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RESEARCH LETTER

Disparities in research funding among African scientists: successes and sources of information

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To the Editor

Adequate funding is critical for advancing research and academic careers. Despite Africa's abundant resources, cultural diversity, and innovation potential, the continent contributes less than 1% to global research outputs.[1] This extraordinarily low contribution is largely attributable to insufficient funding, infrastructure deficits, political instability, and socioeconomic disparities.[2] These challenges hamper Africa's ability to effectively address urgent developmental issues such as climate change, public health crises, and food insecurity.[3]

As part of an ongoing research agenda, this paper reports on a pilot investigation surveying the landscape of research funding in Africa. Specifically, this study examined the disciplinary and regional variations in grant applications, success rates, available opportunities, barriers, and sources of information regarding grants among African scientists.

An online survey was administered to African scientists between May and December 2023 using the Kobo Toolbox platform[4]. Invitations were distributed via multiple electronic platforms, including emails, WhatsApp groups, LinkedIn networks targeting researchers across varied disciplines and institutions. A total of 300 responses were received; after data cleaning and removal of incomplete responses, 294 complete responses were retained for analysis.

KEYWORDS:
Research funding, African scientists, grant success, disciplines, regional disparities, research training, gender, information sources

Data cleaning entailed removing partially completed surveys and those with contradictory or inconsistent responses to ensure data quality. Participants' demographics, career stages, fields of study, institutional affiliations, grant application and success experiences, and sources of information about funding opportunities were collected.

Descriptive statistics were calculated to summarize participant characteristics. Furthermore, binary logistic regression analyses were conducted using SPSS version 27 to identify factors influencing grant success rates. The model adjusted for demographic variables, including age, gender, education level, discipline, and region of origin. To ensure ethical compliance, participants provided informed consent electronically prior to commencing the survey. Anonymity was maintained throughout, with no identifying information stored or used in analyses.

Table 1. Background characteristics of participants

Variable	Frequency N = 294 n (%)
Age Group, years	
25-34	54 (18.2)
35-44	114 (38.5)
>=45	128 (43.2)
Gender	
Women	124 (41.9)
Men	172 (58.1)
Marital Status	
Unmarried	57 (19.3)
Married	239 (80.7)
Region of Origin	
North-East Africa	79 (26.7)
Southern Africa	23 (7.8)
West-Central Africa	194 (65.5)
Missing	4 (1.4)
Highest education attained	154 (52.0)
Less than a Doctoral Degree	142 (48.0)
PhD or Doctoral degree	
Employment status	
Employed (Full-time)	244 (82.4)
Employed (Part-time)	28 (9.5)
Unemployed	24 (8.1)
Main role at work	
Administration/Librarian/Others	47 (15.9)
Clinician	35 (11.8)
Research	61 (20.6)
Teaching	132 (44.6)
Missing	21 (7.1)
Main discipline	
Agricultural, life and biological sciences	52 (17.6)
Arts, Human and Social Sciences	68 (23.0)
Medicine and health sciences	112 (37.8)
Physical and technological sciences	64 (21.6)
Institution Type	
Non-government institution t	56 (18.9)
Government institution	240 (81.1)

The majority of respondents were males (58.1%) and 43.2% were aged 45 years or older. Most respondents originated from Western and Central Africa (65.5%), followed by Northern and Eastern Africa (26.7%), and Southern Africa (7.8%) (Table 1). Nearly half of the respondents held doctoral degrees (48%), and 81.1% were employed within government institutions, with 18.9% affiliated with non-governmental organizations. Full-time employment was prevalent (82.4%), compared to part-time (9.5%) or unemployment (8.1%). The majority were married (80.7%), while 19.3% were unmarried.

Regarding academic disciplines, participants were primarily from medicine and health sciences (37.8%), followed by arts, human, and social sciences (23%), physical and technological sciences (21.6%), and agricultural, life, and biological sciences (17.6%). Of the respondents, 48.6% reported that they had applied for research grants during their careers (Figure 1). However, only 22.1% of those who applied succeeded in securing funding. Men were more likely than women both to apply for and win grants (Figure 1). Older researchers (>45 years) and those holding doctoral degrees were significantly more successful as principal investigators than younger researchers and those with less than doctoral degrees (data from logistic regression).

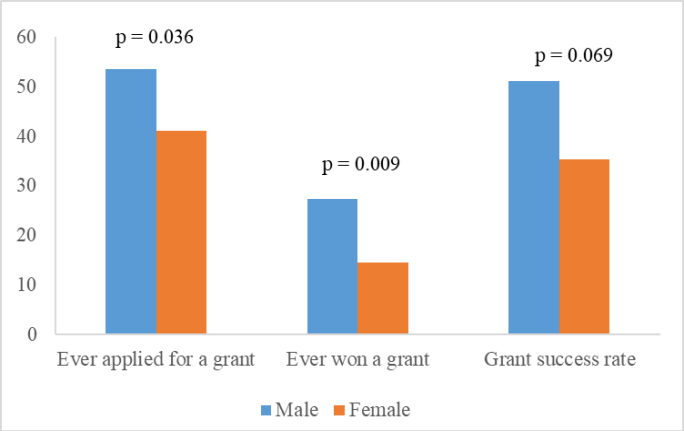

Figure 1. Distribution of grant applications and success rate by gender among African scientists

Disciplinary differences were evident, with agricultural sciences demonstrating the highest grant success rates compared to other fields (Figure 3). Regional disparities were striking although researchers from Western and Central Africa submitted the highest proportion of grant applications (68.5%), they had the lowest success rates (35.7%). Conversely, researchers from Northern and Eastern Africa exhibited the highest success rate (68.8%), followed by Southern Africa (61.5%) (Figure 2). Logistic regression adjusting for demographic factors confirmed that researchers from Western and Central Africa were significantly less likely to succeed in grant applications (Odds Ratio 0.32, 95% CI 0.12–0.83).

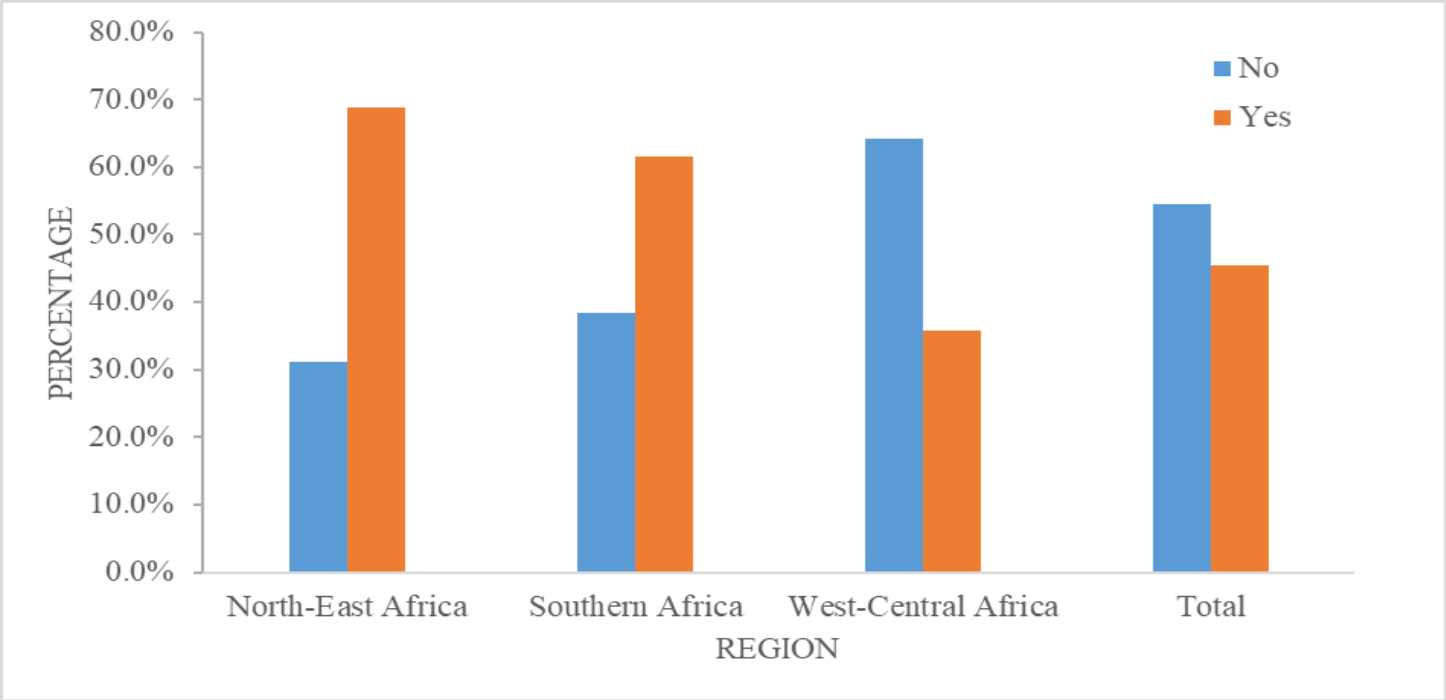

Figure 2. Grant success rates by region among African scientists who had ever applied for a grant

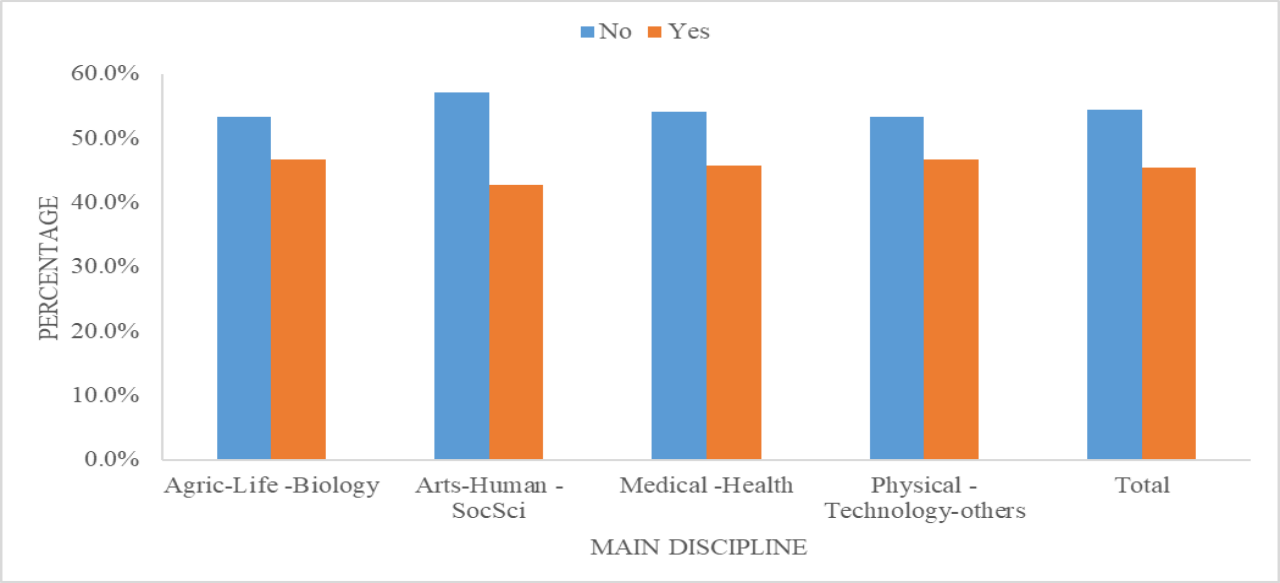

Figure 3. Grant success rates by discipline among African scientists who had ever applied for a grant

There were significant regional variations in the sources of information about funding opportunities (Figure 4). Scientists from Southern Africa primarily relied on institutional sources (65.2%) and newspapers (60.9%) for grant information. In contrast, those from Western and Central Africa utilized fewer formal channels such as institutional sources (55.7%) and journals (5.7%), relying more on informal networks (15.6%). Disciplinary variation was also observed: agricultural scientists depended largely on newspapers (46.2%), arts and social sciences researchers on journals (11.8%), while medical researchers underutilized funder announcements (13.6%).

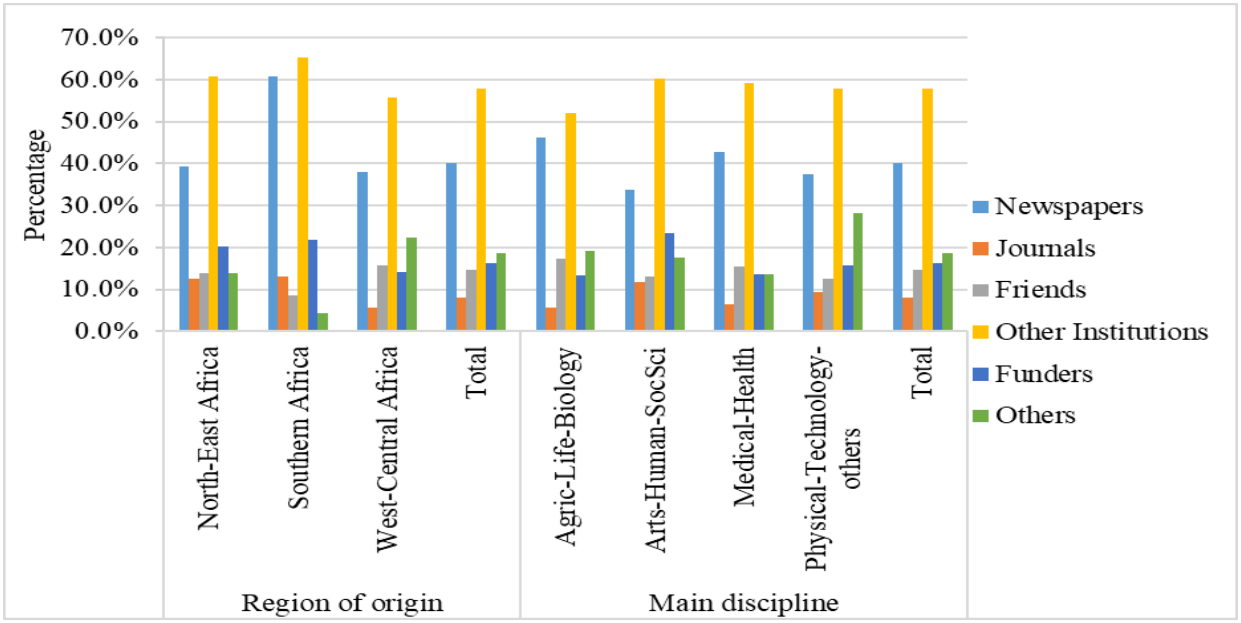

Figure 4. Sources of Information about grants by region and discipline among African scientists.

This study provides exploratory yet insightful data on the funding experiences of African scientists, revealing notable regional, gender, and disciplinary disparities in grant application and success rates. The high proportion of doctoral degree holders in this sample supports existing research highlighting public sector employment as a primary academic research source in Africa.

Our findings align partially with global funding trends that prioritize health research; however, agricultural sciences in this study had the highest grant success rates, reflecting agriculture's critical role in Africa's economy and food security.[5, 6] The overall low success rate (22.1%) despite nearly half applying for grants points to multifactorial barriers, including intense competition, resource limitations, and challenges in writing winning proposals [7].

Gender disparities, with men securing more grants than women, likely stem from systemic biases and unequal non-academic workloads borne disproportionately by women.[1] The association of greater funding success with seniority and doctoral qualifications concurs with established literature linking academic experience to funding outcomes[5].

Regional disparities may result from differences in institutional infrastructure, research investment, capacity building, availability of grant opportunities, and awareness among researchers. Northern, Eastern, and Southern Africa appear to benefit from stronger institutional support, while Western and Central Africa suffer infrastructural and awareness deficits[6].

Incorporating perspectives on grant rejection and resilience from[8] adds depth to understanding the emotional and professional challenges facing African researchers navigating funding landscapes, aiding future capacity-building strategies.

This pilot study highlights urgent needs for targeted interventions to improve grant success among African researchers, particularly in underperforming regions such as Western and Central Africa and among underrepresented groups, including women and early-career scientists. Strengthening institutional capacities, promoting gender equity, ensuring equitable funding distributions, and increasing inter-regional collaborations are critical strategies. Additionally, the establishment of sustainable local funding mechanisms to reduce reliance on external donors is essential.

The findings carry significant policy, practical, and managerial implications. Governments should prioritize capacity building in collaboration with academic and social partners. Institutions need to enhance mentorship and proposal-writing training programs, while funders should design inclusive grant opportunities to address identified disparities.

Acknowledging this is a pilot study with convenience sampling and limited generalizability, the results nevertheless provide valuable insights to inform more comprehensive future research and historic evaluations of research funding equity in Africa.

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CONFLICT OF INTEREST

The authors declare no conflicts of interest related to this manuscript.

AUTHORS' CONTRIBUTIONS

NE: Supervised the research team, coordinated task assignments, wrote the first draft of the manuscript, and managed the manuscript submission process. OSE: prepared the questionnaire on the KoboToolbox platform, performed the statistical analysis, supported writing of first draft of manuscript and provided critical review. MM: supported the drafting of results and provided critical review of the manuscript. AO and AFO:

participated in writing the introduction of the manuscript, compiled relevant scientific literature, supported writing of the discussion section, and provided critical review of the manuscript. IKPA: critically reviewed the results and provided critical review of the manuscript. ES: co-PI of the project, supported development of survey questionnaire, and critically reviewed the manuscript. BIN: PI of the project, conceived the idea of the project, developed the survey questionnaire, guided the project implementation, data analysis, and writing.

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