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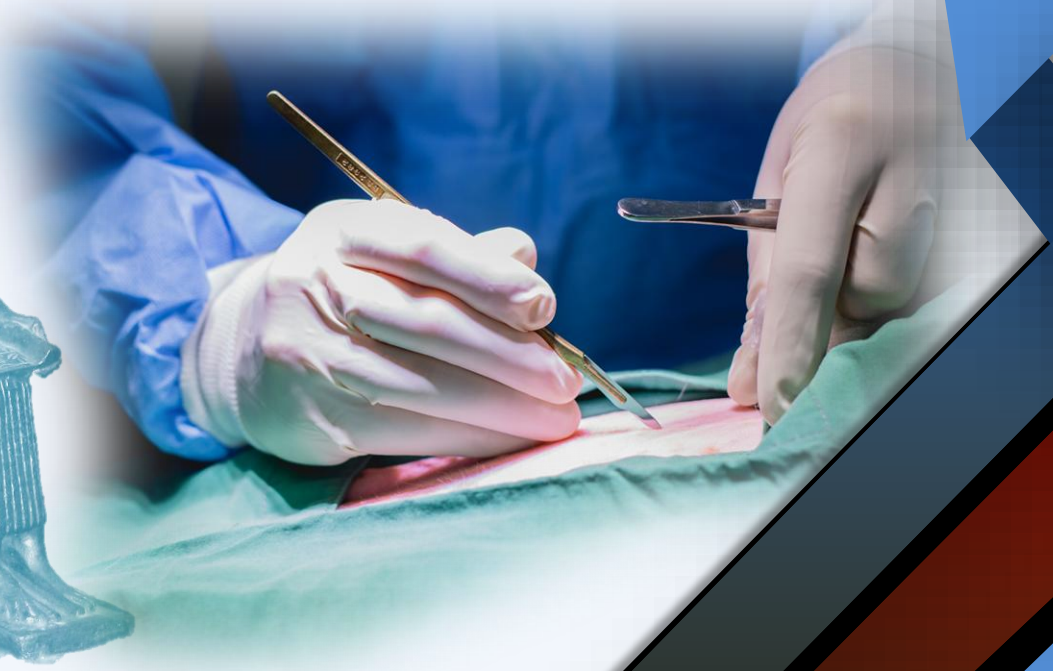

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Original Article

Assessment of Efficacy of Treatment of Depression and Anxiety Among Sample of Egyptian HIV Patients on Prognosis of HIV Disease as Measured by Cluster of Differentiation 4 [CD^4] Count

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ABSTRACT

Background: Depression appears to occur at a higher prevalence among HIV-positive people than among the general population. Treatment of depression in HIV patients either medically, or psychologically will increase HIV medication adherence which will affect its severity and progression.

The aim of the work: this study designed with the aim to detect the impact of depression and anxiety treatment with Serotonin inhibitors [SSRIs] and behavioral management in HIV patients on the severity, and progression of the disease in the terms of the CD^{4+} cell count and medication adherence.

Patients and Methods: This prospective interventional study was done on 120 HIV patients complaining of depression and anxiety. Depression and anxiety were assessed through the Hospital Anxiety and Depression Scale [HADS]. All patients were administered SSRIs and psychotherapy for 6 months. The CD^4 count was measured before, and after the treatment.

Results: Patients had a high median score of HIV-related stigma: 19 [12–18.3], lower median scores of social supports: 15 [22–37], treatment adherence self-efficacy: 81 [89.3–115], physical quality of life: 33.4 [42.6–56.4], and mental quality of life: 31.9 [37.6–51.6]. As regards the HADS Cronbach's α, we found that it was 0.79 for anxiety, 0.76 for depression, and 0.87 for the total HADS**.** In terms of CD4 count, we found that there was no statistically significant difference in follow-up CD4 count after administration of anti-depressant and anti-anxiety treatment at study termination.

Conclusions: Depression could negatively affect the treatment of HIV. This can be due to HIV related stigma, lower social support, treatment adherence, and lower quality of life. However, the values of CD4 cannot used as a treatment indicator.

Keywords: HIV; Depression; Anxiety; CD4.

INTRODUCTION

Depression is a very common and bothersome illness, with a point prevalence of 10% after one year and a lifetime prevalence of 4.9% to 17.9%. Persistent sadness, decreased appetite, loss of interest, poor attention, feelings of guilt or worthlessness, disturbed sleep, psychomotor slowness, low energy, and suicidal ideation are all symptoms of depression [1,2]. Depression's negative effects on a person's health, functioning, and quality of life can extend far beyond the emotional misery they produce. Poor adherence to medical Regimens has been linked to mental health conditions like depression. The research reports that depression in persons with HIV is connected to impaired health status and health-related quality of life, and meta-analytic results suggest that depressed patients are 3 times greater than non-depressed patients to be non-adherent to the recommendations of the medical treatment [3–6].

Depression appears to occur at a higher prevalence among HIV-positive people than among the general population, as indicated by studies of the disease's progression. One-third of 129 adults living with HIV/AIDS in a recent study had a Beck Depression Inventory [BDI] score of 14 or higher [mild to moderate depression], and 27% fulfilled the criteria for a current mood disorder [7–10]. The impact of HIV on the vocational handicap, brain, isolation, stigma, body image alterations, grief, and disability may all contribute to increased depression among HIV-infected individuals [11]. Over time, depression has been linked to a drop in the number of Cluster of Differentiation 4 [CD^{4+}] cells. When considering the effects of antiretroviral treatment over a 2-year period, depression is also a predictor of a more rapid fall in CD^{4+} cell numbers and a considerable increase in HIV viral load [12]. Maladaptive self-care practices may be one way in which depression hinders HIV treatment. Substance misuse, sexual risk-taking, and a lack of treatment adherence have all been linked to depression [13]. Negative medical outcomes, such as those indicated by viral load or CD^{4+} cell count, are strongly correlated with non-adherence. Viral mutations that cause treatment resistance may emerge as a result of inadequate adherence [14]. Treatment of depression in HIV patients either medically, or psychologically will increase HIV medication adherence which will affect its severity and progression [15]. So, this study aimed to detect the impact of depression and anxiety treatment with Serotonin inhibitors [SSRIs] and behavioral management in HIV patients on the severity, and progression of the disease in the terms of the CD^{4+} cell count and medication adherence.

PATIENTS AND METHODS

This prospective interventional study was done on 120 HIV patients between January 2018 to the end of December 2020 in the Mansoura Fever hospital, Dakahlia Governorate, Egypt. Our study followed the Helsinki Declaration principles and ethical approval was obtained from the Damietta Faculty of Medicine, Al-Azhar University. We included the patients after taking informed consent. Patients' recruitment was done according to the following:

The Inclusion Criteria were: 1] HIV patients suffering from anxiety and depression; 2] Willing to participate in the study. However, **the exclusion criteria were:** 1] HIV patients diagnosed with psychological disease before they were diagnosed with AIDS; 2] Drug addict HIV patients; 3] HIV patients diagnosed with chronic diseases.

Data collection:

Data were collected from the patients through interview questionnaires, which consisted of socio-demographic characteristics questions [gender, age, occupation, education level, marital status], clinical data questions [time of starting HIV, CD^4 count], and depression and anxiety symptoms. The eight-item modified Medical Outcomes Study Social Support Survey [mMOS-SS] was used to measure social support. The Internalized AIDS-associated Stigma Scale [IA-RSS], comprising six items, was utilized to evaluate internalized stigma associated to HIV. The HIV Treatment Adherence Self-Efficacy Scale [HIV-ASES] was used to measure the level of self-efficacy for adherence to HIV treatment. The 12-item Short Form Health Survey [SF-12] was used to measure the quality of life, both physically and mentally. The Physical Component Summary [PCS] and the Mental Component Summary [MCS] are the two meta-scores that are produced from the findings of this 12-item scale, which has been validated across age, medical condition, and treatment groups. A higher quality of life is indicated by higher ratings.

Assessment of depression in the included cases was conducted by Beck's Depression Inventory II [BDI-II] scale. Anxiety was assessed by Taylor's Manifest Anxiety Scale [TMAS]. As a general indicator of anxiety as a personality trait. All patients were administered SSRIs and psychotherapy for 6 months. Each patient received the therapeutic dose of any type of SSRI in addition to the psychotherapy which includes supportive psychotherapy and cognitive behavioral therapy. SSRIs include Fluoxetine [20-60 mg/day], Sertraline [50-200 mg/day], Paroxetine [25-50 mg/day], Citalopram [20-40 mg/day], and Escitalopram [10 - 20 mg/day]. The CD^4 count was assessed before and after the treatment.

Statistical analysis: The collected data were coded, processed and analyzed using the SPSS [Statistical Package for Social Sciences] version 27 for Windows® [IBM SPSS Inc, Chicago, IL, USA]. Descriptive statistics included estimates for summarizing the continuous data as mean [X] and standard deviation [SD] for normally distributed data or median and range for skewed data. Frequency with percentage [%] was used for presenting qualitative data. Paired samples t-test was used to compare two dependent groups of parametric data. Marginal Homogeneity test was used to compare two dependent groups of categorical data [cells more than 2x2 tables].

RESULTS

Our study included 120 HIV patients who presented with depression and anxiety. Table 1 shows the demographical profile of the studied patients; Sixty percentages 60% of the participants were males, ad 40% were females. The mean age of all participants was 40.6 ± 3.4 years. The living situation was distributed as the following: 48[40%] were living with a family, 40 [33.3%] were living alone, 22 [18.3%] were living with a single parent, and 10 [8.3%] were in another living situation. In terms of sexual Orientation, 88 [73%] were heterosexual, while 32 [27%] were homosexual/bisexual. The educational level demonstrated that, 8 [7%] were illiterate, 80 [67%] could read and write basic education, 20 [17%] had secondary education, 12 [10%] had University education and above [Post Graduate education [diploma/ Master/Ph.D.]. The employment status revealed that, 70 [58%] had paid employment, 22 [18 %] were

unemployed, 10 [8%] were on sick leave, and 18 [12%] were in other conditions [Table 1]. According to the psychological assessment of the studied patients, they had a low median and IQR social support score of 15 [22–37], a high median and IQR internalized HIV-related stigma score of 19 [12–18.3], a low median and IQR treatment adherence self-efficacy score 81 [89.3–115], low median score of physical quality of life 33.4 [42.6–56.4], and low median score of mental quality of life 31.9 [37.6–51.6]. In terms of Self-reported adherence post participants of the present study 63 [52%] were non-adherent to ART [Table 2]. As shown in table [3], the Beck's Depression Inventory score before treatment was 47.25 ± 5.68 that decreased after treatment to 32.17±4.92, with a statistically significant difference between the two values [p = 0.005]. Before treatment, there were 36 cases [30%] with mild depression, 32 cases [26.7%] with moderate depression and 52 cases [43.3%] with severe depression while after treatment, there were 51 cases [42.5%] with mild depression, 40 cases [33.3%] with moderate depression and 21 cases [17.5%] with severe depression.

As shown in table [4], Taylor's Manifest Anxiety Scale before treatment was 34.09 ± 3.92 that decreased after treatment to 25.11 ± 3.24, with a statistically significant difference between the two values [p = 0.002].

Before treatment, there were 43 cases [35.8%] with mild anxiety, 39 cases [32.5%] with moderate anxiety and 38 cases [31.7%] with severe anxiety while after treatment, there were 46 cases [38.3%] with mild anxiety, 32 cases [26.7%] with moderate anxiety and 22 cases [20.8%] with severe anxiety. There was no statistically significant difference in the CD4 count or categories before and after treatment. The highest percentage were classified as stage 3 representing 65% and 63.3% before and after treatment [Table 5].

Table [1]: Demographic data in the cases of the study

Variables		Study cases [N = 120]
Gender	Male	72 [60%]
	Female	48 [40%]
Age [years]	Mean ± SD	40.6 ±3.4
Sexual orientation [n,%]	Heterosexual	88 [73%]
	Homosexual/Bisexual	32 [27%]
Living situation [n,%]	With family	48 [40%]
	Alone	40 [33.3%]
	Single parent	22 [18.3%]
	Other	10 [8.3%]
Educational level [n,%]	Illiterate	8 [7%]
	Read and write + basic education	80 [67%]
	Secondary education	20 [17%]
	University education and above	12 [10%]
Employment status [n,%]	Paid employment	70 [58%]
	Unemployed	22 [18%]
	On sick leave	10 [8%]
	Other	18 [12%]

Table [2]: Psychosocial and Behavioral Variables of the Studied Group [n=120]

Psychosocial Variables		Study cases [N = 120]
		Median [Range]
Psychosocial variables	- Social Support	15 [22-37]
	- Internalized HIV-related Stigma	19 [12-18.3]
	- Adherence Self-Efficacy	81 [89.3-115]
	- Quality of Life [Physical]	33.4 [42.6-56.4]
	- Quality of Life [Mental]	31.9 [37.6-51.6]
Self-reported adherence [n,%]	- Adherent	35 [29.2%]
	- Moderately-Adherent	22 [18.3%]
	- Non-Adherent	63 [52.5%]

Table [3]: Beck's Depression Inventory score before and after treatment

		Before treatment [n = 120]	After treatment [n = 120]	Test; P value
Beck's Depression Inventory score		47.25 ± 5.68	32.17 ± 4.92	4.548; **0.005***
Depression categories	Normal	0 [0%]	8 [6.7%]	5.714; P = **0.002***
	Mild depression	36 [30%]	51 [42.5%]	
	Moderate depression	32 [26.7%]	40 [33.3%]	
	Severe depression	52 [43.3%]	21 [17.5%]	

Table [4]: Taylor's Manifest Anxiety Scale before and after treatment

		Before treatment [n = 120]	After treatment [n = 120]	Test; P value
Taylor's Manifest Anxiety Scale		34.09 ± 3.92	25.11 ± 3.24	5.412; **0.002***
Anxiety categories	No anxiety	0 [0%]	17 [14.2%]	5.728; **0.001***
	Mild anxiety	43 [35.8%]	46 [38.3%]	
	Moderate anxiety	39 [32.5%]	32 [26.7%]	
	Severe anxiety	38 [31.7%]	25 [20.8%]	

Table [5]: CD4 level before and after treatment

		Before treatment [n = 120]	After treatment [n = 120]	Test, P value
CD4		403.8 ± 108.7	392.6 ± 110.8	1.123; 0.760
CD4 categories	Sage 1 [≥ 500 cells/µl]	11 [9.2%]	9 [7.5%]	0.942; **0.725**
	Stage 2 [200 to 500 cells/µl]	31 [25.8%]	35 [29.2%]	
	Stage 3 [< 200 cells/µl]	78 [65%]	76 [63.3%]	

DISCUSSION

We presented a sample of 120 HIV patients diagnosed with depression, with a mean age of 40.6 ±3.4. The majority of them 72 [60%] were males, 88 [73%] were heterosexual, 80 [67%] could write and have basic education, and 70 [58%] had paid employment. Patients had a high median score of HIV-related stigma: 19 [12–18.3], lower median scores of social support: 15 [22–37], treatment adherence self-efficacy: 81 [89.3–115], physical quality of life: 33.4 [42.6–56.4], and mental quality of life: 31.9 [37.6–51.6]. About 63 [52.5%] of our patients reported their non-adherence to Antiretroviral drugs [ART]. Our study was in line with a meta-analysis showed that HIV patients with depression were 14% less likely to be adherent for ART than others without depression [OR= 0.86, 95%CI [0.71-1.05] [8]. Another systematic review and meta-analysis also showed that HIV patients with significant depressive symptoms were less likely to be adherent to ART than HIV patients without significant depression symptoms [OR= 0.45, 95% CI [0.31 – 0.66]] [16]. Additionally, our patients had a higher median internalized HIV-related stigma score of 19 [12–18.3] which could reflect the reported a higher incidence of non-adherence to ART drugs in our population. This was in line with a cross-sectional study where a multiple linear regression model showed that perceived stigma had a significant association with suicidal ideation [B= 0.596, P= 0.001] [17]. Furthermore, our patients had lower median scores of social support; 15 [22–37], treatment adherence self-efficacy; 81 [89.3–115], physical quality of life; 33.4 [42.6–56.4], and mental quality of life; 31.9 [37.6–51.6]. A systematic review and meta-analysis done on patients of HIV living in Ethiopia revealed that poor social support had 2.31 times higher odds of developing depression than others who had strong social support [OR: 2.31, 95% CI: [1.69-2.93]] [18]. Additionally, a systematic review and meta-analysis showed that HIV patients who had greater stigma were less likely to report higher social support [OR= 0.96, 95% CI [0.94 - 0.99]] [19].

According to the Taylor's Manifest Anxiety Scale [TMSA], it was decreased from 34.09 ± 3.92 before treatment to 25.11 ± 3.24 after treatment. The results from the subscales are slightly lower than the α's in a study where 747 papers were reviewed [20].

Based on the Beck's Depression Inventory score, 21 [17.5%] of the patients still complaining from severe depression, 40 [33.3%] had a moderate depression, 51 [42.5%] had mild depression, and 8 [6.7%] become normal. The difference between the percentages of the patients before and after treatment was statistically significant which agreed with **Lauvsnes *et al.*** [21]. However, lower scores have been found with less time between the tests as well [21]. Therefore, results from the [TMAS] and [BDI] should not be seen as a given for a longer period of time. It should be repeated, even after several weeks have passed. Strength of our study was that the Taylor Manifest Anxiety Scale [TMAS] and Beck Depression Inventory [BDI] were completed by 87% of participants in a multicultural, multilingual population. Therefore, it has shown that the use of these mental health screening tools is feasible in traditionally hard-to-reach and hard-to-diagnose populations by utilizing translated versions of the TMAS and BDI. However, while language differences may not pose a major barrier in cross-cultural study populations, interpretation of results may vary across cultures. Slight variations in the wording of questions may unintentionally change the meaning across cultures. Additionally, the norms and standards for expressing emotions vary between cultures. How depressive symptoms manifest and are described is influenced by cultural background. While the TMAS and BDI have been validated and widely used across cultures, it is still possible cultural biases impacted how participants from diverse backgrounds responded to and interpreted scale items in unlabeled ways. As such, care should be taken when generalizing results to other populations.

Maters, Kim, and Coyne reported that very few validation studies report about challenges in cross-cultural use of the [TMAS] and [BDI] [22]. Additionally, several interviewers reported participants having difficulties in interpreting some of the questions as some of our sample were illiterate. In addition, a large proportion of the participants refused to participate, could not be reached to make an appointment, or did not show up at their appointment.

A final limitation might be that by using the [TMAS] and [BDI] to determine symptoms of psychological distress, some participants who had a higher score on only one of the two subscales may have been "missed". Previous studies have used cut-off scores of ≥8 or ≥11 for the individual subscales [23]. Finally, showed that there was no statistical significance difference in follow-up CD4 count after administration of anti-depressant treatment with Serotonin inhibitors [SSRIs].

Conclusion: Depression could negatively affect HIV patients. Our patients had a high median score of HIV-related stigma: 19 [12–18.3], lower median scores of social supports: 15 [22–37], treatment adherence self-efficacy: 81 [89.3–115], physical quality of life: 33.4 [42.6–56.4], and mental quality of life: 31.9 [37.6–51.6]. Also, our study showed a non-statistically significant difference in follow-up CD4 cells count after administration of anti-depressant and anti-anxiety treatment at study termination.

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None to be disclosed.

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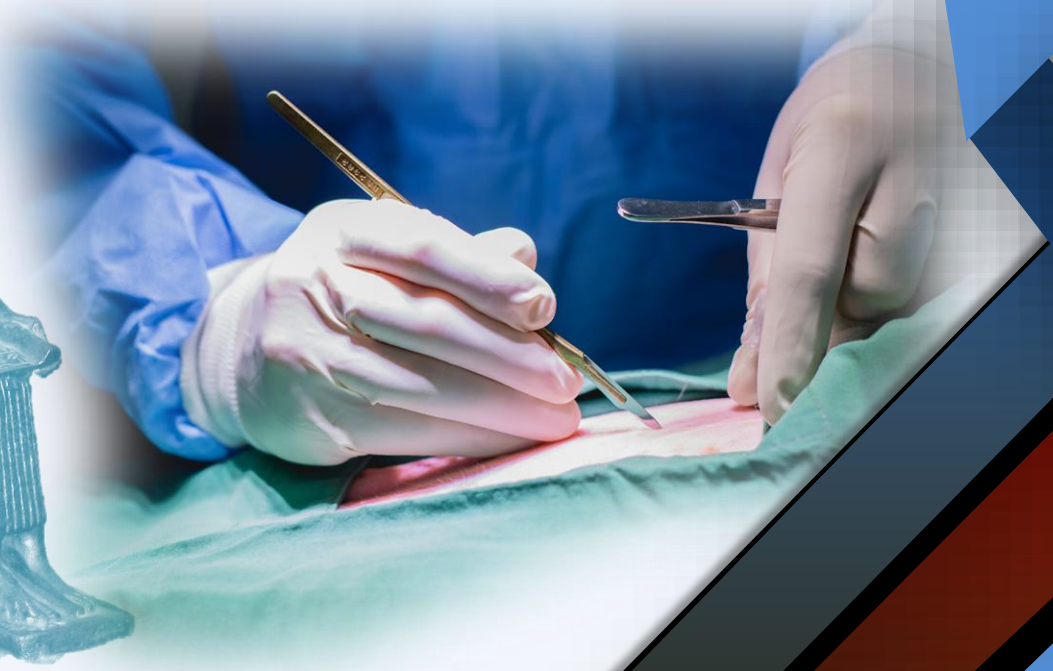

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