RESEARCH

Pattern of admissions and needs assessment for palliative care services among in-patients in a tertiary health facility in South-Western Nigeria

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Abstract

Background Palliative care evolution focuses on education and medication accessibility. As little as 12% of palliative care needs are met. Assessment of the domains of Palliative care and patients' and families' experience are essential in life-limiting conditions. The Lagos University Teaching Hospital (LUTH), have the National Cancer Centre without offering palliative care services.

Aim The aim was to examine pattern of admissions and needs assessment for palliative services among patients admitted into LUTH wards.

Materials and method Responses were entered into a data sheet inputted into Epi info version 7.2. Descriptive characteristics of the participants were presented as frequencies and percentages for age, sex, pattern of disease, domains of Palliative care, Advance care Plan, Preparation for home care, death and Education about the illness and category of medical conditions (palliative and non-palliative conditions). Together for Short Lives (TfSL) tool was used to categorize respondents' conditions into Palliative and Non-palliative conditions. Chi-square test was used to determine association between independent variables (pattern of diagnoses, stage of disease, advanced care plan, preparation for home care/ death and education on illness) and dependent variables (category of medical condition). Chi-square test was also used to explore the association between specialty of the managing doctor (independent variable) and Advance care plan (dependent variable). The level of statistical significance was *P*-value < 0.05.

Results 80.6% of the respondents had palliative care conditions, 83.7% had family members as their caregiver while 13.2% of the participants had no caregiver and 65.9% had no advance care plan. There was no preparation for home care or death in 72.1%, 70.5% had education about their illness, and 68.2% were in the advanced stage of their disease. Participants attending the surgery non-trauma unit (51.6%) were more likely to have advance care plans. Adults were more likely to have palliative care conditions (79.8%) compared to children (20.2%), and was statistically significant.

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Conclusion Majority of the participants need palliative care services but are unavailable and unmet and the most predominant condition was cancer. Majority had no advance care plan or preparation for home care or death despite having advanced stage of the disease. This survey emphasized the need for symptom management, communication and provision of support.

Keywords Admissions, Needs assessment, Palliative care, In-patients, Services, Nigeria

Palliative care evolution follows a public health concept proposed by the WHO that focus on education, policy, medication accessibility, and execution [1]. Amazingly, about 12% of palliative care needs are rendered [2]. The declaration by WHO Member countries regional classification revealed that about a quarter of adults in need of palliative care (26.8%) reside in the Western Pacific area, 20.2% in the Africa territories, 17.9% in Europe and South East Asia regions. The data from Eastern Mediterranean and Americas territories are 4.0% and 14.1% respectively. Meanwhile, the African territory has the greatest number of adults that require of palliative care per 100,000 adult individuals, then by Europe and the Americas territories. Significant proportion (76%) of the 53 million adults that require palliative care services reside in low- or middle-income countries (LMICs). About two-third (67%) are composed of persons aged 50 years and more.

The greatest ratios per 100 000 adult persons requiring palliative care services are predominant in the low-income regions. Non-communicable diseases are responsible for 69% of all medical conditions. This could be a pointer for preventable mortalities due to deficient or burdened health care facilities in low-income regions. The pattern of cases include lung diseases (5.0%), chronic ischaemic heart diseases (0.8%), non-ischaemic heart diseases (1.8%), cerebrovascular diseases (14.1%), degeneration of the CNS diseases (2.2%), inflammatory diseases of the CNS (0.2%), dementia (12.2%), leukaemia (0.5%), liver diseases (2.4%), renal failure (1.0%), congenital malformations (0.1%), injury, poisoning, external causes (6.4%), arthrosclerosis (0.2%), musculoskeletal disorders (0.5%), protein energy malnutrition (0.2%), tuberculosis (2.1%), HIV disease (22.2%), malignant neoplasm 28.2% [2].

Medical conditions that require palliative care consist of numerous and varying life-limiting and life-threatening illnesses that can occur in infants, children, adolescents, and young adults. Unfortunately, because the origin of data predominantly emanates from the high-income regions, the list excludes some of the diagnoses that are prevalent in Low- and Middle-Income Countries (LMIC) such as communicable illnesses, major burns, and complications of severe accidents.

The quantum of diagnostic categories in low income regions requiring palliative care services has expanded including Alzheimer, arteriosclerosis, cerebrovascular disease, chronic ischemic heart disease, congenital malformation, degenerative CNS diseases, haemorrhagic fevers, HIV, inflammatory CNS disease, injury, leukaemia, liver disease, low birth weight, premature birth, birth trauma, lung disease, malignant neoplasm, malnutrition, musculoskeletal disorder, non-ischemic heart disease, renal failure, tuberculosis; injury (including poisoning and external causes) has been included and account for 6.4% of the demand [3]. The variety of features used to recognize palliative care needs rose from only one (pain) to multiple symptoms including differentiation between mild pain and moderate to severe pain in addition to anxiety/worry, bleeding, confusion/delirium, constipation, dementia, depressed mood, diarrhoea, dry mouth, fatigue, itching, nausea/vomiting, shortness of breath, weakness and wounds. About 40% of patients in LMIC regions that require palliative care services are aged 70 years or older, 27% aged 50-69, about 26% aged 20-49 and only 7% are children [3].

Together for Short Lives (TfSL) developed a classification system separating these conditions into four categories depending on illness trajectories and outcomes [4]. Palliative care domains including Biological, Psychological, Social, Spiritual classes of care and patients' experience including advance care plans are vital [5]. Approximately, 18 million persons that are in need of palliative care services die in controllable pain yearly and about 2–4 family members are encountered for each in-patient requiring palliative care services [2]. Yearly, 40 million persons require palliative care (PC); out of which 78% of them reside in low- and middle-income regions [6]. However, only about 14% of this population receive such vital care [7]. Globally, over 25 million persons die as a result of suffering, and greater than 6 billion days lived in agony yearly [8].

The Lagos University Teaching Hospital (LUTH) is one of the biggest teaching hospitals in Nigeria, with 950 beds serving the residents of the city of Lagos, possesses a cancer centre without offering palliative care services. Therefore, there is a justification to situate a palliative care centre in Lagos University Teaching Hospital, Idi-Araba Lagos Nigeria in order to improve the quality of healthcare services rendered.

The aim of this study was to examine the pattern of admissions and needs assessment for palliative care services among patients admitted into the wards of Lagos University Teaching Hospital Idi-Araba in Nigeria. The

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information gathered will serve as an avenue to advocate for the delivery of palliative care services and serve as preliminary data for low and middle-income countries evaluating unmet needs for palliative care.

Research question

1. What is the disease pattern of patients admitted into the wards based on using worldwide need for palliative care for adults based on disease groups (20+ years 2017) and Together for Short Lives (TfSL)?
2. What are the unmet palliative care needs among in-patients?
3. What is the spectrum of distribution of palliative care domains of the patients admitted into the wards including Biological, Psychological, Social and Spiritual domains?

Justification

Palliative care consists of integrated health services that focus on particular needs and choices of persons including physical, social, psychological or spiritual care, with the aim of alleviating pain, distress and enhance their quality of life and that of their families. Lagos University Teaching Hospital (LUTH) possesses the biggest cancer centre in Nigeria but does not have palliative care unit or deliver palliative care services. The cancer centre attends to a high volume of cancer patients and patients with other chronic illnesses requiring palliative care. It is uncertain if palliative care conditions are prevalent in our wards and whether palliative care services are delivered to patients admitted into the wards. The aim of the study was to determine the prevalence of palliative care patients and their unmet needs.

Materials and methods
Study site
Lagos University Teaching Hospital is a tertiary health facility, located in Surulere local government area of Lagos state Nigeria, with 950 admission beds, forty-six (46) clinical departments, and eighteen (18) non-clinical departments. Lagos University Teaching Hospital trains students in clinical and dental sciences, pharmacy and allied courses. LUTH has an advanced cancer treatment centre which functions under a public–private partnership arrangement between The Nigeria Sovereign Investment Authority (NSIA), and the LUTH. It provides advanced radiotherapy and chemotherapy treatment services. At present, LUTH employs over 2300 staff comprising consultants, resident/medical officers, nurses, pharmacists, physiotherapists, medical laboratory

scientists, nutritionists, hospital administrators, engineers and other categories of staff. It is located within two densely populated communities.

Patients recruited were those on admission in wards A, B, D and E blocks in Lagos University Teaching Hospital. Due to the current structural renovation in the hospital wards, each ward comprises of mixed clinical specialties due to constraints for bed spaces. However, admissions into each of the wards are sex-specific for males and females. The maximum bed capacity of the selected wards were A2 – 30 beds, A3 – 30 beds, B1 – 30 beds, B3 – 30 beds,

D2 – 32 beds and E6 – 34 beds. Total number of beds available was 186, out of which 129 participants were recruited for the study (response rate of 69.4%).

Study design
The survey was a descriptive cross-sectional study done to pilot the investigation of the pattern of cases seen among in-patients and their categorization into Palliative and Non-palliative care condition as well as explored the patients and caregiver characteristics.

Study population
Inclusion criteria
Information on study objectives was collected from all consenting consecutive ward patients in the Medical, Surgical, Gynaecological, and Paediatrics wards in 2 week-days (25th – 26th of July, 2022) through an interviewer administered proforma. There are usually more admissions in the week-days than week-ends.

Exclusion criteria

1. Patients with stroke were admitted in a special ward (Spill over wards) in the emergency ward and were not included in this study.
2. Patients on ward admission but who were unstable, those not on bed, those had gone out temporarily for investigations and surgical procedures and those who did not give consent were excluded from the study.
3. Patients admitted in psychiatry wards were excluded.

Sample size estimation
The estimation of the minimum sample size for the pilot study was done using $N = Z^2 \, pq/d^2$ from a study executed by Agbodande KA et al. [11] on Sociodemographic characteristics and identified needs among patients followed in palliative care units in the Republic of Benin in which majority of the participants (89.2%) of patients admitted to palliative care units had cancer representing p, while q was 1-p (10.8%), d represents desired level of precision

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0.05 and Z^2 refers to the standard normal deviate at 1.96 which corresponds to 95% confidence interval and total sample estimated was 148 participants.

When finite correction was applied for population less than 10,000, estimated sample then was Nf = 148/1 + (148/960) which gives 128.7 which rounded up to 129 participants. Final Sample size was 129.

Description of data collection tool

The patients and their care-givers were interviewed and complemented with information in the case notes based on the Proforma. The Proforma consisted of information on demography, diagnosis and when diagnosis was made, chief complaints, stage of disease, domains of palliative care (physical –pain, functional ability, fatigue, strength, poor sleep, appetite, nausea, constipation; psychological – depression, fear, anxiety, enjoyment, cognition, attention, pain distress, happy; social – roles, appearance, relationship, financial constraints, sex function, affection; and spiritual – suffering, hope, religiosity, lost hope in God), category of medical condition (palliative or non-palliative condition), advanced care plan (Will, future treatment plan and possible health outcomes), preparation for home care, death and education about the illness.

The Association for Together for Short Lives (TfSL) initiated the grading system classifying these conditions into four categories based predominantly on illness courses and effect [4]. Four categories of children with life-limiting and life-threatening illnesses: Category 1 TfSL entails using attainable therapeutic measures with possible relapse. This necessitates connection to palliative care practices whenever treatment is not achieved. These include cancer, organ insufficiencies of heart, kidney, liver, transplant and children on prolonged ventilation. Category 2 illnesses include when premature death is unavoidable; these may involve prolonged sessions of disease-focused-therapy, directed at extending life and permitting involvement in usual activities. Children and young persons in this classification may be predominantly incapacitated but possess prolonged times of relatively sound health. These comprise Duchenne muscular dystrophy, Cystic fibrosis and Spinal Muscular Atrophy (SMA). Type 1 on ventilation, HIV on HAART. Category 3 is composed of deteriorating illnesses without curative therapeutic choices, where therapy is entirely palliative and may frequently extend over many years. These comprise mucopolysaccharidoses, Batten disease and other serious metabolic illnesses, SMA type 1 without ventilation, HIV on HAART. Category 4 includes permanent but non-progressive conditions causing serious disability resulting in susceptibility to health sequelae and chances of sudden death. Palliative care services may be needed at any stage and there may be unpredictable and periodic sessions of care. These include complicated cerebral palsy, severe disabilities such as following spinal cord or brain injury, congenital infections (TORCH and Zika virus infection), spina bifida and TB spine [4].

Data collection procedure

Participants recruited consisted of patients admitted into wards with different diagnoses ranging from medical, surgical, paediatric and gynaecological units. The recruitment was carried out over two days (25th and 26th of July 2022) in the selected wards. Patients met by their bed sides were approached for verbal informed consent after explaining the aim of the research and that confidentiality would be maintained. The research assistants were composed of 15 family medicine residents who interviewed consenting patients in each designated ward by using the interviewer administered proforma. Responses were completed in each ward before moving to another ward. Once the patients in a ward have been interviewed, interviewers move to another ward without returning to an already covered ward even when a new patient was admitted. This was done to prevent double recruitment. The diagnoses were then categorised as Palliative and Non-palliative conditions. The information was gathered directly from patients and complemented with that from the patient's case notes. For children, the parents or carers were interviewed. Training of research assistants on the various elements of the domains of quality of life and other contents of the proforma for consistency was ensured and pre-test was carried out among the patients admitted in Family Medicine clinic for short-stay observation. An official request was made by the principal investigator through The Head, Nursing Services for permission to carry out the evaluation in the wards available for admission of patients. Verbal consent of the participants was received before being interviewed.

Data management and analysis

Responses were entered into a data sheet inputted into Epi info version 7.2. Descriptive characteristics of the participants were presented as frequencies and percentages for age, sex, pattern of disease, and category of medical conditions (palliative and non-palliative conditions). Chi-square test was used to determine association between independent variables which include pattern of diagnoses, stage of disease, advanced care plan, preparation for home care/ death, and education on illness, and dependent variable (category of medical condition). Chi-square test was also used to explore the association between specialty of the managing medical doctor (independent
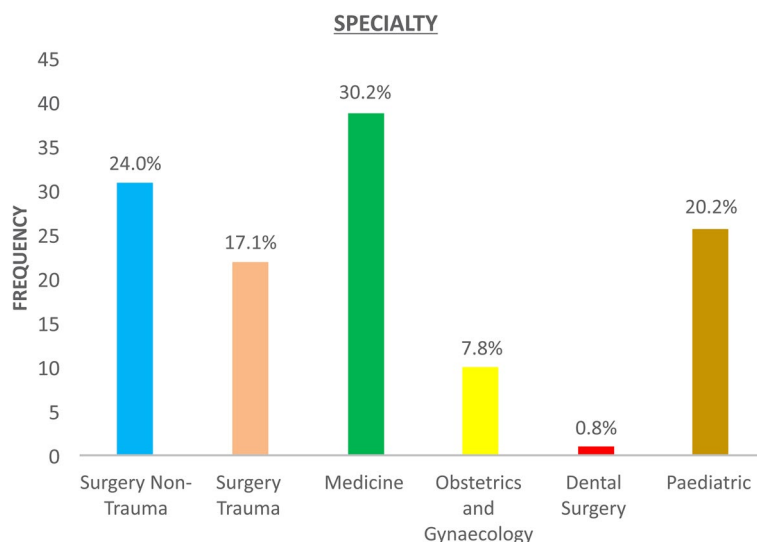
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Fig. 1 Specialty of the managing medical doctor

variable) and Advance care plan (dependent variable). The level of statistical significance was P-value < 0.05.

Data presentation and results

The total number of hospital beds for admission in the hospital was 950. One hundred and eighty-six (186) of these beds were recruited for the study (from 6 wards selected for the study). Of these, 129 participated in the study. The proportion sampled was 69.4%. Patients excluded were those who were unstable, refused consent, not on bed or gone for investigations.

Distribution of respondents by specialty of managing medical doctor

This figure depicts the distribution of the respondents based on the specialty of the managing doctor. About a third of the respondents (30.2%) were managed by Internal Medicine Physicians, 24.0% were in the Surgery non-trauma unit, 20.2% were seen by the Paediatricians, and 17.1% were in the Surgery trauma unit. Only 0.8% of respondents were in the Dental Surgery unit (Fig. 1).

Demographic distribution of the respondents

Table 1 shows the age distribution of the respondents in the study. The mean age of the respondents was 38.76 ± 20.01 years. About two-thirds (64.3%) of the respondents were between the ages of 18 to 59 years, while 15.5% were aged 60 years and above. Only 7.8% of the respondents were less than 5 years. There were 76 (58.9%) female and 53 (41.1%) male respondents. About 80.6% (104) of the respondents had palliative care

Table 1 Demographic distribution

AGE (Years)	Frequency (N) 129	Percentage (%)
< 5	10	7.8%
5–17	16	12.4%
18–59	83	64.3%
60 above	20	15.5%
Mean ± SD	38.7674 ± 20.0120	
SEX		
Female	76	58.9%
Male	53	41.1%
Category		
Palliative care condition	104	80.6%
Non-palliative care condition	25	19.4%
Children	26	20.2%
Adult	103	79.8%%
Total	**129**	**100%**

conditions, while 19.4% (26) of the respondents had non-palliative care conditions. The Adult respondents were made up of 103 (79.8%) participants.

Distribution of ward admissions

Table 2 shows the distribution of respondents based on ward admissions. The female medical ward (A3) had 20.9% of the respondents, while the Paediatrics (D2) ward had 17.8%. The male medical (E5), male medical (A2), and male surgical (B3) wards contained 17.1%, 17.1% and 14.7% of the respondents respectively. The female surgical/gynaecology ward (B1) had 12.4% of the respondents.

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Table 2 Distribution of ward admissions

WARD	Frequency (N)	Percentage (%)
A2 Male medical	22	17.1%
A3 Female medical	27	20.9%
B1 Female surgical/Gynaecology	16	12.4%
B3 Male surgical	19	14.7%
D2 Paediatrics	23	17.8%
E5 Male medical	22	17.1%
Total	**129**	**100.0%**

Pattern of ward admission based on diagnosis

Table 3 shows the pattern of ward admission based on diagnosis. Majority (27.9%) of the respondents admitted into the ward were being managed for cancer. This was followed by trauma (17.8%), infections (10.9%) and hemoglobinopathies (10.9%). Kidney failure, noncancerous tumour and heart failure accounted for 3.9%, 3.1% and 3.1% diagnoses respectively. Other diagnoses include uterine fibroid (2.3%), stroke (2.3%), and goitre (2.3%). Urinary obstruction, tuberculosis of the spine, liver failure, hydrocephalus, congenital anomalies, chronic skin ulcer and AIDS each constitute 1.6% of the diagnoses.

Association between diagnosis and category of medical condition

Table 4 shows the association between diagnosis and category of medical condition. There was a statistically significant ($P < 0.0001$) association between diagnosis and category of medical condition (Palliative versus non-palliative care condition). The respondents' medical condition was more likely to be a palliative care condition.

Summary distribution of physical palliative domain

Table 5 shows the summary distribution of physical palliative domain. Pain constitutes 94.6% of all physical palliative care features, while functional ability constituted 83.7%. About two-thirds of the respondents (65.1%) had fatigue, while 58.9% had reduced strength as part of their features. Poor sleep, poor appetite, and nausea constituted 55.0%, 20.9%, and 19.4% respectively. The least represented palliative care feature was constipation (7.0%).

Summary distribution of psychological palliative domain

Table 6 shows the summary distribution of psychological palliative domain. Depression was the commonest (81.4%) psychological domain, followed by fear (78.3%). Less than half (42.6%) of the respondents had anxiety. Other psychological domains affected were enjoyment (6.2%), cognition (5.4%), attention (3.9%), pain distress (3.1%) and happiness (1.6%). About 7.0% of respondents had no psychological feature affectation reported.

Summary distribution of social palliative domain

Table 7 shows the summary distribution of social palliative domain. Roles, appearance and relationships made up 63.6%, 63.6% and 62.0% respectively. Financial constraint constituted about half (51.9%), while sexual function made up 20.2%.

Summary distribution of spiritual palliative domain

Table 8 shows the summary distribution of spiritual palliative domain. This consists of suffering (88.4%), Hope (80.6%), Religiously in God (41.1%) and Loss of hope in God (0.8%).

Table 9 shows the patients' admission characteristics. Concerning the caregivers, 108 (83.7%) respondents had family members as their caregiver, while 3.1% had others (paid caregivers, neighbours) as caregivers. About one-eight (13.2%) of the participants had no

Table 3 Pattern of ward admission based on diagnosis

DIAGNOSIS	Frequency (N)	Percentage (%)
AIDS	2	1.6%
Appendicitis	1	0.8%
Backpain	1	0.8%
Biliary atresia	1	0.8%
Cancer	36	27.9%
Chronic skin ulcer	2	1.6%
Congenital anomaly	2	1.6%
Diabetes	1	0.8%
Goitre	3	2.3%
Heart failure	4	3.1%
Haemoglobinopathy	14	10.9%
Hydrocephalus	2	1.6%
Infections (Non-viral)	14	10.9%
Kidney failure	5	3.9%
Liver failure	2	1.6%
Non-cancerous Tumour	4	3.1%
Seizure	1	0.8%
Spinal cord compression	1	0.8%
Stroke	3	2.3%
Trauma	23	17.8%
Tuberculosis of spine	2	1.6%
Urinary obstruction	2	1.6%
Uterine fibroid	3	2.3%
Total	**129**	**100.0%**

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Table 4 Association between diagnosis and category of medical condition

Variables	Category of medical condition			Statistic	P-value
DIAGNOSIS	Palliative care condition	Non-palliative care condition	Total	$X^2 = 129.00$	<0.0001*
AIDS	2(100.0)	0(0.0)	2(100.0)		
Appendicitis	0(0.0)	1(100.0)	1(100.0)		
Backpain	1(100.0)	0(0.0)	1(100.0)		
Biliary atresia	1(100.0)	0(0.0)	1(100.0)		
Cancer	36(100.0)	0(0.0)	36(100.0)		
Chronic skin ulcer	2(100.0)	0(0.0)	2(100.0)		
Congenital anomaly	2(100.0)	0(0.0)	2(100.0)		
Diabetes	1(100.0)	0(0.0)	1(100.0)		
Goitre	0(0.0)	3(100.0)	3(100.0)		
Heart failure	4(100.0)	0(0.0)	4(100.0)		
Haemoglobinopathy	14(100.0)	0(0.0)	14(100.0)		
Hydrocephalus	2(100.0)	0(0.0)	2(100.0)		
Infections (non-viral)	0(0.0)	14(100.0)	14(100.0)		
Kidney failure	5(100.0)	0(0.0)	5(100.0)		
Liver failure	2(100.0)	0(0.0)	2(100.0)		
Non-cancerous Tumour	0(0.0)	4(100.0)	4(100.0)		
Seizure	1(100.0)	0(0.0)	1(100.0)		
Spinal cord compression	1(100.0)	0(0.0)	1(100.0)		
Stroke	3(100.0)	0(0.0)	3(100.0)		
Trauma	23(100.0)	0(0.0)	23(100.0)		
Tuberculosis of spine	2(100.0)	0(0.0)	2(100.0)		
Urinary obstruction	2(100.0)	0(0.0)	2(100.0)		
Uterine fibroid	0(0.0)	3(100.0)	3(100.0)		
Total	**104(80.6)**	**25(19.4)**	**129(100.0)**		

Table 5 Summary distribution of physical palliative domain

PHYSICAL PALLIATIVE CARE FEATURES	Frequency (N)	Percentage (%)
*Pain	122	94.6%
*Functional ability	108	83.7%
*Fatigue	84	65.1%
*Strength	76	58.9%
*Poor sleep	71	55.0%
*Appetite	27	20.9%
*Nausea	25	19.4%
*Constipation	9	7.0%

Multiple responses

Table 6 Summary distribution of psychological palliative domain

PSYCHOLOGICAL PALLIATIVE CARE FEATURES	Frequency (N)	Percentage (%)
*Depression	105	81.4%
*Fear	101	78.3%
*Anxiety	55	42.6%
*Enjoyment	8	6.2%
*Cognition	7	5.4%
*Attention	5	3.9%
*Pain distress	4	3.1%
*Happy	2	1.6%
*Nil	9	7.0%

Multiple responses

care-giver. About two-thirds of the respondents (65.9%) had no advanced care plan, while about a third of them (34.1%) had an advanced care plan. There was no preparation for home care or death in 72.1% of the respondents, while 20.2% had made preparation for death, and 7.8% had made preparation for home care.

More than two-thirds (70.5%) of the respondents had education about their illness, while 29.5% had no education about their illness. More than two-thirds of the respondents (68.2%) were in the advanced stage of their

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Table 7 Summary distribution of social palliative domain

SOCIAL PALLIATIVE CARE FEATURES	Frequency (N)	Percentage (%)
*Roles	82	63.6%
*Appearance	82	63.6%
*Relationship	80	62.0%
*Financial constraint	67	51.9%
*Sex function	26	20.2%
*Affection	4	3.1%
*Nil	8	6.2%

Multiple responses

Table 8 Summary distribution of spiritual palliative domain

SPIRITUAL PALLIATIVE CARE FEATURES	Frequency (N)	Percentage (%)
*Suffering	114	88.4%
*Hope	104	80.6%
*Religiously in God	53	41.1%
*Lost hope in God	1	0.8%
*Nil	9	7.0%

Multiple responses

Table 9 Patients' admission characteristics

CAREGIVER	Frequency (N)	Percentage (%)
Family	108	83.7%
Others (Paid caregiver, neighbours, etc.)	4	3.1%
Nil	17	13.2%
Total	**129**	**100.0%**
ADVANCE CARE PLAN	**Frequency (N)**	**Percentage (%)**
No	85	65.9%
Yes	44	34.1%
Total	**129**	**100.0%**
PREPARATION FOR HOME CARE / DEATH	**Frequency (N)**	**Percentage (%)**
Death	26	20.2%
Home care	10	7.8%
Nil	93	72.1%
Total	**129**	**100.0%**
EDUCATION ABOUT ILLNESS	**Frequency (N)**	**Percentage (%)**
No	38	29.5%
Yes	91	70.5%
Total	**129**	**100.0%**
STAGE OF DISEASE	**Frequency (N)**	**Percentage (%)**
Advanced	88	68.2%
Early	41	31.8%
Total	**129**	**100.0%**

disease, while 31.8% were in the early stage of their disease.

Association between Specialty of the managing doctors and advance care plan

Table 10 shows the association between Specialty and Advance care plan. This association was statistically significant ($P = 0.0038$). Participants attending the surgery non-trauma unit were more likely (51.6%) to have advance directives, followed by surgery trauma unit (50.0%), and paediatrics unit (38.5%) respondents. The prevalence of advance care plan among obstetrics and gynaecology specialty and Medicine were 30.0% and 10.3% respectively.

Association between demography and caregiver

Table 11 shows the association between Demography and Caregiver. Respondents between the ages of 5–17 were more likely to have family members as their caregiver (100%), followed by those less than five years (90%), and those between the ages of 18–59 (81.9%). However, there was no statistically significant association between the age categories and caregiver ($P = 0.1659$).

There was a statistically significant association between gender and caregiver. Males were more likely (96.2%) to have family members as caregivers than females. However, females were more likely to have other caregivers (3.9%) such as neighbours and paid caregiver, compared to males (1.9%). The proportion of participants that had no caregiver at all were more common among the females (21.1%) than males (1.9%).

Association between patients' admission characteristics and caregiver

Table 12 shows the association between patients' admission characteristics and caregiver. There was no statistically significant association between having an advanced care plan and caregiver status of the respondent ($P = 0.09$) Also, participants who prepared for home care and death were more likely to be those who had family care-givers (100% and 92.3% respectively). However, there was no statistically significant association between preparation for homecare/death and caregiver status.

Participants who had education about the illness were more likely to have a family member as a caregiver {92.3%}, compared to those who had no education about the illness (63.2%). This was a statistically significant association ($P < 0.05$). There was no significant association between the stage of the illness (early or advanced) and the caregiver status.

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Table 10 Association between specialty of the managing doctors and advance care plan

Variables	Advance care plan			Statistic	*P*-value
Specialty	No	Yes	Total	$X^2 = 17.38$	0.0038*
Surgery Non-trauma	15(48.4)	16(51.6)	31(100.0)		
Surgery Trauma	11(50.0)	11(50.0)	22(100.0)		
Medicine	35(89.7)	4(10.3)	39(100.0)		
Obstetrics and Gynaecology	7(70.0)	3(30.0)	10(100.0)		
Dental Surgery	1(100.0)	0(0.0)	1(100.0)		
Paediatric	16(61.5)	10(38.5)	26(100.0)		
Total	**85(65.9)**	**44(34.1)**	**129(100.0)**		

Significant *p*-value < 0.05

Table 11 Association between demography and caregiver

Variables	Caregiver				Statistic	*P*-value
AGE (Years)	Family	Others	Nil	Total	$X^2 = 9.1395$	0.1659
< 5	9(90.0)	1(10.0)	0(0.0)	10(100		
5–17	16(100.0)	0(0.0)	0(0.0)	16(100		
18–59	68(81.9)	3(3.6)	12(14.5)	83(100		
60 above	15(75.0)	0(0.0)	5(25.0)	20(100		
Total	**108(83.7)**	**4(3.1)**	**17(13.2)**	**129**		
Mean ± SD	37.4713 ± 20.3559	34.7750 ± 23.3653	47.9412 ± 15.0228		F = 2.13	0.1232
Sex						
Female	57(75.0)	3(3.9)	16(21.1)	76(100	$X^2 = 10.8$	**0.0045***
Male	51(96.2)	1(1.9)	1(1.9)	53(100		
Total	**108(83.7)**	**4(3.1)**	**17(13.2)**	**129(100**		

Significant p-value < 0.05

Table 12 Association between patients admission characteristics and caregiver

Variables	Caregiver				Statistic	*P*-value
ADVANCE CARE PLAN	Family	Others	Nil	Total	$X^2 = 4.64$	0.0984
No	67(78.8)	3(3.5)	15(17.6)	85(100.0)		
Yes	41(93.2)	1(2.3)	2(4.5)	44(100.0)		
Total	**108(83.7)**	**4(3.1)**	**17(13.2)**	**129(100.0)**		
PREPARATION FOR HOME CARE / DEATH	Family	Others	Nil	Total	$X^2 = 4.81$	0.3072
Death	24(92.3)	0(0.0)	2(7.7)	26(100.0)		
Home care	10(100.0)	0(0.0)	0(0.0)	10(100.0)		
Nil	74(79.6)	4(4.3)	15(16.1)	93(100.0)		
Total	**108(83.7)**	**4(3.1)**	**17(13.2)**	**129(100.0)**		
EDUCATION ABOUT ILLNESS	Family	Others	Nil	Total	$X^2 = 17.37$	**0.0002***
No	24(63.2)	2(5.3)	12(31.6)	38(100.0)		
Yes	84(92.3)	2(2.2)	5(5.5)	91(100.0)		
Total	**108(83.7)**	**4(3.1)**	**17(13.2)**	**129(100.0)**		
STAGE	Family	Others	Nil	Total	$X^2 = 1.54$	0.4642
Advance	76(86.4)	2(2.3)	10(11.4)	88(100.0)		
Early	32(78.0)	2(4.9)	7(17.1)	41(100.0)		
Total	**108(83.7)**	**4(3.1)**	**17(13.2)**	**129(100.0)**		

Significant *p*-value < 0.05

Table 13 Association between demography and category of medical condition

Variables	Category of medical condition			Statistic	*P*-value
Age	Palliative care condition	Non-palliative care condition	Total	$X^2 = 16.78$	0.0008*
< 5	8(80.0)	2(20.0)	10(100.0)		
5–17	7(43.8)	9(56.3)	16(100.0)		
18–59	73(88.0)	10(12.0)	83(100.0)		
60 above	16(80.0)	4(20.0)	20(100.0)		
Total	**104(80.6)**	**25(19.4)**	**129(100.0)**		
Mean ± SD	39.9404 ± 19.0124	33.8880 ± 23.5332		T = 1.36	0.1755
Children	15(57.7)	11(42.3)	26(100.0)	$X^2 = 0.001$	**0.0021***
Adult	89(86.4)	14(13.6)	103(100.0)		
Female	64(84.2)	12(15.8)	76(100.0)	$X^2 = 0.22$	0.1565
Male	40(75.5)	13(24.5)	53(100.0)		
Total	**104(80.6)**	**25(19.4)**	**129(100.0)**		

Significant *p*-value < 0.05

Association between demography and category of medical condition

Table 13 shows the association between Demography and Category of medical condition. There was a statistically significant association between age of respondents and category of medical condition (palliative versus non-palliative care). Participants between the ages of 18–59 were more likely to have a palliative care condition (88.0%), followed by those less than 5 years of age (80.0%) and those greater than 60 years (80.0%). The mean age of respondents who had palliative care condition was 39.94 ± 19.01. Adults were more likely to have palliative care conditions (86.4%) compared to children (57.7%), and this was significantly associated (*P* < 0.05).

Respondents who were female were more likely to have a palliative care condition (84.2%) compared to those who were male (75.5%). However, there was no significant association between gender and category of medical condition. (*P* = 0.1565).

Discussion

The research was carried out among patients admitted into the wards at Lagos University Teaching Hospital, Idi-Araba. It was aimed at examining the pattern of admissions and needs assessment for palliative services among these patients in order to justify the need for the establishment of palliative care services in Lagos University Teaching Hospital Idi-Araba Lagos Nigeria.

Sociodemographic characteristics of respondents

Majority of the respondents were aged between 18–59 years, representing four-fifth of the participants.

This was similar to the findings made by Ndiok and Ncama where this same age group also represented four-fifth of their participants [9]. The similarity could be attributed to the settings where recruitment of the respondents was done. Both studies were conducted in Nigerian teaching hospitals. This finding was, however, contrary to Robinson et al.'s study (in New Zealand) that had over half of their participants in the age range of 60–79 years [10]. This may be because of the difference in their recruitment method. Although Robinson et al.'s study was also a cross-sectional study, the least age for the recruited participants was 18 years and they all had the ability to understand and speak English.

In this study, females represented more half of the respondents. Most studies reviewed also had a similar pattern of more female respondents. Ndiok and Ncama, Robinson et al., and Agbodande et al. (in Benin Republic) all had higher preponderance of females as well [9–11]. However, the study finding of Olden et al. in New York, in relation to sex distribution was dissimilar, where the males were predominant [12].

Pattern of diseases among admitted patients

In this study, several diseases were diagnosed in the respondents. For better collation and analysis, these diseases were further divided into different categories.

Pattern of diseases based on ICPC-2

The International Classification of Primary Care (ICPC) is the most widely used international classification for systematically capturing and ordering clinical information in Primary Care [13]. It was developed and updated by the World Organization of Family Doctors' (WONCA) International Classification Committee (WICC), and the

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most recent version is the ICPC-2 which was revised in 2015 [13]. The ICPC is divided into 17 chapters by body systems representing the localisation of the problem and/or disease. This makes it easy to use for healthcare providers [13].

Based on ICPC-2 classification, in this study, Musculoskeletal-related diseases constituting about one-fifth were highest in prevalence, and this was followed by the Blood, blood-forming organs and Immune mechanism-related diseases, that similarly accounted for about one-fifth. The least observed belonged to the Male genital-related and Psychologically-related diseases which were both 0.8% of the identified diseases in the respondents.

Contrary to the findings of this study, Ayankogbe et al. reported in their study that General and unspecified illnesses accounted for the highest prevalence (25%) in their study population, this was followed by Pregnancy, child-bearing and family planning-related illnesses at 13.9% [14]. Their least recorded pattern of illnesses were CVDs (1.7%) and Psychological diseases (1.4%) [14]. Although this study, and Ayankogbe et al.*'s* study were conducted in the same geographical area and with similar participants and sampling technique, the difference in the reported findings may be because Ayankogbe et al. had private general/family practice clinics as their study sites as compared with this study which had a teaching hospital as its study site. Of note, however, is the similarity with this study, where psychological diseases were the least occurring in the geographical area.

Also, Gataa et al. reported differences in the pattern of illnesses with highest prevalence as compared to this study [15]. Respiratory and Digestive illnesses accounted for the highest prevalence, about two-third and one-tenth, respectively [15]. Surprisingly, however, the diseases with least prevalence, as reported by Gataa and colleagues were similar to those reported in this study. They were Male genital-related and Psychologically-related diseases which were both 0.1% and 0.85% respectively. The differences in the pattern of illnesses with highest prevalence as compared with this study may be because of the sampling technique employed and the lifestyle of the recruited participants.

Pattern of diseases based on clinical assessment/provisional diagnosis
In this study, cancer was recorded as the most prevalent disease among the participants on admission, the prevalence was about one-third; and this was followed by Trauma accounting for about one-fifth; the least prevalent diseases were Appendicitis, Backpain, Biliary atresia, Diabetes, Seizures and Spinal cord compression. All had similar prevalence of 0.8% among the participants on admission.

In a comparative study by Nicholson et al., cancer was also reported to be the most prevalent disease constituting about three-quatre [16]. The Bromley Care Coordination (BCC) which was being compared with, however, had 16% prevalence for cancerous diseases. The BCC findings, however, had lower cancerous cases possibly because it was a newly introduced innovative home care service, primarily for older people with palliative care needs who do not meet the criteria for referral to specialist palliative care [16].

Also, Robinson et al. and Agbodande et al. reported higher cancer occurrence compared to non-cancer diseases in their studies, as 81.9% and 89.2% respectively [11, 18]. Robinson et al.*'s* study was conducted in New Zealand, a country in Oceania continent among individuals aged 18 years and above; while Agbodande et al.*'s* was in Benin, a West African country, with similar study setting, but with age distribution of 16–82 years, unlike this study with no age restriction in the recruited participants.

In contrast to the findings of this study, Dinçer et al. reported in their study that Cancer was the third highest in prevalence constituting about one-quatre, after Neurologic diseases (about two-third) and Chronic systemic diseases [17]. The least occurring disease that was reported by them was Infection constituting about one-tenth. The difference in their findings, and this study may be because of the difference in the settings of both studies, more so, Dinçer et al. recruited only geriatric participants, unlike this study which also recruited non-geriatric patients.

Pattern of diseases based on category of medical condition
In this study, most of the participants were eligible for palliative care. They represented 80.6% of the total participants. This is despite the fact that the recruited patients were general in-patients with numerous and diverse disease conditions. This further confirmed that palliative care arrangement in every tertiary health care facility cannot be over-emphasized.

Distribution of palliative care domains of patients
In this study, the four major domains of palliative care which include physical, psychological, social and spiritual domains were considered and several features were considered under each major domain. Physical domain was the most occurring, with the highest feature being Pain, which was complained about by almost all participants and the least occurring feature was Constipation. The next predominant domain was Spiritual in which the most common symptom was suffering constituting over four-fifths of the study population, and the least predominant feature was lost hope in God which made up of 0.8%. Social palliative domain had the least predominant

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domain constituting about two-third. Agbondade et al. reported findings that were similar to that of this study. The highest reported feature in their study was Pain which was seen in all their participants, they also observed that the next most common symptom domain was Spirituality, representing over four-fifths of the participants and the next predominant domain was Psychosocial, accounting for three-quarters of the population [11]. The similarity in the distribution of the domains may be related to the settings where the researches were conducted, as both were done in West Africa. When compared to this study, Anderson et al.'s findings were dissimilar. The highest domain of care that was recorded in their study was the Social domain representing one-third of the results, this was then followed by other domains of care that trailed which includes Physical, Psychological and Psychiatric, and Spiritual, religious and existential domains. This represented less than one-fifth of the participants [18]. The difference in reported findings with this study and Anderson et al.'s may be because of the setting in which the research was conducted. It was conducted in the US, and the participants were not only patients on admission, like in this study, but they included patients, family/care givers and professionals.

Admission characteristics among patients

In this study, the patient admission characteristics put into consideration include the caregiver characteristics, advance care plan, preparation for home care/death, education about illness and stage of the disease. Family members constituted over four-fifths of the caregivers rendering care to participants in this study, there was no previous advance care plan by most of the participants, and about three-quarters of them were not prepared for death/home care. Although more than two-thirds of the participants knew about their illness, the stage of the disease was mostly advanced in about two-thirds of the participants. Several reviewed works had different admission characteristics of patients that they reported on. In this study, a sizeable number of the caregivers were the patients' family members. In the studies by Mercandes et al., Oğuz et al. and Monsomboon et al., the family represented 100% of the caregivers [19–21]. This confirmed the importance of the family in the care of its members. In this study, most of the participants did not make provision for advance care plan constituting over two-thirds of the participants. This was, however, contrary to the findings of Monsomboon et al. who reported that about a third of their palliative care patients made previous advanced care plan, 4.9% also had living will [21]. Monsomboon et al.'s study was done in Thailand, and this may be the reason for the difference in the findings with this study. In this study, enquiries were made to find out the preparation of the participants for home care or death, about three-quarters of the participants did not have such plans. This finding was similar to that of Monsomboon and colleagues. They found out that almost three-quarters of the participants in their study had no plans for where they preferred to die. However, less than one-fifth preferred to die at home while 9.3% preferred the hospital [21]. They also considered the caregivers, making enquiries about their preferred place of death for the patients they were taking care of. About two-thirds of the participants had no plans, while the hospital was preferred in about a third, and about one-fifth preferred the home [21]. The findings may suggest that a significant proportion of the participants do not prepare for death. In this study, about three-quarters of the participants were aware of their illness. This was similar to the findings made by Mercadante et al. who discovered that among the patients in their study on planned admission, about half were completely aware of their disease while one-third of the participants were partially aware [19]. However, of the patients on unplanned admission, about two-thirds were completely aware, while one-third had partial awareness [19]. They went further to assess the caregivers' awareness status. The caregivers of patients on planned admission who were completely aware of their disease represented over four-fifths of the participants, while about one-tenth of the participants were only partially aware. The caregivers of patients who had unplanned admission represented four-fifths while only about one-tenth were partially aware of the disease condition of the patients they were taking care of [19]. Only a minute proportion of caregivers in both categories of patients had no awareness of the disease condition of the patients under their care. Monsomboon et al. while studying the characteristics and factors associated with mortality in palliative care patients also assessed the caregivers' understanding about the palliative care status of the patients they were taking care of [21]. About four-fifths of the participants were aware of the palliative care status of the disease condition of the patients, while only one-tenth of the participants were not aware [21]. Contrary to previous reported findings on patient's awareness of the disease condition, Oğuz et al. reported that four-fifths of the advanced cancer patients admitted to the palliative care unit had no information about their disease, while only one-fifth had knowledge of the disease [20]. Mercadante et al. while describing the characteristics of patients who had unplanned admission in comparison to those with planned admission to an acute palliative care unit reported that most of the patients had their diseases in the advanced stage [19]. Over four-fifths of the patients with unplanned admission were in advanced stage of the disease while three-quarters of

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those with planned admission had metastatic diseases [19]. These findings look similar to that from this study where about two-thirds of the participants on admission had advanced stage of disease. This was also similar to the findings made by Oğuz et al. who found out in their study in India, that almost all the patients admitted to the palliative care unit already had metastasis [20]. These findings may corroborate the fact that most patients present to health facilities in advanced stage of their diseases.

Conclusion
Palliative care service was demonstrated as a very important management option in the study, with majority of the participants needing palliative care. Most of the participants were in the economic productive age of 18–59 years. There were more females in the study sample and the predominant health condition for admission into the wards was cancer. The most common palliative domain was physical, and pain was the commonest feature. Most of the patients were taken care of by their family members and they had knowledge of their illness. It was however, surprising that majority had no advanced care plan or preparation for home care/death despite having advanced stages of their disease.

Strength
This is the first Nigerian study to evaluate the admission pattern and needs assessment for Palliative care services among in-patients admitted in a tertiary healthcare facility. This study also employed the use of Together for Short Lives (TfSl) tool to categorize the participants medical diagnoses into Palliative and Non-Palliative conditions. The study site has the largest cancer centre in Nigeria.

Limitations
Some blocks of wards were under renovation and limited the number of ward admissions Recruitment was done within two days limiting the chance of being recruited. The design was cross-sectional and disallowed follow up of patients' experience.

Supplementary Information
The online version contains supplementary material available at https://doi.org/10.1186/s12904-024-01537-w.

Supplementary Material 1.

Authors' contributions
ABA: conceived, designed, analyzed, interpreted and drafted the manuscript. OAO: wrote the discussion and reviewed the manuscript. OMS: data acquisition and wrote the result comment and reviewed the manuscript. OA: reviewed the manuscript for intellectual contribution. AHT: data acquisition and reviewed the manuscript for intellectual contribution. NN: data acquisition and reviewed the manuscript for intellectual contribution. AD: conceived, designed and reviewed the manuscript for intellectual contribution. MTC: reviewed the manuscript for intellectual contribution. DLD: reviewed presentation of result and reviewed the manuscript for intellectual contribution. CTE: reviewed the manuscript for intellectual contribution. AO: reviewed the manuscript for intellectual contribution. JMH: conceived and reviewed the manuscript for intellectual contribution.

Availability of data and materials
Data and other relevant materials used for the study will be made available on request.

Declarations

Ethics approval and consent to participate
We confirm that all the study was carried out in accordance with relevant guidelines and regulations (Declaration of Helsinki). Ethical approval was obtained from the Heath Research and Ethics Committee (HREC) from Lagos University Teaching Hospital Idi-Araba (ADM/DSCST/HREC/APP/5246). A verbal Informed consent, with all risks clearly stated was developed and attached to the protocol. For participants below 18 years of age, Informed consent was received from the parent / guardian staying with the participants. All participants were given the right to withdraw from the study at any time without any affectation of their continued care.

Consent for publication
Not applicable.

Competing interests
Authors declare that there is no competing interest.

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References
1. Stjernsward J, Foley K, Ferris F. The public health strategy for palliative care. J Pain Symptom Manage. 2007;33(5):486–93.
2. Worldwide Hospice Palliative Care Alliance**.** Worldwide need for palliative care for adults by disease groups (20+ years 2017) Global Atlas of Palliative Care. 2020 www.thewhpca.org
3. Worldwide Hospice Palliative Care Alliance. Global Atlas of Palliative Care 2nd Edition 2023. www.thewhpca.org
4. Mitchell S, Bennett K, Morris A, Anne-Marie S, Coad J, Dale J. Achieving beneficial outcomes for children with life-limiting and life-threatening conditions receiving palliative care and their families. Palliat Med. 2019;34(3). https://doi.org/10.1177/0269216319870647
5. Cassel JB. The specialist palliative care measurement model. Palliat Med. 2013;27(2):103.
6. Aregay A, Connor M, Stow J, Ayers N, Lee S. Strategies used to establish palliative care in rural low- and middle-income countries: an integrative review. Health Policy Plan. 2020;35(8):1110–29. https://doi.org/10.1093/heapol/czaa051.
7. Stephen Connor, Cecilia Sepulveda. Global Atlas on Palliative Care at the End of Life. London: Worldwide Hospice and Palliative Care Alliance; Edition 1ˢᵗ. 2014. https://www.researchgate.net/publication/288344767_The_Global_Atlas_of_Palliative_Care_at_the_End_of_Life

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8.   Maddocks M, Higginson IJ. Universal coverage for palliative care in respiratory disease and critical care. Lancet Respir Med. 2017;5(12):915–6. https://doi.org/10.1016/S2213-2600(17)30384-3.

9.   Ndiok A, Ncama B. Assessment of palliative care needs of patients /families living with cancer in a developing country. Scand J Caring Sci. 2018. https://doi.org/10.1111/scs.12568.

10.   Robinson J, Gott M, Frey R, Gardiner C, Ingleton C. Predators of patient-related benefit, burden and feeling safe in relation to hospital admissions in palliative care: A cross-sectional survey. Palliat Med. 2017. https://doi.org/10.1177/0269216317731991.

11.   Agbodande KA, Predencio RD, Gnintoungbe S, Sowanou A, Ayosso M, Fandi O, et al. Sociodemographic characteristics and identified needs among patients followed in palliative care units in the Republic of Benin. Hos Pal Med Int Jnl. 2019;3(2):32–5. https://doi.org/10.15406/hpmij.2019.03.00146.

12.   Olden AM, Holloway R, Ladwig SO, Quill TE, van Wijngaarden E. Palliative care needs and symptom patterns of hospitalised elders referred for consultation. J Pain Symptom Manage. 2011;42(3):410–8.

13.   World Organisation of Family Doctors. International Classification of Primary Care. Global family doctors. Available from: www.globalfamilydoctor.com. Accessed on: 10 May 2022.

14.   Ayankogbe OO, Oyediran MA, Oke DA, Arigbabu SO, Osibogun AA. ICPC-2 defined pattern of illness in a practice-based research network in an urban region in West Africa. Afr J Prim Health Care Fam Med. 2019;1(1):103–6.

15.   Gataa R, Ajmi TN, Bougmiza I, Mtiraoui A. Morbidity patterns in general practice settings of the Province of Sousse. Tunisia Pan African Medical Journal. 2009;3:11.

16.   Nicholson C, Davies JM, George R, Smith B, Pace V, Harris L, et al. What are the main palliative care symptoms and concerns of older people with multimorbidity? - A comparative cross-sectional study using routinely collected phase of illness, Australia-modified Karnofsky performance status and integrated palliative care outcome scale data. Annals of Palliative Medicine. 2018;7(3):S164–75.

17.   Dinçer M, Kahveci K, Döger C, Gökçinar D, Yarici AK, Taş H. Factors affecting the duration of admission and discharge in palliative care centre for geriatric patients. Turkish journal of Geriatrics. 2016;19(2):74–80.

18.   Anderson EW, Frazer MS, Schellinger SE. Expanding the palliative care domains to meet the needs of a community-based supportive care model. Am J Hosp Palliat Med. 2018;35(2):258–65.

19.   Mercadante S, Adile C, Ferrera P, Casuccio. Characteristics of patients with unplanned admission to an acute palliative care unit. Intern Emerg Med. https://doi.org/10.1007/s11739-017-1619-7.

20.   Oğuz G, Koçak N, Şenel G, Kadioğullari N. Characteristics of advanced cancer patients admitted to the palliative care unit from the emergency department. Indian J Palliat Care. 2021;27(1):89–94.

21.   Monsomboon A, Chongwatcharasatit T, Chanthong P, Chakorn T, Prapruetkit N, Surabenjawong U, et al. Characteristics and factors associated with mortality in palliative patients visiting the Emergency Department of a large tertiary hospital in Thailand. BMC Palliat Care. 2022;21:115.

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