



Evaluation of a Training Program on Gender Mainstreaming in Health Research Evaluation at the Senegalese National Research Ethics Committee

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Abstract

Health research must be of high ethical and scientific quality and consider the needs and experiences of women, men, and nonbinary individuals. National Research Ethics Committees (RECs) are in a strategic position to impede sex- and gender-blind research. In 2020 and 2021, training programs on gender mainstreaming and sex and gender approaches in research evaluation were launched in Senegal. They were evaluated through a mixture of qualitative and quantitative methods. Knowledge acquisition was 16.67%, 8.54%, and 28.42% for the trainees of 2021, 2020, and those who attended the training in both years, respectively. Gender mainstreaming was reported as pertinent in research ethics by 74% of participants. This training is expected to catalyze gender-transformative research ethics in West Africa.

Keywords

gender mainstreaming, sex, gender, bioethics, research ethics, Senegal, West Africa

Introduction

Over the last 20 years, numerous emerging and re-emerging epidemics have burdened the West African region. Some of the main outbreaks that preceded the COVID-19 pandemic included Lassa fever and Ebola (Huber et al., 2018; Tambo et al., 2018); throughout which, relevant sex- and gender-related differences between women and men were observed (Dahmane et al., 2014; Harman, 2016; Wenham et al., 2020). In addition to the development of new health interventions, each health emergency has catalyzed further social and public health research in pursuit of the most adequate, efficient, evidence-based, and culturally-congruent response to halt the outbreaks with the aid and participation of the affected populations.

At the same time, at a local and national level, there has been much interest in promoting globally harmonized standards and regulations for quality assurance and epidemiological surveillance systems to monitor the impact of health emergencies on the most vulnerable populations, including the protection of their rights as participants in epidemics research (World Health Organization, 2016). In the frame of North-South cooperation, institutions such as the European and Developing Countries Clinical Trials Partnership (EDCTP) and the World Health Organization's

Special Programme for Research and Training in Tropical Diseases (WHO-TDR) have pooled resources to promote a well-coordinated ethical epidemic response in the present and future scenarios (The European and Developing Countries Clinical Trials Partnership, 2020; World Health Organization, 2016).

Among the efforts to improve governance and regulatory frameworks in epidemics research, gender mainstreaming and sex and gender approach in research must be highlighted. Gender mainstreaming refers to incorporating a gender lens throughout the design, implementation,

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monitoring, and evaluation phases of a project or program with the purpose of promoting gender equality (European Institute for Gender Equality, 2016). Incorporating the considerations of sex and gender into research has been proven to improve the credibility, validity, and generalizability of the research. It also ensures that all gender groups' needs are met and that their experiences with regard to societies' gender inequalities are made pertinent in any scientific research context (Institute of Gender and Health, 2015).

Due to the recent Ebola crisis, there has been significant progress in capacity building at national regulatory and ethics levels in the West African region (Nabyonga-Orem et al., 2021). Countries such as Senegal have, for instance, made substantial strides in the control of the COVID-19 pandemic (Diouf et al., 2020; Zhao et al., 2020) as well as in the prevention of cross-border Ebola transmission (World Health Organization, 2014). One contributing factor to this success is the collaboration between health professionals and anthropologists, who work together to develop culturally-sensitive health interventions that take into account local customs, beliefs, and practices (Wilkinson et al., 2017). This approach has been shown to increase community engagement and trust, ultimately leading to more effective public health responses.

However, despite progress in public health, there remains a significant gender gap in higher education and research within Senegal. Women occupy about 12% of faculty positions, and in research where women represent less than 30% (Canadian Institutes of Health Research, 2019a; Data Bank, 2020). This disparity may impact the representation of women in research ethics committees (RECs) and subsequently affect the conduct of gender-focused research. As RECs play a critical role in reviewing and approving research studies, ensuring gender balance and sensitivity within these committees is essential for promoting gender-responsive research (Schroder et al., 2019).

Gender mainstreaming in research ethics is among the strategies that could help Senegal achieve gender equality in health research, which would improve the quality of epidemics research. Addressing gender inequality within RECs can lead to improved consideration of gender-specific factors in research design and implementation, ultimately resulting in more inclusive and effective health interventions. Therefore, it is crucial to examine the role of RECs in supporting gender-responsive research and promoting gender equality in public health decision-making (Schroeder et al., 2019).

Gender mainstreaming in research ethics refers to the integration of gender perspectives and considerations into the development, implementation, and evaluation of research ethics policies and practices. This includes addressing gender biases in the composition of RECs, as well as ensuring that research protocols and guidelines consider the unique needs and experiences of different genders. By adopting a gender mainstreaming approach in research

ethics, Senegal can promote the development of more inclusive and effective health interventions that take into account the different needs of men, women, and gender-diverse individuals.

To contribute to gender equality in research in West Africa, the EDCTP-awarded "Building capacities in gender mainstreaming for ethics committee members from Senegal to West Africa (BCA-WA-ETHICS)" project kicked off in mid-2019 with the aim to facilitate the integration of a sex and gender perspective in health research conducted in West Africa by strengthening the capacities and skills of members of West African National Research Ethics Committees (NRECs). The BCA-WA-ETHICS project was a collaborative effort between the University of Zaragoza, the Ministry of Health and Social Action of Senegal, and the Institute for Health Research, Epidemiological Surveillance and Training (IRESSEF). The project consortium comprised a diverse group of professionals, including gender experts, health anthropologists, bioethicists, and social scientists. Prior to the launch of the capacity-building activities, the gender landscape study by Sougou (2020) was carried out to engage project stakeholders, involve the West African research ethics community, and to identify gender-related gaps in health research in the region. The BCA-WA-ETHICS, through its networking workpackage, sought to create connections and synergies between the consortium, the Senegalese National Health Research Ethics Committees (Comité national d'éthique pour la recherche en santé, CNERS) and various research ethics committees across Spain and West Africa, as well as with researchers and research institutions, to better understand their gender mainstreaming needs and promote the project's objectives.

To achieve this aim, BCA-WA-ETHICS trained the CNERS as an agent of change in the application of sex and gender perspectives in health research in the West African region. This training builds on the work of Sougou (2020), which provided a comprehensive review of the state of gender mainstreaming in health research in West Africa, the outcome of a survey with Research REC members in West Africa, and several recommendations for more gender-inclusive research. As part of the larger BCA-WA-ETHICS project, our training initiative aimed to address the identified gaps and reinforce gender integration in health research. The Sougou (2020) gender landscape study highlights reveals that there is insufficient integration of gender approaches in health research in West Africa, particularly in Senegal. The research demonstrated the importance of integrating sex and gender in producing scientifically relevant knowledge for addressing differences in health outcomes. The study also found that gender norms in West Africa influence public health issues and vary across individual and group levels. There is a need for improved understanding and harmonization of gender concepts among researchers and research

governance bodies. Additionally, the survey identified a need for gender training among ethics committee members and researchers to better understand and utilize gender analysis tools in health research.

The “*Training Programme on Gender Mainstreaming and Sex and Gender Approaches in Health Research Evaluation and Inspection*” (hereafter, the ‘training’) has been an important lever to reach that goal. The purpose of this study was to evaluate the effectiveness and adequacy of the training concerning (i) the promotion of attitudinal changes toward gender mainstreaming in ethical research evaluation practices and towards gender equality strategies in their workplaces, and (ii) the knowledge acquisition on gender mainstreaming and use of sex- and gender-based analysis in ethical health research evaluation.

Methods

This was a non-experimental, descriptive, longitudinal effectiveness evaluation that used qualitative and quantitative methodologies to collect data at multiple time points (i.e., pre-and post-training, at months 1 and 12 of the ‘training’).

Components and Population

The ‘training’ was conducted between January 2020 and January 2021 in the frame of BCA-WA- ETHICS. Its main components were:

1. A 5-day face-to-face workshop in Dakar (the ‘first workshop’) in January 2020.
2. A 2-week internship (the ‘internship’) at the Aragon Research Ethics Committee (Comité de Ética de la Investigación de la Comunidad Autónoma de Aragón, CEICA) in March 2020.
3. A 4-day online workshop, organized from Dakar (hereafter, the ‘refreshment’ workshop), in January 2021. This activity was planned to be face-to-face in Dakar. However, due to restrictions implemented by the Government of Senegal to control the spread of the SARS-CoV-2 just a few days before its first day, the ‘refreshment’ workshop was held online.

The target population of the ‘training’ included scientists and ethicists affiliated with the CNERS and the Senegalese National Regulatory Authority (Direction de la Pharmacie et du Médicament, DPM, as per its acronym in French). The process of shortlisting participants involved reaching out to members of the CNERS and the Senegalese National Regulatory Authority (DPM) by the Permanent Secretary of the Senegalese NREC, and those who were available during the training period were short-listed as potential trainees. The final selection of participants for each activity was made jointly by all BCA-WA-ETHICS

partner institutions, ensuring a diverse representation of scientists and ethicists affiliated with CNERS and DPM. The selection process considered several factors, including relevance to professional roles, level of experience, commitment to disseminating knowledge, and gender representation. This approach aimed to include individuals who would benefit most from the training and contribute significantly to their respective institutions in terms of implementing the knowledge and skills acquired from the training.

Workshops’ Syllabi

The ‘training’ syllabus was designed with the objectives of helping the trainees to (i) understand the process of gender mainstreaming and the evaluation of health research from a sex and gender perspective, (ii) learn about the design and utilization of sex- and gender-sensitive research site inspection tools, and (iii) learn about best practices in research governance and management from a gender equality lens.

The content of the ‘training’ was informed by the Canadian Institutes for Health Research’s (CIHR) guidelines on the integration of sex and gender in research (Canadian Institutes of Health Research, 2019a, 2019b); the Gender Equality in Academia and Research Toolkit (GEAR) of the European Institute for Gender Equality (EIGE) (European Institute for Gender Equality, 2022); and the results of a ‘gender landscape’ with the objective of mapping all the pertinent gender issues in the context of West African NRECs and their capacity building needs, as well as the current gaps in West African-led health research (Sougou, 2020).

The training was organized into the following sessions:

1. Basic notions and concepts of gender
2. Gender and Health-Gender and Research
3. Strategies for assessing the inclusion of sex and gender in research protocols
4. Strategies for Research Audits
5. Gender statistics
6. The GEAR Toolbox of the EIGE
7. The challenges of women researchers in West Africa
8. Gender Mainstreaming
9. Strategies for gender diagnosis in research institutions
10. Preparation of a gender equality plan for a national ethics committee

All modules included practical content, utilizing case studies, mock National Research Ethics Committee (NREC) protocol evaluation sessions, and group exercises. Open discussions and Q&A sessions were held after each session.

While the ‘first workshop’ was facilitated by the BCA-WA-ETHICS project manager and by an anthropologist and gender expert, the ‘refreshment’ workshop was facilitated by four of the ‘first’ workshop’s trainees who had also participated in the ‘internship’ at CEICA in Spain.

Experts from the CNERS, the MSAS-Gender Division, and the UCAD were invited as guest lecturers at the start of the first workshop. An expert from Benin was invited as a guest lecturer to close the refreshment workshop. Excluding the guest lecturers' sessions (which were not part of the syllabus) the content of the first and refreshment workshops was identical.

Internship

The CEICA was selected as the internship venue due to its status as the only Research Ethics Committee in the Autonomous Community of Aragon, where the University of Zaragoza, the main project coordinator, is located. Additionally, CEICA holds national accreditation to appraise clinical and observational research across Spain and is ISO9001-2015 accredited. The CEICA evaluation tools were chosen because the institution represents a pioneering approach to quality management in research ethics, promoting knowledge transfer and exchange between Spain and Senegal as a part of the BCA-WA-ETHICS project collaboration. The internship was designed with the objective of providing the interns with practical experience in evaluating health research protocols from a sex and gender perspective and becoming familiar with the CEICA evaluation tools. Four Senegalese scientists and collaborators (2 females and 2 males) of the CNERS participated in the internship, which included, among other activities, 5 protocol evaluation simulations.

Evaluation Materials

To achieve the evaluation objectives, a series of instruments were designed to collect trainees' data during the 'first' and the 'refreshment' workshops:

Pre- and post-workshop knowledge tests were administered to the trainees on the first and the last day of each workshop. The pre- and post-workshop knowledge tests included the same questions ($n = 24$) that related to the theoretical content taught to the trainees as per the workshops' syllabus. In order to be able to communicate the test scores to the trainees and to monitor their progress throughout the 'training', these tests were not anonymous.

Session-by-session satisfaction scales were administered to both workshop trainees on a daily basis to rate, using a 5-point Likert scale, including the different sessions included in the syllabus. Using these instruments, the trainees assessed how the sessions were prepared, if participation was encouraged during the sessions, if the facilitators presented the session clearly and concisely, and if the sessions helped them to improve their critical thinking about health research. The session-by-session assessment was anonymous.

A final evaluation form was administered to the trainees on the last day of the first and refreshment workshops. Using

this form, the trainees reflected on their perceptions about the relevance and usefulness of the training. This form was anonymous.

Analysis

All the evaluation instruments were kept in a locked cabinet in the coordinator's office at the UZ, scanned, stored in password-protected electronic environments, and digitized into a series of MS Excel® and MS Word® files.

Several pre- and post-workshop interim analyses of knowledge acquisition, satisfaction, and perceived relevance were done and compared for the same group of trainees at months 1 and 12 of the training. These measures were calculated using the information provided by the trainees in the above-described instruments.

Descriptive uni- and bivariate statistical analyses were run in MS Excel® to describe the results of the trainees' knowledge acquisition questionnaire. This analysis focused on the results in terms of knowledge acquisition and adequacy of the training. Knowledge acquisition was assessed by comparing improvements in scores between the pre- and post-training tests within each workshop, and also between the post-training tests of the first and the refreshment workshop.

The degree of satisfaction with the preparation of the sessions, clarity of the presentations, student participation, and the degree to which the lecturer facilitated the trainees' critical thinking skills concerning the research were evaluated for each of the workshops' sessions. A statistical analysis of all trainees' responses was done in a session-by-session manner.

Descriptive statistics were also run to describe the results of the session-by-session satisfaction scales. Satisfaction scores were calculated for each workshop separately. Improvements between the first and the refreshment workshops were assessed.

Thematic qualitative analysis was done in MS Word® to understand the trainees' opinions as expressed in both workshops' final evaluation forms. Other documents used to analyze data from the evaluation instruments included: training presentations, quality control records, daily minutes of the workshops' participatory exercises, trainees' socio-demographic records, and participation in other BCA-WA-ETHICS-related activities.

Ethical Considerations

This is a training evaluation, the procedures of which were supported by the MSAS-Research Division and communicated to the trainees upon their admission to the training, and that complies with Senegalese regulations on the protection of private personal data.

To ensure the impartiality of the evaluation, an external consultant was recruited to conduct this evaluation.

Results

Socio-demographics

Twenty-eight trainees participated in the training (Table 1); out of which, 10 participated only in the first workshop, 8 only in the second workshop, and 10 in both workshops. The first workshop had 20 participants, while the refreshment workshop had 18 participants.

Of the 28, 14 were female. The average age of women and men was 35.4 and 43.8 years, respectively. Seven had a PhD, nine had a Master's degree, four were PhD students, and eight did not report their level of education. On average, male trainees had a higher educational degree than female trainees (21.4% vs 7.2% were PhD holders). The MSAS was the institution with the highest affiliation rate with 39.3%, 17.9%, and 21.4% for women and men, respectively.

All of the trainees responded to the training evaluation questionnaires.

Effectiveness of Knowledge Acquisition

The training led to an improvement in knowledge in the two editions of the training, being more marked in the refreshment workshop (2021) than in the first (2020), with respective average knowledge gains of 4 (16.67%) and 2.05 points (8.54%), respectively; and especially for those who attended both editions, with an average knowledge gain of 6.82 points (28.42%). Taking a look at sex-disaggregated results, in the 'first' workshop, women outperformed men

with average knowledge gains of 2.7 points (11.25%) and 1.1 (4.58%) points for women and men, respectively. As for the 'refreshment' workshop, women and men had equal average knowledge acquisition with 4 points each. Concerning those who attended both workshops, there was a higher improvement in female than male trainees (8.4 (35%) and 5.55 (23.12%) points, respectively).

Regarding the 'first' workshop, knowledge acquisition was higher for PhD holders (3.07 points, 12.79%), followed by PhD students (2.75, 11.46%) and Master's holders (1 point, 4.17%). As for the 'refreshment' workshop, PhD students showed the highest knowledge gain of 9 points (37.5%), while Master's and PhD holders showed an average improvement of 5 points (20.83%) and 4.66 points (19.42%).

With regards to the trainees' age, those under 40 years of age showed a higher knowledge acquisition in both training programs and among the attendees of both workshops.

Adequacy

The average obtained in all the elements analyzed ranged between 3.84 and 4.16, with the former corresponding to the 'preparation of the session' and the latter to the 'degree to which the facilitators enhanced the trainees' capacity for critical reflection', both corresponding to the 2020 training. In terms of the sessions evaluated (Table 3), the highest and lowest averages obtained correspond to the 2021 training; the lowest being 3.75 for 'gender and health/gender in research and the highest 4.18

Table 1. Sex-Disaggregated Sociodemographic Data.

Affiliation	'First' workshop (Nb/%)			'Refreshment' workshop (Nb/%)			Both workshops (Nb/%)		
	Female	Male	Total	Female	Male	Total	Female	Male	Total
MSAS	3 (15)	5 (25)	8 (40)	3 (16.7)	5 (27.7)	8 (44.4)	5 (17.9)	6 (21.4)	11 (39.3)
UCAD	4 (20)	1 (5)	5 (25)	4 (22.2)	1 (5.5)	5 (27.7)	5 (17.9)	1 (3.6)	6 (21.5)
IRESEF	1 (5)	2 (10)	3 (15)		1 (5.5)	1 (5.5)	1 (3.6)	2 (10)	3 (10)
CNERS	1 (5)	1 (5)	2 (10)		1 (5.5)	1 (5.5)	1 (3.6)	2 (7.1)	3 (10.7)
DPM		1 (5)	1 (5)		1 (5.5)	1 (5.5)		2 (7.1)	2 (7.1)
Université Virtuelle du Sénégal	1 (5)		1 (5)				1 (3.6)		1 (3.6)
Université de Thies					1 (5.5)	1 (5.5)		1 (3.6)	1 (3.6)
Comité Sénégalais des Droits de l'Homme				1 (—)		1 (5.5)	1 (3.6)		1 (3.6)

Studies level	'First' workshop (Nb/%)			'Refreshment' workshop (Nb/%)			Both workshops (Nb/%)		
	Female	Male	Total	Female	Male	Total	Female	Male	Total
PhD	2 (10)	6 (30)	8 (40)	2 (11.1)	4 (22.2)	6 (33.3)	2 (7.1)	6 (21.4)	8 (28.5)
Master's	6 (30)	3 (15)	9 (45)	1 (5.6)	2 (11.1)	3 (16.6)	6 (21.4)	3 (10.7)	9 (32.1)
Phd student	2 (10)	1 (5)	3 (15)	1 (5.6)		1 (5.5)	2 (7.1)	1 (3.6)	3 (10.7)
N/A				4 (22.2)	4 (22.2)	8 (44.4)	4 (14.3)	4 (14.3)	8 (28.6)
Total	10 (50)	10 (50)	20 (100)	8 (44.4)	10 (55.6)	18 (100)	14 (50)	14 (50)	28 (100)

for ‘strategies for the conduct of a gender diagnosis in research institutions and NRECs.

A comparative analysis of the results of the first and refreshment workshops shows a better score in all the elements evaluated in the refreshment workshop, except in the one corresponding to ‘clarity of the presentations’, which in 2021 obtained a slightly lower score (i.e., 0.1 points avg.) (Table 2). In terms of the result of the evaluation of the different sessions, although the difference is not very significant between the two trainings, all the dimensions obtained a better score in the ‘first’ workshop except those corresponding to ‘strategies to conduct a gender diagnosis in research institutions and NRECs’ and in ‘preparation of a gender equality plan for a national ethics committee’, which were better valued in the ‘refreshment’ workshop (Table 3).

Attitudes

Most trainees found the training very relevant and considered that it reinforced and deepened their capacities and knowledge. Furthermore, the majority considered that gender mainstreaming was important in all stages of research, from design to evaluation, and was also applicable to their workplaces (65%). A minority, however, reported that their professional field did not require this approach. The majority indicated that thanks to the workshops their understanding of gender mainstreaming in research ethics

significantly improved. A ‘refreshment’ workshop trainee rejected the perceived normalization of sexual diversity in the conduct of research with vulnerable populations and wrote that the training had the ulterior objective of conditioning the acceptance of homosexuality.

The training syllabus was described as interesting for clarifying certain theoretical confusions such as the differences between sex and gender and equity and equality. Some attendees found the training too long and others insufficient in terms of duration. Other trainees evaluated negatively the fact that both workshops had identical content. In the ‘refreshment’ workshop, five trainees considered it too dense, the facilitators not sufficiently organized, the slides were too densely packed, and the training had little applicability.

Regarding the mastery of the contents by the facilitators, there was consensus that the facilitators encouraged debate and interaction. All trainees but one agreed that the training had responded satisfactorily to their expectations, highlighting the importance of the tools provided. The sessions that were considered most useful were those corresponding to the GEAR, the gender diagnosis tools, the databases Gapminder® and Global Burden of Diseases (GBD) Compare®, and the session on the challenges, opportunities, and obstacles encountered by West African women researchers. The aforementioned tools were particularly helpful because they offered practical, evidence-based methods for incorporating gender and sex considerations

Table 2. Overall Satisfaction Evaluation.

2020					2021			
Mean (SD)	Preparation of the class	Clarity of presentation	Student participation	The lecturer improves your critical thinking skills about research	Preparation of the class	Clarity of presentation	Student participation	The lecturer improves your critical thinking skills about research
	3.84 (0.71)	3.95 (0.64)	4.07 (0.7)	4.16 (0.64)	3.77 (0.81)	4.06 (0.76)	3.85 (0.76)	3.91 (0.72)

Table 3. Session-Disaggregated Evaluation.

Session	2020 mean (SD)	2021 Mean (SD)	2020–21 Dif. Mean (SD)
Basic notions and concepts of gender	3.93 (0.68)	3.78 (0.77)	–0.15 (0.09)
Gender Mainstreaming	4.03 (0.63)	3.82 (0.76)	–0.21 (0.13)
Gender and Health/Gender and Research	4.08 (0.64)	3.75 (0.71)	–0.33 (0.07)
Gender Statistics	4.14 (0.61)	3.92 (0.67)	–0.22 (0.06)
Strategies for assessing the inclusion of sex and gender in research protocols	3.87 (0.79)	3.83 (0.9)	–0.04 (0.11)
Strategies for Research Audit	3.89 (0.79)	3.81 (0.85)	–0.08 (0.06)
The GEAR Toolbox of the EIGE	3.98 (0.6)	3.85 (0.82)	–0.13 (0.22)
The challenges of women researchers in West Africa	4.09 (0.59)	4.04 (0.76)	–0.05 (0.17)
Strategies for gender diagnosis in research institutions	4.17 (0.61)	4.18 (0.67)	0.01 (0.06)
Preparation of a gender equality plan for a national ethics committee (Theory & Exercise) mean	3.91 (0.77)	4 (0.72)	0.09 (–0.05)

into research design, evaluation, and implementation. Moreover, they facilitated the visualization of gender statistics and enabled participants to understand and address the specific needs of diverse populations.

Discussion

The training has proven to be relevant to the career development of scientists and ethicists affiliated with the CNERS and to respond to their needs to conduct more sex- and gender-sensitive research protocol evaluations. The analysis of adequacy shows that a key element of this training is its participatory format, which facilitated reflection, debate, and the generation of ideas by the trainees, a procedure through which it managed to be transformative, as shown by the change in attitude regarding self-perceived willingness to employ gender mainstreaming approaches by the trainees, the identification of shortcomings in their previous training, and their interest in further gender mainstreaming training. This transformative effect is an essential element for the results to be sustainable and have a real impact on the policies of ethics committees regarding the sex- and gender-sensitive evaluation of health research protocols.

A challenge faced during the implementation of the training was the COVID-19 pandemic, as it had hindered the in-person implementation of the refreshment workshop as initially planned, which may have lowered the quality of participatory group exercises and the degree of interaction between the facilitators and trainees, thus negatively affecting the engagement of the trainees. However, given the uncertainty around the future development of the pandemic circumstances, it is of the utmost importance to identify mechanisms to maximize knowledge acquisition and participation potential in the context of an online training program.

If this training were to be implemented in the future in other West African countries, efforts should be dedicated to the identification of obstacles to the incorporation of gender-sensitive approaches in health research evaluation in the context of NRECs in West Africa. A challenge for potential future implementation of similar versions of this training program in other West African settings could be the resistance to gender mainstreaming approaches and how they are perceived to be contradictory to the 'traditional' African socio-cultural norms, as well as the explicit rejection of the normalization of non-heteronormative gender and sexual identities, which could be perceived by future trainees as one of the main objectives of gender mainstreaming. To address these challenges, it is vital to emphasize inclusivity, diversity, and the benefits of integrating gender perspectives in research. Providing tailored, culturally sensitive training materials and fostering a collaborative environment that encourages dialogue and understanding can help overcome resistance. Engaging stakeholders at all levels and creating opportunities for networking and

sharing experiences can contribute to building a community of practice that supports the integration of gender perspectives in research.

While sexual diversity may not be encouraged in Senegal and LGBTQ populations face legal challenges, the training underscored the importance of the right to health for all individuals, regardless of their sexual orientation or gender identity. The ethical principles of justice, beneficence, and non-maleficence were highlighted to advocate for the inclusion and well-being of everyone in society. Future trainers must thoughtfully navigate the prevailing legal landscape while endorsing ethical research practices that emphasize the health rights and well-being of all individuals, upholding the core ethical principles in research.

The results of this evaluation can contribute to providing guidance and practical recommendations to mainstream sex and gender approaches in health research evaluation and inspection and in NREC governance in terms of triggering gender-transformative changes in the NRECs' organizational cultures and in their commitment to reducing gender inequalities and disparities in health research design, conduct, communication, dissemination, and translation. Such changes in the functioning of NRECs could contribute to the protection of the human rights of research participants of all gender groups, including research personnel, to improving the quality of scientific productions in the region in such a way that takes into account the different needs, physiological particularities, and experiences of women, men, and gender-nonconforming individuals, and eventually to enhancing the quality of life of West African populations. Gender-sensitive approaches in research can help impede situations of inequalities and lack of protection of the human rights of research participants, such as those witnessed during the past Ebola epidemic, where many pregnant women were deprived of potentially life-saving treatment due to their exclusion from some clinical trials (Gomes et al., 2017).

The different disaggregated statistical analyses done are not very significant given the small size of the sample, but the aggregate analysis showed a high degree of acceptance of the training objectives, an optimal increase in the acquisition of knowledge, the adequacy of training and the impact of training on attitudes.

Limitations

Provided the relatively high dropout rate between the first and the refreshment workshops (50%), it was not possible to achieve statistically significant results through comparative analysis of knowledge acquisition by means of a paired t-test as the sample size was too low ($n = 10$). Also, due to time and data constraints, the external consultant was unable to perform a knowledge-area disaggregated analysis of the results of knowledge acquisition, which would have presented an opportunity to identify key areas

where the trainees had demonstrated significant improvement or lack thereof. Finally, the different disaggregated statistical analyses done are not very significant given the small size of the sample, but the aggregate analysis showed a high degree of acceptance of the training objectives, an optimal increase in the acquisition of knowledge, the adequacy of training and the impact of training on attitudes.

Conclusion

The results showed an overall improvement in knowledge acquisition in the two versions of the workshop, with a better improvement in the 2021 version. The training achieved a relatively high satisfaction rating. Most trainees recognized the relevance of gender mainstreaming and its potentially high utility in their workplaces. The most highly valued contents were those corresponding to gender statistics tools and the tools for sex- and gender-sensitive evaluation of research protocols, a fact that highlights the need to conduct further training to deepen the knowledge and skills related to said areas. On the other hand, it seems that gender mainstreaming was perceived by some trainees as contradictory to their own socio-cultural beliefs, which suggests the need, in future training courses, to debunk common myths on gender mainstreaming.

Best Practices

Our study evaluates a gender mainstreaming training program for the Senegalese National Research Ethics Committee. This was the first training program of its kind, i.e teaching research ethicists how to integrate sex and gender considerations into their protocol evaluation and monitoring tools. Our study highlights an increase in knowledge acquisition, as well as a positive post-training attitude towards gender mainstreaming in research ethics. As more research ethics committee members recognize the importance of systematically integrating sex and gender aspects in research protocol evaluation, the more it will become standardized and harmonized at a regional level. Given West Africa's elevated rates of gender inequalities and its proneness to health emergencies, it is ethically imperative to take into account sex and gender variables in research design, implementation, and monitoring and evaluation. This would ensure that the principles of justice, autonomy, beneficence, and nonmaleficence are respected for women, men, and gender-diverse individuals involved in research- be it directly or indirectly.

Research Agenda

Further research is needed to analyze and explore the effects of gender mainstreaming training programs in research ethics committees. This type of training needs to be implemented on a larger scale in other West African regions, with a larger number of trainees. This will allow for a more culturally-

sensitive implementation of gender mainstreaming in research ethics in West African settings. It will allow facilitators and instructional designers to adapt their curricula and training evaluation plans in accordance with the sociocultural nuances specific to the region where the training is to take place. Longer post-training follow-up periods are also needed to ensure adequate knowledge retention and skill application. For instance, further research on how research ethicists integrate sex and gender considerations in their work after the training is completed could be very relevant in detecting the limitations and shortcomings, as well as the strengths of the training program.

Educational Implications

In addition to educating research ethics committee members on sex and gender approaches for research evaluation and inspection, it is of the utmost importance to transfer the necessary knowledge and skills to researchers. This will ensure that researchers are adequately equipped with the tools they need to design, implement, and disseminate a research project with a sex- and gender-sensitive perspective. NRECs and Institutional Review Boards could form synergies with research institutions and stakeholders to oversee the training of researchers on sex- and gender-inclusive research methodologies.



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