Impact of Tenofovir/Lamivudine/Dolutegravir (Tld) on the Health-Related Quality of Life and Clinical Outcomes of HIV/AIDS Patients at a Tertiary Health Facility in Niger State

Danjuma Umar (✉ rxdanjumar@gmail.com)

Ahmadu Bello University

Bala Waziri

Ibrahim Badamasi Babangida Specialist Hospital

Umar Ndagi

Ibrahim Badamasi Babangida Specialist Hospital

Shafiu Mohammed

Ahmadu Bello University

Ndagi Usman

Ahmadu Bello University

Hauwa Abubakar-Muhammad

Federal Medical Centre Bida

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Abstract

Background: Human Immuno-deficiency Virus (HIV) remains a major global public health issue. However, it is now considered a chronic infection which can be managed with new, well-tolerated and efficacious ARVs. The aim of the study was to evaluate the effect of Tenofovir/Lamivudine/Dolutrgravir (TLD) on the HRQoL and viral suppression over a short period.

Method: The study was prospective, with a time frame of three (3) months. HRQoL was measured using a disease specific HIV/AIDS Targeted Quality of Life (HAT-QoL) tool and the clinical outcomes focused on viral load using structured data collection tool.

Results: Most of the participants were female (62.1%), currently married 63.2% and no co-morbidity, mean age $43 \pm \text{SD}$ (range 21-77years). There was a statistically significant improvement in HRQoL scores across all domain after 3months of transitioning to TLD. While 8 of the 9 domains namely; overall functions, life satisfaction, health worries, financial worries, medication worries, HIV mastery, Disclosure worries, Provider trust, ($p < 0.001$) sexual function ($p = 0.015$). Improvement was also seen in viral suppression ($p < 0.001$).

Using multiple linear regression analysis, predictors for overall HRQoL scores include female gender ($\beta = 3.59$, 95%CI 1.30-5.78, $p = 0.002$), older age, > 65 years ($\beta = 4.12$, 95%CI -1.42, 9.67 $p = 0.08$), living with family ($\beta = -5.80$, 95%CI -9.60, -2.00, $p = 0.003$), higher family income, $> \text{N}100,000$ ($\beta = 6.09$, 95%CI 1.75, 10.44, $p = 0.006$) and duration on ART ($\beta = 0.52$, 95%CI 0.12, 0.91, $p = 0.01$). While determinants of viral suppression using multi-variant logistic regression analysis revealed living with family (AOR=18.03, 95%CI 3.32-97.85, $p < 0.001$), Primary education (AOR= 0.16, 95%CI 0.029, 0.93, $P = 0.041$), being employed (AOR=0.16, 95%CI 0.028, 0.91, $P = 0.008$), income and baseline viral load (AOR= 0.53, 95%CI 0.44, 0.69, $p < 0.001$). However, living with family is major determinant of viral suppression.

Conclusion: TLD help improved health related quality of life among HIV infected individual and essential in rapid viral suppression.

Background

Human Immuno-deficiency Virus (HIV) remains a major global public health issue, having claimed more than 35 million lives so far (1,2). At the end of 2019, there were approximately 38 million people living with HIV with 1.7 million people becoming newly infected in 2019 globally (3–6) Without treatment, average survival time after infection with HIV is estimated to be 9 to 11 years, depending on the HIV subtype (7). However, potent combinations of antiretroviral drugs have dramatically altered the natural progression of HIV infection and significantly improved patients' quality of life (8). As a result, the number of new Acquired Immuno Deficiency Syndrome (AIDS)-related opportunistic infections and deaths has declined (9). Consequently, the use of HAART has shifted HIV infection from being a terminal illness to a long-term manageable chronic infection, and many people living with HIV infected individuals can have a life expectancy marginally close to that of HIV uninfected individuals(7). However, people living with HIV

(PLWH) continues to face a variety of health-related challenges, which can affect many aspects of their quality of life. These include among other factors social, psychological, functional, occupational and physical well-being (10).

Viral load measure of plasma HIV RNA (viral load) estimates the amount of circulating virus in the blood. This has been proven to correlate with prognosis, with a high viral load predicting faster disease progression (7). Conversely, a reduction in viral load after commencement of antiviral therapy is associated with clinical benefit (8,9).

In 2019, WHO recommended Dolutegravir (DTG) based regimen as the most preferred regimen for adults and adolescents (1). DTG is an integrase enzyme inhibitor and when combined with 2 other ARVs in a single fixed-dose combination pill, is considered to be among the best current treatments for HIV (1). Its availability has previously been limited due to high cost. However, following the availability of a generic fixed-dose combination of Tenofovir/Lamivudine/Dolutegravir (TLD) to an average price of US\$ 75 (N 26,250) per patient per year, DTG-containing ARV regimens is now affordable for many low- and middle-income countries(1). The quest for a safe, efficacious and cost-effective regimen is responsible for continuous evolution of ART. Dolutegravir regimen is the newest regimen recommended by the Nigeria Federal Ministry of Health as the preferred first line therapy(1,2). It was formerly a substitute for patients that cannot tolerate efavirenze based regimen. In comparison to Efavirenze (EFV), the current widely used first line drug, DTG is found to be more efficacious, durable, tolerable, higher bioavailability, lower pill burden, and potential for fewer side effects (1). DTG also had better viral suppression efficacy than other integrase inhibitors (7). Regimens containing DTG and EFV 600mg were comparable with respect to mortality, AIDS-defining illnesses and occurrence of serious adverse events (1).

HRQoL measures are becoming an integral part of patient follow-up, providing valuable feedback, from the patients' perspective, about the disease and associated interventions (10,11). HRQoL assessment in HIV/AIDS takes into account the impact of the infection and antiretroviral therapy (ART) on an individual's physical, psychological and social wellbeing, as reported by the patient. HRQoL measures are important as indicators of the effectiveness of HIV/AIDS treatment and care programmes. Measurements of HRQoL can be incorporated into models that inform economic evaluation of HIV/AIDS treatment services, making them pivotal in resource allocation decisions. Such assessments can also be useful in identifying factors associated with HRQoL among people living with HIV, thereby informing public health decisions on specific impact mitigation and support interventions that may be required to maximize HRQoL (12). Although in Nigeria there are studies that have evaluated the HRQoL in patients on non-DTG-based regimen (13–17), a huge gap in knowledge exist in the outcomes of patients on DTG-based regimen. Therefore, the aim of this study was to evaluate the impact of DTG-based regimen on the HRQoL among HIV/AIDS patients.

Method

Study Design

A prospective approach was used in this study. Participants were recruited consecutively between July 2019 to September 2019 for the baseline parameters and subsequently followed up to December 2019.

Study setting

The study was conducted at Ibrahim Badamasi Babangida Hospital, (IBBSH). The hospital is a major referral centre in Niger state, located about 10 km from Paiko town. It has a functional ART clinic with an active ART team that comprises medical doctors, pharmacists, and triad nurses caring for approximately 700 HIV-infected patients.

Ethical consideration

Ethical approval was sought from the IBBSH human research and ethics committee. Clearance certificate number M201902. All participants gave written informed consent prior to enrollment into the study, in addition to maintaining confidentiality of patients throughout the study.

Study Participants and Sample size

A total of 286 participants were involved in the study. A minimum of 249 participants was estimated to be sufficient in representing the population of about 700 patients at 5% error margin and 95% confidence interval using Raosoft® online sample size calculator with an addition of 15% for response rate (18). The study involved all the HIV-infected clients attending the clinic, meeting the eligibility criteria and that consented to participate in the study.

Eligibility criteria

- i. Participants must be on TLD regimen.
- ii. Participants must be aged 18–60 years or older.
- iii. The patient must have commenced the ART for at least 6 months.

Instruments

Information on demography, medical history and the clinical outcomes was obtained from patients' hospital folders and fill in a well-structured data collection form. The HRQoL was measured using the HIV/AIDS-Targeted Quality of Life (HAT-QoL) developed and validated by Homes and Shea (19). It consists of 34 item stems in nine domains: overall function, health worries, life satisfaction, disclosure worries, financial worries, medication concerns, provider trust, HIV mastery and sexual function. This tool has been successfully adopted in Nigeria by Oparah and colleague (13). Similarly, Biambo *et al*/ applied it in a study in Sokoto, North-western, Nigeria(14). Responses from the HAT-QoL instrument was transformed to numerical values for each dimension using the guide provided with the instrument (12,13,15). Positively worded questions were scored 5 to 1 for "All of the times" to "None of the time" responses were respectively. While negatively worded ones, "All of the time" to "None of the time" responses was scored 1

to 5, respectively. The final dimension score was a linear scale, ranging 0–100, where 0 is the worst score possible and 100 being the best score possible (13,14).

Data Collection Procedure

Schedule method was used for participants with no formal education while the literates were served the questionnaire and guided as appropriate. Using systematic sampling techniques eligible clients were requested to participate taking a maximum of 12 clients per clinic visit, 2 clinics per week over 3 months period until the calculated sample size was achieved. The participants' socio-demographic characteristics, clinical, medication data was obtained from the medical records department from their folders using a specifically designed data collection form. Data on patients' HRQoL was gathered using the HIV/AIDS- Targeted Quality of Life (HAT-QoL) instrument.

Data analysis and Presentation

Descriptive analysis was used to summarize the socio-demographics and HIV-related characteristics and HRQoL profiles of the participants. HRQoL scores of patients with different socio-demographic and clinical characteristics were compared using students't-test. Factors associated with or predicting patients' HRQoL scores and viral suppression were identified using correlation and regression analyses respectively. Level of significance for inferential statistics was set at $p < 0.05$. All the above data analysis was performed using statistical package for social sciences (SPSS) Version 22.0 software

Results

Socio-demographics

Out of the total of 286 participants recruited for the study, a total 261 had complete data at the end of the study and were used for the study analysis. From the 261 data retrieved, 162 (62.1%) were female. The mean age of the participant was $43 \pm$ years but ranged between 21-77 years. There was a relatively good level of literacy with 84 (32.2%) having secondary education and 82 (31.4%) had tertiary education. Most of the participant, 165 (63.2%) had stable relationship and thus were currently married. Also, most of the participants 238 (91.2%) were staying with their families. Furthermore, a good number of the participants, 131 (50.2%) were self-employed. However, most of them, 215 (82.4%) earned less than N50,000 (142 Dollar) per month. Details in Table 1

Clinical characteristics

Most of the participants, 257 (98.5%) were non-smokers and all responded to engage in one form of physical activities or the other. Most of the participants, 225 (86.2%) do not have co-morbidity. Average years for HIV infection and being on-treatment were 5.34 and 4.75, respectively.

At baseline, 121 (46.4%) had viral suppression (< 50 cpm) while 209 (80.1%) became virally suppressed after transitioning to TLD. Most of the participants were in stage WHO clinical staging-1 and had

adherence greater than 95%. However, there was statistical improvement in the other clinical parameters after commencing TLD, including WHO clinical staging ($p=0.68$), viral load ($p<0.001$), mean body weight ($p<0.001$)(Table 2).

Health Related quality of life

There was significant improvement of HRQoL scores across all 9 domains after 3 months of TLD transitioning, ($p<0.001$ in 8 domains while sexual function $p=0.015$). Table 3 shows the mean HRQoL scores and the p-values

Determinants/Predictors of HRQoL scores

Using multiple linear regression analysis, predictors for overall HRQoL scores include female gender ($\beta=3.59$, 95%CI 1.30-5.78, $p=0.002$), older age, >65years ($\beta=4.12$, 95%CI -1.42,9.67 $p=0.08$), living with family ($\beta=-5.80$, 95%CI -9.60,-2.00, $p=0.003$), higher family income, >N100,000 ($\beta=6.09$, 95%CI 1.75,10.44, $p=0.006$) and duration on ART ($\beta=0.52$, 95%CI 0.12, 0.91, $p=0.01$)

Determinants/Predictors of viral suppression

However, determinants of viral suppression using multi-variant logistic regression analysis revealed living with family (AOR=18.03, 95%CI 3.32-97.85, $p<0.001$), Primary education (AOR= 0.16, 965%CI 0.029, 0.93, $P=0.041$), being employed (AOR=0.16, 95%CI 0.028,0.91, $P=0.008$), income and baseline viral load (AOR= 0.53, 95%CI 0.44,0.69, $p<0.001$)

Table 1: Socio-Demographics of 261 HIV-positive clients receiving Tenofovir/Lamivudine/Dolutegravir from Ibrahim Badamosi Specialist Hospital, Minna, Niger state, Nigeria 2019

Socio-Demography	n (%)
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Gender	
Male	99 (37.9)
Female	162 (62.1)
Level of Education	
No formal education	41 (15.7)
Primary/Basic education	54 (20.7)
Secondary education	84 (32.2)
Tertiary education	82 (31.4)
Marital status	
Currently married	165 (63.2)
Widowed	50 (19.2)
Separate/Divorced	27 (10.3)
Single	19 (7.3)
Occupational status	
House wife	6 (2.3)
Student	10 (3.8)
Self-employed	131 (50.2)
Formally employed	92 (35.2)
Retired	22 (8.4)
Monthly income (Naira)	
Less than 10,000	108 (41.4)
10,000 – 50,000	107 (41.0)
50,000 – 100,000	29 (11.1)
More than 100,000	17 (6.5)
Residential arrangement	
Lives alone	14 (5.4)
Lives with family	238 (91.2)
Lives with caregiver	9 (3.4)
Smoking status	
Current smoker	2 (0.8)
Non-smoker	257 (98.5)
Engaged in physical activities	
Yes	261 (100)
No	0
Comorbid	
None	225 (86.2)
Hypertension	20 (7.7)
PUD ¹	1 (0.4)
Malaria (last 4 weeks)	2 (0.8)
Others	12 (4)
Age, years mean (range)	42.96 (21- 77)
Years confirmed HIV ² positive	5.34 (1- 16)
Years on ART ³	4.75 (1- 10)

¹Peptic ulcer Disease, ²Human immune-deficiency virus³ antiretroviral therapy

Table 2: Clinical outcomes after TLD transition of 261 patients at IBBSH Minna, Nigeria 2019

Clinical characteristics	before TLD	after TLD	P_value
Viral load n (%)			
<50cpm	121 (46.4%)	209 (80.1%)	
>50cpm	140 (53.6%)	52 (19.9%)	
<0.001			
WHO clinical staging n (%)			
Stage 1	237 (90.9%)	257 (98.5%)	
Stage 2	24 (9.1%)	4 (1.5%)	0.68
Adherence			
Less than 95%	243 ()	261 (100%)	
Greater than 95%	18 ()	0	
Weight, kg mean±sd	67.51±16.48	69.34±17.04	<
0.001			
Viral load (log) mean±sd	5.14±2.56	3.61±44	
<0.001			

Table 3: Mean and standard deviation of HAT-QoL of 261 HIV patients receiving TLD, before and after 3months interval at IBBSH, Minna, Nigeria, 2019

HAT-QoL ¹ Domains	Before TLD ² (transition)	After 3months TLD (transition)	P-values*
Overall function	70.17±11.47	94.58±10.47	<
0.001			
Life satisfaction	77.04±8.20	95.83±8.75	
<0.001			
Health worries	81.59±11.87	94.58±11.63	
<0.001			
Financial worries	58.30±26.84	60.14±28.37	<
0.001			
Medication worries	71.40±11.56	97.11±8.80	<
0.001			
HIV mastery	73.04±24.86	80.75±26.48	<
0.001			
Disclosure worries	62.47±19.42	74.92±24.19	
<0.001			
Provider trust	82.09±11.36	100±56.44	
<0.001			
Sexual function	85.27±19.44	91.46±41.10	
0.015			
Overall HRQoL	72.72±7.75	88.22±8.43	
<0.001			

¹HIV/AIDS Targeted Quality of Life, ²Tenofovir/Lamivudine/Dolutegravir

Determinants of overall quality of life among patients receiving TLD at IBBSH, Minna. 2019 (n=261)

<u>overall Health related quality of life (HRQoL) scores</u>								
Variable value	<u>unadjusted model</u>				<u>adjusted model</u>			
	β	SE	95 % CI	P value	β	SE	95% CI	P
Age(yrs)								
18-44	ref							
45-64	0.15	1.00	-1.83, 2.12	0.88	0.01	1.08	-2.11, 2.13	
0.99								
>65	4.03	2.32	-0.54, 8.59	0.08	4.12	2.82	-1.42, 9.67	
0.14								
Gender								
Male	Ref							
Female	2.75	0.98	0.82, 4.66	0.005	3.59	1.16	1.30, 5.87	
0.002								
Educational status								
NFE ^a	Ref							
Primary		1.61	-5.39, 0.94	0.17	-2.62	1.61	-5.79, 0.56	0.11
Secondary	-1.70	1.48	-4.61, 1.21	0.25	-2.03	1.60	-5.18, 1.12	0.21
tertiary	-0.95	1.48	-3.87, 1.98	0.53	-1.65	1.76	-5.11, 1.81	
0.35								
Occupational status								
Student	Ref							
House wife	-2.71	3.97	-10.52, 5.11	0.50	-3.17	4.03	-11.11, 4.77	0.43
Retired	3.18	2.93	-2.59, 8.94	0.28	2.33	3.26	-4.10, 8.76	0.48
Self-employed	-0.91	2.52	-5.87, 4.05	0.72	0.18	2.57	-4.89, 5.25	0.94
Employed	1.24	2.56	-3.80, 6.28	0.63	2.61	2.69	-2.68, 7.91	0.33
Marital status								
Single		Ref						
Separated	0.13	2.31	-0.44, 2.71	0.96	-3.20	2.42	-7.95, 1.56	
0.19								
Widowed	2.88	2.08	-1.22, 6.98	0.17	0.34	2.36	-4.32, 5.00	0.89
Married	0.14	1.87	-3.54, 3.82	0.94	-0.34	2.09	-4.46, 3.78	0.87
Residential								
Lives with family	-4.05	1.68	-7.35, -0.75	0.02	-5.80	1.93	-9.60, -2.00	0.003
Income (Naira)								
<10,000	Ref							
10,000-50,000	-0.82	1.05	-2.89, 1.24	0.43	-0.80	1.16	-3.08, 1.48	0.49
≥50,000-100T	0.57	1.61	-2.60, 3.74	0.72	1.03	1.69	-2.30, 4.36	
0.54								
>100,000	4.41	2.01	0.46, 8.36	0.03	6.09	2.21	1.75, 10.44	0.006
Viral load								
≤50copies/ml	Reference							
>50 copies/ml	0.10	0.96	-1.80, 1.99	0.92	-0.92	1.00	-2.88, 1.04	0.36
Family size								
≤6	Reference							
>6	-1.66	0.97	-3.58, 0.26	0.09	-0.72	1.06	-2.80, 1.38	0.50
Comorbidity								
Present	(Ref)							
Absent	0.79	1.41	-1.98, 3.57	0.56	1.47	1.42	-1.34, 4.28	0.30
DoT ^b (yrs)	0.55	0.19	0.17, 0.93	0.004	0.52	0.20	0.12, 0.91	0.01

^aNo formal education, ^bDuration on therapy

Determinants of viral load after transitioning to TLD at IBBSH Minna, n=261

Viral suppression after transitioning to TLD

<u>model</u>		<u>Univarient model</u>				<u>multivarient</u>	
Variable		OR	SE	95 % CI	P value	AOR	SE
95% CI	P value						
Age(yrs)							
18-44 (ref)							
≥ 45	0.85	0.26	0.46,1.56	0.61	0.68	0.34	0.25, 1.83
0.44							
Gender							
Male (Ref)							
Female	0.99	0.31	0.53,1.84	0.97	1.56	0.93	0.49, 4.99
0.45							
Educational status							
NFE (Ref)							
Primary	0.26	0.16	0.08-0.84	0.03	0.16	0.14	0.029, 0.93
0.041							
Secondary	0.54	0.33	0.17-1.76	0.31	0.27	0.25	0.044, 1.68
0.16							
Higher	0.36	0.21	0.11-1.13	0.08	0.27	0.25	0.037, 1.73
0.16							
Occupational status							
NE (Ref)							
Employed	1.05	0.46	0.45-2.46	0.90	0.16	0.14	0.028, 0.91
0.039							
Marital status							
Single Reference							
Separated	2.13	1.77	0.42-10.89	0.36		12.3	17.41 0.77,
197.23 0.076							
Widowed	0.69	0.44	0.19-2.43	0.56	0.18	0.21	0.017, 1.82
0.15							
Married	1.11	0.66	0.34-3.57	0.86	0.27	0.27	0.031, 2.31
0.23							
Residential							
LWF	2.83	1.30	1.15-6.97	0.02	18.03	15.56	3.32, 97.85
0.001							
Income (Naira)							
<10T (Ref)							
10-50T	0.47	0.16	0.24-0.92	0.03	0.24	0.13	0.085, 0.69
0.008							
≥50-100T	1.09	0.66	0.33-3.54	0.89	0.82	0.65	0.17, 3.87
0.80							
>100T	0.57	0.36	0.16-1.95	0.37	0.27	0.24	0.045, 1.58
0.15							
Viral load							
Log10 bvl	0.62	0.04	0.54-0.72	<0.001	0.53	0.05	0.44, 0.69
<0.001							
Family size							
≤6 (Ref)							
>6	1.14	0.36	0.61-2.12	0.68	1.04	0.54	0.38, 2.86
0.94							

Comorbidity							
Present (Ref)							
Absent	0.47	0.26	0.16-1.39	0.17	1.24	0.96	0.27, 5.68
0.78							
DOT(yrs)	0.93	0.06	0.83-1.05	0.27	0.90	0.081	0.75, 1.07
0.24							

NFE=no formal education, NE= not employed, LWF=Living with family, bvl=baseline viral load
DOT=Duration on therapy

Discussion

This study showed improvement in HRQoL across all 9 domains using the HAT-QoL and improvement in clinical characteristics including viral suppression, adherence after 3months of transitioning to TLD. There were good mean overall HAT-Qol scores even at baseline; however statistical improvement was seen after 3months of commencing TLD. These results are not surprising as it has been widely reported that ART improves HIV client health related quality of life (8,10,13,15,20). This may be due to revolutionary and efficient ART care in the facility and the implementation across the country and the world at large. Other factors like acceptability of the disease, reduced stigma and non-discrimination (14,15).

Assessment of health-related quality of life (HRQOL) is useful for determination and documentation of the patient's perceived burden of chronic disease (HIV/AIDS), the effects of the treatment, and changes in health over time, and quantification of the return on health care investment (10). Although, Biambo and colleagues studied the HRQOL of different antiretroviral regimens with TDF+FTC+LPVr having the highest score of 67.58+/-14.80, others are much lower (14). Similarly, Oparah *et al*/reported a high HRQoL among HIV/AIDS patients in south-east, Nigeria (13).

Furthermore, a short duration of 3 months of viral suppression seen as against one-year or longer duration to achieve reasonable viral suppression with other combinations is in agreement of earlier findings of Rhangale and colleagues (21). Similarly, Annalisa and colleagues have reported the clinical efficacy and tolerability of DTG-based regimen (22). This will prevent the possible development of resistance as seen with other combinations. This study has provided local data to further justify the use of DTG-based regimen as the most preferred first line regimen by the WHO recommendation. (1)(11). Thus, the introduction of TLD seems to be the best development to HIV care in this decade.

Similar to previous studies from Nigeria, most of the study participants were female (15,20,23). This may be partly due to many entry points to HIV care such as antenatal clinics, delivery units, postnatal wards and prevention of mother to child transmission (PMTCT) involve mostly women as contained in the national guideline (24). These entry points get more women to enroll for HIV care than the male gender. Another possible explanation is the heterosexual mode of transmission is most common in

African countries and women are more vulnerable since they are usually the receptive partner and carries higher risk of HIV transmission (7,25). This is contrary to what is obtainable in western world as reported by Leonard and colleague, Brenda et al. and Viviane and colleague where the population of male surpasses that of the female (8,26,27). In addition, to high prevalence of men who have sex with men (MSM) and intravenous drug user (7)

The age distribution shows more of young adults which corresponds to the sexually active age, however, a handful of older adults were also recorded. This signifies that HIV population also lives almost as long as non-HIV population. Thus, HIV infection does not really affect the average life-expectancy of individuals. In fact, HIV population is even more likely to live longer. This is because an average Nigerian (African) do not usually go for medical checkup where chronic non-communicable diseases like hypertension, diabetes, chronic kidney disease (CKD), cancers etc. can be detected and possibly managed early(28–30). Unlike HIV population that takes the advantage of the HIV disease to have access to care and screen for other diseases. These non-communicable diseases if not detected and managed early can lead to substantial reduction of individual's average life-expectancy.

Weight loss is one of the clinical parameters in HIV infection and treatment failure. However, with appropriate medication patients are able to return to normal weight or even gain(7,31,32). In this study, there was significant improvement in mean body weight which may be seen as a clinical benefit of the TLD regimen. However, there is need to properly monitor patients weight gain as irrational weight gain is implicated in non-communicable diseases like hypertension, diabetes and cancers.(32)

Older age (>65 years), being female gender, living alone, higher family income (>100,000 naira), being employed, absence of co-morbidity, and duration on ART were predictors of higher quality of life. However, being learned, staying as a house-wife and not employed, living with family and larger family size (>6 persons) was associated with lower quality of life. Our findings with respect to being female and older age with higher quality of life contradicts the study of Brenda and colleagues in Brazil and another study in China by Yunxiang and colleagues (8,33). However, this is in line with studies from Nigeria by Biambo *et al.*(23). A possible explanation is that women and older people usually get moral support from the society in this part of the world. Even at the clinics, they do enjoy favoritism and consideration which may impact positively on their quality of life.

Furthermore, the result with being employed and higher family income with better HRQoL is not surprising since this status impacts positively on individual personality and self-esteem. This in turn contributes to better quality of life.

Several researches have reported better quality of life with absence of comorbidity (8,23,33,34). The burden of HIV infections with one or more other disease definitely impact negatively on patient's quality of life. In addition, the concern of medications including the cost of care may also contribute negatively to their quality of life.

Impact of duration on ART on HRQOL has been controversial (33,34). However, several researches have reported positive association between duration on ART and HRQoL (8,23,33)

Thus, taking note of client social demographics is essential. This help will identify clients with special counseling need which should be met appropriately.

This study revealed independent predictors of viral suppression to include; primary education, being employed; living with family; baseline viral load and family income. However, only living with family was a strong predictor. This suggests that family support and better adherence to the medication is very essential for viral suppression. This finding further implies that even basal viral load was not a strong predictor to viral suppression with this regimen. Thus a patient would definitely have viral suppression irrespective of the clients initial viral load provided the clients adhere to medication.

One of the limitations of this study is that it was a one-centre study. Thus, the outcomes cannot be extrapolated/generalized for the state/region or the country at large. However, it has provided a local data which can be leveraged on. Also, at time of the commencement of the study; most clients were already being transitioned to TLD, thus there was no avenue for direct/simultaneous comparison with other regimen. Finally, the study was for a short duration, thus the long-time effects cannot be deduced.

Conclusion

TLD is a fantastic antiretroviral combination, helping clients to achieve reasonable viral suppression within limited time interval. The combination also help improve clients HRQoL, thus clients are having viral suppression while being happy taking the medication. Age; being female, living with family, higher family income and duration on ART are major predictors of HRQoL. However, living with family is major determinant of viral suppression.

Abbreviations

TLD: Tenofivir+Lamivudine+Dolutegravir

HIV: Human Immuno-deficiency Virus

AIDS: Acquired Immuno Deficiency Syndrome

HAT-QOL: HIV/AIDS Targeted Quality of Life

PLWH: People Living with HIV

DTG: Dolutegravir

EFV: Efavirenze

ART: Anti-retroviral Therapy

IBBSH: Ibrahim Badamasi Babangida Specialist Hospital

SPSS: Statistical Package for Social Sciences

HRQOL: Health related quality of life

PMTCT: Prevention of Mother to Child Transmission

CKD: Chronic Kidney Disease

Declarations

- **Ethics approval and consent to participate**

Ethical approval was sought from the IBBSH human research and ethics committee. Clearance certificate number M201902. All participants gave written informed consent prior to enrollment into the study.

Consent for publication

Not applicable

- **Availability of data and materials**

The datasets used and/or analyzed in this study are available from the corresponding author on reasonable request.

- **Competing interests**

The authors declare that they have no competing interests

- **Funding**

Neither funding nor grant was received for this research

- **Authors' contributions**

UDM (Principal investigator): proposed, designed and implemented the study, did the part of the analysis and write-up. BW, SM and NU: Made substantial contributions to conception and design of the proposal, analysis and interpretation of data critically edit and approved the final manuscript. NU, AMH and UNM: Made significant contributions in design, interpretation of data, revising and approved the final manuscript. BW, UNM and AMH: Participated sufficiently in analysis and interpretation of data, involved in drafting the manuscript, critically edited and approved the final manuscript. However, all authors read and approved the final manuscript.

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