**Peer-reviewed Nutrition-Affiliated Journals from Sub-Saharan Africa: A regional snapshot**

**Running head:** Nutrition Journals from Sub-Saharan Africa

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Abstract: **Background**. Sub-Saharan African (SSA) countries face the multi-part burden of nutrition-related disease characterized by a high incidence of undernutrition, overweight, obesity, and associated non-communicable disease. Local and regional research to support a robust public health response is necessary. No evaluation of the availability and scope of nutrition-related journals within SSA has been published. **Methods**. An electronic search for peer-reviewed journals was conducted using seven publicly accessible databases. **Results**. Ten journals were identified including journals from Kenya (4 journals), Nigeria (3 journals), South Africa (2 journals), and Ghana (1 journal) with eight journals in active production. All active publishing journals are available as only English publications. **Conclusion**. An increased focus on evidence-based research through local and regional journal publications is necessary to develop and maintain public health nutrition programs. Active journals related to nutrition and food sciences are very limited in this comparatively large area and require more support at local, regional, and legislative levels.

Key words: Sub-Saharan Africa, research, nutrition, publishing.

Africa is a continent with high incidence of different forms of malnutrition, mostly in sub-Saharan African (SSA) countries.[1] These countries are undergoing important changes at demographic, economic, and ecologic levels.[2 3] Although governments express continuous commitment to public health solutions, their capacity to achieve the United Nations' Sustainable Development Goals is very low, as seen in the fact that less than 20% of SSA countries are on track.[4] Indeed, the 2015 United Nations report [5] reported that the prevalence of malnutrition among children under five years of age in SSA accounted for one third of all undernourished children globally. The World Health Organization indicated that the rates of stunting, wasting, and underweight in the countries in SSA are the highest rates worldwide. [1] According to the WHO report anemia affects large proportion of the population in the SSA region. More specifically, in countries such as Burkina Faso and Cote d'Ivoire more than 60% of children aged 6–59 months are diagnosed with anemia. [6] Anemia in pregnant women has a median of 47.3%, reaching the highest prevalence (67.9%) in Gambia. [1]

Paradoxically, evidence emphasizes a current and complex coexistence of under- and over-nutrition.[7] For example, Ziraba, et al.[8] conclude that in a decade (1992-2005), overweight and obesity increased by approximately 33% in SSA countries, with the prevalence of obesity in urban and rural areas increasing by 42% and 14.5%, respectively; they further suggest that the total estimated increase of overweight/obesity is 35.5%. The prevalence of type 2 diabetes, mostly in urban areas, rose in tandem with obesity figures to 4.3% in 2012.[9] The nutritional divide between increasing older populations in SSA suggests that over half are underweight, with many older people experiencing food insecurity, and a quarter are overweight of whom 56% are obese.[10 11] Obesity is more prevalent in urban areas, while undernutrition is prevalent in rural areas. This pattern emerges from nutrition transition to diets higher in saturated fats

and refined sugars in urban areas vs. higher energy expenditure of rural inhabitants simultaneously with more inadequate access to food, health services, and housing. [12] In addition to obesity, type 2 diabetes mellitus as well as hypertension are increasingly prevalent in SSA. According to the International Diabetes Federation,[13] approximately 19 million adults aged 20-79 years were living with diabetes in this region in 2019. By 2045, this figure is estimated to increase to 47 million.[13] Additionally, this region has the highest proportion of undiagnosed diabetes. Additionally, previous studies continue to report the growing prevalence of hypertension in SSA. [14-18]

Epidemiology studies on older people in SSA revealed that more than 50 million people are aged 60 years and over.[19 20] Such an increase requires adjustment in health care and interventions to promote a good well-being in this age group.[21] The ongoing rise in non-communicable diseases are public health issues, requiring more attention from the government and stakeholders to overcome over- and under-nutrition.[22] Moreover, inadequate nutrition has a tremendous negative effect on human capital and societal development. The SSA region demonstrates delayed economic progress because of the poor nutritional status of the population.[23]

In SSA countries, nutrition and health landscapes are becoming more multifaceted due to environmental, social, economic, and food security factors.[24 25] A well-designed and implemented research agenda is required to improve the health and nutritional status of the population. Yet, Holdsworth, et al.[2] reported that prioritizing research in SSA countries happens ad hoc. Nutrition research activities should be developed within the perspective of facilitating progress in tackling the high prevalence of both under- and over-nutrition. Holdsworth et al. emphasized the need to promote nutrition research to strengthen advocacy to international and

national stakeholders by supplying evidence. In view of all of this, it is important that the quality and quantity of research meet international standards.

Although research publication has increased during the last two decades, [26] Africa in general and SSA countries in particular are still under-represented at the global level in terms of scientific research production and publication. In 2011, research within and about Africa represented just 10% of scientific publications globally.[27] Aaron, et al.[28] analyzed peer-reviewed articles on key public health nutrition topics published over a decade (1998-2008) in West Africa and suggested that the number of peer-reviewed published research studies on nutrition issues in the SSA region was limited. Research suggests that numerous studies in biomedical research (from 2005-14) were published in local journals with low impact factors and limited global reach. [29]

A bibliometric analysis of the French published papers in French-speaking countries in SSA suggests that papers in this area that are published in French have a much lower citation rate than those published in English.[30] Since, to our knowledge, no study has assessed the publication of nutrition journals in SSA countries, the objective of this paper, is to assess the presence of peer-reviewed nutrition journals and to discuss how nutrition research and its application could be better supported within the SSA region.

## Methods

An electronic review for peer-reviewed journals was conducted using the following publicly accessible databases: 1) African Journals Online Database (AJOL); 2) PubMed National Library of Medicine Catalog Journals National Center for Biotechnology Information Database records; 3) Scopus; 4) Google Scholar; 5) Science Direct; 6) Directory of Open Access Journals (DOAJ); and 7) World Health Organization African Index Medicus (AIM) database to identify nutrition-related journals published in sub-Saharan African countries. For the purposes of this descriptive

review of journals, SSA countries were defined using the United Nations Geoscheme for Africa maintained by the United Nations Statistics Division.[31] A comprehensive search was carried out using a combination of the following phrases and terms: "nutrition; home economics; environmental nutrition; public health nutrition; clinical nutrition; medical nutrition; food sciences; diet; OR dietetics; AND journal, AND Angola; Benin; Botswana; Burkina Faso; Burundi; Cabo Verde; Cameroon; Central African Republic; Chad; Comoros; Congo; Côte d'Ivoire; Democratic Republic of the Congo; Djibouti; Equatorial Guinea; Eritrea; Eswatini; Ethiopia; Gabon; Gambia; Ghana; Guinea; Guinea-Bissau; Kenya; Lesotho; Liberia; Madagascar; Malawi; Mali; Mauritania; Mauritius; Mozambique; Namibia; Niger; Nigeria, Rwanda; Sao Tome and Principe; Senegal; Seychelles; Sierra Leone; Somalia; South Africa; South Sudan; Togo; Tanzania; Uganda; Zambia; OR Zimbabwe" to identify all relevant journals. Search results examined each journal's website and were reviewed to identify country of origin, activity status, publication period, available formats, language of publication, and impact factor. Results of the electronic survey were compiled and tabulated (see Table 1). Given the nature of this study, ethical approval and clearance were not warranted and therefore not obtained.

**Inclusion and exclusion criteria**. Only peer-reviewed journals were included in this review. Only independent SSA countries were included and, therefore, British and French Possessions and Overseas Territories of The Islands of Saint Helena, Ascension and Tristan da Cunha, Mayotte, British Indian Ocean Territory, and Réunion were excluded in this review. Additionally, as a delimitation, the authors excluded North African countries from this review due to a similar study that was previously conducted in the North African region. [32] For the purpose of this paper, nutrition-associated journals were defined as peer-reviewed journals with a primary focus any of the following disciplines: Nutrition, food agriculture, food sciences, and closely related disciplines of human food and nutrition. Journals with papers in the medical,

biomedical, public health sciences, and other allied health that did not have food or nutrition as their primary scope were excluded. Food chemistry, food production, livestock food, and agricultural journals were also excluded. Both active and interrupted or ceased journals were included in the results. Given the wide spectrum of languages used in this region, English and French terms and phrases were used. The authors recognize that relevant applicable journals may have been excluded because of these delimitations.

**Results**

The search yielded 10 relevant journals in the SSA countries, of which only eight show active status currently. Countries where these journals were published were Kenya (4 journals), followed by Nigeria (3 journals), then South Africa (2 Journals), and Ghana (1 journal). The language used in all these journals was English. In the publication period of currently "inactive" journals, one journal had lasted for one year and another journal had lasted for five years. Seven active journals had lasted over at least 15 years, while one had lasted over two years. An activity status of "active has lasted at least 20 years in five journals, more than 15 years in two journals, and for at least three years in one journal. Four actively publishing journals offered freely available open access to their respective publications, and four active journals did not. Two active journals offered both online access and printed format. Impact factors were not identified in any of the journals.

**Discussion**

The results of this review highlight the need for an increase in evidence-based nutrition research within SSA countries. Whether the solution to poor nutrition begins with a top-down legislative approach or a grass roots community approach, health and nutrition promotion

practices should be established based on the peer-reviewed literature. [33] Solutions for nutrition-related challenges are often centered on what should be done, when it needs to happen, and how much it will cost. Evidence-informed health and nutrition practice suggests that—at all stages of program planning, implementation, and assessment—the questions of *how* and *why* should be answered via a continuous evaluation cycle.[33] These questions are affected by location, socio-economic status, availability of local and regional resources, cultural acceptance at the individual and community levels, and relatability to the nutrition professionals in the wider community. A lack of academic and research sources that meet these needs adversely affects nutrition program planning, implementation, and outcomes and has long-term effects within SSA populations.

Although the nutrition research literature is robust from the global perspective, regional research efforts published within a culturally and geographically congruent context add value, proper insight, credibility, and relevance. The perceived quality of research findings and their apparent usability (measured by acceptance and adoption) are affected by how and where new evidence is developed and presented. [34] When evidence-based research is needed to inform local and regional nutrition education and healthy eating programs and a significant deficit exists in availability, the initial problem of poor nutrition is compounded, resulting in a double burden of nutrition-related comorbidities and lack of regional and culturally congruent nutrition-related resources.

All active and inactive journals reviewed in this study were published in English, which is a limitation, particularly from the point of view of local and regional nutrition health practitioners. Health promotion materials offered in native languages and/or in an ethnically sensitive style affect usability.[35] [36] An increased focus on evidence-based research through local and regional publication opportunities, support for existing publishers, and opportunities for

local nutrition professionals is warranted. Africa is the second most populous continent in the world, includes 18% of the world's population, and is second in population density. North America is the fifth most populous continent, including just 4% of the world's population, and is fifth in population density. Additionally, while the population growth rate globally is 1.05%, North America has a below average rate of 0.62% and the continent of Africa leads the world with a 2.49% growth population rate burden. [37] At the same time that such differences lend more weight to Africa, North America generates academic research from 40 regional and national nutrition journals [38] and SSA currently has eight active nutrition journals.

**Conclusions**. Inadequate nutrition has significant negative consequences for human capital and societal development. In SSA countries but few other parts of the world, undernutrition and diet-related non-communicable diseases affected by climatic and demographic changes are both widely observed, despite efforts to improve national economies. The current review highlights the need for an increase in evidence-based, robust, and consistent nutrition research in SSA countries. Active journals related to nutrition and food sciences are very limited in this large area and require more government support. Having an exclusively English profile, the cadre of SSA nutrition-related journals is inadequate for the needs of local and regional health and nutrition community programs, thus offering fewer opportunities for health promotion material and recommendations.

The importance of early public health interventions would prevent the transition from reaching critical levels of non-communicable diseases in these SSA countries, still in the early stages of the nutritional transition. [39-41] Referring to an appropriate and strong nutrition research-based system would engage and stimulate the demand from SSA policymakers. Locally generated evidence-based nutrition and health programs could have a significant positive effect on nutritional status within SSA countries. The challenge is to integrate the implementation of

these interventions into appropriate local systems that facilitate high levels of cost-effective coverage sustainably. These efforts require a substantial and high-priority financial commitment at the national and international levels toward achieving the SDG 2030 supported by locally generated and regionally published nutrition research.

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**Table 1.** Selected Journals from Sub-Saharan African countries

| Journal Name | Publication Period [a] | Activity Status | Country Origin | Language | Print Format [b] | Open Access [c] | I.F [d] |
|---|---|---|---|---|---|---|---|
| Agricultural and Food Science Journal of Ghana | 2004-2020 | Active | Ghana | English | Electronic | No | N/A |
| African Journal of Food and Nutritional Security | 2001 | Inactive | Kenya | English | Electronic | No | N/A |
| African Journal of Food, Agriculture, Nutrition and Development | 2001-Present | Active | Kenya | English | Electronic | Yes | N/A |
| Journal of Food Technology in Africa | 1999-2004 | Inactive | Kenya | English | Electronic | Yes | N/A |
| The KNDI Journal of Nutrition and Dietetics | 2017-2019 | Active | Kenya | English | Electronic | No | N/A |
| Nigerian Food Journal | 1983-2020 | Active | Nigeria | English | Electronic | No | N/A |
| Nigerian Journal of Nutritional Sciences | 1981-2020 | Active | Nigeria | English | Both | No | N/A |
| Journal of Agriculture and Food Sciences | 2003-Present | Active | Nigeria | English | Electronic | Yes | N/A |
| Journal of Consumer Sciences | 1998-Present | Active | South Africa | English | Electronic | Yes | N/A |
| South African Journal of Clinical Nutrition | 1987-Present | Active | South Africa | English | Both | Yes | N/A |

[a] Information obtained from Journal website
[b] Paper; electronic; Both
[c] N/A - Information not available
[d] I.F - Impact Factor obtained from Journal website (2020 - 2021)