Overdue Assignment: A Case Study on Academic Writing Development for Postgraduate Health Professional Trainees in Kenya

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ABSTRACT

OBJECTIVES: Though essential for research capacity building, development of authorial identity for thesis projects and publications has been overlooked in African postgraduate residency programs. This study aims to explore authorial identity among postgraduate health professional trainees at two universities in Kenya. It also evaluated the effect of Age of Acquisition of English on confidence in writing.

METHODS: This exploratory case study utilized quantitative and qualitative data. Pre- and post-workshop surveys were generated from learning objectives and evaluated confidence in writing and plagiarism awareness, both important attributes of authorial identity. As confidence in writing might be influenced by the English Age of Acquisition, the questionnaire also included items from the Language Experience and Proficiency Questionnaire. Pre- and post-workshop responses were analyzed using planned comparisons. Focus group discussions further explored authorial identity among participants and were analyzed thematically.

RESULTS: A total of 57 postgraduate trainees from nine medical specialties participated in the study. Both confidence in writing and plagiarism awareness improved significantly after the workshop: confidence in writing pre-test ($M = 3.20$, $SD = 0.59$) and post-test ($M = 3.97$, $SD = 0.61$), $t(56) = 6.93$, $P < .001$, $d = 0.9$; plagiarism awareness pre-test ($M = 3.01$, SD 0.72) and post-test ($M = 3.92$, SD 0.65), $t(56) = 6,8$, $P < .001$, $d = 0.9$. The average English Age of Acquisition was 4.98 years and showed no correlation with confidence in writing. Participants recognized that authentic authorship requires hard work and suggested plagiarism is driven by inadequate writing instruction. They proposed that changing perceptions of research and writing could overcome a graduation requirement mindset among trainees.

CONCLUSIONS: Interactive workshops using procedural and enculturation approaches may be useful to develop authorial identity among postgraduate health professionals in Kenya. Further research is needed on evaluating workshop effectiveness using direct indicators of learning and other curricular reforms to promote authorship.

KEYWORDS: Africa, writing skill development, authorial identity, health professionals, research capacity building, plagiarism

Introduction

Although the African continent carries about 25% of the global disease burden, Africa contributes less than 2.6% of the global scientific output.[1,2] More research originating from Africa is important to develop a better understanding of local health problems and enhance institutional and policy decision making. Current health research capacity building efforts in African countries focus on knowledge and skills to conduct research, but do not emphasize writing skill development to publicly disseminate those findings. More importantly, no focus is put on the development of authorial identity among students, defined by the sense a writer has of themselves as an author and the textual identity they construct in their writing. As a result, this leads to insufficient understanding of referencing, paraphrasing and plagiarism, often unintentional.[3-5] How to best teach writing skills and develop authorial identity to improve equity in health care research remains a key issue in international healthcare education.[6]

Role of African governments and universities

Governments have a crucial role to play in facilitating increased research output in their countries. The 2008 Global Ministerial Forum on Research for Health, held in Bamako, Mali, called on national governments to strengthen the research capacity of novice researchers while allocating at least 2% of national health budgets for research.[7,8] Although health policy and system research publications from low- and middle-income countries (LMICs) are growing in number, only 4% of those first authors come from the same LMICs.[9] A more recent systematic review also demonstrated the considerably low representation of Africans as first and last authors among infectious disease research studies on the African continent, extending more than 30 years.[10] Reasons for low authorship among Africans are complex. Certainly, funding can fuel power imbalances between high income countries and LMICs on research collaborations. Still, African researchers have comparatively less experience managing and publishing research.[11] While

governments should leverage their mandate to increase health research spending, relatively low African authorship remains a challenge.

Currently, formal education and training for academic writing skills to support publishing efforts on a competitive global scale is scarce.[12] Thus, universities in Africa should be primary facilitators of writing skill development among health professional (HP) trainees at all levels. In Kenya, for example, most doctors enrolled in four-year residency programs did not receive academic writing instruction in secondary school or at the undergraduate level, even though English-based education begins in primary schools. Residency programs (like all Master degrees from universities in Kenya) require a 20,000-word thesis for graduation,[13] a daunting task without a solid foundation in academic writing. Universities encourage or even require their postgraduate students to publish in peer-reviewed journals despite inadequate writing skills to meet that goal.

Authorial identity and plagiarism interventions

Plagiarism is a global concern, but it remains a greater risk in countries with weak academic writing instruction and inadequate mastery of the English language.[3] Furthermore, health researchers from LMICs, and specifically Kenyan investigators, have reported awareness of common plagiarism practices at their universities.[14,15] Plagiarism goes beyond university projects and has plagued the publishing sphere of African medical journals, particularly in introduction and discussion sections.[14]

Several short (single session) interventions in referencing, paraphrasing and avoiding plagiarism have demonstrated improved outcomes among university students in the United States and Australia.[16,17] Yet a recent country-wide survey among universities in Rwanda indicated a high knowledge of plagiarism among students with a contrastingly low (11.6%) percentage of those able to recognize plagiarism.[5] This demonstrates the need for greater skill development rather than increasing knowledge alone. The authors also argued that to reduce plagiarism, trainings should (1) include the purpose and principles of academic writing to allow students to view themselves as disseminators of scholarship, and (2) target English writing skills to build students' confidence in expressing their ideas. Interventions have demonstrated that confidence in writing has proved more influential in reducing plagiarism than language background among those who did not learn English as their first language.[16]

Academic writing instruction for HP cannot utilize only a procedural approach, focusing solely on the rules of citing and referencing.[16] Writing skills must include critical analysis of literature sources to inform students' own ideas and instruct how to build a coherent argument in their writing.[3,12] Students often do not perceive themselves as authors so there is a need to develop their own authorial identity or voice.[3,18] Confidence

in writing and plagiarism awareness are important attributes of authorial identity.[18] An enculturation-oriented approach aims to develop authorial identity, helping students to explore ownership of ideas while using scholarship to support their own arguments.[16] Though various academic writing interventions have been described, few have included both procedural and enculturation-oriented approaches.

Language

HP trainees from LMICs face an added challenge in authorship because English is often not their primary language. Academic writing skills are built on top of foundational English writing skills such as sentence structure and variety, correct grammar, unity and coherence in the expression of ideas and paragraph construction, all of which prove challenging to students whom English is not their primary language.[19] Though most postgraduate students in Kenya today received English-only education from a primary school level, these learners come from diverse multilingual backgrounds. In fact, many Kenyans acquire English as their third language, after learning their mother tongue first and Kiswahili as their second language. The effect of Age of Acquisition (AoA) of English on authorship and plagiarism in Kenya has not been described. Despite that, it is well established that syntax errors (eg, as measured by grammaticality judgments) and degree of nonnative accent increase with increases in AoA of a language.[20]

When considering how to assess the language background of multilinguals, many researchers find that challenges exist in that no bi/multilingual individual is perfectly balanced in all skill areas (eg, reading, writing, production (speech), and spoken comprehension). For example, an individual may have native-like competency in their first language (often referred to as the mother tongue in Kenya), but weak writing or reading skills in that language. In contrast, their reading and writing skills may be stronger in another language, perhaps one of the languages that they learned later.[21] Due to the complex nature of language processing, many researchers aim to have participants complete a language history questionnaire (LHQ), which allows them to report the order in which their languages were acquired, as well as self-reported ratings for the four key areas of language skill for each language known.[22,23]

To better understand authorial identity and writing development needs among Kenyan postgraduate HP trainees, we aimed to answer the following research questions:

1. What is the effect of a 2-day workshop on participants' confidence in writing and plagiarism awareness?
2. What is the effect of the Age of Acquisition of English on confidence in writing?
3. What are attitudes toward authorship, plagiarism and writing instruction in Kenya?

This study can inform current efforts aiming to foster writing skills in African countries, which may help reduce plagiarism and increase academic output among postgraduate HP trainees.

Methods

Writing workshop

We constructed a novel curriculum utilizing both procedural and enculturation approaches to writing instruction for postgraduate HP trainees in Kenya. This case study aims to evaluate the effect of that workshop while exploring authorial identity and writing skill development needs for multilinguals in Kenya. An exploratory case study paradigm was chosen to "investigate a contemporary phenomenon and within its real-world context, especially when the boundaries between phenomenon and context may not be clearly evident."[24] An important first step of case study research is defining the case in scope and time. The phenomenon or *case* explored was authorial identity and *how* to develop authorial identity and *how* to best develop it among multilingual HP enrolled in postgraduate programs. Authorial identity is shaped by many contextual factors including language background, confidence in writing and plagiarism awareness. Thus a case study design was appropriate, drawing on multiple sources of data while exploring social and cultural phenomena around constructs.[25]

The two full day workshop was designed to address capacity gaps in scientific writing: critical analysis of literature, synthesis of ideas, constructing an argument, and appropriate referencing among novice writers. Furthermore, it built on single session interventions on decreasing plagiarism, patch writing and strengthening paraphrasing skills.[16,17] Pedagogical principles of active learning methodologies, formative feedback and reflection drew from six principles of experiential learning theory (ELT): (1) learning is a process rather than an outcome; (2) all "learning is relearning"; (3) learners must move between "opposing modes of reflection and action and feeling and thinking"; (4) learning is holistic involving cognition, emotion, attitude and behavior; (5) learning occurs through interaction with the environment; and (6) learning involves knowledge construction.[26,27]

Study participants

The workshop was conducted at two private institutions in Kenya, Aga Khan University Hospital (AKUH) and Kabarak University (KABU). AKUH and KABU have trainees from various medical disciplines who are pursuing an MMED or MSc degree. The 2-day workshop was required for postgraduate HP trainees in a selected year of training at both institutions. A total of four workshops were conducted in 2021 by the same facilitator (SO), two of which were face to face and two were online via Zoom. The workshop was two full days of interactive learning and writing exercises, including peer review (Appendix I). The intensive workshop was adapted from a full semester course offered at KABU, and workshop attendance was required by corresponding Heads of Departments at each institution.

Study design

This study employed both quantitative and qualitative methods. All postgraduate students who attended the entire workshop at both institutions were invited to participate in the quantitative survey (Appendix II). The pre-workshop survey included items from the Language Experience and Proficiency Questionnaire, adapted for the Kenyan population in previous multilingual language research.[22] Pre- and post-workshop surveys contained 10 identical items that were generated directly from the learning objectives of the workshop. Respondents selected from five options: 1, "strongly disagree," 2, "disagree," 3, "neutral," 4, "agree," and 5, "strongly agree." To limit social desirability bias, respondents were reminded that honest responses on post-workshop surveys would shape subsequent writing workshops to best meet their expressed needs for writing skill development.

Three focus group discussions (FGD) were constituted using opportunistic sampling with broad representation of age, gender, undergraduate experience, postgraduate institutions, English language proficiency and attitudes toward plagiarism. FGD were conducted with structured interviews that explored authorship, plagiarism, participants' previous writing instruction, writing workshop feedback and ideas on future trainings. We ensured that FGD facilitators (FO, DBB) were not faculty from the same institution as focus group members. Qualitative data was collected with audio-recordings and transcribed.

Ethical consent was obtained by Aga Khan University Hospital-Nairobi (2020/IERC-02(v2), 17th November 2020) and Egerton University (EUREC/APP/114/2021, 12th February 2021) and we complied with their ethical regulations. Written consent was obtained from all study participants prior to study initiation. All tools were in the English language.

Data analysis

Questions 1–6 and 10 represented confidence in writing and questions 7–9 represented plagiarism awareness. Likert scale responses of pre- and post-workshop surveys were grouped according to these two attributes and means were analyzed using planned comparisons (paired sample *t*-tests). Pearson's test was used to evaluate correlation between AoA of English and Confidence in writing in Pre- and Post-workshop tests. Facilitators' notes taken during FGD were cross-checked with themes generated from the primary recorded data. Transcripts from FGD were analyzed manually using the six-stage process of Braun and Clarke[28] and an audit trail was kept. First, transcripts were read several times for familiarization and then initial codes were generated in a systematic approach. Codes were collated into potential themes and

checked back for alignment with entire data set. Themes were revised for specific naming and clarity. The final report was analyzed collectively among investigators and related back to the research questions exploring the phenomenon of authorship. Final themes were shared and cross-checked with FGD participants to ensure data trustworthiness.

Results

Four writing workshops were conducted at two institutions between January and October, 2021. A total of 57 graduate trainees from nine medical specialties participated in the study (Table 1). The average age of participants was 32.6 years. All but one completed undergraduate studies in five African countries (Kenya, Uganda, Tanzania, Somaliland and Sudan). Of these participants, 40% and 42% reported English as their second and third language learned, respectively. The average AoA of English among all participants was 4.98 (SD = 4.66) years old. Trainees were proficient multilinguals: 100% of participants reported knowing two languages, and 72% reported knowing three languages. Mean AoA were 1.88 (SD = 1.60), 4.29 (SD = 2.41), and 8.92 (SD = 7.18) years old for the first language (L1), second language (L2), and third language (L3).

Questionnaire: confidence in writing and plagiarism awareness

To compare the impact of the workshop on authorial identity, confidence in writing and plagiarism awareness were evaluated in the questionnaire. Questions 1–6 and 10 evaluated

Table 1. Participants' demographics.

Variables	N (%)
Gender	
Male	20 (35)
Female	37 (65)
University	
KABU	16 (28)
AKU	41 (72)
Year of study	
PGY1	16 (28)
PGY2	10 (17.5)
PGY3	31 (54.5)
English as 1st, 2nd, 3rd language	
English L1	10 (17.5)
English L2	23 (40)
English L3	24 (42)
Total	**57 (100)**

confidence in writing, and questions 7-9 evaluated plagiarism awareness. Mean scores for each participant's pre-survey and post-survey ratings were computed for these questions, this meant that the scores for questions #4 and #6 in the survey needed to be transposed. A paired sample t-test conducted on the pre/post comparison revealed that both confidence in writing and plagiarism awareness improved significantly after the workshop:

Confidence in writing pre-test ($M = 3.20$, $SD = 0.59$) and post-test ($M = 3.97$, $SD = 0.61$), $t(56) = 6.93$, $P < .001$, $d = 0.9$, illustrating a big effect size. Plagiarism awareness pre-test ($M = 3.01$, SD 0.72) and post-test ($M = 3.92$, SD 0.65), $t(56) = 6,8$, $P < .001$, $d = 0.9$, also a big effect size (Figures 1 and 2). In addition, post hoc exploratory analyses were conducted to determine whether there was any difference in learning platform (face-to-face vs online learning), but no significant differences were observed.

Questionnaire: age of acquisition of English

Though the average English AoA was 4.98, there was a broad range among participants. Correlations with English AoA and confidence in writing (questions 1–6, 10) were not significant for both the pre-test and the post-test ($r = .25$, $P = .07$; $r = -.03$, $P = .82$, respectively).

Focus group discussions: authorship, plagiarism and writing instruction

Three FGDs were conducted face to face, zoom only or blended format. FGDs consisted of 6–10 individuals and lasted approximately 50 minutes. The following three themes emerged from data analysis:

Authentic authorship requires hard work. Participants described the role of first authors as the primary lead actively involved in all stages of the research and writing. In research projects such as their thesis, being an author involves active engagement in all steps, from concept development, data collection and
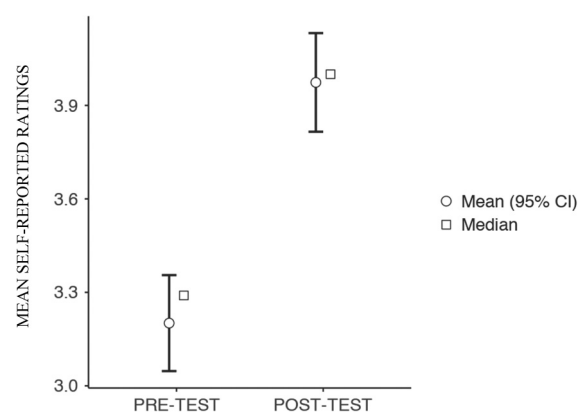

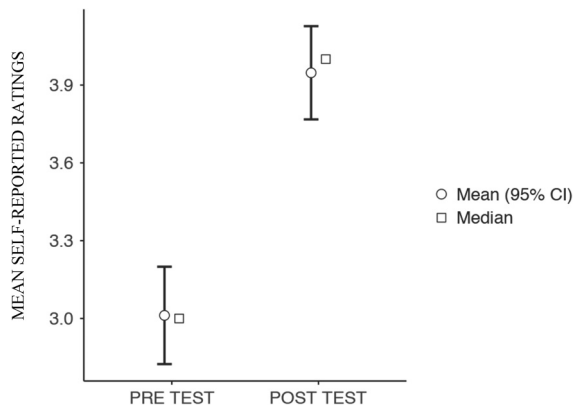
Figure 1. Confidence in writing.

Figure 2. Plagiarism awareness.

analysis to the final write up. Challenges cited included deciding on a topic, getting started and writing a literature review while avoiding plagiarism. Participants expressed authorship as having a unique, authentic voice in their writing. Participants also highlighted this challenge in authorship:

> "But now when I want to reference it is very difficult to make my voice be heard from the referencing material that I get, so changing words that is what is difficult for me so that it doesn't sound like it is or can be seen as it is the person that wrote the literature that I'm reviewing." (FGD#2, P1)

Authorship was described as not only referencing others' work but a clear interpretation or analysis of the relevance of that work to their own research project. All participants expressed appreciation for the hard work that authorship requires. On a scale of 1 to 10, participants described their confidence in being a first author of a publication and responses emphasized the required effort for this challenge:

> "I would still rate myself 5 out of 10. The reason being one, I got an appreciation of how much work it takes to write material that would meet the scientific rigor in terms of publication. But secondly, also why I rated myself 5 is that I feel there is work on my end now that needs to be done in terms of practice in writing in order to achieve that kind of expectation." (FGD#2, P8)

Plagiarism driven by inadequate academic writing instruction. Participants' pre-workshop understanding of plagiarism was limited to recognizing it was something that should not be done. They asserted that they and others often committed plagiarism without realizing it. Post-workshop, participants expressed gained insight on how to detect plagiarism and how to avoid it in their writing. Most reported that it was not the first time to hear the term, but the first time to really understand it:

> "I don't think it has been much emphasized in many of our institutions so that many students do not know what plagiarism is exactly. They may know it as a blanket statement that yes it is stealing

someone else's work but they might not know the nitty gritty of what plagiarism is. So some do it without necessarily knowing and for some they may know but since it is not emphasized much in our teaching then they may not take it as such a big deal" (FGD #2, P6)

Other participants also suggested a lack of deterrents from universities as a contributing factor to plagiarism:

> "It is something that you hear almost when you do your thesis . . . the consequences are not very clear. Very few people have faced really any consequences in terms of plagiarism. Therefore, I think it is still a dark area that needs to be brought to the light" (FGD#2, P9)

Participants felt referencing was often taught either poorly, not at all, or too late in training. An example given on poor instruction was seminars that lacked practice opportunities to summarize in their own words.

This required writing workshop was the first of its kind for most participants, while some cited seminars they voluntarily attended or sought out in undergraduate programs. Suggested solutions included more frequent writing workshops and implementing them as early as possible in education systems, even prior to undergraduate. They promoted a shift in early instructional emphasis:

> "I wish they would make us maybe paraphrase or write [a summary] regarding what you have read, and then you would understand to interpret text and to put text in your own words other than only testing comprehension. . . then it would create a culture of you know, you don't read texts to copy and paste, you read texts to comprehend and be able to paraphrase things in your own words" (FGD#1, P4)

Changing our perception of research. Participants often described research projects as a tedious academic requirement and no participant expressed research as a career endeavor to pursue after graduation. Those without plans to publish lacked a sense of purpose for their research efforts beyond graduation requirements:

> "You put in so much work and then it doesn't really translate into anything." (FGD#1, P3)

This is consistent with how participants viewed publication in peer-reviewed journals as the only noteworthy dissemination of scholarship. Similarly, writing a thesis was a requirement to complete a program:

> "The culture of writing in Kenya. . . there is no culture of writing. I think you only write, for most us, you only write when it is required of you to write, so there is no responsibility attached to the writing, I need to write so I can graduate. But now with . . . the culture of writing being instilled in us maybe we will do better." (FGD#2, P5)

Their recommendations were to address and change trainees' limited perceptions on research. Participants suggested curriculum efforts such as protecting dedicated time for

research and writing, utilizing tools for complex skills such as synthesizing the literature and emphasizing practical over theoretical instruction. They felt supervisors should play a more active role in guiding novice writers with a formative, rather than a punitive, response to plagiarism. All felt that writing instruction should be strengthened at secondary school and undergraduate levels but should still be integrated in postgraduate programs.

Discussion

This case study utilized quantitative and qualitative data to evaluate the impact of a 2-day writing workshop on confidence in writing and plagiarism awareness, describe any correlations in writing confidence and participants' English AoA, and explore participants' attitudes toward authorship, plagiarism and writing instruction. Our findings demonstrated meaningful impact on postgraduate HP trainees' confidence in writing and plagiarism awareness regardless of the age they learned English. We also presented the first qualitative findings on HP trainees' attitudes toward attributes and development of authorial identity among two Kenyan universities. Collectively these findings describe how participants view authorial identity and trainings needed to strengthen authorship among multilingual health professionals.

Language and training

The majority of study participants' learned English as a second or third language with a wide range of English AoA. Our findings indicated that an earlier English AoA did not correlate with an increased confidence in writing skills. This suggests that intensive training in the 2-day seminar may be more influential to our results than baseline English mastery. By self-reported measures, post-seminar ratings showed significant increased confidence in referencing, summarizing and synthesizing articles while avoiding plagiarism. Other studies from the UK and Africa have similarly attributed unintentional plagiarism to knowledge deficits and insufficient skill development.[3-5,18,29] This was further supported by qualitative data from this study that explored reasons for plagiarism—lack of awareness and training were clear contributors. Still, participants also suggested reasons for intentional plagiarism. University students in Kenya do not face severe consequences and often do not see the value of their research efforts. Limited research on plagiarism from the East African region assumes plagiarism is always intentional, including it among other forms of academic dishonesty such as cheating on exams.[30,31] Our study suggests that plagiarism in East Africa is not a dichotomous intentional or unintentional act. It can be either and it can be both, adding to the complexity of the problem. This complexity was recently described by a country-wide survey of Rwandan universities with 63.3% of students viewing plagiarism as unacceptable, while 44.4% found it

difficult to avoid.[5] Universities must take up the challenge to provide a wide array of solutions: capacity building and training, helping learners use plagiarism detection software as a formative tool while setting clear and enforced consequences for plagiarism. Where university-wide reforms prove challenging, writing skill development for HP trainees may be left to individual faculty/schools of medicine and departments. Smaller cohorts among postgraduate programs call for multi-institutional seminars for both time and cost effectiveness.

Despite meaningful gains in confidence and plagiarism awareness, qualitative data from our study illustrated confidence in first-authorship of publications was still low, a recognized gap for researchers from LMICs.[32,33] Participants expressed tremendous insight into the amount of work required for authentic authorship without plagiarizing. Though participants felt more confident in their writing skills, they recognized how far they still had to go to meet publication standards. Trainees should be made aware of the pre-publication editing services provided by journals to help bridge this chasm.[11] In addition, universities can offer similar required writing seminars more frequently throughout postgraduate HP training. Previous studies have demonstrated the effectiveness of short duration/single session interventions for writing skills.[16,17] This study expanded on those interventions by providing more opportunities for learning by doing in paraphrasing, citing and revising their writing samples. In addition, this study facilitated reflection and discussion on topics unexplored in single session interventions—namely scholarship, authorial identity and factors contributing to plagiarism—to explore authorship among HP trainees in Kenyan universities.

Change the approach to writing and research

Participants were clear in describing research projects as graduation requirements that must be endured. Reasons for low interest in research included a lack of robust research cultures in their institutions, insufficient supervisor support, the time required for authentic authorship and feeling that their thesis projects will not meet publication standards. Our findings emphasize the need to reevaluate research methods instruction in postgraduate training programs. Insufficient senior research mentors among LMIC institutions sheds light on the incongruity of research methods instruction and research practices.[32] Still, faculty can foster greater enthusiasm for research among trainees in helping them see the value of generating questions that address local community health concerns on a low budget.[34] While publishing in reputable peer-reviewed journals is a desired output, mentors and supervisors should encourage scholarship dissemination through presentations, posters and oral abstracts at institutional, regional and international conferences. Networking and collaboration at these events may encourage trainees in their research efforts and help see beyond graduation requirements.

How institutions approach writing instruction can also shape trainees' view of research. Procedural instruction of writing skills alone will produce surface learning and fall short of transformative learning needed for attitudinal change toward plagiarism.[16] Furthermore, the core ethos of HP training is to learn by doing, and writing is no exception. Improvement can only be realized through practice, revisions and feedback from peers and supervisors. This evaluative approach to clarify meaning in writing samples may be well established in western settings of all academic levels but is still an unconventional practice in African settings.[35,36] When possible, aligning seminars with thesis-related outputs (concept papers, literature review, etc.) and creating a "workshop" environment on those assignments would be particularly helpful. Experiential learning, formative feedback and fostering an authorial voice can transform knowledge, skills and attitudes toward writing for research projects.

There are several limitations to this study. Our findings suggest that intensive writing seminars can translate to self-reported gains in confidence in writing and plagiarism awareness, but we did not employ objective measures to determine writing skill improvement after the workshop. Self-reported data can be influenced by social desirability bias. We attempted to mitigate this by reminding participants that their post-workshop responses would shape future writing trainings to better meet their expressed needs. The first two FGDs were conducted with select workshop participants within 4 to 6 weeks after each workshop. However, the final FGD drew from two different workshops held 4 months apart due to insufficient workshop participants. This meant that some participants in the third FGD had completed the workshop 5 months prior, so workshop recall was not equivalent across the groups. This did not influence general discussion on authorship, plagiarism and writing instruction but may have impacted reported strengths and weakness of the workshop. A sample size calculation was not performed prior to conducting this study, and the sample was limited by the number of enrolled residents in residency programs at the two universities. Most residency programs have cohorts of less than ten in Kenya, so collaboration with other institutions can allow broader curriculum implementation and robust evaluation. Such collaboration could promote inter-professional writing skill development for all health professions and facilitate multidisciplinary research efforts across institutions. Further research using a systematic framework such as Kirkpatrick model or learning-transfer evaluation method (LTEM) is needed to evaluate the broader impact of the writing skills program on writing skills development and longitudinal impact on thesis related outputs and manuscript submissions.

Conclusion

Authorial identity among HP trainees in Kenya can be strengthened by intensive writing seminars and can be a multi-institutional initiative. Such efforts are likely to improve HP trainees' satisfaction in required research projects and may be a critical step in increasing health research output of African universities.

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Appendix I

Overview

This short course of will equip learners with foundational knowledge and skills for academic writing appropriate for scientific disciplines. Learners will practice reading comprehension, paraphrasing and citing of scholarly articles in a given citation style as an example (Vancouver or APA). Furthermore, learner attitudes toward writing, authorship and plagiarism will be explored through various active learning methodologies.

Logistics: Personal laptops (or computer lab), a small conference room or lecture theater with projection capability and internet connectivity

Learners: Residents and other postgraduate health professional students

Duration: Four half-day sessions (to be scheduled on weekly, biweekly or monthly basis) of 3.5 hours depending on institutional preference

Goals and objectives

Goals	Objectives
	At the end of this short course, learners should be able to:
To strengthen knowledge and skills in academic writing	• Identify and follow citation rules of selected citation style • Use reference manager software to generate reference lists
	• Describe key components of each section of IMRAD
	• Analyze and synthesize academic articles. • Define, recognize and avoid plagiarism with effective use of paraphrasing and appropriate citation of sources in a given style.
To Increase Confidence In Writing To Develop Authorial Identity In Writing	• Rate Highly Confidence In Their Writing And Ability To Avoid Plagiarism. • Express High Likelihood Of Becoming A Scientific Author. • Highly Value The Ethical Handling Of Sources.

Course readings

No pre-reading is required of the learners for Sessions 1–2 though pre-reading is requested for Sessions 3:

Article	Session
Rohwer A, Young T, Wager E, Garner P. Authorship, plagiarism and conflict of interest: views and practices from low/middle-income country health researchers. BMJ Open. 2017;7(11):e018467.[14]	1
Mathenge W, Foster A, Kuper H. Urbanization, ethnicity and cardiovascular risk in a population in transition in Nakuru, Kenya: a population-based survey. BMC Pub Heal. 2010;10:569.[37]	2
Maina D, Omuse G, Revathi G, Adam RD. Spectrum of microbial diseases and resistance patterns at a private teaching hospital in Kenya: implications for clinical practice. PLoS ONE. 2016;11(1): e0147659[38]	3
Hranjec et al (2012). Aggressive versus conservative initiation of antimicrobial treatment in critically ill surgical patients with suspected intensive-care-unit-acquired infection: a quasi-experimental, before and after observational cohort study. Lancet Infec Dis. 2012;12(10):774–780.[39]	3
Bailey LC, Forrest CB, Zhang P, Richards TM, Livshits A, DeRusso PA. Association of antibiotics in infancy with early childhood obesity. JAMA Ped. 2014;168(11):1063–1069.[40]	3
Kwena Z, Sharma A, Wamae N, Muga C, Bukusi E. Provider characteristics among staff providing care to sexually transmitted infection self-medicating patients in retail pharmacies in Kibera slum, Nairobi, Kenya. Sexually transmitted diseases. 2008 May 1;35(5):480–3.[41]	3
Ofori-Asenso R, Brhlikova P, Pollock AM. Prescribing indicators at primary health care centers within the WHO African region: a systematic analysis (1995-2015). BMC Pub Heal. 2016;16(1): 724.[42]	4

Session plan

Session	Course content	Activities
1	Introduction to academic writing: IMRAD components; paragraph construction; citation rules; reference manager software	Pre-course survey Reading comprehension; utilizing PubMed, African Journal Online and Google Scholar to find sources; generating reference list; reflective writing
2	Paraphrasing, citing and plagiarism	Reading comprehension; summarizing/analyzing and citing article, recognizing plagiarism; reflective writing
3	Synthesizing the literature	Reading comprehension; summarizing/analyzing four articles, completing synthesis matrix
4	Revising and editing	Reading comprehension; summarizing/analyzing and citing article; revising/editing activity; peer review; reflective writing Post-course survey

Course evaluation

A pre- and post-course survey will be administered to learners at the beginning and end of the workshop. Survey items will explore extent to which learning objectives were met.

Appendix II

PRE–writing seminar survey

Mark site: _____AKUH   _____USIU   _____KABU

Name: _____   **Mobile (1):** _____

Circle: **Male**   **Female**   **Mobile (2):** _____

Age: _____   **Current course of study:** _____

Undergraduate degree: _____

University/country where undergraduate degree was obtained: _____

Language Background

First language learned: _____   At what age: _____

Second language learned: _____   At what age: _____

Third language learned: _____   At what age: _____

Questions 1–4, refer to your first language/mother tongue listed above.

Please bold or highlight your proficiency level for each language and skill:

1. 1. Understanding Spoken—First Language

1 = almost none
2 = very poor
3 = fair
4 = functional
5 = good
6 = very good
7 = like a native speaker

1. 3. Reading—First Language
1 = almost none
2 = very poor
3 = fair
4 = functional
5 = good
6 = very good
7 = like a native speaker

1. 5. Understanding Spoken—Second Language

1 = almost none
2 = very poor
3 = fair
4 = functional
5 = good
6 = very good
7 = like a native speaker

1. 7. Reading—Second Language
1 = almost none
2 = very poor
3 = fair
4 = functional
5 = good
6 = very good
7 = like a native speaker

1. 9. Understanding Spoken—Third Language

1 = almost none
2 = very poor
3 = fair
4 = functional
5 = good
6 = very good
7 = like a native speaker

1. 11. Reading—Third Language
1 = almost none
2 = very poor
3 = fair
4 = functional
5 = good
6 = very good
7 = like a native speaker

1. 2. Speaking—First Language

1 = almost none
2 = very poor
3 = fair
4 = functional
5 = good
6 = very good
7 = like a native speaker

1. 4. Writing—First Language
1 = almost none
2 = very poor
3 = fair
4 = functional
5 = good
6 = very good
7 = like a native speaker

1. 6. Speaking—Second Language

1 = almost none
2 = very poor
3 = fair
4 = functional
5 = good
6 = very good
7 = like a native speaker

1. 8. Writing—Second Language
1 = almost none
2 = very poor
3 = fair
4 = functional
5 = good
6 = very good
7 = like a native speaker

1. 10. Speaking—Third Language

1 = almost none
2 = very poor
3 = fair
4 = functional
5 = good
6 = very good
7 = like a native speaker

1. 12. Writing—Third Language
1 = almost none
2 = very poor
3 = fair
4 = functional
5 = good
6 = very good
7 = like a native speaker

For the following 10 items, please clear circle a response on a scale of 1 (strongly disagree) to 5 (strongly agree):

1. I know how to follow citation rules when referencing

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	2	3	4	5

2. I feel comfortable using a reference manager software such as Mendeley or Zotero

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	2	3	4	5

3. I can describe the key components for each section: Introduction, Methods, Results/Analysis, Discussion

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	2	3	4	5

4. I find it difficult to summarize the study design, major findings or limitations of an article in my own words.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	2	3	4	5

5. I feel comfortable synthesizing articles to write a coherent literature review

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	2	3	4	5

6. I find it difficult to reference a study using my own words without copy/pasting

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	2	3	4	5

7. I can recognize a plagiarized statement when presented with the original text

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	2	3	4	5

8. I feel confident about how to avoid plagiarism in my writing

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	2	3	4	5

9. Acts of plagiarism are common in Kenyan postgraduate programs

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	2	3	4	5

10. I will someday be a first author of an article in a reputable peer-reviewed journal

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	2	3	4	5