

RISK PROFILE, KNOWLEDGE OF FALL AND PRACTICE OF SAFE BEHAVIOUR AMONG COMMUNITY-DWELLING ADULTS IN KANO METROPOLIS, NIGERIA

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Abstract

Background: People who grow older may increasingly be at risk for fall and are susceptible to injuries from fall. Fall-related injuries are associated with serious psychological and behavioural consequences including fear of recurrent fall and isolation. It is doubtful if knowledge of fall will be associated with the fall risk profile and safe behavioural practices among elderly.

Objective: The objective of this study is to determine if there is any association between knowledge of fall, fall risk profile and safe behaviour among community dwelling adults in Kano metropolis.

Methods: A cross-sectional survey of community-dwelling adults (n= 287) was carried out using Fall Knowledge Assessment Questionnaire, Desmond Fall Risk Questionnaire and Fall Behaviour Scale for the Older Persons. A snow balling sampling technique was used to recruit volunteers regardless of their education, gender, socio-economic status and irrespective of walking with aid or not.

Results: The results of this study showed that there was a weak significant correlation between the knowledge of fall and fall risk ($r = - 0.219$, $p < 0.05$) and no significant correlation was observed between knowledge of fall and behaviour ($r = 0.030$, $p < 0.05$) and behaviour and fall risk ($r = 0.090$, $p < 0.05$).

Conclusion: From the outcome of this study, it was concluded that there was a reciprocal relationship between knowledge of fall and fall risk among this cohort of elderly participants in Kano metropolis.

Keywords: *Risk profile, Knowledge, Behaviour, Fall, Community-dwelling adults*

Introduction

Falls and fall-related injuries constitute an important public health concern¹. Each year, one in three community-dwelling older adults (65 year or above) sustain a fall². Fall is a sudden, unintentional change in position causing an individual to land at lower level, on an object, the floor, or the ground, other than as consequences of sudden onset of paralysis, epileptic seizure or overwhelming external force³. About 20%-30% of fall results in serious injuries, and injuries care is costly⁴.

Population ageing and the increased tendency to fall with age, present a major challenge to health care providers and health system as well as for older people and their caregivers⁵. Older people make up a large and increasing percentage of the population of countries worldwide⁶. As people grow older they are increasingly at risk for fall and are susceptible to injuries from fall^{6, 7}. Falls are also associated with serious social and psychological consequences as people lose confidence in functional activities and become isolated and may therefore face restrictions in their activities⁸.

Evidence of falls in older adults in low and middle income countries is sparse, and there is a lack of standardized terminology and definition. Methodological and sampling differences make it difficult to generalize across diverse settings and populations⁹. A review of studies for falls has shown annual fall rates for older adults of between 14 and 51 % among Indians¹⁰. Studies in China, Hong Kong, Macao, Singapore and Taiwan¹¹ reported annual rates of falls for adults aged 60 years and over of between 14.7 and 34 %. In Nigeria, a study

conducted on fall incidence in a population of elderly persons in Nigeria showed that, of the 2,096 persons who responded to the question on fall, 23% reported having had a fall in the previous 12 months with females (24%) were more likely than males (17.9%) to have experience a fall¹².

Falls occur because of various complicated interactions rather than one factor, and are divided into internal and external risk factors¹³. The risk factors most commonly seen in hospital patients are previous falls, muscle weakness or difficulty in mobility, dementia, delirium, continence problems or urinary frequency, medication that increases the risk of falls, and orthostatic hypotension¹⁴. Others include increasing age, gender, medication use and predisposing medical conditions including Parkinson's disease, osteoporosis and vision problem etc^{15, 16}. The spectrum of clinical processes of identifying individuals at risk or increased risk of falls involve risk profiling

For the risk profiling, various fall predisposing factors should be comprehensively assessed¹⁷. When screening an elderly population, it is not necessarily the case to determine a clear relationship between the incidence of falls and associated risk factors¹⁸. Indeed, the score of a questionnaire, which comprehensively assess fall-risk factors, does not always accurately predict when fall will occur in the future¹⁹. Therefore, knowledge of fall and fall demographics is important for self-prevention, and for health professionals to formulate falls prevention and target those at highest risk²⁰.

Effective self-prevention is achieved by behavioural adjustment to fall predisposing factors²¹. Behaviour has been operationally defined as something that people “do or refrain from doing, although not always consciously or voluntarily” and relates to overt behaviour patterns, actions, and habits²². This working definition also includes “mental events and feeling states that are ‘observed’ or measured indirectly” which promote safety and alleviate risks of falling in elderly²².

At the moment, we do receive recurrent complains of fall among our elder patients. These cases of fall and its devastating consequences are increasingly becoming a burden on elderly and their support network. Although our routine elderly care is now refocusing towards prevention and interventions of fall. However, for successful fall prevention and intervention programs, the need for assessing risk profile, knowledge of fall; and fall behaviour among elderly is eminent. Therefore, this study is an attempt at assessing the risk profile, knowledge of fall and safe behaviour among community-dwelling adults in Nigeria.

Materials And Methods

The research design of this study was a cross-sectional survey of risk profile, knowledge of fall and safe behaviour among community-dwelling adults in Kano. A snow balling sampling technique was used to recruit volunteers regardless of their education, gender, socio-economic status and irrespective of walking with aid or not. Participants were recruited in spite of their medical (e.g. hypertension, diabetes, heart disease, etc) or orthopedics conditions (e.g.

spondylosis, lower limb fractures, lumbosacral/ back pain, etc). Only participants that were conscious and oriented in time, place and people were included in this study. Participants with mental impairment, hearing impairment, visual impairment, inability to answer or provide respond to the items on the questionnaire were excluded from the participation. Ethical approval for the study was sought from the Ethical Committee of Kano State Ministry of Health.

The sample size of this study was arrived at using sample size proportion of Bekibele and Gureje (2010) as proposed by survey general formula:

$$N = (Z)^2 \cdot P(1-P) / d^2 \quad \text{Where } N = \text{Sample size}$$

$$Z = 95\% \text{ Confidence interval}$$

$$P = 0.23 \text{ (Proportion of the participants)}$$

$$d = 0.05 \text{ (worst case scenario)}$$

$$N = (1.96)^2 \times 0.23(1-0.23) / (0.05)^2$$

$$= 0.6803 / 0.0025$$

$$= 272$$

But, 10% of 272 were added up to accommodate for non-response rate
 $10/100 \times 272 = 27$
 $27 + 272 = 299$. Therefore, the sample size was approximately 300.

Fall Knowledge Assessment Questionnaire with 6-items, Desmond Fall Risk Questionnaire with 15-items of binary scale, Fall Behaviour Scale for the Older Persons with 30-items and a socio-demographic sheet of 9-items were administered by the researcher. The 6-items binary subscale Fall Knowledge Questionnaire was developed by the researcher, and was not tested for

validity and reliability. The Desmond Fall Risk Questionnaire was adopted for the study; this questionnaire has universal applicability on fall risk screening, 0.98 content validity and test-re-test reliability of 0.88²³. The Fall Behavioural Scale for the Older Person was also adopted for this study. This questionnaire is a 30-item Likert scale that has an internal consistency of 0.84 using Cronbach alpha and content validity index of 0.94^{24, 25}.

The socio-demographic information of the study participants includes age, weight, height and BMI. Weight was measured with the aid of Mechanical Bathroom Weighing Scale (LCNZ0011). This was measured to the nearest 0.1 kg, with the participant wearing light clothes and without shoes. The reading of the scale was recorded while the participants were on the scale and repeated measure was taken to minimize error. The height was measured with the aid of 60"/150cm Sewing Tape Measure (HTS103D3). The height was measured to the nearest 0.1cm and was performed by standing the participants on a flat wall, with feet together with heels, back and shoulder straight and touching the wall. The top of the participants head was used as reference. This was marked and measured from the ground level repeatedly in order to minimize error.

The knowledge component of the data collection sheet composed of 6-items of binary scale. It was coded as zero (for "no" response) and one (for "yes" response). The maximum score of knowledge was six while the minimum was zero. Participants were categorized as either having poor knowledge (a score of 0-3) or a good knowledge (a

score of 4-6). The risk profile component composed of 15-items of binary scale. It was also coded as zero (for "no" response) and one (for "yes" response). The maximum score of this component was fifteen while the minimum was zero. Participants were categorized into high risk (a score of 0-7) and low risk (a score of 8-15) respectively.

Furthermore, the safe behaviour practice component of the data collection sheet has 30-items on a 4-points Likert scale. This was coded as one (for "never" response), two (for "sometimes" response), three (for "often" response) and four (for "always: response) respectively. The maximum score of this component was one hundred and twenty while the minimum was thirty. Participants were categorized as having a bad behaviour (a score of 30-79) and good behaviour (a score of 80-120) respectively. The questionnaires administration and the anthropometric measurements were carried out by MK. These questionnaires were written in English and were not translated into any other language before administration.

The participants were approached in their communities (home, religious centers, rest points, social gathering centers, etc) based on the requirements of snow balling using a consensual procedure. This procedure entails explaining the study's focus to the participants, assurance of the utmost confidentiality of the participants' information, respects for their consents, freedom of voluntary participation and withdrawal from the study at any point in time. It also includes educating the

participants on the study, advising participants on risk prevention associated with the study and allowing freedom of asking question for possible clarification. Data were collected from participants who declared their consent and were able to understand and respond to the English version of the questionnaire. There were no personal identifiers or contact details that are linked the questionnaire, personal information of the participants were not disclosed and were used for research purpose only. The participants were given two weeks to complete the questionnaire after which the questionnaires were retrieved by MK from the participants.

Descriptive statistics in the form of frequency distribution table was used to describe the socio-demographic characteristics of the participants. Chi-square statistics was used to determine the proportional differences of fall risk levels, knowledge levels and behaviour categories among the male and female participants. Spearman's rho correlation was used to determine the relationship between knowledge of fall and fall risk, knowledge of fall and behaviour and behaviour and fall risk among the participants. All statistical analyses were performed using SPSS version 20. Alpha value was set at 0.05

Results

This survey was carried out to determine the association between the knowledge of fall, fall risk profile and safe behavioural practices of elderly in Kano metropolis, Nigeria. Three hundred questionnaires were administered to these community-dwelling adults who declared their voluntary consents for the study. Out of the 300 questionnaires, only 287 were retrieved from the participants after two weeks of administration with a response rate of 95.66%. The mean age of the participants was 70.32 ± 8.48 years (Table 1); among which male participants were 204 (71.1%) while 83 (28.9%) were the female folk (Table 2).

Results show that there was good knowledge of fall in male (55.88%) and female (63.86%) participants, a low fall risk profile among male (82.84%) and female (91.57%) participants and a good behavioural in the male (66.6%) and female (27.2%) participants respectively (Table 2). There was a statistically significant weak negative correlation between knowledge of fall and fall risk ($r = -0.219$, $p < 0.05$), there was no statistically significant correlation between knowledge of fall and behaviour ($r = 0.030$, $p < 0.05$) and between behaviour and fall risk ($r = 0.090$, $p < 0.05$) as shown in Table 3.

Table 1: Socio-demographic Characteristics of the Participants

Dependent variables	M ± SD (n = 287)
Age (years)	70.32±8.48
Weight (kg)	54.71±8.06
Height (m)	1.62±0.80
BMI (kg/m ²)	21.02±4.25

BMI= Body mass index,
n = sample size

Table 2: Difference in Knowledge levels, Fall Risk and Behaviour by Gender

Variables	Gender		X ²	P-value
	Male n = 204	Female n = 83		
Knowledge category				
Poor	90 (44.12%)	30 (36.14%)	1.54	0.001
Good	114 (55.88%)	53 (63.86%)		
Risk category				
Low	169 (82.84%)	76 (91.57%)	0.281	0.002
High	35 (17.16%)	7 (08.43%)		
Behaviour category				
Bad	13 (4.5%)	5 (1.7%)	0.012	0.000
Good	191 (66.6%)	78 (27.2%)		

Significance level set at p<0.05

Table 3: Association between Fall Risk, Knowledge and Behavior among the participants

	Correlation coefficient (r)			N
	Risk (p-value)	Knowledge (p-value)	Behavior (p-value)	
Risk	1.000 (0.000)	- 0.219** (0.000)	0.030 (0.609)	287
Knowledge	-0.219** (0.000)	1.000 (0.609)	0.030 (0.609)	287
Behavior	0.090 (0.126)	0.030 (0.609)	1.000 (0.126)	287

** Significance level set at $p < 0.05$

Discussion

This cross-sectional survey was carried out to determine if there is association between knowledge of fall, fall risk and safe behavioural practice among community dwelling adults in Kano metropolis, Nigeria. The adults sampled in this study were mostly male (71.1%), this outcomes differs from what was obtained in a study that found higher female respondents (67.9%) than their male folk²⁶. The reason for this variation was that, this present study was conducted among community-dwelling adults while the previous study included elderly participants from community and elderly home which may results in enrolling more female²⁶.

Majority of the participants in this study reported having good knowledge of fall with 55.88% score among male and 63.86 score in female. This is higher than a previous study that found less than one-half (38%) of elderly reported feeling “very knowledgeable” about fall and its associated risks in Indonesian elderly²⁷. The knowledge of fall among community dwelling adults in Kano seems good, as compared to their counterparts in Indonesia. An optimistic attitude in believing that awareness and knowledge regarding fall and

fall prevention among elderly remains poor was not supported in this study as good knowledge of fall was found among the participants²⁸. Notwithstanding, knowledge of fall was shown to be a strong preventive factor against episodic falls and recurrent falls, our finding corroborates the importance and the need for health care professionals to explain and make an elderly persons understand more about fall to minimize the associated risks.

This study revealed two category of fall risk profile, these were high risk (17.16% male and 8.43 female) and low risk category (82.84% male and 91.57% female). Majority of the participants have low risk profile and good behaviour towards fall (93.63% male and 93.98% female). This may be as a result of cultural and social prejudice around them. The fall risk profile proved to be low and the behavioural attributes were good. This is explaining that shifting in one affects the other. In essence, change in behaviour either ways affects the risk and susceptibility of fall and/or recurrent episodes same way. Therefore, safety among the community-dwelling adults is basically determined by behavioural adjustments. The correlation between the fall risk and behaviour was found to be insignificant. This implies that

the behaviour does not influence the risk of fall among community-dwelling adults. The likely reason to that is because; both the behavioural attributes and fall risk profile are moderately favourable, therefore none can influence the other but any shift or adjustment in any leads to significant effect. According to the global report of the World Health Organization in 2010 on fall prevention in old age, behavioural determinants refer to human actions, emotions, or daily choices potentially modifiable through strategic interventions. So, discussing these preventive behaviours practiced by the community-dwelling adults may guide us on predicting their susceptibility to fall. It helps in ascertaining their fall risk profile and knowing how much they contribute to preventive and autonomous attitudes among themselves. These behavioural components have psychosocial domains that explore the risk profile and as such the behavioural determinants predict fall susceptibility.

In this study we found that there was a weak negative and statistically significant relationship between knowledge of fall and fall risk among the participants. This outcome corroborate with a similar finding that reported that majority of the elderly population in the city of Juiz de Fora, displayed little knowledge on falls and were exposed to a variety of daily risk factors²⁹. This reciprocal relationship implies that as the knowledge of fall increases, the risk of having a fall or a recurrent fall episode reduces. Base on the relationship between knowledge and risk of fall, clinicians may deduce how adequate awareness campaign on fall can reduce serious health concern and psychological problems in older people.

The study contributed to the body of research that examines risk profile, knowledge of fall and safe behavioural practice in community dwelling adults in Kano metropolis, Nigeria. For clinicians involved in adults care, fall prevention needs to be a key public health priority because of the devastating consequences caused by fall and to achieve this goal, there is need for considering the clients knowledge, risk profile and behavioural domains. Clinicians require expertise in knowledge assessment, effective fall risk profiling and reliable behaviour appraisal for designing fall prevention interventions for elderly within their particular risks and abilities. Therefore, healthcare professionals in the areas of elderly care must be familiar with behavioural and risk constraints of their elderly patients while choosing appropriate fall prevention programs and for effective referrals.

Limitations of the study

Limitations of this study include; (1) Results from this study may not generalize to all elders in Kano metropolis due to the restrictive nature of snow balling sampling technique. (2) Older adults sample included community dwelling adults and excluded residents of elderly home facilities. (3) The study was a descriptive survey using questionnaires; therefore, the information concerning the knowledge, risk exposure and behaviour may differ from the reality due to recall bias.

Conclusion

It is therefore concluded that, there was low fall risk profile, good knowledge of fall and safer behaviour and among the study

participants. Thus, the risk of fall is influenced by knowledge of fall among these community-dwelling adults. Therefore, for effective fall prevention and community reintegration of elderly with previous fall episodes, clinicians may focus on risks profiling, behavioural modifications and fall education.

Recommendations

Therefore, it is recommended that other studies may be necessary to examine the knowledge, intrinsic and extrinsic risk factors and safety behaviours using scientific methods to analyze the participants' abode and to include both family members and care givers in the subsequent evaluations for their life style and habits and to establish relationship accordingly.

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