

Improving Access to Comprehensive Injury Risk Assessment and Risk Factor Reduction in Older Adult Populations

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Preventing injuries in older populations (aged 50–86 years) is more complex than in younger populations because of frailty, comorbidities, polypharmacy, and physical and cognitive functional limitations. To improve accessibility and delivery of comprehensive, focused injury prevention, we developed a model incorporating applicable features of our national children's program with additional elements to address challenges of older populations. The older adult injury prevention model addresses gaps in prevention by improving access to risk factor screening, safety devices, education, counseling, medical care, and referrals. (*Am J Public Health*. 2007;97:676–678. doi:10.2105/AJPH.2006.091140)

Comprehensive children's injury prevention programs are widely available but do not address the complexities of comorbid illnesses, physical and cognitive functioning, frailty, and polypharmacy that complicate older adult injury prevention programs.^{1–4} Existing older adult programs are frequently single injury mechanism programs. Although falls are the prevalent mode of injury, nonfall mechanisms contribute disproportionately to the older adult injury burden in minority communities.^{5,6} Although this suggests that comprehensive rather than single mechanism injury programs may be more appropriate, such models are not available and few reports have been published on injury risk factors for older adults residing in minority communities—both of which hamper prevention efforts.

Our children's injury prevention program, based on a model with coalition involvement in reengineering of physical and social environments, contained useful features for adult and older adult injury prevention¹ but did not include comprehensive risk factor identification or an injury prevention delivery mechanism suitable for addressing issues of older adult populations. A familiar and accepted delivery mechanism—the health fair—had been used successfully to increase access to a variety of preventive screenings in older populations^{7,8} but had not evolved sufficiently to support a focused, comprehensive prevention and intervention approach to a single, but highly complex, issue.

METHODS

We developed a comprehensive older adult injury prevention model by (1) adapting applicable features of the children's program, such as community coalitions; (2) adding a screening mechanism to identify risks associated with intrinsic comorbid diseases, polypharmacy, and functional limitations; and (3) advancing the health fair concept as the delivery mechanism through which to initiate efforts to narrow gaps in access to care and injury prevention and to improve continuity of care for conditions associated with increased injury risk.

In 2005, all Harlem Hospital Center departments providing care for conditions or symptoms associated with increased injury risk and select community organizations were invited to participate in the Harlem Seniors Injury Prevention Fair geared toward issues identified through injury surveillance. Planning sessions, initially held at the departmental level, culminated in a group meeting of departmental chairs and staff. Challenges of older adult injury prevention were discussed, including gaps in access to and continuity of care for those with comorbid conditions and multiple physicians.

On-site risk assessments, screenings, referrals for comprehensive examinations, distribution of safety devices, educational counseling, and literature distribution were conducted at 17 stations, all located in a community gymnasium, staffed by physicians, health care providers, representatives from

community organizations, and injury prevention staff (Table 1).

An abbreviated version of the Comprehensive Injury Risk Assessment and Reduction for Elderly Populations survey, administered during (n=62) and following (n=27) the fair, was used to collect information for baseline injury from 4 major sources: in the community; at home; from individual, intrinsic comorbid diseases or conditions, symptoms, and functional status; and from medical care or rehabilitation.⁹ Example questions from one of the injury categories (poisoning) on the instrument included the following: “How many prescription medications do you currently take? Nonprescription/over-the-counter medications? Can you describe your system for knowing when to take your medications?” Other related information collected included names of prescription and nonprescription medications, conditions being treated, dose of medication, frequency of medication use, length of time taking medication, prescribing physician, and date when physician last prescribed or reviewed medications.

RESULTS

Study Population

Among the 140 program participants, mean age was 68.3 ± 9.7 years, 80.9% were women, and 92.1% were Black. Nearly two thirds completing risk assessments reported previous injury during their lifetime; 90.5% received emergency department care, and 54.0% were hospitalized.

Most of the participants' homes lacked 1 or more of the safety devices for falls, fire and burn prevention, environmental exposure, and poisoning (Table 2). Comorbid conditions and functional limitations with the potential to contribute to several injury mechanisms were prevalent among participants.

Falls

Several factors associated with increased fall risks were observed (Table 2). Increased fracture risk was prevalent (53.7% had negative T scores on bone mineral density [BMD] screening, 36.4% of whom had a T score ≤ -1 , demonstrating an increased fracture risk).

Poisoning

Multiple risk factors present for unintentional medication poisoning included

TABLE 1—Select Stations and Injury Prevention Activities Conducted at the Harlem Seniors Injury Prevention Fair (N = 140): New York, 2005

| Station ^a or Services Received (%) ^b | Screening | Referrals for Comprehensive Examinations | Referral Details or Other Activities ^c |
|--|--|--|--|
| Ophthalmology (34.5) | Vision | Yes | Referrals for low vision assessment and intervention; distribution of small lighted magnifying glasses |
| Audiology (16.9) | Hearing | Yes | Referrals for evaluation, intervention, and treatment of hearing difficulty |
| Pharmacy (83.9) | Medication safety review for high-risk medications, polypharmacy, drug interactions, and comorbidities | Yes | Distribution of weekly pill boxes for dosing. (Second fair distributed new pill boxes to accommodate polypharmacy with 7 days; each day has Morn/Noon/Bed/Eve dosings) |
| Radiology (56.4) | Bone mineral density (BMD) with portable sonometer | Yes | Low BMD referred for risk assessment and stationary bone density. (Second fair included newly developed culturally appropriate literature) |
| Neurology (59.9) | Gait, balance impairments, history of stroke, and presence of fall-associated conditions | Yes | Referrals to neurology clinic for more comprehensive examination and testing. (Third fair will include new rubber tips for worn, unmaintained walking aids) |
| Urology (59.9) | Screening and counseling for incontinence or increased urination frequency (fall risk from rushing to the bathroom) | Yes | Referral to urology clinic; distribution of materials on pharmacological and other treatments as indicated |
| Injury risk assessment (44.4) | Administered abbreviated injury risk assessment tool for individual, community, medical care, and comorbid disease risks | Other fair stations ^a | Counseled about importance of warnings and contraindications on medications; distributed lighted magnifying glasses; gave rechargeable flashlights for completion of injury risk assessment tool |
| Home safety (91.5) | None | No | Free safety devices, timer for cooking, nightlights. (Third fair will include skid-proof socks and shower shoes) |
| Fire safety (NA) | None | No | General fire and burn prevention education with individual counseling as requested |

Note. NA = data not available. All participants (N = 140) received educational counseling and literature.

^aOther stations present (% attendance): welcome station (96.5); nutrition (69.9); geriatrics (40.1); geriatric psychiatry (NA); physical therapy and rehabilitation (92.3); social services (NA); community-based physical activities for older adults (NA); and neighborhood and community safety (NA). (The second fair included referral station for facilitating on-site appointments to improve follow-up.)

^bPercentage of those attending the fair who availed themselves of services available at that station.

^cRevisions were made between the first and second fair offering. This column contains the pilot of the first event with the added changes made for future offerings in parentheses.

polypharmacy (4.5 ± 3.0 medications), lack of a pill box organizer or system for taking medication, difficulty remembering to take medications, difficulty hearing, and inability to read fine print on medication bottles with or without corrective lenses (Table 2).

Fire and Burns and Heat and Cold Exposure

More than one fourth of the participants had functional limitations that slowed movement and complicated stair evacuation. Smoke alarm ownership was high, but battery maintenance was 25% lower than alarm ownerships. Few owned room thermometers that would enable them to track indoor residence or outdoor temperatures (Table 2).

DISCUSSION

We have described a community-based, comprehensive injury prevention initiative created through expansion of our children's injury prevention model to include features

that address issues associated with injuries among older adults.¹ The injury prevention fair was a well-accepted delivery mechanism for initiation of prevention activities; attendees waited in lengthy lines to complete risk assessments and be rewarded with an injury prevention device. Missing data were primarily the result of an inability to meet unexpected demand at several key stations, including injury risk assessment and BMD screening.

Prevalent low BMDs, low BMD screening rates, and recent reports on calcium and pharmacological interventions support the need for intensified efforts to identify alternative methods of fracture prevention.^{10–12}

Several aspects of the initial pilot program were identified as needing improvement. Efforts to refine the program include: (1) coordination of referrals through a centralized station at the event; (2) improved follow-up with increased access to services for high-risk participants after the event; (3) increased emphasis on fracture education, prevention, and

screenings for low BMD; (4) culturally appropriate educational materials; and (5) increased risk assessment screening before and on the health fair day.

The injury prevention fair with cross-specialty physician and community agency participation was a well-accepted model for initiating assessment of highly complex issues associated with injury prevention in adults and seniors. Comprehensive injury risk assessment was essential for identifying modifiable risks at the individual level. The injury prevention fair model provided a mechanism (1) to identify risk, (2) to deliver counseling and educational materials, (3) to distribute safety devices, and (4) to improve access to and screening by health care professionals for risk factor identification and reduction. ■

About the Authors

At the time of the study, Joyce C. Pressley was with the Mailman School of Public Health, Columbia University, New York, NY, and the Injury Free Coalition, New York. Barbara Barlow was with Columbia University, Harlem Hospital, and

TABLE 2—Selected Variables Reported During Injury Risk Assessments Conducted Among Community-Dwelling Older Adults Using the Comprehensive Injury Risk Assessment and Reduction for Elderly Populations Survey: New York, 2005

| | % of Participants Who Reported Positive Responses | | |
|--|---|----------------------|---------------------|
| | Age 50–64 y (n = 34) ^a | Age 65–74 y (n = 34) | Age ≥ 75 y (n = 21) |
| Vision | | | |
| Wear corrective lenses | 88.2 | 88.2 | 100.0 |
| Had vision checked in last year | 58.8 | 47.1 | 47.6 |
| Hearing | | | |
| Have difficulty hearing | 8.8 | 8.8 | 30.0 |
| Ever had hearing tested before | 48.0 | 44.0 | 57.9 |
| Use hearing aid | 2.9 | 5.9 | 10.5 |
| Physical and cognitive activities (% with difficulty) | | | |
| Walking indoors | 23.5 | 32.4 | 14.3 |
| Walking outdoors | 29.4 | 29.4 | 28.6 |
| Climbing or descending stairs | 33.3 | 23.5 | 28.6 |
| Remembering things | 17.6 | 11.8 | 23.8 |
| Fall risks | | | |
| Have grab bars in bathroom or shower | 17.6 | 41.2 | 66.7 |
| Have handrails on stairs | 75.8 | 89.3 | 72.2 |
| Have nightlights | 64.7 | 70.6 | 71.4 |
| Poison prevention and medication safety | | | |
| Use pill organizer | 56.3 | 67.7 | 75.0 |
| Could not read fine print on medication bottle with or without corrective lenses | 39.4 | 29.4 | 42.9 |
| Could not read print on medication bottle with lighted magnifying glass | 20.6 | 8.8 | 4.8 |
| Fire and burn prevention | | | |
| Have smoke alarm or detector | 91.2 | 100.0 | 90.5 |
| Use timer for cooking | 29.4 | 45.5 | 52.4 |
| Home temperature regulation | | | |
| Have room thermometer | 15.2 | 23.5 | 14.3 |
| Have air conditioner | 78.8 | 48.5 | 71.4 |
| Have cooling fans | 84.4 | 84.8 | 88.2 |

^aDenominator may be less than the total number of participants because of unanswered questions.

the Injury Free Coalition, New York. Lodze Quitel was with Harlem Hospital, New York. Aisha Jafri was a summer research assistant and an MPH student at the Mailman School of Public Health, Columbia University, New York.

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Contributors

J. C. Pressley originated the idea for the injury prevention fair, participated in prefair planning, conducted injury risk assessments, and wrote the brief. B. Barlow participated in prefair planning, recruitment of participating departments, and funding assurances; supervised activities on fair day; and reviewed article drafts. L. Quitel participated in prefair planning,

handled prefair coordination of participating departments, conducted injury risk assessments, and commented on article drafts. A. Jafri worked tirelessly on fair preparations, conducted injury risk assessments, entered data, and reviewed and commented on the article.

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Human Participant Protection

Institutional review board approval for this project was provided by the Harlem Hospital Center institutional review board.

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