variables

(mc=mean centered)	Health Status Linear Regression β (Std Error)	Absence of Fatigue Linear Regression β (Std Error)	Job Satisfaction Logistic Regression β (Std Error)	Odds Ratio
SOCIODEMOGRAPHICS [a]				
■ Gender (Female=Ref)	0.164 (0.065) *	0.130 (0.041) **	-0.152 (0.190)	
■ Race/Ethnicity				
o African-American	Ref	Ref	Ref	
o Caucasian	0.076 (0.064)	0.020 (0.039)	0.269 (0.196)	
o Hispanic	-0.349 (0.088) ***	0.036 (0.053)	-1.084 (0.241)***	.338
■ Age (+agesq for health)	-0.044 (0.010) ***	0.004 (0.001)**	0.019 (0.005)***	1.019
■ Education				
o High School Grad	Ref	Ref	Ref	
o < HS Grad	-0.119 (0.054)*	0.034 (0.034)	0.346 (0.166)*	1.414
o > HS	0.103 (0.062)	-0.013 (0.037)	-0.169 (0.176)	
■ Married/Living Together	-0.072 (0.049)	-0.019 (0.031)	-0.267 (0.146)	
■ Log income	0.023 (0.041)	-0.074 (0.021)***	0.149 (0.112)	

	Health Status Linear Regression β (Std Error)	Regression β (Std Error)	Job Satisfaction Logistic Regression β (Std Error)	Odds Ratio

WORK-RELATED STRESSORS

A. Physical Demands

	β (Std Error)	β (Std Error)	β (Std Error)	Odds Ratio
Subjective physical demands (mc)	-0.001 (0.024)	-0.038 (0.015)*	0.220 (0.069)**	1.246
▪ Physical task frequency (mc)	-0.000 (0.041)	-0.002 (0.025)	0.558 (0.138)***	1.747

B. Emotional Demands

	β (Std Error)	β (Std Error)	β (Std Error)	Odds Ratio
▪ Concealed Feelings (mc)	-0.048 (0.020)*	-0.030 (0.013)*	0.211 (0.060)***	1.235
▪ Abuse (mc)	0.023 (0.044)	-0.204 (0.027)***	-0.456 (0.122)***	.634

C. Schedule Demands

	β (Std Error)	β (Std Error)	β (Std Error)	Odds Ratio
▪ Overtime hours (mc)	-0.003 (0.002)	-0.006 (0.001)***	-0.011 (0.005) *	.989
▪ More than one consumer	-0.017 (0.055)	0.067 (0.034)*	-0.519 (0.162)**	.595
▪ Days worked while sick	-0.012 (0.005) *	-0.011 (0.003)***	0.029 (0.016)	

	Health Status Linear Regression		Job Satisfaction Logistic Regression	
	β (Std Error)	β (Std Error)	β (Std Error)	Odds Ratio
▪ Relative/Co-habitation	Ref	Ref	Ref	
o Relative, same home	0.150 (0.060) *	0.014 (0.038)	-0.034 (0.179)	
o Relative, different home	0.090 (0.125)	-0.222 (0.080) **	-0.802 (0.358)*	.448
o Non-relative, same home[b]	0.105 (0.060)	0.037 (0.036)	0.021 (0.174)	
o Non-relative, diff home				

D. Financial Strain

	β (Std Error)	β (Std Error)	β (Std Error)	Odds Ratio
▪ Difficulty paying bills	-0.093 (0.023) ***	-0.064 (0.015) ***	-0.037 (0.068)	
▪ Difficulty seeing	-0.221 (0.052) ***	-0.121 (0.032)	-0.403 (0.144)	.668

	β (Std Error)	β (Std Error)	β (Std Error)	Odds Ratio
MD for financial reasons		***	**	
▪ Health insurance	-0.220 (0.059)***	-0.024 (0.036)	-0.082 (0.171)	
SUPPORT/CONTROL				
▪ Job Insecurity	-0.232 (0.058) ***	-0.093 (0.037)*	-0.399 (0.164) *	.671
▪ Social support (mc)	0.114 (0.028) ***	0.068 (0.018) ***	0.345 (0.085) ***	1.412
▪ Decision latitude (mc)	0.013 (0.004) **	-0.002 (0.003)	-0.002 (0.012)	
▪ Union very important	-0.010 (0.068)	-0.090 (0.038)*	0.968 (0.199) ***	2.632

	Health Status Linear Regression	Linear Regression	Job Satisfaction Logistic Regression	
	β (Std Error)	β (Std Error)	β (Std Error)	Odds Ratio
INTERACTION EFFECTS				
Married x Decision latitude	-0.015 (0.006) **	-0.001 (0.004)	-0.008 (0.016)	
Overtime x DL	-0.000 (0.000)	-0.0002 (0.000)*	-0.000 (0.000)	
Physical Demands x Support	-0.001 (0.022)	0.029 (0.014)*	-0.218 (0.070)**	.804
Constant	4.606	5.278	-1.282	
Adjusted R^2/Pseudo R^2 c	0.28 – 0.29	0.23 – 0.25	0.28 – 0.29	
Adjusted R^2/Pseudo R^2 - Sociodemographic Variables	0.21 - 0.23	0.05 - 0.06	0.18 – 0.19	

*p<0.05; **p<0.01; ***p<0.001; ~p between 0.05 and 0.06

[a] Some sociodemographic variables were omitted from the models due to multicollinearity or problems with small cell size: immigrant, citizenship status, ethnic match between worker and consumer. Others were not significant for any outcome: homeowner vs renter.
b Non-relatives in the same home as the consumer are significantly different than all other categories in the Absence of Fatigue and Job Satisfaction models, not just the reference category
[c] Adjusted R^2 and Pseudo R^2 values are ranges (minimum to maximum) across the 10 imputed datasets

Muntaner, C., Geiger Brown, J et al. Unmet need for medical care, insurance status, and depression among home care workers.

Unmet need for medical care among home care workers, insurance status, and health correlates. Analyses revealed that Hispanic ethnicity is the strongest predictor of unmet health care needs over and above lack of insurance.

Table 34 Self-reported health status among home care workers, Los Angeles 2003 (N=1643)

Characteristic	N	%
Self-reported health status		
Poor	47	2.9
Fair	505	31.3
Good	654	40.5
Very good	237	14.7
Excellent	173	10.7
Perceived sleep quantity		
Nowhere near enough	104	6.4
Could do with a lot more	96	5.9
Could do with a little more	370	22.9
Get right amount	929	57.5
Get plenty	117	7.2
Days worked sick (past month)		
None	731	48.9
1-2	398	26.6
3-5	261	17.5
6-10	49	3.3
> 10	56	3.7
Worries about having to give up job for health reasons	71	4.4
Positive screen for major depression (RCESD)	101	6.4
Musculoskeletal disorder (case definition)		
Neck	169	10.7
Shoulder	129	9.5
Back	199	14.6
Unable to see MD when needed (past 12 months)		
Yes	641	39.9
No	962	59.9

Table 35 Insurance and financial status of home care workers, Los Angeles 2003 (N=1643)

	N	%
Insurance status		
No medical coverage	358	22.7
Has medical coverage	1222	77.3
Has insurance through the union	207	12.6
Difficulty paying bills (household)		
Very difficult	293	18.5
Somewhat difficult	443	28.0
Not very difficult	438	27.7
Not difficult at all	406	25.7

Table 36 Health status of home care workers by insurance status, Los Angeles 2003 (N=1643)

Characteristic		Uninsured			Insured		p
Self-rated health status	N	%		N	%		
Poor-fair		113	31.6		427	35.0	
Good to excellent		245	68.4		793	65.0	.23
Days working while sick							
None		169	48.0		540	48.7	
1-2		105	29.8		287	25.9	
3-5		55	15.6		203	18.3	
6-10		9	2.6		38	3.4	
> 10		14	4.0		41	3.7	.50
Worried about having to give up job for health reasons							
Yes		13	3.6		56	4.6	
No		345	96.4		1163	95.2	.82
Depressed							
Yes		31	8.8		69	5.8	
No		321	91.2		1121	94.2	.04
MSD							
Neck							
Asymptomatic		288	81.6		1033	86.8	
Symptoms		16	4.5		4	3.4	
Case		49	13.9		116	9.7	.048
Back							
Asymptomatic		277	78.9		827	84.0	
Symptoms		12	3.4		22	2.2	
Case		62	17.7		135	13.7	.08

Unable to see MD when needed (past 12 months)					
Yes	212	59.4	422	34.6	
No	145	40.6	793	65.1	<.001

Table 37. Odds of unmet medical needs past 12 months by predisposing and enabling factors, home care workers in Los Angeles, 2003 (n-1643)

Predisposing Factors	N	OR	95% CI	
Non-English speaking		4.040	3.269	4.99
Caucasian		1.337	.988	1.809
Hispanic		4.617	3.587	5.942
High school graduate		1.535	1.175	2.006
Less than HS graduate		3.079	2.340	4.051
Single		.846	.660	1.086
Separated		.934	.605	1.442
Divorced		.761	.541	1.071
Widowed		.604	.420	.870
Green card		2.924	2.297	3.721
Work permit		2.492	1.121	5.539
31-40		1.025	.616	1.706
41-50		1.744	1.099	2.767
51-64		1.920	1.227	3.004
65+		.700	.421	1.163
Uninsured		2.747	2.157	3.49

Reference categories include: English speaking, African American, Any college, Married. Citizen, 30 or younger, has medical insurance

Muntaner, C., et al. Work organization, neighborhood poverty and self-reported health among home care workers. (in preparation)

A multilevel analysis of each health outcome was performed with individuals at level I and census tracts as level II. Initially, a random intercept model was fitted to each outcome at each time point. This helped us to assess if there is a variation of the outcomes between census tracts. We used Mlwin version 2.0 software. Table 38 shows the results of these analyses. Self-rated health at time I showed significant variation between census tracts. To further investigate the variables explaining this higher level of variation in self-rated health, we included several explanatory variables. The results are shown in table 40.

Multilevel analyses on the influence of county of residence socioeconomic position with individual level variables including work organization yielded significant findings of Median income on self rated health (Table 40).

Table 38 Over all mean and variances of the over all mean (intercept) between census tracts for each outcome variable for data*.

Outcome	Intercept (standard error)**	Area level variance (standard error)***
Depression at time I (binary)	-2.67 (.1019)	0.000 (0.0000)
Depression at time II (binary)	-3.03 (.1407)	0.000 (0.0000)
Self-rated health at time I (binary)	-.670 (.0059)	0.224 (0.1099)
Self-rated health at time II (binary)	-1.21 (.0716)	0.120 (0.1595)
Neck problem at time I (binary)	-1.80 (.0720)	0.000 (0.0000)
Neck problem at time II (binary)	-2.33 (.1083)	0.523 (0.3070)
Back problem at time I (binary)	-1.59 (.0749)	0.261 (0.1606)
Back problem at time II (binary)	-2.13 (.0991)	0.273 (0.2676)
Shoulder problem at time I (binary)	-1.92 (.0809)	0.000 (0.0000)
Shoulder problem at time II (binary)	-2.54 (.1143)	0.030 (0.4154)

* SAS version 9 proc Glimmix was used in analysis. **Intercept (over all mean of the outcome)
***Variance of the intercept between census tracts

Table 39. Number of census tracts and number of person(s) within census tract

Number of Census Tracts (CT)	Number of observations per CT	Total number of observations
503	1	503
205	2	410
96	3	288
45	4	180
24	5	120
8	6	48
9	7	63
3	8	24
2	9	18
Total = 895		**Total = 1654**

Table 40. Results of multilevel analysis of health outcomes at time I predicted by individual, work and Census Tract (CT) characteristics.†

Employee and CT characteristics	Outcomes at time I				
	Self-rated health (poor/fair, others)	Depression (yes, no)	Back problem (yes, no)	Neck problem (yes, no)	Shoulder problem (yes, no)
	β (95% CI)	β (95% CI)	β (95% CI)	β (95% CI)	β (95% CI)
Constant	-.986 (-2.75, .782)	**-3.83 (-6.47, -1.19)**	-1.13 (-2.97, .712)	-1.07 (-2.92, .782)	-.179 (-3.73, .157)
Age	**.015 (.004, .026)**	-.015 (-.034, .003)	-.011 (-.024, .002)	-.011 (-.023, .002)	-.002 (-.015, .011)
Personal income (by 10,000 increments)	-.078 (-.161, .005)	-.003 (-.129, .123)	.064 (-.021, .149)	-.057 (-.147, .033)	-.007 (-.098, .084)
Median family income of CT in 1000s	**-.011 (-.022, -.001)**	-.002 (-.018, .013)	**-.018 (-.03, -.006)**	-.011 (-.023, 0.00)	-.011 (-.023, .002)
Not married vs. married	-.165 (-.495, .166)	.221 (-.361, .803)	-.108 (-.498, .281)	.032 (-.349, .413)	.023 (-.394, .441)
Ethnicity					
African-American	**-1.23 (-1.70, -.761)**	**.914 (.002, 1.83)**	**.956 (.318, 1.59)**	.406 ((-.149, .962)	**1.12 (.424, 1.82)**
Caucasian	**-1.19 (-1.68, -.699)**	.909 (-.035, 1.85)	**.758 (.097, 1.42)**	.201 (-.386, .788)	.726 (-.004, 1.46)
Hispanic (ref)	0.00 (-------)	0.00 (-------)	0.00 (-------)	0.00 (-------)	0.00 (-------)
Level of education					
< High school	**.735 (.044, 1.43)**	.318 (-.685, 1.32)	.085 (-.560, .731)	-.010 (-.699, .678)	-.454 (-1.13, .223)
High school graduate	.200 (-.470, .871)	-.349 (-1.33, .627)	-.490 (-1.09, .111)	-.286 (-.935, .363)	-.645 (-1.26, -.027)
Some college	.416 (-.277, 1.11)	.352 (-.584, 1.29)	-.135 (-.749, .479)	.073 (-.587, .733)	-.195 (-.813, .424)
College graduate/ graduate school (ref)	0.00 (-------)	0.00 (-------)	0.00 (-------)	0.00 (-------)	0.00 (-------)
Emotional suppression	.108 (-.039, .255)	**.307 (.096, .518)**	.164 (-.002, .329)	**.204 (.050, .359)**	**.216 (.047, .384)**
Frustrating situations	**.339 (.182, .495)**	**.377 (.146, .608)**	**.420 (.246, .594)**	**.389 (.222, .556)**	**.342 (.162, .523)**
Dealing with unmet needs	-.008 (-.167, .151)	.132 (-.087, .350)	-.018 (-.203, .166)	-.033 (-.209, .143)	-.052 (-.248, .143)
Support from family, friends and relatives	**-.140 (-.244, -.035)**	**-.296 (-.463, -.129)**	**-.153 (-.270, -.036)**	-.104 (-.220, .013)	-.076 (-.201, .048)
Physical demands	-.011 (-.362, .340)	.301 (-.385, .987)	.068 (-.359, .495)	.272 (-.143, .687)	-.024 (-.478, .430)
Control (karasek's)	.033 (-.031, .097)	.073 (-.020, .167)	.029 (-.036, .094)	.022 (-.044, .088)	.016 (-.053, .084)
Sample size (prevalence of disorder)	1109 (300)	1091 (74)	1034 (189)	1087 (173)	1020 (141)
Range of census tract cluster size	1 to 7	1 to 7	1 to 7	1 to 7	1 to 7
Number of census tracts	675	665	638	666	634
Random effects	**Variance (std)**	**Variance (std)**	**Variance (std)**	**Variance (std)**	**Variance (std)**
Intercept	.0004 (.1752)	0.00 (0.00)	.4975 (.2259)	:0115 (.2144)	.0471 (.2627)

† 95% confidence intervals of bolded values do not include 0, All are models are estimating the probability of lower health.

Table 41 Results of multilevel analysis of health outcomes at time II predicted by individual, work and census tract (CT) characteristics.†

Employee and census Tract characteristics	Outcomes at time II*				
	Self-rated health (poor/fair, others)	Depression (yes, no)	Back problem (yes, no)	Neck problem (yes, no)	Shoulder problem (yes, no)
	β (95% CI)	β (95% CI)	β (95% CI)	β (95% CI)	β (95% CI)
Constant	-1.69 (-4.04, .660)	-1.71 (-5.55, 2.14)	**-3.61 (-6.48, -.751)**	-1.25 (-4.23, 1.73)	-4.13 (-7.36, -.908)
Age	.013 (-.001, .028)	.016 (-.011, .044)	-.006 (-.025, .013)	-.012 (-.032, .008)	-.006 (-.028, .015)
Personal income (by 10,000 increments)	-.069 (-.188, .049)	.015 (-.165, .195)	.011 (-.126, .148)	-.077 (-.230, .076)	.029 (-.122, .179)
Median family income of CT in 1000s	-.01 (-.025, .005)	.003 (-.019, .025)	0.00 (-.016, .017)	-.003 (-.023, .016)	.006 (-.012, .025)
Not married vs. married	.159 (-.272, .591)	-.231 (-1.03 ,.573)	.161 (-.447, 768)	-.420 (-1.02, .185)	-.067 (-.732, .599)
Ethnicity					
African-American	-.164 (-.798, .470)	.274 (-.894, 1.44)	1.02 (-.031, 2.08)	**1.20 (.291, 2.11)**	1.19 (.027, 2.35)
Caucasian	-.143 (-.823, .537)	.011 (-1.29, 1.31)	**1.45 (.380, 2.52)**	**1.34 (.381, 2.30)**	1.54 (.353, 2.72)
Hispanic (ref)	0.00 (-------)	0.00 (-------)	0.00 (-------)	0.00 (-------)	0.00 (-------)
Level of education					
< High school	.946 (-.046, 1.94)	-.745 (-2.167, .677)	.611 (-.352, 1.57)	1.04 (-.230, 2.30)	.852 (-.293, 2.00)
High school graduate	.466 (-.501, 1.43)	-.538 (-1.86, .780)	-.345 (-1.27, .582)	.696 (-.505, 1.90)	.139 (-.947, 1.22)
Some college	.278 (-.741, 1.30)	-.281 (-1.61, 1.05)	-.194 (-1.14, .749)	.372 (-.886, 1.63)	.078 (-1.05, 1.21)
College graduate/ graduate school (ref)	0.00 (-------)	0.00 (-------)	0.00 (-------)	0.00 (-------)	0.00 (-------)
Emotional suppression	.183 (-.013, .379)	.121 (-.208, .450)	.100 (-.161, .361)	.165 (-.091, .420)	.111 (-.180, .402)
Frustrating situations	.059 (-.148, .267)	.111 (-.230, .453)	.154 (-.111, .418)	.193 (-.079, 464)	.059 (-.245, .364)
Dealing with unmet needs	-.008 (-.234, .218)	.281 (-.023, .585)	-.076 (-.366, .215)	-.008 (-.288, .273)	-.245 (-.619, .129)
Support from family, friends and relatives	.030 (-.109, .169)	**-.303 (-.552, -.055)**	.041 (-.141, .222)	-.090 (-.272, .092)	-.012 (-.215, .190)
Physical demands	.385 (-.071, .841)	-.437 (-1.30 , .422)	.284 (-.383, .951)	.421 (-.235, 1.08)	-.074 (-.777, .629)
Control (Karasek's)	-.051 (-.134, .032)	-.044 (-.182, .095)	-.005 (-.105, .095)	-.077 (-.180, .026)	-.003 (-.115, .109)
Outcome at time I	**1.23 (.804, 1.66)**	**2.08 (1.22, 2.94)**	**1.43 (.847, 2.01)**	**1.35 (.758, 1.94)**	**1.71 (1.07, 2.34)**
Sample size (prevalence of disorder)	777 (161)	755 (38)	709 (75)	754 (71)	699 (54)
Range of census tract cluster size	1 to 6	1 to 6	1 to 6	1 to 6	1 to 6

Employee and census Tract characteristics	Outcomes at time II*				
	Self-rated health (poor/fair, others)	Depression (yes, no)	Back problem (yes, no)	Neck problem (yes, no)	Shoulder problem (yes, no)
	β (95% CI)	β (95% CI)	β (95% CI)	β (95% CI)	β (95% CI)
Number of census tracts	515	503	473	499	472
Random effects	Variance (std)	Variance (std)	Variance (std)	Variance (std)	Variance (std)
Intercept	.3646 (.2628)	.2027 (.6684)	.5718 (.3909)	.7214 (.4184)	.1990 (.5226)

† 95% confidence intervals of bolded values do not include 0, All are models are estimating the probability of lower health.

<u>Summary output:</u>

Papers

Arteaga, S., Geiger-Brown, J., Muntaner, C: [2002] Home care work organization and health: Do Hispanic women report different health concerns? <u>Hispanic Health Care International</u>, 1(3), 135-141.

Geiger-Brown, J., Muntaner, C., McPhaul, K., Lipscomb, J., Trinkoff, A:[2007] Abuse and violence during home care work as a predictor of depression <u>Home Care Quarterly</u> 2007;26(1):59-77.

Delp L, Muntaner C, Geiger Brown J Wallace S Job stressors among home care workers in California's consumer-directed model of care: the impact of job satisfaction and health outcomes. <u>Am J Public Health</u> Special issue on health care workers (in revision)

Muntaner, C., Geiger Brown, J., Lipscomb, J., Trinkoff, A. Emotional demands of work and depression among home care workers. (in preparation)

Geiger-Brown, J., Muntaner, C., Trinkoff, A. Physical work demands in home care and incidence of musculoskeletal disorders of the neck, shoulder and back (in preparation)

Muntaner, C., Geiger Brown, J et al. Unmet need for medical care, insurance status, and depression among home care workers. <u>Int. Journal of Health Services</u> (in revision)

Muntaner, C., et al. Work organization, neighborhood poverty and self-reported health among home care workers. (in preparation)

Geiger-Brown, J., Muntaner, C. A comparison of reliability and validity of the Revised CESD in English vs. Spanish language version (in preparation)

Dissertation:
Dissertation Proposal (dissertation defended successfully in fall 2006)
Linda Delp.: [2002] Department of Community Health Services. UCLA School of Public Health "Job stressors among home care workers in California's consumer-directed model of care: the impact of job satisfaction and health outcomes."

Presentations:

Delp L Muntaner C. Health, work and policy in California's consumer-directed model of homecare 135th Annual Meeting of the American Public Health Association (November 6, 2007) Whashington DC

Delp L, Muntaner C, Wallace S, Geiger Brown J: [2006] Job Stressors and Health Outcomes in California's Home Care Workforce 134th Annual Meeting of the American Public Health Association (November 4-8, 2006) Boston, MA.

Geiger Brown, J. Muntaner C: [2006] Abuse and violence during home care work as predictor of worker depression. NORA Symposium 2006, Research Makes a Difference! April 18-19, 2006.

Geiger Brown, J. Muntaner C: [2006] Job Stressors and Health Outcomes in California's Home Care Workforce. 134th Annual Meeting of the American Public Health Association (November 4-8, 2006) Boston, MA.

Geiger-Brown, J., Muntaner, C: [2006] Abuse and violence during home care work. Work, Stress & Health, 2006, Making a Difference in the Workplace. American Psychological Association, Miami, FL.

Geiger-Brown, J. & Muntaner, C: [2005] Abuse and violence toward home care workers and depressive symptoms- a longitudinal analysis. Women's Health Research Group Annual Conference, University of Maryland, Baltimore.

Geiger-Brown, J., Muntaner, C: [2004] Extended work hours and mental health symptoms. Long Working Hours and Health Conference. NIOSH at University of Maryland School of Nursing. Baltimore, MD

Geiger-Brown, J. & Muntaner, C: [2004] Caring 24/7. Home care workers' emotional demands when the consumer is a relative. Congress of Nursing Science, State of the Science 2004, Washington, D.C.

Geiger-Brown, J. & Muntaner, C: [2004] Long hours of work among home care workers; exposures and health correlates. Congress of Nursing Science, State of the Science 2004, Washington, D.C.

Geiger-Brown, J. & Muntaner, C: [2004] Home care workers' emotional demands when consumer is a relative and living with worker. American Public Health Association, Annual Meeting 2004, Washington, D.C.

Muntaner, C and Geiger-Brown, J: [2004] Abusive situations in home care work: prevalent and related to worker depression. American Public Health Association, Annual Meeting 2004, Washington, D.C.

Geiger-Brown, J. & Muntaner, C: [2003] "Physical and psychosocial demands on home care workers". Service Workers' International Union, Local 434B, administrators and staff.

Muntaner C: [2003] "Preliminary results". Service Workers' International Union, Local 434B, leadership.

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