

**QUALITY OF LIFE IN PATIENTS ACCESSING HIV CARE IN TOBAGO: A CROSS SECTIONAL
STUDY**

A Thesis (Research Paper)

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ABSTRACT

Aim: The objective of this study was to determine the quality of life (QOL) of HIV patients living in Tobago as well as to assess factors associated with higher and lower quality of life in patients accessing care at the Tobago Health Promotion Clinic between October 2021 and March 2022.

Methodology: A cross-sectional study design was used to interview HIV patients seeking care at an outpatient clinic. WHOQOL-HIV-BREF and EQ5D3L were used to measure QOL and associations with sociodemographic and clinical predictors were sought.

Results: Of 233 participants there was a response rate of 90%. The average age of participants was 47.45 years and males and females making up 46.2% and 53.8% respectively. EQ5D3L results revealed participants had overall lower QOL index scores (0.86) and EQVAS scores (65.98) compared to published Trinidad and Tobago population norms (0.93 and 82.3). EQ5D3L found the presence of opportunistic infections to be a negative predictor of QOL and being in a stable relationship, having a higher income and duration of time on ART to be positive predictors of QOL ($P<0.05$). WHOQOL-BREF HIV found negative predictors to be increasing age, being in receipt of government aid, having detectable viral loads and the presence of opportunistic infections, with positive predictors being female gender, non-heterosexual, being married, higher education, and being employed with higher income levels ($P<0.05$)

Conclusion: The QOL in this group of HIV patients was below that of population norms. These findings highlight the need for targeted interventions to improve the quality of life of patients living with HIV/AIDS in Tobago.

LIST OF ACRONYMS

AIDS Acquired Immune Deficiency Syndrome

EQ53-3L Euroqol Quality of Life Instrument

HIV Human Immunodeficiency Virus

NGO Non-Governmental Organization

QOL Quality of Life

WHOQOL-HIV BREF World Health Organization Quality of Life Instrument

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INTRODUCTION

The prevalence of HIV in Trinidad and Tobago is estimated to be 0.7% (1). In Tobago, the estimated prevalence of HIV may be as high as 1%. Tobago has a population of 60,874 persons based on the Trinidad and Tobago 2011, Population and Housing Census Report. In Tobago, prevalence estimates may be as high; PAHO, the Pan American Health Organization, quotes a staggering prevalence rate for Trinidad and Tobago of 1.5 percent (2); this means that Primary Care physicians will be seeing HIV-positive clients and must be involved in either diagnosis or treatment stages. The only public treatment site for outpatient HIV management for adult patients is the Tobago Health Promotion Clinic. The clinic is usually staffed with two Primary Care physicians. The Tobago Health Promotion Clinic is also an integrated clinic. The families of persons living with HIV often attend the clinic for their primary care medical needs, and there is an active segment of chronic disease clients. The clinic also attends to "walk-in" clients' needs. Primary care doctors in the other Health Centres refer HIV patients to the Tobago Health Promotion Clinic as the need arises. HIV patients also seek care at private medical clinics and attend the HIV treatment site.

The primary care physician's role in being sensitive to the needs of HIV patients and competence in diagnosing and treating patients and their families is vital in the Tobago setting (3). The British HIV Association has recommended increased GP involvement in caring for patients with HIV (4).

Newly diagnosed HIV Patients are referred from a Primary Care facility or upon discharge from the Scarborough General Hospital in Tobago. Morbidity due to HIV-associated Opportunistic infections often presents to Primary Care doctors, whether from the public or private sectors, and then diagnosed and referred to the Tobago Health Promotion Clinic. Primary Care doctors need to have a clinical understanding of HIV and its presentations. Primary care physicians are also poised to assess and advise on the quality of life of persons living with HIV (5).

PROBLEM STATEMENT

HIV has no definite cure. However, drugs such as Antiretrovirals (ARVs) have been developed to promote effective care for HIV patients and prolong life expectancy. Antiretrovirals are now the primary drugs used to increase life expectancy among HIV/AIDS patients in Tobago (6). With increased life expectancy, studying the quality of life can allow clinicians to optimize patient outcomes. The study, therefore, aims to identify the socioeconomic factors associated with low or high quality of life of adults living with HIV on the island. The study will aim to shed light on the challenges persons living with HIV face and how these challenges affect the quality of life of persons living with HIV in Tobago (12). The study is relevant to understand the difficulties persons living with HIV in Tobago face. This research will seek to evaluate the socioeconomic factors that people living with HIV are affected by and which may be targeted by care providers to improve the quality of life for these individuals (7).

AIMS

To evaluate the quality of life of patients living with HIV in Tobago.

OBJECTIVES

1. To determine the quality of life of patients living with HIV accessing care at the Tobago Health Promotion Clinic between October 2021 and March 2022.

2 To determine the sociodemographic and HIV-related factors associated with quality of life in Tobagonians living with HIV/AIDS.

RESEARCH QUESTIONS

PRIMARY QUESTIONS

1. What is the quality of life of persons living with HIV in Tobago and who also seek care at the Tobago Health Promotion Clinic, Tobago?

SECONDARY QUESTIONS

1. What are the key predictors of quality of life of persons living with HIV in Tobago?

LITERATURE REVIEW

INTRODUCTION

The literature review applied in this research proposal appraises peer-reviewed articles and science website sources such as Medline, PubMed, and Scopus written in English. Key search terms used were; HIV, AIDS, socioeconomic factors, quality of life, quality of life HIV instrument, quantitative research, HIV questionnaires, and Tobago sociodemographic. PubMed.gov alone yielded more than 7000 articles. The search was narrowed by focussing on peer-reviewed articles, articles that used similar research instruments and methodology, and those published within 10 years of the literature review. The pieces selected, twenty-six in number, were critically appraised for inclusion.

Socioeconomic factors comprise income levels, educational background, employment, marital status, and mode of transportation, to name a few (8). These socioeconomic factors are constant and reliable predictors of an extensive array of outcomes across individuals' lives, including psychological and physical well-being. Socioeconomic factors affect the overall functioning of an individual (9). Socioeconomic factors associated with a lower quality of life include poverty, low educational attainment, and poor health. Poor socioeconomic resources among HIV patients due to unequal distribution is related to risky health behaviour practices (8). The socioeconomic factors affecting HIV patients and the community are social support, income levels, educational achievement, and unemployment (8). These socioeconomic factors tend to affect the quality of life of individuals living with HIV and their morbidity and mortality as they affect how long and well HIV patients live (9).

HIV-related quality of life questionnaires has been developed over time in different countries and by various agencies. Several peer-reviewed sources were examined for this study's literature search. In a systematic review of HIV quality of life tools that could be self-administered, Cooper et al., found a paper reporting the WHOQOL-HIV BREF had internal consistency and discriminant validity. The authors also highlighted the importance of spirituality, personal beliefs, and independence domains, which the WHOQOL-HIV BREF addresses (10). Cooper et al. go on to discuss that the WHOQOL-HIV BREF and PROQOL-HIV may provide the most cross-cultural validity and make good choices for international assessment of HIV quality of life (10).

The second questionnaire, to assess the quality of life, will employ the World Health Organization quality of life instrument WHOQOL-HIV BREF (11).

WHOQOL-HIV BREF is made up of 31 questions. The questions represent six domains, and responses are recorded on a 5-point Likert scale.

The third questionnaire, also a quality of life assessment tool, is the Euroqol EQ-5D 3L tool. This tool has been widely studied and used and has the added advantage of having a data set for Trinidad and Tobago and population norms for Trinidad and Tobago, Jamaica, Barbados, and the English-speaking Caribbean (12).

Income is critical for people with HIV to access quality healthcare and improved quality of life (5). The management of opportunistic infections requires resources for correct interventions,

such as purchasing the required medications and attending to basic needs. Low-income earners are challenged in accessing quality social services such as health, education, and a balanced diet (6). In Tobago, public health advocates for the provision of programs to educate patients on management interventions, especially low-income earners who lack adequate funds to finance healthcare needs at the individual and family level (13). Lack of vital skills and knowledge about health and well-being is associated with undernutrition among Caribbean HIV patients living in unsuitable economic environments. Despite the provision of free education up to the tertiary level among Tobagonians, low education levels, which is associated with lower income, characterise challenges in adopting the management interventions, such as lack of knowledge on the required dietary interventions, timely antiretroviral interventions, and prevention measures (14). A 2011 study by Scott et al. on Poverty, Employment, and HIV/AIDS concluded that HIV/AIDS and poverty reinforce each other, with impoverished, defenceless women being a considerable driver of the disease while also bearing the burden of its effect (13).

Social support for people living with HIV/AIDS has demonstrated a definite possibility to influence health-related quality of life. Social support has three components that are informational, emotional, and tangible (15). Knowing the difference between the types of social support is significant because their functions may not be interchangeable. Emotional support fulfils and satisfies an individual's need for nurturance, a feeling of belonging, and alliance (16). It is a sustained function of social support that is well organised to limit stress in non-HIV settings (17). It is considered more desirable than other forms of social support (17). This implies that HIV patients in a socially-supportive environment have an improved health-related quality

of life compared to those who feel stigmatised and unsupported and are likely to live longer and healthier (15).

Issues of employment and occupational functioning are some of the challenges HIV patients face. Work is crucial because it provides structure, meaning, role identity, social support, and financial security (18). HIV patients are challenged by vocational dilemmas as they adapt to unexpected illnesses. They deal with the fear and uncertainty of HIV/AIDS, affecting their financial, professional, and healthcare security which complicates their vocational choices. Some HIV patients chose to leave the workforce and receive disability aids. Those who decide to keep working face work-related functioning limits by HIV-specific influences such as tiredness, regular medical appointments, physical and mental challenges, episodic illnesses, and drug side effects (13).

Unemployment among individuals with HIV results in depression, anxiety, low self-esteem, and social isolation more than the employed person (13). In the literature on HIV/AIDS, other research that has combined joblessness as a variable of interest has produced the same results. According to Kelly et al., joblessness was among the influences linked to suicidal ideation in HIV patients. Research by Dickey et al. on psychosocial vulnerability stated that young people who lacked permanent jobs were more exposed to psychiatric symptoms and depression (19). Lastly, Swindells et al. demonstrated that employment was one of the influences connected with better quality of life among individuals struggling with chronic illness. Hence employed HIV patients are likely to live longer than unemployed patients.

Education provides appropriate information and knowledge, which is critical among persons living with HIV and the community. It includes knowledge of effective prevention measures, care, and support for HIV patients (5). Informed individuals can take care of themselves by having healthy meals, taking their medications, and maintaining relationships. This type of knowledge also helps people avoid risky behaviours that could harm their physical and mental health. It is also essential in reducing the humiliation and judgment of individuals dealing with HIV in the community (19). Education levels play a vital part in improving health-related quality of life as individuals can better take care of themselves, and their health and are more likely to live in a more accepting society. Education can change peoples' perspectives, reducing negativity and promoting social support (15). Educated HIV patients are also able to make informed choices that contribute to their resilience and longevity

RATIONALE

HIV as a disease continues to be important from a public health standpoint and involves Family Medicine practitioners in Tobago. Antiretroviral drugs have contributed to patients living longer lives. There is very limited research as it pertains to HIV in Tobago and particularly Quality of Life of patients under care in Tobago. This study is designed to explore Quality of Life in these patients.

METHODS

SETTING

Due to the nature of the topic, a quantitative method was employed using a cross-sectional study. The data was collected at the Tobago Health Promotion Clinic using a questionnaire (20).

The research design and the method of data collection in this study are based on the research objectives and focused on understanding the quality of life of Tobagonians living with HIV/AIDS and how it is associated with various socioeconomic factors.

The research was set in Tobago, an Island located on the Eastern side of the Caribbean within the republic of Trinidad and Tobago, the southernmost nation in the Caribbean. Data collection was conducted at the Tobago Health Promotion Clinic, which is in Scarborough, Tobago. The Health Promotion Clinic is an Outpatient HIV Clinic that provides Patients in Tobago with clinical care, including laboratory investigations and medications (14). The Health Promotion Clinic, at this point, serves appropriately 460 clients. Patients may be referred from any public or private institution and reviewed based on clinical need. (18) This institution was chosen because access to patients can be achieved in an already familiar and confidential setting.



Figure 1: Map of Tobago showing Villages



Figure 2: Map of Tobago showing the location of the Tobago Health Promotion Clinic.

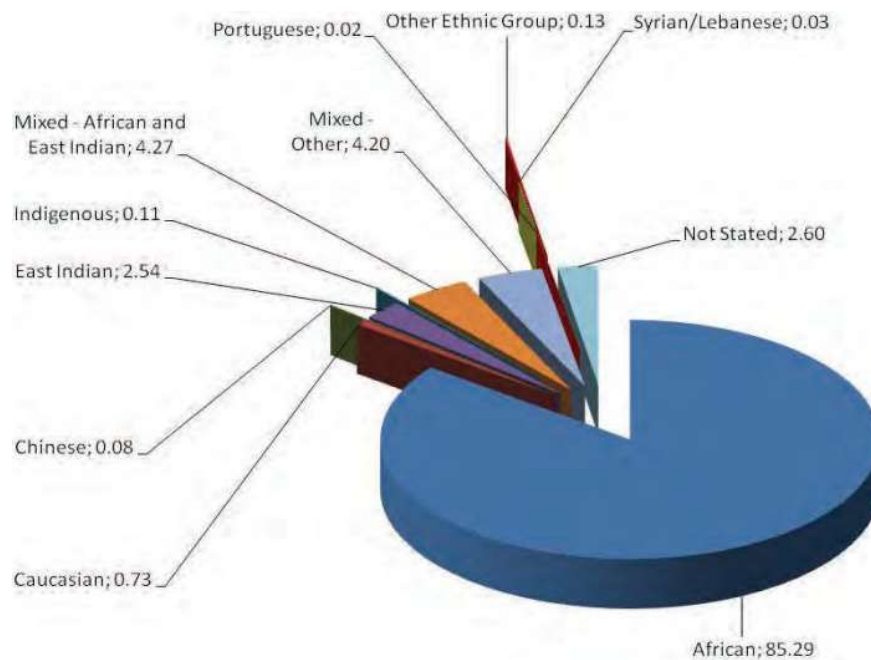


Figure 3: Percentage distribution of Total Population by Ethnic Group, 2011 Tobago.

Data of public records from the Central Statistical Office and based on the most recent census data of 2011 for Trinidad and Tobago show a population of 60,874 persons for Tobago. Tobago's population is mainly of African descent, with a percentage of 85.29%. The parish of St. George, which envelops the capital Town of Scarborough, has the highest population growth per annum across Trinidad and Tobago (21).

Study Design

This research employed a cross-sectional study that utilises a quantitative research methodology of collecting and analysing data that will be used to answer the research questions. The study focuses on exploring existing levels of quality of life of Tobagonians living with HIV/AIDS. The study has utilized three questionnaires. To ascertain baseline characteristics, the first collected demographic data, socioeconomic data, and clinical characteristics described in more detail under the research design heading (22).

The second questionnaire assessed quality of life and is disease-specific for HIV and has employed the World Health Organization quality of life instrument WHOQOL-HIV BREF (11). WHOQOL-HIV BREF is made up of 31 questions. The questions represent six domains, and responses were recorded on a 5-point Likert scale.

The Third questionnaire applied was the EQ-5D 3L. This Euroqol 5-dimension tool for quality of life was created by the Euroqol Research Foundation. It is a tool used worldwide in clinical trials, health surveys, and cost analysis studies and can be used to compare groups or individuals over time. The EQ-5D has also been chosen because there are published population norms for Trinidad and Tobago, Barbados, Jamaica, and the English-speaking Caribbean.

SAMPLE SIZE AND SAMPLING

SAMPLING

A list of HIV patients who receive treatment at the Tobago Health Promotion Clinic was obtained to determine the sampling framework. The Tobago Health Promotion Clinic is the only Outpatient HIV treatment clinic in Tobago at this time. The most updated list comprised a client list of 460 patients.

A randomizer was used to obtain a sample from the complete database of patients, and those patients were contacted to participate in the study.

SAMPLE SIZE

To calculate the Initial Sample Size, the following formula was applied.

$$n_0 = \left(\frac{z^2}{d^2} \right) p(1 - p)$$

= 369 participants.

Where: Z = 1.96 (at a 95% confidence interval), p = estimated prevalence, d = desired margin of error 5%. An estimated prevalence = p of 0.4 was used in these calculations. Studies reports vastly variable prevalence data regarding measured outcomes for quality of life, however after literature review and comparison of studies with similar methodologies (23) a p of 0.4 was used to proceed.

A Finite Population Correction Factor was applied in the next step of sample size consideration.

The calculated sample size is greater than 5% of the total population to be sampled.

The following formula was applied:

$$n = \frac{n_0}{[1 + n_0/N]}$$

= 204 participants.

It is estimated that 90% of the approached participants will be willing to respond. To adjust for expected non-responders, we can apply the formula:

$$= n / (1-k)$$

= 223 participants.

Where n = calculated sample size, k = estimated non-response proportion.

DATA COLLECTION

Once a participant from the randomly selected sample list agreed to participate in the study and informed consent was obtained, the researcher provided the participant with the three questionnaires and stationary materials to help complete the documents in a quiet and private room. The researcher was present to the participant to aid in explaining elements of questions a participant may not be clear on or to help fill questionnaires if a participant was unable to do so at the time. No formal pretesting was carried out as the instruments used are validated in the native language used for this study.

The first two questionnaires collected demographic data, socioeconomic data, and clinical characteristics, including age, gender, ethnic background, education, employment status, area of residence, immigrant vs. non-immigrant status, dwelling type, transportation type, marital status, sexual orientation, smoker vs. non-smoker, alcohol vs. no alcohol use, on ART (antiretroviral medication) vs. not on ART, presence of opportunistic infections, CD4 count and viral load. Data not known to the Patient was sourced if available from the patient's medical record.

The second questionnaire to assess the quality of life employed the World Health Organization quality of life instrument WHOQOL-HIV BREF. The WHOQOL-HIV BREF is made up of 31 questions. The questions represent six domains of focus, physical, psychological, independence, social relationships, environment, spirituality, and general health. The responses are recorded on a 5-point Likert scale with scores of negatively directed questions reversed. Scores are then multiplied by 4 to make it comparable to the scoring pattern of the parent questionnaire WHOQOL-100.

Cross-cultural validity of the WHOQOL-HIV BREF instrument was established. There is strong evidence to support the reliability and validity of the WHOQOL-HIV BREF across various studies (10).

The third questionnaire was administered, the Euroqol, EQ-5D 3L. The EQ-5D 3L will allow comparison of patients over time and with other groups of persons regionally and internationally where data sets specific to countries or regions exist.

STATISTICAL ANALYSES

The collected data was analysed using the Statistical Product and Service Solutions software (SPSS version 25.0) for statistical analysis. Descriptive data were presented using frequencies and percentages for categorical data. Continuous data were presented as means with standard deviation when normally distributed and medians with interquartile ranges when non-normal. The Kolmogorov–Smirnov test was used to explore data normality. Comparisons for continuous data were made using the independent sample t-test for normally distributed data and Mann-Whitney U or Kruskal-Wallis tests for non-normal continuous data (30). All significant associations for Kruskal-Wallis tests were explored with appropriate post-hoc Bonferroni adjusted pairwise comparisons. A *P* value of < 0.05 was deemed statistically significant.

OUTCOME MEASURES

WHOQOL-HIV BREF

The WHOQOL-HIV BREF domain scores were calculated in keeping with the recommendations of the tool developers, and 6 domain scores were generated. The six domain scores denote an individual's perception of quality of life in the following domains: Physical, Psychological, Level of Independence, Social Relationships, Environment, and Spirituality (11). Individual items are rated on a 5-point Likert scale where 1 indicates low negative perceptions and 5 shows high positive perceptions. For example, an item in the positive feeling facet asks, "How much do you enjoy life?" and the available responses are 1 (not at all), 2 (a little), 3 (a moderate amount), 4 (very much) and 5 (an extreme amount). As such, domain and facet scores are scaled positively, where higher scores denote a higher quality of life (23).

EQ5D3L

The EQ5D3L tool data were analysed to generate the 3 main outcome measures of QOL. The 5 numeric health state values denote the responses to the 5 main questions in EQ5D3L, e.g., 12232, where 11111 is the best possible health state, and 33333 is the worst possible health state. The health states each have an equivalent health index value which was calculated (ranging from 0-1, where 1 is the best possible health state and 0 is the worst. The visual analog scores (VAS) were also recorded.

RESULTS

Of 233 eligible participants, 210 completed the survey. (response rate: 90%). As shown in Table 1, 97 (46.2%) were male, and 113 (53.8%) were female. The majority of participants were heterosexual (88.9%), while 6 (2.9%) identified as MSM or WSW, 13 (6.3%) as bisexual, and 3 (1.4%) as other. The mean age of participants was 47.45 ± 12.25 years. The majority of participants were of African Descent (91.9%), followed by Mixed (5.2%) and East Indian (1.0%). Most participants were non-immigrants (98.1%), while 4 (1.9%) were migrants.

Table 1 shows the sociodemographic and clinical characteristics of the sample.

Variable (n = 210)	n(%)
<i>Socio-Demographic</i>	
Gender	
Male	97 (46.2%)
Female	113 (53.8%)
Sexual orientation	
Heterosexual	185 (88.9%)
MSM, WSW	6 (2.9%)
Bisexual	13 (6.3%)
Other	3 (1.4%)
Age (mean $\pm$ standard deviation)	47.45 $\pm$ 12.25
Ethnicity	
East Indian	2 (1.0%)
African	193 (91.9%)
Mixed	11 (5.2%)
Other	4 (1.9%)
Government Assistance	
No	162 (77.1%)
Yes	48 (22.9%)
Migrant status	
Non-immigrant	206 (98.1%)
Migrant	4 (1.9%)
Marital Status	
Single	107 (51.4%)
Married	38 (18.3%)
Common law	42 (20.2%)
Separated/Divorced	21 (10.1%)

Level of Education	
Primary	67 (33.0%)
Secondary	105 (51.7%)
Tertiary	31 (15.3%)
Monthly Household Income	
0-3,000	70 (34.7%)
3001 - 10 000	121 (59.9%)
10,001 +	10 (5.5%)
Employment	
Full time	99 (48.1%)
Part-time	29 (14.1%)
Unemployed	40 (19.4%)
Retired	38 (18.4%)
Dwelling type	
House	171 (81.4%)
Apartment	38 (18.1%)
none	1 (0.5%)
Mode of transport	
Private car	76 (36.2%)
Hired car	116 (55.2%)
Bus	18 (8.6%)
<i>Health Related Variables</i>	
Antiretroviral therapy	
No	4 (1.9%)
Yes	206 (98.1%)
Tine on ART (years) (<i>mean ± standard deviation</i>)	8.88 ± 4.41
Viral load	
Undetected (0)	163 (77.6%)
Detected (>0)	47 (22.4%)
Smoking	
Non-smoker	147 (70.0%)
Smoker	63 (30.0%)
Use of Alcohol in the past year	
No	50 (23.8%)
Yes	160 (76.2%)
Opportunistic infection	
No	201 (96.2%)
Yes	8 (3.8%)

Table 1 – Sociodemographic and health-related characteristics of a sample

Table 2 below shows the main QOL measures for the WHOQOL-HIV BREF tool. All domain distributions were significantly skewed on normality testing.

WHOQOL-HIV BREF DOMAIN	<i>(mean ± standard deviation)</i>	Median (IQR: Q1, Q3)
Domain 1 – Physical	15.19 ± 2.57	16.00 (14.00,17.00)
Domain 2 - Psychological	13.73 ± 2.14	13.60 (12.00, 15.20)
Domain 3 – Level of independence	13.53 ± 2.94	14.00 (11.00,16.00)
Domain 4 – Social relationship	13.61 ± 3.05	13.00 (11.00,16.00)
Domain 5 - Environment	12.34 ± 2.11	12.50 (11.00,14.00)
Domain 6 – Spiritual/Personal beliefs	14.02 ± 2.76	14.00 (12.00,16.00)

Table 2 WHOQOL-HIV BREF domain scores

Table 3 below shows the EQ5D3L outcome measures. Index and EQVAS values were both significantly skewed on normality testing. The mean EQ5D3L index value was 0.86 (95%CI 0.85-0.88), and the mean EQVAS was 65.98 (95%CI 63.84-68.10). Of this sample, 33% reported perfect health in all 5 domains, with 2/3 reporting some upset in quality of life.

EQ5D3L Outcome Measures	
EQ5D3L Health State (ranked) n(%)	
11111*	70 (33.3%)
11121	35 (16.7%)
21221	20 (9.5%)
21222	16 (7.6%)
11112	12 (5.7%)
21121	11 (5.2%)
22221	7 (3.3%)
11122	5 (2.4%)
11221	5 (2.4%)
11222	4 (1.9%)
11212	3 (1.4%)
22211	3 (1.4%)
11211	2 (1%)
22222	2 (1%)
11223	1 (0.5%)
12121	1 (0.5%)

21111	1 (0.5%)
21122	1 (0.5%)
21211	1 (0.5%)
21212	1 (0.5%)
22122	1 (0.5%)
22212	1 (0.5%)
22223	1 (0.5%)
22322	1 (0.5%)
22331	1 (0.5%)
22332	1 (0.5%)
Index value <i>(mean ± standard deviation)</i> <i>Median, IQR</i>	0.86 ± 0.12 0.84 (0.76,1.00)
EQVAS <i>(mean ± standard deviation)</i> Median (IQR)	65.98 ± 14.89 70.00 (60.00,75.00)

*Best possible health state

Table 3 – EQ5D3L Outcome measures
WHOQOL-HIV BREF predictors

Table 4 shows associations for WHOQOL-HIV BREF domain scores and key socio-demographics.

Socio-Demographic	Physical		Psychological		Level of independence		Social relationship		Environment		Spiritual/Personal beliefs	
Gender [#]		<i>P</i> value		<i>P</i> value		<i>P</i> value		<i>P</i> value		<i>P</i> value		<i>P</i> value
Male	15.0	0.004	13.6	0.016	14.0	0.006	13.0	0.043	12.5	0.681	14.5	0.236
Female	16.0		14.4		15.0		14.0		12.5		15.0	
Sexual orientation[#]												
Heterosexual	15.0	0.001	13.6	0.023	14.0	<0.001	13.0	0.005	12.5	0.004	14.0	0.104
Non-heterosexual	17.0		15.2		16.0		17.0		13.5		15.0	
Ethnicity[#]												
African	16.0	0.797	13.6	0.995	14.0	0.510	14.0	0.855	12.5	0.223	15.0	0.603
Non-African	16.0		13.6		15.0		13.0		13.0		14.0	
Age[*]	-0.44	<0.001	-0.02	0.778	-0.31	<0.001	0.08	0.247	0.07	0.314	0.14	0.045
Government Assistance[#]												
No	16.0	0.221	14.4	0.012	14.0	0.264	14.0	0.046	13.0	0.001	15.0	0.002
Yes	15.0		13.2		12.0		12.0		11.3		13.0	
Marital Status[#]												
Single	16.0	0.301	13.6	0.433	14.0	0.522	13.0	0.028	12.0	0.058	13.0	0.010
Married	16.0		14.4		15.0		15.0		13.5		15.0	
Common law	16.0		14.4		15.0		14.0		12.5		15.0	
Separated/Divorced	15.0		13.6		13.0		13.0		12.5		15.0	
Level of Education[#]												
Primary	15.0	0.001	13.6	0.279	14.0	0.027	14.0	0.191	12.5	0.637	14.0	0.534
Secondary	16.0		13.6		14.0		13.0		12.5		14.0	
Tertiary	17.0		14.4		15.0		12.0		13.0		15.0	
Monthly Household Income[#]												
0-3,000	15.0	0.074	13.6	0.062	13.0	0.013	13.0	0.387	11.8	0.020	14.0	0.101
3001 - 10 000	16.0		13.6		14.0		14.0		12.5		15.0	
10,001 +	16.5		14.8		15.5		11.5		14.3		16.0	
Employment[#]												
Full time	16.0	<0.001	14.4	0.006	15.0	<0.001	14.0	0.054	13.0	<0.001	15.0	0.020
Part-time	16.0		13.6		14.0		13.5		12.0		14.5	
Unemployed	15.0		12.8		13.0		12.0		11.0		12.0	
Retired	14.0		13.6		12.0		13.0		12.5		15.0	

[#]Reported as medians, ^{*}Reported using Spearman's Rho correlation coefficient, Significant associations in bold (post hoc comparisons reported in text)

Table 4 - WHOQOL-HIV BREF domain scores and key socio-demographics.

As seen in Table 4 there were several significant socio-demographic predictors of WHOQOL-HIV BREF domain scores.

Female gender was significantly associated with higher median physical, psychological, independence and social relationship scores compared to males.

Compared to heterosexuals, non-heterosexuals (same sex, bisexual and other orientations) experienced significantly higher physical, psychological, independence, social relationship and environment scores.

Age was significantly negatively correlated with physical quality of life and independence level but positively correlated with spirituality.

Receiving government assistance was associated with associated with significantly lower psychological, social relationship, environment, and spiritual/personal beliefs domain scores.

There were associations between marital status and certain domains. In post-hoc pairwise comparisons for marital status and social relationship scores, being married was associated with a higher median score compared to being single ($P=0.017$). Similarly for the spiritual/personal beliefs domain being married was associated with a higher median score compared to being single ($P=0.016$).

In post-hoc pairwise comparisons for educational status and physical domain scores, compared to primary level, having a secondary level education ($P=0.041$) or tertiary levels education ($P=0.001$) were associated with significantly better physical scores. Similarly for the independence level domain a tertiary level education was associated with a higher median score compared to primary levels ($P=0.044$).

In post-hoc pairwise comparisons for income and independence domain scores, compared to 0-3000\$, the 3001\$-10,000\$ bracket ($P=0.018$) and 10,000\$+ levels ($P=0.028$) were associated with significantly better scores. The highest income bracket also had significantly higher environment scores compared to the lowest range ($P=0.031$).

In post-hoc pairwise comparisons for employment and physical domain scores, compared to being retired, having full time ($P<0.001$) or part-time employment ($P=0.010$) was associated with higher scores. Full time compared to being employed ($P=0.010$) was associated with higher psychological scores. Full time compared to unemployed ($P=0.011$) and retired ($P<0.001$) had significantly higher independence scores. Compared to being unemployed, being employed full time ($P<0.001$) or retired ($P=0.031$) was associated with significantly higher environment domain scores. Similarly compared to being unemployed, being employed full time ($P=0.026$) or retired ($P=0.049$) was associated with significantly higher spiritual beliefs domain scores.

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Table 5 shows associations for WHOQOL-HIV BREF domain scores and key clinically related factors.

Variable	Physical		Psychological		Level of independence		Social relationship		Environment		Spiritual/Personal beliefs	
		<i>P</i> value		<i>P</i> value		<i>P</i> value		<i>P</i> value		<i>P</i> value		<i>P</i> value
Antiretroviral therapy[#]												
No	16.0	0.759	13.6	0.550	14.0	0.120	14.0	0.177	12.5	0.941	15.0	0.986
Yes	15.0		12.8		12.0		10.0		12.3		13.5	
Viral load[#]												
Undetected (0)	16.0	0.887	13.6	0.288	14.0	0.419	14.0	0.206	12.5	0.009	15.0	0.002
Detected (>0)	15.0		13.6		14.0		12.0		11.8		13.0	
Opportunistic infection[#]												
No	16.0	<0.001	13.6	0.001	14.0	0.002	14.0	0.006	12.5	0.007	15.0	<0.001
Yes	10.5	1	10.8		9.0		10.5		10.8		10.0	
Duration of ART (years) *	-	0.583	0.22	0.002	0.04	0.603	0.238	0.001	0.10	0.150	0.13	0.066
	0.04											
Smoking[#]												
Non-smoker	16.0	0.583	14.4	0.092	14.0	0.447	14.0	0.128	12.5	0.667	15.0	0.193
Smoker	16.0		13.6		14.0		13.0		12.5		13.0	
Use of Alcohol in the past year[#]												
No	15.0	0.084	14.4	0.051	14.5	0.990	14.0	0.263	13.0	0.524	14.0	0.547
Yes	16.0		13.6		14.0		13.0		12.5		15.0	

[#]Reported as medians, * Reported using Spearman's Rho correlation coefficient, Significant associations in bold

Table 5 WHOQOL-HIV BREF domain scores and key health-related variables

With regard to HIV related variables as seen in Table 5 having a detectable viral load was associated with lower environment and spiritual domain scores. Opportunistic infections were associated with lower scores in all WHOQOL-HIV BREF domains. Duration of ART treatment was positively correlated with psychological and social relationship scores. There were no associations between use of ART (vs none), alcohol and smoking and any of the WHOQOL-HIV BREF domains.

EQ5D3L predictors

Table 6 shows the associations between EQ5D3L health index values, VAS, and sociodemographic characteristics of the sample

Socio-Demographic	EQ-VAS		Health Index Value	
Gender [#]		P value		P value
Male	65.0	0.004	0.83	<0.001
Female	70.0		0.88	
Sexual orientation [#]				
Heterosexual	70.0	0.127	0.84	<0.001
Non-heterosexual	70.0		1.00	
Ethnicity [#]				
African	70.0	0.505	0.84	0.113
Non-African	70.0		0.80	
Age [*]				
	-0.15	0.031	-0.39	<0.001
Government Assistance [#]				
No	70.0	0.299	0.84	0.919
Yes	65.0		0.84	
Marital Status [#]				
Single	65.0	0.281	0.84	0.046
Married	70.0		0.84	
Common law	70.0		1.00	
Separated/Divorced	70.0		0.79	
Level of Education [#]				
Primary	70.0	0.049	0.83	0.054
Secondary	65.0		0.84	
Tertiary	72.5		0.94	
Monthly Household Income [#]				
0-3,000	65.0	0.032	0.84	0.719
3001 - 10 000	70.0		0.84	
10,001 +	77.5		0.85	
Employment [#]				
Full time	70.0	0.004	0.85	<0.001
Part-time	70.0		0.85	
Unemployed	65.0		0.84	
Retired	65.0		0.76	

[#]Reported as medians, ^{*}Reported using Spearman's Rho correlation coefficient, Significant associations in bold (post hoc comparisons reported in text)

Table 6. Sociodemographics and EQ5D3L measures

In post hoc analyses for marital status, being in a common law was associated with a higher health index value compared to a divorced/ separated participant but it attained borderline significance ($P=0.05$)

In post hoc analyses for education level, tertiary level was associated with a higher health index value compared to primary level ($P=0.044$)

Household income was associated with EQ-AS but further post-hoc pairwise comparisons did not attain statistical significance.

In post hoc analyses for employment status, compared to full- time employment, being unemployed ($P=0.016$) or retired ($P=0.024$) was associated with a lower EQVAS score. Compared to those who were retired, being employed full time ($P<0.001$) part time ($P=0.003$) or unemployed ($P=0.024$) was associated with higher health index value scores.

Table 7 below shows the associations between EQ5D3L health index values, VAS, and clinical characteristics of the sample

Variable	EQ-VAS		Health Index Value	
Antiretroviral therapy [#]		<i>P</i> value		<i>P</i> value
No	70.0	0.889	0.84	0.264
Yes	67.5		0.78	
Viral load [#]				
Undetected (0)	70.0	0.129	0.84	0.898
Detected (>0)	65.0		0.85	
Opportunistic infection [#]				
No	70.0	0.002	0.84	0.042
Yes	40.0		0.77	
Duration of ART (years) *	0.15	0.038	0.1	0.141
Smoking [#]				
Non-smoker	70.0	0.227	0.84	0.630
Smoker	65.0		0.84	
Use of Alcohol in the past year [#]				
No	70.0	0.192	0.84	0.909
Yes	70.0		0.84	

[#]Reported as medians, *Reported using Spearman's Rho correlation coefficient

Table 7 Health-related predictors of EQ5D3L measures

As seen in Table 7 there were no associations between EQ5D3L measures and ART use, viral load detected status, smoking or alcohol. Opportunistic infection was significantly associated with lower median scores for both EQ-VAS and health index values. Duration of ART was positively correlated with EQ-VAS.

In additional analyses the 2 EQ5D3L QOL measures and 6 WHOQOL-HIV BREF QOL domains scores were all significantly associated ($P < 0.001$) with correlation coefficients ranging from 0.21 – 0.73.

DISCUSSION

Overall quality of life was significantly lower in the sample group versus that of the general population. The mean EQ5D3L index value was 0.86, and the mean EQVAS was 65.98 in this sample of HIV-positive patients. This was significantly less than the TT population norms of 0.93 for the index value and 82.3 for the EQVAS (24). In this sample, 33% reported perfect health in all 5 EQ5D3L domains, with 2/3 reporting some upset in quality of life. This again contrasts significantly with that of the general Trinidad and Tobago population, where 64% enjoyed a perfect health state (24). A possible reason for this observed difference may be because the sample in this study considered a very specific subset of the population, HIV-positive persons, a sample that, for example, has to deal with a medication burden the general population may not experience, as well as dealing with the perceived stigma of HIV and other more nuanced issues worthy of further determination through research. Other studies have shown a reduced QOL in HIV patients compared to the general population (25).

Similar studies across the different regional health authorities may be beneficial to compare and ultimately address predictors of QOL in HIV patients.

In this study females reported better physical, psychological, independence and social relationship scores compared to males. Similarly, EQ5D3L measures were better in women compared to men. This finding lends itself to even more study as to what is unique about women

and if certain traits or habits can be transferrable to male counterparts through any sort of counselling or clinical intervention.

The data analysis also showed that compared to heterosexuals, non-heterosexuals (same sex, bisexual and other orientations) experienced significantly higher physical, psychological, independence, social relationship, and environment scores. Literature often speaks to a higher incidence of Mental Health problems and depression among non-heterosexuals (26); the data from this study may warrant further in-depth investigation as to why in Tobago, scores correlating with a higher quality of life are found and can be translated into a national, regional, or international benefit for non-heterosexuals seeking HIV care.

Full-time employment is associated with a higher quality of life scores on all WHOQOL-HIV BREF QOL domains and EQ5D3L measures. Higher-income was also associated with greater independence level, environment, and EQ-VAS scores. Governmental assistance correlated with negative associations with the WHOQOL-HIV BREF in the psychological, social relationships, environmental and spiritual domains. These findings are intuitive. However, for unemployed persons or with a lower income, it may be beneficial for stakeholders such as HIV clinics, Health policymakers and NGOs to determine how best to alleviate unemployment and increase revenue for patients seeking HIV care.

Opportunistic infections were associated with lower QOL scores on all WHOQOL-HIV BREF QOL domains and EQ5D3L measures. Those with opportunist infection had EQ5D3L measures well below the Trinidad and Tobago population norms. The WHOQOL-HIV BREF's detectable

viral load also negatively affected the environmental and spiritual domains. Duration of ART also was associated with higher EQVAS scores. These findings relate directly to treatment. Patients must be treated appropriately for opportunistic infections. All that can be done to ensure adherence to ARVs to reduce the incidence of opportunistic infections is vital to optimizing the quality of life in HIV patients (27).

Married or Living with a partner vs. being divorced or separated was associated with higher index scores on the EQ5D3L. Marriage and relationship counselling being available at the clinical level may therefore be beneficial for patients needing these services. A Support Group geared toward those seeking healthy relationships may be beneficial to consider at local treatment sites.

As HIV changed from a fatal illness to a chronic illness, interventions should also shift to target all areas involved in a PLHIV's health management including related to health professionals, family and society, these were the findings of Tran et al. an examination of systematic reviews and meta-analyses reviewing interventions to improve quality of life of PLHIV. Several specific suggestions included outreach to high-risk groups, partnering with Churches for counselling, expanding coverage of psychosocial and behavioural interventions, increasing the involvement of family and friends and incorporating e-health strategies for adherence improvement.

This study is the first to look at Quality of Life of HIV patients in Tobago and is a starting point to conduct similar studies to reproduce results and be a guiding document to help policy makers and NGOs and clinical staff focus on areas of need when it comes to care in a system with finite resources.

CONCLUSION

This study endeavoured to examine the Quality of Life of patients seeking care for HIV in Tobago and to determine what factors in sociodemographic and clinical parameters related to Quality of Life. The EQ5D3L mean index value (0.86) and EQVAS (65.98) were significantly lower than the corresponding values of the Trinidad and Tobago population norms (0.93 and 82.3, respectively, with worse QOL in males, older age, unemployed, lower socioeconomic brackets, heterosexuals and those with opportunistic infections. The WHOQOL-HIV BREF domains with the lowest mean scores were environment (12.34), level of independence (13.53), and social relationships (13.61).

The primary care physician's assessment of quality of life should be part of routine clinical care. Available resources through social worker support and partnership with NGOs may be considered in the primary care setting. Further research on patients who receive governmental assistance may prove beneficial in determining needs and appropriate distribution. Research into non-heterosexual patients and the positive predictors of quality of life may yield insight into the general HIV patient population. A review of treatment guidelines for patients with opportunistic infection may be beneficial.

The statistically significant findings are in keeping with what may have been expected at the beginning of the project; however, the rationale for conducting the research is to have a base upon which more research among the patients with HIV can be conducted and most importantly, perhaps have concrete evidence, so that policymakers have a basis for funding and resourcing of care.

LIMITATIONS

Sampling bias was minimized by using randomization to select participants thereby attempting to create a representative sample and allow for findings to be generalized to the patient population under investigation.

Another limitation to consider would be the lack of recording or appreciation of factors affecting quality of life of patients in the study that were not the focus of data collection and analysis. There could potentially be confounding if unknown factors are not recognized or considered. Confounders not measured but may also affect quality of life must be considered for example, exercise, religion, various activities participants may be involved in.

In this study the researcher also provides care to the participants in a doctor-patient relationship. Participant bias or acquiescence bias, which can have an impact of confounding on research findings must also be considered when evaluating the results of the study.

RECOMMENDATIONS

Recommendations coming from this study will focus primarily on addressing the statistically significant factors that affect the Quality of Life of HIV patients. HIV patients with detectable viral loads or coping with opportunistic infections should be specially managed to determine the best way forward for treatment and adherence (28).

Relationship counselling within the clinical setting may be offered, but this is determinant on if staff is sufficiently trained for this specific type of interaction. Addressing employment and income, through engagement of policy makers and the clinical level with social workers and NGOs, is recommended strongly as both research instruments pointed to these as important factors related to Quality of Life. Meaningfully addressing employment and income will require a team and network of professionals.

ETHICAL CONSIDERATIONS

Approval was granted from the Ethics Committee of the University of the West Indies St. Augustine campus (Ref: CREC-SA. 1199/10/2021), and the Ethics Committee of the Tobago Regional Health Authority. Participants were verbally asked to contribute to the research; upon acceptance, a written agreement form was provided before the interview process. This document contained objectives of the study stated clearly, including the mode of information gathering, notification of voluntary participation, notification of their right to leave the research at any time during the research process, and the right to decline to answer any questions during the interview. Protection of the participants through the assurance of confidentiality of information shared, and anonymity of identity was achieved by use of pseudonyms. The commitment was made to participants that the information they share would be used only for research purposes and every effort to secure data was made.

Participants were informed that they may be asked to discuss sensitive information, which they were under no obligation to share if it were to be a potential source of distress to them. After completing the questionnaires, names were replaced with numeric identification numbers. Electronic data only had numeric identification numbers and was safeguarded on a password-protected computer. The researcher had exclusive access to a locked room where physical research supplies were kept.

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APPENDIX 1:

INFORMED CONSENT FORM

Dear Patient,

I invite you to participate in this Research Study being conducted to evaluate Quality of life and factors that affect Quality of life in persons living with HIV in Tobago. The study will be conducted by Ryan Kumar. The method used to meet this purpose would be collection of data on 2 questionnaires. It is estimated that the questionnaires will take 25 minutes or less to complete, but please take your time when answering questions. Your contribution to this study is voluntary, and you are free to withdraw at any time before or during the data collection process. Should you choose to withdraw; all information collected will be destroyed and omitted from the final paper. Please feel free to voice any discomfort with this procedure. Your identity will be kept anonymous, as a pseudonym will be used. There will be non-disclosure of your personal information outside of the purpose of this paper. The interview questions may require you to speak about sensitive issues. It is always your choice to refrain from answering any question you are uncomfortable with.

By signing this consent form, I certify that I have read the above and agree to the terms of this agreement:

APPENDIX 2:
Demographic, socioeconomic and clinical characteristics form.

Date: _____

First Name: _____

Last Name: _____

Age (in years): _____

Gender: _____

Ethnicity: _____

Marital Status: (single, married, living with a partner, separated, divorced,
widowed) _____

Education: (primary, secondary, tertiary) _____

Employment Status: (full time, part time, seasonal, unemployed) _____

Monthly Income: _____

Are you receiving any assistance from the government? _____

Village/ Area of Residence: _____

Immigrant/ Non-Immigrant: _____

Dwelling Type: _____

Transportation Modes most frequently used: _____

Sexual Orientation: _____

Smoker/ Non-smoker: _____

Any Alcohol Use Past 1 year? _____

On ART/ Not on ART: _____

Duration of time on ART: _____

Presences of Opportunistic Infection? _____

CD4 Count: _____

Viral Load: _____

APPENDIX 3:

WHOQOL-HIV BREF

ABOUT YOU

Before you begin we would like to ask you to answer a few general questions about yourself: by circling the correct answer or by filling in the space provided.

- What is your **gender**? Male / Female
- How old are you? _____ (age in years)
- What is the highest **education** you received? None at all / Primary / Secondary / Tertiary
- What is your **marital status**? Single / Married/ Living as married / Separated / Divorced / Widowed
- How is your **health**? Very Poor / Poor / Neither Poor nor Good / Good / Very Good
- Do you consider yourself currently ill? Yes / No
- If there is something wrong with you, what do you think it is? _____

Please respond to the following questions if they are applicable to you:

- What is your **HIV serostatus**? Asymptomatic / Symptomatic / AIDS converted
- In what year did you first **test positive** for HIV? _____
- In what year do you think you were infected? _____
- How do you believe you were **infected with HIV**? (circle one only):
Sex with a man / Sex with a woman / Injecting drugs / Blood products / Other (specify) _____

Instructions

This assessment asks how you feel about your quality of life, health, or other areas of your life. **Please answer all the questions.** If you are unsure about which response to give to a question, **please choose the one** that appears most appropriate. This can often be your first response. Please keep in mind your standards, hopes, pleasures and concerns. We ask that you think about your life **in the last two weeks**. For example, thinking about the last two weeks, a question might ask:

		Not at all	A little	A moderate amount	Very much	Extremely
11 (F5.3)	How well are you able to concentrate?	1	2	3	4	5

You should circle the number that best fits how well are you able to concentrate over the last two weeks. So you would circle the number 4 if you were able to concentrate very much. You would circle number 1 if you were not able to concentrate at all in the last two weeks.

Please read each question, assess your feelings, and circle the number on the scale for each question that gives the best answer for you.

		Very poor	Poor	Neither poor nor good	Good	Very good
1 (G1)	How would you rate your quality of life?	1	2	3	4	5

		Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
2 (G4)	How satisfied are you with your health?	1	2	3	4	5

The following questions ask about **how much** you have experienced certain things in the last two weeks.

		Not at all	A little	A moderate amount	Very much	An extreme amount
3 (F1.4)	To what extent do you feel that physical pain prevents you from doing what you need to do?	1	2	3	4	5
4 (F50.1)	How much are you bothered by any physical problems related to your HIV infection?	1	2	3	4	5
5 (F11.3)	How much do you need any medical treatment to function in your daily life?	1	2	3	4	5
6 (F4.1)	How much do you enjoy life?	1	2	3	4	5
7 (F24.2)	To what extent do you feel your life to be meaningful?	1	2	3	4	5
8 (F52.2)	To what extent are you bothered by people blaming you for your HIV status	1	2	3	4	5
9 (F53.4)	How much do you fear the future?	1	2	3	4	5
10 (F54.1)	How much do you worry about death?	1	2	3	4	5

		Not at all	A little	A moderate amount	Very much	Extremely
11 (F5.3)	How well are you able to concentrate?	1	2	3	4	5
12 (F16.1)	How safe do you feel in your daily life?	1	2	3	4	5
13 (F22.1)	How healthy is your physical environment?	1	2	3	4	5

The following questions ask about **how completely** you experience or were able to do certain things in the last two weeks.

		Not at all	A little	Moderately	Mostly	Completely
14 (F2.1)	Do you have enough energy for everyday life?	1	2	3	4	5
15 (F7.1)	Are you able to accept your bodily appearance?	1	2	3	4	5
16 (F18.1)	Have you enough money to meet your needs?	1	2	3	4	5
17 (F51.1)	To what extent do you feel accepted by the people you know?	1	2	3	4	5
18 (F20.1)	How available to you is the information that you need in your day-to-day life?	1	2	3	4	5

19 (F21.1)	To what extent do you have the opportunity for leisure activities?	1	2	3	4	5
------------	--	---	---	---	---	---

		Very poor	Poor	Neither poor nor good	Good	Very good
20 (F9.1)	How well are you able to get around?	1	2	3	4	5

The following questions ask you how **good or satisfied** you have felt about various aspects of your life over the last two weeks.

		Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
21 (F3.3)	How satisfied are you with your sleep?	1	2	3	4	5
22 (F10.3)	How satisfied are you with your ability to perform your daily living activities?	1	2	3	4	5
23 (F12.4)	How satisfied are you with your capacity for work?	1	2	3	4	5
24 (F6.3)	How satisfied are you with yourself?	1	2	3	4	5
25 (F13.3)	How satisfied are you with your personal relationships?	1	2	3	4	5
26 (F15.3)	How satisfied are you with your sex life?	1	2	3	4	5
27 (F14.4)	How satisfied are you with the support you get from your friends?	1	2	3	4	5
28 (F17.3)	How satisfied are you with the conditions of your living place?	1	2	3	4	5
29 (F19.3)	How satisfied are you with your access to health services?	1	2	3	4	5
30 (F23.3)	How satisfied are you with your transport?	1	2	3	4	5

The following question refers to **how often** you have felt or experienced certain things in the last two weeks.

		Never	Seldom	Quite often	Very often	Always
31 (F8.1)	How often do you have negative feelings such as blue mood, despair, anxiety, depression?	1	2	3	4	5

Did someone help you to fill out this form? _____

How long did it take to fill this form out? _____

Do you have any comments about the assessment? _____

THANK YOU FOR YOUR HELP

APPENDIX 4: EQ-5D3L

By placing a tick in one box in each group below, please indicate which statements best describe your own health state today.

Mobility

- I have no problems in walking about ☐
- I have some problems in walking about ☐
- I am confined to bed ☐

Self-Care

- I have no problems with self-care ☐
- I have some problems washing or dressing myself ☐
- I am unable to wash or dress myself ☐

Usual Activities (*e.g. work, study, housework, family or leisure activities*)

- I have no problems with performing my usual activities ☐
- I have some problems with performing my usual activities ☐
- I am unable to perform my usual activities ☐

Pain / Discomfort

- I have no pain or discomfort ☐
- I have moderate pain or discomfort ☐
- I have extreme pain or discomfort ☐

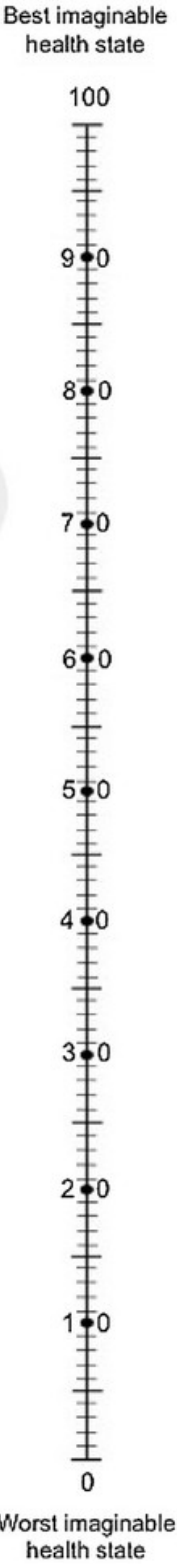
Anxiety / Depression

- I am not anxious or depressed ☐
- I am moderately anxious or depressed ☐
- I am extremely anxious or depressed ☐

To help people say how good or bad a health state is, we have drawn a scale (rather like a thermometer) on which the best state you can imagine is marked 100 and the worst state you can imagine is marked 0.

We would like you to indicate on this scale how good or bad your own health is today, in your opinion. Please do this by drawing a line from the box below to whichever point on the scale indicates how good or bad your health state is today.

Your own health state today





TOBAGO REGIONAL HEALTH AUTHORITY

Doretta's Court, #197 Mt. Marie Road, Lower Scarborough, Tobago, West Indies.

Telephone: 1-868-635-3000, 639-3908 • Fax: 1-868-660-7538

Website: www.trha.co.tt

• Email: trha@trha.co.tt

April 8th, 2022

Dr. Ryan Kumar
DM Student
UWI St. Augustine

Dear Dr. Kumar,

Re: Request to Conduct Research Exercise at Scarborough General Hospital

I refer to your letter dated October 04th, 2021 in which you have requested authorization to conduct clinical research at the Scarborough General Hospital.

In this regard, the Tobago Regional Health Authority hereby grants authorization, in accordance with the approval of the Division of Health, Wellness and Social Protection, to conduct research on the following topic: Quality of Life in Patients Accessing HIV Care in Tobago - A Cross sectional study".

Consistent with the Division's approval, you are required to provide to each participant:

- a) the name and contact information of the researcher;
- b) the name and contact information of the researcher's supervisor;
- c) clear instructions on how to withdraw consent during and after the interview process.

Further, you are required to provide a copy of the research report to the Tobago Regional Health Authority and the Division of Health Wellness and Social Protection, within one (1) month of the completion of your study.

Respectfully,

TOBAGO REGIONAL HEALTH AUTHORITY

SIMON WILTSHIRE

CHIEF EXECUTIVE OFFICER

"Your Health is Our Progress"

APPENDIX 6: ETHICAL APPROVAL UWI



THE UNIVERSITY OF THE WEST INDIES
ST. AUGUSTINE, TRINIDAD AND TOBAGO, WEST INDIES
CAMPUS RESEARCH ETHICS COMMITTEE
TELEPHONE: (1-868) 662-2002 ext. 82755 E-mail: campusethics@sta.uwi.edu

December, 1 2021

Ryan Kumar

9 Tranquility Heights, Signal Hill, Tobago

Email: rkmail1@yahoo.com

Dear Ryan Kumar,

Ref: CREC-SA.1199/10/2021

Title: Quality of life in Patients Accessing HIV Care in Tobago: A Cross-Sectional Study

I am pleased to advise that your application for research on the above captioned topic has been approved on behalf of Campus Research Ethics Committee, St. Augustine.

Approval is valid for one (1) year.

Sincerely,

Professor Jerome De Lisle
Chair
Campus Research Ethics Committee

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APPENDIX 7: TURNITIN REPORT

QOL HIV

by Ryan Kumar

Submission date: 29-Sep-2022 07:25PM (UTC-0400)

Submission ID: 1911217447

File name: 27813_Ryan_Kumar_QOL_HIV_871892_1024044859.docx (1M)

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INTRODUCTION

The prevalence of HIV in Trinidad and Tobago is estimated to be 0.7% (1). In Tobago, the estimated prevalence of HIV may be as high as 1%. Tobago has a population of 60,874 persons based on the Trinidad and Tobago 2011, Population and Housing Census Report. In Tobago, prevalence estimates may be as high; PAHO, the Pan American Health Organization, quotes a staggering prevalence rate for Trinidad and Tobago of 1.5 percent (2); this means that Primary Care physicians will be seeing HIV-positive clients and must be involved in either diagnosis or treatment stages. The only public treatment site for outpatient HIV management for adult patients is the Tobago Health Promotion Clinic. The clinic is usually staffed with two Primary Care physicians. The Tobago Health Promotion Clinic is also an integrated clinic. The families of persons living with HIV often attend the clinic for their primary care medical needs, and there is an active segment of chronic disease clients. The clinic also attends to "walk-in" clients' needs. Primary care doctors in the other Health Centres refer HIV patients to the Tobago Health Promotion Clinic as the need arises. HIV patients also seek care at private medical clinics and attending the HIV treatment site.

The primary care physician's role in being sensitive to the needs of HIV patients and competence in diagnosing and treating patients and their families is vital in the Tobago setting (3). The British HIV Association has recommended increased GP involvement in caring for patients with HIV (4).

Newly diagnosed HIV Patients are referred from a Primary Care facility or upon discharge from the Scarborough General Hospital in Tobago. Morbidity due to HIV-associated Opportunistic infections often presents to Primary Care doctors, whether from the public or private sectors, and then diagnosed and referred to the Tobago Health Promotion Clinic. Primary Care doctors need to have a clinical understanding of HIV and its presentations. Primary care physicians are also poised to assess and advise on ³the quality of life of persons living with HIV (5).

PROBLEM STATEMENT

HIV has no definite cure. However, drugs such as Antiretrovirals (ARVs) have been developed to promote effective care for HIV patients and prolong life expectancy. Antiretrovirals are now the primary drugs used to increase life expectancy among HIV/AIDS patients in Tobago (6). With increased life expectancy, studying the quality of life can allow clinicians to optimize patient outcomes. The study, therefore, aims ³⁸ to identify the socioeconomic factors associated ³⁵ with low or high quality of life of adults living with HIV on the island. The study will aim to shed light on the challenges persons living with HIV face and how these challenges affect ³ the quality of life of persons living with HIV in Tobago (12). The study is relevant to understand the difficulties persons living with HIV in Tobago face. This research will seek to evaluate the socioeconomic factors that people living with HIV are affected by and which may be targeted by care providers ³⁹ to improve the quality of life for these individuals (7).

² AIMS

To evaluate the quality of life of patients living with HIV in Tobago.

OBJECTIVES

1. To determine the ¹⁸ quality of life of patients living with HIV accessing care at the Tobago Health Promotion Clinic between October 2021 and March 2022.

2 To determine the sociodemographic and HIV-related ¹⁹ factors associated with quality of life in Tobagonians living with HIV/AIDS.

RESEARCH QUESTIONS

PRIMARY QUESTIONS

- ⁶ 1. What is the quality of life of persons living with HIV in Tobago and who also seek care at the Tobago Health Promotion Clinic, Tobago?

SECONDARY QUESTIONS

- ²⁰ 1. What are the key predictors of quality of life of persons living with HIV in Tobago?

LITERATURE REVIEW

INTRODUCTION

The literature review applied in this research proposal appraises peer-reviewed articles and science website sources such as Medline, PubMed, and Scopus written in English. Key search terms used were: HIV, AIDS, socioeconomic factors, ³⁴ quality of life, quality of life HIV instrument, quantitative research, HIV questionnaires, and Tobago sociodemographic. PubMed.gov alone yielded more than 7000 articles. The search was narrowed by focussing on peer-reviewed articles, articles that used similar research instruments and methodology, and those published within 10 years of the literature review. The pieces selected were critically appraised.

Socioeconomic factors comprise income levels, educational background, financial security, subjective social status, and class comprehension, to name a few (8). These socioeconomic factors are constant and reliable predictors of an extensive array of outcomes across individuals' lives, including psychological and physical well-being. Socioeconomic factors affect the overall functioning of an individual (9). Socioeconomic factors associated with a lower quality of life include poverty, low educational attainment, and poor health. Poor socioeconomic resources among HIV patients due to unequal distribution is related to risky health behaviour practices (8). The socioeconomic factors affecting HIV patients and the community are social support, income levels, educational achievement, unemployment, and society (8). These socioeconomic factors tend to affect the ⁵ quality of life of individuals living with HIV and their morbidity and mortality as they affect how long and well HIV patients live (9).

HIV-related quality of life questionnaires has been developed over time in different countries and by other agencies. Several peer-reviewed sources were examined for this study's literature search. In a systematic review of HIV quality of life tools that could be self-administered, Cooper et al., found a paper reporting the WHOQOL-HIV BREF had internal consistency and discriminant validity. The authors also highlighted the importance of spirituality, personal beliefs, and independence domains, which the WHOQOL-HIV BREF addresses (10). Cooper et al. go on to discuss that the WHOQOL-HIV BREF and PROQOL-HIV may provide the most cross-cultural validity and make good choices for international assessment of HIV quality of life (10).

The second questionnaire to assess the quality of life will employ the World Health Organization quality of life instrument WHOQOL-HIV BREF (11).

WHOQOL-HIV BREF is made up of 31 questions. The questions represent six domains, and responses are recorded on a 5-point Likert scale.

The third questionnaire, also a quality of life assessment tool is the Euroqol EQ-5D 3L tool. This tool has been widely studied and used and has the added advantage of having a data set for Trinidad and Tobago and population norms for Trinidad and Tobago, Jamaica, Barbados, and the English-speaking Caribbean (12).

Income is critical for people with HIV to access quality healthcare and improved quality of life (5). The management of opportunistic infections requires resources for correct interventions, such as purchasing the required medications and attending to basic needs. Low-income earners are challenged in accessing quality social services such as health, education, and a balanced diet (6). In Tobago, public health advocates for the provision of programs to educate the patients on management interventions, especially low-income earners who lack adequate funds to finance healthcare services at the individual level and family (13). Lack of vital skills and knowledge about health and well-being is associated with undernutrition among Caribbean HIV patients living in unsuitable economic environments. Despite the provision of free education up to the tertiary level among Tobagonians, low education levels, which is associated with lower income, characterise challenges in adopting the management interventions, such as lack of knowledge on the required dietary interventions, timely antiretroviral interventions, and prevention measures (14). A 2011 study by Scott et al. on Poverty, Employment, and HIV/AIDS concluded that HIV/AIDS and poverty reinforce each other, with impoverished, defenceless women being a considerable driver of the disease while also bearing the burden of its effect (13).

¹⁰ Social support for people living with HIV/AIDS has demonstrated a definite possibility to influence health-related quality of life. Social support has three components that are informational, emotional, and tangible (15). Knowing the difference between the types of social support is significant because their functions may not be interchangeable. Emotional support fulfils and satisfies an individual's need for nurturance, a feeling of belonging, and alliance (16). It is a sustained function of social support that is well organised to limit stress in non-HIV settings (17). It is considered more desirable than other forms of social support (17). This implies

that HIV patients in a social-supportive environment have an improved health-related quality of life compared to those who feel stigmatised and unsupported and are likely to live longer and healthier (15).

Issues of employment and occupational functioning are some of the challenges HIV patients face. Work is crucial because it provides structure, meaning, role identity, social support, and financial security (18). HIV patients are challenged by vocational dilemmas as they adapt to unexpected illnesses. They deal with the fear and uncertainty of HIV/AIDS, affecting their financial, professional, and healthcare security which complicates their vocational choices. Some HIV patients chose to leave the workforce and receive disability aids. Those who decide to keep working face work-related functioning limits by HIV-specific influences such as tiredness, regular medical appointments, physical and mental challenges, episodic illnesses, and side effects (13).

Unemployment among individuals with HIV results in depression, anxiety, low self-esteem, and social isolation more than the employed person (13). In the literature on HIV/AIDS, other research that has combined joblessness as a variable of interest has produced the same results. According to Kelly et al., joblessness was among the influences linked to suicidal ideation in HIV patients. Research by Dickey et al. on psychosocial vulnerability stated that young people who lacked permanent jobs were more exposed to psychiatric symptoms and depression (19). Lastly, Swindells et al. demonstrated that unemployment was one of the influences connected with better quality of life among individuals struggling with chronic illness. Hence employed HIV patients are likely to live longer than unemployed patients.

Education provides appropriate information and knowledge, which is critical among persons living with HIV and the community. It includes knowledge of effective prevention measures, care, and support for HIV patients (5). Informed individuals can take care for themselves by having healthy meals, taking their medications, and maintaining relations. This type of knowledge also helps people avoid risky behaviours that could harm their physical and mental health. It is also essential in reducing the humiliation and judgment of individuals dealing with HIV in the community (19). Education levels play a vital part in improving health-related quality of life as individuals can better take care of themselves, and their health and are more likely to live in a more accepting society. Education can change peoples' perspectives, reducing negativity and promoting social support (15). Educated HIV patients are also able to make informed choices that contribute to their resilience and longevity

METHODS

SETTING

Due to the nature of the topic, a quantitative method was employed using a cross-sectional study. The data was collected at the Tobago Health Promotion Clinic using a questionnaire (20). The research design and the method of data collection in this study are based on the research objectives and focused on understanding the quality of life of Tobagonians living with HIV/AIDS and how it is associated with various socioeconomic factors.

The research was set in Tobago, an Island located on the Eastern side of the Caribbean within the republic of Trinidad and Tobago, the southernmost nation in the Caribbean. Data collection was conducted at the Tobago Health Promotion Clinic, which is in Scarborough, Tobago. The Health Promotion Clinic is an Outpatient HIV Clinic that provides Patients in Tobago with clinical care, including laboratory investigations and medications (14). The Health Promotion Clinic, at this point, serves appropriately 460 clients. Patients may be referred from any public or private institution and reviewed based on clinical need. (18) This institution was chosen because access to patients can be achieved in an already familiar and confidential setting.

Data of public records from the Central Statistical Office and based on the most recent census data of 2011 for Trinidad and Tobago show a population of 60,874 persons for Tobago. Tobago's population is mainly of African descent, with a percentage of 85.29%. The parish of St. George, which envelops the capital Town of Scarborough, has the highest population growth per annum across Trinidad and Tobago (21).

Study Design

This research employed a cross-sectional study that utilises a quantitative research methodology of collecting and analysing data that will be used to answer the research questions. The study focuses on exploring existing levels ³ of quality of life of Tobagonians living with HIV/AIDS.

The study has utilized three questionnaires. To ascertain baseline characteristics, the first collected demographic data, socioeconomic data, and clinical characteristics described in more detail under the research design heading (22).

The second questionnaire assessed ² quality of life and is disease-specific for HIV and has employed the ⁴ World Health Organization quality of life instrument WHOQOL-HIV BREF (11).

WHOQOL-HIV BREF is made up of 31 questions. The questions represent six domains, and responses ²⁸ were recorded on a 5-point Likert scale.

The Third questionnaire applied was the EQ-5D 3L. This Euroqol 5-dimension tool for quality of life was created by the Euroqol Research Foundation. It is a tool used worldwide in clinical trials, health surveys, and cost analysis studies and can be used to compare groups or individuals over time. The EQ-5D has also been chosen because there are published ⁷ population norms for Trinidad and Tobago, Barbados, Jamaica, and the English-speaking Caribbean.

SAMPLE SIZE AND SAMPLING

SAMPLING

A list of HIV patients who receive treatment at the Tobago Health Promotion Clinic was obtained to determine the sampling framework. The Tobago Health Promotion Clinic is the only Outpatient HIV treatment clinic in Tobago at this time. The most updated list comprised a client list of 460 patients.

A randomizer was used to obtain a sample from the complete database of patients, and those patients were contacted ²³ to participate in the study.

SAMPLE SIZE

To calculate the Initial Sample Size, the following formula was applied.

$$n_0 = \left(\frac{z^2}{d^2} \right) p(1 - p)$$

= 384 participants.

¹⁷ Where: $Z = 1.96$ (at a 95% confidence interval), p = estimated prevalence, d = desired margin of error 5%. An estimated prevalence = p of 0.5 was used in these calculations as in the Tobago setting, no previous research has been conducted regarding ³³ quality of life in HIV patients.

A Finite Population Correction Factor was applied in the next step of sample size consideration.

The calculated sample size is greater than 5% of the total population to be sampled.

The following formula was applied:

$$n = \frac{n_0}{[1 + \frac{n_0}{N}]}$$

= 210 participants.

It is estimated that 90% of the approached participants will be willing to respond. To adjust for expected non-responders, we can apply the formula:

$$= n / (1-k)$$

= 233 participants.

Where n = calculated sample size, k = estimated non-response proportion.

DATA COLLECTION

Once a participant from the randomly selected sample list ³⁰ agreed to participate in the study and informed consent was obtained, the researcher provided the participant with the three questionnaires and stationary materials to help complete the documents in a quiet and private room. The researcher was present to the participant to aid in explaining elements of questions a participant may not be clear on or to help fill questionnaires if a participant was unable to do so at the time.

The first two questionnaires collected demographic data, socioeconomic data, and clinical characteristics, including age, gender, ethnic background, education, employment status, area of residence, immigrant vs. non-immigrant status, dwelling type, transportation type, marital status, sexual orientation, smoker vs. non-smoker, alcohol vs. no alcohol use, on ART (antiretroviral medication) vs. not on ART, presence of opportunistic infections, CD4 count and viral load. Data not known to the Patient was sourced if available ³⁷ from the patient's medical record.

⁴ The second questionnaire to assess the quality of life employed the World Health Organization quality of life instrument WHOQOL-HIV BREF. The WHOQOL-HIV BREF is made up of 31 questions. The questions represent six domains of focus, physical, psychological, ³ independence, social relationships, environment, spirituality, and general health. The responses are recorded on a 5-point Likert scale with scores of negatively directed questions reversed. ³ Scores are then multiplied by 4 to make it comparable to the scoring pattern of the parent questionnaire WHOQOL-100.

Cross-cultural ³³ validity of the WHOQOL-HIV BREF instrument was established. There is strong evidence to support ²⁴ the reliability and validity of the WHOQOL-HIV BREF across various studies (10).

The third questionnaire was administered, the Euroqol, EQ-5D 3L. The EQ-5D 3L will allow comparison of patients over time and with other groups of persons regionally and internationally where data sets specific to countries or regions exist.

STATISTICAL ANALYSES

The collected data were analysed using the Statistical Product and Service Solutions software (SPSS version 25.0) for statistical analysis. Descriptive data were presented using frequencies and percentages for categorical data. Continuous data were presented as means with standard deviation when normally distributed and medians with interquartile ranges when non-normal. The Kolmogorov–Smirnov test was used to explore data normality. Comparisons for continuous data were made using the independent sample t-test for normally distributed data and Mann-Whitney U or Kruskal-Wallis tests for non-normal continuous data (30). All significant associations for Kruskal-Wallis tests were explored with appropriate post-hoc Bonferroni adjusted pairwise comparisons. A *P* value of < 0.05 was deemed statistically significant.

OUTCOME MEASURES

WHOQOL-HIV BREF

The WHOQOL-HIV BREF domain scores were calculated in keeping with the recommendations of the tool developers, and 6 domain scores were generated. The six domain scores denote an individual's perception of quality of life in the following domains: Physical, Psychological, Level of Independence, Social Relationships, Environment, and Spirituality (11). Individual items are rated on a 5-point Likert scale where 1 indicates low negative perceptions and 5 shows high positive perceptions. For example, an item in the positive feeling facet asks, "How much do you enjoy life?" and the available responses are 1 (not at all), 2 (a little), 3 (a moderate amount), 4 (very much) and 5 (an extreme amount). As such, domain and facet scores are scaled positively, where higher scores denote a higher quality of life (23).

EQ5D3L

The EQ5D3L tool data were analysed to generate the 3 main outcome measures of QOL. The 5 numeric health state values denote the responses to the 5 main questions in EQ5D3L, e.g., 12232, where 11111 is the ¹⁶best possible health state, and 33333 is the worst possible health state. The health states each have an equivalent health index value which was calculated (ranging from 0-1, where 1 is the best possible health state and 0 is the worst. The visual analog scores (VAS) were also recorded.

RESULTS

Of 233 eligible participants, 210 completed the survey. (response rate: 90%). As shown in Table 1, 97 (46.2%) were male, and 113 (53.8%) were female. The majority of participants were heterosexual (88.9%), while 6 (2.9%) identified as MSM or WSW, 13 (6.3%) as bisexual, and 3 (1.4%) as other. The mean age of participants was 47.45 ± 12.25 years. The majority of participants were of African Descent (91.9%), followed by Mixed (5.2%) and East Indian (1.0%). Most participants were non-immigrants (98.1%), while 4 (1.9%) were migrants.

As seen in Table 4 there were several significant socio-demographic predictors of WHOQOL-HIV BREF domain scores.

Female gender was significantly associated with higher median physical, psychological, independence and social relationship scores compared to males.

Compared to heterosexuals, non-heterosexuals (same sex, bisexual and other orientations) experienced significantly higher physical, psychological, independence, social relationship and environment scores.

Age was significantly negatively correlated with physical quality of life and independence level but positively correlated with spirituality.

Receiving government assistance was associated with associated with significantly lower psychological, social relationship, environment, and spiritual/personal beliefs domain scores.

There were associations between marital status and certain domains. In post-hoc pairwise comparisons for marital status and social relationship scores, being married was associated with a higher median score compared to being single ($P=0.017$). Similarly for the spiritual/personal

beliefs domain being married was associated with a higher median score compared to being single ($P=0.016$).

In post-hoc pairwise comparisons for educational status and physical domain scores, compared to primary level, having a secondary level education ($P=0.041$) or tertiary levels education ($P=0.001$) were associated with significantly better physical scores. Similarly for the independence level domain a tertiary level education was associated with a higher median score compared to primary levels ($P=0.044$).

In post-hoc pairwise comparisons for income and independence domain scores, compared to 0-3000\$, the 3001\$-10,000\$ bracket ($P=0.018$) and 10,000\$+ levels ($P=0.028$) were associated with significantly better scores. The highest income bracket also had significantly higher environment scores compared to the lowest range ($P=0.031$).

In post-hoc pairwise comparisons for employment and physical domain scores, compared to being retired, having full time ($P<0.001$) or part-time employment ($P=0.010$) was associated with higher scores. Full time compared to being employed ($P=0.010$) was associated with higher psychological scores. Full time compared to unemployed ($P=0.011$) and retired ($P<0.001$) had significantly higher independence scores. Compared to being unemployed, being employed full time ($P<0.001$) or retired ($P=0.031$) was associated with significantly higher environment domain scores. Similarly compared to being unemployed, being employed full time ($P=0.026$) or retired ($P=0.049$) was associated with significantly higher spiritual beliefs domain scores.

With regards to HIV related variables as seen in Table 5 having detected viral loads ³⁶ were associated with lower environment and spiritual domain scores. Opportunistic infections ³² were associated with lower scores in ALL WHOQOL-HIV BREF domains. Duration of ART treatment was positively correlated with psychological and social relationship scores. There were no associations between use of ART (vs none), alcohol and smoking and any of the WHOQOL-HIV BREF domains.

EQ5D3L predictors

In post hoc analyses for marital status being in a common law was associated with a higher health index value compared to divorced/separated participant but it attained borderline significance ($P=0.05$)

In post hoc analyses for education level, tertiary level was associated with a higher health index value compared to primary level ($P=0.044$)

Household income was associated with EQ-AS but further post-hoc pairwise comparisons did not attain statistical significance.

In post hoc analyses for employment status, compared to full-time employment, being unemployed ($P=0.016$) or retired ($P=0.024$) was associated with a lower EQVAS score. Compared to those who were retired, being employed full time ($P<0.001$) part time ($P=0.003$) or unemployed ($P=0.024$) was associated with higher health index value scores.

As seen in Table 7 there were no associations between EQ5D3L measures and ART use, viral load detected status, smoking or alcohol. Opportunistic infection was significantly associated with lower median scores for both EQ-VAS and health index values. Duration of ART was positively correlated with EQ-VAS.

In additional analyses the 2 EQ5D3L QOL measures and 6 WHOQOL-HIV BREF QOL domains scores were all significantly associated ($P<0.001$) with correlation coefficients ranging from 0.21 – 0.73.

DISCUSSION

The mean EQ5D3L index value was 0.86, and the mean EQVAS was 65.98 in this sample of HIV-positive patients. This was significantly less than the TT population norms of 0.93 for the index value and 82.3 for the EQVAS (24). In this sample, 33% reported perfect health in all 5 EQ5D3L domains, with 2/3 reporting some upset inequality of life. This again contrasts significantly with that of the general Trinidad and Tobago population, where 64% enjoyed a perfect health state (24). A possible reason for this observed difference may be because the sample in this study took into account a very specific subset of the population, HIV-positive persons, a sample that, for example, has to deal with a medication burden the general population may not experience, as well as dealing with the perceived stigma of HIV and other more nuanced issues worthy of further determination through research. Other studies have shown a reduced QOL in HIV patients compared to the general population (25).

Similar studies across the different regional health authorities may be beneficial to compare and ultimately address predictors of QOL in HIV patients.

In this study females reported better physical, psychological, independence and social relationship scores compared to males. Similarly, EQ5D3L measures were better in women compared to men. This finding lends itself to even more study as to what is unique about women and if certain traits or habits can be transferrable to male counterparts through any sort of counselling or clinical intervention.

The data analysis also showed that compared to heterosexuals, non-heterosexuals (same sex, bisexual and other orientations) experienced significantly higher physical, psychological, independence, social relationship, and environment scores. Literature often speaks to a higher incidence of Mental Health problems and depression among non-heterosexuals (26); the data from this study may warrant further in-depth investigation as to why in Tobago, scores correlating with a higher quality of life are found and can be translated into a national, regional, or international benefit for non-heterosexuals seeking HIV care.

Full-time employment is associated with a higher quality of life scores on all WHOQOL-HIV BREF QOL domains and EQ5D3L measures. Higher-income was also associated with greater independence level, environment, and EQ-VAS scores. Governmental assistance correlated with negative associations with the WHOQOL-HIV BREF in the psychological, social relationships, environmental and spiritual domains. These findings are intuitive. However, for unemployed persons or with a lower income, it may be beneficial for stakeholders such as HIV clinics, Health policymakers, NGOs to determine how best to alleviate unemployment and increase revenue for patients seeking HIV care.

Opportunistic infections were associated with lower QOL scores on all WHOQOL-HIV BREF QOL domains and EQ5D3L measures. Those with opportunist infection had EQ5D3L measures well below the Trinidad and Tobago population norms. The WHOQOL-HIV BREF's detectable viral load also negatively affected the environmental and spiritual domains. Duration of ART also was associated with higher EQVAS scores. These findings relate directly to treatment. Patients must be treated appropriately for opportunistic infections. All that can be done to ensure

adherence to ARVs to reduce the incidence of opportunistic infections is vital to optimizing the quality of life in HIV patients (27).

Married or Living with a partner vs. being divorced or separated was associated with higher index scores on the EQ5D3L. Marriage and relationship counselling being available at the clinical level may therefore be beneficial for patients needing these services. A Support Group geared toward those seeking healthy relationships may be beneficial to consider at local treatment sites.

CONCLUSION

² This study endeavoured to examine the Quality of Life of patients seeking care for HIV in Tobago and to determine what factors in sociodemographic and clinical parameters related to Quality of Life. The EQ5D3L mean index value (0.86) and EQVAS (65.98) were significantly lower than the corresponding values of the Trinidad and Tobago population norms (0.93 and 82.3, respectively, with worse QOL in males, older age, unemployed, lower socioeconomic brackets, heterosexuals and those with opportunistic infections. The WHOQOL-HIV BREF domains with the most insufficient means were environment (12.34), level of independence (13.53), and social relationships (13.61).

The primary care physician's assessment of the quality of life should be part of routine clinical care. Available resources through social worker support and partnership with NGOs may be considered in the primary care setting. Further research on patients who receive governmental assistance may prove beneficial in determining needs and appropriate distribution. Research into non-heterosexual patients and the positive predictors of quality of life may yield insight into the general HIV patient population. A review of treatment guidelines for patients with opportunistic infection may be beneficial.

The statistically significant findings are in keeping with what may have been expected at the beginning of the project; however, the rationale for conducting the research is to have a base upon which more research among the patients with HIV can be conducted and most importantly, perhaps have concrete evidence, so that policymakers have a basis for funding and resourcing of care.

LIMITATIONS

Sampling bias was minimized by using randomization to select participants thereby attempting to create a representative sample and allow for findings to be generalized to the patient population under investigation.

Another limitation to consider would be the lack of recording or appreciation ⁹ of factors affecting quality of life of patients in the study that were not the focus of data collection and analysis. There could potentially be confounding if unknown factors are not recognized or considered. Confounders not measured but may also affect quality of life must be considered for example, exercise, religion, various activities.

RECOMMENDATIONS

Recommendations coming from this study will focus primarily on addressing the statistically significant factors that affect the ²Quality of Life of HIV patients. HIV patients with detectable viral loads or coping with opportunistic infections should be specially managed to determine the best way forward for treatment and adherence (28).

Relationship counselling within the clinical setting may be offered, but this is determinant on if staff is sufficiently trained for this specific type of interaction. Addressing employment and income, through engagement of policy makers and the clinical level with social workers and NGOs, is recommended strongly as both research instruments pointed to these as important factors related to Quality of Life. Meaningfully addressing employment and income will require a team and network of professionals

ETHICAL CONSIDERATIONS

Approval was granted from ¹²the Ethics Committee of the University of the West Indies St. Augustine campus (Ref: CREC-SA. 1199/10/2021), and the Ethics Committee of the Tobago Regional Health Authority. Participants were verbally asked to contribute to the research; upon acceptance, a written agreement form was provided before the interview process. This document contained objectives of the study stated clearly, including the mode of information gathering, notification of voluntary participation, notification of their right to leave the research at any time during the research process, and the right to decline to answer any questions during the interview. Protection of the participants through the assurance of confidentiality of information shared, and anonymity of identity was achieved by use of pseudonyms. The commitment was made to participants that the information they share would be used only for research purposes and every effort to secure data was made.

Participants were informed that they may be asked to discuss sensitive information, which they were under no obligation to share if it were to be potential source of distress to them. After completing the questionnaires, names were replaced with numeric identification numbers. Electronic data only had numeric identification numbers and was safeguarded on a password-protected computer. The researcher had exclusive access to a closed room where physical research supplies were kept.

APPENDIX 8: CERTIFICATE OF COMPLETION



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BSTRACT Aim: The objective of this study was to determine the quality of life (QOL) of HIV patients living in Tobago as well as to assess factors associated with higher and lower quality of life in patients accessing care at the Tobago Health Promotion Clinic between October 2021 and March 2022. **Methodology:** A cross-sectional study design was used to interview HIV patients seeking care at an outpatient clinic. WHOQOL-HIV-BREF and EQ5D3L were used to measure QOL and associations with sociodemographic and clinical predictors were sought. **Results:** Of 233 participants there was a response rate of 90%. The average age of participants was 47.45 years and males and females making p 46.2% and 53.8% respectively. EQ5D3L results revealed participants had overall lower QOL index scores (0.86) and EQVAS scores (65.98) compared to published Trinidad and Tobago population norms (0.93 and 82.3). EQ5D3L found the presence of opportunistic infections to be a negative predictor of QOL and being in a stable relationship, having a higher income and duration of time on ART to be positive predictors of QOL (P<0.05). WHOQOL-BREF HIV found negative predictors to be increasing age, being in receipt of overment aid, having detectable viral loads and the presence of opportunistic infections, with positive predictors being female gender, non-heterosexual, being married, higher education, and being employed with higher income levels (P<0.05). **Conclusion:** The QOL in this group of HIV patients was below that of population norms. These findings highlight the need for targeted interventions to improve the quality of life of patients living with HIV/AIDS in Tobago. **List of Tables List of Figures INTRODUCTION** The prevalence of HIV in Trinidad and Tobago is estimated to be 0.7% (1). In Tobago, the estimated prevalence of HIV may be as high as 1%. Tobago has a population of 60,874 persons based in the Trinidad and Tobago 2011, Population and Housing Census Report. In Tobago, prevalence estimates may be as high; PAHO, the Pan American Health Organization, quotes a staggering prevalence rate for Trinidad and Tobago of 1.5 percent (2); this means that Primary Care physicians will be seeing HIV-positive clients and must be involved in either diagnosis or treatment stages. The only public treatment site for outpatient HIV management for adult patients is the Tobago Health Promotion Clinic. The clinic is usually staffed with two Primary Care physicians. The Tobago Health Promotion Clinic is also an integrated clinic. The families of persons living with HIV often attend the clinic for their primary medical needs, and there is an active segment of chronic disease clients. The clinic also attends to "walk-in" clients' needs. Primary care doctors in the other Health Centres

with two Primary Care physicians. The Tobago Health Promotion Clinic is also an integrated clinic. The families or persons living with HIV often attend the clinic for their primary care medical needs, and there is an active segment of chronic disease clients. The clinic also attends to "walk-in" clients' needs. Primary care doctors in the other Health Centres refer HIV patients to the Tobago Health Promotion Clinic as the need arises. HIV patients also seek care at private medical clinics and attend the HIV treatment site. The primary care physician's role in being sensitive to the needs of HIV patients and competence in diagnosing and treating patients and their families is vital in the Tobago setting (3). The British HIV Association has recommended increased GP involvement in caring for patients with HIV (4). Newly diagnosed HIV Patients are referred from a Primary Care facility or upon discharge from the Scarborough General Hospital in Tobago. Morbidity due to HIV-associated Opportunistic infections often presents to Primary Care doctors, whether from the public or private sectors, and then diagnosed and referred to the Tobago Health Promotion Clinic. Primary Care doctors need to have a clinical understanding of HIV and its presentations. Primary care physicians are also poised to assess and advise on the quality of life of persons living with HIV (5). PROBLEM STATEMENT HIV has no definite cure. However, drugs such as Antiretrovirals (ARVs) have been developed to promote effective care for HIV patients and prolong life expectancy. Antiretrovirals are now the primary drugs used to increase life expectancy among HIV/AIDS patients in Tobago (6). With increased life expectancy, studying the quality of life can allow clinicians to optimize patient outcomes. The study, therefore, aims to identify the socioeconomic factors associated with low or high quality of life of adults living with HIV on the island. The study will aim to shed light on the challenges persons living with HIV face and how these challenges affect the quality of life of persons living with HIV in Tobago (12). The study is relevant to understand the difficulties persons living with HIV in Tobago face. This research will seek to evaluate the socioeconomic factors that people living with HIV are affected by and which may be targeted by care providers to improve the quality of life for these individuals (7). AIMS To evaluate the quality of life of patients living with HIV in Tobago. OBJECTIVES 1. To determine the quality of life of patients living with HIV accessing care at the Tobago Health Promotion Clinic between October 2021 and March 2022. 2 To determine the sociodemographic and HIV-related factors associated with quality of life in Tobagonians living with HIV/AIDS. RESEARCH QUESTIONS PRIMARY QUESTIONS 1. What is the quality of life of persons living with HIV in Tobago and who also seek care at the Tobago Health Promotion Clinic, Tobago? SECONDARY QUESTIONS 1. What are the key predictors of quality of life of persons living with HIV in Tobago? LITERATURE REVIEW INTRODUCTION The literature review applied in this research proposal appraises peer-reviewed articles and science website sources such as Medline, PubMed, and Scopus written in English. Key search terms used were; HIV, AIDS, socioeconomic factors, quality of life, quality of life HIV instrument, quantitative research, HIV questionnaires, and Tobago sociodemographic. PubMed.gov alone yielded more than 7000 articles. The search was narrowed by focussing on peer-reviewed articles, articles that used similar research instruments and methodology, and those published within 10 years of the literature review. The pieces selected, twenty-six in number, were critically appraised for inclusion. Socioeconomic factors comprise income levels, educational background, employment, marital status, and mode of transportation, to name a few (8). These socioeconomic factors are constant and reliable predictors of an extensive array of outcomes across individuals' lives, including psychological and physical well-being. Socioeconomic factors affect the overall functioning of an individual (9). Socioeconomic factors associated with a lower quality of life include poverty, low educational attainment, and poor health. Poor socioeconomic resources among HIV patients due to unequal distribution is related to risky health behaviour practices (8). The socioeconomic factors affecting HIV patients and the community are social support, income levels, educational achievement, and unemployment (8). These socioeconomic factors tend to affect the quality of life of individuals living with HIV and their morbidity and mortality as they affect how long and well HIV patients live (9). HIV-related quality of life questionnaires have been developed over time in different countries and by various agencies. Several peer-reviewed sources were examined for this study's literature search. In a systematic review of HIV quality of life tools that could be self-administered, Cooper et al., found a paper reporting the WHOQOL-HIV BREF had internal consistency and discriminant validity. The authors also highlighted the importance of spirituality, personal beliefs, and independence domains, which the WHOQOL-HIV BREF addresses (10). Cooper et al go on to discuss that the WHOQOL-HIV BREF and PROQOL-HIV may provide the most cross-cultural validity and make good choices for international assessment of HIV quality of life (10). The second questionnaire, to assess the quality of life, will employ the World Health Organization quality of life instrument WHOQOL-HIV BREF (11). WHOQOL-HIV BREF is made up of 31 questions. The questions represent six domains, and responses are recorded on a 5-point Likert scale. The third questionnaire, also a quality of life assessment tool, is the Euroqol EQ-5D 3L tool. This tool has been widely studied and used and has the added advantage of having a data set for Trinidad and Tobago and population norms for Trinidad and Tobago, Jamaica, Barbados, and the English-speaking Caribbean (12). Income is critical for people with HIV to access quality healthcare and improved quality of life (5). The management of opportunistic infections requires resources for correct interventions, such as purchasing the required medications and attending to basic needs. Low-income earners are challenged in accessing quality social services such as health, education, and a balanced diet (6). In Tobago, public health advocates for the provision of programs to educate patients on management interventions, especially low-income earners who lack adequate funds to finance healthcare needs at the individual and family level (13). Lack of vital skills and knowledge about health and well-being is associated with undernutrition among Caribbean HIV patients living in unsuitable economic environments. Despite the provision of free education up to the tertiary level among Tobagonians, low education levels, which is associated with lower income, characterise challenges in adopting the management interventions, such as lack of knowledge on the required dietary interventions, timely antiretroviral interventions, and prevention measures (14). A 2011 study by Scott et al. on Poverty, Employment, and HIV/AIDS concluded that HIV/AIDS and poverty reinforce each other, with impoverished, defenceless women being a considerable driver of the disease while also bearing the burden of its effect (13). Social support for people living with HIV/AIDS has demonstrated a definite possibility to influence health-related quality of life. Social support has three components that are informational, emotional, and tangible (15). Knowing the difference between the types of social support is significant because their functions may not be interchangeable. Emotional support fulfils and satisfies an individual's need for nurturance, a feeling of belonging, and alliance (16). It is a sustained function of social support that is well organised to limit stress in non-HIV settings (17). It is considered more desirable than other forms of social support (17). This implies that HIV patients in a socially-supportive environment have an improved health-related quality of life compared to those who feel stigmatised and unsupported and are likely to live longer and healthier (15). Issues of employment and occupational functioning are some of the challenges HIV patients face. Work is crucial because it provides structure, meaning, role identity, social support, and financial security (18). HIV patients are challenged by vocational dilemmas as they adapt to unexpected illnesses. They deal with the fear and uncertainty of HIV/AIDS, affecting their financial, professional, and healthcare security

which complicates their vocational choices. Some HIV patients choose to leave the workforce and receive disability aids. Those who decide to keep working face work-related functioning limits by HIV-specific influences such as tiredness, regular medical appointments, physical and mental challenges, episodic illnesses, and drug side effects (13). Unemployment among individuals with HIV results in depression, anxiety, low self-esteem, and social isolation more than the employed person (13). In the literature on HIV/AIDS, other research that has combined joblessness as a variable of interest has produced the same results. According to Kelly et al., joblessness was among the influences linked to suicidal ideation in HIV patients. Research by Dickey et al. on psychosocial vulnerability stated that young people who lacked permanent jobs were more exposed to psychiatric symptoms and depression (19). Lastly, Swindells et al. demonstrated that employment was one of the influences connected with better quality of life among individuals struggling with chronic illness. Hence employed HIV patients are likely to live longer than unemployed patients. Education provides appropriate information and knowledge, which is critical among persons living with HIV and the community. It includes knowledge of effective prevention measures, care, and support for HIV patients (5). Informed individuals can take care of themselves by having healthy meals, taking their medications, and maintaining relationships. This type of knowledge also helps people avoid risky behaviours that could harm their physical and mental health. It is also essential in reducing the humiliation and judgment of individuals dealing with HIV in the community (19). Education levels play a vital part in improving health-related quality of life as individuals can better take care of themselves, and their health and are more likely to live in a more accepting society. Education can change peoples' perspectives, reducing negativity and promoting social support (15). Educated HIV patients are also able to make informed choices that contribute to their resilience and longevity RATIONALE HIV as a disease continues to be important from a public health standpoint and involves Family Medicine practitioners in Tobago. Antiretroviral drugs have contributed to patients living longer lives. There is very limited research as it pertains to HIV in Tobago and particularly Quality of Life of patients under care in Tobago. This study is designed to explore Quality of Life in these patients. METHODS SETTING Due to the nature of the topic, a quantitative method was employed using a cross-sectional study. The data was collected at the Tobago Health Promotion Clinic using a questionnaire (20). The research design and the method of data collection in this study are based on the research objectives and focused on understanding the quality of life of Tobagonians living with HIV/AIDS and how it is associated with various socioeconomic factors. The research was set in Tobago, an Island located on the Eastern side of the Caribbean within the republic of Trinidad and Tobago, the southernmost nation in the Caribbean. Data collection was conducted at the Tobago Health Promotion Clinic, which is in Scarborough, Tobago. The Health Promotion Clinic is an Outpatient HIV Clinic that provides Patients in Tobago with clinical care, including laboratory investigations and medications (14). The Health Promotion Clinic, at this point, serves appropriately 460 clients. Patients may be referred from any public or private institution and reviewed based on clinical need. (18) This institution was chosen because access to patients can be achieved in an already familiar and confidential setting. Data of public records from the Central Statistical Office and based on the most recent census data of 2011 for Trinidad and Tobago show a population of 60,874 persons for Tobago. Tobago's population is mainly of African descent, with a percentage of 85.29%. The parish of St. George, which envelops the capital Town of Scarborough, has the highest population growth per annum across Trinidad and Tobago (21). Study Design This research employed a cross-sectional study that utilises a quantitative research methodology of collecting and analysing data that will be used to answer the research questions. The study focuses on exploring existing levels of quality of life of Tobagonians living with HIV/AIDS. The study has utilized three questionnaires. To ascertain baseline characteristics, the first collected demographic data, socioeconomic data, and clinical characteristics described in more detail under the research design heading (22). The second questionnaire assessed quality of life and is disease-specific for HIV and has employed the World Health Organization quality of life instrument WHOQOL-HIV BREF (11). WHOQOL-HIV BREF is made up of 31 questions. The questions represent six domains, and responses were recorded on a 5-point Likert scale. The Third questionnaire applied was the EQ-5D 3L. This Euroqol 5-dimension tool for quality of life was created by the Euroqol Research Foundation. It is a tool used worldwide in clinical trials, health surveys, and cost analysis studies and can be used to compare groups or individuals over time. The EQ-5D has also been chosen because there are published population norms for Trinidad and Tobago, Barbados, Jamaica, and the English-speaking Caribbean. SAMPLE SIZE AND SAMPLING SAMPLING A list of HIV patients who receive treatment at the Tobago Health Promotion Clinic was obtained to determine the sampling framework. The Tobago Health Promotion Clinic is the only Outpatient HIV treatment clinic in Tobago at this time. The most updated list comprised a client list of 460 patients. A randomizer was used to obtain a sample from the complete database of patients, and those patients were contacted to participate in the study. SAMPLE SIZE To calculate the Initial Sample Size, the following formula was applied. = 15 participants. Where: $Z = 1.96$ (at a 95% confidence interval), $p = \text{estimated prevalence}$, $d = \text{desired margin of error } 5\%$. An estimated prevalence = p of 0.01 was used in these calculations as PAHS estimates a prevalence possibly as high as 1% for Trinidad and Tobago. A Finite Population Correction Factor was not needed as the sample size is less than 5% of the finite population of 460 patients. It is estimated that 90% of the approached participants will be willing to respond. To adjust for expected non-responders, we can apply the formula: = 17 participants. Where $n = \text{calculated sample size}$, $k = \text{estimated non-response proportion}$. DATA COLLECTION Once a participant from the randomly selected sample list agreed to participate in the study and informed consent was obtained, the researcher provided the participant with the three questionnaires and stationary materials to help complete the documents in a quiet and private room. The researcher was present to the participant to aid in explaining elements of questions a participant may not be clear on or to help fill questionnaires if a participant was unable to do so at the time. No formal pretesting was carried out as the instruments used are validated in the native language used for this study. The first two questionnaires collected demographic data, socioeconomic data, and clinical characteristics, including age, gender, ethnic background, education, employment status, area of residence, immigrant vs. non-immigrant status, dwelling type, transportation type, marital status, sexual orientation, smoker vs. non-smoker, alcohol vs. no alcohol use, on ART (antiretroviral medication) vs. not on ART, presence of opportunistic infections, CD4 count and viral load. Data not known to the Patient was sourced if available from the patient's medical record. The second questionnaire to assess the quality of life employed the World Health Organization quality of life instrument WHOQOL-HIV BREF. The WHOQOL-HIV BREF is made up of 31 questions. The questions represent six domains of focus, physical, psychological, independence, social relationships, environment, spirituality, and general health. The responses are recorded on a 5-point Likert scale with scores of negatively directed questions reversed. Scores are then multiplied by 4 to make it comparable to the scoring pattern of the parent questionnaire WHOQOL-100. Cross-cultural validity of the WHOQOL-HIV BREF instrument was established. There is strong evidence to support the reliability and validity of the WHOQOL-HIV BREF across various studies (10). The third questionnaire was administered, the Euroqol EQ-5D 3L. The EQ-5D 3L will allow comparison of patients over time

the WHOQOL-HIV BREF across various studies (10). The third questionnaire was administered, the Euroqol, EQ-5D 3L. The EQ-5D 3L will allow comparison of patients over time and with other groups of persons regionally and internationally where data sets specific to countries or regions exist. STATISTICAL ANALYSES The collected data was analysed using the Statistical Product and Service Solutions software (SPSS version 25.0) for statistical analysis. Descriptive data were presented using frequencies and percentages for categorical data. Continuous data were presented as means with standard deviation when normally distributed and medians with interquartile ranges when non-normal. The Kolmogorov-Smirnov test was used to explore data normality. Comparisons for continuous data were made using the independent sample t-test for normally distributed data and Mann-Whitney U or Kruskal-Wallis tests for non-normal continuous data (30). All significant associations for Kruskal-Wallis tests were explored with appropriate post-hoc Bonferroni adjusted pairwise comparisons. A P value of < 0.05 was deemed statistically significant. OUTCOME MEASURES WHOQOL-HIV BREF The WHOQOL-HIV BREF domain scores were calculated in keeping with the recommendations of the tool developers, and 6 domain scores were generated. The six domain scores denote an individual's perception of quality of life in the following domains: Physical, Psychological, Level of Independence, Social Relationships, Environment, and Spirituality (11). Individual items are rated on a 5-point Likert scale where 1 indicates low negative perceptions and 5 shows high positive perceptions. For example, an item in the positive feeling facet asks, "How much do you enjoy life?" and the available responses are 1 (not at all), 2 (a little), 3 (a moderate amount), 4 (very much) and 5 (an extreme amount). As such, domain and facet scores are scaled positively, where higher scores denote a higher quality of life (23). EQ5D3L The EQ5D3L tool data were analysed to generate the 3 main outcome measures of QOL. The 5 numeric health state values denote the responses to the 5 main questions in EQ5D3L, e.g., 12232, where 11111 is the best possible health state, and 33333 is the worst possible health state. The health states each have an equivalent health index value which was calculated (ranging from 0-1, where 1 is the best possible health state and 0 is the worst). The visual analog scores (VAS) were also recorded. RESULTS Of 233 eligible participants, 210 completed the survey. (response rate: 90%). As shown in Table 1, 97 (46.2%) were male, and 113 (53.8%) were female. The majority of participants were heterosexual (88.9%), while 6 (2.9%) identified as MSM or WSW, 13 (6.3%) as bisexual, and 3 (1.4%) as other. The mean age of participants was 47.45 ± 12.25 years. The majority of participants were of African Descent (91.9%), followed by Mixed (5.2%) and East Indian (1.0%). Most participants were non-immigrants (98.1%), while 4 (1.9%) were migrants. Table 2 below shows the main QOL measures for the WHOQOL-HIV BREF tool. All domain distributions were significantly skewed on normality testing. 0.85-0.88), and the mean EQVAS was 65.98 (95%CI 63.84-68.10). Of this sample, 33% reported perfect health in all 5 domains, with 2/3 reporting some upset in quality of life. #Reported as medians, *Reported using Spearman's Rho correlation coefficient, Significant associations in bold (post hoc comparisons reported in text) Table 4 - WHOQOL-HIV BREF domain scores and key socio-demographics. As seen in Table 4 there were several significant socio-demographic predictors of WHOQOL-HIV BREF domain scores. Female gender was significantly associated with higher median physical, psychological, independence and social relationship scores compared to males. Compared to heterosexuals, non-heterosexuals (same sex, bisexual and other orientations) experienced significantly higher physical, psychological, independence, social relationship and environment scores. Age was significantly negatively correlated with physical quality of life and independence level but positively correlated with spirituality. Receiving government assistance was associated with significantly lower psychological, social relationship, environment, and spiritual/personal beliefs domain scores. There were associations between marital status and certain domains. In post-hoc pairwise comparisons for marital status and social relationship scores, being married was associated with a higher median score compared to being single ($P=0.017$). Similarly for the spiritual/personal beliefs domain being married was associated with a higher median score compared to being single ($P=0.016$). In post-hoc pairwise comparisons for educational status and physical domain scores, compared to primary level, having a secondary level education ($P=0.041$) or tertiary levels education ($P=0.001$) were associated with significantly better physical scores. Similarly for the independence level domain a tertiary level education was associated with a higher median score compared to primary levels ($P=0.044$). In post-hoc pairwise comparisons for income and independence domain scores, compared to 0-3000\$, the 3001\$-10,000\$ bracket ($P=0.018$) and 10,000\$+ levels ($P=0.028$) were associated with significantly better scores. The highest income bracket also had significantly higher environment scores compared to the lowest range ($P=0.031$). In post-hoc pairwise comparisons for employment and physical domain scores, compared to being retired, having full time ($P<0.001$) or part-time employment ($P=0.010$) was associated with higher scores. Full time compared to being employed ($P=0.010$) was associated with higher psychological scores. Full time compared to unemployed ($P=0.011$) and retired ($P<0.001$) had significantly higher independence scores. Compared to being unemployed, being employed full time ($P<0.001$) or retired ($P=0.031$) was associated with significantly higher environment domain scores. Similarly compared to being unemployed, being employed full time ($P=0.026$) or retired ($P=0.049$) was associated with significantly higher spiritual beliefs domain scores. # With regard to HIV related variables as seen in Table 5 having a detectable viral load was associated with lower environment and spiritual domain scores. Opportunistic infections were associated with lower scores in all WHOQOL-HIV BREF domains. Duration of ART treatment was positively correlated with psychological and social relationship scores. There were no associations between use of ART (vs none), alcohol and smoking and any of the WHOQOL-HIV BREF domains. EQ5D3L predictors Table 6 shows the associations between EQ5D3L health index values, VAS, and sociodemographic characteristics of the sample. In post hoc analyses for marital status, being in a common law was associated with a higher health index value compared to a divorced/separated participant but it attained borderline significance ($P=0.05$). In post hoc analyses for education level, tertiary level was associated with a higher health index value compared to primary level ($P=0.044$). Household income was associated with EQ-AS but further post-hoc pairwise comparisons did not attain statistical significance. In post hoc analyses for employment status, compared to full-time employment, being unemployed ($P=0.016$) or retired ($P=0.024$) was associated with a lower EQVAS score. Compared to those who were retired, being employed full time ($P<0.001$) part time ($P=0.003$) or unemployed ($P=0.024$) was associated with higher health index values. Table 7 below shows the associations between EQ5D3L health index values, VAS, and clinical characteristics of the sample. Table 7 Health-related predictors of EQ5D3L measures As seen in Table 7 there were no associations between EQ5D3L measures and ART use, viral load detected status, smoking or alcohol. Opportunistic infection was significantly associated with lower median scores for both EQ-VAS and health index values. Duration of ART was positively correlated with EQ-VAS. In additional analyses the 2 EQ5D3L QOL measures and 6 WHOQOL-HIV BREF QOL domains scores were all significantly associated ($P<0.001$) with correlation coefficients ranging from 0.21 - 0.73. DISCUSSION Overall quality of life was significantly lower in the sample group versus that of the general population. The mean EQ5D3L index value was 0.86, and the mean EQVAS was 65.98 in this sample of HIV-positive patients. This was significantly less than the TT population norms of 0.93 for the index value or alcohol. Opportunistic infection was significantly associated with lower median scores for both EQ-VAS and health index values. Duration of ART was positively correlated with EQ-VAS. In additional analyses the 2 EQ5D3L QOL measures and 6 WHOQOL-HIV BREF QOL domains scores were all significantly associated ($P<0.001$) with correlation coefficients ranging from 0.21 - 0.73. DISCUSSION Overall quality of life was significantly lower in the sample group versus that of the general population. The mean EQ5D3L index value was 0.86, and the mean EQVAS was 65.98 in this sample of HIV-positive patients. This was significantly less than the TT population norms of 0.93 for the index value and 82.3 for the EQVAS (24). In this sample, 33% reported perfect health in all 5 EQ5D3L domains, with 2/3 reporting some upset in quality of life. This again contrasts significantly with that of the general Trinidad and Tobago population, where 64% enjoyed a perfect health state (24). A possible reason for this observed difference may be because the sample in this study considered a very specific subset of the population, HIV-positive persons, a sample that, for example, has to deal with a medication burden the general population may not experience, as well as dealing with the perceived stigma of HIV and other more nuanced issues worthy of further determination through research. Other studies have shown a reduced QOL in HIV patients compared to the general population (25). Similar studies across the different regional health authorities may be beneficial to compare and ultimately address predictors of QOL in HIV patients. In this study females reported better physical, psychological, independence and social relationship scores compared to males. Similarly, EQ5D3L measures were better in women compared to men. This finding lends itself to even more study as to what is unique about women and if certain traits or habits can be transferable to male counterparts through any sort of counselling or clinical intervention. The data analysis also showed that compared to heterosexuals, non-heterosexuals (same sex, bisexual and other orientations) experienced significantly higher physical, psychological, independence, social relationship, and environment scores. Literature often speaks to a higher incidence of Mental Health problems and depression among non-heterosexuals (26); the data from this study may warrant further in-depth investigation as to why in Tobago, scores correlating with a higher quality of life are found and can be translated into a national, regional, or international benefit for non-heterosexuals seeking HIV care. Full-time employment is associated with a higher quality of life scores on all WHOQOL-HIV BREF QOL domains and EQ5D3L measures. Higher-income was also associated with greater independence level, environment, and EQ-VAS scores. Governmental assistance correlated with negative associations with the WHOQOL-HIV BREF in the psychological, social relationships, environmental and spiritual domains. These findings are intuitive. However, for unemployed persons or with a lower income, it may be beneficial for stakeholders such as HIV clinics, health policymakers and NGOs to determine how best to alleviate unemployment and increase revenue for patients seeking HIV care. Opportunistic infections were associated with lower QOL scores on all WHOQOL-HIV BREF QOL domains and EQ5D3L measures. Those with opportunistic infection had EQ5D3L measures well below the Trinidad and Tobago population norms. The WHOQOL-HIV BREF's detectable viral load also negatively affected the environmental and spiritual domains. Duration of ART also was associated with higher EQVAS scores. These findings relate directly to treatment. Patients must be treated appropriately for opportunistic infections. All that can be done to ensure adherence to ARVs to reduce the incidence of opportunistic infections is vital to optimizing the quality of life in HIV patients (27). Married or Living with a partner vs. being divorced or separated was associated with higher index scores on the EQ5D3L. Marriage and relationship counselling being available at the clinical level may therefore be beneficial for patients needing these services. A Support Group geared toward those seeking healthy relationships may be beneficial to consider at local treatment sites. As HIV changed from a fatal illness to a chronic illness, interventions should also shift to target all areas involved in a PLHIV's health management including related to health professionals, family and society, these were the findings of Tran et al. an examination of systematic reviews and meta-analyses reviewing interventions to improve quality of life of PLHIV. Several specific suggestions included outreach to high-risk groups, partnering with Churches for counselling, expanding coverage of psychosocial and behavioural interventions, increasing the involvement of family and friends and incorporating e-health strategies for adherence improvement. This study is the first to look at Quality of Life of HIV patients in Tobago and is a starting point to conduct similar studies to reproduce results and be a guiding document to help policy makers and NGOs and clinical staff focus on areas of need when it comes to care in a system with finite resources. CONCLUSION This study endeavoured to examine the Quality of Life of patients seeking care for HIV in Tobago and to determine what factors in sociodemographic and clinical parameters related to Quality of Life. The EQ5D3L mean index value (0.86) and EQVAS (65.98) were significantly lower than the corresponding values of the Trinidad and Tobago population norms (0.93 and 82.3, respectively, with worse QOL in males, older age, unemployed, lower socioeconomic brackets, heterosexuals and those with opportunistic infections. The WHOQOL-HIV BREF domains with the lowest mean scores were environment (12.34), level of independence (13.53), and social relationships (13.61). The primary care physician's assessment of quality of life should be part of routine clinical care. Available resources through social worker support and partnership with NGOs may be considered in the primary care setting. Further research on patients who receive governmental assistance may prove beneficial in determining needs and appropriate distribution. Research into non-heterosexual patients and the positive predictors of quality of life may yield insight into the general HIV patient population. A review of treatment guidelines for patients with opportunistic infection may be beneficial. The statistically significant findings are in keeping with what may have been expected at the beginning of the project; however, the rationale for conducting the research is to have a base upon which more research among the patients with HIV can be conducted and most importantly, perhaps have concrete evidence, so that policymakers have a basis for funding and resourcing of care. LIMITATIONS Sampling bias was minimized by using randomization to select participants thereby attempting to create a representative sample and allow for findings to be generalized to the patient population under investigation. Another limitation to consider would be the lack of recording or appreciation of factors affecting quality of life of patients in the study that were not the focus of data collection and analysis. There could potentially be confounding if unknown factors are not recognized or considered. Confounders not measured but may also affect quality of life must be considered for example, exercise, religion, various activities participants may be involved in. In this study the researcher also provides care to the participants in a doctor-patient relationship. Participant bias or acquiescence bias, which can have an impact of confounding on research findings must also be considered when evaluating the results of the study. RECOMMENDATIONS Recommendations coming from this study will focus primarily on addressing the statistically significant factors that affect the Quality of Life of HIV patients. HIV patients with detectable viral loads or coping with opportunistic infections should be specially managed to determine the best way forward for treatment and adherence (28). Relationship counselling within the clinical setting may be offered, but this is determinant on if staff is sufficiently trained for this specific type of interaction. Addressing employment and income, through engagement of policy makers and the clinical level with social workers and NGOs, is recommended strongly as both research instruments pointed to these as important factors related to Quality of Life. Meaningfully

clinical level with social workers and NGOs, is recommended strongly as both research instruments pointed to these as important factors related to Quality of Life. Meaningfully addressing employment and income will require a team and network of professionals. ETHICAL CONSIDERATIONS Approval was granted from [the Ethics Committee of the University of the West Indies St. Augustine campus \(Ref: CREC-SA. 1199/10/2021\)](#), and [the Ethics Committee of the Tobago Regional Health Authority](#). Participants were verbally asked to contribute to the research; upon acceptance, a written agreement form was provided before the interview process. This document contained objectives of the study stated clearly, including the mode of information gathering, notification of voluntary participation, notification of their right to leave the research at any time during the research process, and the right to decline to answer any questions during the interview. Protection of the participants through the assurance of confidentiality of information shared, and anonymity of identity was achieved by use of pseudonyms. The commitment was made to participants that the information they share would be used only for research purposes and every effort to secure data was made. Participants were informed that they may be asked to discuss sensitive information, which they were under no obligation to share if it were to be a potential source of distress to them. After completing the questionnaires, names were replaced with numeric identification numbers. Electronic data only had numeric identification numbers and was safeguarded [on a password-protected computer](#). The researcher [had](#) exclusive [access to](#) a locked room where physical research supplies were kept. 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42
