# Health Related Quality of Life and Associated Factors Among HIV Patient on Highly Active Antiretroviral Therapy at Assosa Hospital, Northwest Ethiopia, 2019

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**Abstract:** Health-related quality of life is a broad concept reflecting a patient's general subjective perception of the impact an illness and treatment given for them. It measures an integral part of patient follow up by providing valuable feedback about the disease as well as associated interventions. The aim of this study was to assess health related quality of life and associated factors among HIV patient on highly active antiretroviral therapy at Assossa general hospital. Institution based cross-sectional study design was conducted among HIV positive patient from February, 8 to March, 21$^{st}$ 2018 at Assossa general hospital. Data was collected using medical outcome study HIV questionnaire, systematic sampling technique was used, entered in to Epi-info software version 7 analyzed using the statistical product and service solution version 20. Bivariate at p-value < 0.2 and Multivariate Logistic regression p-value at <0.05 was used to identify factors associated with health related quality of life. Three hundred participants with 96.5% response rate were involved in the study. About fifty six point seven percent of the study participants mean (±SD) score of overall health related quality of life was 54.85±11.3. Participant that had viral load copies of forty and below were AOR=3.19 (95%CI 1.73, 5.91) associated with good health related quality of life and participant who have no recent opportunistic infection were AOR=2.87 (95%CI 1.49, 5.51) associated with good health related quality of life. Therefore, the health related quality of life was good. Occupational status, living condition viral load copies/ml and opportunistic infection showed association with good health related quality of life and Further research was suggested.

**Keywords:** Acquired Immunodeficiency Syndrome, Health Related Quality of Life, Opportunistic Infection

## 1. Introduction

Human immunodeficiency virus (HIV) is the virus that attacks white blood cells that are crucial to the normal functioning of the immune system and which protects the body against illness. Whereas Acquired Immunodeficiency Syndrome (AIDS) which occurs when the immune system is weakened by HIV to the point where a person is susceptible to any number of Opportunistic Infections (OIs) or diseases [1].

HIV/AIDS pandemic remains the most serious of infectious disease challenges to public health but following the emergency of highly active antiretroviral therapy (HAART) changed the disease's natural course, marking a considerable reduction in mortality, the occurrence of opportunistic infections, the time of hospitalization, and the time interval until progression to AIDS [2]. Current HAART formulation are now more effective, easier to take, and often better tolerated than the first HAART regimens. Still, patients are burdened with having to take lifetime treatment with potential adverse effects, which may diminish their health-related quality of life (HRQoL) [3].

As of World Health Organization (WHO), *"Quality of life is defined as an individuals' perception of their position in life in the context of the culture and value systems in which they live in relation to their goals, expectations, standards and concerns"*. This indicates individuals satisfaction depends on their physical, mental, social relationships, cognitive and spiritual aspects of their life [4, 5]. Nearly 36.7 million people

had HIV infections across the world in 2016, compared to 33.3 million in 2010 and HIV prevalence was estimated to be 0.8% in 2016 that has leveled with the prevalence reported in 2001and the vast majority of people living with HIV were found in low- and middle-income countries [6].

The introduction of highly active antiretroviral therapy has reduced global HIV/AIDS-related deaths from 1.5million in 2010 to 1.1 million in 2016. Beside this, sustained viral suppression and reduction of viral load in the blood and other bodily fluids has led to substantial decreases in the incidence of AIDS-defining illness and AIDS-related morbidity and mortality [7, 8].

Ethiopia is one of the sub-Saharan African countries severely heated by the HIV/AIDS pandemic and HIV has penetrated even the hard-to-reach rural areas. However, with the existing socio-cultural diversity of the country, the prevalence and distribution of HIV greatly varies by region, place of residence and sex of individuals [9]. Prevalence rate of HIV was estimated to be 1.16% and 14,872 death 22,827 newly infected with HIV in the country [10].

Survival among patients infected with HIV has significantly improved following the introduction highly active antiretroviral therapy. But still, patients are burdened with taking lifetime treatment and drug adverse effects, which may diminish their health-related quality of life. These judgments include the expectations learnt from experiences, highly specific and vary between individuals in physical mental, economic and employment status are factors influencing quality of life based on previous studies on quality of life in relation to education and employment [11, 12].

Measuring HRQoL can give base line data for health care managers and authorities or policy maker, NGO, researchers and health care worker as it make possible for evaluation of the efficiency, effectiveness and cost–benefit ratio of health care programmes, and for pharmaceutical companies that gather data on effectiveness, clinical benefit, satisfaction with treatment and treatment adherence of HIV patients. HRQoL assessment will also help clinicians and policy maker to make judgments about areas of need of PLWHA and will be assistance in planning the interventions to address these needs with the overall aim of improving quality of life. Therefore this study will be designed to assess how PLWHA who accessed care are perceived their health related quality of life from ART clinic at Assossa Hospital.

# 2. Methods and Materials

## 2.1. Study Design

Institution based cross-sectional study was conducted.

## 2.2. Study Area and Period

Assossa general hospital is found in capital city of Benishangul Gumuz regional state Assossa town that serves total population of around 261449. There for, the study was conducted in Assossa general hospital with the total number of PLWHA currently enrolled in chronic care were found to

be around 1127 [13, 14] and the study was conducted from February 8, to march 21, 2018.

## 2.3. Source Population

All HIV positive patient who were on Highly Active Antiretroviral Therapy at Assosa general hospital.

## 2.4. Study Population

All HIV positive patient who were on Active Antiretroviral Therapy that fulfill the inclusion criteria and available during the study period.

## 2.5. Inclusion Criteria

1) All HIV positive patients on ART who were age>18 years.
2) Known HIV positive patient enrolled in chronic care for at least six (6) months and above.

## 2.6. Sample Size

It was calculated by using single population proportion formula with Epi Info-7 software to obtain required sample size with the following assumption. proportional rate 43.6% [15] and 10% non-response rate. Based on this assumption Single population proportional formula was used to describe as follows:

The final sample size by adding 10% (28) nonresponsive rate was 283+28=311.

## 2.7. Dependent Variable

### 2.7.1. Health Related Quality of Life Study Subject

HRQoL dimension includes (General Health perception, Vitality, Bodily pain, Quality of life, Health distress, Role functioning, Cognitive functioning, Social functioning, Physical functioning, Health transition).

### 2.7.2. Independent Variables

The selected Sociodemographic variables were (Age, Gender, Family size, Education status, Occupational status marital status, Living condition, Residence, Income, Religion, and Social Support).

### 2.7.3. Clinical Factors

The selected clinical characteristic variable were (Duration of treatment, WHO Clinical stage, recent viral load, recent CD4+count, Adherence status, HAART Regimen, Functional status, opportunistic infection).

### 2.7.4. Behavioral Factors

The selected behavioral characteristic of the study participant were (Alcohol, Chat, cigarette smoking and illicit drug use).

## 2.8. Operational Definition

Good health related quality of life is means study subject those who score above the mean from 11 dimension of MOS HIV questionnaire [16-19].

Poor health related quality of life those who score below the mean was taken after summarizing and computing 11dimension of MOS HIV questionnaire [16, 18-20].

## 2.9. Data Quality Assurance

Data was checked for its completeness and missing items in every moment. Beside all this data was checked for completeness during data collection, entry and compilation before analysis was made by principal investigator. Furthermore, translation of the English version questionnaire into Amharic language was carried out. by Amharic speakers English language professionals and data was cleaned before analysis carried on.

## 2.10. Data Analysis

Data was entered into Epi info version 7software. and exported to SPSS version 20. Data was presented with frequency tables. bivariate analysis was used with cut of point at P<0.2 and entered into multivariable analysis then significance level was sated at P<0.05 and confidence level of 95%. By considering mean of each dimension HRQoL was categorized as poor or good HRQoL. score below the mean classified poor quality of life for 11 domains. Finally, model fitness was checked using Hosmer and Lemeshow statistical fit test.

## 2.11. Ethical Clearance

This was obtained from ethical review committee of Debre Markose University college of Health science. After that study subject were oriented about the purpose, procedure of data collection, confidentiality, privacy and the absence of any direct benefit. participation was based on willingness using written and verbal consent and who were unwilling to participate and refusing the consent were respected. Cited references were presented for due acknowledgement of academic source.

# 3. Result

## 3.1. Socio-demographic Characteristics

A total of 311 HIV positive patient were sampled for this study. From this three hundred (96.5%) were responded with the mean age of the study participants was found to be (37±SD 9.57) years. Out of the total participants 155 (51.7%) were female and 142 (47.3%) were married currently and living together. Concerning the religious categories of the study participants, 158 (52.7%) orthodox, 96 (32.0%) Muslim and 43 (14.3%) were catholic faith follower. Regarding family size, occupational status and monthly income of the study participants 164 (54.7%) had three and more than three family member, 205 (68.5%) were employed and 70 (23.3%) of the study participants had below 500 Ethiopia birr and 111 (37%) had monthly income of 2000 thousand Ethiopian birr and above respectively. Concerning social support 214 (71.3%) had support from family or their friends the remaining finding of this study were displayed below in (table 1).

*Table 1. Distribution of Socio-demographic characteristic of HIV positive patient at Assossa General Hospital Benishangule Gumuze Regional State, West Ethiopia 2018.*

| Variable | Category | Frequency (n=300) | Percent (%) |
|---|---|---|---|
| Age | 18-35 | 137 | 45.7 |
| | >35 | 163 | 54.3 |
| Sex | Male | 145 | 48.3 |
| | Female | 155 | 51.7 |
| Religion | Orthodox | 158 | 52.7 |
| | Muslim | 96 | 32 |
| | Catholic | 43 | 14.3 |
| | Others | 3 | 1 |
| Place of living | Urban | 233 | 77.7 |
| | Rural | 67 | 22.3 |
| Family size | <=2 | 136 | 45.3 |
| | >=3 | 164 | 54.7 |
| Marital status | Single | 48 | 16 |
| | Married | 142 | 47.3 |
| | Divorced | 68 | 22.7 |
| | Widowed | 42 | 14 |
| Occupational status | Employed | 205 | 68.3 |
| | Unemployed | 95 | 31.7 |
| Monthly income | <500 | 70 | 23.3 |
| | 501-999 | 33 | 11 |
| | 1000-1499 | 55 | 18.3 |
| | 1500-1999 | 31 | 10.3 |
| | >=2000 | 111 | 37 |
| Level of education | Illiterate | 70 | 23.3 |
| | Primary school | 78 | 26 |
| | Secondary school | 64 | 21.3 |
| | Higher education | 88 | 29.3 |
| Living condition | Alone | 81 | 27 |
| | With family/friends | 219 | 73 |
| Social support | No | 86 | 28.7 |
| | Yes | 214 | 71.3 |

### 3.2. Clinical Characteristics

All of the clinical data available on patient chart were updated after initial entry to the time of data collection. Out of all the study participant 210 (70%) individual had taken treatment for more than three years and the dominant WHO clinical stages at the time of this study were stage one 201 (67%) and stage three 53 (17.7%) respectively. Concerning recent viral load 174 (58%) of the study participant had more than 40copies/ml and around 119 (39.7%) participant had opportunistic infection (table 2).

**Table 2.** *Clinical characteristics of patient on HAART at Assossa General Hospital Benishangul Gumuz Regional State west Ethiopia, 2018.*

| Variable | Category | Frequency (n=300) | Percent% |
|---|---|---|---|
| Duration of treatment (in months) | <=36 | 90 | 30 |
| | >36 | 210 | 70 |
| RecentCD4+ cells count/mm³ | <=350 | 143 | 47.7 |
| | >350 | 157 | 52.3 |
| Recent Viral load | <=40 | 148 | 49.3 |
| | >40 | 152 | 50.7 |
| Recent WHO Clinical Stage | Stage I | 201 | 67 |
| | Stage II | 8 | 2.7 |
| | Stage III | 53 | 17.7 |
| | Stage IV | 38 | 12.3 |
| HAART Regimen | First line | 231 | 77 |
| | Second line | 69 | 23 |
| Adherence status | Good | 227 | 73.7 |
| | Fair | 62 | 20.7 |
| | Poor | 17 | 5.7 |
| Functional status | Working | 243 | 81 |
| | Ambulatory | 49 | 16.3 |
| | Bedridden | 8 | 2.7 |
| Opportunistic infection | No | 181 | 60.3 |
| | Yes | 119 | 39.7 |

### 3.3. Behavioral Characteristics

From the total three hundred eleven sample size three hundred were responded for the interview with 96.7% response rate. Out of the total study participants who reported Chewing chat accounts 95 (31.7%), drinking alcohol 92 (30.7%), Illicit drug use were 64 (21.3%) and cigarette smoker were 93 (31%) at the time of data collection (table 3).

**Table 3.** *The Distribution of Behavioral characteristics of HIV positive patient at Assossa General Hospital Benishangul Gumuz Regional State, West Ethiopia April, 2018.*

| Variable | Category | Frequency (n=300) | Percent (%) |
|---|---|---|---|
| Chewing chat | No | 205 | 68.3 |
| | Yes | 95 | 31.7 |
| Alcohol drinking | No | 208 | 69.3 |
| | Yes | 92 | 30.7 |
| Cigarette smoking | No, | 207 | 69 |
| | Yes | 93 | 31 |
| Illicit drug use | No, | 236 | 78.7 |
| | Yes | 64 | 21.3 |

### 3.4. Health Related Quality of Life of Study Subject

About 300 participants completed the MOS-HIV Health Survey questionnaire and out of this 48% had good general health perception, around 167 (55.7%) the study participant had good physical health, and around one hundred sixty one (53.7%) of the study participant had good cognitive functioning. More than half 158 (52.7%) participants had good MHS. The overall HRQoL mean score of the study participant was 54.85±11.3 and fifty six point seven percent of participant have good health related quality of life. The transformed mean scores of each of the 11 MOS-HIV dimension and two summary scores were presented below (table 4).

**Table 4.** *Medical outcome study HIV dimension score of 300 study participants who were on HAART at Assossa General Hospital Benishangul Gumuz Regional State west Ethiopia 2018.*

| Dimension | Range of raw score | Transformed mean score ± SD | Respondents that score above mean in (%) |
|---|---|---|---|
| General Health perception | 5-25 | 49.1± 1.9 | 144 (48%) |
| Physical health | 6-18 | 63.91 ± 4.75 | 167 (55.7%) |
| Bodily pain | 2-11 | 43.1 ± 4.2 | 130 (43.3%) |
| Vitality/fatigue | 4-24 | 51.05 ± 3.8 | 39 (13%) |
| Social function | 1-6 | 45.6 ± 2.3 | 138 (46%) |
| Role function | 2-4 | 45 ±.98 | 137 (45.7%) |
| Mental health | 5-30 | 48.3 ± 3.0 | 168 (56%) |
| Health distress | 4-24 | 60 ± 9.1 | 177 (59%) |
| Cognitive function | 4-24 | 55.6 ± 9.11 | 161 (53.7%) |
| Quality of life | 1-5 | 42.75± 1.91 | 128 (42.7%) |
| Health transition | 1-5 | 42.75± 1.91 | 129 (42.7%) |
| Physical summary score | - | 54.8 ± 5.7 | 160 (53.3%) |
| Mental summary score | - | 54.9 ± 16.8 | 158 (52.7%) |
| Over all HRQoL | - | 54.85±11.3 | 170 (56.7%) |

### 3.5. Factors Associated with Health Related Quality of Life

All questionnaire were summarized and computed then over all health related quality of life were generated. Then logistic regression analysis shows that variables like place of living (residence), level of education, occupational status, social support from family/friends, living condition, recent viral load, functional status, illicit drug use, HAART regimen, opportunistic infection, illicit drug use, alcohol drink, shows association in bivariate regression model at p < 0.2.

In multivariable logistic regression model only living condition, absence of opportunistic infection and decreased number of viral load shows significant association with good overall health related quality of life at p < 0.05. This study revealed that participants who were employed found to be AOR=2.2 (95%CI=1.29, 3.73) times more likely to good health related quality of life as compared with their counterpart. The study participants who were living with their family and friends AOR=1.49 (95%CI 1.14, 3.34) time more likely to have good health related quality of life than those who were living alone and participants that had viral load copies of forty and below were AOR=3.19 (95% CI, 1.73, 5.91) times more likely to have good health related quality of life as compared to their counterpart. participant who has no recent opportunistic infection were AOR=2.87 (95% CI, 1.49, 5.51) times more likely to have good health related quality of life as compared to those who had opportunistic infection (table 5).

***Table 5.*** *Bivariate and multivariable logistic regression result of Factors associated with health related quality of life of HIV positive patients at Assossa general hospital in Benishangul Gumuz regional state West Ethiopia, 2018 (n=300).*

| Variables | Category | HRQoL | | COR (95%CI) | AOR (95% CI) | p-value |
|---|---|---|---|---|---|---|
| | | Good | Poor | | | |
| Living condition | With family | 136 (45.33%) | 83 (27.66%) | 2.26 (1.35, 3.81) | 1.95 (1.14, 3.34)* | 0.014 |
| | Alone | 34 (11.33%) | 47 (15.66%) | 1.00 | 1.00 | |
| Occupational status | Employed | 129 (43%) | 76 (25.33%) | 2.23 (1.36, 3.66) | 2.20 (1.29, 3.73)* | 0.004 |
| | Unemployed | 41 (13.66%) | 54 (18%) | 1.00 | 1.00 | |
| Chat chew | No | 130 (43.33%) | 84 (28%) | 1.78 (1.07, 2.95) | 1.99 (0.66, 6.02) | 0.22 |
| | Yes | 40 (13.33%) | 46 (15.33%) | 1.00 | 1.00 | |
| Cigarette smoking | No | 137 (45.66%) | 70 (23.33%) | 3.56 (2.13, 5.95) | 0.72 (0.23, 2.23) | 0.57 |
| | Yes | 33 (11%) | 60 (20%) | 1.00 | 1.00 | |
| Alcohol drink | No | 140 (46.66%) | 68 (22.66%) | 4.25 (2.52, 7.18) | 0.99 (0.28, 3.32) | 0.99 |
| | Yes | 30 (10%) | 62 (20.66%) | 1.00 | 1.00 | |
| HAART regimen | First line | 150 (30%) | 81 (27%) | 4.53 (2.25, 8.15) | 1.49 (0.63, 3.54) | 0.37 |
| | Second line | 20 (6.66%) | 49 (16.33%) | 1.00 | 1.00 | |
| Opportunistic infection | No | 141 (47%) | 54 (18%) | 6.84 (4.03, 11.63) | 2.87 (1.49, 5.51)* | 0.017 |
| | Yes | 29 (9.66%) | 76 (25.33%) | 1.00 | 1.00 | |
| Recent Viral load | <=40 | 100 (33.33%) | 26 (8.66%) | 5.71 (3.37, 9.68) | 3.19 (1.73, 5.91)* | 0.001 |
| | >40 | 70 (23.33%) | 104 (34.66%) | 1.00 | 1.00 | |

***Table 6.*** *Factors associated with health related quality of life of HIV positive patients at Assossa general hospital in Benishangul Gumuz regional state West Ethiopia, 2018 (n=300).*

| Variable | | Good | Poor | COR (95%CI) | AOR (95% CI) | P-value |
|---|---|---|---|---|---|---|
| Functional status | Good | 156 (52%) | 87 (29%) | 2.98 (0.69, 12.01) | 1.03 (0.20, 4.91) | 0.99 |
| | Fair | 11 (3.66%) | 38 (12.66%) | 0.48 (0.09, 2.34) | 0.36 (0.06, 1.95) | 0.24 |
| | Poor | 3 (1.00%) | 5 (1.66%) | 1.00 | 1.00 | |
| Level of education | Anabel to read& write | 33 (11%) | 37 (12.33%) | 1.00 | 1.00 | |
| | Elementary | 46 (15.33%) | 32 (10.66%) | 1.62 (0.84, 3.09) | 1.56 (0.71, 3.46) | 0.26 |
| | High school | 36 (12%) | 28 (9.33%) | 1.44 (0.72, 2.84) | 1.48 (0.61, 3.58) | 0.38 |
| | Higher education | 55 (18.33%) | 33 (11%) | 1.86 (0.98, 3.53) | 0.98 (0.45, 2.41) | 0.97 |
| Residence | Urban | 139 (46.33%) | 94 (31.33%) | 1.71 (0.99, 2.96) | 1.35 (0.68, 2.67) | 0.38 |
| | Rural | 31 (10.33%) | 36 (12%) | 1.00 | 1.00 | |
| Illicit drug use | No | 145 (48.33%) | 91 (30.33%) | 2.48 (1.41, 4.38) | 0.53 (0.21, 1.29) | 0.16 |
| | Yes | 25 (8.33%) | 39 (13%) | 1.00 | 1.00 | |

NB: * indicate statistical significance level at p-value < 0.05

## 4. Discussion

The present study intended to assess health related quality of life and associated factors among PLWHA at Assossa general hospital. In this paper, the participants mean (±SD) score of physical health (63.91), mental health (48.3), cognitive function (55.7) and energy/fatigue (51.01) were found to be comparable with study which was conducted in Iran [19]. But it was lower as compared to study done in Ireland, Greek and Uganda [2, 16, 21]. This variation might be because of methodological difference, study area and due to the fact that health related quality of life is socio demographically sensitive.

Overall mean score of HRQoL in our study area was 54.85±11.3 which is comparable with the study done in Ireland and Iran [16, 19]. Moreover, the transformed mean score for physical health summary and mental health summary score were 54.8±5.7 and 54.9±16.8, respectively which was consistent with studies conducted in other countries, including Ireland, Belgium and Iran [16, 22, 23]. On the other hand, HRQoL study participants reported in this paper higher was compared to study done at Bahirdar [15]. This variation might

be due to difference in data collection tools and improved HIV care service in the country following up to dated training which was given in the year 2014 for all health care worker who are providing HIV care and treatment service in ART clinic and the effectiveness of some of the interventions for HIV positive patient who were exposed to ART clinic.

Conferring to this study participants that had viral load copies of forty and below were AOR=3.19 (95% CI, 1.73, 5.91) times more likely to have good HRQoL. Even if many of previous study did not show its association with HRQoL; this finding was comparable with study done at Thailand and Portugal, decreased virological status was associated with a good HRQoL [18, 24, 25]. The possible justification might be its relationship with immunological Status because as viral load decreases there might be improvement in CD4-cell count and decreased vulnerability to disease that finally leads to improvement in HRQoL corroborated by scientific evidence.

This Study shows that Participants who have no recent OI were AOR=2.87 (95% CI, 1.49, 5.51) times more likely to have good HRQoL as likeness to those who had opportunistic infection. This finding was comparable with study done Valladolid a tertiary hospital RioHortega University and Uganda [21, 26]. The possible justification might be due to

the fact that the presence of opportunistic infection will have moderate to severe body function alteration due to the nature of disease process that finally affects HRQoL of HIV positive people who are on HAART. The presence of opportunistic infection cause individual to have compromised daily living activities, limited participation income generating activities and finally affect health related quality of life.

The subject who were currently living with their family or friends found to be AOR=1.95 (95% CI, 1.14, 3.34) times good health related quality of life as likeness to those who were living alone. This finding was comparable with study done in Cambodia and Iran [19, 27]. The possible justification might be those who were living with their family or friend might have good or better social support that had indirect role in HRQoL, by mediating depression. In fact, biological treatments were not enough for treating such patients and, at the same time, getting familiar with and eliminating their mental problems can be a good prognosis for their treatment. This finding suggests that, improving social support could reduce depressive symptoms, which then could improve HRQoL.

This study revealed Employed Participants were AOR=2.2 (95% CI, 1.29, 3.73) times to have good health related quality of life as compared with those who were not employed. This study demonstrates the same finding with similar study conducted in Bangladesh, Canada, Ethiopia and Zimbabwe [15, 22-29]. The possible justification might be due to the fact that being unemployed have negative impact on psychological well-being and HRQoL of individual due to feeling of worthlessness, loneliness, financial limitations that could result poor standard of living condition. People with HIV may be disinclined to go back to work or seek new job because of the stress and misconceptions related to disclosure of their HIV status to their employers and colleagues which results in poor HRQoL.

## 5. Conclusions

This study showed that HRQoL of study participants was good. Living condition, occupational status, viral load copies/ml and opportunistic infection revealed significant association with good health related quality of life. On the other hand, age, sex, family size, income level of education was not associated with health related quality of life.

## Limitation

1) Participants for this study were recruited from one urban hospital so; this could limit the generalizability of the findings to other facility. Inferring this finding to other settings would be with great caution due to the fact that HRQoL is highly sensitive to socio-cultural and demographic nature of the HIV positive people.
2) The nature of study design limit us not to assess change in HRQoL over time. Making follow up for study subject might provide valuable information on changes in HRQoL.

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