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Evaluation of Perception and Participation in Continuing Medical Education (CME) Among Healthcare Professionals in South-South Nigeria

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Abstract **Original Research Article**

Background: Continuing Medical Education (CME) is a structured process of lifelong learning that enables healthcare professionals to maintain competence, enhance skills, and ensure quality patient care. In Nigeria, CME has gained increasing relevance due to evolving disease patterns, technological advancement, and the demand for evidence-based practice. However, while awareness is generally high, participation varies according to institutional support, workload, and access to resources. This study assessed the awareness, perception, and participation in CME among healthcare professionals in South-South Nigeria.

Methods: A descriptive cross-sectional study was conducted among 187 healthcare professionals in Ovia North-East Local Government Area of Edo State. Participants were selected using a two-stage sampling technique from both public and private facilities. Data were collected with a structured interviewer-administered questionnaire and analyzed using IBM SPSS version 27. Descriptive statistics summarized the data. Ethical approval was obtained from the Department of Community Health, Igbinedion University Teaching Hospital, Okada (Ref: IUTH/R.24/VOL.I/80).

Results: Of the 187 respondents, 114 (61.0%) were female and 73 (39.0%) males. Most were aged between 20–39 years (79; 42.2% and 70; 37.4%, respectively), and the majority held a bachelor's degree (133; 71.1%). Awareness of CME was universal (100%), with online platforms (164; 87.7%) and professional associations (142; 75.9%) serving as the main information sources. Almost all respondents (181; 96.8%) agreed that CME improves competence and professional development. However, participation was irregular, 172 (92.0%) reported attending CME activities, yet only 18 (10.5%) did so frequently, while 98 (57.0%) participated occasionally. Workshops and seminars (158; 91.9%), online courses (145; 84.3%), and conferences (119; 69.2%) were rated most beneficial. Mentorship programmes (22; 12.8%) and simulation training (20; 11.6%) were least utilized. Access to CME was primarily through online platforms (154; 89.5%), webinars (134; 77.9%), and in-person sessions (119; 69.1%).

Conclusion: The study revealed universal awareness and positive perception of CME among healthcare professionals in South-South Nigeria, but participation remains inconsistent. Institutional barriers, funding limitations, and workload pressures hinder regular engagement. Strengthening institutional support, incorporating blended learning models, and embedding CME participation into career appraisal systems are essential strategies to improve regular attendance and sustain professional competence across the health workforce.

Keywords: Continuing Medical Education, awareness, perception, participation, healthcare professionals, Edo State, Nigeria

Background

Continuing Medical Education (CME) represents a deliberate and structured process of lifelong learning through which healthcare professionals update their knowledge, refine clinical skills, and maintain competence in an ever-evolving health system.[1] It is globally recognized as an essential component of professional development that ensures practitioners remain aligned with emerging scientific evidence, technological innovations, and ethical standards in patient care. The World Health Organization emphasizes that CME contributes significantly to strengthening health systems, improving service quality, and achieving universal health coverage, particularly in low- and middle-income countries where health workforce gaps are pronounced.[2,3]

In Nigeria, CME has become increasingly relevant due to the rapid transformation in disease patterns, technological advancement, and the demand for evidence-based medical practice. With the growing burden of non-communicable diseases, infectious outbreaks, and health emergencies, it is imperative that doctors, nurses, laboratory scientists, pharmacists, and allied professionals continuously update their competencies.[4] Yet, the extent of CME participation often varies according to institutional support, personal motivation, and access to resources such as funding and internet connectivity.[5] Studies have also indicated that while most health professionals are aware of the value of CME, regular participation remains suboptimal, especially among practitioners in peripheral or resource-constrained facilities.[6,7]

Awareness and perception of CME play a central role in determining participation levels. Positive attitudes towards CME are linked with improved professional confidence, enhanced teamwork, and better patient outcomes, while low awareness, poor institutional encouragement, and competing work demands have been identified as key barriers. Digital learning platforms, online courses, and blended models introduced after the COVID-19 pandemic have expanded the possibilities for continuous education, yet their utilization still depends on digital literacy and infrastructural support.[8]

Understanding the participation patterns and perceived benefits of CME among health professionals is therefore crucial in designing responsive training programmes that align with both individual and institutional needs. This study investigates the level of awareness, perception, and participation in CME among healthcare professionals in South-South Nigeria. By identifying the prevailing trends and barriers, the findings are expected to guide policymakers, hospital administrators, and professional associations in developing sustainable frameworks that promote regular engagement in CME and ultimately enhance healthcare delivery in the region.

METHODOLOGY

Study Area

The study was conducted in Ovia North-East Local Government Area of Edo State, Nigeria. The LGA lies within the Edo South Senatorial District and has its administrative headquarters in Okada. The area is home to the University of Benin and Igbinedion University, Okada, both of which contribute to its prominence as an academic and healthcare centre. There are over forty registered healthcare facilities within the LGA, including primary health centres, private clinics, and one tertiary hospital. The presence of both public and private health institutions made Ovia North-East an appropriate setting for assessing awareness, perception, and participation in continuing medical education among healthcare professionals.

Study Design and Population

A descriptive cross-sectional study design was employed to assess the awareness, perception, and participation in Continuing Medical Education (CME) among healthcare professionals in Ovia

North-East LGA. This design was suitable because it enabled the collection of data at a single point in time from a representative group. The target population comprised physicians, nurses, pharmacists, medical laboratory scientists, community health workers, and administrative staff employed in both public and private health facilities. Participants included only those who had worked in their respective facilities for at least one year before the study period and who provided informed consent to participate.

3.4 Sample Size Determination

The minimum sample size was determined using the formula for estimating a single proportion:

$$n = \frac{Z^2 pq}{d^2}$$

where n is the desired sample size, Z represents the standard normal deviation at 95 percent confidence (1.96), p is the estimated prevalence of CME participation (87.3 percent based on a previous study among Lagos healthcare workers), q is $1 - p$, and d is the degree of precision set at 5 percent (0.05). Substituting these values yielded a sample size of 168. After adjusting for a 10 percent non-response rate, the final sample size was 187 respondents.

3.5 Sampling Technique

A two-stage sampling technique was used to select participants. In the first stage, Ovia North-East Local Government Area was purposively selected because of its accessibility and concentration of healthcare facilities. In the second stage, the thirteen wards within the LGA were listed, and six were randomly selected using computer-generated numbers. All registered healthcare facilities within the selected wards were included in the sampling frame, and healthcare professionals were recruited consecutively until the sample size of 187 was achieved.

Data Analysis

All completed questionnaires were checked for accuracy, coded, and entered into IBM SPSS Statistics version 27 for analysis. Descriptive statistics such as frequencies and percentages were used to summarize categorical variables. Inferential statistics were conducted using the Chi-square test to determine associations between selected socio-demographic factors and CME participation. Statistical significance was set at $p < 0.05$.

Ethical Consideration

Ethical approval was obtained from the Department of Community Health, Igbinedion University Teaching Hospital, Okada (Reference Number: IUTH/R.24/VOL.I/80). Each participant provided informed consent after being adequately briefed on the purpose and procedure of the study. Participation was voluntary, and respondents were assured of anonymity, confidentiality, and the freedom to withdraw at any stage without any form of penalty.

RESULTS

Sociodemographic characteristics of respondents (Table 1)

Out of the 187 respondents, 114 (61.0%) were female and 73 (39.0%) were male. The majority, 79 (42.2%), were aged between 20–29 years, followed by 70 (37.4%) aged 30–39 years, while 38 (20.3%) were aged 40 years and above. Regarding marital status, 110 (58.8%) were single, 52 (27.8%) were married, and smaller proportions were widowed 8 (4.3%), co-habiting 8 (4.3%), separated 7 (3.7%), or divorced 2 (1.1%).

In terms of education, the majority held a Bachelor's degree (133; 71.1%), followed by Master's degree holders (47; 25.1%), while 3 (1.6%) had doctoral degrees and 4 (2.1%) possessed other qualifications such as HND. With respect to professional roles, 40 (21.4%) were medical laboratory scientists, 39 (20.9%) were nurses, and 31 (16.6%) were physicians. Other respondents included 21 (11.2%) pharmacists, 20 (10.7%) records staff, 16 (8.6%) administrative staff, 12 (6.4%) community health extension workers, 6 (3.2%) community health officers, and 2 (1.1%) health assistants.

Considering years of experience, 87 (46.5%) had worked for 1–5 years, 53 (28.3%) for 6–10 years, 31 (16.6%) for less than one year, and 16 (8.6%) for over 10 years. In terms of workplace setting, most respondents were employed in a teaching hospital (115; 61.5%), while 34 (18.2%) worked in government facilities, 25 (13.4%) in community health centres, and 13 (7.0%) in private practices.

Awareness of CME among respondents (Table 2)

All 187 respondents (100.0%) reported being aware of Continuing Medical Education (CME) activities, indicating complete awareness among the study population. The most common source of information on CME was online platforms (164; 87.7%), followed by professional associations (142; 75.9%) and workplace announcements (112; 59.9%). Other notable sources included colleague recommendations (79; 42.2%).

In terms of forms of CME known to respondents, the majority identified online courses (167; 89.3%) and workshops and seminars (155; 82.9%) as the most familiar. Other forms mentioned were conferences (108; 57.8%), mentorship programmes (25; 13.4%), simulation training (21; 11.2%), and journal clubs (19; 10.2%).

Perception of CME among respondents (Table 3)

Most respondents held a positive perception of Continuing Medical Education (CME). A large proportion, 179 (95.8%), agreed or strongly agreed that CME is a learning activity undertaken after basic formal education, while only 8 (4.3%) were uncertain. Similarly, 177 (94.6%) agreed or strongly agreed that CME represents a process of lifelong learning that meets patient needs, whereas 4 (2.1%) strongly disagreed and 6 (3.2%) were unsure.

Regarding professional development, 175 (93.6%) agreed that CME is valuable to their career growth, while only 8 (4.3%) disagreed and 4 (2.1%) were uncertain. Conversely, opinions were divided concerning whether CME programmes are lengthy and boring, only 76 (40.6%) agreed or strongly agreed, while 88 (47.1%) disagreed or strongly disagreed, and 23 (12.3%) were undecided.

Almost all respondents recognized the professional relevance of CME, with 181 (96.8%) agreeing or strongly agreeing that CME improves skill and competence. Likewise, 162 (86.6%) acknowledged that CME involves participation in workshops, seminars, conferences, research, and formal training, while a small proportion (6; 3.2%) disagreed.

Participation in Continuing Medical Education (CME) activities (Table 4 and Figure 2)

Out of 187 respondents, 172 (92.0%) indicated that they had participated in Continuing Medical Education (CME) activities, while 15 (8.0%) reported no participation. Among those who participated, 98 (57.0%) engaged in CME occasionally, 56 (32.6%) participated rarely, and only 18 (10.5%) reported frequent participation. This indicates that while awareness of CME was universal, consistent participation remained relatively low.

Regarding the types of CME activities perceived as most beneficial, the majority of respondents identified workshops and seminars (158; 91.9%), followed by online courses (145; 84.3%) and conferences (119; 69.2%). Fewer participants considered journal clubs (28; 16.3%), mentorship programmes (22; 12.8%), and simulation training (20; 11.6%) as beneficial.

Pattern of CME participation among respondents (Table 5)

Among the 172 respondents who had participated in CME, 95 (55.3%) agreed or strongly agreed that they regularly participate in in-house trainings and hands-on practicals, while 62 (36.1%) disagreed or strongly disagreed. In terms of professional development, 125 (72.6%) agreed or strongly agreed that they engage in short professional courses, whereas only 29 (16.9%) disagreed or strongly disagreed.

Participation in conferences, seminars, workshops, or meetings was notably high, with 142 (82.5%) agreeing or strongly agreeing to attend such events,

while 17 (9.9%) disagreed or strongly disagreed. Similarly, the vast majority, 163 (94.7%), agreed or strongly agreed that they engage in general reading, learning, and gathering of medical knowledge, demonstrating a strong commitment to self-directed learning.

However, engagement in peer review of biomedical publications was comparatively lower, as only 69 (40.2%) agreed or strongly agreed to being involved, while 87 (50.6%) disagreed or strongly disagreed. Regarding mentoring and coaching roles, 117 (68.0%) agreed or strongly agreed that they provide instruction or guidance to trainees or students, indicating a reasonable level of knowledge-sharing among professionals.

When specific forms of participation were considered, 112 (65.1%) reported taking part in in-house trainings and practicals, 154 (89.5%) attended conferences, seminars, or workshops, and 100 (58.1%) were involved in research and paper publication.

Platforms Used for Accessing CME Activities (Figure 2)

The most common medium through which respondents accessed Continuing Medical Education (CME) was online platforms (154; 89.5%), followed by webinars (134; 77.9%) and in-person attendance (119; 69.1%). Considerably fewer respondents reported using reading medical journals (51; 29.6%) or mobile applications (12; 6.9%) for CME engagement.

Table 1: Sociodemographic characteristics of respondents

Variables	Frequency (n=187)	Percentage (%)
Gender		
Male	73	39.0
Female	114	61.0
Age (years)		
20 - 29	79	42.2
30 - 39	70	37.4
≥ 40	38	20.3
Marital Status		
Single	110	58.8
Married	52	27.8
Widowed	8	4.3
Co-habiting	8	4.3
Separated	7	3.7
Divorced	2	1.1
Level of Education		
Bachelor's degree	133	71.1
Master's degree	47	25.1
Doctoral degree	3	1.6
Others (HND)	4	2.1
Job/Title		

Med lab scientist	40	21.4
Nurse	39	20.9
Physician	31	16.6
Pharmacist	21	11.2
Records staff	20	10.7
Administrative staff	16	8.6
Community health extension worker	12	6.4
Community health officer	6	3.2
Health assistant	2	1.1
Years of experience		
<1	31	16.6
1 - 5	87	46.5
6 - 10	53	28.3
>10	16	8.6
Type of Facility		
Teaching Hospital	115	61.5
Community health center	25	13.4
Private practice	13	7.0
Government facility	34	18.2

Table 2: Awareness of CME among respondents

Variables	Frequency (n = 187)	Percentage (%)
Awareness of CME		
Yes	187	100.0
No	0	0.0
Source of information on CME*		
Online platforms	164	87.7
Professional association	142	75.9
Workplace announcements	112	59.9
Colleague recommendation	79	42.2
Forms of CME known*		
Online courses	167	89.3
Workshop and seminars	155	82.9
Conferences	108	57.8
Mentorship programs	25	13.4
Simulation training	21	11.2
Journal club	19	10.2

Multiple responses allowed

Table 3: Perception of CME among respondents

Variables	Strongly Disagree n (%)	Disagree n (%)	Maybe n (%)	Agree n (%)	Strongly Agree n (%)
It is a learning activity after basic formal education	0 (0.0)	0 (0.0)	8 (4.3)	68 (36.4)	111 (59.4)
It is a process of lifelong learning for individuals and teams which meet the needs of patients	4 (2.1)	0 (0.0)	6 (3.2)	76 (40.6)	101 (54.0)
CME is valuable to my professional development	0 (0.0)	8 (4.3)	4 (2.1)	60 (32.1)	115 (61.5)
CME programs/lectures are lengthy and boring	29 (15.5)	59 (31.6)	23 (12.3)	32 (17.1)	44 (23.5)
CME improves your skill and competence	0 (0.0)	0 (0.0)	6 (3.2)	88 (47.1)	93 (49.7)
It involves participation in workshops, seminars, conferences, journaling, research and formal training	2 (1.1)	4 (2.1)	19 (10.2)	92 (49.2)	70 (37.4)

Table 4: Participation in Continuing Medical Education (CME) activities

Variables	Frequency (n=172)	Percentage (%)
Frequency of engaging in CME programs		
Frequently	18	10.5
Occasionally	98	57.0
Rarely	56	32.6
Never	15	8.7
Type of CME respondents found most beneficial		
Workshop and seminars	158	91.9
Online courses	145	84.3
Conferences	119	69.2
Journal club	28	16.3
Mentorship program	22	12.8
Simulation training	20	11.6

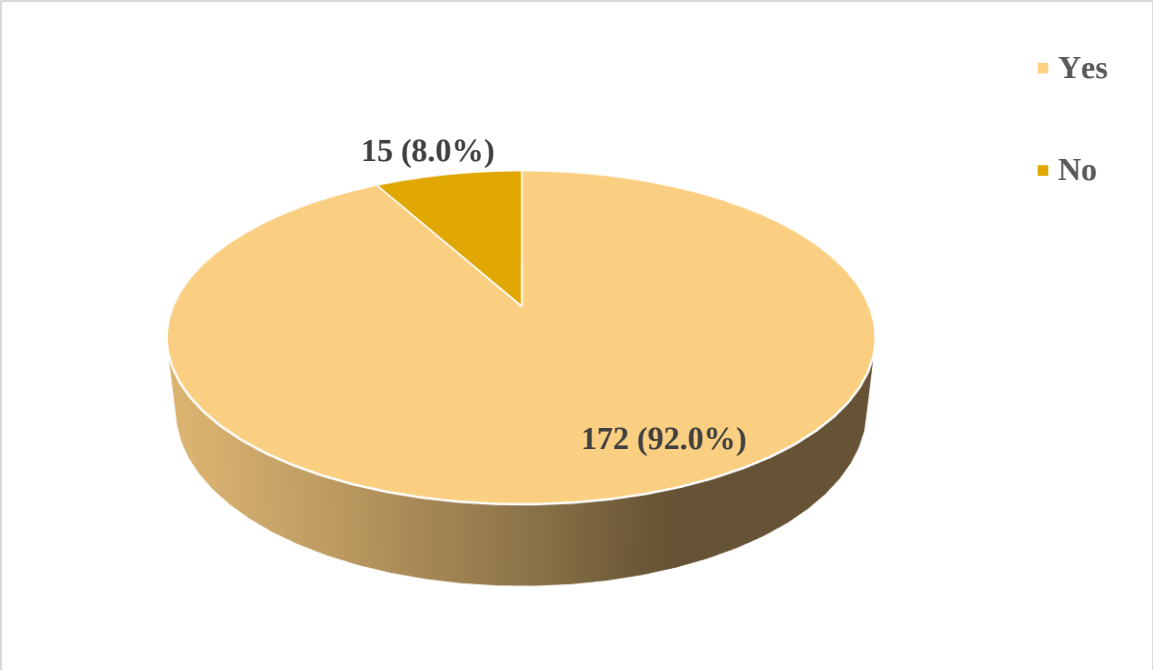

Figure 1: CME participation among respondents

Table 5: Pattern of CME participation among respondents

Variables	Frequency (n = 172)	Percentage (%)
I participate in in-house trainings and hands-on practicals		
Strongly agree	29	16.9
Agree	66	38.4
Maybe	15	8.7
Disagree	56	32.6
Strongly disagree	6	3.5
I engage in short professional courses		
Strongly agree	35	20.3
Agree	90	52.3
Maybe	18	10.5
Disagree	27	15.7
Strongly disagree	2	1.2
I attend conferences, seminars, workshops, or meetings		
Strongly agree	37	21.5
Agree	105	61.0
Maybe	13	7.6
Disagree	15	8.7
Strongly disagree	2	1.2
I engage in general reading, learning, and gathering of medical knowledge		

Variables	Frequency (n = 172)	Percentage (%)
Strongly agree	42	24.4
Agree	121	70.3
Maybe	7	4.1
Disagree	2	1.2
Strongly disagree	0	0.0
I engage in peer review of biomedical publications		
Strongly agree	13	7.6
Agree	56	32.6
Maybe	16	9.3
Disagree	69	40.1
Strongly disagree	18	10.5
I coach or mentor trainees or students		
Strongly agree	33	19.2
Agree	84	48.8
Maybe	15	8.7
Disagree	32	18.6
Strongly disagree	8	4.7
I participate in in-house trainings and hands-on practicals		
Yes	112	65.1
No	60	34.9
I attend conferences, seminars, workshops, or meetings		
Yes	154	89.5
No	18	10.5
I engage in research and paper publication		
Yes	100	58.1
No	72	41.9

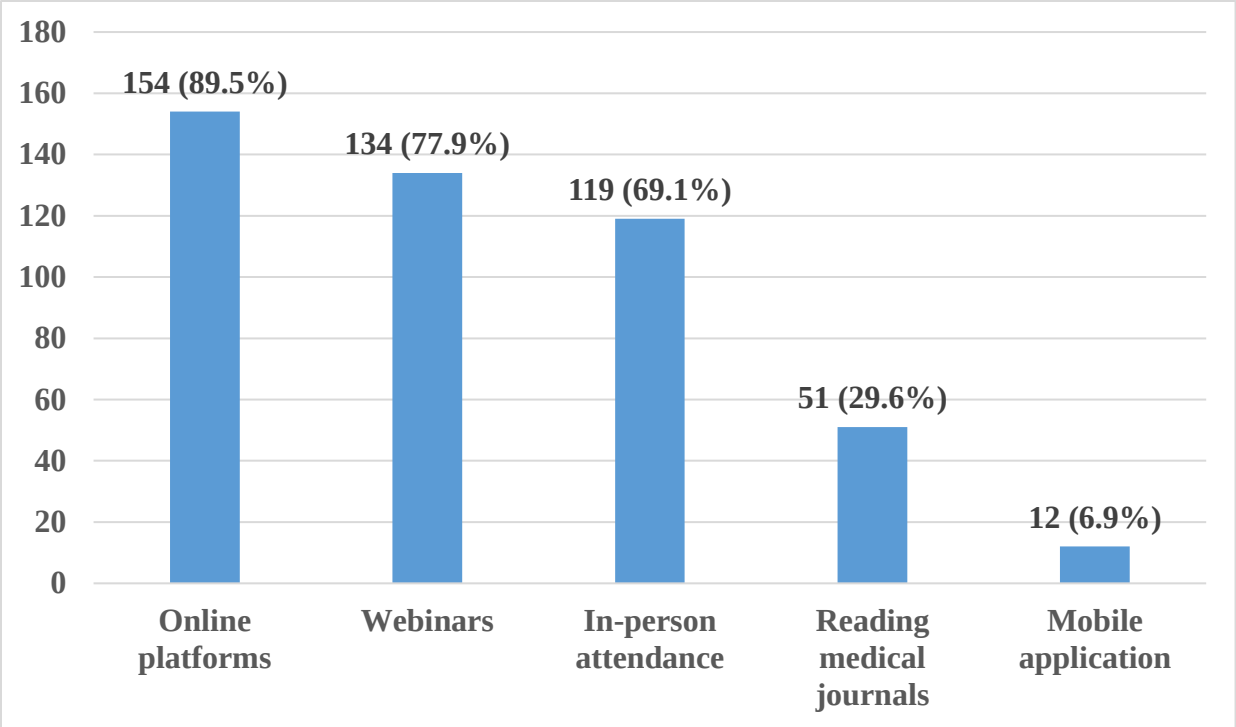

Figure 2: Platforms used for accessing CME activities

DISCUSSION

This study revealed a predominance of female healthcare professionals and a largely youthful workforce aged between 20 and 39 years. Similar findings in Ekiti, Nigeria reported a comparable pattern, reflecting the increasing entry of young female professionals into the health sector.[9] Most respondents possessed a bachelor's degree and had worked for less than ten years, consistent with a similar study in Iran which noted that early-career professionals form the majority of CME participants.[10] The concentration of respondents in teaching hospitals further confirms that tertiary institutions remain the main centres of professional development in Nigeria. This emphasizes the need to extend structured CME opportunities to primary and secondary health facilities where most patient care occurs.

Awareness of Continuing Medical Education was universal among respondents. The prominence of online platforms and professional associations as major sources of information reflects the growing influence of technology and institutional networks in promoting CME. However, limited awareness of mentorship and simulation-based learning suggests that more interactive and practical forms of CME are not yet widely promoted. Strengthening institutional communication and diversifying CME models to include hands-on and mentorship-driven formats could help improve the quality of professional learning.

The perception of CME among participants was highly positive, as most viewed it as a vital process for lifelong learning, career development, and improved patient outcomes. This aligns with findings from Ethiopia, which highlighted CME as an essential driver of clinical competence.[11,12] Although some respondents described CME programmes as lengthy or monotonous, this could be linked to limited interactivity and time constraints. Adapting CME delivery to include shorter, focused, and participatory sessions may enhance engagement and retention among healthcare workers.

Most respondents had participated in CME at some point, although regular participation was comparatively low. This trend is similar to a Portuguese study, which identified workload, limited funding, and lack of incentives as major barriers to consistent CME involvement.[13] Workshops, seminars, and online courses were the most commonly utilized and valued forms of CME, consistent with similar studies that noted flexible and certificate-based learning formats encourage attendance.[14,15] The low participation in mentorship and simulation training highlights the need for institutional support to develop more structured and practice-oriented CME programmes.

Respondents demonstrated strong engagement in short courses, seminars, and self-directed learning, indicating motivation for professional improvement. However, fewer were involved in research and peer review, echoing the report of several studies which attributed low research participation to weak mentorship, limited exposure to scholarly publishing and lack of time and resources.[16,17] The preference for online platforms and webinars confirms the increasing adoption of virtual learning modes following the COVID-19 pandemic. The low use of mobile applications and journal reading implies underutilization of self-paced and evidence-based learning tools. Encouraging blended learning approaches and enhancing digital literacy among healthcare workers could improve participation and ensure more comprehensive professional growth.

CONCLUSION

The findings showed universal awareness and a generally positive perception of CME, indicating strong recognition of its value in professional development. However, participation was irregular, with most respondents engaging only occasionally.

Workshops, seminars, and online courses were the most common and beneficial forms of CME, while research, mentorship, and simulation-based learning were less explored. These patterns suggest that although healthcare workers are motivated to learn, participation is limited by institutional and resource constraints. Strengthening organizational support, promoting flexible learning models, and fostering mentorship will help improve regular participation and sustain professional competence across healthcare facilities.

RECOMMENDATIONS

Based on the findings of this study, it is recommended that health institutions adopt structured and mandatory CME policies to ensure consistent participation among healthcare professionals. Greater institutional support, including sponsorship and time allowances, should be provided to enable attendance at approved CME programmes.

Blended learning models combining online and in-person formats should be promoted to improve accessibility and flexibility. Professional associations should strengthen mentorship and research-based CME opportunities to encourage scholarly engagement. Finally, integrating CME participation into career progression and appraisal systems could serve as an incentive for sustained involvement.

LIMITATIONS

This study was conducted within a single local government area, which may limit the generalizability of the findings to other regions. Data were self-reported, which may have introduced recall or response bias. In addition, resource and time constraints restricted the inclusion of a larger sample size and more diverse facility types. Despite these limitations, the study provides valuable insight into the patterns, perceptions, and challenges of CME participation among healthcare professionals in South-South Nigeria.

REFERENCES

1. McAdams CD, McNally MM. Continuing Medical Education and Lifelong Learning. *Surgical Clinics of North America*. 2021;101(4):703-715. doi:10.1016/j.suc.2021.05.015

2. Weisz G, Nannestad B. The World Health Organization and the global standardization of medical training, a history. *Global Health*. 2021;17(1):96. doi:10.1186/s12992-021-00733-0

3. World Health Organization. Continuing Professional Development for Health Workforce Transformation: Global Overview and Strategies. *World Health Organ Tech Rep Ser*. Published online 2023. https://www.who.int/publications

4. Odunyemi A, Rahman T, Alam K. Economic burden of non-communicable diseases on households in Nigeria: evidence from the Nigeria living standard survey 2018-19. *BMC Public Health*. 2023;23(1):1563. doi:10.1186/s12889-023-16498-7

5. Egwudo AE, Jegede AO, Oyeniyi TA, et al. Integrating digital health technologies into the healthcare system: Challenges and opportunities in Nigeria. *PLOS Digital Health*. 2025;4(7):e0000928. doi:10.1371/journal.pdig.0000928

6. Hassan Alshehri HM, Alshehri AMH, Alshehri AMH, et al. Primary health care professionals' opinions regarding continuing medical education: A cross sectional study. *Medicine*. 2024;103(50):e40865. doi:10.1097/MD.0000000000040865

7. Negussie A, Sisay A, Shibabaw A, et al. Perceptions, attitudes, and challenges regarding continuing professional development among Ethiopian medical laboratory professionals: a mixed-methods study. *BMC Med Educ*. 2025;25(1):1049. doi:10.1186/s12909-025-07633-6

8. Haleem A, Javaid M, Qadri MA, Suman R. Understanding the role of digital technologies in education: A review. *Sustainable Operations and Computers*. 2022;3:275-285. doi:10.1016/j.susoc.2022.05.004

9. Adeusi TJ, Awe TV, Iyanda AE, et al. Gender Gap in Enrollment into Primary Healthcare Professionals' Education in Nigeria. *Journal of Development Administration (JDA)*. 2020;5(2):70-79. https://africasocialwork.net/journal-of-development-administration-jda/

10. Faghihi SA, Khankeh HR, Hosseini SJ, Soltani Arabshahi SK, Faghih Z, Shirazi M. Impractical CME programs: Influential parameters in Iran. *Med J Islam Repub Iran*. 2017;31(1):29-33. doi:10.18869/mjiri.31.6

11. Tesfaye Y. The Role of Social Support and Demographic Variables in Promoting Identity Achievement: The Case of College Students in Gondar, Amhara Region, Ethiopia. *American Journal of Applied Psychology*. 2017;6(6):173. doi:10.11648/j.ajap.20170606.16

12. Merahi MK, Yallew WW. Physicians' perception towards continuing professional development in government teaching hospitals of Addis Ababa, Ethiopia-mixed method design. *BMC Health Serv Res*. 2025;25(1):111. doi:10.1186/s12913-025-12261-3

13. Reis T, Faria I, Serra H, Xavier M. Barriers and facilitators to implementing a continuing medical education intervention in a primary health care setting. *BMC Health Serv Res*. 2022;22(1):638. doi:10.1186/s12913-022-08019-w

14. Forsetlund L, O'Brien MA, Forsén L, et al. Continuing education meetings and workshops: effects on professional practice and healthcare outcomes. *Cochrane Database of Systematic Reviews*. 2021;2021(9). doi:10.1002/14651858.CD003030.pub3

15. Esene H, Ehis B, Agbon-Ojeme G, Adam V. Determinants of Participation in Continuing Medical Education among Health Workers in South-South Nigeria. Omanarp International Journal of Health Sciences, Nov. 2025; 3(1):1-12.

16. Oyediran OO, Oyeyemi AA, Ojo IO, Ogidan OC. Research Participation and Utilization among Clinical Nurses in a Southwestern

Tertiary Health Institution, Nigeria. *East Afr Med J*. 2021;98(10):4184-4192. https://www.ajol.info/index.php/eamj

17. Adebayo O, Ogechukwu MI, Tolani MA, et al. Factors associated with participation in Research by Very Early Career Doctors in a Lower Middle-Income Country in Africa: A Multi-Centre Study. *Ibom Medical Journal*. 2021;14(3):262-273. doi:10.61386/imj.v14i3.54