Adapted Counseling Care Model for Management of Female Sexual Dysfunction Among Women Living With and Without HIV

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ABSTRACT

Background and Objective: Sexual health research among women living with human immunodeficiency virus (HIV) has focused mainly on sexual practices and risk behaviors, with little consideration for treating sexual dysfunction and improving sexual satisfaction. The aim of this pilot study was to assess the effectiveness of an adaptive counseling care model in the management of female sexual dysfunction (FSD) among women living with HIV and without HIV in northern Nigeria.

Methods: This was a prospective cohort study of 200 women with HIV and a matched comparison arm of 200 women without HIV. Sexual function was assessed using the Female Sexual Function Index (FSFI), with a score ≤ 26.55 indicating FSD. We counseled women with FSD using the Permission, Limited Information, Specific Suggestions, Intensive Therapy (PLISSIT) model and evaluated the effectiveness of the model by comparing mean differences in baseline and six weeks post-intervention FSFI scores.

Results: The overall prevalence of FSD was 96.8%, with no difference between HIV-positive and HIV-negative participants (p = 0.398). Based on the six domains of the FSFI, the most common reported dysfunctions were sexual pain (21.7%), sexual desire disorder (17.6%), orgasm disorder (17.6%), lubrication disorder (17.2%), sexual arousal (16.9%), and poor sexual satisfaction (9.0%). The overall mean FSFI score (±standard deviation, SD) for those with FSD, in both groups (n = 387) prior to the counseling intervention was 16.05±10.65 (HIV-positive: 18.58±8.46; HIV-negative: 13.98±10.85). At the end of the intervention, the overall mean FSFI score in both groups increased to 23.58±16.53 (HIV-positive: 21.37±11.24; HIV-negative: 16.72±13.81) (p < 0.05 in all cases).

Conclusion and Global Health Implications: FSD is very common among women in Northern Nigeria, irrespective of HIV status. An adapted counseling care model improved sexual function in both HIV-positive and HIV-negative women. The PLISSIT model can guide healthcare providers to initiate and navigate sexual health discussions with women in this setting.

Keywords: Female Sexual Dysfunction, HIV, Adaptive Counseling, Nigeria

INTRODUCTION

In the past decade, there has been increasing attention to the importance of addressing the concept of sexual health. Promoting sexual health can complement traditional public health efforts to improve mental health and quality of life.[1] Sexual health is an important component of overall health, but there are numerous barriers (professional, religious, cultural, and personal) that prevent women from receiving proper medical care and support for their sexual health needs.[2] Northern Nigeria is a highly conservative setting, and religious beliefs and cultural practices associated with the predominantly Muslim communities pose unique challenges to the identification and management of female sexual dysfunction (FSD). However, despite the enormous burden of FSD (prevalence of >80%)[3] in this population and the availability of effective treatment measures, FSD has been poorly researched.

The common denominator of all FSD is personal distress, which results in depression and anxiety, thereby affecting mental health and reducing the quality of life for the women affected.[4–8] For example, in a study on women with hypoactive sexual desire disorder (the most common FSD), respondents had low scores on validated measures of quality of life (SF-36 and SF-12 Health Surveys, and the EQ-5D)[9,10] that were comparable in magnitude to data reported among persons with lower back pain or diabetes mellitus.[9–13]

Of all people currently living with human immunodeficiency virus (HIV) globally, 9% of them reside in Nigeria.[14] Nigeria ranks fourth in the global burden of people living with HIV, with an estimated ~1.9 million people living with HIV and 51,000 AIDS-related deaths annually.[15–17] Research on the sexual health of women with HIV infection has generally focused on sexual practices and risk behaviors without giving sufficient consideration to sexual satisfaction and dysfunction. However, diminished sexual function among these women is associated with more severe HIV-related symptoms and a decrease in adherence to antiretroviral treatment.[18] There is also a dearth of data on this subject from Nigeria, despite an HIV prevalence of 1.4% among Nigerians aged 15–49 years.[19] In addition, there are currently no guidelines to manage sexual dysfunction in the HIV care setting in the country.

The Permission, Limited Information, Specific Suggestions, Intensive Therapy (PLISSIT) sexual counseling model is a simple and cost-effective intervention targeting women with sexual dysfunction that can be applied by physicians at the point of care.[20] PLISSIT offers a succinct method for introducing sex into a clinical conversation, narrowing the scope of a patient's concern, and offering effective counseling and treatment. This model has reduced symptoms of sexual dysfunction and improved sexual satisfaction among women in a variety of settings.[20,21] However, the PLISSIT model has not been adapted for use in Nigeria or among women with HIV. The purpose of this pilot study was to determine the prevalence and patterns of FSD and assess whether the PLISSIT counseling model was effective in improving sexual function among a cohort of HIV-positive and HIV-negative women living in Nigeria.

METHODS

This was a prospective cohort study conducted at the general outpatient and HIV clinics of Aminu Kano Teaching Hospital (AKTH), Kano, Nigeria. AKTH is a 750-bed referral hospital serving a catchment population of more than 15 million people.[22]

Female adults (aged 18–60 years) were recruited during their routine follow-up visits from June 2023 to August 2023. A total of 200 HIV-negative women were selected using a simple random sampling technique (balloting) from the general outpatient clinic, while another 200 HIV-positive women were similarly recruited from the HIV clinic. We excluded women with pregnancy, those with major psychiatric illnesses like major depression disorder, and those who reported no sexual activity in the past month by choice [Figure 1]. Written informed consent was obtained from all study participants. A table of random numbers was used to recruit the participants who met the inclusion criteria in both clinics.[23]

Prior to the commencement of the study, two female research assistants were trained on the use of the survey instrument, and ethical approval was obtained. We used a structured questionnaire and the Kobo Toolbox app for data collection.[24] The questionnaire had two parts: a demographics section and a Female Sexual Function Index (FSFI) section. The demographics section of the questionnaire captured personal information, including religion, marital status, parity, income, residence, and history of tobacco and alcohol use. There were also questions specific to FSD, specifically history of sexual trauma, sexual dysfunction in partners, and comorbidities among participants (i.e., hypertension, diabetes mellitus, sickle cell disease, asthma, and non-major psychiatric conditions). The FSFI contained 19 questions with five options that evaluated sexual desire, arousal, vaginal lubrication, orgasm, sexual satisfaction, and sexual pain.[25] The score of each domain was calculated by summing up the scores of each area, multiplied by the coefficient of each section. The coefficients are sexual desire (0.6), sexual arousal (0.3), vaginal lubrication (0.3), orgasm (0.4), sexual satisfaction (0.4), and sexual pain (0.4). The total FSFI score was obtained by summing the scores of all six domains. Scores range from 2 to 36. The higher the score, the better the sexual function. This tool has been used to validate data in Nigeria, a total FSFI score of ≤26.55 was used as a cutoff point to differentiate between women with sexual dysfunction and those without.[26,28]

Scores below this threshold suggest the presence of sexual dysfunction in at least one domain.[27–29]

Participant recruitment was done concurrently in the HIV and outpatient clinics by trained research assistants who were fluent in the local Hausa language and conversant with the culture and customs of the area. The questionnaire was administered to participants in the local Hausa language in each clinic. Participants found to have FSD had individual counseling sessions based on the PLISSIT model. The number of counseling sessions for each individual was based on the participant's type of sexual dysfunction.

All counseling sessions were performed by the research assistants (nurses), sexual health physician, and gynecologist (when needed). The PLISSIT counseling model was used in the following format:

The Permission component consisted of first obtaining permission from the patient to question them about their sexual dysfunction and showing openness to dialogue. The second step (Limited Information) was to provide information about the cause of sexual dysfunction, for example, lack of libido, pain, fatigue, vaginal dryness, anxiety, burden of HIV diagnosis, and so on. The third step (Specific Strategies) involved developing specific strategies for each problem. The last component (Intensive Therapy) involved implementing the treatment strategy previously discussed with the patient. Low sexual desire and anorgasmia were managed with medication, psychotherapy, and stress reduction. Sexual pain caused by vaginal dryness was managed with lubricating oils and intravaginal estrogen creams. Regarding pain and fatigue, it was recommended to practice different sexual positions, rest before intercourse, and use muscle relaxants or painkillers.

Subsequent counseling sessions were based on this format. The participants were offered medication and psychotherapy and referred to appropriate care, as indicated. Six weeks after the first counseling session, FSFI questionnaires were completed again by the participants. The patients continued to be seen after the study period.

Statistical Analysis

We computed the prevalence of FSD as the proportion of participants with FSD by HIV status. The statistical significance of the relationships between nominal and ordinal/categorical predictor variables was evaluated with the chi-square test of association. We used Student's t-test or Wilcoxon rank-sum tests for comparisons of continuous variables. We used the mean FSFI scores for each of the six domains to compare the pattern of FSD by participant HIV status. The impact of the intervention on FSD was evaluated by subtracting mean FSFI scores before and after the intervention for each domain. All
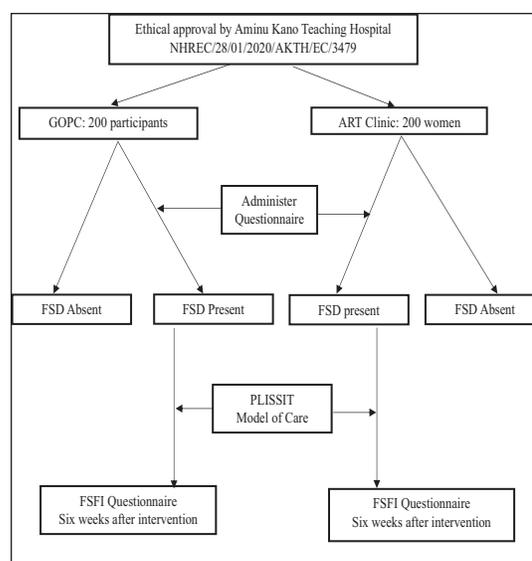
Figure 1: Inclusion flow chart of study participants. FSD: Female sexual dysfunction, FSFI: Female sexual function index, PLISSIT: Permission, limited information, specific suggestions, intensive therapy, GOPC: General outpatient clinic, ART: Antiretroviral therapy.

tests used a two-tail probability with $p < 0.05$ as statistically significant. The R statistical software (version 4.3.2) was used for all statistical analyses.[30]

Ethical Considerations

This study was approved by the ethics committee of Aminu Kano Teaching Hospital, reference number NHREC/28/01/2020/AKTH/EC/3479.

RESULTS

The overall prevalence of FSD among both groups was 96.8% ($n = 387$). The prevalence of FSD was 96.0% among women with HIV ($n = 192$) and 97.5% among women without HIV ($n = 195$). This difference was not statistically significant ($p = 0.398$). The majority of participants were between 25 and 44 years of age, married, of Hausa-Fulani ethnicity, and Muslim [Table 1]. The two groups were comparable in terms of demographic characteristics. History of hypertension, intimate partner violence, and male sexual dysfunction were more common among HIV-positive participants compared to participants without HIV [Table 1].

The pattern of FSD based on the six domains of the FSFI was similar in both groups, as shown in Table 2. In both groups, the most common complaint was pain (92.3%), followed by disorders of sexual desire (85.3%), orgasmic disorders (85.0%), arousal disorders (72.8%), poor lubrication (67.8%), and low sexual satisfaction (48%).

Table 1: Demographic characteristics in HIV-negative and HIV-positive groups

Characteristic	HIV-negative, N = 200 n (%)	HIV-positive, N = 200 n (%)	p-value
Age group, n (%)			**0.001***
18–24 years	15 (7.5%)	36 (18.0%)	
25–34 years	57 (28.5%)	55 (27.5%)	
35–44 years	82 (41.0%)	52 (26.0%)	
45–55 years	42 (21.0%)	47 (23.5%)	
>55 years	4 (2.0%)	10 (5.0%)	
Monthly income (NGN), n (%)			**0.020***
0–29,000	188 (94.0%)	176 (88.0%)	
30,000–59,000	11 (5.5%)	15 (7.5%)	
60,000 and above	1 (0.5%)	9 (4.5%)	
Tribe, n (%)			0.9
Hausa-Fulani	177 (88.5%)	179 (89.5%)	
Yoruba	4 (2.0%)	5 (2.5%)	
Igbo	2 (1.0%)	1 (0.5%)	
Other	17 (8.5%)	15 (7.5%)	
Religion, n (%)			>0.9
Islam	190 (95.0%)	191 (95.5%)	
Christianity	8 (4.0%)	7 (3.5%)	
Other	2 (1.0%)	2 (1.0%)	
Marital status			**<0.001***
Single	10 (5.0%)	2 (1.0%)	
Divorced	36 (18.0%)	2 (1.0%)	
Married	118 (59.0%)	183 (91.5%)	
Widowed	36 (18.0%)	13 (6.5%)	
Parity, n (%)			**<0.001***
Nulliparous	26 (13.0%)	39 (19.5%)	
Multiparous (2–5 children)	117 (58.5%)	78 (39.0%)	
Grand multiparous (>5 children)	57 (28.5%)	83 (41.5%)	
Medical comorbidities			
Hypertension			**0.002***
No	165 (82.5%)	138 (69.0%)	
Yes	35 (17.5%)	62 (31.0%)	
Diabetes mellitus			0.073
No	191 (95.5%)	182 (91.0%)	
Yes	9 (4.5%)	18 (9.0%)	
Asthma			0.812
No	194 (97.0%)	193 (96.5%)	
Yes	6 (3.0%)	7 (3.5%)	
Sickle cell disease			>0.9
No	200 (100%)	199 (99.5%)	
Yes	0 (0%)	1 (0.5%)	
Other comorbidities			0.286
No	142 (71.0%)	130 (65.0%)	
Yes	58 (29.0%)	70 (35.0%)	
None, n (%)			**<0.001***
No	82 (41.0%)	117 (58.5%)	
Yes	118 (59.0%)	83 (41.5%)	
Education, n (%)			0.137
Primary	52 (26.0%)	41 (20.5%)	
Secondary	84 (42.0%)	87 (43.5%)	
Tertiary	39 (19.5%)	55 (27.5%)	
Others	25 (12.5%)	17 (8.5%)	
Residence, n (%)			0.364
Rural	10 (5.0%)	15 (7.5%)	

Table 1: (Continued...)			
Characteristic	**HIV-negative, N = 200** **n (%)**	**HIV-positive, N = 200** **n (%)**	***p*-value**
Urban	190 (95.0%)	185 (92.5%)	
Employment, *n* (%)			0.911
Employed	17 (8.5%)	18 (9.0%)	
Unemployed	183 (91.5%)	182 (91.0%)	
Alcohol use			0.429
No	1 (0.5%)	4 (2.0%)	
Yes	199 (99.5%)	196 (98.0%)	
Past sexual trauma			0.761
Yes	2 (1.0%)	4 (2.0%)	
No	198 (99.0%)	196 (98.0%)	
Partner's sexual dysfunction			**<0.001***
Absent	191 (95.5%)	171 (85.5%)	
Present	9 (4.5%)	29 (14.5%)	
Intimate partner violence			**<0.001***
Absent	183 (91.5%)	148 (74.0%)	
Present	17 (8.5%)	52 (26.0%)	
*Significant associations where p<0.05, n: Sample size, N: Total population, NGN: Naira.			

Table 2: Pattern of sexual dysfunction among women with FSD, Kano, Nigeria					
Pattern of sexual dysfunction	**All participants** **n, %**	**HIV-positive**		**HIV-negative**	
		Dysfunction present **n (%)**	**Dysfunction absent** **n (%)**	**Dysfunction present** **n (%)**	**Dysfunction absent** **n (%)**
Arousal	291 (72.8%)	147 (73.5%)	53 (26.5%)	144 (72.0%)	56 (28.0%)
Desire	341 (85.3%)	172 (86.0%)	73 (36.5.0%)	169 (84.5%)	31 (15.5%)
Lubrication	271 (67.8%)	127 (63.5%)	53 (26.5%)	144 (72.0%)	56 (28.0%)
Orgasm	340 (85.0%)	167 (83.3%)	33 (16.5%)	173 (88.5%)	27 (13.5%)
Satisfaction	192 (48.0%)	88 (44.0%)	112 (56.0%)	104 (52.0%)	96 (48.0%)
Pain	369 (92.3%)	184 (92.0%)	16 (8.0%)	185 (92.5%)	15 (7.5%)
FSD: Female sexual dysfunction.					

The average FSFI score among both groups prior to intervention was 16.05±10.65 (HIV positive: 18.58±8.46, HIV negative:13.98±10.85). The mean score of sexual function after the intervention increased to 23.58±16.53 (HIV positive: 21.37±11.24, HIV negative: 16.72±13.81). This change was statistically significant ($p < 0.001$).

DISCUSSION

FSD negatively affects the quality of life and physical well-being of women.[31] Studies on female sexual function are important, as they lead to improved awareness, and enable the institution of superior preventive measures and treatment modalities for FSD.[31,32] Studies of FSD among women living with HIV have focused mainly on sexual behavior. This study examined the prevalence of FSD in two groups of women—those living with HIV and those without HIV and assessed the effectiveness of

an adaptive counseling care model in the management of FSD among women living with HIV in northern Nigeria.

The overall prevalence of FSD in both groups was found to be 96.8%, with no statistically significant difference by HIV status. This prevalence is much higher than reports from other settings, including Enugu, Southern Nigeria (53.5%),[32] Egypt (50.4%),[27] Iran (31.5%),[33] Saudi Arabia (60%),[34] Jordan (64%),[35] Cameroon (42%),[36] and the United States (43%).[37] A meta-analysis also found a lower prevalence of 40.9%.[38] A possible reason for this disparity in findings from our study could lie in the conservative nature of northern Nigeria, where open discussions about sexual problems and sex education are deemed taboo.[39,40] This cultural context may lead to less awareness of FSD as a problem, resulting in a reluctance to seek assistance. Not surprisingly, another study in the same environment revealed a much closer high

Table 3: Mean scores of FSFI domains before and after intervention by HIV status, Kano, Nigeria

Sexual function	All participants			HIV-positive			HIV-negative		
	Before intervention	After intervention	p-value	Before intervention	After intervention	p-value	Before intervention	After intervention	p-value
	Mean (SD)	Mean (SD)		Mean (SD)	Mean (SD)		Mean (SD)	Mean (SD)	
Arousal	2.49 (1.90)	3.17 (0.82)	0.016*	3.28 (1.82)	3.51 (2.01)	0.002*	2.13 (1.82)	2.73 (0.86)	0.014*
Desire	2.82 (1.46)	3.62 (0.62)	0.001*	2.99 (1.45)	3.39 (1.42)	0.012*	2.66 (1.45)	2.91 (1.44)	0.015*
Lubrication	2.70 (2.02)	3.43 (0.72)	0.003*	3.22 (1.74)	3.65 (0.63)	0.003*	2.31 (2.18)	2.89 (0.92)	0.002*
Orgasm	2.77 (2.07)	2.89 (0.71)	0.067	3.35 (1.79)	3.52 (0.67)	0.052	2.31 (2.18)	2.74 (0.76)	0.015*
Satisfaction	2.04 (1.37)	5.23 (0.61)	0.004*	1.74 (1.53)	2.61 (0.63)	0.001*	1.16 (1.44)	1.79 (0.43)	0.002*
Pain	3.41 (2.64)	5.24 (0.90)	0.001*	4.00 (2.33)	4.69 (2.62)	0.001*	2.96 (2.81)	3.66 (2.51)	0.012*
Total	16.05 (10.65)	23.58(16.53)	<0.001	18.58 (8.46)	21.37 (11.24)	<0.001	13.98 (10.85)	16.72(13.81)	<0.001

*Statistically significant association. FSFI: Female sexual function index, SD: Standard deviation.

prevalence of 86%,[3] reinforcing the influence of cultural factors on the recognition and reporting of sexual health issues in the region.

Based on the six domains of the FSFI, we found that the most common sexual dysfunctions were sexual pain (92%), sexual desire disorder (85.3%), and orgasm disorder (85%). A meta-analysis published in 2018 provided a broader perspective on the prevalence of sexual dysfunction across domains.[38] The estimates indicated a wide range of prevalence in each domain of sexual dysfunction: hypoactive desire disorder 28.2% [6%–70%]; sexual aversion disorder, [5%–24%] sexual arousal disorder 22.6% [1%–60%]; lubrication difficulties 20.6% [1%–53%]; female orgasmic disorder 25.7% [8%–72%]; and pain 20.8% [1%–72%].[38] While we did not examine the frequency of sexual activity, other studies that identified pain as their primary domain of FSD suggested less frequent exposure to sexual activity to be likely responsible. This explanation is supported by other studies that included women who had undergone circumcision, where pain also emerged as the predominant domain for sexual dysfunction.[39,40] These findings underscore the multifaceted nature of sexual dysfunction and its varied prevalence across different domains.

The PLISSIT sexual counseling model is a simple and cost-effective intervention targeting women with sexual dysfunction and can be implemented by physicians at the point of care.[41] Several studies have demonstrated the model's effectiveness in alleviating symptoms of sexual dysfunction and improving sexual satisfaction among women in diverse settings.[42,43] However, despite its proven efficacy, the PLISSIT model has not been adapted for use among women with HIV in predominantly conservative northern Nigeria. The introduction and customization of the PLISSIT model could potentially fill this void, offering a tailored and culturally sensitive approach to sexual counseling for women living with HIV in Northern Nigeria.

In our study, the overall mean FSFI score for participants with FSD in both groups was initially 15.67. Following a six-week counseling intervention using the PLISSIT model, there was a statistically significant increase in the overall mean FSFI score to 23.58 [Table 3]. This finding is consistent with Abelhakm et al., who found statistically significant differences in mean scores on the Arizona Sexual Experiences Scale before and after implementing the PLISSIT model program.[41] Other studies that used the Arizona Sexual Experience Scale reported similar effectiveness of the PLISSIT model.[42–44] Torkzahrani et al. also demonstrated a statistically significant decrease in sexual problems among lactating women after using the PLISSIT model,[45] as did other studies that revealed post-intervention improvement in all the dimensions of sexual function[36–38] and in the sexual quality of life.[46–48]

Our findings suggest that the PLISSIT model can be a practical guide for healthcare providers to initiate and navigate sexual health discussions. Sung et al.'s work further supports this notion, emphasizing the model's utility in offering a structured approach for healthcare professionals to introduce sexual health topics, provide counseling, and implement interventions.[48] The PLISSIT model not only addresses the specific sexual health needs of women in Northern Nigeria but could also serve as a versatile tool for healthcare providers in fostering open and effective communication about sexual health.

Limitations

This study relies on interviewer-based data, which can be influenced by participants' willingness to disclose sensitive information about sexual dysfunction, potentially leading to underreporting or overreporting. Furthermore, there may be other factors influencing the prevalence of FSD and the effectiveness of the PLISSIT model that were not

controlled for, such as other contraceptive use, ART, and hormonal imbalance.

CONCLUSION AND GLOBAL HEALTH IMPLICATIONS

This study reveals that FSD is very common and often underreported among women visiting outpatient clinics. Through patient education, participants gain awareness that FSD is a common issue among women, which can reduce feelings of isolation and stigma. Incorporating the PLISSIT model into routine care by healthcare practitioners can provide a structured approach to addressing FSD, leading to better patient outcomes. Policymakers should prioritize the development of guidelines and policies that include routine screening and management of FSD in women with HIV. Additionally, allocating resources to train healthcare providers in the PLISSIT model and other effective interventions can improve care quality. Further research should be supported to explore the long-term benefits of the PLISSIT model and other interventions for FSD in diverse populations of women with and without HIV.

Key Messages

- The study reveals a strikingly high prevalence of female sexual dysfunction (FSD) among women with and without human immunodeficiency virus (HIV), highlighting a critical and often overlooked health issue in this population.
- Implementing the Permission, Limited Information, Specific Suggestions, Intensive Therapy (PLISST) model of care can significantly improve symptoms of female sexual dysfunction, suggesting that it is a valuable and effective management strategy for women with and without human immunodeficiency virus.
- Training healthcare providers on the Permission, Limited Information, Specific Suggestions, Intensive Therapy (PLISST) model and other effective interventions for female sexual dysfunction is essential to enhance care delivery and patient outcomes.

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COMPLIANCE WITH ETHICAL STANDARDS

Conflicts of Interest

The authors declare no potential conflicts of interest.

Financial Disclosure

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Ethics Approval

The research/study was approved by the Institutional Review Board at Aminu Kano Teaching Hospital, number NHREC/28/01/2020/AKTH/EC/3479, dated January 27, 2023.

Declaration of Participant Consent

Informed consent was obtained in a written form from all study participants.

Use of Artificial Intelligence (AI)-Assisted Technology for Manuscript Preparation

The authors confirm that there was no use of AI-assisted technology for assisting in the writing or editing of the manuscript and no images were manipulated using AI.

Disclaimer

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