Being Old and Doing Time: Functional Impairment and Adverse Experiences of Geriatric Female Prisoners

Brie A. Williams, MD,† Karla Lindquist, MS,* Rebecca L. Sudore, MD,*† Heidi M. Strupp,‡ Donna J. Willmott, MPH,‡ and Louise C. Walter, MD*†*

The number of older prisoners is increasing exponentially. For example, the number of geriatric female prisoners in California has increased 350% in the past decade. Despite an increasing population of geriatric female prisoners, the degree of functional impairment in this population is unknown. Therefore, the goals of this study were to describe the prevalence and nature of functional impairment in geriatric female prisoners in California and to identify aspects of the prison environment that may exacerbate functional impairments.

Questionnaires were analyzed from 120 geriatric women in California state prisons. Functional impairment was defined as impairment in activities of daily living (ADLs) or in prison ADLs (PADLs), including dropping to the floor for alarms, standing for count, getting to meals, hearing orders, and climbing onto the top bunk. The mean age of participants was 62; 16% were dependent in one ADL, and 69% reported one PADL impairment. Increasing severity of functional impairment was associated with worse health status and more adverse prison experiences. For example, fall rates ranged from 33% in women without impairment to 57% with PADL impairment to 63% with ADL dependence ($P = .02$). Several prison environmental stressors were identified that likely exacerbate functional impairment. For example, 29% of geriatric women were assigned to a top bunk.

Geriatric female prisoners report high rates of functional impairment. ADL and PADL impairment were associated with worse health status and adverse prison experiences. Therefore, the evaluation of functional impairment in geriatric female prisoners needs to consider the unique demands of the prison environment. **J Am Geriatr Soc 2006.**

Key words: prisoners; geriatrics; activities of daily living; women

From the *Division of Geriatrics, University of California, San Francisco, California; †San Francisco Veterans Affairs Medical Center, San Francisco, California; and ‡Legal Services for Prisoners with Children, San Francisco, California.

Address correspondence to Brie A. Williams, MD, 4150 Clement Street Box 181-G, San Francisco, CA 94121. E-mail: brie.williams@ucsf.edu

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The population of older prisoners in the United States is increasing exponentially.[1–4] California, the largest state prison system, has 7,150 geriatric prisoners, of whom 353 are women.[3] The number of geriatric women in California prisons has increased 350% in the past decade.[3,4] Prisoners are defined as "geriatric" at age 55, because they develop disability and comorbid conditions earlier than persons in the general U.S. population.[2,4–8] It is projected that by 2030 there will be 33,000 geriatric prisoners in California alone and that one-third of the U.S. prison population will be geriatric.[9] This dramatic aging is, in part, due to longer sentences, mandatory minimum sentencing laws, and tighter parole policies.[2,10] Because the average cost for incarcerating a geriatric prisoner is $70,000 per year, two to three times that of a younger prisoner, the expense of sustaining the prison system is expected to rise considerably.[2,11]

Although functional impairment predicts high healthcare costs, future functional decline, and mortality, few studies have examined the health and functional status of geriatric prisoners.[12,13] In Iowa, 11% of male prisoners aged 50 and older were found to have limitations in self-care activities. In the United Kingdom, 10% of male prisoners aged 60 and older reported disability in one or more activities of daily living (ADLs).[7,8] In prison, geriatric women have higher rates of comorbid conditions than men, and in the general U.S. population, older women have higher rates of functional impairment than older men.[6,14–16] During incarceration, female sex and older age are also the strongest predictors of morbidity and increased use of medical care,[16,17] but no studies to the authors' knowledge have assessed functional impairment in geriatric female prisoners. Furthermore, no studies have evaluated the unique functional demands imposed by the prison environment.

Therefore, the goals of this study were to describe the prevalence and nature of functional impairment in geriatric female prisoners in the California state prison system, to describe the association between the severity of functional impairment and health status and adverse experiences, and

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to explore how aspects of the prison environment might exacerbate functional impairment.

METHODS

Study Population

In this cross-sectional study, data were analyzed from a questionnaire of geriatric women in California state prisons. Statistics from the California Department of Corrections and Rehabilitation indicated that there were 353 women prisoners aged 55 and older as of August 2004.[3] The only confidential mail sent to prison is that protected by attorney/client privilege. Therefore, Legal Services for Prisoners with Children (LSPC), a legal aid and advocacy group, sent questionnaires to 203 geriatric female prisoners who were known to the organization through prior advocacy work using attorney/client mail. Limiting the sample to known prisoners allowed LSPC to ensure confidentiality in questionnaire responses.

Of the 203 questionnaires sent, 29 were not completed because of parole, and four were sent to the wrong address. This resulted in 170 questionnaires sent to eligible women, of which 101 were completed (59% response rate). LSPC then obtained an additional 19 questionnaires from women referred by other prisoners who met the age requirement, resulting in 120 subjects.

A cover letter informed subjects that LSPC was conducting an evaluation to better understand prison conditions for older women, that they had the right not to complete the questionnaire, and that results would be used for research. The Committee on Human Research at the University of California, San Francisco and the San Francisco Veterans Affairs Medical Center approved analyses and publication of these data.

Questionnaire Design

LSPC designed the questionnaire and developed it in a series of individual structured, open-ended interviews with 10 key informants who were geriatric female prisoners and former prisoners. The 10 women were selected to be a diverse group representing a spectrum of ages, races, and prison locations. The interviews contained questions about the experiences of older women (e.g., "What are your concerns about getting older in prison?" How do prisoners regard older prisoners?"). Results from the structured interviews were used to generate items for the final questionnaire. The resulting questionnaire included open- and close-ended questions and was reviewed by physicians, prison advocates, attorneys, and former and current prisoners before distribution.

Demographic and Health Status Measures

Demographic questions included age, race/ethnicity, highest grade completed, length of sentence, and whether the offense was related to domestic violence. Health status questions included those about medical illnesses, self-rated health, and number of current medications. Participants were asked to indicate their illnesses from a list of 23 common conditions such as hypertension, asthma, and diabetes mellitus. Self-rated health was evaluated by asking participants to rate their health on a 10-point scale. Several geriatric conditions were assessed, including difficulty with vision or hearing, incontinence (loss of bladder control), and memory loss. Mobility impairment was assessed by asking women whether they needed help walking or used a wheelchair.

Functional Measures

ADLs were assessed by asking respondents whether they currently needed help with any of five ADL (bathing, eating, toileting, dressing, and transferring (getting in and out of bed)). Women were classified as having ADL dependence if they reported needing help with one or more activity.

In addition to traditional ADLs, incarceration introduces daily physical activities that are unique to prison life and are necessary to independent functioning while in prison. During the pilot interviews, women were asked, "Are there prison routines that become more challenging for prisoners as they get older?" Prison experts reviewed the responses to identify the five activities most commonly required on a daily basis. These prison-specific functional activities were termed "prison activities of daily living" (PADLs). The five PADLs were dropping to the floor for alarms, standing for head count, getting to the dining hall for meals, hearing orders from staff, and climbing on and off the top bunk. Women were asked to rate each PADL activity as not difficult, somewhat difficult, or very difficult. Women were classified as having PADL impairment if they described one or more activities as very difficult.

Other Outcome Measures

Adverse prison experiences included reporting a fall in the previous year, feeling depressed, feeling unsafe in one's prison cell, and reporting physical abuse by another prisoner. Women were asked about environmental modifications for functional impairment, including the number of prison hours worked, the type of work required, assignment to a top bunk, presence of bathroom handrails, and who provided them with needed assistance.

Statistical Analysis

Descriptive analyses of the women's demographics, health status, and functional impairment were performed. Women were classified into one of three functional groups: those with no functional impairment, those with PADL impairment but without ADL dependence, and those with ADL dependence.

The relationship between functional impairment and health was evaluated to examine the construct validity of the PADL measurement as an indicator of intermediate-level functional status. This was done by testing trend associations across the three functional groups in self-rated health, the presence of mobility impairment, and the presence of three or more comorbid conditions. Regression analysis was used for self-rated health, and chi-square test for trend was used for mobility and comorbid conditions. Rates of adverse prison experiences were also compared between the three functional groups using chi-square tests for trend.

Chi-square test for trend was used to examine whether the prison environment had been modified to meet the needs of prisoners with functional impairment by assessing the

association between functional group and job status, assignment to top bunk, and presence of bathroom handrails. Descriptions of who provided the needed assistance to women with ADL dependence or mobility impairment were also reported. Intercooled Stata, version 8.0 (Stata Corp., College Station, TX) was used for all statistical analyses.

To further illustrate some of the experiences of geriatric female prisoners with functional impairments, case vignettes were included. Vignettes were obtained from the open-ended sections of the questionnaires. Identifying features were omitted to protect the participants.

RESULTS

Characteristics of Geriatric Female Prisoners

The mean age of the 120 respondents was 62 (range 55–82); 12% were aged 70 and older, and 68% were white (Table 1). Sixty percent of women had completed high school. Fifty-one percent reported that their conviction was related to domestic violence, and 46% had been in prison for more than 15 years. Thirty-three percent reported three or more of the comorbid conditions listed in Table 1, and 78% took five or more medications. In addition, 58% of women reported impaired vision, 52% reported impaired hearing, 28% had experienced memory loss, and 22% reported incontinence.

Functional Impairment

Sixteen percent of women needed help with one or more ADLs (Table 1). Sixty-nine percent of women reported that at least one PADL was very difficult for them to perform, including 65 women with no reported ADL dependence. PADL difficulties included hearing orders from staff (59%), dropping to the floor for alarms (57%), standing for head count (35%), getting to the dining hall for meals (31%), and climbing on and off the top bunk (14 of the 35 women assigned to a top bunk).

Women with worse functional status reported worse self-rated health ($P<.01$), more mobility impairment ($P<.01$), and higher rates of comorbid conditions ($P<.01$) (Table 2). For example, 74% of women with ADL dependence reported mobility impairment, compared with 26% with PADL impairment and 5% with no impairment.

Association Between Functional Status and Adverse Experiences

Increasingly severe functional impairment in geriatric female prisoners was associated with more adverse experiences (Figure 1). For example, 51% of all women reported falling in the previous year. Fall rates ranged from 33% in women with no impairment to 63% in women with an ADL impairment (P for trend = .02). For the 33 women with mobility difficulties, 70% reported a fall within the previous year. Sometimes falls occurred during prison activities not modified to individuals at risk for falls. For example, an 80-year-old woman with arthritis and visual impairment described falling and hitting her head on a metal box while standing for a long time during head count.

Feeling depressed was also associated with increasing severity of functional impairment. Nineteen percent of women with no functional impairment reported having depression, compared with 40% of women with a PADL impairment and 53% of women with ADL impairment (P for trend = .01).

Personal safety concerns were more common in women with functional impairment, although these trends were of

Table 1. Characteristics and Functional Impairment of Geriatric Female Prisoners (N = 120)

Characteristic*	N (%)
Demographic	
Age	
55–59	55 (46)
60–64	51 (28)
65–69	17 (14)
≥70	14 (12)
Ethnicity	
White	82 (68)
Black	16 (13)
Latina	7 (6)
Mixed or other	15 (13)
Education < high school	42 (35)
Health status	
Comorbidities	
Hypertension	77 (64)
Diabetes mellitus	19 (16)
Asthma/chronic obstructive pulmonary disease	39 (33)
Arthritis	88 (73)
Stroke	15 (13)
Depression	43 (36)
Cancer	14 (12)
Heart disease/heart attack	37 (31)
Other geriatric conditions	
Mobility impairment*	33 (28)
Impaired vision	70 (58)
Impaired hearing	62 (52)
Incontinence†	26 (22)
Problems with memory	33 (28)
Functional impairment	
Dependence in ADLs‡	
Bathing	6 (5)
Eating	5 (4)
Toileting	2 (2)
Dressing	11 (10)
Transferring	6 (5)
≥1 ADL impairments	19 (16)
≥1 ADL or mobility impairments	38 (32)
Impairment in PADLs§	
Dropping to the floor for alarms	68 (57)
Standing for head count	56 (47)
Climbing on and off the top bunk‖	14 (40)
Getting to the dining hall	37 (31)
Hearing orders from staff	32 (27)
≥1 PADL impairments	83 (69)

Note: All characteristics were self-reported.
* Defined as needs help with walking or uses a wheelchair.
† Defined as loss of bladder control.
‡ Defined as needing help with activities of daily living (ADLs).
§ Defined as very difficult.
‖ For those in a top bunk (n = 35).
PADL = prison activity of daily living.

Table 2. Association Between Physical Function and Health Status

Health Status	No Functional Impairment (n = 36)	Prison Activity of Daily Living Impairment Only (n = 65)	Activity of Daily Living Dependence (n = 19)	*P*-value*
Self-rated health, mean ± standard deviation†	5.3 ± 2.0	3.3 ± 2.1	2.2 ± 1.4	<.01
Three or more comorbidities, n (%)‡	4 (11)	24 (37)	12 (63)	<.01
Mobility impairment, n (%)§	2 (5)	17 (26)	14 (74)	<.01

* *P*-value calculated using regression analysis for self-rated health and chi-square test for trend for comorbidities and mobility impairment.
† Rated on a scale of 1 to 10, with 1 = the worst health and 10 = the best health.
‡ Self-reported hypertension, diabetes mellitus, asthma/emphysema, arthritis, stroke, depression, cancer, and heart disease/heart attack.
§ Self-reported need help with walking or uses a wheelchair.

borderline statistical significance (Figure 1). Twenty-three percent of geriatric women reported feeling unsafe in their cells, and 34% reported physical abuse by other prisoners. One woman described the safety risks for older inmates: "There are some older women who can't take care of themselves, so to be in a room with eight women and to be in a room with aggressive women is not a very safe place for them to be [living]. . . . What happens is you see a lot of older women with black eyes."

Aspects of the Prison Environment that Likely Exacerbate Functional Impairment

Many geriatric women reported participation in physically demanding activities and had no access to environmental modifications for functional impairment. For example, 70% were required to work full time, including 68% of women with PADL impairment and 50% of women with ADL dependence. Sixty-one percent had been assigned to jobs that were too difficult to perform, including janitorial positions and yard crew. A 75-year-old woman with arthritis awaiting hip replacement was assigned to manual labor on the yard crew when she arrived in prison at age 70. Eventually her job was changed to porter. She described this experience: "I use a brush for the toilet and I bend over—carefully—to clean the tile. I use my leg to clean the floor because I can't use a mop." In addition, 29% of geriatric women were assigned to a top bunk, including two women with ADL dependence and seven with mobility impairment. Even for many women without functional impairment, getting on and off the top bunk was difficult. For example, a 57-year-old woman with impaired vision reported breaking her arm and coccyx while climbing onto her top bunk. Other accommodations, such as bathroom handrails, were frequently not available. Eighty-two percent of geriatric female prisoners with PADL impairment and 58% with ADL dependence reported no handrails in their bathrooms.

The majority of assistance reported was informal, provided by other prisoners rather than prison staff. Of the 38 women needing help with ADLs or mobility, 69% reported that they mostly received help from other prisoners, and 28% reported that no one helped them. Only one woman reported that she regularly received help from prison staff. An elderly wheelchair-bound inmate with a history of stroke explained that she often missed meals, because, without someone to help her, she could not get to the dining hall on time.

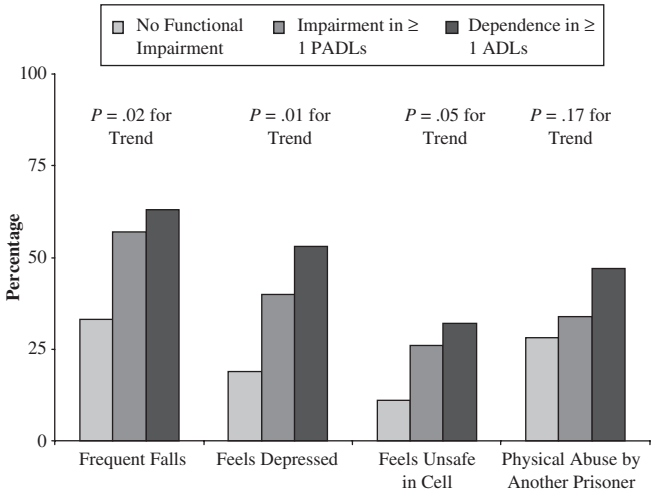

Figure 1. Self-reported adverse experiences according to functional status. This figure shows the percent of geriatric female prisoners with no functional impairment, impairment in one or more prison activities of daily living (PADLs), or dependence in one or more activities of daily living (ADLs) who reported falls, felt depressed, felt unsafe, or reported physical abuse by another prisoner.

DISCUSSION

The prevalence of functional impairment and comorbid conditions was high among geriatric female prisoners in California. Sixteen percent of women aged 55 and older reported needing help with one or more ADLs, twice the rate of the general U.S. population aged 65 and older.[18] Geriatric female prisoners also reported high rates of comorbidities, consistent with other studies showing high rates of disease burden in older prisoners.[2,4,6–8] For example, women prisoners aged 55 and older reported similar rates of diabetes mellitus and heart disease as women aged 65 and older in the general U.S. population (16% diabetes mellitus, 31% heart disease), but geriatric female prisoners reported higher rates of hypertension (64% vs 51%), asthma/chronic obstructive pulmonary disease (33% vs 19%), and arthritis (73% vs 48%) than older women in the community.[19]

Because functional impairment constitutes a complex interaction between a person's physical abilities and her environment, the ability to perform daily prison activities was assessed and termed "prison activities of daily living." When PADLs were measured, functional impairment was much more common than measures of ADLs would indicate; 69% of women reported an impairment in PADLs whereas only 16% of women would be identified as functionally impaired based on traditional ADL measures. Thus, people who are independent in the community might be impaired in prison.

Women with impairment in ADLs or PADLs were at greater risk for poor self-rated health, mobility impairment, and a higher burden of comorbid conditions. These, in turn, are associated with increased morbidity and mortality.[14,20–22] Furthermore, women with ADL or PADL impairment were more likely to report adverse experiences, including falls, feeling depressed, feeling unsafe, and physical violence. For example, 63% of women with ADL impairment and 57% of women with PADL impairment reported falling in the previous year, compared with 33% with no impairment. In comparison, an estimated one-third of the U.S. population aged 65 and older reports falling annually.[23]

Although functional impairment and the environment's functional requirements may be mismatched in the community,[24] the mismatch is intensified in prison. Prisons, which are generally designed for young, healthy inmates without functional limitations,[4,10] often lack assistive devices such as bathroom handrails, which also occurs in the community.[24] However, prisons also raise the physical level at which older adults must function by requiring activities such as climbing onto a top bunk and dropping to the floor for alarms. Using periodic functional assessments to identify women with functional impairment could decrease these mismatches. For example, women with functional limitations could be assigned to less physically demanding jobs and to a bottom bunk. Bathroom handrails could be installed to decrease falls,[25] and a formal caregiver job could be created in which younger inmates assist geriatric prisoners with functional impairments.

Some states have initiated interventions to address the problems of aging in prison. For example, the Project for Older Prisoners partners law schools and state departments of corrections to allow early release for nonviolent elderly inmates. Thus far, the Project for Older Prisoners program has organized the early release of 100 older prisoners without a single act of recidivism.[26] In Texas, a university-based program has improved chronic disease management in older prisoners through implementation of treatment guidelines.[1] A program in Florida trains medical students in geriatrics by having them care for older prisoners,[2] and in Pennsylvania, prisoner–caregivers assist older prisoners with ADL impairments after receiving training in the use of assistive devices (such as wheelchairs).[10]

This study has limitations inherent in studying a group of subjects with special confidentiality requirements. To guarantee confidentiality, the questionnaire was limited to women previously known to LSPC in order to use attorney/client mail. Despite this limitation, responses from one-third of all geriatric women in California state prisons were analyzed, and the sample reflects the racial/ethnic and age distributions of geriatric women in California prisons.[3] In addition, all data were self-reported, although self-report is considered a valid measure of disease burden and functional impairment.[18,20,24,27] This study also likely underestimates the severity of functional impairment and disease burden in geriatric female prisoners. Women had to be well enough to complete the questionnaire, and only one of the respondents resided in California's skilled nursing facility for prisoners. The questionnaire also may not have been completed by women with low literacy, a prevalent problem in prison that is associated with chronic disease and poor disease self-management.[28–30] In addition, the prevalence of functional impairment would have likely been higher if this study had assessed difficulty with ADLs rather than dependence in ADLs. Indeed, the prevalence of difficulty with any ADL approaches 43% of women of lower socioeconomic status in the general U.S. population.[27]

In summary, geriatric female prisoners reported high rates of functional impairment that were associated with worse health status and adverse experiences and likely contribute to the escalating costs of prison health care. This study suggests that functional assessment that takes into account the unique physical demands of the prison environment could identify geriatric women at greater risk for adverse outcomes with the goal of reducing prison healthcare costs and future disability while increasing safety. Interventions could then be implemented to mitigate some of the functional demands of prison. Because the law mandates adequate healthcare in prisons,[1] functional assessment and environmental modifications are necessary to provide humane and appropriate medical care to this population.

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