

Falls and Injuries Among Elderly In Alor Gajah



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OBJECTIVE

- General objective:
 - To describe the prevalence of injury and fall among elderly
- Specific Objective:
 - To describe the prevalence, pattern, type and consequence of injury and fall.
 - To describe the associated factor related to SD, depression, cognitive function, activities of daily living, balance and gait, home environment



INTRODUCTION

- Falls and injury are common among elderly and often associated with significant morbidity and mortality.
- Chronic illnesses, drug usage, cognitive and mood impairment, increasing age and balance and gait
- Problem are those categorized as intrinsic factors.
- While the extrinsic factors include environmental defects such as home and surrounding atmospheres.
- It then may result in severe physical injuries and negative psychological impact.



METHODOLOGY

- Study design: Cross sectional study
- Study population: Elderly who has been followed up in Klinik Warga Emas, Alor Gajah.
- Setting: Daerah Alor Gajah
- Duration: 3 weeks
- Sample size calculation:

The estimated prevalence of fall among elderly is around 20% based on results from previous study. Through Epi Info, calculated sample size: 250 subjects to justify our results. It was further inflated by 10% to 275 subjects.
- Sampling method: Systematic sampling (1 in 3).
- Sampling frame : 3000
- Inclusion criteria: Patients living within 12km from Klinik Kesihatan Alor Gajah (Alor Gajah Health Clinic).



METHODOLOGY

- Conduct of study:
 - Questionnaire consisting of structured questions
 - conducted through face to face interview.
 - Secondary data from Klinik Kesehatan Alor Gajah pertaining to physical examination
- Exclusion criteria:
 - Refusal, passed away, moved out
- Questionnaire
 - Part A: Social demography, patient's medical problems, patient's current mood, cognitive function, and dependency index
 - Part B: Assessment of fall and injury in past 1 year
 - Part C: Assessment of balance and gait based on Tinetti tool
 - Part D: Assessment for risk of fall base on patient's home condition



METHODOLOGY

- VARIABLES
 - Sex
 - Age
 - Ethnicity
 - Marital status
 - Working status
 - Living status
 - Polypharmacy
 - Medical illness
 - Mood score
 - Cognitive function
 - Daily activity
 - Fall and injury assessment
 - Balance and gait
 - Floor element

- DATA MANAGEMENT
 - Cleaning up of data
- Statistical analysis (SPSS version 13.0)
 - Descriptive
 - Inferential



RESULTS

- Accidents
 - 68 (26.9%) of our respondents had accidents for the past 1 year.
 - 56 (22.13%) had falls, 13 (5.14%) had motor vehicle accidents and 2 (0.79%) had burns.
- Injuries from Accidents
 - Among those who had accidents, 33 (48.5%) sustained injuries.
 - The most common injuries are swelling (9, 27.27%), laceration (9, 27.27%) and fracture (8, 24.24%).
- Falls
 - Most of the falls occurred inside the house (23 cases, 41.07%)
 - Out of this fall, 10 cases occurred at the same level (43.48%)
 - Most of the fall occurred in the morning (24 cases, 42.86%)
 - The commonest type of fall is slip (31 cases, 55.36%)



RESULTS

Injuries from Falls

- Out of the 56 respondents that had a fall, 26 (46.43%) sustained injury.
- The most common injury sustained are bruises (7 cases, 28%), swelling (6 cases, 24%), and fracture (6 cases, 24%)

Table of significant association between working status and falls

		Fall		χ^2	p
		Yes	No		
Working status	Working	14 (34.10%)	27 (65.90%)	4.096	0.043
	Not working	42 (19.80%)	170 (80.20%)		



RESULTS

Table of significant association between balance and gait with falls

		Fall		X^2	p
		Yes	No		
Balance and gait	High risk for fall	6 (50.00%)	6 (50.00%)	5.676	0.028
	Moderate/ low risk for fall	50 (20.70%)	191 (79.30%)		



RESULTS

All the following factors are associated with a higher prevalence of fall but no association is established:

- Sex
- Age
- Marital status
- Living status
- Polypharmacy
- Medical illness
- Mood
- Floor element
- Dependency
- Cognitive function



DISCUSSION

- Accidents and Falls
- Most common accident among the elderly is fall
 - The high prevalence of fall in the elderly is most probably due to the presence of many of its risk factors in this group
- Fall usually occur inside the house compare to out of the house
 - Tend to spend more time at home
 - Those that are able to go out may be more independent and fit



DISCUSSION

- Falls
- Majority occur at the same level
 - poor illumination, clutter or wet floor
- Mostly occur in the morning
 - most of the elderly have their activities and ambulation during the morning compare to noon and evening which are more of their resting time
- The commonest type of fall is slip
 - Unsecured carpet and slippery floor
- Most of the injuries incurred in falls are bruises and laceration.
 - Elderly could even sustain fracture from fall especially those with low bone density.



DISCUSSION:

RISK FACTORS FOR FALL

1. Working status

- There is an association between fall and working status.
- It may sound ironic, but it has been shown in an American study that those who are inactive fall more than those who are moderately active provided they are doing so in safe environment¹.
- This theory is supported by the fact that muscle atrophy resulting from disuse² can cause instability and cognitive impairment³ and depression⁴, both risk factors for fall are seen more often in the non-working group.
- However this theory could not be applied in our study population
- Most of our working respondents are doing manual work in the rubber estate or managing their own orchard.



DISCUSSION

1. Working status

- The nature of their job that is physically demanding and the working environment that promotes fall (such as uneven earth surface and poor lightning early in the morning) increases their risk of falling
- The non-working elderly in our study population are not leading an overt sedentary lifestyle.
- They still keep themselves occupy with household chores and taking care of their grandchildren. These leisure activities slow down the aging process (including vision, auditory and cognitive deterioration) and thus reduce the relative risk for fall.



DISCUSSION

2. Balance and gait

- Medical conditions leading to falls often present with symptoms of balance and gait impairment.
- Balance disorders can be caused by impairment of vision, vestibular function, postural muscle response and proprioception ⁵
- There is an association between impaired balance and gait with fall.
- Balance and gait impairment causes inability to prevent a slip, trip or stumble becoming a fall
- Muscle weakness is a significant risk factor for fall (OR=4.4), as is gait deficit (OR= 2.9) balance deficit (OR=2.9) and the use of an assistive device (OR=2.6)⁶
- Any lower extremities disability (loss of strength, orthopedic abnormality or poor sensation) is associated with increased risk.^{7,8,9,10}
- Difficulty in rising from the chair is also associated with increased risk.^{11,12}



LIMITATIONS

1. The subjects were chosen from patients who were being followed up in the Alor Gajah Health Clinic. This may introduce selection bias into our study.
2. There may be differences in the distribution of age, ethnicity, sex, social economical and health status between this small group of elderly and the elderly population in the community at large.
3. This reduced the applicability of our results in terms of generalization.
4. Data such as injury and fall assessment were gathered from self-reporting and not verified by any records.
5. There could be elements of over or under reporting happening.
6. This was a study on period prevalence (one-year recall). Therefore, some amount of recall bias had to be taken into consideration.



LIMITATIONS

7. There may be some error in the secondary data that we collected from Klinik Kesehatan Alor Gajah.
8. The survey was conducted by 30 interviewers and parts of the assessment were quite subjective in nature resulting in an inevitable intra and inter observer bias.
9. There may be some error in the secondary data that we collected from Klinik Kesehatan Alor Gajah.
10. This may introduce information bias.
11. Our study is cross sectional and may therefore be susceptible to reverse causality.
 - Example; with respect to the effects of antidepressants and hypnotics or anxiolytics, it is possible that having had a fall may lead to anxiety or depression and therefore treatment for these conditions.



RECOMMENDATIONS

- There are many different strategies in the prevention of fall.
- The effectiveness of a strategy may differ in institutional or community dwelling elderly.
- There are basically 2 approaches:
 - Individual approach
 - Community approach



RECOMMENDATIONS

Individual approach in community dwelling elderly

1. Gait training and advice on appropriate use of assistive devices.
2. Review and modification of medications.
3. Exercise program, balancing training.
4. Treatment of acute & chronic disease.
5. Health promotion and education.
6. Modification of environmental hazards:
 - Secure carpet edges
 - Reduce clutter
 - Adequate illumination
 - Install grab rail in bathroom
 - Use rubber mat in bathroom
 - Install handrails on staircases



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