

REVIEW

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Frailty concept in Africa neurosurgical practice: a prospective review



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Abstract

Neurosurgical management of older patients is very complex and delicate; efforts are being made in identifying groups of older patients at risk of poor surgical outcomes before the surgery, making frailty an important concept in risk identification and postoperative outcome assessment of older patients in the ever-changing neurosurgical world. It's of great importance for the concept of frailty to be adopted in Africa's neurosurgical practice in other to optimize the outcomes and improve the efficiency of neurosurgery in the older patients whose population is expanding, forming a great quota of people using neurosurgical services in Africa. This article looks into the importance and challenges of frailty studies in African neurosurgical practice which mainly are the longer length of time in carrying out such studies; reduces manpower, lack of availability of specialized equipment in standardizing the assessment, and others; makes recommendations on ways to ease its adoption such as funding frailty research and creation of population-specific frailty assessment tools among others.

Introduction

A condition or syndrome that results from a multisystem reduction in reserve capacity to the extent that several physiological systems are close to or pass the threshold of symptomatic clinical failure is referred to as frailty, which is a state of increased vulnerability to adverse outcomes [1, 2]. Frailty is a collection of subthreshold decrements that have an impact on multiple physiological systems and make a person more vulnerable [3]. The common focal idea about fragility is of a more established individual who is at the uplifted hazard of unfavorable well-being status change [4]. It's a multifaceted idea that thinks about the complicated exchange of physical, mental, social, and ecological elements [5]. According to

Fried et al., frailty can be recognized based on the presence of three or more core elements such as poor endurance, weakness, tiredness, low level of physical activities, and slow gait [6]. One or two of these features indicate a precursor state, three or more of these features indicate frailty, and none indicate no frailty [7]. Frailty is a concept that has been used to determine surgical outcomes in older patients; therefore, it becomes a crucial factor in Africa's practice of neurological surgery, as a result of increased life expectancy in the continent and increase usage of neurosurgical services [8–11]

With expanding population of elderly people in the world and Africa, improving neurosurgical care to this age group becomes paramount, and frailty studies are important tools in ensuring improved neurosurgical service delivery to elderly people in Africa. Wojda et al. reported an increase in the population of elderly patient that are presenting in the accident and emergencies in sub-Saharan Africa over the period of 1989–2014, as seen in Fig. 1 [12]. A study using Hopkins Frailty Score that was developed by Makery et al. as a standardized, verified perioperative risk assessment tool for surgical patients found that frailty independently predicts the discharge

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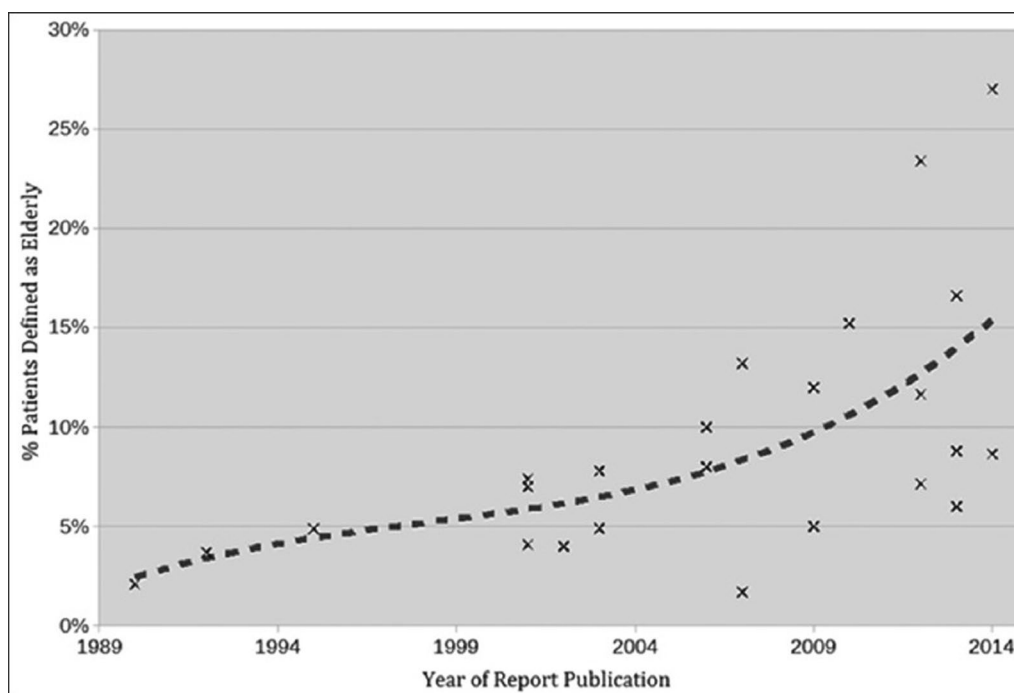


Fig. 1 Graphical representation of the increasing proportion of patients defined as elderly (Y-axis) in the literature reports from sub-Saharan Africa, based on accident and emergency literature between 1990 and 2014 (X-axis). Individual reports are each represented by "X", with the dashed heavy black line showing the third-degree polynomial model of the overall composite trend. Adopted from Wodja et al. 2016 [12]

predisposition, postoperative complications, and length of stay in patients undergoing surgery for brain tumor resection [13–15]

This article is aimed at comparing the state of frailty in the Africa neurosurgical practice with practice. It is a review of studies that have been done on frailty concept in neurosurgery globally, comparing it with the state of neurosurgical practice in Africa, how well as frailty being incorporated and making recommendation on ways of improving so as to meet global standards. Due to the limited availability of research articles reporting the frailty concept in neurosurgery in Africa, this article has the weakness of basing it judgment based on the little available researches.

Importance of frailty in Africa neurosurgical practice

Frailty is found to be an important risk assessor in determining and improving the outcome of patients going for neurological surgeries such as brain tumor resection, deep brain stimulations, decompressive surgeries, and spinal surgeries in the Western world [16–20]. This concept, if adapted into neurosurgical practice in Africa, will have positive effects on various neurosurgical procedures through the identification of high-risk patients whose physiological states are not fit for the surgery, thereby

reducing the postoperative mortalities and morbidities. States and outcomes of neurosurgical procedures in Africa are relatively lagging in the number of surgeons, available equipment and technology, and preoperative, perioperative, and postoperative management when compared with Western countries such as the USA, UK, Canada, and others as reported in different studies [21–23].

Frailty studies have important roles in optimizing neurosurgical outcomes in Africa, as the frailty index was found to be useful in determining perioperative morbidity [24]. It's therefore important that research that focuses on generating a frailty index that will be specific for patients in different neurosurgical facilities across the continent be carried out to serve as guides for neurosurgeons in carefully selecting patients for surgeries and also preoperative counseling and consent taking.

Challenges of frailty studies in Africa neurosurgical practice

There are several challenges to frailty studies in Africa, which include the length of time in completing frailty assessment; it takes a longer period and close patient monitoring to carry out such studies which makes it quite difficult in Africa where there is little compliance to clinic visit especially when it comes to postoperative

monitoring. In general, newer frailty assessment tools are designed to be shorter in duration and more conveniently performed in an outpatient preoperative clinic [25]. At this time, tools such as the Physical Frailty Phenotype require patient participation, specialized equipment, staff training for standardized assessment, and additional time to perform the physical measurements [7, 25]. Also, the reduced ratio of practicing neurosurgeons to the patient population in the continent makes patient participation in frailty studies quite difficult; lack of availability of specialized equipment in standardizing this assessment is also an important challenge to frailty studies in Africa. The poor state of medical records in Africa also poses a challenge to frailty research; some frailty assessment tools are based on electronic medical records and databases which are not fully implemented in Africa [25, 26].

Recommendation

Frailty risk assessment studies should be encouraged in Africa especially in delicate medical practices such as neurosurgery to help in peri- and postoperative risk stratification and outcome improvement. Neurosurgical staff should be trained in carrying out frailty assessment and research, and specialized equipment in aiding such assessment should be provided in various centers. Frailty research in neurosurgical patients should be funded by governmental and non-governmental organizations. The African Center for Disease Control and various National Centers for Disease Control should work on creating an easy-access database for neurosurgical patients that will aid frailty research and assessment. Frailty assessment tools that will be specific to African patients should be developed.

Conclusion

Frailty is an important concept in the ever-changing medical world that has an important role in determining surgical outcomes. Frailty concept should be introduced to neurosurgical practice in Africa, as this will improve the quality of services provided and also the outcome of procedure; frailty index will help in prognosticating outcomes of surgeries, selection of patients that are fit for surgeries, and educating patients when taking consents for procedures. Efforts should be put in place to see to its adoption in African neurosurgical practices as a current trend in improving neurosurgical outcomes.

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Author contributions

K.A. contributed to conceptualization, project administration and writing—review and Designing. K.A., P.O. and O.T. performed collection and assembly of data. K.A., E.A. and H.J. reviewed and edited the final. K.A. and E.A. worked on Fig. 1. H.J., P.O. and O.T. worked on Fig. 1. All authors wrote the manuscript and made final approval of manuscript.

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Code availability

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Declarations

Ethics approval and consent to participate

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Consent to publication

Not applicable.

Competing interest

The authors declare that they have no conflict of interest.

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