Original Article

30-Day All-Cause Mortality Rate amongst Older Patients Admitted to the Medical Ward of a Tertiary Hospital in Nigeria

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ABSTRACT

Introduction: Older people face challenges in the overburdened health-care services in Nigeria, especially when hospitalised. Few available studies on mortality were retrospective, oftentimes with incomplete data which may affect the establishment of the outcome.
Objectives: This study determined the 30-day all-cause mortality rate (MR) and associated factors amongst older patients in the medical wards of University College Hospital, Ibadan.
Materials and Methods: A prospective cohort study of 417 patients (>60 years) from the 1st day of admission to death or discharge at the end of 30th day of admission. Data were collected with a semi-structured questionnaire. Information obtained included respondents' sociodemographic characteristics, anthropometric measurements, frailty and functional status. Others were morbidity profile, quality of life, cognition, nutrition, anxiety and depression. Data were analysed using SPSS version 24 at a level of significance $P < 0.05$.
Results: The mean age was 71.6 ± 8.1 years and 216 (51.8%) were females. Eighty-seven (20.9%) deaths were recorded. The unadjusted 30-day all-cause MR was 13.7 deaths (95% confidence interval [CI]: 11.0–16.9/1000 patient-days). This was significantly higher amongst males than females with a MR ratio (MRR) of 1.93 ([95% CI: 1.23–3.05]; $P = 0.01$). Factors significantly associated with mortality were being financially self-supporting (MRR = 2.82; 95% CI: 1.01–6.41), having a cognitive impairment (MRR = 1.92; 95% CI: 1.12–3.20), frailty (MRR = 1.65; 95% CI: 1.01–2.84), ischemic heart disease (MRR = 1.93; 95% CI: 1.18–3.07) and acute exacerbation of bronchial asthma (MRR = 3.92; 95% CI: 1.04–9.42).
Conclusion: The 30-day MR was high amongst older patients, especially the males. Modifiable factors contributing to hospital mortality should be addressed at admission.

Key words: 30-day mortality rate, medical wards, Nigeria, older patients

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INTRODUCTION

In-hospital admission and mortality of older patients is high globally and is increasing, especially in Africa.[1] Hospitalisation for medical illnesses is considered to be a risk factor for death amongst older people.[1] The high death rate is mostly due to other risk factors such as nosocomial infections, disability and iatrogenic conditions.[2] Hospitalisation results in progressive functional, physical and cognitive decline of the normal aging process.[1] Sadly, most hospitalised older patients do not return to their previous functional level following hospitalisation.[2]

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The mortality rates (MRs) amongst older patients admitted to the medical wards vary from one clinical setting to another. Furthermore, amongst countries, regions and races.[3] The unadjusted all-cause mortality amongst older patients admitted to medical wards of hospitals from studies in South America was 16.4%, North America (8.2%) and Europe (5.0%).[3] However, the all-cause MR was comparatively high amongst older Africans (22.6%). Studies have shown that the highest in-hospital MRs were amongst older patients admitted to the acute medical wards or intensive care units.[1,4]

Different measures have been employed in studies to determine the outcome of hospitalisation amongst older patients, especially those in the medical wards.[5] Policymakers and

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researchers are often confronted with the decision on whether assessing only the commonly used 'in-hospital deaths' is adequate for public reporting. This is because the length of time patients are hospitalised is an important factor as it varies with disease conditions.[6] Studies have shown differences in mortality trends and hospital performance when the results of in-hospital and 30-day mortality measures were compared.[6] However, mortality measures with shorter observation periods such as 30-day mortality may capture better, certain elements of care quality such as medications, adverse drug events, clinical errors and hospital safety practices.[6,7]

In many countries in Africa including Nigeria, there is a huge reliance on facility-based data which are often incomplete due to several factors. These include poor record-keeping and health-care workers' individualism while obtaining information during hospitalisation of older patients. There is therefore a flaw as the reports lack standardisation.[1,8] This study is a prospective study on the 30-day all-cause mortality amongst older patients admitted to the medical wards in a tertiary facility in Nigeria. To the best of our knowledge, this is the first Nigerian study to look at 30-day MRs amongst older patients admitted in the medical wards

MATERIALS AND METHODS

This was part of a large study on the outcomes of in-patient medical admission amongst older patients, part of which has been published.[9,10]

Study site

The study was carried out on the medical wards of the University College Hospital (UCH), Ibadan. The UCH has 150 beds for in-patient medical admissions and covers all major specialties in internal medicine. Older patients are admitted through the general outpatient clinic, medical outpatient clinics and emergency department based on their medical conditions and the body system involved. They are managed by the medical team in the relevant specialties comprising resident doctors and consultant physicians.

Study population

Older male and female patients aged 60 years and above who were admitted to the medical wards of UCH between May 2013 and February 2014 were recruited and followed up to discharge or death. Their ages were determined by the direct recall, the use of historical events and extrapolations from their age at marriage and those of their first child. For older patients who were unconscious, aphasic, or too ill to respond, proxies including caregivers and close relatives who were living with the older patients were interviewed. [11] All non-consenting older patients were excluded from the study. The sample size was calculated using the formula for a single proportion with the best estimate of the prevalence of hospitalised older patients in Nigeria (41%).[12] All consecutively presenting older patients were recruited.

Procedure

With the aid of a semi-structured questionnaire that had been pre-tested before the actual study, information on the sociodemographic characteristics, family dynamics, lifestyle habits, health-care utilisation and clinical status were obtained. The outcome variable of interest was mortality at the end of 30 days of hospital admission and this was used to calculate the 30-day all-cause MR. Potential predictors of mortality were assessed using validated instruments. The10-item Barthel's basic activities of daily living (BADL) scale was used to assess functional disability with each item scored separately and the unconscious patient is scored zero (e.g., 0, 1, 2, or 3 for transfer; 0 or 1 for grooming).[13] Total possible scores for BADL range from 0 to 20 with lower scores indicating increased disability and higher scores indicating better functionality.[13] Furthermore, the Hospital Anxiety and Depression Scale (HADS) was utilised to assess the patient's level of anxiety and depression while on admission.[14] HADS has seven questions for generalised anxiety (questions 2, 4, 6, 8, 11, 12 and 14) and another 7 questions for depression (questions 1, 3, 5, 7, 9, 10 and 13). Each question of HADS is scored on a 4-item scale (3, 2, 1 and 0) with questions 7 and 10 in reverse score. Thus, the total score for generalised anxiety ranges between 0 and 21which is same for depression. Respondents with a score of 0–7 are labelled as non-cases; 8–10 as borderline and 11 or more as cases.[14] Furthermore, the patient's cognition was screened using the 'six-item screener'. This is a brief and reliable instrument for assessing cognitive impairment and has been documented to have a comparable diagnostic property with the Mini-Mental State Examination by Folstein with a score of 3 or more errors indicate cognitive impairment.[15] On the other hand, the respondent's nutritional status was assessed using the Mini-Nutritional Assessment-short-form (MNA-SF).[16] MNA-SF comprises 6 items which take <5 min to administer. A score of 0–7 is ascribed to 'Malnutrition'; 8–11 as 'at risk of malnutrition' and 12–14 as 'No malnutrition'.[16]

Similarly, the Short Form 12 (SF-12) questionnaire (version 2) health survey was used to assess the subjective physical and mental quality of life of the respondents.[17] SF-12 is an eight-scale health profile which is scored so that a high score indicates better health.[17] Furthermore, based on the clinical profile of the respondents; the Canadian Study of Health and Aging (CSHA) clinical frailty scale was used to assess clinical frailty. Frailty is rated from 1 (very fit) to 7 (severely frail).[18] Anthropometric measurements of height and weight were performed to determine their body mass index (BMI). The clinical diagnoses were also obtained.

Eligible respondents were recruited as they were admitted into the medical wards. The informed consent of the respondents or the proxies was obtained. The questionnaire was administered within the first 24 h of admission when it was feasible so as not to interfere with the clinical management. For the

administration of the questionnaire except the CSHA's clinical frailty scale which were assessed by the author, a young man with Higher National Diploma and good command of both English and the predominant local language (Yoruba) was trained. The questionnaire was checked in detail with him. The mannerism of respect, dignity and patience required in dealing with older people were emphasised. Informal training, clarifications and support for the research assistant continued throughout the course of the research. The questionnaire was administered by the research assistant in English language and in Yoruba language (after back-translation was carried out to ensure each question conveyed the expected meaning) when necessary. Each interview took an average of 45 min. Brief bereavement counselling was given to the families of respondents who died during hospital admission. Approval for the study was obtained from the University of Ibadan/UCH Institutional Ethical Review Board (approval number: UI//EC/12/0092).

Following administration, the questionnaires were sorted, cross-checked and coded serially. Data were analysed using the Statistical Package for Social Sciences version 21 (IBM Corp, Armonk, NY, USA). The Centre for Disease Control and Prevention guidance for the determination of the patient-days (P-D) for summary data collection was utilised.[19] The 30-day all-cause MRs were obtained using the number of deaths at 30 days divided by the P-D contributed by the patients during the period. This was calculated per 1000 P-D. Furthermore, the MR ratio (MRR) was determined. The level of significance was set at $P < 0.05$.

RESULTS

There were 216 (51.8%) females and 201 (48.2%) males in the study population. The mean age of the respondents was 71.6 ± 8.1 years. There was no significant difference between the mean age of the males (71.4 ± 8.1 years) and those of the females (71.6 ± 8.2 years) ($t = -0.49$; $P = 0.63$).

In all, there were 87 deaths by the end of the 30 days of hospital admission (males = 53 and females = 34 deaths). The median length of stay was 12 days (interquartile range: 8–16 days). The overall unadjusted 30-day all-cause MR was 13.7 deaths (95% confidence interval [CI] = 11.0–16.9)/1000 P-D. The all-cause MR was significantly higher amongst the males 18.7 deaths (95% CI: 14.0–24.4)/1000 P-D compared

Table I: The 30-day all-cause mortality rate by the sociodemographic characteristics

Variable	*n*=417	Number of deaths	P-D	Mortality rate per 1000 P-D (95% CI)	MRR (95% CI)	*P*
Age (years)						
60-64	87	15	1023	12.5 (7.0-20.6)	Reference	
65-69	92	22	1249	17.6 (11.1-26.7)	1.14 (0.57-2.36)	0.71
70-74	83	17	1067	15.9 (9.3-25.5)	1.04 (0.49-2.24)	0.91
75-79	76	17	1072	15.9 (9.2-25.4)	1.09 (0.51-2.34)	0.81
80-84	50	11	588	18.7 (9.3-33.30)	1.36 (0.57-3.17)	0.44
≥85	27	5	355	14.1 (4.6-32.9)	1.04 (0.30-3.02)	0.91
Marital status						
Not currently married	133	24	1877	12.8 (8.2-19.0)	Reference	
Currently married	284	63	3477	18.1 (13.9-23.2)	1.42 (0.87-2.37)	0.17
Educational status						
None	101	19	1375	13.8 (8.3-21.6)	Reference	
Primary	92	18	1191	15.1 (8.9-23.9)	1.09 (0.54-2.20)	0.91
Secondary	120	23	1497	15.4 (9.7-23.1)	1.11 (0.58-2.16)	0.85
Tertiary	104	27	1291	20.9 (15.9-30.4)	1.51 (0.81-2.88)	0.21
Occupational status						
Still engaged	114	26	1505	17.3 (11.3-25.3)	Reference	
Retired	303	61	3849	15.9 (12.1-20.4)	0.92 (0.57-1.51)	0.79
Living arrangement						
With others	408	84	5229	16.1 (12.8-19.9)	Reference	
Alone	9	3	125	24.0 (4.9-70.1)	1.49 (0.30-4.52)	0.66
Financial support						
By others	406	81	5217	15.5 (12.3-19.3)	Reference	
Self-supporting	11	6	137	43.8 (16.1-95.3)	2.82 (1.01-6.41)	0.05*
Social support						
By others	410	85	5266	16.1 (12.9-19.9)	Reference	
Self-supporting	7	2	88	22.7 (2.8-82.1)	1.41 (0.17-5.25)	0.84
Number of children alive						
<5	276	51	3604	14.2 (10.5-18.6)	Reference	
≥5	141	36	1669	21.6 (15.1-29.9)	1.52 (0.97-2.38)	0.07

*Significant at 5% level of significance. CI: Confidence interval, P-D: Patient-days, MRR: Mortality rate ratio

with the females 9.7 deaths (95% CI: 6.7–13.6)/1000 P-D with a MRR of 1.93 (95% CI: 1.23–3.05); $P = 0.01$.

Table I shows the all-cause MR by the sociodemographic characteristics. The highest all-cause MR 18.7 deaths/1000 P-D was in respondents aged 80–84 years, while lowest all-cause MR 12.5 deaths/1000 P-D was amongst those aged 60–64 years. The all-cause MR was significantly higher amongst respondents who were self-supporting financially compared to those who received financial support from other family members (MRR = 2.82 [95% CI:;; 1.01–6.41] $P = 0.05$).

Table II shows the variation in days of admission and all-cause MRs. There was a significant decrease in the 30-day MR from 50.9 deaths/1000 P-D on the 7th day to 13.7 deaths/1000 P-D on the 30th day (Cochrane-Armitage test for linear trend $\chi^2 = 28.10$, $P < 0.001$).

The MR was significantly higher amongst the males as the days progressed compared to the females. The highest MRR between males and females was on the 7th day of admission [Table III].

The 30-day all-cause MR by the clinical parameters is shown in Table IV. Respondents with cognitive impairment had a significantly higher MR compared with those without cognitive impairment 26.1 deaths/1000 P-D versus 13.6 deaths/1000 P-D (MRR 1.92 [95% CI: 1.12–3.20] $P = 0.02$). Furthermore, the 30-day all-cause MR was significantly higher amongst respondents who had frailty 18.8 deaths/1000 P-D compared to those who had no frailty 11.3 deaths/1000 P-D (MRR = 1.66 [95% CI: 1.03–2.76] $P = 0.04$). Respondents who were underweight had the highest 30-day all-cause MR 26.7 deaths/1000 P-D followed by respondents with normal BMI 18.2 deaths/1000 P-D while, the least 30-day all-cause MR was in respondents who were overweight and obese 16.3 deaths/1000 P-D without statistical significance. There was no significant association between the nutritional status, functional disability, the level of anxiety and depression, being on regular medications 1-month before hospital admission and 30-day all-cause MR.

The 30-day all-cause in-hospital MR by the common morbidities is shown in Table V. These were the diagnoses made in the respondents while on admission. The 30-day all-cause MR was significantly higher amongst respondents who had ischaemic heart disease ($P = 0.01$) and acute exacerbation of bronchial asthma ($P = 0.04$).

DISCUSSION

Mortality amongst older patients on admission in medical wards is high globally and this was also shown in this study. For this study, the MR (number of deaths per 1000 P-D) was used to determine the outcome of hospitalisation amongst older patients. This approach allows for standardisation and comparison of data across different clinical settings.[20] Furthermore, the approach is useful for clinical audit as the general performance of the health facility can be assessed.

The MR shows the magnitude of deaths and takes into account the total number of days contributed by patients who died and those who were discharged during a specified period of admission. Thus, it includes the time contributed by both the dead and discharged patients. The MR in our study was lower compared with previous retrospective data from the same facility[21] and the medical wards in South Africa.[22] The MR amongst older patients is usually high in the first few days of admission.[22] This was similarly shown in our study where the MR was very high on the 7th day compared to the 30th day of admission. Similarly, MRs at the 7-day, 14-day, 21-day and

Table II: 7-day, 14-day, 21-day and 30-day all-cause mortality rate

Days at admission	Total				MRR	*P*
	Number of patients	Number of deaths	Person-days	Mortality rate per 1000 person-days (95% CI)		
7	89	24	472	50.9 (32.6-75.7)	3.01 (2.26-5.88)	<0.001*
14	258	53	2271	23.3 (17.5-30.5)	1.70 (1.19-2.42)	0.01*
21	375	76	4264	17.8 (14.0-21.3)	1.30 (0.94-1.79)	0.11
30	417	87	6344	13.7 (11.0-16.9)	Reference	

*Significant at 5% level of significance, Cochrane-Armitage test for linear trend χ^2=28.10, df=1, P<0.001. df: Degree of freedom, CI: Confidence interval, MRR: Mortality rate ratio

Table III: 7-day, 14-day, 21-day and 30-day all-cause mortality rate by sex

Days spent at admission	Males			Females			MRR	*P*
	Number of deaths	Person-days	Mortality rate per 1000 person-days (95% CI)	Number of deaths	Person-days	Mortality rate per 1000 person-days (95% CI)		
7	19	274	69.3 (41.8-108.3)	5	198	25.3 (8.2-58.3)	2.75 (1.01-9.41)	0.05*
14	36	1199	30.3 (21.0-41.6)	17	1072	15.9 (9.2-25.4)	1.89 (1.04-3.60)	0.04*
21	49	2001	24.5 (18.1-32.4)	27	2263	11.9 (7.9-17.4)	2.05 (1.26-3.42)	0.01*
30	53	2839	18.7 (14.0-24.4)	34	3505	9.7 (6.7-13.6)	1.93 (1.23-3.05)	<0.001*

*Significant at 5% level of significance. CI: Confidence interval, MRR: Mortality rate ratio

Table IV: 30-day all-cause mortality rates by the clinical parameters

Variable	*n*	Number of deaths (*n*=87)	P-D	Mortality rate per 1000 P-D (95% CI)	MRR (95% CI)	*P*
Cognitive function (357)†						
Not impaired	284	50	3674	13.6 (10.1-17.9)	Reference	
Impaired	73	23	882	26.1 (16.5-39.1)	1.92 (1.12-3.20)	0.02*
Anxiety (404)†						
Not anxious	347	69	4869	14.2 (11.0-17.9)	Reference	
Anxious	57	14	635	22.1 (12.1-34.5)	1.56 (0.81-2.79)	0.19
Depression (404)†						
Not depressed	76	7	461	15.2 (6.1-31.3)	Reference	
Depressed	328	76	4903	15.5 (12.2-19.4)	1.02 (0.47-2.63)	1.00
Nutritional status (307)†						
No malnutrition	296	68	4172	16.3 (12.7-20.7)	Reference	
Malnutrition	11	4	221	18.1 (4.9-46.3)	1.11 (0.29-2.98)	0.99
Frailty status						
Not frail	158	25	2212	11.3 (7.3-16.7)	Reference	
Frail	259	62	3298	18.8 (14.4-24.1)	1.66 (1.03-2.76)	0.04*
Functional status						
Independent	69	14	875	16.0 (8.8-26.8)	Reference	
Dependent	348	73	5328	13.7 (10.7-17.2)	0.86 (0.48-1.64)	0.68
Body mass index						
Underweight	11	2	75	26.7 (3.2-96.3)	1.47 (0.17-5.71)	0.81
Normal	162	34	1868	18.2 (12.6-25.4)	Reference	
Overweight	145	33	1728	19.1 (13.1-26.8)	1.05 (0.63-1.75)	0.94
Obese	99	18	1146	15.7 (9.3-24.8)	0.86 (0.46-1.57)	0.72
On regular medications						
No	303	63	3818	16.5 (12.7-21.1)	Reference	
Yes	114	24	1678	14.3 (9.2-21.3)	0.87 (0.52-1.41)	0.64
Physical quality of life						
Good	244	44	3165	13.9 (10.1-18.7)	Reference	
Poor	173	43	2183	19.7 (14.3-26.5)	1.42 (0.91-2.20)	0.13
Mental quality of life						
Good	210	47	3154	14.9 (11.0-19.8)	Reference	
Poor	207	40	2272	17.6 (12.6-24.0)	1.18 (0.76-1.85)	0.51
Multiple morbidities						
1-4	335	67	4366	15.4 (11.9-19.5)	Reference	
≥5	82	20	988	20.2 (17.4-31.3)	1.32 (0.76-2.20)	0.34

*Significant at 5% level of significance, †Not measured in some respondents because of severe cognitive impairment and unresponsiveness. CI: Confidence interval, P-D: Patient-days, MRR: Mortality rate ratio

30-day of admission were significantly higher amongst the male respondents. This finding may be explained by several factors. For instance, older males have a lower life expectancy and have a higher risk of multiple morbidities, especially involving the cardiovascular system. Furthermore, older males have been shown to have more exposure to stressors of life most importantly the socioeconomic stressors, poorer lifestyle habits and weak health-seeking behaviours.[1,3,22]

In this study, financial self-support was significantly associated with higher mortality and was not surprising. Nigeria is witnessing a contraction of its economy with an increasing poverty level. There has been deepening poverty since the economic collapse in the 1970s, leading to the pauperisation of the middle class.[23] The proportion of Nigerians living below the poverty line, as documented by the Federal Office of Statistics rose from 28% to 66% between 1980 and 2010.[23] Furthermore, the pensions and other retirement emoluments of the elderly Nigerians were not being paid regularly. Poverty amongst the elderly Nigerians has been worsened by the unemployment rates (13.3%) and underemployment rates (19.3%) amongst their children/grandchildren who could have supported them adequately.[24] Furthermore, the African tradition dictates that older persons live and are taken care of by their children, though this pattern seems to be diminishing due to the westernisation of the African culture.[25] However, financial support from children, friends, family and the community has been found to improve the chance of having better outcomes from hospital admissions.[1,3,26]

The clinical morbidities most significantly associated with 30-day MR were cognitive impairment, frailty, ischaemic heart disease and acute exacerbation of bronchial asthma. Morbidities related to the cardiovascular, neurological and respiratory

Table V: 30-days all-cause in-hospital mortality rate by morbidity (*n*=417)

Morbidity	Morbidity present		Morbidity absent		MRR (95% CI)	*P*
	Number of deaths	Mortality rate per 1000 person-days (95% CI)	Number of deaths	Mortality rate per 1000 person-days (95% CI)		
Hypertension	45	12.0 (8.7-16.0)	42	16.3 (11.7-22.0)	0.73 (0.47-1.14)	0.18
Diabetes mellitus	23	12.1 (7.7-18.2)	64	14.4 (11.1-18.4)	0.84 (0.52-1.35)	0.57
Malignancies	4	36.7 (10.0-94.0)	83	13.9 (11.1-18.4)	2.65 (0.71-7.04)	0.14
Sepsis	19	14.8 (8.9-23.1)	68	13.4 (10.4-17.0)	1.10 (0.63-1.86)	0.79
Stroke	17	13.4 (7.8-21.5)	70	13.8 (10.8-17.4)	0.97 (0.54-1.67)	1.00
IHD	28	22.3 (14.8-32.3)	67	11.6 (8.8-15.0)	1.93 (1.18-3.07)	0.01*
CKD	18	18.6 (11.0-29.4)	69	12.8 (10.0-16.2)	1.45 (0.81-2.46)	0.21
CCF	16	21.8 (12.5-35.4)	71	12.7 (9.9-16.0)	1.72 (0.93-2.99)	0.08
UTI	13	23.1 (12.3-39.4)	74	12.8 (10.1-16.1)	1.80 (0.92-3.27)	0.09
Gastroenteritis	3	7.5 (1.5-21.9)	84	14.1 (11.3-17.5)	0.53 (0.11-1.60)	0.39
Skin ulcer	7	15.6 (6.3-32.1)	80	13.6 (10.8-16.9)	1.15 (0.45-2.47)	0.84
Delirium	4	14.3 (3.9-36.7)	83	13.7 (10.9-17.0)	1.05 (0.28-2.79)	1.00
Anaemia	7	30.2 (12.1-62.2)	83	13.1 (10.4-16.3)	2.31 (0.90-4.97)	0.39
PUD	5	17.7 (5.8-41.4)	82	13.5 (10.8-16.8)	1.31 (0.42-3.19)	0.69
Asthma	4	51.9 (14.2-133.0)	83	13.3 (10.6-16.4)	3.92 (1.04-9.42)	0.04*
Tuberculosis	2	11.8 (1.4-42.5)	85	13.8 (11.0-17.0)	0.86 (0.23-3.18)	1.00
Chronic liver disease	4	23.5 (6.4-60.3)	83	13.4 (10.7-16.7)	1.75 (0.47-4.65)	0.18
COPD	3	15.7 (3.2-45.9)	84	13.7 (10.9-16.9)	1.15 (0.23-3.48)	0.57
Parkinsonism	2	29.9 (3.6-107.8)	85	13.5 (10.8-16.7)	2.20 (0.26-8.21)	0.08
Encephalopathy	3	17.9 (3.7-52.2)	84	13.6 (10.9-16.8)	1.31 (0.27-3.97)	0.81
PVD	1	4.5 (0.1-25.1)	86	14.1 (11.2-17.4)	0.32 (0.01-1.84)	0.09

*Significant at 5% level of significance. IHD: Ischaemic heart disease, CKD: Chronic kidney disease, CCF: Congestive Cardiac failure, UTI: Urinary tract infection, PUD: Peptic ulcer disease, COPD: Chronic obstructive pulmonary disease, PVD: Peripheral vascular disease, CI: Confidence interval, MRR: Mortality rate ratio

systems have been reported to be commonly associated with mortality, especially amongst medical in-hospital older patients in Africa.[1,22] Frailty has been reported as the common pathway to death amongst older patients because frail older persons lack the physiologic reserve to combat disease and injury due to the constriction of homeostasis otherwise termed homeostenosis.[10,27,28] Cognitive impairment predisposes elderly patients to high in-hospital and post-hospital mortality.[29,30] Several reasons have been proffered for the association between cognitive impairment and mortality; these include the vulnerability of patients with severe cognitive impairment to frailty and functional disability. Furthermore, gait and motor abnormalities which are strongly associated with dementia and mortality may explain the association between cognitive impairment and mortality in this study.[31]

The finding of significant 30-day mortality amongst respondents with ischaemic heart diseases (IHD) and not for stroke might be due but not limited to the fact that documented evidence has shown that the identifiable risk factors for both diseases could explain 90% of IHD but only 60% of ischaemic stroke.[32] Furthermore, the pathophysiology of IHD is commonly due to the rupture or erosion of vulnerable plaques in coronary arteries, leading to severe stenosis or occlusion.[32] Whereas, stroke is not a simple disease but the manifestation of several diseases with different pathophysiology.[32] The highest incidence of IHD is found in younger patients than stroke at around the 5th and 6th decades of life.[33] Furthermore, ischaemic stroke is the most common type of stroke in most older persons and the fatality (8%–12%) is much less than for the haemorrhagic stroke (37%–38%).[33]

CONCLUSION

The MR amongst older patients was high and declined with the duration of admission. The MR measured by the number of deaths per 1000 P-D is an important public health outcome measure in the determination of the magnitude of deaths and comparison of data. Financial support through the recruitment of family alliance and improvement in the social network from children, friends, family and the community may improve the chance of having better outcomes from hospital admissions amongst older patients. Targeted and timely interventions on the modifiable factors, especially cognitive impairment, frailty and cardiopulmonary diseases may delay progression into negative health outcomes.

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Conflicts of interest

There are no conflicts of interest.

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