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# Assessment of the readiness of health facilities in urban areas to deliver geriatric-friendly care services: a cross-sectional study in Kampala City, Uganda

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## Abstract

**Background** With the global rise in the elderly population, ensuring geriatric-friendly healthcare services is paramount. This study aimed to assess the current readiness of health facilities in Kampala City, Uganda, to provide geriatric-friendly care services.

**Methods** We conducted a cross-sectional study in 35 health facilities (HF) including Private for-profit (PFP), Private not-for-profit, and public (government-run) facilities at different levels i.e., Health Centre III, Health Centre IV, and Hospitals, within Kampala City, Uganda. Data was collected using a self-administered health facility assessment tool. Facilities scoring 80–100 were classified as fully ready to offer geriatric-friendly care, 51–79 indicated moderate readiness, and 0–50 indicated low readiness.

**Results** The overall readiness index (RI) across all facilities was low, 44.09 (SD ± 14.18). The National Referral Hospital (NRH), PFPs, and HFs in Kampala Central had the highest RI of 55.34. 47.63 and 51.09 respectively. The low readiness of HF to provide geriatric-friendly care was due to the low scores in leadership and governance (13.49), financing (19.29), human resource (42.66), and Health Management Information System (47.99) WHO building blocks. HCIVs had a higher readiness index than the other HF levels (Coefficient: 17.40, 95% CI: 4.16 to 30.64, $p = 0.012$). HFs in Kawempe had a significantly lower RI than those in Makindye and Kampala Central (Coefficient: -13.80, 95% CI: -24.48 to -3.11, $p = 0.013$).

**Conclusion** The findings of our study indicate that public and private health facilities in Kampala City are not ready enough to provide geriatric-friendly care services.

**Keywords** Geriatric-friendly care services, Health facility readiness, Urban areas, Geriatric care in Uganda

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## Introduction

Globally, the proportion of the aging population (adults aged 60 years and above) is growing exponentially [1–4]. Between 2015 and 2050, the proportion of the world's population over the age of 60 is expected to double from 12% to about 22% [5]. In 2020, there were over 74.4 million individuals aged 60 years and over in Africa, most of whom (54.3 million) were from Sub-Saharan Africa (SSA) [6, 7]. This number is projected to increase more than twofold by 2050 [5].

The elderly make significant contributions to their societies and nations. They offer guidance as prominent political leaders, members of parliament, business and industrial figures, and cultural influencers. In Uganda, one of the most crucial roles of older individuals is serving as primary caregivers. However, despite their role in providing care for their relatives, there are no support systems in place to ensure that they receive long-term healthcare when they need it [8]. Old age is associated with a myriad of health challenges such as increased dependence, loss of self-reliance, and diminished physical and mental capacity or functioning [9]. Moreover, advancing age increases the vulnerability to cardiovascular diseases, cancer, arthritis, dementia, cataracts, osteoporosis, diabetes, hypertension, and Alzheimer's disease [10]. The number of sick days also increases at around 60 years and is highest after 75 years [8]. Therefore, elderly persons frequent health facilities more than younger adults, with an estimated 11.4 annual hospital visits [11] Additionally, the average length of stay of elderly people in hospitals is greater than that of the general population [12]. Although aging comes with a risk of disability and long-term illnesses, early interventions can diminish this trend [8]. Therefore, the healthcare system must be well prepared to handle the health needs of the elderly.

In 2004, the World Health Organization (WHO) launched the "Age-Friendly Primary Health Care " project aiming to improve older adults' care [13]. Elderly-friendly hospitals (EFH) should offer a range of services including easy access to the hospital, appropriately timed visits, appointment reminders, trained doctors and nurses in geriatric medicine, support staff to guide the elderly through different sections of the hospital, age-friendly medications, appropriate physical environment, toilets and signboards, inpatient services, admission and billing for senior patients [2, 14, 15]. It is vital to have a conducive physical environment to prevent falls in the elderly, which are quite common among them due to balance disorders [14]. While most of the developed countries have recognized the impending challenge of the aging population and have achieved noteworthy success in improving the state of geriatric care across different levels of their healthcare systems, there is still minimal evidence about the preparedness of health facilities in Low-and-Middle Income Countries (LMICs).

In Uganda, older people are defined as those aged 60 years and above [16]. The current population of older persons is approximately 2.55 million [17] and is expected to cross 6 million by 2050. Additionally, the life expectancy of Ugandans between 1950 and 2024 increased from 39.3 to 64.7 years [18] and this is attributed to the continuously improving medical services, widespread vaccination programs, better management of infectious diseases, and reduced maternal and child mortality rates [19, 20]. However, there is generally limited data about the readiness of health facilities to provide geriatric services in Uganda. The 2020 situational analysis report on the state of older persons in Uganda summarized the socioeconomic and health challenges faced by the elderly in Uganda and provided recommendations that focused on strengthening the political representation and justice systems of the elderly. Evidence regarding the capacity of the health system to address older persons' health challenges was not reported [8]. The National Plan of Action for Older People in Uganda described the socio-economic and health aspects of the elderly in the country but also recognized that despite the establishment of HFs at all levels, age-related diseases were not adequately addressed due to the lack of geriatricians in the country. Information on the readiness of HFs to provide geriatric care was lacking. Nonetheless, they recommended the incorporation of geriatrics in the medical training curricula for all healthcare workers (HCWs), re-orienting HCWs on geriatrics and gerontology, and including drugs for the treatment of age-related diseases on the essential medicines list [16]. Some geriatrics-related studies in Uganda have assessed the knowledge, attitude, and treatment practices of HCWs toward the care of the elderly [21]. Others have explored the relationship between aging and HIV [22, 23], and the challenges faced by older adults in accessing health care [24, 25]. Only one study which was conducted in rural areas of Uganda assessed the readiness of public HFs to provide geriatric-friendly health services which was very low [26].

Many elderly in Uganda travel miles to access better healthcare from referral hospitals, many of which are in urban areas [25]. However, no study has been conducted to assess the readiness of urban health facilities to provide geriatric-friendly healthcare services. Therefore, our study aimed to assess the readiness of health facilities in urban areas of Uganda to deliver geriatric-friendly services. The results of this study will add to the existing literature on the preparedness of healthcare facilities to offer geriatric-friendly healthcare, providing the necessary evidence for shaping policies that will improve geriatric care in Uganda.

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## Methods

### Study design

This was a cross-sectional study conducted in health facilities from May 2023 to June 2023.

### Study setting and population

The study was carried out within health facilities (HFs) in Kampala, the capital city of Uganda. The city has a population of over 1.88 million people, which is about 4% of Uganda's total population (45.9 million) [17]. Less than 5% of the elderly live in Kampala city [27] but most of the referral health facilities capable of managing comorbidities among the elderly are located in Kampala. There are 1,448 registered health facilities in Kampala city [28]. The health facilities in Uganda are stratified into seven levels depending on the services they provide and the catchment area they are intended to serve. The facilities are designated Health Center (HC) I, II, HC III, HC IV, District/General Hospital (GH), Regional Referral Hospital (RRH), and National Referral Hospital (NRH).

HCIIIs are the first-level referral health facilities located at the sub-county level and offer nonspecialized preventive, curative, and promotive health care services. In Uganda, they serve an average population of 30,000 people. HCIVs are second-level referral health facilities located at the county level. On top of offering services offered at HCIIIs, they offer surgical, inpatient, and blood transfusion services. They are designed to serve 100,000 people. General Hospitals are more specialized and are located at the district level. They offer more specialized health care services and serve over 500,000 people. RRHs offer a wider range of specialized services and serve a population of over 2,000,000 people. NRHs are the highest level of Uganda's health system, offer a full range of specialized health services, and serve a population of over 10,000,000 to 31,000,000 people [26, 29, 30].

The health facilities are further categorized according to ownership i.e., into government (public health facilities) and private health facilities. The private facilities are also classified as private for-profit (PFP) and private not-for-profit (PNFPs). In Kampala district, the government facilities constitute 2%, PNFPs 4%, and PFPs 94% [28].

### Sampling

Kampala city is made up of five divisions: Kampala Central, Makindye, Nakawa, Kawempe, and Lubaga. We randomly selected three divisions, and these were Kampala Central, Kawempe, and Makindye divisions. Secondly, we listed and described the HFs in each of the selected divisions based on their levels, Table 1. Low-level health facilities such as HCIIs and private clinics were excluded from the study due to low staffing norms and their focus on treating outpatients, who are less sick and don't stay overnight. Our study focused on referral HFs that offer both inpatient and outpatient services. One of the two NRHs in Kawempe Division was also excluded because it only offers specialized care in obstetrics and gynecology, and neonatology.

A total of 36 HFs were selected; 7 of 7 HCVIVs, 12 of 12 GH/RRHs, 2 of 2 NRHs, and randomly selected 15 of 25 HCIIIs.

**Table 1** List of HFs based on their levels

| | Kampala Central | Makindye | Kawempe | Total |
|---|---|---|---|---|
| HCIII | 5 | 11 | 9 | **25** |
| HCIV | 2 | 0 | 5 | **7** |
| GH/RRH | 7 | 4 | 1 | **12** |
| NRH | 0 | 1 | 1 | **2** |
| **Total** | **14** | **16** | **16** | **46** |

### Data collection

Data was collected using a self-administered pretested geriatric health facility assessment tool. The tool was pretested among administrators of two health facilities in the Nakawa division. Key findings from the pretesting exercise were difficulties in verifying responses under the Human Resources for Geriatric Care section which was noted as an anticipated limitation in our study.

The variables of the tool were adopted from the assessment tool used by Ssensamba et al., 2019 [26]. They developed these variables with guidance from the WHO's 2008 Age-Friendly Primary Health Care Centers Toolkit [13], USAID Health Systems Assessment Approach manual [31], and Service Availability and Readiness Assessment (SARA) [32]. Ssensamba et al., 2019 [26] used this tool to collect data about the readiness of HFs in rural districts of Uganda to provide geriatric care. We chose to use the same tool because it had been applied in our Uganda setting. The only changes we made to this tool were in the sociodemographic section, where we added ownership of the health facility (PNFP, PFP, Public/Government-owned) to the level and location of the health facility. No other major modifications were made to the tool to facilitate comparison with the only previous study that had been conducted in our setting.

Six research assistants (who were all medical doctors) collected the data after undergoing a two-day training on using the questionnaire to gather accurate information. They were also trained in making the correct observations, and inspections, and verifying the information provided by the respondents. The questionnaire/HF assessment tool (Appendix 1) was divided into 7 sections. The first section covered the socio-demographic characteristics (independent variables) of each healthcare facility, including location, level, and type of ownership. The next six sections included the dependent variables aligned with the WHO health system building blocks.

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1. Leadership and Governance (A); guiding documents for geriatric care (geriatric policy and management guidelines), leadership for geriatric care (geriatric focal person, supervisor for geriatric services), stakeholders and partners for geriatric care (old persons represented on the health unit committee, a community network for older adults, external partner that supports geriatric care).
2. Financing for geriatric care (B); HF's workplan incorporates geriatric care activities, HF's budget includes allocations to geriatric activities, HF receives external financial support for geriatric activities, older adults receive financial health service incentives.
3. Human Resources for Geriatric care (C); training for geriatric care delivery, support for older adults, continuous professional development and support in geriatric care.
4. Geriatric care service delivery (D); a geriatric-friendly physical HF, public access to the HF, privacy for older adults, assistance services for older adults, education on geriatric care and information materials, handling geriatric emergencies, investigative services for older adults.
5. Medical commodities and equipment for geriatric care (E); equipment for the provision of geriatrics services, commodities for geriatrics care, and drugs for the management of common geriatric health conditions.
6. Health Management Information Systems (HMIS) for geriatric care (F); national HMIS tools sensitive to geriatric care, availability of geriatric assessment tools, data for service improvement, data reporting, and research on aging. (Appendix 1)

Six to Seven administrators from each facility answered each questionnaire. Each respondent tackled the section that concerned their department i.e., the head of the facility answered Section A, the finance manager answered Section B, the human resource manager responded to Section C, the head of clinical services (medical doctor) responded to Section D, the procurement officer and/or pharmacist responded to Section E, and the records manager responded to section F. Observation, inspection, and verification were also done by the research assistants to confirm the participants' responses.

### Data analysis

Data was extracted into a Microsoft Excel 2016 spreadsheet, cleaned, coded, and then transferred to R Programming language (RStudio 2023.06.0+421 "Mountain Hydrangea") for analysis. The questionnaire items were categorized into the six WHO health system building blocks: Leadership and Governance, Financing for Geriatric Care, Human Resources for Geriatric Care, Service Delivery, Medical Commodities and Equipment, and Health Management Information Systems (HMIS). Each question was scored dichotomously ("present" = 1, "absent" = 0). The percentage scores per block were calculated. These percentage scores reflect the facility's performance in each of the six health system blocks. To assess the overall readiness of health facilities in delivering geriatric care services, we calculated a composite score known as the Readiness Index (RI). The RI for each health facility (HF) was the average of the percentage scores across the six building blocks: RI = (a+b+c+d+e+f)/6 [32], where **a** to **f** represent the respective percentage scores for the six building blocks. The overall RI was the mean of readiness indexes across all HFs.

The distribution of the Readiness Index (RI) was tested for normality using the Shapiro-Wilk and Anderson-Darling tests. The Shapiro-Wilk test yielded a p-value of 0.3605, and the Anderson-Darling test provided a p-value of 0.2974, both of which are greater than 0.05, indicating that the data is normally distributed. The homogeneity of variances was checked with Levene's test which revealed that variances were homogenous across all categories of HFs with p-values greater than 0.05 across all categories (Level of HF: $p=0.6333$, Type of ownership of HF: $p=0.5682$, Location of HF: $p=0.5596$). ANOVA test was used to assess the differences in the readiness indexes of HFs according to the level, type of ownership, and location of the HFs. Linear regression analysis was used to describe the relationship between the level, location, and type of ownership of HFs and the readiness to provide geriatric care.

## Results

A total of 35 out of 36 health facilities participated in this study. One NRH in the Makindye division could not participate in the study because their administrative clearance process would not meet our study's timelines. Of the 35 health facilities that participated, 42.86% ($n=15$) were HCIIIs, 20.00% ($n=7$) were HCIVs, 34.29% ($n=12$) were either GHs or RRHs, and one was an NRH. Regarding the location of the health facilities, 37.14% ($n=13$) were in Kampala Central division, an equal proportion ($n=13$) in Kawempe, while 25.71% ($n=9$) were in Makindye. In terms of ownership, 11.43% ($n=4$) of the health facilities were public (government-owned), 54.29% ($n=19$) were PFPs, and 34.29% ($n=12$) were PNFPs.

The overall readiness index (RI) across all facilities was 44.09 (SD±14.18). At the health facility level, NRH had the highest RI at 55.34, followed by HCIVs at 52.00, GH/RRHs at 48.74, and lastly HCIIIs at 35.93. According to the type of ownership, PFPs had the highest RI of 47.63, public HFs 41.93, and PNFPs 39.21. Regarding the

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**Table 2** Readiness index scores by location, type of ownership, and level of HF

| Characteristics | Frequency of health units | WHO block score | | | | | | RI | Std deviation RI |
|---|---|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | F | | |
| Overall | 35 | 13.49 | 19.29 | 42.66 | 70.42 | 70.34 | 48.34 | 44.09 | 14.18 |
| **Level of health facility** | | | | | | | | | |
| HCIII | 15 (42.86%) | 9.26 | 15 | 29.72 | 59.81 | 56.45 | 45.33 | 35.93 | 13.02 |
| HCIV | 7 (20.00%) | 17.46 | 28.57 | 56.35 | 82.99 | 76.35 | 50.29 | 52 | 13.05 |
| GH/RRH | 12 (34.29%) | 14.81 | 20.83 | 48.26 | 77.86 | 82.13 | 48.54 | 48.74 | 12.14 |
| NRH | 1 (2.86%) | 33.33 | 0 | 73.61 | 52.38 | 95.24 | 77.5 | 55.34 | NA |
| **Ownership of health facility** | | | | | | | | | |
| Government-owned | 4 (11.43%) | 13.89 | 6.25 | 39.24 | 64.05 | 69.13 | 59 | 41.93 | 12.03 |
| Private for-profit | 19 (54.29%) | 17.84 | 25 | 47.3 | 72.83 | 74.19 | 48.63 | 47.63 | 14.06 |
| Private not-for-profit | 12 (34.29%) | 6.48 | 14.58 | 36.46 | 68.73 | 64.66 | 44.33 | 39.21 | 14.47 |
| **Location of hospital** | | | | | | | | | |
| Kampala central | 13 (37.14%) | 20.94 | 34.62 | 50.21 | 79.56 | 75 | 46.19 | 51.09 | 11 |
| Kawempe | 13 (37.14%) | 10.68 | 13.46 | 39.96 | 63.33 | 65.33 | 46.27 | 39.84 | 14.71 |
| Makindye | 9 (25.71%) | 6.79 | 5.56 | 35.65 | 67.46 | 70.85 | 54.44 | 40.12 | 14.9 |

(A-Leadership and governance for geriatric care, B-Financing for geriatric care, C-Human Resources for Geriatric Care, D-Geriatric Care Service Delivery, E-Medical Commodities and Equipment, F-Health Management Information System for Geriatric Care)

**Table 3** Human resources for geriatric care at different levels of the health facilities

| Level of health facility | HCIII ($n=15$) | HCIV ($n=7$) | GH/ RRH($n=12$) | NRH ($n=1$) | Total ($n=35$) |
|---|---|---|---|---|---|
| **The HF has trained geriatric care specialist** | 0 (0%) | 0 (0%) | 3 (25%) | 1 (100%) | 4 (11.43%) |
| **The HF plans to hire a geriatric practitioner** | 1 (6.67%) | 2 (28.57%) | 3 (25%) | 1 (100%) | 7 (20%) |
| **The HF has a health worker to help older adults** | 7 (46.67%) | 5 (71.43%) | 7 (58.33%) | 1 (100%) | 19 (54.29%) |
| **The HF has support staff to help older adults** | 8 (53.33%) | 6 (85.71%) | 7 (58.33%) | 1 (100%) | 21 (60%) |
| **Health workers received geriatric care training in the last two years** | 1 (6.67%) | 1 (14.29%) | 5 (41.67%) | 0 (0%) | 6 (17.14%) |
| **HF staff receive CPD in geriatric care** | 1 (6.67%) | 2 (28.57%) | 4 (33.33%) | 0 (0%) | 6 (17.14%) |
| **HF receives mentorship in geriatric care** | 1 (6.67%) | 4 (57.14%) | 3 (25%) | 1 (100%) | 8 (22.86%) |

location, HFs in Kampala Central division had the highest RI of 51.09, followed by those in Makindye with an RI of 40.12, and then those in Kawempe with an RI of 39.84. Table 2.

### WHO building block scores

The WHO building blocks that scored highest were Geriatric care service delivery, and Medical Commodities and Equipment for geriatric care, with 70.42 and 70.34, respectively. Leadership and governance for geriatric care and Financing for geriatric care score lowest at 13.49 and 19.29 respectively Table 2.

### Leadership and governance for geriatric care

No health facility possessed a geriatric care policy, only two facilities reported having geriatric management guidelines, 14.28% ($n=5$) had a geriatric focal person, and 11.43% ($n=4$) had a supervisor for geriatric services, old persons represented on the health unit committee and a community network for older adults. Only three HFs (8.57%) had an external partner that supports geriatric care (Supplementary Table S1, Additional File 1).

### Financing for geriatric care

Five (14.29%) health facilities had a work plan incorporating geriatric care activity, and a budget that includes allocations to geriatric activities, two received external financial support for geriatric services, and three reported older adults receiving financial health service incentives at the HFs (Supplementary Table S2, Additional File 1).

### Human resources for geriatric care

Of the 35 health facilities, only four (11.40%) health facilities had a trained geriatric specialist. More than half of the health facilities had a doctor with some geriatric training (68.57%, $n=24$) and nurses with some geriatric training (60%, $n=21$). More than half of the HFs had a health worker (54.29%, $n=19$) and support staff (60%, $n=21$) to help older adults Table 3 (Supplementary Table S3, Additional File 1).

### Geriatric care service delivery

Only six (17.14%) health facilities ran a geriatric clinic, 22. 86% ($n=8$) had a reception area fitted with printed and audiovisual information on geriatric care, 20% ($n=7$) had information leaflets on aging and health, 65.71%

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**Table 4** Geriatric Care Service delivery at different levels of the health facility

| Level of health facility | HCIII (*n* = 15) | HCIV (*n* = 7) | GH/ RRH (*n* = 12) | NRH (*n* = 1) | Total |
|---|---|---|---|---|---|
| **Pathways at the HF well-paved handrails and grabs** | 5 (33.33%) | 3 (42.86%) | 7 (58.33%) | 1 (100%) | 16 (45.74%) |
| **HF markings are easily read by old persons** | 7 (46.67%) | 5 (71.43%) | 11 (91.67%) | 0 (0%) | 23 (65.71%) |
| **Floors rough to prevent falls** | 9 (60%) | 6 (85.71%) | 10 (83.33%) | 1 (100%) | 26 (74.29%) |
| **Toilets designed to accommodate old persons' needs** | 4 (26.67%) | 7 (100%) | 11 (91.67%) | 0 (0%) | 22 (62.86%) |
| **HF is well-lit for ease of movement** | 15 (100%) | 7 (100%) | 12 (100%) | 1 (100%) | 35 (100%) |
| **Reception area fitted with printed and audio-visual information on geriatric care** | 3 (20%) | 1 (14.29%) | 4 (33.33%) | 0 (0%) | 8 (22.86%) |
| **The HF is not more than 5 km from the community it serves** | 14 (93.33%) | 7 (100%) | 11 (91.67%) | 1 (100%) | 33 (94.29%) |
| **Public transport readily available at or nearby the HF** | 15 (100%) | 7 (100%) | 11 (91.67%) | 1 (100%) | 34 (97.14%) |
| **The HF gives priority to the old** | 8 (53.33%) | 7 (100%) | 10 (83.33%) | 0 (0%) | 25 (71.42%) |
| **Older adults are escorted by someone to hey health points** | 11 (73.33%) | 7 (100%) | 11 (91.67%) | 0 (0%) | 29 (82.86%) |
| **The HF runs a special geriatric clinic or unit** | 1 (6.67%) | 2 (28.57%) | 2 (16.67%) | 1 (100%) | 6 (17.14%) |
| **Health workers talk about geriatric during health education** | 3 (20%) | 5 (71.43%) | 5 (41.67%) | 0 (0%) | 13 (37.14%) |
| **The HF has information leaflets on aging and health** | 0 (0%) | 4 (57.14%) | 3 (25%) | 0 (0%) | 7 (20%) |
| **An equipped emergency resuscitation kit is in place** | 10 (66.67%) | 6 (85.71%) | 11 (91.67%) | 0 (0%) | 27 (77.14%) |
| **The HF has an ambulance to refer** | 6 (40%) | 5 (71.43%) | 11 (91.67%) | 1 (100%) | 23 (65.71%) |
| **Microscopy** | 15 (100%) | 7 (100%) | 12 (100%) | 1 (100%) | 35 (100%) |
| **Urinalysis** | 15 (100%) | 7 (100%) | 12 (100%) | 1 (100%) | 35 (100%) |
| **Renal and functional tests** | 6 (40%) | 6 (85.71%) | 12 (100%) | 1 (100%) | 25 (71.43%) |
| **Prostate surface antigens and tumour markers** | 7 (46.67%) | 6 (85.71%) | 10 (83.33%) | 1 (100%) | 24 (68.57%) |
| **Blood cholesterol** | 5 (33.33%) | 7 (100%) | 11 (91.67%) | 1 (100%) | 24 (68.57%) |
| **Blood glucose (or any other screening tests for diabetes)** | 15 (100%) | 7 (100%) | 12 (100%) | 1 (100%) | 35 (100%) |
| **Serum electrolytes** | 6 (40%) | 7 (100%) | 11 (91.67%) | 1 (100%) | 25 (71.43%) |
| **X-ray machines** | 1 (6.67%) | 5 (71.43%) | 11 (91.67%) | 1 (100%) | 18 (51.43%) |
| **Ultrasound scan** | 10 (66.67%) | 7 (100%) | 12 (100%) | 1 (100%) | 30 (85.71%) |
| **Is visual acuity done at the HF** | 5 (33.33%) | 4 (57.14%) | 9 (75%) | 1 (100%) | 19 (54.29%) |

(*n*=23) had HF marking easily read by the elderly, 74.29% (*n*=26) had floors rough to prevent falls, 62.86% (*n*=22) had 45.74% (*n*=16) toilets designed to accommodate the elderly and 100% (*n*=35) were well-lit for easy movement of the elderly. More than half of the health facilities had ambulances, X-ray machines, and ultrasound scans and were able to do microscopy, urinalysis, renal function tests, prostate surface antigens and tumor markers, blood cholesterol, blood glucose, serum electrolytes, and visual acuity testing Table 4 (Supplementary Table S4, Additional File 1).

### Medical commodities and equipment

Visual acuity screening charts, and hearing screening equipment were available at 45.71% (*n*=16) and 34.29% (*n*=12) of the HFs respectively. Memory loss screening cards were only available at 8.57% (*n*=3) of the health facilities. Most of the HFs provided wheelchairs (85.79%, *n*=30) but only 17.14% (*n*=6) provided walking aids for the blind. More than 80% of the HFs had antihypertensives, anti-diabetic, antibiotics, pain killers, anti-depressants, nutrition supplements, and benzodiazepines for insomnia management Table 5 (Supplementary Table S5, Additional File 1).

### Health Management Information System (HMIS) for geriatric care

Only 8.57% (*n*=3) of the HFs had a geriatric medical assessment tool, 11.43% (*n*=4), had a memory loss evaluation form, 5.71% (*n*=2) had a geriatric depression scale, 11.43% (*n*=4) had a falls evaluation form and one HF had a geriatric daily activity form. Less than half of the HFs segregated data by age and (42.86%, *n*=15) no HF was running a geriatric-focused project for which data was utilized Table 6 (Supplementary Table S6, Additional File 1).

### Factors associated with the readiness of HFs to provide geriatric-friendly services

The ANOVA test analysis showed a significant difference in the readiness indexes across the different levels of HFs (p-value=0.0226). There was no significant difference in RI based on the type of ownership of the HF (p-value=0.2572) or location (p-value=0.0719).

Multivariable linear regression analysis showed that HCIVs had a higher readiness index than the rest of the HF levels (Coefficient: 17.40, 95% CI: 4.16 to 30.64, *p*=0.012). Health facilities in the Kawempe division had a significantly lower RI compared to those in Makindye and Kampala Central (Coefficient: -13.80, 95% CI: -24.48

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**Table 5** Medical commodities and equipment for geriatric care at the different levels of health facilities

| Level of health facility | HCIII (*n* = 15) | HCIV (*n* = 7) | GH/RRH (*n* = 12) | NRH (*n* = 1) | Total (*n* = 35) |
|---|---|---|---|---|---|
| **Visual acuity screening chart** | 4 (26.67%) | 4 (57.14%) | 8 (66.67%) | 1 (100%) | 16 (45.71%) |
| **Hearing screening equipment** | 1 (6.67%) | 3 (42.86%) | 8 (66.67%) | 1 (100%) | 12 (34.29%) |
| **Memory loss screening cards** | 0 (0%) | 0 (0%) | 3 (25%) | 1 (100%) | 3 (8.57%) |
| **Incontinence bags** | 7 (46.67%) | 5 (71.43%) | 10 (83.33%) | 1 (100%) | 22 (62.86%) |
| **Eyeglasses** | 3 (20%) | 1 (14.29%) | 8 (66.67%) | 1 (100%) | 12 (34.29%) |
| **Hearing aids** | 0 (0%) | 0 (0%) | 6 (50%) | 1 (100%) | 6 (17.14%) |
| **Walking clutches** | 3 (20%) | 5 (71.43%) | 8 (66.67%) | 1 (100%) | 16 (45.71%) |
| **Walking aids for the blind** | 0 (0%) | 1 (14.29%) | 5 (41.67%) | 1 (100%) | 6 (17.14%) |
| **Wheelchairs** | 12 (80%) | 6 (85.71%) | 12 (100%) | 1 (100%) | 30 (85.71%) |
| **Painkillers** | 15 (100%) | 6 (85.71%) | 12 (100%) | 1 (100%) | 33 (94.29%) |
| **Anti-hypertensive drugs** | 13 (86.67%) | 6 (85.71%) | 12 (100%) | 1 (100%) | 31 (88.57%) |
| **Anti-diabetic drugs** | 12 (80%) | 6 (85.71%) | 12 (100%) | 1 (100%) | 30 (85.71%) |
| **Eye drops and ointments** | 12 (80%) | 6 (85.71%) | 12 (100%) | 1 (100%) | 30 (85.71%) |
| **Antibiotics** | 15 (100%) | 6 (85.71%) | 12 (100%) | 1 (100%) | 33 (94.29%) |
| **Nutrition supplements** | 8 (53.33%) | 6 (85.71%) | 11 (91.67%) | 1 (100%) | 25(71.42%) |
| **Antidepressants** | 12 (80%) | 6 (85.71%) | 12 (100%) | 1 (100%) | 30 (85.71%) |
| **Anticholinergic drugs to manage incontinence** | 5 (33.33%) | 5 (71.43%) | 12 (100%) | 1 (100%) | 22 (62.86%) |
| **Antimalarial drugs** | 13 (86.67%) | 6 (85.71%) | 12 (100%) | 1 (100%) | 31 (88.57%) |
| **Benzodiazepines for Insomnia** | 11 (73.33%) | 6 (85.71%) | 12 (100%) | 1 (100%) | 29 (82.86%) |
| **Oxygen** | 11 (73.33%) | 5 (71.43%) | 11 (91.67%) | 1 (100%) | 27 (77.14%) |

**Table 6** Health management information system for geriatric care at different levels of health facilities

| Level of health facility | HCIII (*n* = 15) | HCIV (*n* = 7) | GH/RRH (*n* = 12) | NRH (*n* = 1) | Total (*n* = 35) |
|---|---|---|---|---|---|
| **Geriatric medical assessment tool** | 0 (0%) | 0 (0%) | 2 (16.67%) | 0 (0%) | 3 (8.57%) |
| **Geriatric comp screening tool** | 0 (0%) | 0 (0%) | 2 (16.67%) | 0 (0%) | 3 (8.57%) |
| **Geriatric mental state examination tool** | 0 (0%) | 0 (0%) | 3 (25%) | 1 (100%) | 4(11.43%) |
| **Memory loss evaluation form** | 0 (0%) | 0 (0%) | 3 (25%) | 0 (0%) | 4(11.43%) |
| **Geriatric depression scale** | 0 (0%) | 0 (0%) | 1 (8.33%) | 1 (100%) | 2 (5.71%) |
| **Urinary incontinence evaluation form** | 0 (0%) | 0 (0%) | 2 (16.67%) | 0 (0%) | 3 (8.57%) |
| **Falls evaluation form** | 0 (0%) | 0 (0%) | 3 (25%) | 0 (0%) | 4(11.43%) |
| **Geriatric daily activity form** | 0 (0%) | 0 (0%) | 1 (8.33%) | 0 (0%) | 1 (2.86%) |
| **HF collects geriatric care data** | 1 (6.67%) | 4 (57.14%) | 5 (41.67%) | 1 (100%) | 10 (28.57%) |
| **Data is segregated by age** | 6 (40%) | 4 (57.14%) | 7 (58.33%) | 1 (100%) | 15 (42.86%) |
| **HF running any geriatric-focused project for which data is utilized** | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |

to -3.11, $p$=0.013). The type of ownership of the HF did not influence the readiness of a health facility to provide geriatric care Table 7.

## Discussion

From the current study, the overall level of readiness was low (44.09). This correlates with previous literature, which revealed that a substantial number of countries in Africa continue to face limited access to high-quality geriatric healthcare [33]. The insufficient readiness of healthcare facilities to offer geriatric care primarily stems from the lack of geriatric training institutions. There is a lack of teaching modules on geriatric care in the undergraduate and postgraduate training curricula of medical doctors [21], resulting in inadequate geriatric specialists and specialized geriatric clinics [34, 35]. It's imperative to provide additional evidence to influence policies that will promote the integration of geriatrics curricula in all HCWs' training institutions in Uganda.

In this study, the location and the health facility level influenced the readiness of HFs to provide geriatric care. HCIVs had a higher readiness index than other HF levels (HCIIIs, GH/RRH). This was contrary to the findings from a study done by Ssensamba et al., 2019 [26] where general hospitals were identified to be readier than HCIVs and HCIIIs. In our study, the majority of the HCIVs were PFPs which focus on generating profits for sustainability. Consequently, they tend to offer a wide range of high-quality health services to attract and retain clients. Additionally, health facilities in the Kawempe division had lower readiness compared to those in Kampala Central and Makindye. This is probably because the Kawempe division comprises majorly lower-level health facilities that are less equipped with healthcare workers, specialized equipment, and financial resources [30, 36].

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**Table 7** Linear regression analysis of factors associated with the readiness of health facilities to provide geriatric-friendly services

| | Dependent: RI | | Value Mean (SD) | Coefficient (univariable) | Coefficient (multivariable) |
|---|---|---|---|---|---|
| 1 | Level | HCIII | 35.9 (13.0) | - | - |
| 2 | | HCIV | 52.0 (13.0) | 16.07 (4.20 to 27.94, $p=0.010$) | 17.40 (4.16 to 30.64, $p=0.012$) |
| 3 | | GH/RRH | 48.7 (12.1) | 12.81 (2.77 to 22.86, $p=0.014$) | 8.68 (-1.77 to 19.13, $p=0.100$) |
| 5 | Location | Kampala central | 51.1 (11.0) | - | - |
| 6 | | Kawempe | 39.7 (14.5) | -11.41 (-22.13 to -0.69, $p=0.038$) | -13.80 (-24.48 to -3.11, $p=0.013$) |
| 7 | | Makindye | 40.1 (14.9) | -10.96 (-22.82 to 0.89, $p=0.069$) | -6.02 (-17.20 to 5.16, $p=0.279$) |
| 8 | Ownership | Government | 41.4 (11.3) | - | - |
| 9 | | Private for-profit | 47.6 (14.1) | 6.23 (-9.42 to 21.88, $p=0.424$) | 3.67 (-12.30 to 19.64, $p=0.641$) |
| 10 | | Private not-for-profit | 39.2 (14.5) | -2.20 (-18.62 to 14.23, $p=0.787$) | 1.03 (-14.95 to 17.01, $p=0.896$) |
| 4 | NA | NA | NA | 17.33 (-9.46 to 44.12, $p=0.197$) | 25.89 (-3.49 to 55.27, $p=0.082$) |

Number in data frame = 35, Number in model = 35, Missing = 0, Log-likelihood = -132.2, AIC = 282.4, R-squared = 0.42, Adjusted R-squared = 0.28

The readiness score was lowest in the leadership and governance building block (13.49). The majority lacked geriatric management guidelines, dedicated leaders, and partnerships for geriatric care services. Our results correlate with findings from a similar study conducted in rural areas of Uganda with even lower scores in the leadership and governance block [26]. The absence of management guidelines has been associated with suboptimal treatment practices demonstrated by healthcare workers while caring for the elderly [37, 38]. Incorporating geriatric management guidelines into the Uganda Clinical guidelines could improve care for the elderly at all HFs. Individual HFs can also design their evidence-based user manuals on the management of geriatric syndromes and emergencies. Additionally, leadership, vision, and proactive measures are pertinent to designing and improving the healthcare system to cater to the escalating number of elderly with complex multi-morbidities [34]. The absence of leadership hinders the promotion of policies and the mobilization of resources favorable to the geriatric population. Hence, it is essential to focus on training more geriatric physicians and nurses, as well as support staff like physiotherapists, social workers, and public health specialists who are dedicated to caring for the elderly. They must be also equipped with the advocacy and leadership skills necessary to influence policy action in Uganda.

Health financing remains the single most important constraint facing the medical sector in Uganda. The inputs affected by low health sector funding are human resources, drugs, and other medical supplies that are essential for any basic healthcare interventions [39]. In our study, financing was among the WHO blocks that received the lowest scores. Previous studies conducted in Uganda have also highlighted the issue of low health financing, which consequently hinders the provision of specialized health services [26, 40, 41]. The health budget, currently at 4.1% of the total 2024/2025 budget, is insufficient to support the delivery of quality health services especially in public health facilities [42]. Apart from the health budget being less than recommended, the percentage allocated to Non-Communicable Diseases that make up many of the geriatric conditions is only 17% [39]. Although there is no evidence explaining the lack of finances for geriatric care in private health facilities, geriatric medicine is still in its infant stages in Uganda, which may not encourage investment. In 2015, the Government of Uganda introduced the Social Assistance Grant for Empowerment (SAGE) program to provide senior citizen grants. The program aimed to help individuals aged 60–65 years and above in selected districts access basic services and start income-generating activities. Each beneficiary is entitled to approximately $6.7 per month. In 2023, the Ministry of Gender, Labor, and Social Development launched the Special Enterprise Grant for Older Persons (SEGOP) for individuals aged 60–70 years. This initiative aims to improve their access to sustainable livelihoods [43]. However, neither program prioritizes aiding the elderly in accessing quality healthcare. It's equally crucial for the government to provide direct financial assistance to health facilities to support geriatric care and activities.

The service delivery for the geriatric care block recorded the highest score among HFs in Kampala This can be explained by the Government of Uganda's current efforts to improve its health system by making health facilities more accessible and equipped with laboratory sundries, and screening equipment, especially in public health facilities [36]. Additionally, the high score is also probably because private health facilities tend to consistently provide a wider range of quality health services although at a cost that all individuals may not meet [44]. Moreover, there are more private health facilities than public health facilities in the Kampala district [28, 45]. It is also worth noting that these services are generally available for all patients and not necessarily dedicated to geriatric patients. The absence of geriatric clinics in

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most HFs which is due to the lack of geriatricians further exposes the under-provision of geriatric services in Uganda.

According to the WHO framework for health systems, a well-functioning health system ensures equitable access to essential medical products, vaccines, and technologies of assured quality, safety, efficacy, and cost-effectiveness, and their scientifically sound and cost-effective use [46]. Having adequate commodities and equipment is a prerequisite for managing the elderly. Most of the HFs in our study had medicines required for the management of conditions common among the elderly. This is because of the government's efforts to improve the procurement and supply of essential medicines in all public HFs [47]. Furthermore, our research involved private healthcare institutions that typically purchase a wider variety of medicines but offer these at a price that may be out of reach for everyone. However, few HFs had the essential equipment required for the management of conditions prevalent among the elderly. These include eyeglasses, wheelchairs, hearing aids, crutches, and memory loss screening cards. The addition of not only drugs but also equipment to the minimum health care package in all referral HFs would contribute to better geriatric care.

The World Health Organization, through the International Association of Gerontology and Geriatrics (IAGG), recommended that all health professionals should be familiar with old age care, whatever their chosen specialty [48]. In our study, human resources for the geriatric care block scored low since many of the healthcare workers had not received adequate training in geriatrics and only three facilities reported having a geriatrician. Previous studies in Uganda [26] and Africa [48] have also identified a shortage of geriatricians as a significant issue. This low score is possible because most healthcare workers are trained in health institutions with no defined curricula on geriatric medicine [21, 33]. Additionally, a study conducted across Africa demonstrated that out of 40, 35 countries had no formal undergraduate training for medical students in geriatrics and 33 of 40 countries reported no national postgraduate training scheme for geriatrics [48]. Additionally, a study done by Daniel et al., 2021 in Uganda also revealed that among the 110 respondents, 73 (66.4%) medical doctors had suboptimal knowledge of clinical care of elderly patients, and over three-quarters (74.5%, $n=82$) of medical doctors did not routinely observe recommended treatment practices when caring for elderly patients [21]. Therefore, health workers in Uganda are not fully equipped with the appropriate competencies and skills to cater to elderly persons in clinical care. Including geriatrics curricula in all levels of healthcare workers' training will bolster the workforce for geriatrics care in Uganda.

The low HMIS block score in our study correlates with previous studies that revealed HMIS challenges in Uganda [26, 49, 50]. Most facilities in our study did not categorize data by age or implement geriatrics projects that required the use of their data. The lack of tools like the geriatric medical assessment tool, geriatric comprehensive screening tool, geriatric mental state examination tool, memory loss evaluation form, and Geriatric Depression Scale in most HFs raises concerns about the proper management of geriatric conditions and the use of data in decision making. The government should implement monitoring, evaluation, and Health Management Information Systems (HMIS) to track geriatric indicators essential for guiding policy formulation [51].

### Strengths

To our knowledge, this study provides the first published insight on the readiness of both public and private health facilities to offer geriatric-friendly care services in an urban area in Uganda thus providing useful information for comparison and policy action.

### Limitations

The study was conducted in only Kampala city which may limit generalization of results to other urban areas or cities. Some of the responses, especially under human resource for geriatric care block could not be backed up with any evidence i.e., certificates of training, which could introduce a degree of uncertainty regarding the accuracy of reported results.

### Conclusion and recommendation

Our study findings suggest that both public and private healthcare systems in Kampala City, Uganda are not adequately prepared to provide geriatric-friendly care services. This is primarily due to low scores in leadership and governance, financing, human resources, and HMIS WHO building blocks. This is an important policy issue, as most geriatric care referrals from peripheral healthcare facilities are sent to urban health facilities in Kampala for expert management. The existing health system gaps restrict the efficient and quality provision of geriatric care to referred patients. To address this, health facilities in Kampala need significant health system reforms to better manage geriatric patients. Additionally, there is a need to support geriatric research to establish an evidence database that can influence policy action and mainstream geriatrics and gerontology in training curricula for healthcare workers at all levels.

### Ethical consideration

This research was a minimal-risk study and was carried out according to the declarations of the World Health Assembly in Helsinki. Ethical Approval was sought from

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The AIDS Support Organization (TASO) Institutional Review Board (Approval number; TASO-2023-201), and Uganda National Council of Science and Technology (registration number: HS2881ES) before data collection. Administrative clearance was sought from the authorities under which each facility operates. Each participant was enrolled in the study after reading and signing the informed consent form that clearly stated the purpose, potential risks, and benefits of the study. The study was voluntary, and every participant had a right to leave the study at any stage.

## Supplementary Information

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Supplementary Material 1

Supplementary Material 2

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**Author contributions**
Anna Maria Gwokyalya and Peruth Ainembabazi conceived, conceptualized, and designed the study. Felix Bongomin reviewed and critiqued the study protocol. Anna Maria Gwokyalya and Peruth Ainembabazi participated in data collection. Nelson Twinamasiko participated in designing the analytical framework for the study. Raymond Bernard Kihumuro and Timothy Mwanje Kintu analyzed the data. Anna Maria Gwokyalya drafted the manuscript. Felix Bongomin, Peruth Ainemnabazi, Timothy Mwanje Kintu participated in reviewing the manuscript. All authors read and approved the final manuscript.

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**Data availability**
Datasets used and/or analyzed during the current study are available from the corresponding author upon reasonable request.

## Declarations

**Conflict of interest**
The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest. The positions of the authors did not affect the process and outcomes of this research.

**Consent for publication**
-N/A.

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