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RESEARCH ARTICLE

ASSESSMENT OF FALL RISK AMONG ELDERLY IN HOME ENVIRONMENT IN AL-HASA

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Abstract

Introduction and Aim: Fall it is an accident that unintentionally breaks down a person on the floor, the surface of the earth, or any other low level. The goal of this study was to estimate the prevalence of falls among the elderly and investigate the factors that contribute to this study.

Method: The study design was quantitative, descriptive that surveyed for elderly risk of fall and their caregivers, using google form. The study was conducted by a two questionnaire type assessment, 8 questions were used to assess each questionnaire, using fall efficacy scale International with four options (not at all concerned, somewhat concerned, fairly concerned, very concerned), and using Modified Barthel index scale with three options (No, complete dependence, yes, partially assist, and independence).

Result: People who are 65 Years old and above were 140 participated in the study. In Barthel index study about (32.9% - 52.1%) was independence, and about (29.3% - 48.6%) were need partial assist, and about (18.6% - 36.4%) were complete dependence. In fall efficacy scale about (6.4% - 42.9%) were not at all concerned, and about (12.9% - 31.4%) were somewhat concerned, and about (12.9% - 29.3%) were fairly concerned, and about (12.9% - 57.1%) were very concerned.

Conclusion: The elderly stage is the most stage or period that the human will have many conditions that enhance to fall.

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Introduction:-

[1] Kellogg International Work Group .This Group defined fall it is an accident that unintentionally breaks down a person on the floor, the surface of the earth, or any other low level. Most of the falls causes have no significant injuries, but there is a danger that will lead to many causes' broken bones, such as hip fracture, arm and ankle. There are several factors it can be changed or improved to help prevent falling. For example, vitamin D deficiency, weakness in lower limbs or some problem in balance that contributes falling. Some problem in senses can be also one of these factors.

Body

[1]Dan Med Bull .He explains elderly is a sensitive period in human life, in which elderly people are exposed to potential threats such as increasing of chronic health condition, low blood pressure, osteoporosis(bone

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weakness), vestibular disorders (balance impairment), loneliness, isolation, lack of social support, and because of their physical and mental disabilities, their autonomy has been threatened in many cases. It is the reason for mortality of unintentional injuries for elderly in the world very common. Elderly physical changes begin by entering into middle age. These changes have the greatest effect on muscle function by decreasing motor function, reducing muscle strength and muscle endurance. Thus, the physiological changes in the nervous and musculoskeletal system which occur during the ageing process and its effect on complex movements and cause the increasing of falls. Falling is the result of a complex interference of several risk factors. These factors are divided into four main groups: biological risk factors (age, sex, diseases, cognitive abilities), economic social (literacy, income, habitation, public health, social isolation), behavioral (Fears of falling, lifestyle, Taking medicines at the same time, stopping sports activities) and peripheral (Building design, stairs, Corridors, carpets and Slippery floors, fences, baths, washrooms). Several studies have shown that there is a relationship between domestic risks and falling. [1] Kellogg International Work Group. As such, this group will find that dangerous floor surfaces, stumbling snags, insufficient lighting, ineffectively structured or dim stairs without handrails to sit as expanding the danger of falling, stumbling or slipping for older individuals. [2] Tinetti et al. It focuses on around that 33% of individuals more than 65 years old will fall every year, in any event, when no injury happens, rehashed falls can cause lost certainty that may in the end lead to lasting habitation in an aged care facility. [3] Tinetti et al. This literature found no distinction in the quantity of dangers in the homes of fallers and nonfallers however bedrooms risks were related with falls. [4] Cummings et al. This literature demonstrated that hip fracture are the most genuine consequence of falls: 16% of women and 5% of men will have a hip fracture during their lives, most of these fractures happening after the age of 75 years. [5] Speechley and Tinetti. This study reported that environmental risks were additionally bound to add to falls in incredible more seasoned individuals than in frail older individuals. Nonetheless, they additionally found that while there was no impact of natural perils on fall rates among slight individuals, fiery individuals living with progressively environmental risks were bound to fall. [6] Day et al. According to this study indicated that 66% of falls in more older individuals happen in their homes, and most studies investigating why more older individuals fall have presumed that a blend of a few elements adds to a fall, and that the presence of certain factors—either intrinsic or extrinsic. [7] Studenski et al. These studies have been recently reported an expanded danger of falls related with a higher home risk score. [8] Clemson et al. This studied clarified about that extraneous factors regularly bring about excursions, slips, or stumbles, causing expanded fall chance, especially for community residence older adults whose homes may contain numerous perils. [9] Connell & Wolf. This study gives that most family units contain potential dangers, for example, free mats, flimsy furnishings and discouraged walkways, and older individuals ascribe their falls to excursions or slips inside the home or prompt home encompassing. [10] Masud and Morris. This literature clarified that by and large, fall chance elements are portrayed as being either extraneous or natural in starting point, notwithstanding characteristic and outward factors prompting expanded fall hazard, conduct fall chance variables are those that reflect decisions of older people as for how they connect inside their surroundings. [11] Shaw. This study discloses psychological hindrances add to falls by lessening judgment and by adversely influencing visual-spatial aptitudes, For instance, people with intellectual weaknesses (eg, Alzheimer malady) have around multiple times the danger of falling contrasted and people without cognitive impairments. [12] Hart-Hughes et al. This literature cleared that falls can bring about perpetual and basic outcome; including, injury, long haul inability, diminished action and mobility levels and fear of fall.

Summary

The elderly stage is the most stage or period that the human will have many conditions that enhance to fall. Not only the physical changes have a great impact in reducing muscles and decreasing motor function but also the physiological changes that may affect nervous and musculoskeletal those are responsible of many of complex movements. There are many factors that result falling and these factors are divided to many groups, it includes biological, economic social, behavioral and peripheral. There are some scales that use to assess the elderly performance like fall efficacy scale and Barthel index scale.

Justification:

Most of the elderly may have fall risk while doing the activity daily level (ADL) like: while cleaning overhead roof, or while bathing or toileting, while going up and down the stairs, and so on. So we assist the elderly activities like if he can do the activity independently, or need partial assist, or need complete assist. We do this assessment to know the patient ability while doing the daily activities and to prevent any fall risk as soon as possible and to let the elderly do the activities in comfortable and easy way.

Objective of the study:-**Aim of the study:**

This study was to estimate the prevalence of falls among the elderly and investigate the factors that contribute to this study.

Specific Objectives:

1. To find the prevalence of fall investigate risk factors.
2. To find out fear of fall (FOF) and its associate factors on elderly people.
3. To find the most common circumstances in home on elderly People.

Secondary Objective:

- 1- The Home environment will be assessing for any kind of fall risk.

Methodology:-**Study Area/Setting:**

This study Assessed elderly home environmental hazards for falls in one or more of the following settings: personal homes or apartments, public housing, and housing for older persons including retirement residences in Al Ahsa.

Study Subjects:**Inclusion Criteria:**

1. Geriatric people-Age above 65 years and frail
2. Only male subject.
3. Main home environment
4. Older patients with dementia
5. Assess environmental hazards for falls in one or more of the following settings: personal homes or apartments, bathrooms, indoor and outdoor area.

Exclusion Criteria:

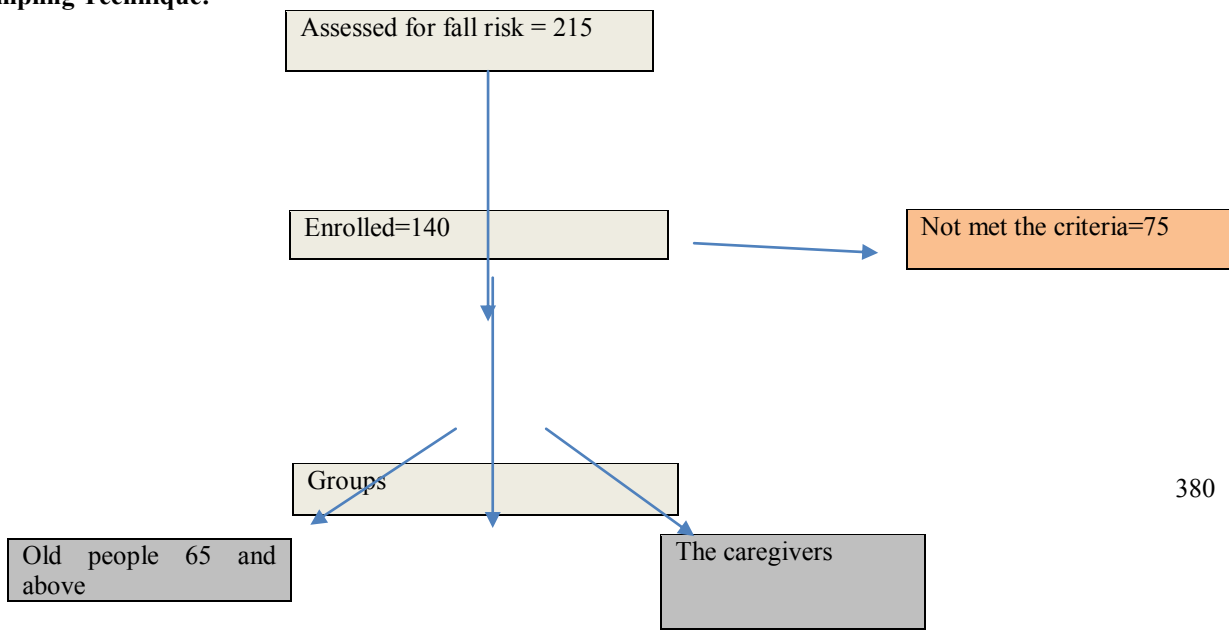
1. Hospital or long term settings
2. Less than 65 years old people
3. Female is excluded. Because Saudi culture and unable to measure the accessibility of females home area.

Study Design:

This study used a quantitative, Descriptive and survey design. This quantitative research study design is extensively used for human thinking and function. The descriptive study design is observing and describing the patient's behavior through a questionnaire. The survey design used for collecting data from the patient. This study statistical tool used for survey purpose.

Sample Size:

The number of participants in the study was 140 with a respond rate 65.1%

Sampling Technique:

This study to assess the Random Sampling Technique. This technique to evaluate through the issuing of a questionnaire to elderly persons. These persons are intending to circulate to other peers to participate in this survey. All Participants to ask them to complete all sections of the questionnaire. On meeting with participants this study is explain to them, their questions to be answer. The information sheet explains that informed consent is implied through voluntary participation in this survey.

Data Collection methods, instruments used, measurements:

Two questionnaires were used, Questionnaire fall efficacy scale, and Modified Barthel index scale.

Fall efficacy scale International

The Falls Efficacy Scale-International (FES-I) is a short, easy to administer tool that measures the level of concern about falling during 16 social and physical activities inside and outside the home whether or not the person actually does the activity. The level of concern is measured on a four point Likert scale (1=not at all concerned to 2=somewhat concerned 3=fairly concerned 4=very concerned) (Yardley et al., 2005). This scale is self-administered. In regard to the test-retest reliability for total FES-I scores, ICC values were 0.94 (CI 95% =0.90–0.96), and 0.91 (CI 95% = 0.86–0.94). FES-I Validity score $r = 0.50$ tests for functional movement and its quality $r = 0.51$ and independency in daily activities $r = 0.67$

Modified Barthel index scale

In the modified 10-item version, functional categories may be scored from 0 to 1, 0 to 2, or 0 to 3, depending on the function. 0=incontinent or need help 1=Major help 2=minor help 3=independent This scale is self-administered. This considerable inter-observer disagreement (95% CI of ± 4 points). There was evidence that the BI might be highly reliable in patients with elderly peoples and when scores obtained by patient interview are compared with patient testing. The role of assessor training and/or guidelines on the reliability of the MBI has not been investigated.

Data Management and Analysis Plan:

Descriptive analyses were conducted in IBM SPSS Statistics for Windows (version 24.0, Armonk, NY). Statically analyses included a summary of participant characteristic.

Results:-

The total result from the study (table 1) was 215 Saudis, 139 males (64.7%) and females were 76 (35.3%). People who are 65 Years old and above were 140 participants (65.1%) and 75 participants (34.9%) were under 65 years old. In other hand, people who are not 65 years old and do not take care about elderly people were 76 (35.3%) and the people who are 65 years old or caregivers 139 (64.7%).

The result from the study (table 2) the person who independently take care of his appearance were 46 (32.9%), and who need partial assistant 68 (48.6%), and participant who completely dependent 26 (18.6%). The person who uses bathroom independently 65 (46.4%) and who need partial assistant 46 (32.9%) and who is completely dependent 29 (20.7%). Also, the person who eat food independently 73 (52.1%) and who need partial assistant 41 (29.3%) and who completely dependent 26 (18.6%). In other hand, the person who is transfer from bed to chair and vice versa independently 55 (39.3%) and who need partial assistant 54 (38.6%) and who completely dependent were 31 (22.1%). The participants who are walk inside the house independently were 51 (36.4%) and who need partial assistant 62 (44.3%) and who are completely dependent 27 (19.3%). The participant who wears and takes off clothes independently 68 (48.6%) and who need partial assistant 44 (31.4%) and who need completely dependent 28 (20%). The people who are go up and down from stairs independently 37 (26.4%) and who need partial assistant 52 (37.1%) and who completely dependent 51 (36.4%). The participant who takes a bath independently 68 (48.6%) and who need partial assistant 44 (31.4%) and who are completely dependent were 28 (20%).

The result from the study (table 3) was people who were not concerned while cleaning house 18 (12.9%) and who are somewhat concerned 42 (30%) and who are fairly concerned 41 (29.3%) and who very concerned 39 (27.9%). In other hand, the participant who are not concerned while wearing and taking off clothes 60 (42.9%) and who somewhat concerned 44 (31.4) and who fairly concerned 18 (12.9%) and who very concerned 18 (12.9%). People who are not concerned while preparing the food 53 (37.9%) and who somewhat concerned 39 (27.9%) and who are fairly concerned 23 (16.4%) and who are very concerned 25 (17.9%). Also, participants who are not concerned while taking a shower and using toilet were 34 (24.3%) and who somewhat concerned 43 (30.7%) and who are fairly concerned 25 (17.9%) and who are very concerned 38 (27.1%). People who are not concerned while going up and

down from stairs 18 (12.9%) and who are somewhat concerned 37 (26.4%) and who are fairly concerned 36 (25.7%) and who are very concerned 49 (35%). The participant who are not concerned while taking things from high roofs or from the floor were 23 (16.4%) and who somewhat concerned 39 (27.9%) and who are fairly concerned 25 (25.7%) and who are very concerned 53 (37.9%). People who are not concerned while going to answer the phone before it stops ringing were 44 (31.4%) and who are somewhat concerned were 44 (31.4%) and who are fairly concerned 30 (21.4%) and who are very concerned 22 (15.7%). Finally, the participant who are not concerned while walking on a wet floor were 9 (6.4%) and who are somewhat concerned were 18 (12.9%) and who are fairly concerned 33 (23.6%) and who are very concerned 80 (57.1%).

Table 1:-

Demographic Data				
sex	Frequency		Percentage	
Male	139		(64.7%)	
Female	76		(35.3%)	
Age	Frequency		Percentage	
65 years and above	140		65.1%	
Under 65 years	75		34.9%	
	Frequency		Percentage	
No, I am not 65 years and I don't take care of elderly people	76		35.3%	
Yes, I am 65 years old or I take care of elderly	139		64.7%	
	Independence	Yes, partially assist	No, complete dependence	
Can the person take care of his appearance?	46 (32.9%)	68 (48.6%)	26 (18.6%)	
can the person use the bathroom independently?	65 (46.4%)	46 (32.9%)	29 (20.7%)	
can the person eat food independently?	73 (52.1%)	41 (29.3%)	26 (18.6%)	
can the person transfer from bed to chair and vice versa?	55 (39.3%)	54 (38.6%)	31 (22.1%)	
can the person walk inside the house comfortably?	51 (36.4%)	62 (44.3%)	27 (19.3%)	
Can the person wear and	68 (48.6%)	44 (31.4%)	28 (20.0%)	

take off clothes?			
can the person go up and down from stairs?	37 (26.4%)	52 (37.1%)	51 (36.4%)
can the person take a bath independently?	68 (48.6%)	31.4%) (44	28 (20.0%)

Table 2:

Barthel Index Scale

Table 3:

Fall Efficacy Scale

	Not at all concerned	Somewhat Concerned	Fairly concerned	Very concerned
while cleaning house (wipe the floor, wipe high roofs, etc...)	18 (12.9%)	42 (30.0%)	41 (29.3%)	39 (27.9%)
while wearing and taking off clothes	60 (42.9%)	44 (31.4%)	18 (12.9%)	18 (12.9%)
while preparing the food	53 (37.9%)	39 (27.9%)	23 (16.4%)	25 (17.9%)
while taking a shower and using toilet	34 (24.3%)	43 (30.7%)	25 (17.9%)	38 (27.1%)
while going up and down from stairs	18 (12.9%)	37 (26.4%)	36 (25.7%)	49 (35.0%)
while taking things from high roofs or from the floor	23 (16.4%)	39 (27.9%)	25 (25.7%)	53 (37.9%)
while going to answer the phone before it stops ringing	44 (31.4%)	44 (31.4%)	30 (21.4%)	22 (15.7%)
while walking on a wet floor	9 (6.4%)	18 (12.9%)	33 (23.6%)	80 (57.1%)

Discussion:-

Many studies have exposed that there is connection between domestic risks and falling. [1] Such as, this group would discover that unsafe floor surfaces, stumbling snags, poor lighting, ineffectively structured or dim stairs without handrails to sit as growing older people's risk of dropping, stumbling or slipping for elderly people. [2] It focuses on the fact that 33 percent of people over 65 years of age would fall annually, in any case, when no accident occurs, rehashed falls can cause lack of certainty that can eventually lead to permanent accommodation in an aged care facility. [3] The quantity of hazards in the homes of fallers and non-fliers did not vary in this literature, but bedroom hazards were correlated with falls. [4] This literature indicates that the most real result of falls is hip fracture: 16% of women and 5% of men would have a hip fracture during their lives, with most of these fractures occurring after age 75. [5] The study informed that environmental hazards were additionally bound to increase to falls in incredible more seasoned people than in frail elder individuals. However, they furthermore found that while there was no influence of natural perils on fall rates among slight individuals, fiery individuals living with increasingly environmental risks were bound to fall. [6] The study showed that 66% of falls in extra elder individuals occur in their homes, and most studies exploring why more elder individuals fall have supposed that a blend of a few elements adds to a fall, and that the presence of certain factors either intrinsic or extrinsic. [7] The expanded risk of falls associated with a higher home risk score has recently been identified in these studies. [8] This study explained that foreign influences frequently contribute to excursions, slides, or stumbles, creating increased

risks of dropping, particularly for older adults whose homes can include various dangers. [9] This analysis indicates that too many family units contain possible risks, such as free mats, poorly constructed furnishings and discouraged walkways, and older people ascribe their spills to hikes or slides within the house or prompt home. [10] This literature explained that by and wide, elements of fall chance are represented as either alien or normal in the starting point, despite characteristic and external influences that cause increased fall risk, variables of fall chance are those that represent more elderly people's choices as to how they communicate within their environment.[11] This study reveals that psychological hindrances add to falls by reducing judgment and adversely affecting visual-spatial abilities, for example people with intellectual weaknesses (e.g. Alzheimer's disease) have the risk of falling contrasted and people without cognitive impairments approximately several times. [12] This literature clarified that falls could produce perpetual and fundamental results, including injury, long-term inability to fall, decreased levels of activity and mobility, and worry of fall.

Implication:

In our days, Elderly people facing many problems in their environment that limit them from doing activity that is helpful for them. As we know that the aging is natural processes that affect the physical and cognitive part of the individuals. The physicians and the medical staff recommended to the elderly patients who face barriers in their environment some device that is more helpful and more stable to their situations. The home environment and various aspects of surrounding locations strongly influence their wellbeing and quality of life. This device can help them in many sites such as, home, work and anywhere you name it. Many devices can restore confidence to them by walking, increase mobility and provide family members with peace of mind and any occupation they do by it. In same stages of the person life specially above 65 years, person may have to take some strategy from the medical care stuff OT, PT and the consulting, and he/she must follow it, so that will modify to them the using of the assistive devices or adept in their life.

In our region Al-Ahsa or Saudi Arabia at all, they till now some people don't believe in Home modifications and they see is not important but, on the other hand, the assistive device or any modifications that apply in environment for elderly patient is important to them in they found it like golden or meaningful assist, so the modifications for elderly patient are important not in their home only also in any place that people can go to. Assistive technologies can make a major contribution to the security, safety and quality of life of the elderly living at home, there are limitations. Not all will benefit from or approve new supports and technologies for devices, and the status of individuals must be carefully evaluated.

Limitation:

The one of limitations that affect our study is that sample was not very clear, in begin we decided to visit home of elderly patients and make a record about the simple assist that must be apply at any house but regarding to the pandemic we should take care of the elderly patient especially who diagnosed with a chronic disease to make them safe. According to the pandemic situations, we make survey and publish it to elderly people or the caregivers of them around Al-ahsa region we take data in this way. The future for the home that include older patient is to give them the maximize assistance that modify and facilitate the life activities.

Conclusion:-

In Al-Ahsa region, we found that most home were not include modifications for elderly people that face problem to perform their occupations or activity that are helpful and meaningful to them. Each home at least must include or build with modifications that make old people perform activity with low effort.

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