A Community Home Inspection Approach to Preventing Falls Among the Elderly

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Synopsis

Falls are the leading cause of accidents among those ages 65 and older and the largest single cause of death due to injury of the elderly. Environmental factors play a key role in the probability of a fall in the homes of the elderly. A community health promotion team approach can reduce the prevalence rate of injuries due to falls by eliminating the risk factors precipitating the injuries.

A comprehensive program in Wilmington, OH, will incorporate the use of the community senior citizens' center, the local college, fire department, local radio stations and newspapers, community churches, local merchants, educators, and the medical community. Extrinsic factors that previously have been linked directly to falls will be identified in the home inspections. The "Fixer-Up-Team," composed of college students and community volunteers, will rectify any unsafe condition found by the inspection team. Local merchants and lumber yards will donate materials to make needed repairs. Active senior citizens will be trained as part of the inspection team, allowing this program to be self-perpetuating.

Compared with the national prevalence rates, this program will show a decrease in injuries caused by falls in the homes of the participants of this program.

FALLS ARE THE LEADING cause of fatal and nonfatal injury in persons ages 65 and older (*1–4*) and are the largest single cause of death due to injury in the elderly (*5*). It is projected that the number of persons in the United States ages 65 or older will increase to more than 33 million by the year 2000, and one-third will require medical attention as a direct result of a fall (*6*). Falls and the resulting injuries can have a dramatic impact on self-confidence and independence, often leading to decreased mobility, increased debility, and diminished quality of life as well additional strain on health services (*7,8*). The loss of self-esteem and the fear of repeated falls are psychologically damaging to the elderly (*9*).

Literature Summary

Falling is most prevalent in women. It becomes more frequent with advancing age, although the numbers reported are conservative since most falls of the elderly go unreported (*5*). Incidence rates have been explored through several community-based studies (*10–13*) and hospital-based surveys (*14–19*) as well as studies in long-term care facilities (*20–24*).

Hip fracture is the most commonly treated fall injury (*25*), with approximately 200,000 hip fractures reported annually in older people. Of those admitted to the hospital after a fall, only about half will be alive a year later (*20,26*). Repeated falls are often the reason for admission of previously independent elderly persons to long-term institutions (*27*). The 200,000 hip fractures each year cost $2 billion, or $10,000 per fracture (*28*).

Although the costs of falls in the United States are not known, injuries account for between $75 billion and $100 billion each year in direct and indirect costs, according to the Committee on Trauma Research (*4*). The Surgeon General's 1979 report, "Healthy People," indicated that many deaths and injuries due to falls were preventable. Environmental factors, such as stairway design and disrepair, inadequate lighting, and slipping and tripping on water, ice, clutter, loose rugs, or electrical cords, may also play a key role in the occurrence of a fall (*2*).

One of the most common fears in the elderly is the "fear of falling." This awareness of possible injuries leads the elderly to a decreased "quality of life." The study by Wolf-Klein and coworkers shows evidence that the most important factor in

preventing falls is through providing patients and caregivers information that increases awareness of home hazards (*28*).

The etiology of falling episodes shows intrinsic and extrinsic factors involved (*5*). The extrinsic factors all deal with the following home environment factors:

1. bathroom: slippery floor and bathtub, lack of grab bars, and low toilet seats;
2. bedroom: high bed, inadequate lighting, sliding carpets, slippery floor, and non-locking bed wheels;
3. stairs: lack of handrails, poor lighting, high steps, and worn stair treads;
4. dining room: slippery floors, incorrect chair height, lack of armrests, and inadequate lighting; and
5. kitchen: cabinets too high, use of chairs to climb on, slippery linoleum floors, loose rugs, insufficient lighting, and glare from floors.

Goals and Objectives

Program goal. The incidence rate of hip fractures due to falls in the over-60 population in Wilmington, OH, will be decreased through an education seminar program and a home safety inspection.

Program objective. The incidence rate of hip fractures due to falls will be reduced for the Wilmington, OH, population by 10 percent within the first year of the program.

Behavioral objectives: (*a*) 80 percent of the members of the Wilmington Senior Citizen Center will have a free home safety inspection and followup visit for making corrections during the first year of the program. (*b*) A home safety seminar workshop will be conducted on the first Tuesday of every month at the senior center for the entire first year of the program. (*c*) 75 percent of the corrections or adjustments suggested by the home inspections will be corrected by the "Fixer-up-Team" within 2 weeks of referral from the inspection team.

Behavioral learning objectives: (*a*) Knowledge. By the end of the program, 90 percent of the 300 members of the center will be able to identify potential home hazards, suggest a way to correct hazards, and state the two major causes of falls. (*b*) Beliefs. By the end of the program, 80 percent of the members will believe that hazards lead to injury, that prevention is a wise choice, and will be

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lieve in community interest. (*c*) Skills. By the end of the program, 70 percent of the members will be able to correct three common home hazards, complete a safety questionnaire, and assist in performing a home hazards survey for another elderly person not involved in this program.

It is the purpose of this study to decrease falls through a cooperative effort involving many components of a rural community. The chosen site for this program, Wilmington, OH, is a small rural town serving as the county seat of Clinton County. Three major cities are within 65 minutes via an interstate highway system. According to the U.S. Bureau of Census in 1980, Wilmington's population was 10,431, with 1,472 older than 65. The projected population shows a predicted growth in the elderly population, especially in the 75 and older age bracket. The mean family income is $21,201 and the median is $19,255. The per capita income is $6,815, with an unemployment rate of 7.0 percent.

The surrounding area has 14 nursing homes and assisted living facilities. One county-owned hospital with a capacity of 152 beds is staffed by 29 physicians and 12 dentists. Two orthopedic surgeons are located within the city limits and have full privileges at the local hospital. "HealthSense" is the hospital's community health education component that offers preventative and alternative lifestyle programs.

The Wilmington Senior Citizens' Center is free to community members over the age of 60. Many activities and trips are planned, and noon meals served through the local hospital. Regular exercise classes are attended twice weekly by approximately 50 members. Recreational equipment is used daily, and there is good attendance when guest speakers or special programs are scheduled. The members are active in other community affairs.

Estimated Budget for Fall Prevention Program

Personnel:	
Director (full time)	$ 35,000
Secretary (part time)	4,500
Supplies:	
Office	800
Educational materials	3,000
Services:	
Telephone	250
Data processing	500
Subtotal	$ 44,050
Indirect costs (calculated at 17 percent of total)	7,488
Total	$ 51,538

Since predisposing factors will greatly influence the success of this program, it is imperative that the values and beliefs of these senior citizens be fully understood. Because this age group is conservative in its clothing and shoe styles, this must be taken into consideration. The income level will prohibit many from buying new shoes, so the backup idea of fitting inserts to make the heel non-slip is important. Other financial assistance, such as discounts at a local shoe store and free cab fare for transportation, will help reinforce the beliefs, attitudes, and perceptions that the community cares. The strong belief in independence must not be upset, so this program will be approached as a helping assignment, and the seniors will not be asked to change their ways, only adopt a safer way of doing things. The value placed on such potentially hazardous items as throw rugs is important to note. The elderly will not be asked to discard or remove any, but checks will be done to see that the loose rugs are secured to the floor.

Enabling factors include the availability of inspection teams working with the fire department, the donations of local merchants, help from churches, free transportation, and reduced prices at shoe stores. The Sertoma Club at the local college will be asked to allow students academic credit for participating in inspections and working on the "Fixer-Up-Team". The City Council will be asked to proclaim a "Senior Citizens Day" for public awareness. Grants will be requested to help defer any costs above donations.

Reinforcing factors could include peer pressure from fellow members of the Senior Citizens' Center, which could add to the compliance rate. Community, family, and church members could enhance the reinforcing factors. Additional factors could include the local physicians and county health department.

Methodology

All involved agency representatives will be invited early in the planning phase to insure adequate, active, and timely participation for coordinating, planning, and implementing of the entire project. All personnel will be kept fully informed by meetings held in various locations with differing formats to gain input from all agencies.

In the preparation phase, program and service components will be asked to develop clearly delineated functions and responsibilities within the context of the objectives, philosophy, and limitations of the program. The recruitment and training of staff members and volunteers will be followed by a pretest of all components of the program on a sample target population of community leaders. The personnel, facilities, budget, equipment, supplies, record-keeping forms, and referral sources will be tested during this pilot test.

The implementation phase will start with an initial contact of senior citizens through the local radio station. On the "Community Contact Hour," speakers (including an orthopedic surgeon, local fire chief, educators, and health promotion specialist) will present informative talk shows stressing problems associated with falls by the elderly. After 2 weeks of raising concerns about falls, the project's director will announce a program to be held at the local senior center preceding the noon meal on a designated Tuesday. At this meeting a film will show typical hazards in and around the home that lead to falls. Following this, a peer group discussion will take place. This method will be chosen so that the elderly do not feel threatened or spoken down to.

After the awareness and needs have been established, the project director will coordinate times for a safety survey to be done in each home. At this time, all consent forms will be signed so that the participants understand that they can withdraw at any time. This permission procedure also complies with the State laws that require firemen to be invited into the home. The home survey will be done on a one-on-one basis through an individual instruction format for each participant. The inspection personnel will use materials written at a low reading level designed in a check list format, along with easy-to-understand pictures.

Significance

This type of a pilot project can be carried out easily and effectively in this area because most

members of the community are acquaintanced with each other. Too often, rural areas are ignored in health programs. This project encourages several integral components of one community to work together in a program that addresses a national concern. The project can enhance the quality of life of these people and reduce medical costs. The program's emphasis is placed on individual responsibilities as well as on community efforts.

Evaluation

Evaluation will address the size and complexity of the program within the overall framework of the community effort. The participating elderly persons and all staff members will be asked to fill out questionnaires to determine if the program objectives have been met. The participants will look at the knowledge, skills, attitudes, and abilities of staff members at the end of the program. The rates of compliance and adherence will be checked at 6 months and then 1 year after completion of the project through followup home inspections and consultations with orthopaedists and hospital personnel.

The project director will look at the interworking relationships of all agencies involved, gaining feedback from all parties. The goals and program objectives will be examined to determine if they were met. Representatives from each participating group will evaluate how well all of the involved groups worked together. This step will be essential for several reasons. If these groups want to work together in the future, it will be imperative that all feel the project is conducted properly and is successful. Future projects and the possibility of other undertakings involving all of the parties will depend on the success of this program.

References

1. Lambert, D. A., and Sattin, R. W.: . Deaths from falls, 1978-1984. MMWR 37: 55-1, Surveillance Summary, February 1988, pp. 21-26.
2. Baker, S. P., O'Neill, B., and Karpf, R. S.: The injury fact book. Lexington Books, Lexington, MA, 1984.
3. Accident facts. National Safety Council, Chicago, 1985.
4. Injury in America. Committee on Trauma Research, Commission on Life Sciences, National Research Council, and the Institute on Medicine. National Academy Press, Washington, DC, 1985.
5. Tideiksaar, R., and Kay, A. D.: What causes falls? A logical diagnostic procedure. Geriatrics 41: 32-50 (1986).
6. Statistical abstract of the United States. Bureau of Census, U.S. Department of Commerce, Washington, DC, 1985.
7. Granek, E., et al.: Medications and diagnoses in relation to falls in a long-term care facility. J Am Geriatr Soc 35: 503-511 (1987).
8. Tinetti, M. E., Williams, F., and Mayewski, R.: Fall risk index for elderly patients based on number of chronic disabilities. Am J Med 80: 429-434 (1986).
9. Nickens, H.: The psychiatric consultant's approach to elderly falls. Hosp Community Psychiatry 35: 1190-1191, 1248 (1984).
10. Exton-Smith, A. N.: Functional consequences of aging; clinical manifestations. *In* Care of the elderly: meeting the challenge of dependency, edited by N. Exton-Smith and J. Grimley-Evans. Academic Press, London, 1977, p.41.
11. Perry, B. C.: Falls among elderly: review of methods and conclusions of epidemiological studies. J Am Geriatr Soc 30: 367-371 (1982).
12. Gabell, A., Simons, M. A., and Nayak, U. S. L.: Falls in the healthy elderly: predisposing causes. Ergonomics 28: 965-975 (1985).
13. Rubeinstein, L. Z., et al.: Falls and instability in the elderly. J Am Geriatr Soc 36: 266-278 (1988).
14. Scott, C. J.: Accidents in hospital with special reference to old people. Health Bull (Edinb) 34: 330-335 (1976).
15. Sehested, P., and Severin-Nielsen, T.: Falls by hospitalized elderly patients; causes, prevention. Geriatrics 32: 101-108 (1977).
16. Morris, E. V., and Isaacs, B.: The prevention of falls in a geriatric hospital. Age Ageing 9: 181-185 (1980).
17. Berry, G., Fisher, R. H., and Lang, S.: Detrimental incidents, including falls, in elderly institutional population. J Amer Geriatr Soc 29: 322-324 (1981).
18. Catchen H.: Repeaters: inpatient accidents among hospitalized elderly. Gerontologist 23: 273-276 (1983).
19. Morgan, V. R., et al.: Hospital falls; A persistent problem. Am J Public Health 75: 775-777 (1985).
20. Gryfe, C. I., Amies, A., and Ashley, M. J.: A longitudinal study of falls in an elderly population: I. Incidence and morbidity. Age Ageing 6: 201-210 (1977).
21. Miller, M. B., and Elliott, D. F.: Accidents in nursing homes: Implications for patients and administrators. *In* Current issues in clinical geriatrics, edited by M.B. Miller. Tiresias Press, New York, 1979, p. 97.
22. Louis, M.: Falls and their causes. J Gerontol Nurs 9: 142-149 (1983).
23. Colling, J., and Park, D.: Home, safe home. J Gerontol Nurs 9: 175-179 (1983).
24. Blake, C., and Morfitt, J. M.: Falls and staffing in a residential home for elderly people. Public Health 100: 385-391 (1986).
25. Hongladarum, G. C.: Analysis of the causes and prevention of injuries attributed to falls: a study for the Centers for Disease Control. Public Health Service, Washington DC, 1977, pp. 160-165.
26. Overstall, P. W.: Falls in the elderly—epidemiology, aetiology and management. *In* Recent advances in geriatric medicine, edited by B. Isaacs. Churchill Livingstone, New York, 1978, p. 61.
27. Rodstein, M.: Accidents among aged: incidence, causes and prevention. J Chronic Disorders 17: 515-526 (1964).
28. Wolf-Klein, G. P., et al.: Prevention of falls in the elderly population. Arch Phys Med Rehabil 69: 689-691 (1988).