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Factors associated with participation in Research by Very Early Career Doctors in a Lower Middle-Income Country in Africa: A Multi-Centre Study

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Abstract

Background: Research is beneficial for the professional growth of a doctor, and forms the bedrock of evidence-based medical practice. Very Early Career Doctors (VECDs) face peculiar personal, work and time constraints which have the potential to affect their research performance. This study described the research engagement of VECDs in Nigeria and investigated its potential associations.

Methods: A descriptive cross-sectional study from the quantitative research arm of the Challenges Among Residency Training and Early Career Doctors in Nigeria (CHARTING) Study was conducted between May and December, 2019. Data on socio-demographics, work-related practices, research engagement and training were collected and summarised using frequencies and proportions (categorical variables) and means and standard deviations (for normally distributed continuous variables). Chi-square analysis was used in determining associations between variables and research engagement outcomes; and potential predictors investigated using logistic regression. A p-value < 0.05 was considered significant.

Results: A total of 476 VECDs from nine tertiary hospitals in Nigeria were recruited. They comprised of 305 (65.1%) males and 163 (34.9%) females with a mean age of 31.2 +/- 5.0 years. Three hundred and seventy-four (81.5%) and 187 (40.7%) respondents had participated in research and presented their research work, respectively. The proportion of respondents who received research grants, were first authors, and were involved in local & international publications were 8 (1.7%), 32 (6.9%), 42 (9.2%) and 37 (8.0%) respectively.

Age $\leq$ 40 years (P=0.038), graduating within the last 5 years (P=0.016), $\leq$ 4 years on current job (P=0.001), working in a university affiliated centre (P=0.011), previous undergraduate research methodology training (P<0.0001), and agreeing with the statement that research will enhance their career (P=0.038); were significantly associated with ever having done any research work on bivariate chi-square analysis. Only having had a research methodology training significantly predicted ever participating in any research work (OR=4.49 (95% C.I 2.39-8.45); p<0.0001).

Conclusion: VECDs had a high research participation, but low research presentation in scholastic gathering, funding, authorship and publication rates. Research methodology training significantly predicted research participation.

Keywords: Internship and residency, Nigeria, physicians, publications, training support

Introduction

Research basically entails all the systematic activities involved in investigating a well-thought out specific problem and the issues surrounding it, as well as reporting findings for the purpose of advancing knowledge and practice.[1] Benefits of being actively involved in research activities include promotion of critical thinking and analytical skills; helping to clearly define career interests; expanding on knowledge and understanding of a chosen field; and building a synergistic community between peers and organizations both within and outside their work environment.[2] As part of a vibrant scientific community, research advances knowledge, builds confidence in scientific processes, informs policy formulation and is the backbone of evidence-based practice.[3]

Very Early Career Doctors (VECDs) are a subset of Early Career Doctors (ECDs) who are usually less than 10 years in practice and are of a lower cadre than senior registrars and senior medical officers for those in residency training or non-training positions respectively in the Nigerian medical health system.[4] They include house-officers/interns, medical officers and registrar as against senior medical officers and senior registrars.[5,6] They are unique being at the formative stage of their medical career.

There is an increased global attention on the need for early involvement of doctors in research. The Royal

College of Physicians described engaging in research as being "intellectually rewarding, and good for your patients, your hospital and your career…".[3] Doctors in Nigeria are obliged to conduct research during the final year of their medical training as a mandatory pre-requisite for the MBBS degree. It is also a requirement of the senior stage of the residency programme. A few faculties specifically request for research to be submitted at the membership stage of the residency programme in the form of case book.[4] This should hopefully stimulate the interest of the individual in conducting high quality research relatively early in their career. There is however a competition for the interest and time of these doctors between clinical work and research , hence research tends to play second-fiddle.

Previous studies have investigated research engagement in terms of activities relating to evidence search and critical appraisals; involvement in recruitment of study participants; public engagement and dissemination of findings, etc.[4,7-9] It has also been observed that certain factors contribute to poor research involvement among health scientists such as lack of time, poor mentorship, lack of research methodology training, poor awareness about research benefits and lack of financial support.[7,9]

VECDs working in Nigeria are still coming to grasps with their new career and face challenges of long work hours, poor remuneration, burnout issues, lack of mentorship and training. However, we do not fully understand the levels of their engagement in research and the factors that affect it particularly at a stage in their career when it is not compulsory.

Available studies on research involvement of doctors in Nigeria are single centre studies in selected geopolitical zones and the study population involved all cadre of physicians.[7, 9] Furthermore, a previous report also from CHARTING study exploring research among resident doctors demonstrated that publication and grantsmanship rates were very low.[9] This study focused on VECDs, a unique subset of ECDs, with their own peculiar challenges.[7] We took a more holistic approach by utilizing amore robust database of VECDs from all geopolitical regions of Nigeria, to produce a more generalizable result. Furthermore, VECDs are unique because they do not usually have compulsory research component in their scheme of work; research activity is rare in those pursuing civil service as medical officers and very uncommon in those undergoing residency as junior residents.

We evaluated the participation of Nigerian VECDs in scientific research activities and possible predictors of this participation in order to provide evidence to inform policy decisions. Specifically, we examined the associations between factors such as socio-demographic characteristics, personal and career factors, and undergraduate and postgraduate research methodology training as potential predictors of early research participation by VECDs in Nigeria

Methodology

Study design: This was a cross-sectional analytical observational study that formed part of the larger multicenter CHARTING (Challenges of Residency Training and Early Career Doctors in Nigeria) study.[5] The CHARTING study is the largest trainee-led multi-centre Research Collaboration Network(RCN) in Nigeria. This initiative was pioneered by the Nigerian Association of Resident Doctors (NARD) to promote studies regarding ECDs in the country.[6]

Study Population: The study population included VECDs who had completed their first degree in Medicine or Dentistry/Dental Surgery and were undergoing internship, junior residency training, or are employed as junior medical officers or equivalent in the dentistry field. Only those working in Nigerian tertiary hospitals and training centres affiliated to NARD were included in this study. VECDs were excluded if they failed to give informed consent.

Setting/Site: Eligible study participants were recruited from tertiary hospitals where VECDs work and where NARD branches are located across the six geopolitical zones of the country according to the sampling criteria. There are 74 such hospitals/centres in the country comprising federal teaching hospitals, state teaching hospitals and federal medical centres. These centres are geographically distributed as follows: 10 in the North-East, 13 in the North-Central Nigeria, 14 in the North-West, 15 in the South-West, 10 in the South-East Nigeria, and 12 in the South-South

Nigeria.[4]

Sampling method: A multi-staged sampling technique was employed. At the first stage, nine hospitals were selected from the six geopolitical zones using simple random sampling using a list of all hospitals where VECDs work as a sampling frame. The second stage involved the selection of five departments from each selected hospital using simple random sampling. At the final stage, all eligible VECDs were recruited from each selected department in each hospital. These participants were a subset of the larger participants of the CHARTING-1 study comprising interns, all medical/dental officers below the rank of principal medical officers and all residents (junior and senior). More detailed description of the sampling methods are published in the CHARTING study protocol paper.[4]

Data Collection: Closed ended, self-administered questionnaires were used in obtaining information about sociodemographic characteristics; involvement in research activities; personal and work-related activities among participating VECDs. Questionnaire was pretested and validated on VECDs in a single centre in South-West Nigeria not included in the study. All outcome variables had binary responses ("Yes" or "No") except for the perception of enhancing effect of research on personal career which was measured on a 5-point Likert scale.

Ethical Considerations: Ethical approval for the CHARTING study was obtained from the National Health Research Ethics Committee (NHREC). Written informed consent was obtained from each eligible participant and data collected were anonymized before analysis with strict adherence to confidentiality

Variable measurements

Outcome Variables: Primary outcome variable was defined as any form of participation of VECD in research work. Secondary outcomes included first authorship of research work, local and international peer-reviewed journal publications and receipt of grants.

Predictor variables: Participants responded to questions on socio-demographic variables (age, sex, marital status, work cadre) and potential predictors to determine their association with research engagement. Potential predictors which were recorded based on existing literature included number of children, years since graduation, years of practice, number of hours engaged in research and academic activities weekly, number of call duties weekly, additional qualifications, if presently working in a university-affiliated centre, being a surgical resident (because it was assumed surgical residents have longer working hours), previous research methodology training, and perception of enhancing effect of research on personal career.

Data Analysis: All data was analysed in Statistical Package for Social Sciences (SPSS) v.23 (IBM Corp., Armonk,NY). Means and standard deviations were reported for normally distributed continuous variables, while frequencies and proportions were used to summarize categorical variables. Pearson's chi-square test was used to determine the association between potential predictors and outcome variables. Multivariate analysis was done using logistic regression to assess the independent predictors and compute the adjusted odds ratio after controlling for confounders. A significance level of <0.05 was pre-determined as the acceptable cut-off in ascertaining statistical significance.

Results

Response rate, missing data

A total of 476 respondents were included in this study with some form having missing data ranging from 0% (sex) to 12% (age). Since missing data level was <20% overall, a complete case analysis was done for each variable.

Description/Summary of population

The mean age of respondents was 31.2 ± 5.0 years, with a range of 22 years to 52 years. Table 1 summarizes the sociodemographic distribution of VECDs that participated in this study. The male:female ratio was 1.86:1.00, with half of the respondents being married. Registrars made up about half of all respondents. Participation rates differed across centres from 3% to 25%. Most (74.2%) VECDs that participated in this study had graduated from medical school within five years; had practiced for seven years or less (81.7%) and about 95% had been at their current jobs for five years or less. More than half of all VECDs spent >7

Table 1. Sociodemographic characteristics of VECD respondents

Socio-demographic characteristics	Frequency	Proportion (%)
Gender (N=468)		
Male	305	65.1
Female	163	34.9
Marital status (N=465)		
Married	235	50.5
Not married	230	49.5
Centre (M=476)		
Federal Medical Centre Abeokuta	102	21.4
Federal Teaching Hospital, Gombe	39	8.2
University College Hospital Ibadan	89	18.7
Federal Teaching Hospital, Ido-Ekiti	52	10.9
Obafemi Awolowo University Teaching Hospital Complex, Ile-Ife	93	19.5
University of Jos, Jos	15	3.2
Federal Medical Centre, Katsina	45	9.5
LAUTECH Teaching Hospital, Ogbomosho	24	5.0
University of Port-Harcourt, Port Harcourt	17	3.6
Cadre (N=454)		
House officer	165	36.3
Medical officer	55	12.1
Registrar	234	51.6
Additional educational qualification (N=47)		
Masters	20	42.5
Postgraduate Diploma	13	27.7
Others	14	29.8

hours per week on research activities with 71.6% working in tertiary hospitals that were affiliated with a university (Table 2).

Although majority of respondents (81.5%) had been involved in research, less than half of them (40.7%) had presented their work in research forums. While further exploring their level of inclusion in the research project, less than 10% of the respondents had local (9.2%) and international publications (8.0%), had participated as first authors (6.9%), or had received research grants (1.7%).

In spite of these low rating, most respondents (96.1%) agreed that VECD should be more involved in medical research (Table 3). The difference in male:female participation rates was not significant (83% vs 78%, p = 0.077).

The following personal and work-related factors showed significant positive associations with ever having participated in any research work on bivariate chi-square analysis: less than 40 years of age (p =0.038), 5 years or less since graduation (P = 0.016), 4 years or less on current job (P = 0.001) and working in a university affiliated centre (P = 0.011) (Table 4). There was also an observed significant positive association between having ever had any previous undergraduate research methodology training and ever participating in a research work (P<0.001). Participants who agreed with the statement that research will enhance their career were more likely to have ever participated in a research work compared to those who were undecided or disagreed with the statement (p

Table 2. Work-related characteristics of VECDs

VECDs Work-related characteristics	Frequency	Proportion (%)
Years of graduation from medical school (N=438)		
≤ 5 years	325	74.2
> 5 years	113	25.8
Years of practice (N=328)	268	81.7
≤ 7 years	268	81.7
>7 years	60	18.3
Years on current job (N=360)		
<5 years	342	95.0
≥ 5 years	18	5.0
Surgical vs non-surgical residents (N=278)		
Surgical	127	45.7
Non-surgical	151	54.3
Resident vs non-resident doctors (N=454)		
Resident	220	48.5
Non-resident	234	51.5
Private research hours per week (N=336)		
≤ 7 hours per week	152	45.2
>7 hours per week	184	54.8
University affiliated centre (N=423)		
Yes	303	71.6
No	120	28.4

=0.038) (Table 5).

On multivariate analysis using a logistic regression, having had a research methodology training significantly predicted ever participating in any research work (OR = 4.49 (95% C.I. 2.39-8.45); p<0.0001). Other variables included in the multivariate logistic regression model did not significantly predict research participation in this study.

Discussion

This research observed the research participation and related factors amongst VECDs practicing in Nigeria. Research participation rates, though high for general research activities, reduced dramatically when specific aspects were considered (publications, first authorship and receipts of grant). Other studies have reported similar high participation rates in any form of research activity which also decreased in specific research involvement like publications and research presentation.[9,10] In a particular study, 100% of participants had ever participated in any research but this dropped to as low as 34.3% when asked about research publications in academic peer-reviewed journals.[9,11] The high participation rates could be due to participation in the mandatory undergraduate research activity, which is not primarily conducted for the purpose of conference presentation or publication and as such usually not of good enough quality for publication. Another explanation may be the assistance given to senior colleagues in part of their research work like data collection. The little or no requirement for curricular research by both the National and West African postgraduate medical colleges for junior resident doctors as against the senior level may not create a motivating environment for VECDs to engage in research. Observed research participation and publication rates were also far lower for VECDs in Nigeria in this present study compared to all medical practitioners as reported in a study in Abia

Table 3: Research engagement of VECDs

ECD responses to questions regarding research engagement	Frequency	Proportion (%)
Have you ever participated an any research work? (N=459)		
Yes	374	81.5
No	85	18.5
Have you ever presented any research work anywhere? (N=459)		
Yes	187	40.7
No	272	59.3
Have you ever been a first author of a peer reviewed article? (N=461)		
Yes	32	6.9
No	429	93.1
Have you ever published any of your research work in any local journal? (N=459)		
Yes	42	9.2
No	417	90.8
Have you ever published any of your research work in any international journal? (N=461)		
Yes	37	8.0
No	424	92.0
Have you ever received any of your research or project grants from any local agency or body? (N=460)		
Yes	8	1.7
No	452	98.3
Have you ever received any of your research or project grants from any international agency or body? (N=461)		
Yes	8	1.7
No	453	98.3
Resident doctors should be more involved in medical research (N=463)		
Strongly disagree	8	1.7
Disagree	3	0.7
Undecided	7	1.5
Agree	140	30.2
Strongly agree	305	65.9

Table 4. Relationship between personal and work-related factors and VECDs participation in research

	Have you ever participated in any research work		
	Yes: n (%)	**No: n (%)**	**P-value**
Gender (N=456)			
Male	249 (83.3)	51 (16.7)	0.077
Female	122 (78.2)	34 (21.8)	
Marital status (N=453)			0.065
Married	180 (77.9)	51 (22.1)	
Not married	188 (84.7)	34 (15.3)	
Masters (N= 45)			0.918
Yes	14 (77.8)	4 (22.2)	
No	22 (81.5)	5 (18.5)	
Masters + PhD (N=459)			0.680
Yes	14 (77.8)	4 (22.2.)	
No	360 (81.6)	81 (18.4)	
Age (N = 406)			0.038*
≤40 years	316 (82.5)	67 (17.5)	
>40 years	15 (65.2)	8 (34.8)	
Years of graduation from medical school (N=426)			0.016*
≤5 years	263 (83.5)	52 (16.5)	
>5 years	81 (73.0)	30 (27.0)	
Years of practice (N=324)			0.291
≤7 years	210 (79.5)	54 (20.5)	
>7 years	44 (73.3)	9 (50.0)	
Years on current job (N – 353)			0.001*
≤4 years	274 (81.8)	61 (18.2)	
>4 years	9 (50.0)	9 (50.0)	
Additional qualification (N=459)			0.788
Yes	36 (80.0)	9 (20.0)	
No	338 (81.6)	76 (18.4)	
Number of children (N = 191)			0.380
≤2 children	117 (73.1)	43 (26.9)	
>2 children	25 (80.6)	6 (19.4)	
Average call days per month (N = 415)			0.076
≤7 days	36 (72.0)	14 (28.0)	
>7 days	301 (82.5)	64 (17.5)	
Number of calls in a month (N=438)			0.109
≤7 calls	107 (76.4)	33 (23.6)	
>7 calls	247 (82.9)	51 (17.1)	
Personal research hours per week (N=331)			0.120
≤7 hours	119 (79.9)	30 (20.1)	
>7 hours	157 (86.3)	25 (13.7)	
Average hours of research involvement per week (N=195)			0.904
≤7 hours	136 (82.4)	29 (17.6)	
>7 hours	25 (83.3)	5 (16.7)	
Hours of formal educational activities in a week (N=383)			0.632
≤7 hours	168 (82.4)	36 (17.6)	
>7hours	144 (80.4)	35 (19.6)	
Additional qualification (Masters and PhD) (N = 459)			0.680
Yes	14 (77.8)	4 (22.2)	
No	360 (81.6)	81 (18.4)	
University affiliated centre (N = 407)			0.011*
Yes	247 (84.9)	44 (15.1)	
No	86 (74.1)	30 (25.9)	
Surgical vs non-surgical (N=275)			0.645
Surgical	96 (76.2)	30 (23.8)	
Non-surgical	117 (78.5)	32 (21.5)	

*P-values reported are based on Pearson's chi-square test o significance

Table 5. Undergraduate and post graduate research methodology training and VECDs research participation

	Have you ever participated in any research work		
Variables	**Yes n (%)**	**No n (%)**	**P-value**
Have you ever had any previous undergraduate research methodology training (N = 455)			
Yes	310 (88.8)	39 (11.2)	<0.0001*
No	62 (58.5)	44 (41.5)	
Have you ever had any previous post graduate research methodology training (N = 454)			
Yes	62 (81.6)	14 (18.4)	0.984
No	308 (81.5)	70 (18.5)	
Research will enhance your career (N = 452)			
Strongly disagree	5 (83.3)	1 (16.7)	0.038*
Disagree	1 (25.0)	3 (75.0)	
Undecided	5 (62.5)	3 (37.5)	
Agree	119 (82.1)	26 (17.9)	
Strongly agree	242 (83.7)	47 (16.3)	

*P –values reported are based on Pearson's chi-square test of significance

Table 6. Predictors of VECDs ever participating in any research work

Predictor variables	β	Exp (β)	(95% C.I)	P-value
5 years or less of graduation from medical school	-0.38	0.68	(0.35-1.35)	0.271
4 years or less on current job	-0.70	0.50	(0.16-1.53)	0.224
Had a research methodology training	1.50	4.49	(2.39-8.45)	<0.001*
Working in a university-affiliated centre	-0.43	0.65	(0.35-1.23)	0.185
Constant	-2.21		(-0.11-	0.005

B-coefficients are from a logistic regression model with all four predictor variables included and outcome variable as "ever participated in any research work"

state Nigeria (9.2% vs 34.3%).[9] This may not be unconnected with the mostly non-compulsory requirement of research activities at this phase of career and few proportions who had undertaken an academic postgraduate degree programme. This obvious disparity emphasizes the need for mentorship of VECDs to harness their potential and build their capacity early before they progress to higher professional levels which require more research engagement activities.

The proportions of doctors in Abia State Nigeria that had ever presented research work at conferences was a precise reflection of the national average obtained in this study (40.7% vs 40.3%).9 Less than half of VECDs had experience in research presentation which is useful in the development of communication skills for dissemination of research findings. It is also a necessary step if the impact of one's work is to be felt by the scientific community. Conference presentations in the form of poster or abstract presentation, seminar or workshop facilitation or lectures are important fora for sharing

evidence and initiating a healthy environment for constructive criticisms and conversations with leading academics in similar research areas.[9]

Less than 10% of VECDs had any form of local or international journal publications. This is buttressed by the fact that article submission charges, as observed in a study in Abia state, Nigeria, was a common consideration when deciding to publish articles among doctors and may effectively dissuade researchers from publishing.[9] This factor can also be construed to be implied in this present study where only a minute proportion (1.7%) of participants were recipients of any form of research grants. Out-of-pocket research financing is a common occurrence among Nigerian doctors and is a fundamental barrier to research involvement both in resource-poor and rich countries.[12-15] Lack of available research grants especially directed at young aspiring doctors is detrimental to the effective cultivation of the future crop of doctors cum scientists in Nigeria. There was an observed significant positive association between having ever had any previous undergraduate research methodology training and ever participating in a research work. A similar study conducted in South-Eastern Nigeria and similar studies in other countries also observed self-reported postgraduate research methodology training as being positively associated with research participation.[7,13,16,17] This observation was in spite of the limitation of the study sample in the South-Eastern Nigeria study to only one state in the region, and a highly skewed sex ratio with 80% male participants which do not reflect the national demographic profile of ECDs and as such not directly comparable to the present study.[18] The study however, unlike the present, observed that time constraints, funding and mentorship significantly predicted research engagement independently. It should however be noted that males in developing nations have been reported to have more time to spare outside work hours and thus may have modified the effect between time constraints and research participations leading to positive associations. As with this study, time constraints was not identified as a significant predictor of research involvement by a Pakistani study.[13] However, this was in sharp contrast to majority of studies which used comparative analysis and observed positive associations between time dedicated to research and research participation.[13,17,19] Perhaps the nature of the present study design which utilized a cross-sectional approach and thus incapable of monitoring temporal trend may be a pointer. Research involvement in the present study was investigated without any time constraints and as such may have occurred even before participants started dedicating more time to research activities. However, there is need for VECDs to be intentional in setting aside pre-scheduled time weekly in spite of their tight work schedule to engage in research activities. Group collaboration with regular meetings will indeed prove useful in enhancing their research engagement.

A majority of participants agreed with the statement that research will enhance their career and these were more likely to have ever participated in a research work compared with those who were undecided or disagreed with the statement. This highlights the fact that VECDs have identified the need for research involvement for future career advancement. However, Ulrich etal[19] had contradictory findings with no positive association observed between research participation and intentions for future career in research among trainee residents.[19] Their findings could affirm the hypothesis that research engagement among residents is mostly due to the compulsory research pre-requisite for completion of residency training and not necessarily the need for future career advancement. However, the present study did not include senior residents, whom this requirement pertains to, as part of its population and may be the reason for the opposing observations. Junior residents may be involved in research as part of assistance rendered to senior residents and consultants in the area of data collection mostly, and this may form a mental image they may wish to aspire to especially if such seniors are their mentors. The personal career growth of doctors is hinged on scientific research and publications and is an important criterion when competing for lucrative opportunities in both the national and international space. VECDs, because of the overwhelming nature of their work, may see research as non-critical to their present career advancement which is focused on rendering clinical services and succeeding in

their professional exams.

Results from this present study should not be interpreted as inferring a causal relationship between significant variables and research engagement as merely associations were investigated and observed significant associations may not necessarily translate to being causal. It should be recalled that this was a cross-sectional study which can only observe interrelationship between variables at a particular point in time - snapshot. Secondly, details about specific areas of research participation and type of research involved in was not investigated and could have helped to illuminate specific areas for in-depth study. As earlier mentioned, participation in research could range from critically appraising already published articles, recruitment of study participants to more rigorous activities like data collection, analysis and journal writing. We do not know which areas participants were more involved in, and their level of involvement, thus our results may not be directly comparable to other studies with more specific outcomes.[9]

However, this study benefitted from its wide multi-centre participation of VECDs cutting across all geopolitical zones of Nigeria and is at present the only nation-wide study which has investigated research engagement among VECDs in Nigeria. Within reasonable limits, its results can be inferred to reflect the research engagement practices of majority of Nigerian VECDs.

Future research should focus on doctors not only as participants in research activities but also as consumers of research findings by critically appraising and utilizing results for evidence-based practice. Resident doctors have been identified as not being systematic readers of medical literature and instead rely on synthesized evidence to inform their practice.[8] The need for proper critical appraisals of available evidence and its utilization to inform best practices is essential for practicing clinicians and public health specialist in this ever-evolving climate.

A research engagement toolkit for Nigerian doctors, which has proved useful in other countries,[3] highlighting the need for research engagement, ways to participate in research, easy access to grants, targeted research opportunities, and resources on research presentation and publishing will indeed be a useful tool to encourage and facilitate engagement in research especially by VECDs.

Conclusion

In conclusion, a high proportion of Nigerian VECDs, as observed from this study, have ever participated in research activities with poor levels of engagement in research presentation, publication, first authorship and grant receipt rates. Undergraduate research methodology training was a significant predictor of research participation among VECDs in Nigeria. Adequate research methodology trainings of VECDs is pertinent to improve their research engagement.

Conflict of Interest

The Research & Statistics Committee of NARD /Research Collaboration Network is funded by the National Association of Resident Doctors (NARD) which is the umbrella body for residents, house officers and medical/dental officers.

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