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Effect of depressive symptoms and HIV exposure on the quality of life of HIV-seropositive and seronegative pregnant women

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ABSTRACT

Introduction: Depression among human immunodeficiency virus (HIV)-seropositive individuals has been associated with reduced quality of life. The aim of the study was to evaluate the effect of depressive symptoms and HIV exposure on mean quality of life scores in HIV-seropositive and HIV-seronegative postpartum women.

Methods: A cross-sectional study was conducted with two groups: 80 HIV-seropositive and 80 HIV-seronegative postpartum women. The Edinburgh Postnatal Depression Scale and the World Health Organization Quality of Life short-version scale were used to assess presence of depressive symptoms and quality of life scores. Two-way analysis of variance was used to compare the effects of depressive symptoms, HIV exposure and interaction between depressive symptoms and HIV exposure on mean quality of life scores, with $p < 0.05$ considered statistically significant.

Results: Depressive symptoms were present in 35% (28) of HIV-seropositive and 17.5% (14) of HIV-seronegative participants ($p = 0.02$). The interaction between depressive symptoms and HIV exposure was not significant for any quality of life domain. The main effect of HIV exposure was also not significant. Depressive symptoms had a negative influence on quality of life scores in all domains (physical health, psychological health, social relationships and environment) ($p < 0.001$).

Conclusions: The quality of life of pregnant women is negatively influenced by the presence of depressive symptoms.

Keywords: *Pregnancy; quality of life; depression and HIV*

Quality of life (QoL) can be defined as individuals' perception of their position in life and their values, goals, expectations, standards and concerns[1]. Many factors can affect the QoL of pregnant women, particularly changes in sleep, worries, anxiety, depression and excessive weight gain[2]. Kapetanovic et al.[3] report that the psychiatric health and QoL of human immunodeficiency virus (HIV)-seropositive women may be affected by depression and other mental health conditions[3]. A high prevalence of depressive symptoms and other mental health-related vulnerabilities associated with adverse pregnancy outcomes and decreased QoL have been described in this population. Depression among HIV-seropositive individuals has been associated with lower scores in the psychological, social and environmental domains of QoL[4]. A study conducted on HIV-seropositive pregnant women in an urban setting in Brazil found lower scores for domains related to secrecy and financial matters among this group[5]. A systematic review of African studies found substantial rates of depressive symptoms and emotional distress among HIV-seropositive pregnant women. Rates of depression are also high among HIV-seropositive pregnant women in developed countries and, regardless of the country, HIV-seropositive pregnant women have lower levels of education[3]. In a cross-sectional study of 633 HIV-seropositive African women, 48.7% had depressed mood, which was associated with unplanned pregnancies, HIV-infected children, domestic violence, non-use of condoms in recent years, and poor adherence to antiretroviral medication[6]. Depression

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is commonly associated with negative beliefs about the disease and feelings of hopelessness, which undermine individuals' motivation to care for their health, reducing confidence in their ability to cope with the demands of treatment[7].

Potential risk factors for prenatal and postnatal depression in women are the following: age under 18 years, race, low level of education, living in deprived areas, low socioeconomic status, sociocultural beliefs, unplanned pregnancy, health problems during pregnancy, domestic violence and lack of family support[8]. A study of 179 pregnant women in Italy found that postpartum depression was associated with lack of social support and negative outcomes in pregnancy. The authors concluded that social support during pregnancy plays an important role in preventing effects of postpartum depression on newborn outcomes[9].

A recent review describing QoL during uncomplicated pregnancy showed that symptoms of depression, anxiety, and stress were factors that had a strong negative impact on the QoL of pregnant women. They reinforce that, in some countries, QoL of pregnant woman has been little studied and no specific mechanism has been found to explain the association[10].

In view of the possible relationship between depressive symptoms and poorer QoL scores, the present study aimed to evaluate, in the immediate puerperium, the effect of depressive symptoms and HIV exposure on mean QoL scores of HIV-seropositive and HIV-seronegative women.

MATERIAL AND METHODS

This cross-sectional study was conducted at the obstetric unit of a tertiary hospital in Porto Alegre, southern Brazil, with two groups of puerperal women aged 18 years or older, either HIV-seropositive or HIV-seronegative, between July 2015 and July 2016. The sample was selected using medical records of hospitalized HIV-seropositive postpartum women. The selection of HIV-negative postpartum women followed the HIV-seropositive bed rule. Data were collected in the immediate puerperium (up to 48 hours postpartum), using a questionnaire on age, skin color, education, marital status, type of delivery, tobacco, alcohol and drug use, parity, time since HIV diagnosis, and time since beginning antiretroviral therapy. Socioeconomic status was categorized as class A-B, C or D-E according to the Brazilian Economic Classification Criteria scoring system (2015 update), where class A represents the highest status and class E represents the lowest status[11].

The presence of maternal depressive symptoms was determined according to the Edinburgh Postnatal Depression Scale (EPDS), translated and validated for Brazilian Portuguese. This self-administered questionnaire consists of ten items scored on a 4-point scale. The cut-off score used for depressive symptoms was 11-12, and participants with scores ≥12 were considered positive for depressive symptoms[12]. Although the scale determines an increased risk of developing depression, it does not consist of a diagnosis of depression. QoL was assessed using the World Health Organization Quality of Life short-version (WHOQOL-BREF) instrument, translated and adapted for the Brazilian context. This instrument consists of 26 questions and is divided into four domains, namely physical health, psychological health, social relationships and environment[13]. There is no QoL cut-off score; thus, scores closer to 100 indicate better QoL, while those closer to zero indicate poorer QoL.

Statistical analysis was performed in SPSS, version 18.0. For comparing groups exposed and not exposed to HIV, Student's t-test was used for continuous variables with normal distribution, and results were expressed as mean and standard deviation. Pearson's chi-square test with Yate's correction for continuity was used for categorical variables, which were described as percentage and relative frequency. Two-way analysis of variance (ANOVA) was used to compare the effects of depressive symptoms, HIV exposure and the interaction between depressive symptoms and HIV exposure on mean QoL. P-values lower than 0.05 were considered statistically significant.

The research project was approved by the Research Ethics Committee of the relevant institution (case no. 15/0249) and followed all regulations for research involving human subjects (resolution no. 466/2012). All participants signed an informed consent form that ensured the confidentiality of their identity and the data obtained.

RESULTS

A total of 160 postpartum women participated in the study; 80 were HIV-seronegative and 80 were HIV-seropositive. Table 1 shows the characteristics of the sample. The HIV-seropositive group was significantly older ($p < 0.001$), had a lower educational level ($p < 0.001$), had a higher proportion of individuals belonging to a lower socioeconomic status ($p = 0.014$), had a higher proportion of unemployed participants ($p = 0.011$), had a higher proportion of non-whites ($p = 0.004$), had a higher proportion of participants without a partner ($p < 0.001$) and had a higher proportion of smokers ($p = 0.03$). Depressive symptoms were present during gestation in 35% of the HIV-seropositive group (28 patients) and in 17.5% of the HIV-seronegative group (14 patients), showing a significant difference ($p = 0.02$). There was no difference between the groups for alcohol and drug use during pregnancy.

Regarding HIV diagnosis, 66.2% (n = 53) of the HIV-seropositive group were diagnosed during pregnancy, although length of time since diagnosis did not significantly affect depressive symptom scores ($p = 0.451$). Of the infected women, 97.5% were on antiretroviral therapy during pregnancy;

47.43% (n = 37) began prior to pregnancy and 52.56% (n = 41) began during pregnancy. Viral load was undetectable in 78.8% (n = 63) of seropositive patients after 34 weeks. The median time since diagnosis was two [0-6] years.

Table 2 reports presence of depressive symptoms, HIV exposure and the interaction between these two factors on mean QoL scores. The interaction between depressive symptoms and HIV exposure had no significant effect on QoL domains. HIV exposure also

Table 1: Social characteristics, presence of depressive symptoms in HIV-seronegative (HIV-) and HIV-seropositive (HIV+) pregnant women.

	HIV-	HIV+	*p****
Age (years)*	25.6 (±4.9)	28.8 (±5.9)	<0.001
Education (years)*	10.0 (±2.3)	8.6 (±2.2)	<0.001
Skin color**			0.004
White	77.5% (62)	55% (44)	
Non-white	22.5% (18)	45% (36)	
Socioeconomic status**			0.014
Class A-B	22.5% (18)	6.3% (5)	
Class C	63.7% (51)	76.2% (61)	
Class D-E	13.8% (11)	17.5% (14)	
Marital status**			<0.001
With partner	91.3% (73)	63.8% (51)	
Without partner	8.7% (7)	36.2% (29)	
Employed**	62.5% (50)	41.5% (33)	0.011
Smoking**	17.5% (14)	33.7% (27)	0.030
Alcohol consumption**	20% (16)	17.5% (14)	0.839
Drug consumption**	2.5% (2)	7.5% (6)	0.277
Presence of depressive symptoms**	17.5% (14)	35.0% (28)	0.020

*Student's t-test: mean (standard deviation); **Chi-square test: percentage (absolute frequency); ***p<0,05 (significant diference between the groups); HIV = human immunodeficiency virus.

Table 2: Comparison of quality of life scores by physical health, psychological health, environment and social relationships domains with presence of depressive symptoms and HIV exposure in the gestational period of HIV-seropositive and HIV-seronegative women.

Domains	Presence of depressive symptoms	HIV exposure		Total	*p* Depressive symptoms	*p* HIV exposure	*p* interaction
		HIV+	HIV-				
		Mean [95% CI]	Mean [95% CI]				
Physical health	No	70.7 [66.8;74.6]	74.1 [70.6;77.5]	**72.4 [69.8;75.0]**	**<0.001**	0.673	0.395
	Yes	57.3 [52.0;62.6]	56.1 [48.6;63.6]	**56.7 [52.1;61.3]**			
	Total	*64.0 [60.7;67.3]*	*65.1 [61.0;69.2]*				
Psychological health	No	75.0 [72.2;77.8]	77.8 [75.4;80.3]	**76.4 [74.6;78.3]**	**<0.001**	0.693	0.273
	Yes	61.5 [57.7;65.2]	60.1 [54.8;65.4]	**60.8 [57.5;64.1]**			
	Total	*68.2 [65.9;70.6]*	*69.0 [66.0;71.9]*				
Environment	No	63.6 [59.5;67.6]	62.8 [59.2;66.4]	**63.2 [60.5;65.9]**	**<0.001**	0.056	0.100
	Yes	55.2 [49.7;60.8]	45.3 [37.5;53.1]	**50.3 [45.5;55.0]**			
	Total	*59.4 [56.0;62.8]*	*54.1 [49.8;58.4]*				
Social relationships	No	81.4 [76.8;86.0]	82.3 [78.2;86.4]	**81.9 [78.8;85.0]**	**<0.001**	0.610	0.426
	Yes	66.7 [60.4;73.0]	62.5 [53.6;71.4]	**64.6 [59.1;70.0]**			
	Total	*74.0 [70.1;78.0]*	*72.4 [67.5;77.3]*				
Total score	No	72.7 [69.7;75.6]	74.3 [71.6;76.9]	**73.5 [71.5;75.4]**	**<0.001**	0.531	0.158
	Yes	60.2 [56.1;64.2]	56.0 [50.3;61.7]	**58.1 [54.6;61.6]**			
	Total	*66.4 [63.9;68.9]*	*65.1 [62.0;68.3]*				

Two-way analysis of variance (ANOVA): mean [95% confidence interval, CI]; ***p*** interaction = p-value of the interaction between presence of depressive symptoms and HIV exposure; HIV = human immunodeficiency virus.

had no significant effect on mean QoL. Conversely, depressive symptoms influenced mean QoL in all domains (physical health, psychological health, social relationships and environment) and in total score ($p < 0.001$), showing that mean QoL scores were lower in pregnant women with positive depressive symptom scores (≥ 12). Although there is no cut-off point for stratifying QoL scores, significantly lower values were observed in postpartum women with depressive symptoms. The differences in mean QoL domain scores between the groups ranged from 12.9 (environment domain) to 17.3 (social relationship domain).

DISCUSSION

The present study evaluated the effects of depressive symptoms and HIV exposure on QoL scores of HIV-seropositive and HIV-seronegative postpartum women in southern Brazil. There was a negative relationship between QoL scores and depressive symptoms, regardless of HIV exposure.

The mean age and parity of HIV-seropositive postpartum women were significantly higher than those of HIV-seronegative women. Koenig et al.[14] also reported an association of HIV infection with higher pregnancy rates. A Brazilian study of HIV-infected pregnant women showed that almost half of them (48.9%) had had at least two previous pregnancies[15]. A higher parity in the HIV-seropositive group could also be explained by a higher mean age. The mean level of education in the HIV-seropositive group was lower (8.6 ± 5.9 years studying) than in the HIV-seronegative group (10 ± 2.3 years), and more HIV-seropositive women had lower socioeconomic status. A recent National Epidemiological Bulletin on HIV found that the majority of the HIV-positive population in Brazil has been infected for five and eight years[16]. Yaya et al.[17] found that individuals with a low educational level have less understanding about HIV and its forms of transmission than those with a higher educational level; thus, there is an increased risk of transmission among the disadvantaged. A study conducted in Africa showed that poorer populations are at higher risk of HIV infection, with women having a higher risk, regardless of socioeconomic status[18]. Lack of information and low educational levels can influence self-care and risk behaviors, thus increasing the risk of HIV infection.

The literature reports increased use of tobacco, alcohol and drugs among HIV-seropositive pregnant women[19,20]. A 2017 study on pregnant African women found a smoking rate of 32.7%[21], similar to that found in our study (33.8%). In the present study, the similar use of drugs and alcohol in HIV-seronegative and HIV-seropositive women may be due to the embarrassment of responding positively in the immediate postpartum period. A total of 36.2% of the HIV-seropositive group reported not living with a partner, which is consistent with the study of Lima et al.[15], which reported that 50% of HIV-infected young pregnant women did not have a stable sexual partner. A cross-sectional study conducted in Brazil with 2,145 women, 713 of whom were infected with HIV, also found that HIV-positive women were less likely to have a stable partner[22].

Depressive symptoms were significantly more frequent during pregnancy in the HIV-seropositive group (35%) than in the HIV-seronegative group (17%). The literature varies widely regarding diagnosis and/or symptoms of depression in this population. Calvetti et al.[7] found that 24.8% of young adults with HIV had symptoms of anxiety, sadness, fear, low self-esteem and guilt. In a cross-sectional study of 633 HIV-seropositive African women, 48.7% of the sample had depressed mood[6]. Donald et al.[21] reported moderate or high depression in 35.88% of postpartum women infected with HIV, similar to the rate found in our study. Such studies have shown concordance in their results, in which HIV-seropositive pregnant women have higher rates of depressive symptoms. These findings seem to show that HIV affects psychological aspects and increases scale scores indicating depression.

Regarding the interaction between depressive symptoms and HIV exposure on QoL domains, significant associations have been found between mean QoL scores and depressive symptoms, regardless of HIV exposure. Consistent with our findings, Sut et al.[23] reinforced that psychiatric disorders affect the physical and psychological domains of QoL during pregnancy. Shrestha et al.[24] demonstrated that a feeling of social support improves the perception of QoL and is associated with lower rates of depression. With respect to HIV exposure, our study found no association with lower QoL scores. In contrast with our results, a 2004 U.S. study conducted by Oetzel et al.[25] found a negative association between QoL, perceived social support and social undermining on HIV-seropositive individuals. Studies conducted by Li et al.[26] and Johnson et al.[27] found that social support mitigates the negative impact of depression on the QoL of people with HIV. Ashaba et al.[28] have recently found that pregnancy is a stressful period for HIV-seropositive women. Anxiety, health-related fears and uncertainty about the infant's future are common in HIV-infected women and may compromise treatment engagement and reduce the QoL of both mother and child, resulting in significant anxiety in various domains. There was no difference between

the association of depressive symptoms with QoL scores among HIV-seropositive and HIV-seronegative pregnant women, perhaps because pregnant women exposed to HIV performed prenatal care with a high-risk prenatal team that provided support and clarification regarding the stigma of HIV.

These findings should be interpreted in the light of some limitations. The sample size was not estimated for the aim of the current study. Thus, perhaps a larger sample size will be needed to detect a significant interaction between HIV exposure and depressive symptoms impacting QoL. However, an advantage of this study was the inclusion of HIV-seropositive pregnant women, a population little studied yet. In addition, validated instruments and techniques were used.

Depressive symptoms were significantly more prevalent in HIV-seropositive postpartum women, although it was not possible to correlate HIV infection with lower QoL scores. The presence of depressive symptoms was significantly associated with lower QoL in all domains, regardless of HIV serostatus. In conclusion, during pregnancy and puerperium, the health care team should be attentive to diagnosis and treatment of depressive symptoms, aiming to improve the QoL of these patients.

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Conflicts of Interest

The authors declare no conflicts of interest.

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