Evaluation of the Nigerian national antiretroviral (ARV) treatment training programme

EO Idigbe, O Odutolu, P Okonkwo, MO Folayan, CBR Uwakwe, RA Audu, OM Jolayemi, M Osagbemi

ABSTRACT

There is an understanding that greater availability of HIV treatment for the 40.3 million people currently infected with HIV is a humanitarian imperative that could prolong the lives of millions, restore economic productivity, and stabilise societies in some of the world's hardest-hit regions. The Nigerian government recognises that the country has the third highest burden of infection, with people living with HIV estimated to total 4.0 million, and so in 2002 commenced the implementation of one of Africa's largest antiretroviral (ARV) treatment programmes. A successful ARV programme requires that all components of a functional management system be put in place for effective and efficient functioning. This would include logistics, human resources, financial planning, and monitoring and evaluation systems, as well as sustainable institutional capacities. The Nigerian national ARV treatment training programme was conceived to meet the human resource needs in hospitals providing ARV therapy. This paper reports on the evaluation of the training programme. It examines knowledge and skills gained, and utilisation thereof. Recommendations are made for improved training effectiveness and for specific national policy on training, to meet the demand for scaling up therapy to the thousands who need ARV.

Keywords: ARV, training, evaluation, HIV, health care provider.

RÉSUMÉ

Il est entendu qu'une disponibilité importante du traitement du VIH auprès de 40.3 million de gens actuellement contaminés de VIH est un impératif humanitaire qui pourrait prolonger la vie des millions, rétablir une productivité économique et rendre stable les sociétés dans des régions du monde les plus frappées. Le gouvernement nigérien reconnait que leur pays a un fardeau de contamination élevée qui leur met en troisième sur la liste, comptant environ 4.0 million de gens vivant avec le VIH. De ce fait, en 2002 une mise en œuvre d'un des plus grands programmes africains de traitement antirétroviral voit le jour. Un programme réussit de ARV exige que toutes les parties du système de gestion fonctionnel soient mise en place pour un fonctionnement efficace; c'est-à-dire les logistiques, les ressources humaines, la planification financière et le contrôle et l'évaluation de systèmes ainsi que des capacités renouvelables des instituts. Le programme national nigérien de formation au traitement antirétroviral (ARV) a été conçu pour répondre au besoin de ressources humaines dans des hôpitaux qui dispensent une thérapie (ARV). Cette communication donne un rapport d'évaluation du programme de formation. Elle étudie la connaissance et le savoir faire acquis et leur mise en œuvre. Des recommandations sont faites avec le but d'améliorer l'efficacité de la formation et aussi pour une politique nationale particulière sur la formation afin de répondre au besoin d'augmenter la thérapie auprès de milliers qui ont besoin d'ARV.

Mots clés: ARV, formation, évaluation, VIH, personnel de santé.

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INTRODUCTION

In 2005, the total number of people living with the human immunodeficiency virus (HIV) reached its highest level: an estimated 40.3 million (36.7 - 45.3) people are now living with the virus (UNAIDS/WHO, 2005). Sub-Saharan Africa remains the hardest-hit with 25.8 million living with HIV. Currently an estimated 4.0 million Nigerians have become infected with HIV, thus representing roughly one-tenth of the worldwide pandemic and the world's third largest disease burden. The Federal Ministry of Health (FMOH) nationwide surveys among women attending antenatal clinics indicate that HIV prevalence has steadily increased from 1.8% in 1991, to 3.8% in 1993, 4.5% in 1995, 5.4% in 1999, 5.8% in 2001 and 5.0% in 2003 (FMOH, 2004). These national prevalence figures mask serious epidemics at the zonal and state levels. With the current prevalence of 5% and infection rates in some parts of the country as high as 12%, Nigeria is in the midst of a potential crisis, facing the real possibility of rates escalating to levels seen in southern Africa, unless treatment and prevention activities are greatly enhanced.

The imperative to address treatment for HIV/AIDS in developing countries has become more urgent as the burden of AIDS mortality has shifted to the poorest and most marginalised segments of the globe (Carmody *et al.*, 2003). Fortunately, there is increasing access to HIV treatment and care in these developing countries (Global HIV Prevention Working Group, 2004). Governments, international agencies (GFATM, World Bank, US government etc.), drug manufacturers, and private organisations are mobilising to substantially increase access to life-prolonging antiretroviral therapy (ART). There is the understanding that greater availability of HIV treatment for the 40.3 million people currently infected with HIV is a humanitarian imperative that could prolong the lives of millions, restore economic productivity, and stabilise societies in some of the world's hardest-hit regions (Global HIV Prevention Working Group, 2004). The WHO and UNAIDS global target of having 3 million people on ART by 2005 has spurred the Global Fund and the President's Emergency Plan for AIDS Relief (PEPFAR) initiative of the US government into making provision for treating 700 000 people and delivering ART to 2 million people by 2007. In June 2005, UNAIDS indicated that these 'advances present an opportunity to intensify efforts and increase the momentum towards universal access to prevention, treatment and care for all countries affected by AIDS (UNAIDS/WHO, 2005). A policy paper on this has since been endorsed by the UNAIDS governing board and twelve policy actions that would be needed to ensure universal access were enunciated.

The Nigerian government also recognised that the country has the third highest burden of infection, with people living with HIV estimated to be 4 million, and in 2002 commenced the implementation of one of Africa's largest antiretroviral (ARV) treatment programmes. The ART programme was commenced nationwide in 2002 in university teaching hospitals in 25 centres. The centres initially offered treatment based on a triple therapy combination of generic nevirapine, lamivudine and stavudine. The cost of drugs was highly subsidised at $8 per patient per month. However, the patients bear the cost of laboratory investigations. The situation has improved with the drugs now free, and the support from PEPFAR, Global Fund and the host government has also made laboratory investigation free. There is also a wider array of first- and second-line drugs as well as drugs for salvage therapy. Resistance studies are being done with the help of Harvard University programme in Nigeria. By now over 80 centres provide ARV to people living with HIV and AIDS (PLWHA) and close to 100 000 PLWHA are on treatment.

But the programme must overcome substantial obstacles, which include the near collapse of health infrastructures, lack of logistic management systems, inadequate data for planning and projections, and more critically the need to recruit and train tens of thousands of health care workers. More specifically, a successful ARV programme requires that all components of a functional management system be put in place for effective and efficient functioning. This would include logistics, human resources, financial planning, and monitoring and evaluation systems, as well as sustainable institutional capacities.

A truly functional management system is particularly important in ARV programmes, for many reasons. ARVs are very complex and potentially dangerous drugs that need to be administered and monitored very carefully. They are also drugs that once the patient starts, he/she has to take for life. Added to this, is the fact that the drugs are given in many different

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combinations there are first-line, second-line and salvage drugs. There is no doubt that these drugs have revolutionised the management and care of HIV/AIDS patients, and every effort must be made to preserve the efficacy of these drugs (FMOH, 2004; WHO, 2004; Kombe, David & Nwagbara, 2004).

It is imperative that health workers should be very knowledgeable and skilled in all the components of an effective ART programme. There is evidence that even if drugs were made affordable, the main barriers to access would be lack of an adequate health care delivery system, and a key component of a functional health care system is the human resource base (WHO, 2004). For an effective and comprehensive HIV/AIDS management programme, well-trained and motivated personnel are important. Thus a reliable network of a critical mass of physicians, mid-level health care providers, laboratory scientists, community health workers, adequate laboratory facilities for measuring viral load and CD4 T-cell counts, as well as facilities for monitoring drug resistance are absolute requirements for the successful implementation of any ART programme (Fujiwara, Clevenbergh & Diodlo, 2005). Hence the Nigerian national ARV treatment training programme was instituted at the Nigeria Institute of Medical Research (NIMR).

The national training programme introduces health workers in Nigeria (physicians, pharmacists, nurses, counsellors and laboratory scientists) to the basics of HIV/AIDS, as well as training on the management of patients on ARV therapy. Physicians, pharmacists, nurses and counsellors were trained in separate profession-specific groups using the same eight-module training manual over a period of 4 days: two modules were taught per day. The eight modules taught were: overview of HIV/AIDS; assessment of patients; who should be offered ART; strategies for HAART; comprehensive care and support; opportunistic infections; special circumstances; and the future of HIV/AIDS control. The laboratory scientists also had a similarly structured training using a group-specific training manual.

The first session of each day was dedicated to didactic teaching by consultants who were specialists in the subject field. The teaching made use of developed training kits, thereby ensuring some degree of consistency in information exchange between each

trained batch. The second session of each day was dedicated to skills building, wherein participants shared experiences and interacted in groups, undertook practical sessions or visits to ART sites. On the fourth day, all participants developed a work plan for effecting identified necessary changes in their various institutions.

A team of trainees were always invited from each identified institution across the country for each batch of training. Trainees were invited from both the public and private health sectors, which were either providing ART services or had the potential to provide ART services. Those that were identified to have the potential to provide services were institutions identified to refer patients to ART service providing institutions. A cycle of three trainings were conducted each year. A minimum of 50 persons per each professional cadre were trained during each cycle.

The thrust of the programme was to develop and enhance clinical capacities for HIV/AIDS care and support programmes in the country. This was to be achieved through the development of a critical mass of clinicians and other health workers with adequate knowledge on the use of antiretroviral drugs in the clinical management of HIV infections. The programme was initially supported financially and technically by the Harvard AIDS Prevention Initiative in Nigeria (APIN). By December 2003, a training module was developed and the actual training commenced in February 2004. By the end of November 2005, 1 390 health personnel had been trained. The number included 365 physicians, 123 pharmacists, 610 nurses/counsellors, 216 laboratory scientists, and 77 medical records officers from 81 ART implementing centres in the country.

This paper is based on the evaluation of the programme. It reports on the effectiveness of the programme, achievements and lessons learned. It makes recommendations for scaling up the programme and increasing the effectiveness of the training institution. It also recommends the need for a comprehensive national policy for training to build human capacity for HIV/AIDS programming.

METHODOLOGY
Target population
These were doctors, nurses, counsellors, laboratory scientists and pharmacists. Others included heads of

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ARV departments, and HIV/AIDS patients or clients in institutions where health workers had been trained, in the case of the study population, and from those where no training had taken place for the controls.

Study design

This was a cross-sectional descriptive study of respondents sampled as described in the next section, to assess the effectiveness of the national ARV training programme in Nigeria.

Sampling procedure

The multi-stage random sampling technique was adopted to select a sample population from the participants of the national ARV training programmes. The sampling procedure was stratified by profession, public/private health care facility and region of the country, to assure representation. Individuals were randomly selected from resulting frames. The sample size was 139 out of a pool of 1 390 trained personnel (10%). Provision was made for attrition and a total of 147 people were interviewed, consisting of 36 doctors, 19 pharmacists, 43 nurses, 34 laboratory scientists and 15 counsellors.

Data collection instruments

Data for this study were obtained through the following sources:

Questionnaire survey with sampled participants: Two questionnaires were administered to the respondents. The first was the same post-test questionnaire used at the end of the training, and the purpose was to assess how much knowledge participants had retained 6 - 9 months after training. The same post-test questionnaire was also administered to a smaller comparison group of untrained health personnel from institutions where no personnel had benefited from the NIMR organised trainings. This was a proxy measurement of any benefit from training, since we could not implement a strict quasi-experimental study for logistic and ethical reasons. The second instrument assessed the participants' perception and rating of the content and process of training, with provision for making recommendations to improve future training sessions.

Questionnaire survey with clients at service delivery point: This client exit questionnaire sought to assess clients' perceptions regarding quality of care. A section of the questionnaire specifically sought their impressions of

the quality of service before and after the period in which staff received training. They were also asked to adjudge which personnel provided outstanding care services and the reasons for their judgment. This section of the questionnaire was included to help assess if trained personnel within the ART centres had improved their skills, and consequently affected the quality of service delivery at the centre. The evaluator administered the questionnaire to 6 consecutive clients attending an ART service providing institution within each geopolitical zone. The inclusion criterion for clients in the survey was that clients had been accessing ART services at the centre since 2003. The evaluator recorded the responses of all clients on the questionnaire, in view of the possibility of a number of clients not being able to read and write.

In-depth interviews with heads of ARV departments: This interview obtained the views of the head of unit of an ART service institution in each geopolitical zone. The ART service site was the same as the institution in which service recipients were surveyed on the quality of service delivery noted above. Using a structured questionnaire guide, the head of unit of the ART centre was interviewed on the entire management system of the programme with a view to determining the institutional strengths and weaknesses, and how they might affect the optimal performance of the trained health workers. The questions include describing the criteria and process (by whom and how) by which participants were selected for participation in the training programme and its appropriateness, the observed impact of the training the quality of service delivery in the institution, and possible identified limiting factors on impact.

Focus group discussions: One focus group discussion (FGD) was conducted in each zone to further explore participants' perceptions of the training and its effect on their skills and the quality of services in the ARV clinics. Each geopolitical zone has 6 states. Focus group discussions were organised in a state within each geopolitical zone that had the largest number of sampled trainees. Where the number of trainees within a state was less than 12, other trainees from not too distant states were invited to join the focus group discussion sessions. Each FGD group was composed of trainees representative of all professional cadres. Information obtained helped to strengthen quantitative data from the surveys.

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Observations of activities at service delivery points: Tools employed included a health facility inventory checklist for drugs, laboratory, human resources and supplies.

Data management and analysis

The developed evaluation questionnaires were pilot tested for comprehension and clarity. All ambiguities in the questionnaires were then corrected before they were used on the selected sample. Data generated from both the qualitative and quantitative methods were used to complement each other and to throw more light on the study objectives. The data analysis exercise was computer aided, using Excel, EPI INFO 3.2 and Ethnograph version 5. Analysis of qualitative data involved the analysis of the transcripts individually and collectively to identify major opinions and attitudes expressed by individuals and groups. Code words were developed from a list obtained from the different interview guides. Final review of all qualitative data was undertaken to describe findings and these helped to complement quantitative data, enabling more informed conclusions.

Variable transformation was done for many of the responses in the form of ranking and the specific transformations for different variables will be explained with the results as indicated.

Study limitations

This study had a number of limitations, which included:

• A formative evaluation was not conducted and no specific M&E framework was developed at the beginning of the project. The result was that some of the baseline information needed for comparison was not available. Again, targets of what constituted success were not set from the beginning. This could be explained by the fact that there was a great urgency to start the training if patients already on ARVs were to benefit from quality care.
• Detailed analysis of the pre- and post-test differences was not possible because some of the pre-test results could not be found. We believe that this was partly overcome by the use of the many other quantitative and qualitative data derived from this study.
• A truly quasi-experimental study could not be undertaken partly for the reasons discussed above and also due to logistic and ethical considerations.
• Rigorous quantitative analysis of the data to determine changes could not be performed, as there

was no way to tackle the issue of confounding variables.

The use of several quantitative and qualitative methods was however an advantage, and a deliberate effort was made to use the combination of these data to corroborate evidence of change and sometimes even attribute the observed change to the training programme. Despite these obvious limitations, it is believed that the results and recommendations of this evaluation should be useful as guidelines in planning and developing future national ARV training.

RESULTS

The findings below were extracted from a larger data set specifically to answer the evaluation questions raised above.

Demographic information

Sex of participants

The sex distribution of selected participants for the evaluation is presented in Fig. 1. There were 73 men and 68 women representing 51% and 49% of the sampled respondents respectively. Thus, both males and females were almost equally represented in the training.
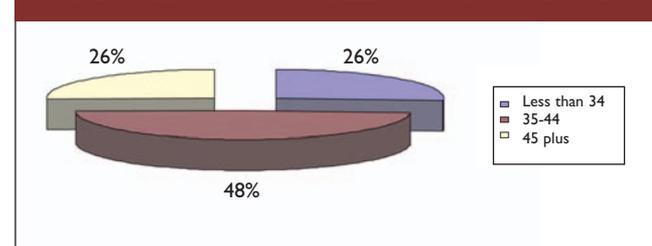

FIG. I. DISTRIBUTION OF SAMPLED PARTICIPANTS BY SEX
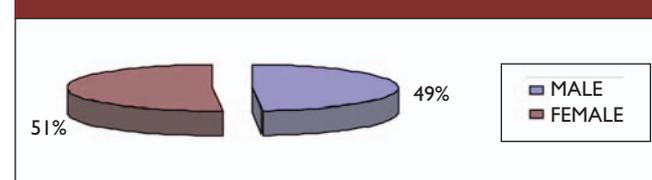
Age distribution of participants

Fig. 2 presents information on the age distribution of the sampled participants. The majority (48%) fell within the age group 35 – 44 years, while those who were younger than or equal to 34 years and those who were 45 years and older represent 26% each.

FIG. 2. DISTRIBUTION OF SAMPLED PARTICIPANTS BY AGE

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Professional categories
About one third of the participants were nurses (30%). Slightly less than one quarter were doctors or laboratory scientists, while pharmacists and counsellors accounted for 13% and 9.6% of the sampled participants respectively (see Fig.3).

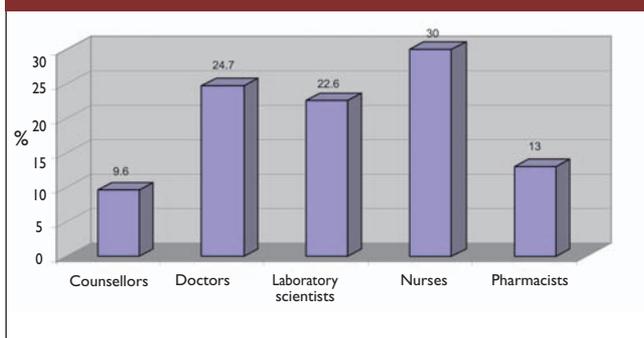**FIG. 3. DISTRIBUTION OF SAMPLED PARTICIPANTS BY PROFESSION**

Knowledge gained and skills utilisation
Perceived increase in knowledge and skills
Fig. 4 presents information on how participants rated the degree to which their exposure to the training increased their knowledge. About 68% of the participants noted that the training provided an average increase in their knowledge of ARVs, while a total of 93.7% noted an average to high increase in knowledge. The highest rating came form laboratory scientists (93.7%), while the lowest came from doctors (67.7%).

FIG. 4. PARTICIPANTS' RATING OF PERCEIVED INCREASE IN KNOWLEDGE AND SKILLS DUE TO EXPOSURE TO THE TRAINING BY PROFESSION
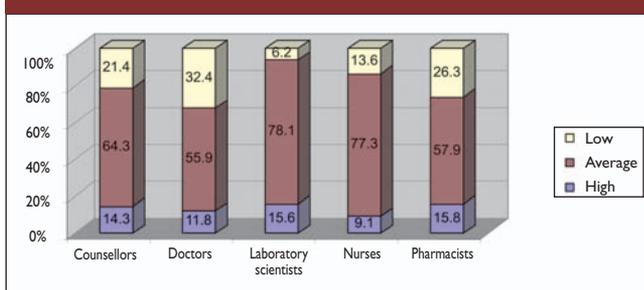
The perception observed in Fig. 4 was supported by qualitative information. Reports from focus group discussions noted that:

I gained more knowledge in this AFB test. Before I had problem with rating it, like I used to write No AFB but when I went for that training, I knew that either negative or

+, ++, +++ and also, one thing that I understand there that is really helping is the use of JIK after making stain before cleaning so that you will reduce the number of aerosols. I didn't know that before and it has helped me (laboratory scientist).

There has been an increase in knowledge and improved clinical skills. The staff have a more positive attitude and better acceptance of HIV patients. They are also more enthusiastic, happy, feel recognised and feel part of the team (head of an ART centre).

Overall, the evidence from the qualitative aspect of the study suggests that participants in the national ARV training programme have benefited immensely, and this would have contributed positively to their performance and efficiency.

Participants' assessment of the training programme
The training sessions were variously rated by the participants as a way of assessing their reaction to the training programme regarding content of training, duration of training and lectures, and effectiveness of the training aids used and relevance of materials supplied. The results of the analysis are presented.

Content of training
About 2.3% of nurses and 5.3% of pharmacists rated the theoretical aspect of the training low (see Fig. 5). The majority noted the content of the theoretical session of the trainings as average. The reasons for these rating were highlighted during the focus group discussions:

A lot of the content of the training was not applicable to the realities on the ground. We learnt so much about what happens in foreign countries and very little about what happens here at home. Many of us do not know how to apply many of the content of the training in the face of the realities of our daily practice (doctor in the southwest geopolitical zone).

The training content was okay but it did not address the peculiar needs of we pharmacists. I learnt a lot though but I feel there is a need for focused training for we pharmacists also (pharmacist at Adeoyo Maternity Hospital).

Many of those who commented positively about the theoretical content of the training however complained

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FIG. 5. PARTICIPANTS' RATING OF THE THEORETICAL ASPECT OF THE TRAINING SESSION BY PROFESSION
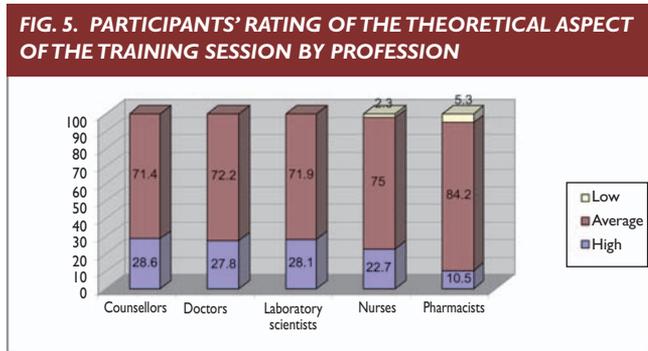
about the inadequacy of the time allocated to the practical session and the conduct of the practical sessions. Some comments are noted below:

The conveyors reduced the number of days for the training from 4 to 3 days. The training had more time for theory than practical. The theory sessions were satisfactory but the practical sessions were rushed and therefore unsatisfactory. The trainees only got to watch the trainers use equipment and that was as practical as it got (a health worker during the focus group discussion session).

In the same vein another participant said:

Time for theory was enough, practical period was not enough especially with regard to viral load extraction and detection. Basic information was lacking in terms of counselling that made it difficult for most of them to understand. The practical aspect was not adequate (one of the trainers).

Time allotted for lecture sessions
Doctors generally rated the adequacy of time allotted for lecture sessions as average to high (94.4%), while 25% of nurses felt that the adequacy of time allocation was low. Fig. 6 shows the professional rating of the adequacy of time allocated for the lecture sessions.

FIG. 6. PARTICIPANTS' RATING OF THE ADEQUACY OF TIME ALLOTTED FOR LECTURE SESSIONS BY PROFESSION
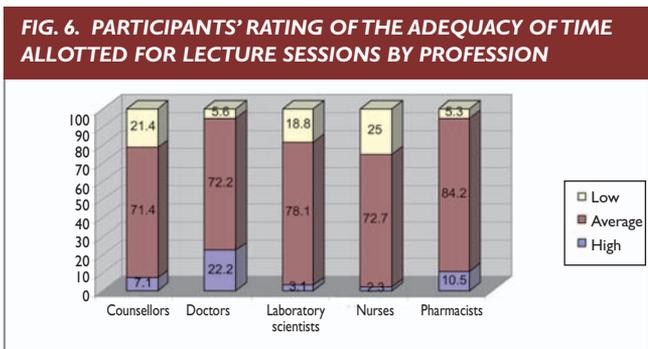
Use of training aids
The training aids used during the training included provision of the training manual, a background reading document to enhance understanding of the training content, a complementary CD training kit on the contents of the training manual, information on possible reading materials, and contacts for networking. Generally, few participants indicated that the training aids used during training sessions were ineffective (see Fig. 7).

FIG. 7. PARTICIPANTS' RATING OF THE EFFECTIVENESS OF TRAINING AIDS USED DURING TRAINING SESSIONS BY PROFESSION
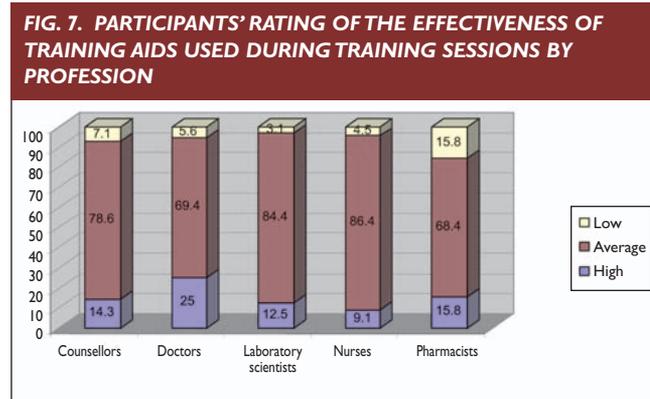
One of the comments from participants on the training material provided was:

[materials provided were] *1 CD-ROM, 1 manual for VCT … The VCT manual is rich in information but not adequate. There were inadequate female condoms to practicalize the teaching. If adequate samples will be given the training will look lively* (participant from the North East).

Training quality
The study examined the quality of the training received by the participants regarding its relevance to their job needs, how well they were involved in the learning process, the knowledge and skills they acquired, and the extent to which the training prepared the participants to use the knowledge and skills acquired on their jobs. Participants were asked to retrospectively rate the training against this background and expectations.

Only a relatively small proportion of the participants in all the professions indicated that the training was highly relevant to their job needs. The highest in this category were pharmacists (15.8%) followed by counsellors and doctors (14.3% each), laboratory scientists (12.5%) and nurses (11.4%). It is interesting to note that a

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significant proportion of pharmacist (42.1%) rated the relevance of the training as low to their job needs. This is unusually high compared with the other professional categories like counsellors (28.6%), doctors (20%), nurses and laboratory scientists with 4.5% and 3.1% respectively.

Again, only a small proportion of pharmacists (21.1%), laboratory scientists (11.8%), counsellors (14.3%), doctors (11.8%) and nurses (9.1%) rated their level of involvement in the learning process as high (see Fig. 8).

FIG. 8. PARTICIPANTS' RATING OF THEIR INVOLVEMENT IN THE LEARNING PROCESS DURING TRAINING BY PROFESSION
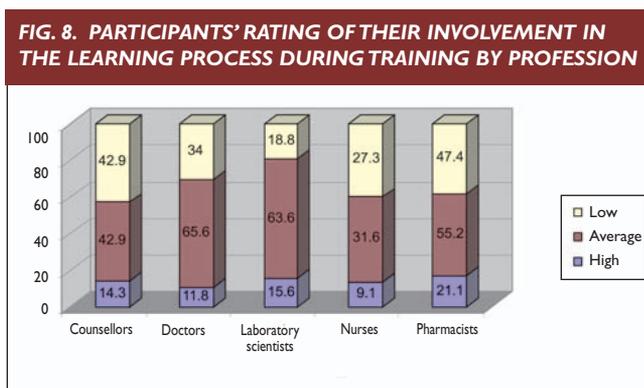
Utilisation of knowledge and skills gained at service delivery points

The client interviews sought information on the quality of service provided at the facility level. These range from practices indicating level of stigma, tracking of drug intake, adherence counselling, to accuracy of documentation. Frequencies of response to the questions indicating the quality of service provided are presented in Table 1.

Level of discrimination

The level of discrimination in the provision of health services appears to be low, with less than 30% of hospitals sampled having discriminatory practices (evidenced by the report from the first section of Table 1. This may, in part, be attributed to the training, based on evidence from the in–depth interviews. A respondent summarised the observed changes as follows:

The training has reduced the level of stigma and discrimination displayed by staff that are now friendlier. Before now, nurses would hesitate to give injection to positive patients but now they feel it's okay provided they are well protected (participant from UDUTH).

TABLE 1. QUALITY OF SERVICE DELIVERY OBSERVED IN SELECTED CENTRES PARTICIPATING IN NATIONAL ARV TRAINING, 2005

Quality of service indicator	N = 15	%
Level of stigma		
Are there segregated waiting and consulting facilities for patients?	4	26.67
Is separate medical equipment used for infected patients?	2	13.33
Over-zealous use of safety precautions	2	13.33
Are the case notes marked with special symbols?	3	20.00
Tracking drug intake		
Do attending clinicians routinely enquire about drug usage?	13	86.67
Are adherence monitoring tools available in the clinic?	8	53.33
Are the adherence monitoring tools being used routinely?	7	46.67
Do the attending pharmacists inspect patients' used drug foil?	9	60.00
Adherence counselling		
Any adherence counselling for new patients before drug collection	13	86.67
Any adherence counselling for old patients coming for drug refill	12	80.00
Are the pharmacists involved in the adherence counselling?	13	86.67
How confidentiality is maintained		
Case note only handled by authorised personnel	15	100.00
Case note kept in secure environment	15	100.00
Is consultation, counselling and result disclosure individualised?	15	100.00
Documentation of care		
Written records of consultation on each clinic visit	15	100.00
Documented evidence of drugs dispensed on each visit	15	100.00
Documented evidence of counselling sessions	9	60.00

Tracking of drug intake

As reported in Table 1, a good number of the sampled ART centres (13 of the 15) had their attending clinicians routinely enquiring about drug usage from patients. However, just over 50% had adherence monitoring tools (8 out of 15) and less than 50% use these tools routinely (7 out of 15).

Adherence counselling

A good number of centres had ARV drug adherence counselling structures in place (13 out of 15). It was also observed that pharmacists were involved in the adherence counselling of patients in 13 of the 15 centres. Evidence from the FGD sessions indicated that

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the training contributed significantly to this observed improvement in the quality of services at the delivery point:

> *The strong point of the course included exposure to current information on HIV/AIDS … and on patient management. Participants also valued the knowledge on adherence counselling* (participant from ABUTH).

> *Observed changes include better quality counselling, adherence counselling is now given to all patients before they collect their prescription* (participant from AKUTH).

> *Adherence counselling is done for all patients at every visit by all team members, including the pharmacist, the doctors and data managers* (participant from UCH).

Maintaining confidentiality
Table 1 indicates that in all the evaluated ART centres, confidentiality with respect to case note handling and disclosure of information on patients was maintained. A head of unit summarised his observation on the outcome of the training on the service delivery between the trained staff and the untrained ones this way:

> *The training has had significant impact on the service delivery. This is most noticeable amongst the pharmacists, nurses and the laboratory staff. There is a big difference in their attitudes to PLWHA. They are also better in ensuring confidentiality of information in comparison to untrained staff* (MHY).

Documentation of care
In like manner, there was a high level of documentation of care given to patients in almost all the centres. In all 15 centres there were written records of consultation on each clinic visit and documented evidence of drugs dispensed on each visit, and 9 centres had evidence of documented counselling sessions. The ethnographic assessment suggests improved quality of service delivery in the participating health institutions. This was strongly corroborated by this response from a participant during the FGD:

> *There are very noticeable differences between the trained staff and the untrained. The training has had significant impact on the quality of service delivery at the centre. The trained staff keep better records, are less hasty to prescribe ARV and*

are better at counselling patients on drug adherence (head of unit at NIMR).

Challenges faced in utilising the acquired skills
The information presented showed that many of the participants did not have the opportunity to use the knowledge and skills acquired from the training very frequently. This problem was most prevalent among pharmacists (47.4%), doctors (47.1%) and laboratory scientists (42.3%), and remains a problem among considerable proportion of counsellors (38.5%) and nurses (34.1%).

Fig. 9 shows that lack of resources was the single most important reason the participants identified as militating the use of knowledge and skills acquired through the training. This was the challenge for 70% or more of doctors, laboratory scientists, and pharmacists, and constituted a challenge to more than half of the nurses and counsellors. Another frequently mentioned challenge, as shown in Fig. 9, was lack of support and motivation from the institution and colleagues that cut across the different professions.

FIG. 9. CHALLENGES FACED IN UTILISING SKILLS BY PROFESSION
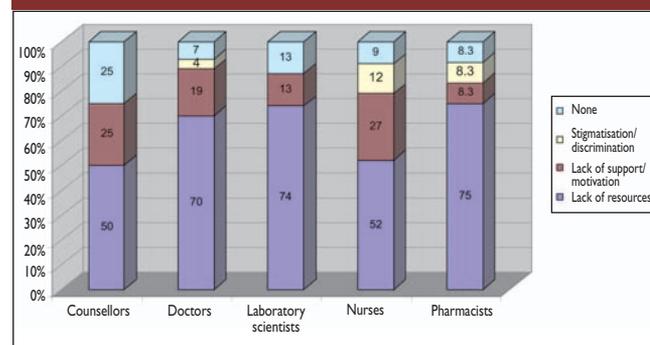
Factors affecting utilisation of acquired knowledge and skills
Seventy per cent of participants believed that unavailability/inadequacy of facilities and resources greatly hindered their application of the knowledge and skills acquired from the training programme. The remaining participants (17%) mentioned inaccessibility to and unavailability of ARVs, and 13% mentioned lack of support from management and colleagues (see Fig. 10).

These limiting/enhancing factors were also highlighted by informants in many focus group discussions and in-depth interviews.

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FIG. 10. PERCEIVED FACTORS THAT HINDER THE APPLICATION OF SKILLS ACQUIRED

- Lack of support from the management/colleagues
- Inaccessibility/unavailability of ARVs
- Unavailability /inadequate facilities/resource
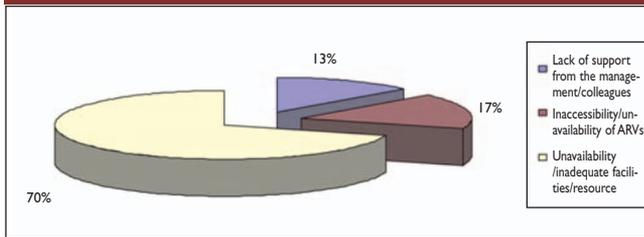
The equipment that are being used in our centres have to be upgraded … like the CD4 count – the method we are using is very cumbersome and is not the best (participant from UDUTH).

The only problem we are having is that of the ARVs which are not within reach fully in the HIV centre (participant from Dalhatu Hospital – a private clinic).

Even though the clinic provides VCT, it has not been able to fully utilise the skills acquired due to the lack of drugs. The MD feels that the training efforts so far have been a waste (Bamby private clinic).

Client assessment of the quality of service provided by health personnel
Fig. 11 shows that most of the clients interviewed described the quality of service they received from the health personnel in the sampled clinics as good. Doctors enjoyed the highest rating of good service provision (92.1%), followed by nurses (76.3%).

FIG. 11. CLIENTS' RATINGS OF THE QUALITY OF SERVICE PROVIDED BY THE HEALTH PERSONNEL
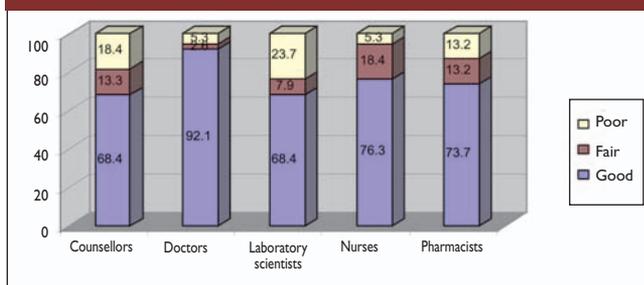
Table 2 summarises clients' responses to quality of care offered at the service delivery points studied, and the findings strongly suggest that they were satisfied with the services offered at these centres.

TABLE 2. CLIENT PERCEPTION OF THE SERVICES PROVIDED AT THE SAMPLED SERVICE DELIVERY POINTS

Item	Yes (N = 38)	(%)
Do service providers listen to your problems?	35	89.7
Do service providers assure you of confidentiality/privacy?	32	82.1
Do service providers advise you to return for follow-up visits?	35	89.7
Do service providers discuss your drug intake with you on every visit?	33	84.6
Have there been any changes in the quality of services over the years?	29	74.4

Drugs and supplies management

About 40% of the sampled institutions maintain the ARV pharmacy separately from that of the institution. About 75% (28 institutions) stocked the approved national ARV drugs. All the institutions that stocked the approved national ARV drugs reported that the drug list contained first-line ARVs, and about 61% reported that their list contained second- line ARVs. However, few institutions (18%) that stocked approved national ARV drugs said their list included medications for opportunistic infections.

TABLE 3. DRUGS AND SUPPLIES MANAGEMENT INDICATORS OF INSTITUTIONS PARTICIPATING IN NATIONAL ARV TRAINING PROGRAMME 2005

	Yes (N = 28)	%
Drugs		
Does the ARV pharmacy differ from the institution pharmacy?	15	39.5
Does the institution stock the approved national ARV drugs?	28	100
If yes, does the drug list contain 1st line ARVs?	28	100
If yes, does the list contain 2nd line ARVs?	17	60.7
Does the drug list contain medications for OIs?	26	92.9
Supplies management and logistics		
Commodity security	14	50
Forecasting	12	42.9
Quantification	10	35.7
Sourcing	16	57.1
Storage	16	57.1
Data management	8	28.6
Is there a monitoring system in place to ensure a continuous flow of supplies of key ARV and OIs drugs?	15	53.6
Are there adequate storage facilities for ARVs in your institution?	20	71.4
Is there a process in place (security) to protect drugs from loss, theft or misuse?	24	85.7

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Among the 28 institutions that stocked approved ARVs, about 50% had some form of commodity security, 43%, 36% and 57% respectively had a drug forecasting system, quantification and sourcing procedures in place. Only 28% had a data management system in place. In the same manner about 54% reported they had in place a monitoring system to ensure continuous flow of supplies of key ARV and OIs drugs. Twenty of the 28 institutions (71.43%) reported adequate storage facilities for ARVs, while about 86% of the institutions had security in place to protect drugs from loss, theft or misuse. Table 3 shows a breakdown on the responses with respect to drug and supply management systems in place in these institutions.

Correlates of knowledge and skills utilisation among participants

Background and institutional characteristics of the respondents were cross-tabulated with the indicators of the reported utilisation of the acquired knowledge and skills from the training. Table 4 shows that respondents in the mid-level of their career, aged 35 – 44 years, were more likely than others to be categorised as highly utilising their knowledge and skills on the job. There were no differences between male and female respondents on the level of knowledge and skills utilisation. Doctors and the nurses are more likely to be categorised as highly utilising their knowledge and skills than the other professionals.

Participants from institutions categorised as having good facilities were significantly more likely than others to be rated high in knowledge and skills utilisation than those from institutions with average or poor facilities. The reason may be that such facilities offered them more opportunities than others.

In a different way, sampled participants from institutions rated with average drug and supplies management practices were more likely to be categorised as highly utilising the knowledge and skills they acquired from the training than those from good or poorly rated institutions. The reason may be that those institutions offered more challenges to the participants than those with already established routines of drug and supplies management practices, such as the big, well-funded and established institutions.

The majority of respondents who perceived the overall training session as average were rated higher in the level of knowledge and skills utilisation than others who perceived the training sessions as either poor or high. All the participants who rated the overall training quality as high were more likely to be categorised as highly utilising the knowledge and skills acquired from the training.

In a similar pattern, while most of the respondents reported poor a working environment, the few who had a good working environment were all categorised as highly utilising the knowledge and skills they acquired from the training on their job compared with other categories.

TABLE 4. CORRELATES OF KNOWLEDGE AND SKILLS UTILISATION AMONG THE PARTICIPANTS			
Background variables	**Level of skills utilisation**		
	High	**Low**	**N**
Age*			
Less than 34	63.2	36.8	38
35 - 44	67.1	32.9	70
44 and above	57.9	42.1	38
Sex			
Male	64.8	35.2	71
Female	64.3	35.7	70
Professional category			
Counsellors	71.4	28.6	14
Doctors	60	40	35
Lab scientists	50	50	32
Nurses	74.4	25.6	43
Pharmacists	63.2	36.8	19
Institutional facilities rating[†]			
Good	64.7	35.3	68
Average	55.2	44.8	29
Poor	33.3	66.7	3
Drug and supplies management			
Good	65.8	34.2	38
Average	66	34	50
Poor	47.1	52.9	17
Assessment of training session			
High	51.7	48.3	29
Average	71.4	28.6	98
Poor	42.1	57.9	19
Training quality			
High	100	0.0	21
Average	61	39	59
Poor	54.5	45.5	66
Work environment support			
High	100	0.0	15
Average	75	25	16
Low	60.4	39.6	106

*$p \leq 0.05$
[†]$p \leq 01$

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Table 5 contains information on respondents who reported some noticeable changes in their performance with the utilisation of knowledge and skills acquired from the training against the background of their socio–economic characteristics, training experience and work environment. This was highest among those in the age cohort 35 – 44 years. Men were more likely to report noticeable changes in performance than women; and doctors and nurses were more likely to report changes in performance after exposure to the training than the other professional categories.

TABLE 5. CORRELATES OF REPORTED CHANGES IN PERFORMANCE AMONG THE PARTICIPANTS			
Background variables	Perceived changes in performance		
	High	Low	N
Age*			
Less than 34	31	69	36
35 - 44	35.3	64.7	68
44 and above	21.9	78.1	32
Sex			
Male	36.2	63.8	69
Female	23.4	76.6	64
Professional category			
Counsellors	15.4	84.6	13
Doctors	30.3	69.6	33
Lab scientists	33.3	66.7	27
Nurses	33.3	66.7	42
Pharmacists	37.7	73.7	19
Institutional facilities rating			
Good	17.9	82.1	67
Average	28	72	25
Poor	0.0	100	3
Assess drug and supplies management			
Good	27	73	37
Average	23.4	76.6	47
Poor	27	73	15
Assessment of training session			
High	18.5	81.5	27
Average	33.7	66.3	92
Poor	35.3	64.7	17
Training quality			
High	90.5	9.5	21
Average	32.1	67.9	53
Poor	9.7	90.3	62
Work environment support			
Good	93	7	15
Average	62.5	37.5	16
Low	17.1	82.9	105
Skills utilisation[†]			
High	38.5	61.5	91
Low	15.6	84.4	45

*$p \leq 0.05$
[†]$p \leq 01$
Categories were pooled together to increase cell frequency to 5 and above for chi square estimate.

Participants from institutions categorised as having good facilities were significantly more likely to report changes in their performance than other participants. Differences in reported changes in performance were not as clear cut between participants from institutions categorised as having good, average or poor drug assessment and management practices.

Respondents who rated the training session high were more likely to report high noticeable changes in their performance. Similarly, participants who enjoyed good working environment were more likely to report high noticeable changes in their performance than other participants.

Finally, participants who were categorised as highly utilising the knowledge and skills acquired through exposure to the training programme were significantly more likely to report high noticeable changes in their job performance than those whose utilisation of the skills were categorised as low.

DISCUSSION

This evaluation was designed to assess the effectiveness of the national ARV training programme and its effect on the performance of the trained health workers, and to determine if this has resulted in improvement in quality of services provided at their health facilities.

Generally most participants believed that knowledge and skills gained at the training was average, while laboratory scientists and nurses appeared to have benefited most with respect to knowledge acquisition from the training. It was not possible to compare pre-test results with post-tests immediately following training to assess immediate knowledge acquisition, and at 6 months to assess knowledge retention, due to inaccessible data. However, information gathered from the qualitative data helped to reinforce the quantitative data collected in this respect.

Information presented revealed that about 50% of the participants were not able to utilise the skills gained due to many factors, including poor institutional capacities, lack of support and motivation from institutions and colleagues. Only very few participants (2.4 – 18.8%) admitted receiving high support from their supervisors in the performance of their tasks. These same problems have been observed in other

studies (FMOH, 2003). As documented in the Prime II report, trainees and supervisors experienced frustrations when they observed that upon completion of training, the learners had demonstrated the skills competently and passed the knowledge tests, only to be unable to use these same skills at their work place. The implication of the foregoing is that for future training, the selection of health workers must take into consideration the opportunities available in their centres to practise or make use of what they have learned.

The importance of the need for a supportive and facilitative working environment in the utilisation of skills and knowledge acquired is corroborated by the report of this analysis, which noted that participants from institutions categorised as having good facilities were significantly more likely than others to be rated high in knowledge and skills utilisation than those from institutions with average or poor facilities. Also, participants who enjoyed a good working environment were more likely to report high noticeable changes in their performance than other participants. There is therefore a need to simultaneously address the needs of these ART service/potential service centres to ensure that as the capacities of personnel are built to provide services, there are complementary facilities and an enabling working environment to facilitate the provision of quality services.

In addition, knowledge and skill acquisition by participants could be further facilitated through improving the content of the training sessions: the training content should be made more relevant to the Nigerian environment and situation, taking cognisance of the peculiarities in our environment. As one participant noted:

We were trained about the need to store some of the first- and second-line drugs in refrigerators. Here in Nigeria where electricity is a luxury, how do we ensure that? Why can't we have nationally listed drugs that do not need electricity to ensure potency? (participant from Southwest).

There should also be more sessions devoted to practice as this further ensures skills acquisition. A number of participants noted that the sessions did not give them enough time to have hands–on practical experience. One of the participants noted:

It is important that we also acquire some of these laboratory skills as there would be times in the primary health centre were we may be the only skilled hands. We may then need to be the persons to conduct these tests (nurse in Adeoyo Maternity Hospital, Ibadan).

Sessions could also me made more interactive. This could be achieved through the training of trainers on teaching methodology. This may help in ensuring that the trainers make their sessions more participatory and thereby more educative.

The study also noted that respondents in the mid-level of their career, aged 35 – 44 years, were more likely than others to be categorised as highly utilising their knowledge and skills on the job. There were however no differences between men and women on the level of knowledge and skills utilisation. This finding has great significance in the selection of future participants for the workshop. It may therefore be important that while ensuring a gender balance in the representation of participants at future trainings, emphasis should be placed on selection of personnel in their mid-career level within the age bracket 35 – 44 years. This would not only ensure the high utilisation of knowledge and skills on the job, but also possibly ensure on-the-job training of other personnel, as well as long-term utilisation of the knowledge and skills acquired.

On the other hand, for the training institution, competency-based training requires careful planning, preparation and coordination among various constituencies involved in the process of training. Roles, responsibilities, timelines and channels of communication should be identified and clarified at every level. A programme management plan should be built into the training programme document to serve as a point of reference (Schenck-Yalesias, 2004). There is also a need to develop a training policy, and plan and improve trainer skills; to establish a specific group of trained clinical instructors; and develop a curriculum to train trainers. These would together help to ensure the development of effective and efficient training programmes (Igbal, 1988).

The foundations for generating action to meet the daunting challenges posed by HIV/AIDS are clear policies, effective strategic planning and sound decision-making processes. These foundations help to create strong partnerships, to make the best use of

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human and financial resources, and to generate positive outcomes (WHO, 2003). The success of HIV/AIDS prevention, treatment and care programmes depends on the creation of an enabling environment. In such an environment, relevant stakeholders have the capacity, skills and opportunities to meaningfully participate in the process, and human and material resources are mobilised to address priority action areas (Future Groups, 2004). According to Kombe *et al.*, while the government's programme has achieved significant success, there are a number of issues that need to be addressed before the programme can be successfully expanded. Among these factors is the need for a coordinated training programme on ARVs. A successful ARV programme requires more than just an adequate budget. The development of clinical protocols, training curricula, logistic plans etc. is also crucial (Howard *et al.*, 1992).

For all these to work out well, there is the need for a definite national training policy that gives clear directions on the necessary steps to actualise these goals. This will ensure that training programmes are well planned and coordinated to allow for effective synergy and leveraging in order to achieve the desired efficiency in the use of resources available for training. This will greatly support the mobilisation of the critical mass of health workers needed to fight the HIV/AIDS pandemic in Nigeria. Recent review of many of our national HIV/AIDS policy documents does not reveal clear policies and plans for training health workers on HVI/AIDS in general, and antiretroviral drug management in particular (Federal Government of Nigeria, 2003; 2005). Attempts should be made to fill this obvious gap. Experience of NIMR ARV training and this evaluation report should be instructive and can be used as advocacy tools for promoting a sound policy environment for training in general.

RECOMMENDATIONS
The study raises many issues which are pertinent to Nigeria meeting its treatment target as the country begins its scale-up programme. Some of these essential steps are listed as recommendations below:
* Definite training needs assessment and formative evaluation, as well as a systematic monitoring and evaluation plan must be put in place for all future training, to allow for better monitoring and

evaluation processes, which would help address the needs of the clients.
* Planning of training should be accompanied by creating the right work environment for the trainees on return from the workshop. Institutions and colleagues should be sensitised on the necessary support systems needed for effective comprehensive HIV/AIDS management at health facilities.
* The training programme should be professionally focused – training curricula should be developed to train specific health sector cadres involved with ART service provision. This would help to improve knowledge and skills acquisition and utilisation on the job, as well as address specific training needs of each health sector cadre.
* In some cases, duration of training should be increased to allow more time for practical sessions and other competency-based activities.
* Problem-solving supportive supervision and occasional refresher courses should be introduced to ensure continuous quality improvement.
* Specific national training policies and plans must be put in place to ensure sustainability, credibility and continuity.
* Future evaluation designs should incorporate more innovative methods of objectively assessing clients' perceptions of quality of services rendered.

CONCLUSION
Evidence from the study suggests that the national ARV programme training was of immense benefit to health workers involved in the management of HIV/AIDS patients. This is significant. For an effective and comprehensive HIV/AIDS management programme, well-trained and motivated personnel are an obvious imperative. Key strengths of the training programme included having a core group of experienced ARV personnel as facilitators, as well as the number of key stakeholders who were bought into the programme, making it more sustainable. However, the programme could be improved through the allocation of more time to the practical component of the training as well as ensuring that the training content takes cognisance of the peculiar needs of the Nigerian environment and try to address these.

Information presented revealed that about 50% of the participants were not able to utilise the skills gained. Over 70% of this problem was due to limiting factors

including poor institutional capacities, lack of support and motivation from institutions and colleagues. It is therefore important that trainees should be selected from institutions where knowledge and skills can be utilised in the short term. In the medium term and long term, within a comprehensive response drive, the capacity of other health institutions to support and facilitate the utilisation of skills and knowledge acquired for ART services should be expanded.

A major inference from the desk review of documents is that there is as yet no clear training policy and plan for HIV/AIDS in Nigeria. Apart from the very general comments about the need to build capacity of relevant players in the control and prevention of HIV/AIDS, there are no specific strategies to actualise training needs of service providers in the prevention, care and support of HIV/AIDS patients. A national training needs assessment for HIV/AIDS management is therefore long overdue as this would help feed into the development of a national training policy on HIV/AIDS.

Despite the limitations itemised above, the findings of this evaluation show that the objectives of the training programme were realised and the recommendations will be very instructive in planning future training to meet the growing need for health workers to treat thousands of PLWHA who need ARV.

Acknowledgement

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