

## Social Support and Depression in Patients with Human Immunodeficiency Virus Attending a General Hospital in South-South, Nigeria

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### Abstract

**Background:** Depression is one of the commonest psychiatric disorders seen among Human immunodeficiency virus/Acquired immunodeficiency syndrome (HIV/AIDS) individuals and these two conditions are significant public health issues. Also, lack of social support increases the risk of depression among them.

**Aim:** To determine the extent and type of social support and correlates of depression among HIV/AIDS patients attending General Hospital in south-south, Nigeria.

**Setting:** The research was conducted in the HIV/AIDS outpatient clinic of the General hospital in south-south, Nigeria.

**Methods:** A cross-sectional study design was carried out on three hundred and twenty-three patients living with HIV/AIDS from June to October 2016. The instruments used were Socio-demographic questionnaire, Mini international neuropsychiatric interview M.I.N.I (A1-A6 module, English version 6.0), and OSLO-3 items social support scale.

**Results:** Majority (95.7%) of the respondents received social support and more than half (53.6%) of the respondents have strong social support. There was a significant association between social support and depression ( $X^2 = 18.38$ ,  $df = 1$ ,  $p = 0.001$ ). The majority (83.3%) of the respondents were females and depression was significantly associated with marital status ( $X^2 = 7.36$ ,  $df = 2$ ,  $p = 0.03$ ). Also, there was a significant association between monthly income and depression ( $X^2 = 9.31$ ,  $df = 2$ ,  $p = 0.01$ ). In multivariate regression, absence of social support ( $B = 2.120$ ,  $p = 0.001$ ,  $OR = 8.327$ ) was the most significant predictor for depression

**Conclusion:** This finding implies that depression is one of the mental health issues that affect HIV/AIDS infected individuals in Nigeria and lack of social support increases the risk of depression among them.

**Keywords:** Social Support; Depression; Human Immunodeficiency Virus.

### Introduction

Human immunodeficiency virus (HIV) and depression are projected to become the world's two leading cause of disability by 2030 [1]. It has been noted that worldwide about 36.9 million people are currently living with HIV, Sub-Saharan Africa is the most affected region with 25.8 million people living with HIV by 2014 [2]. Furthermore, this region accounts for 70% of the global total number of new cases of HIV infection. In addition, there are about two million newly infected cases, that is, about 6,000 newly infected

cases per day with 5,200 being adults (15-45 years). Also, 1.2 million people died from HIV related causes globally in 2014 [2]. Nigeria is one of the most populous countries in Sub-Saharan Africa with an estimated population of 170 million in 2013 and an annual growth rate of 2.54% [3]. One of the most common mental health issues reported in patients with Human immunodeficiency virus/Acquired immunodeficiency Syndrome (HIV/AIDS) is depression [4]. Depression destroys families and slows down the careers of affected individuals [5]. Worldwide, greater than 350 million peo-

ple of all ages are estimated to be affected with depression [6]. The lifetime prevalence of depression varies widely, from 7% in Japan to 17% in United States [7]. In a study conducted in Nigeria, the lifetime and 12-month estimates of depression were 3.1% and 1.1% respectively [8]. Generally, HIV positive patients are two to seven folds more likely to meet the diagnostic criteria for major depression [9]. Also, a study conducted by Pence et al showed that the prevalence of depression among HIV patients was 36%, while Sub-Saharan African settings have the majority of the world's HIV-infected population and the prevalence of depression among them ranges from 8-60% [5, 10-20].

The cause of depression is multifactorial. Biological, psychological, and social factors play different roles in causing depression. The biological causative factors include genetics, neurochemistry, neuroendocrine, cerebral pathophysiology, cellular factors, and immunological components. Psychological causes may include psychodynamic, cognitive, and behavioral factors. Social causes may include but not limited to lack of confiding relationship, unemployment, and social isolation. Also, precipitating factors or life events such as bereavement, marital discord, physical illnesses and poor social support contribute to the etiology of depression [21].

Social support is defined as the physical and psychological comfort provided by other people which is known to be an integral part of our psychological make-up of always wanting to affiliate with others [22]. It is one of the social factors identified to play a major role in depression because it enables people to negotiate life crisis and to participate freely within the family and society [5]. In Thailand, family and social relationships have been shown to be associated with alleviation of depressive symptoms in HIV/AIDS patients, with better family functioning specifically having a positive effect on the quality of life and medication adherence [23]. Also, there is evidence that a lack of social support increases the risk of depression among HIV/AIDS patients [5]. In addition, HIV/AIDS patients who are diagnosed to be depressed have been reported to have self-care behaviours for dealing with depressive symptoms which fall into the following categories: physical activity, distraction techniques, denial/avoidant coping, medications, and talking to others which are a form of social support [24].

Therefore, it is crucial to identify patients with depression for appropriate management. Unfortunately, in Nigeria, the management of patients with HIV emphasizes on somatic aspects of the disease and neglects the psychiatric manifestations, thus depression is under-diagnosed. This is essentially due to the fact that mental health is not effectively integrated into HIV clinical care. Although there is a scarcity of resources, efforts aim at providing social support will help to reduce the prevalence of depression recorded among HIV/AIDS patients.

## Research Methods and Design

**Study Design:** It was a descriptive cross-sectional study.

**Setting:** The study was carried out in a General Hospital in South-South Nigeria.

**Study Population:** Patients who were tested and confirmed to

be HIV positive that were attending the outpatient clinic of the hospital were studied.

## Inclusion Criteria

1. Patients with a confirmed diagnosis of HIV positive on follow up visit and on Highly active antiretroviral therapy (HAART).
2. Patients between the ages of 18-65 years.

## Exclusion Criteria

1. Patients who were too debilitated to participate were excluded.
2. Patients with previously diagnosed mental illness prior to the diagnosis of HIV infection.
3. Patients with cognitive impairment assessed by a screening form.

## Sample Size Determination

Sample size calculation using formula " $n = \frac{n_1}{1 + (n/N)}$ " when studying proportion with population less than 10,000. Calculate first  $n = z^2 pq / d^2$  which is the formula when studying proportion with population greater than 10,000

$$n = z^2 pq / d^2$$

Where,

n = sample size population is >10,000

z = standard normal deviate; usually set at 1.96 which corresponds to 95% confidence level.

p = prevalence from past studies. Previous <p> = 57% = 0.57

q = proportion in target population not having the particular characteristics (q = 1 - p) 0.43

d = degree of accuracy required, usually set at 0.05 (5%) level.

$$n = (1.96)^2 \times 0.57 \times 0.43 / (0.05)^2$$

$$= (3.84 \times 0.25) / 0.0025$$

$$= 384$$

To calculate  $n = \frac{n_1}{1 + (n/N)}$

n = desired sample size, when population is <10,000

n = sample size in a descriptive study as obtained above

N = estimate of study population = 2000

$$= \frac{384}{1 + (384/2000)} \text{ where total population is 2000}$$

$$= \frac{384}{1 + 0.19}$$

$$= \frac{384}{1.19} = 322.69$$

Approximately, an estimated sample size of 323 was derived from the above calculation. This was rounded up to a sample size of 355 in order to take care of incomplete responses (considering 10% non-response) [25, 26].

## Procedure

Patients attending the HIV clinic of the General Hospital were enlightened about the purpose of the study, an inclusion form was given to them, the form was retrieved and consecutive attendee who met the inclusion criteria were recruited into the study. Written consent was obtained from all participants after the objectives and protocol of the study had been spelled out to them. Participants were required to fill the socio-demographic questionnaire and OSLO-3 item social support scale. Patients who requested assistance in filling the questionnaire were interviewed by the researcher. Also, M.I.N.I (A1-A6 module, English version 6.0) was

used by the researcher to diagnose for depression. Information and necessary education were given to participants who were depressed and referral to the available psychiatric facilities was done. Also, those patients that do not have social support were referred to the social welfare unit of the hospital. Interviews were conducted strictly within clinic hours of 8:30am-4:00pm, with an average of nine patients interviewed per day. The data was collected over five months. (June- October 2016)

### Data Analysis

Data were pre-coded to ensure accuracy and entered into the Statistical package for social sciences 22nd version which was used for analysis. Tables were generated according to objectives and Pearson's Product Moment Correlation and independent student t-test were used to analyze parametric variables while Chi-square and Fisher's exact test were used for non-parametric variables where applicable. Also, logistic regression was used to determine the predictor for depression. All analyses were done at 0.05 level of significance, a two-tailed test.

### Ethical Considerations

Ethical Clearance to proceed with the study was obtained from

the ethical committee of the State Ministry of Health overseeing the General Hospital (ref # CRS/MH/HREC/015/Vol.V/188). The study was carried out without coercion to participate. Each participant with a diagnosis of depression was counseled and referred to a psychiatric facility for further management, those participants that lack social support were referred to the social welfare unit of the hospital and those without depression were counseled on measures to limit the development of depression. The confidentiality of the participants was maintained during and after the study. The study was non-invasive and did not involve any procedure that harmed the participants. The Cost of the investigations was borne by the authors.

### Results

#### The extent and type of social support among HIV-positive individuals

Majority 309(95.7%) of the subjects have social support. More than half (53.6%) of the respondents have strong social support. Most of the respondents received emotional (90.1%) and financial (77.4%).

**Table 1:** The frequency of social support among respondents

Variable (Social Support)	Frequency (%) N= 323
Present	309(95.7)
Absent	14(4.3)

**Table 2:** Extent and types of social support received by respondents

Variables	Frequency (%) N=323
<b>Extent of social support</b>	
Poor	28(8.6)
Intermediate	122(37.8)
Strong	173(53.6)
<b>Type of social support</b>	
Financial	250 (77.4)
Emotional	291 (90.1)
Errands/domestic chores	47 (14.6)
Hospital care/drug procurement/supply of needed gadgets	11 (3.4)
Formal support group	3 (0.9)
None	14 (4.3)

N.B Some respondents received more than one type of support.

#### The association between social support and depression among HIV-positive individuals.

There is a significant association between social support and depression ( $X^2 = 18.38$ ,  $df = 1$ ,  $p = 0.001$ ).

**Table 3:** Association between social support and depression among HIV-Positive individuals

Variables (Social Support)	Depression present	No depression	X <sup>2</sup>	df	p-value
Present	34(10.5%)	275(85.2%)			
			18.38	1	0.001*
Absent	7(2.2%)	7(2.2%)			

\*Fisher's exact test

**Socio-demographic correlates of depression among HIV-positive individuals**

Depressive disorder was significantly associated with marital status (X<sup>2</sup>=7.36, df=3, p=0.03), monthly income (X<sup>2</sup>=9.31, df=2, p=0.01)

while age (X<sup>2</sup>=1.26, df=3, p=0.74), gender (X<sup>2</sup>=1.64, df=1, p=0.20), level of education (X<sup>2</sup>=5.20, df=2, p=0.07), ethnicity (X<sup>2</sup>=3.22, df=2, p=0.20), employment status (X<sup>2</sup>=2.57, df=4, p=0.63) were not significantly associated with depression.

**Table 4:** Socio-demographic correlates of respondents with or without depression.

Variables	Depressed N (%)	Non depressed N (%)	X <sup>2</sup>	df	p-value
<b>Age</b>					
15-24	4(1.2)	20(6.2)			
25-44	29(9.0)	193(59.8)			
45-64	8(2.5)	64(19.8)	1.26	3	0.74
65+	0(0.0)	5(1.5)			
<b>Gender</b>					
Male	4(1.2)	50(15.5)	1.64	1	
Female	37(11.5)	232(71.8)			0.20**
<b>Educational level</b>					
Primary	20(6.2)	93(28.8)	5.20	2	
Secondary	13(4.0)	141(43.6)			0.07
Tertiary	8(2.4)	48(14.9)			
<b>Ethnicity</b>					
Efik	16(5.0)	152(47.1)	3.22	2	0.20
Igbo	2(0.6)	9(2.8)			
Others	23(7.1)	121(37.5)			
<b>Marital Status</b>					
Married	10(3.1)	121(37.5)			
Single	13(4.0)	89(27.5)	7.36	2	0.03*
Separated/Divorced/ Widowed	18(5.6)	72(22.3)			
<b>Employment status</b>					
Retired	3(0.9)	16(4.9)			
Self employed	20(6.2)	159(49.2)	2.57	4	0.63
Employed by Others	5(1.6)	32(9.9)			
Government employ	2(0.6)	24(7.5)			
Unemployed	11(3.4)	51(15.8)			
<b>Monthly income</b>					
No income	13(4.0)	62(19.2)			
₦1-₦25000 (\$82)	26(8.1)	146(45.2)	9.31	2	0.01*
>₦25000 (\$82)	2(0.6)	74(22.9)			
<b>Family history of depression</b>					
Present	3(0.9)	16(5.0)	0.139	1	0.72**
Absent	38(11.8)	266(82.3)			

\*significant

\*\*=Fisher's exact test

### Clinical characteristics of HIV-Positive Respondents

The majority (94.1%) of the respondents had no family history of depression. Almost half (48.6%) of the respondents had been on HAART ranged from 1-5 years and 46.1% of respondents had

been diagnosed to be HIV positive ranged from 1-5 years. More than half (51.7%) of the respondents had a CD4 count greater than 500 cells/mm<sup>3</sup> [3]. The age at diagnosis of respondents with HIV ranged from 10-62 years with a mean of 33 years (S.D = 10.2).

**Table 5:** Clinical characteristics of HIV-positive respondents

Clinical characteristics	Frequency (%) (N=323)
<b>Age at diagnosis (in years)</b>	
10-20	22 (6.8%)
21-30	123 (38.1%)
31-40	106 (32.8%)
41-50	48 (14.9%)
51-60	20 (6.2%)
61-70	4 (1.2%)
<b>Mean ± S.D</b>	33.5 ± 10.2
<b>CD4 count (cell/mm<sup>3</sup>)</b>	
<500	156 (48.3%)
>500	167 (51.7%)
<b>Family history of mental illness</b>	
Present	19 (5.9%)
Absent	304 (94.1%)
<b>Duration on HAART (in years)</b>	
<1	64 (19.8%)
1-5	157 (48.6%)
6-10	76 (23.5%)
11-15	26 (8.1%)
<b>Duration of HIV infection (in years)</b>	
<1	52 (16.1%)
1-5	149 (46.1%)
6-10	107 (33.1%)
11-20	15 (4.7%)

### Clinical correlates of depression among HIV-positive individuals

The age at diagnosis of HIV, duration of HIV infection and duration on HAART were negatively correlated (Pearson correlation (r) of -0.017, -0.004 and -0.013 respectively) to depression, that is the older the age at diagnosis of HIV, the longer the duration of HIV

infection and the longer the duration on HAART the less likely they were to suffer from depression. Also, age at diagnosis of HIV, duration of HIV infection, and duration on HAART were not significantly correlated to depression at with p-value of 0.766, 0.944, and 0.811 respectively.

**Table 6:** Relationship between clinical variables and depression among respondents

Variables	Pearson correlation (r)	P-value
Age at diagnosis of HIV	-0.017	0.766
Duration of HIV infection	-0.004	0.944
Duration on HAART	-0.013	0.811

### Predictors of depression among the respondents

The significant variables (marital status, monthly income, and social support) associated with depression were entered into logistic regression model to determine the independent predictors of depression, marital status ( $p=0.19$ ) dropped out of the analysis. Monthly income was associated with depression ( $p=0.03$ ) and social support ( $p=0.001$ ). Overall, the major predictor of depression

was the absence of social support.

The Cox & Snell R square is 0.084 while the Nagelkerke R square is 0.158, meaning that between 8.4% and 15.8% of the variability of depression is explained by the logistic regression model. The reference variables, Odds ratio and 95% Confidence interval for the predicting variables were shown in Table 8.

**Table 8:** Predictors of Depression among respondents

Variable	B	SE	Wald	df	p-value	Cox & Snell R <sup>2</sup>	Nagelkerke R <sup>2</sup>
						0.084	0.158
Marital status	-0.753	0.441	3.324	2	0.19		
Monthly income	2.226	0.820	7.393	2	0.03		
Social support	2.120	0.618	11.743	1	0.001		

B= Regression coefficient, SE= standard error of regression coefficient, Wald= Wald chi-square, df= degree of freedom.

**Table 8:** Predicting variable for Depression among respondents

Variable	Odds Ratio(95% CI)
<b>Marital status</b>	
Married versus Separated/divorced/widowed	0.471 (0.20-1.12)
Single versus Separated/divorced/widowed	0.582 (0.26-1.32)
<b>Monthly income</b>	
₦0 versus more than ₦25,001	9.263 (1.86-46.23)
₦1-₦25,000 versus more than ₦25,001	6.870 (1.49-31.65)
<b>Social support</b>	
Absence of social support versus presence of social support	8.327 (2.48-27.99)

N.B 95% CI= 95% Confidence interval.

### Discussion

#### The extent and types of social support among HIV-positive individuals.

This study found that about half of the respondents have strong social support. This is similar to the finding reported in a tertiary institution in South-west Nigeria [27]. This may be attributed to the fact that respondents in this study have extended family support and sometimes support from spouses. The finding in my study differs from the report by Tesfaw et al in Addis Ababa where about sixty-one percent of respondents had poor social support. The likely reason for this was that HIV/AIDS patients preferred to avoid seeking help from others and avoid opening up about their health due to social stigma towards themselves, which increases their isolation [28].

The majority of the respondents in this study had emotional support. This is similar to the study reported in Nepal by Amiya et al [29]. The finding from this study supports the fact that there is a link between emotional support and health in terms of direct and buffering effects. The finding from my study differs from the report by Nath et al [30] in India where the majority of the patients

had a high score for belief type of support (87.65) as compared to other types of social support like emotional support (score of 54.34) and financial support (score of 54.25). The likely reason for this is the “highly religious nature of Indians with considerable faith in god” [30].

#### The Association between social support and depression among HIV-positive individuals

In this study, there is a significant association between lack of social support and depression. This is similar to another study by Vyavaharkar et al in the United States. The finding in my study differs from the studies conducted in Enugu by Ndu et al and in Coastal South, India by Unnikrishnan et al where they found no significant association between social support and depression [12, 31, 32]. The likely reason for this is that patients got good social support because of closely-knit family system and spouse support.

#### Socio-demographic and clinical correlates of depression among HIV-positive individuals

In this study, there was no statistically significant association between age and depression. This finding is similar to the reports by Bongogo et al in South Africa and Shittu et al in Ilorin [5, 33]. The likely reason individuals can experience depression at different times in their lives for various reasons [33]. The finding in my study differs from the outcome of the study conducted by Getalem and Emnet in Ethiopia which reported that there was a significant association between age and depression. The likely reason may be fear of stigma or discrimination and fear of loss of partners in the future due to the nature of the disease.

This current study showed that there was no statistically significant association between gender and depression. This is similar to the study reported by Aguocha et al [11]. The finding in my study is not in keeping with the report from the study conducted by Ibrahim et al in North-eastern Nigeria which stated that there is a statistically significant association between gender and depression. The likely reason for this is the additional psychological stresses faced by women living with a socially stigmatizing illness both at home and work [35].

In this study, there was no significant association between depres-

sion and level of education. This is similar to studies conducted by Yee et al in Kuala Lumpur and by Aguocha et al in Owerri. The finding in my study differs from the report by Onyebueke et al in Enugu which looked at depression and suicide risk among HIV infected individuals attending outpatient HIV/AIDS clinic of a Nigerian Tertiary Health Institution [36, 37]. The likely reason for this difference was the smaller size of the study population compared to my study where the sample size is twice their sample size. Studies have shown that the smaller the sample size the less reliable the study [38].

In this study, there is no association between occupation and depression. This is in keeping with another study by Ibrahim et al in Jos [38]. This study differs from the report by Bhatia et al in Delhi who looked at the prevalence of depression in people living with HIV/AIDS undergoing ART and factors associated with it [39]. The likely reason for this difference was that a significant proportion of their study population was between 14 to 20 years. It is noteworthy that this age group is less likely to be working. It is therefore very likely that this may have accounted for the difference in the finding.

This study showed that there is a significant association between the income of respondents and depression. This is similar to the report by Shittu et al in Ilorin [5]. The finding in this study shows that low income predominates, thus, income has been shown to significantly affect the person overall living conditions [5]. Also, low-income people living in poverty, cannot afford healthy food, sufficient clothing and good housing all of which are necessary preconditions of good health [5].

In this study marital status is significantly associated with depression. This is similar to the reports by Agaba et al in Jos, Onyebueke et al in Enugu and Shittu et al in Ilorin [37, 5]. The likely reason given was that women are much likely to experience negative social stress than men because they carry the double burden of raising children and household chores. The finding in my study differs from the report by Aguocha et al in Owerri which stated that there is no significant association between marital status and depression [11]. The likely reason is the fact that being married with a good social support system has strong protection against depression and married people are less prone to depression. Additionally, Aguocha et al used PHQ-9 which is a screening instrument [11].

In this study, there was no significant association between family history and depression among respondents. This is similar to the report by Sale et al [41, 42]. The finding in this current study differs from the report by Kinyanda et al who studied Prevalence and risk factors of major depressive disorder in HIV/AIDS as seen in the semi-urban Entebbe district, Uganda [43]. The likely reason for this difference is that the study was conducted in two different clinics using cross-sectional and longitudinal study designs. Hence, the finding was consistent with family studies, which have shown that the history of depression in the first degree relations of a subject naturally increases the subjects' vulnerability to developing depression [35]. Another likely reason for the difference in findings of this present study and the Uganda study is underreporting of family history of mental illness by patients and relatives in

typical African study, this is due to the fear of stigmatization [35].

In this study, there is no significant correlation between age at diagnosis of HIV and depression. The finding in this study differs from a study conducted by Aguocha et al which looked at Prevalence and socio-demographic determinants of depression among patients attending HIV/AIDS Clinic in a teaching hospital in Imo State [11]. The likely reason may be because of the use of PHQ-9 which is a screening instrument for diagnosing depression.

This present study reported that there was no significant correlation between the duration of HIV illness and depression. This is similar to reports by Rai et al in India and Yee et al in Kuala Lumpur but differs from the outcome in a study by Olley et al who looked at Psychopathology and coping in recently diagnosed HIV/AIDS patients [44-46]. The likely reason for this difference is because the study was done among patients who are recently diagnosed with HIV and the mean duration of HIV diagnosis was about six months.

This study reported that there was no significant correlation between the respondents' duration on HAART and depression. This is similar to a study reported by Rabkin et al but differs from the outcome in a study by Wagner et al who looked at depression and its relationship to HIV antiretroviral adherence [47, 48]. The likely reason for this contrast maybe the longitudinal study design used compared to the cross-sectional study design that was used in this study.

### **Predictors of depression in the respondents**

This study showed that the absence of social support is the most significant predictor for depression. This is similar to the findings reported by Xiao et al in China [49]. The finding in this present study differs from the report by Leserman et al who carried out a longitudinal study of social support and social conflict as predictors of depression and dysphoria among HIV positive gay men in North Carolina, United States of America [50]. Although the North Carolina study agrees that the absence of social support is an important predictor of depression among HIV positive men, it goes ahead to indicate that social conflict is the most significant predictor for depression. The likely reason for this difference maybe because of the differences in study design. It should be noted that the North Carolina finding is a longitudinal study that followed up their subjects for one year whereas this present study is cross-sectional.

### **Limitations**

This study is hospital-based and the results may not be generalised to the entire population of People Living with HIV/AIDS. Also, OSLO-3 was used for the first time among HIV/AIDS in this environment. Although, it has been validated for use in Nigeria.

### **Conclusion**

This study showed that the majority (95.7%) of the respondents received social support. The commonest type of social support respondents received was emotional support (90.1%). More than half of the respondents have strong social support. There was an association between social support and depression. The most significant predictor for depression was social support.

This study showed that the majority (83.3%) of the respondents were females and depression was significantly associated with marital status. Also, majority (94.1%) of the respondents had no family history of depression.

In this study, there was no significant correlation between depression and age at diagnosis of HIV, duration of HIV infection, and duration on HAART.

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### Data Availability Statement

The data that support the findings of this study are available on request from the corresponding author, [C.O].

### Disclaimer

The views and opinions expressed in this article are those of the authors and do not necessarily reflect the official policy or position of any affiliated agency of the authors.

### Competing interests

The authors have declared that no competing interests exist.

### Authors' contributions

This work was carried out with the collaboration of all the authors. C.O, E.O, and E.E designed the study. C.O wrote the protocol for the study. In addition, C.O, E.O, E.E, and B.I did the literature search, and C.O and E.O were in charge of the data analysis. C.O wrote the initial draft of this publication, O.P prepared the tables, and all the authors made corrections for the final draft of this manuscript.

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