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Socio-demographics, Social Support and Adherence: A Cross-sectional Descriptive Perspective of users of Antiretroviral Therapy in a Nigerian Secondary Health Facility

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Studies in varied resource settings report consistent trends in benefits among Clients adherent to Antiretroviral Therapy (ART). Social support in this instance may potentiate treatment outcomes. This study aims to determine the socio- demographics, social support and adherence to ART among clients accessing care at a General Hospital in Nigeria. This is a descriptive cross-sectional study of a sample of 340 clients determined using Cochran formula and selected via systematic sampling. Data collection is by interview via semi-structured questionnaire. Analysis is by statistical package for social sciences version 22.0. Tests of associations are with chi-square test with alpha set at $\leq$ 0.05. The study reveals bimodal age groups. Males are 122 (35.9%),43 (12.7%) are long distant commercial vehicle drivers, 25 (7.4%) are hospitality workers, while113 (32.2%) reports receipt of social support and298 (87.7%) adherence to HAART. An association exists between social support and adherence (p=0.000).In summary, the survey finds socio-demographic variations, with

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association between social support and adherence. There is need for behavioral change interventions that target variations in socio- demographics in enhancing adherence via good social support.

Keywords: Socio-demographics; social support; Nigeria; adherence; HAART.

1. INTRODUCTION

Social support is the feeling (perceived or experienced) that one is loved, appreciated, valued, cared for by others, and is part of an obligatory mutually supportive social network [1,2]. The aim of this support is to attain heights as stronger, effective organization and communities, better positioned to promoting mutuality, equality and opportunity [3]. Provision for this range of service is made by public, private and not--for- profit organizations, spouse, intimate partners, pets, friends, family, colleagues at the work place, health care providers, communities or affiliations [3,4].

Four broad types of social support are as outlined [3-8]:Informational support which is the communication of facts and guidance that can be used in managing problems, e.g. information(advice)or companionship (sense of belonging) from ones network; Instrumental support (Practical support) which implies the provision of tangible assistance, e.g. physical assistance. transportation aid, financial aid, payment for medications, picking up prescriptions, reading labels/ leaflets, filing pill boxes, etc.; Emotional support which includes the provision of nurturance, nourishment, empathy encouragement, listening, attachment, reassurance of worth and care from the members of a given social network. This form of support enhances self-esteem [8] Finally, Appraisal support, referred to as (structural support, affinitive support and social integration). It comprises intangible support in form of (personal advice) [3] and series of social relationships with mutual interests and benefits, e.g. marital status, friends with benefits, living arrangement, social network size plus duration and frequency of contact [3]. Alternative classifications in literature include: functional support (i.e. emotional cum instrumental support) and loss support [9], then based on sources- formal (professional support systems - healthcare et social service providers) and informal (community organizations- family, friends, churches, mosques, social clubs, co-operatives) [9].

Medication adherence is estimated with the extent to which a client takes a medication in tandem with the intent of the prescriber [10]. Adherence implies taking medication in full compliance as it relates to time, doses and way, just as rightly as instructed by the prescriber [11]. For HAART regimen, the time period varies from one day to one month.

In December 1995, the first protease inhibitor for ART was licensed. In July1996 a class of agents (HAART) was reported [12], and remains the treatment of choice. Apart from prognostic impacts on single modality interventions,near-perfect ($\geq$95%) adherence is required for its effectiveness, vis a vis significant gains in clinical, immunological and virological outcomes [13], decrease in rates of hospitalization, shorter hospital stays [14-17], quality of life and overall health [13,18-20].Even with free access to the Regimen in Nigeria and some settings, clients and health-care providers are faced with significant lifetime adherence issues [4,13,21-23].

Successful practical, contemporary, robust and multi-faceted strategies depend on evidence based global solidarity and shared responsibility of which social support is an integral part [13]. For instance, peer support promotes behaviour change, improves adherence among clients experiencing social drift and sustains self-care [13,24]. So does family support, especially among children and adolescents in settings with resource restraint, stigmatization, HIV sero-concordant or discordant parents, etc [9,13,25,26]. On patient factors linked to non-adherence, Clinicians could optimize adherence to ART, by taking pains to clerk clients, educate them, as well as maintain support and collaboration. Such factors as: [13,27-30] cognitive/behavioral factors related to ART, e.g. self-efficacy, outcome expectancies, complex medication regimen or inconvenient dosing frequency, dietary restrictions, pill burden and adverse effects; mental health factors, e.g. anxiety, depression, panic, substance/ alcohol abuse disorders; and structural barriers, e.g. Homelessness, lack of insurance, lack of transportation and poor system of care.

The Nigerian National AIDS/STIs Control Programme in the March 2020 update on the use of ART, reiterates the strengthening of social support viz: HIV diagnosis- use of innovative testing strategies for improved case finding and efficient use of resources; index testing (partner testing, sexual network testing, social network testing and genealogy) and in HIV treatment- use of community/Lay Providers [23].The present study will bridge the gaps in knowledge and strengthen then data systems for promotion of evidence base for program planning, policy formulation and implementation on ART provision. In this era of instability and dwindling socio- economic conditions resulting from insecurity, pandemics, recession, fiscal recklessness, etc, this research agenda focuses on the socio- demographics of clients and social support as potential strategic options in addressing adherence to ART at the hour glassed public secondary health care level. This study determines the socio- demographics, social support and adherence to ART among clients accessing care at a General Hospital in Nigeria.

2. MATERIALS AND METHODS

2.1 Study Design

This is ahealth facility based cross-sectional descriptive study, conducted from June to December 2017.

2.2 Study Setting

The study area is Awo Omama, the headquarters of Oru East local government area (LGA) in Imo state, Nigeria. The LGA has a projected population of 195,743 persons and an area of 136km^2 [31]. The town contributes a major hotspot, comprising series of comfort homes and squatter shanties along the Breweries factory junction off the 'Trunk A" road linking two major cities- Onitsha (the biggest commercial city in nearby Anambra state, hosting the largest market in West Africa) and Owerri, the Capital of Imo The study site is the ART Center at the General Hospital. The Hospital offers the following services: Training of students from allied medical sciences and undergraduates in medicine (Madonna University Nigeria) on Rural Medical Posting; Directly Observed Treatment Short course; Optometry; Maternal and Child Health/ Family Planning; Immunization; General Out Patient and In-patients. It is the only nodal center in the entire LGA, provides HAART free of cost, engages in Prevention of mother to child transmission of HIV, Counselling sessions and regular Follow up of clients, including home visits, monitoring of clients on HAART for adverse reactions. It has the relevant resources for CD4 count estimation. The March, 2017 monthly report of the Center, documents 3,000 registered PLWHA. The HIV clinic runs on Tuesdays and Thursdays from 8am to 4pm with an average attendance of 93 clients per clinic day.

Data collection employs questionnaires designed from an adapted version of a Social support measurement tool- the Medical Outcomes Study Social Support Survey (MOSSSS) [32]. This consists of sections a) Socio- demographic characteristics of respondents- age, gender, marital status, ethnicity, religion, highest level of education, current employment status, occupation, b) Awareness and availability of social support, c) Adherence to HAART.

2.3 Study Participants

The target population consists of registered HIV positive clients accessing care at the General Hospital.

2.3.1 Inclusion criteria

All registered clients, with confirmed HIV-positive sero-status and are aware they are infected, disclosing their HIV status at least to one person, attends follow-up regularly and on HAART for at least six months prior to this study. This allows adequate time for adherence issues, if any, to have manifested.

2.3.2 Exclusion criteria

Such clients, whose conditions may affect their responses. E.g. the deaf and dumb, autistics, mentally challenged, those on hospital admission with gross cognitive dysfunction or seriously ill, such as the demented (since dementia is a common complication of HIV/AIDS), Also, pregnant women, because of associated factors, e.g. vomiting and excessive tiredness Clients who are participants of other concurrent adherence or related studies. Clients who are at least 18 years of age and decline consent to participate or younger than 18 years old without assent and/or full informed consent from their parents or guardians.

2.4 Variables

The dependent/ main outcome variable for this study is the Availability of social support, while the independent variables are: Socio-demographic characteristics- age, gender, marital status, ethnicity, religion, highest level of education, current employment status, occupation and Adherence to HAART.

2.5 Data Sources/Measurement

Frequencies, percentages and rates of the variables e.g. adherence rates are assessed using univariate analysis.

2.6 Bias

The questions are sensitive in nature and could lead to reporting bias. Assuring clients of strict confidentiality of their responses and the anonymity of study tools reduced these effects. Data are collected once, (alternate Tuesdays and Thursdays) every week, to reduce the bias for day-specific clinic attendance.

2.7 Study Size

2.7.1 Sample size determination

The sample size is determined based on the estimate population of 3,000 registered HIV positive clients accessing care at the setting, using the sample size formula for cross-sectional studies in populations greater than 10,000 (Cochran) stated thus: $n=Z^2pq/ d^2$ [33], where n= minimum sample size; Z=Standard normal deviate set at 1.96 (95% confidence interval); p = prevalence of adherence to anti-retroviral drug, while q=1-p and d = level of precision usually set at 0.05. According to the WHO, adherence to HAART in developing countries is 60% to 80% [34]. Assuming an average of 70% adherence, i.e. p=0.7 andq=0.3, with d = Maximum allowable error (5% = 0.05). the total sample size required was calculated to be 323 clients. Since estimated sample size was more than 5% of the estimated population, which is in turn less than 10,000, Then the sample size is adjusted using the formula (33): N1 = n /1 + (n/N), where N = target population, N1 = 291. Using 10 % attrition, the actual sample size (nf)= N1/f (33) 295/0.9 = 328 clients. However, 340 questionnaires are administered.

2.7.2 Sampling technique

This survey employs systematic random sampling technique. Complete enumeration method is adopted with the clinic register as the sampling frame. A sampling fraction is determined by dividing the number of clients booked for appointment on each data collection day by the minimum number of clients to be interviewed. Then, every n^{th} eligible consenting client presenting for care is enrolled into this study and interviewed consecutively, until the target sample size is attained.

2.8 Data Collection

Data are collected using pre-tested, interviewer-administered semi- structured questionnaires. Social support is the sum total of informational, instrumental, emotional and appraisal support received by clients including positive social interactions. HAART-related profiles of the clients are taken from ART cards and medical records. The information obtained through the interviews are checked and verified by pill-count. Pill counts require clients to return the medication packaging to the clinician. However, clients tend to forget the packages or inadvertently discard them. If a client self-reports missing at least a single dose of HAART out of the total eight doses within a four-day schedule, the client's adherence is < 95%- set as the adherence level [13,14]. This study estimates adherence by dividing the number of months of HAART dispensed by the number of months of follow-up (recall bias notwithstanding) [35]. Near perfect adherence implies that a client on a twice-daily regimen should not miss or delay more than three [3] doses of HAART per month [14-17]. To ensure data quality, training of data collection team, field monitoring and day end reviews are done.

2.9 Statistical Methods

The data are reviewed, entered into the computer and cleaned via range and consistency checks. Descriptive and statistics of the data are carried out using statistical package for social sciences (SPSS) Windows version 22.0 [36]. Quantitative data are analysed by computing frequency tables, presented as simple frequencies and percentages. Bivariate analysis using chi-square test determines associations between variables. Level of significance is set at $\leq$ 0.05.

3. RESULTS

Table 1 presents the socio- demographic characteristics of respondents. Response rate of 340 clients at the sampling is 100%. The study reveals bimodal age groups of 90(26.5%) for 30-39 and 40-49 years respectively. Majority of respondents 218 (64.1%) are females, 209 (61.5%) are currently married and 337 (99.1%), Christians. Only 64 (18.8%), have higher than secondary level of education. Forty-three (12.7%) are long distance commercial vehicle drivers, 25 (7.4%) hospitality workers, while 249 (73.2%) resides outside the area.

Table 2 highlights the awareness and availability of social support to respondents. One hundred and forty (41.2%) reports awareness of social support, out of which the commonest sources of information are 65 (46.4%) Radio/Television and 43 (30.7%) friends. One hundred and thirteen (32.2%) reports receipt of social support, out of which 111(98.2%), 101 (88.4% and 98(86.7%) are finance, information and food et sundries. The commonest sources are 112 (91.2%) Church, 101 (89.4%) Family, 97 (85.8%) Peer support group.

Table 3 shows the adherence to HAART among respondents. Two hundred and ninety-eight (87.7%) are adherent to HAART, while reasons for missing medications include: 29 (69.9%) forget taking medications, 26 (69.1%) aftermaths of taking medications in the open, 25 (59.5), lack of financial/transportation aids for picking up the medications/prescriptions, 21(50%)) poor communication of facts and guidance.

Table 4 summarizes the relationship between social support availability and adherence to HAART among respondents. There is a statistically significant association between social support availability and adherence to HAART among respondents. ($\chi 2$ = 35.448, p=0.000).

Table 1. Socio- demographic characteristics ofclients accessing care at a secondary health facility in Imo state Nigeria from June to December 2017

Characteristics	Frequency (N=340)	Percentage (%)
Age(years)		
<19	12	3.5
20-29	50	14.7
30-39	90	26.5
40-49	90	26.5
50-59	58	17
> 60	40	11.8
Gender		
Male	122	35.9
Female	218	64.1
Marital status		
Currently married	209	61.5
Never married	89	26.2
Separated	17	5
Divorced	6	1.7
Widow	11	3.2
Widower	8	2.4
Widowed	19	5.6
Not Currently married	131	39.5
Religion		
Christianity	337	99.1
Islam	3	0.9
Highest level of education attained		
Nil formal	40	11.8
Primary	51	15
Secondary	185	54.4
Tertiary	64	18.8
Formal	300	88.2

Characteristics	Frequency (N=340)	Percentage (%)
Occupation		
Unemployed	55	16.2
Farming	76	22.4
Trading	60	17.6
Long distance commercial	43	12.7
vehicle driving		
Civil service	33	9.6
Artisanship	27	7.9
Hospitality work	25	7.4
Schooling	21	6.2
Employed	285	83.8
Ethnicity		
Hausa.	5	1.5
Ibo	327	96.2
Yoruba.	8	2.3
Residence		
Within the community	91	26.8
Outside the community	249	73.2

Table 2. Awareness and availability of social support to clients accessing care at a secondary health facility in Imo state Nigeria from June to December 2017

Variables	Frequency (N= 340)	Percentage (%)
Aware of social support		
Yes	140	41.2
No	200	58.8
Source of information about social support (n= 140) *		
Radio/Television	65	46.4
Friends	43	30.7
Internet	39	34.5
School	22	15.7
Church	20	14.3
Place of work	11	7.9
Reports receipt of social support		
Yes	113	32.2
No	227	68.8
Membership of support group		
Yes	97	28.5
No	243	71.5
Types of social support made available (n= 113) *		
Instrumental		
Financial aid	111	98.2
Informational		
Information/ advice	101	88.4
Guidance	77	68.1
Emotional		
Food and sundries	98	86.7
Empathy/Encouragement	77	68.1
Appraisal		
Social network/peer support group	97	85.6
Currently married	69	61.1
Source of social support available (n= 113) *		
Formal		

Variables	Frequency (N= 340)	Percentage (%)
Peer support group	97	85.8
Non- governmental organizations	51	45.1
Health service providers	47	41.6
Informal		
Church	112	91.2
Family	101	89.4
Friends	81	71.7
Radio/Television	55	48.7

** Multiple responses*

Table 3. Adherence to HAART among clients accessing care at a secondary health facility in Imo state Nigeria from June to December 2017

Variables	Frequency N=340	Percentage (%)
Adherence to HAART		
Yes	298	87.7
No	42	12.3
Total	340	100
Reasons for missing medication (n= 42) *		
Forgetting to take medications	29	69.1
Aftermaths of taking medication in the open, e.g. loss of self-esteem, discrimination, stigmatization	26	61.9
Lack of financial/transportation aid for picking up the medications/prescriptions	25	59.5
Poor communication of facts and guidance e.g.info on the effects of missing medication	21	50
Fear of side effects	21	50
Medication is out of stock/ unavailable	11	26.2
Poor encouragement/empathy	2	4.8

** Multiple responses*

Table 4. The relationship between social support availability and adherence to HAART among clients accessing care at a secondary health facility in Imo state Nigeria from June to December 2017

	Adherence to HAART				
Variables	**Frequency (N)/Percentage (%)**			**Test statistic (χ2)**	**p value**
	Yes n/ (%)	**No n/ (%)**	**Total n/ (%)**		
Availability of social support					
Yes n/ (%)	82 (24.1)	31 (9.1)	113 (322)		
No n/ (%)	216 (63.6)	11(3.2)	227 (66.8)	35.448	0.000*
Total n/ (%)	298 (87.7)	42 (12.3)	340 (100)		

** Statistically significant association @ p≤0.05*

4. DISCUSSION

This cross-sectional survey determines the socio- demographics, social support and adherence to HAART among clients accessing care in a nodal ART center situated in a secondary health facility in Nigeria. The strengths of this study include: the 100% response rate obtained, use of a standardised instrument to evaluate social support and use of a. relatively long duration definition of at least one (1) month for adherence [35].

This study makes specific assessment of the prevalence of socio- demographic variables of participants. This reveals bimodal age groups of 30-39 and 40-49 years. Tough there are few outliers, this finding is in line with age groups most commonly reported as modally infected with HIV/AIDS [37].

In the index study, prevalence of HIV varies disproportionately with gender distribution, with an estimate of at most four males per ten participants. This is in tandem with findings of the 2012 Nigeria National HIV/AIDS and Reproductive Health Survey (NARHS) [37]. It is also in keeping with reports locally [18,19,20] and elsewhere [38,39], which posit that when males are recruited, retention on HAART is less likely than in females. In addition, this male descendancy may not be unconnected with lower burden of HIV/AIDS in males compared to their female folks. This trend links cultural norms and traditions perpetuating male dominance on access to informational support on HIV, associated ills and prevention. These factors put females on the side of weakness in negotiating safe sexual practices with their male folks. Opposed to females, males exhibit poor health care seeking behavior, which further explains this position, in tandem with the saying, "women fall sick, men die," The researchers suggest the need for ensuring defeminisation of the scourge; positively addressing gender equity and empowerment as well as instituting gender-specific strategies in the improvement of health care seeking behavioral change, recruitment and retention rates among males.

This study determines the marital status of clients and reveals that majority of them, 61.5% are currently married. The findings of a study of HIV/AIDS clients in a General Hospital in Ilorin Nigeria concurs that the currently married participants are in the majority [20]. Nonetheless, stigmatization. discrimination and rejection by the populace and fear of losing out of potential intimate relationships among PLWHA proffer explanation to this [38,39]. More so, currently married HIV positive clients (especially the concordant couples), may not feel as hurt facing these as the discordant [37].

Our data suggest that an appreciably lesser proportion of the index study participants, have higher than secondary level of education. This finding agrees with the reports of similar studies [40,41]. Majority of participants are less likely to understand, assimilate the import of information on their health condition and imbibe the practices if such are relayed in English [40]. This may also lead to attrition. The researchers suggest the provision of educational materials in local languages.

According to the current study, there are about forty -three long distance commercial vehicle drivers and seven hospitality workers respectively, in every hundred participants. These are high risk occupation groups with regards to HIV/AIDS aetiology. Based on self-reports, poor dignity in labour and the concealing of sources of income, the researchers suggest the possibility of reporting bias and thus posit that this consideration be made in the interpretation and application of these findings Also, about seven in every ten participants are not residing within the study setting. While the study is set in a transit zone, clients would rather taxi up the lane to distant lands in order to preserve secrecy over their sero-status. Findings elsewhere, though among another high-risk group- gay men, also concur [42]. The literature suggests and links this scenario to poor management of stigmatization, discrimination and rejection resulting from inefficient social support systems [38,39,40,42]. This re-emphasises the place of confidentiality in HIV/AIDS management. The level of unemployment, 16.2% may be worrisome, though the study is limited by not noting the causes and history of unemployment. They may lose employment, financial resources, and even family and friends, which are major sources of support.

The present study highlights the awareness and availability of social support among these participants**.** It reports apparently low awareness of social support (about four in every ten) and that the commonest sources of uptake of information are from Radio/Television and friends. Though there is dearth of studies on awareness of social support, the report is not consistent with the findings by other authors, where appropriate settings for health promotion include: Schools, and the workplace [43,44]. These alternative sources may not adequately meet their needs, may not influence personal life-styles which affect health and may contribute to the report on low awareness.

On availability of social support, the study finding shows poor receipt of social support (about three in every ten) and that the commonest types of social support received by participants are finance, information and food et sundries, while the commonest sources of the supports include Church, Family and Peer group. Studies indicate that the level of support varies across the different sources and types of support received [9,23,28]. Studies also associate adherence with good social support [9,45].The low levels of perceived social

support of PLWHA in this study demands the relevant attention to this vulnerable group. We suggest that relevant stakeholders ensure provision of quality support, the source of which clients are able to access.

The present study reports 87.7% adherence to HAART. This adherence rate is similar to the rates of (83%–95%) reported in resource-restrained settings in India [46], Senegal [47], etc. It is lower than 93.5%in South Africa [48] and nonetheless sub-optimal compared with the set level of ≥95% drug adherence. This is a pointer that adherence to HAART is still a major challenge to the management of PLWHA in Nigeria.

In this study, forgetfulness is the primary reason for missing doses in HAART – a finding that is consistent with those of several studies [49,50]. Most clients on HAART forgot to bring mediations when away from home, and changed daily routines or when at home due to congested schedules. Other reasons for missing medications include: aftermath of taking medication in the open, lack of financial/transportation aids for picking upthe medications/prescriptions, poor communication of facts and guidance, e.g.info on the effects of non- adherence. This finding is in tandem with those of several studies [49,50] and links these reasons to inefficiencies in social support systems.

In the current study, the bivariate analysis reveals statistically significant association between availability of social support and adherence to HAART. Previous studies indicate supportive evidence on strong correlation between these variables- clients with sub-optimal adherence lack the necessary social support [50,51].

5. LIMITATIONS OF THE STUDY

Firstly,our sample was made up exclusively of HIV positive participants who were already engaged in HIV care, who may have been more likely than those not engaged in medical care to report positive interactions with care providers. Furthermore, the small sample size affected our ability to delineate many differences in the use of cross-sectional design, so the survey fails to determine causal links and true mediation between the variables (socio- demographic characteristics and social support). Studies based on self-reports reflect only short-term or average adherence, may often overestimate it and may not match actual behaviors. None of the data record sheets or questionnaires contains names of clients. This further preserve confidentiality. In addition, most studies related to adherence have been completed in adults. Even this study is unable to utilize the children/ adolescent data nor address some factors that may relate to social support and explain more variance in the outcome. Further research to understand outcome variations are warranted.

6. CONCLUSIONS

The index study reveals bimodal age groups. Majority of the clients are females, currently married and resident outside the study area. Among them are long distance commercial vehicle drivers and hospitality workers. Other findings include: apparently poor overall receipt of social support and suboptimal adherence to HAART. The research shows considerable evidence of association between social support availability and adherence to HAART. There searchers thus recommend cross-sectoral approach intensified to effect behavioral change interventions that target socio- demographic differences in enhancing adherence ia social support. There is need for comprehensive gender cum couple -based counselling. Family members and partners of clients on HAART should play the role of treatment supporters and provide other needed forms of support to clients The Government in collaboration with relevant stakeholders should via shared responsibility, policies and legislation, strengthen the capacity of the health system to boost social support, improve on and sustain the overall adherence.

CONSENT AND ETHICAL APPROVAL

The study has been examined and approved by the Madonna University Teaching Hospital Ethics Committee. Permission to conduct the study was obtained from the State Ministry of Health. Verbal informed consent was obtained from each participant for the conduct and for their anonymized information to be published in this article and assurance of confidentiality given. Study participants were free to refuse or withdraw from the study at any time without any penalty. The study's purpose and objectives were explained to each participant prior to interview. All authors hereby declare that the study has therefore been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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