Demographic and clinical factors correlating with high levels of psychological distress in HIV-positive women living in Ontario, Canada

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Title: Demographic and clinical factors correlating with high levels of psychological distress in HIV-positive women living in Ontario, Canada

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Abstract

The concept of psychological distress includes a range of emotional states with symptoms of depression and anxiety and, has yet to be reported in HIV-positive women living in Ontario, Canada who are known to live with contributing factors. This study aimed to determine the prevalence, severity and correlates of psychological distress among women accessing HIV care participating in the Ontario HIV Treatment Network Cohort Study using the Kessler Psychological Distress Scale (K10). The K10 is a 10-item five-level response scale. K10 values range from 10 to 50 with values less than or equal to 19 categorized as not clinically significant, scores between 20-24 as moderate levels, 25 to 29 as high, and 30 to 50 as very high psychological distress. Correlates of psychological distress were assessed using the Pearson chi-square test and univariate and multivariate logistic regression analysis. Moderate, high and very high levels of psychological distress were experienced by 16.9%, 10.4% and 15.1% of the 337 women in our cohort, respectively, with 57.6% reporting none. Psychological distress levels greater than 19 correlated with being unemployed (vs. employed/student/retired; AOR=0.33, 95% CI 0.13-0.83), living in a household without their child/children (AOR=2.45, 95% CI 1.33-4.52), CD4 counts < 200 cells/mm³ (AOR=2.07, 95% CI 0.89-4.80), and to a lesser degree an education of some college or less (vs. completed college or higher; AOR=1.71, 95% CI 0.99-2.95). Age and ethnicity, a priori variables of interest, did not correlate with psychological distress. Findings suggest that socio-economic factors which shape the demography of women living with HIV in Ontario, low CD4 counts and losing the opportunity to care for their child/children has a significant relationship with psychological distress. Approaches to manage psychological distress should address and make considerations for the lived experiences of women since they can act as potential barriers to improving psychological well-being.
Keywords: Psychological distress, HIV, women, depression, anxiety.
Introduction

Psychological distress is understood as emotional suffering characterized by depression and anxiety-related symptoms, and by somatic symptoms with gender and cross-cultural differences (Drapeau, Marchand, & Beaulieu-Prevost, 2012; Kirmayer, 1989; Mirowsky & Ross, 2002; Piccinelli & Simon, 1997). It differs from commonly discussed mental health conditions, depression and anxiety, by including symptoms of rage and insomnia and can be succinctly measured using the Kessler Psychological Distress Scale (K10) in clinical settings because of its brevity (Furukawa, Kessler, Slade, & Andrews, 2003). It distinguishes between serious and non-serious psychological illnesses in clinical and research settings, and has been expansively used in population health surveys in Australia, the United States (US) and Canada (Andrews & Slade, 2001; Cairney, Veldhuizen, Wade, Kurdyak, & Streiner, 2007; Caron & Liu, 2010, 2011; Dallo, Kindratt, & Snell, 2013; Dey & Lucas, 2006; Furukawa et al., 2003; Hickman, Delucchi, & Prochaska, 2012; Kessler et al., 2002; Kessler et al., 2003; Kessler & Ustun, 2004; Koster et al., 2009; Oakley Browne, Wells, Scott, McGee, & New Zealand Mental Health Survey Research, 2010; Slade, Grove, & Burgess, 2011). Generally reporting higher K10 distress levels in women, they often do not assess HIV status. The relationship between HIV and K10 distress levels and its correlates may go unreported. The Ontario HIV Treatment Network (OHTN) Cohort Study (OCS) possesses a cohort of women living with HIV accessing care in Ontario, Canada where K10 distress levels have been measured, but have yet to be reported.

Assessing psychological distress and its correlates is critical in the context of HIV for women and for clinical reasons (Sharp, Khaylis, Kamen, Lee, & Gore-Felton, 2010). In the US and Canada, people living with HIV may experience four to seven times greater depression levels than the general population with evidence of greater depressive and anxiety symptoms in
women (Atkinson et al., 1988; Berger-Greenstein et al., 2007; Catz, Gore-Felton, & McClure, 2002; Evans et al., 2002; Husbands et al., 2007; Kennedy, Skurnick, Foley, & Louria, 1995; Morrison et al., 2002). Decreased adherence to treatment, increased hospitalization, greater HIV disease severity and poor quality of life and well-being correlated with depression (Catz, Kelly, Bogart, Benotsch, & McAuliffe, 2000; Greeson et al., 2008; Lima et al., 2007; Mijch et al., 2006).

Depression and anxiety correlates have largely been identified in African American women and African, Caribbean and Black women from Canada living with HIV using scales measuring depression and anxiety separately. Psychosocial correlates were life stressors and less social support and adaptive coping skills (Catz et al., 2002; Ivanova, Hart, Wagner, Aljassem, & Loutfy, 2012). The co-occurring nature of life stressors such as an HIV diagnosis, intimate partner violence and drug use with low social support have a compounding effect on depressive symptoms (S. Illangasekare, Burke, Chander, & Gielen, 2013; S. Illangasekare et al., 2012; S. L. Illangasekare, Burke, McDonnell, & Gielen, 2013). Clinical correlates of anxiety included shorter times since HIV diagnosis, antiretroviral (ART) use and reproductive-related worries, and clinical outcomes of HIV disease progression correlated with stressful life events and depression (Anastos et al., 2005; Antelman et al., 2007; Bouhnik et al., 2005; Catz et al., 2002; Cook et al., 2004; Evans et al., 2002; Ickovics et al., 2001; Ivanova et al., 2012; Leserman, 2003, 2008). Depression was associated with HIV-related stigma, gender and racial discrimination and anxiety with HIV-related stigma (Ivanova et al., 2012; Logie, James, Tharao, & Loutfy, 2013).

This study will determine the prevalence and severity of psychological distress and its socio-demographic and clinical correlates among women in the OCS. Psychological distress
correlates can shape interventions and services to optimize the psychological well-being of HIV-positive women living in Ontario.

**Methods**

**Study design and population**

The OCS is a clinical and population health prospective observational research study in Ontario, Canada, recruiting HIV-positive participants from primary and tertiary care sites (Rourke et al., 2013). Data is collected from clinical (i.e. chart abstractions, medical records) and external sources (i.e. Public Health Ontario Laboratories), and a 30 minute core- or 120 minute extended-questionnaire (i.e. sociodemographic and psychosociobehavioural measures) (Rourke et al., 2013). This study was approved by the OHTN Governance Committee and the University of Toronto Research Ethics Board.

In this cross-sectional analysis, eligible participants self-identified as woman or trans woman and answered \( \geq 7 \) K10 questions, the only mental health measure contained within the core questionnaire. Missing values were imputed by calculating the mean of non-missing values. Interviews completed from January 2009 to December 2011 were selected to be applicable to the current analysis.

**Kessler Psychological distress Scale (K10)**

Psychological distress was assessed using the K10 which has strong psychometric properties (Kessler et al., 2002; Kessler et al., 2003). It quantifies the frequency and severity of depression and anxiety-related symptoms in the 30 days prior to completing the scale using a five level
response option, ‘none of the time = 1’ to ‘all of the time = 5’. The K10 score was reversed calculated providing a score between 10 to 50 where distress level categories were: 10-19 (not clinically significant), 20-24 (moderate), 25-29 (high), and 30-50 (very high) (Furukawa et al., 2003).

**Definition of correlates**

Socio-demographic and -economic factors including participant characteristics and clinical outcomes evaluated correspond to variables in the core questionnaire (Table 1). Age and ethnicity were *a priori* correlates of interest. Ethnicity in Canada plays a role in the HIV epidemiology disproportionally affecting Aboriginal populations and racialized communities, and age is a standard controlled variable.

**Statistical analysis**

The primary outcomes were the prevalence and severity of psychological distress. Baseline demographic and clinical characteristics were presented as frequencies and proportions for categorical variables and medians and interquartile ranges (IQR) for continuous variables. For logistic regression analysis, psychological distress levels were dichotomized into scores ≤ 19 (not clinically significant) and > 19 (moderate to very high). Prevalence was summarized with frequencies and proportions. Univariate and multivariate logistic regression models were used to identify covariates of psychological distress >19. Covariates in the univariate model with a significance level < 0.05 and *a priori* variables of interest were candidates for multivariate analysis. Statistical analyses were performed using SAS Statistical Software Version 9.2 (SAS Institute Inc., Cary, NC, USA).
Results

Cohort characteristics

Of 627 self-identified women and trans women in the OCS, 338 completed the core questionnaire, but one did not answer any K10 questions leaving 337 for the analysis. In total, 318 (94%) women responded to all K10 questions, 19 women had only 1 to 3 missing questions. The median K10 score was 18 [IQR: 13-25]. The percent of respondents in each K10 distress categories was 57.6% reporting no clinically significant levels, 16.9% moderate levels, and 10.4% and 15.1% reporting high to very high psychological distress levels, respectively. Descriptive statistics of cohort characteristics are summarized in Table 1 without identification of trans women (n=3) due to their low numbers (< 6). [Table 1 near here]

Logistic regression analysis of K10 scores

In the univariate model, correlates associated with moderate to very high levels of psychological distress (> 19) were being Aboriginal (OR=2.0, 95% CI: 1.10-3.76), living in a household without their child/children (OR=2.11, 95% CI: 1.34-3.23), and CD4 counts < 200 cells/mm³ (OR=2.5, 95% CI: 1.16-5.22) (Table 2). [Table 2 near here] The a priori exposure variables, age and ethnicity, were not associated with K10 distress levels > 19.

In the multivariate model, 335 observations were included with 2 observations deleted due to missing values. Age and ethnicity were not associated with K10 distress levels >19 in contrast to living in a household without their child/children (AOR=2.45, 95% CI: 1.33-4.52), having CD4 counts <200 cells/mm³ (AOR=2.07, 95% CI: 0.89-4.80) and to a lesser degree having an education of some college or less (AOR=1.71, 95% CI: 0.99-2.95) (Table 3). [Table 3
near here) Being employed, a student or retired (AOR=0.33, 95% CI: 0.13-0.83) correlated with significant decreases in psychological distress levels. Household gross income was excluded from the multivariate model as it was mildly collinear with employment status (correlation coefficient, r=0.6).

**Discussion**

A high proportion (42.4%) of women in our cohort experienced any level of psychological distress with 25.5% suffering from high to very high levels. Socio-economic factors, low CD4 counts, and living in a household without one’s child/children correlated with psychological distress.

In our study, unemployment and having achieved lower educations status were correlates of enhanced psychological distress. A differential relationship between increasing psychological distress and specific employment (i.e. psychological demands, job insecurity) and non-employment situations (i.e. permanent and temporary disability) were shown in a Canadian general population survey using the Kessler Psychological Distress Scale (Marchand, Drapeau, & Beaulieu-Prevost, 2012). In this survey having an education and high income were protective against psychological distress (Caron & Liu, 2011).

Evidence from US studies show that for mothers socio-economic factors such as financial and housing instability, mental health, substance use and low CD4 counts led to separation from their child, but also that separation itself may lead to poor mental health (Cowgill et al., 2007; Theall, Mitchell, Ludwick, Brown, & Kissinger, 2004). Our study shows enhanced psychological distress in HIV-positive mothers residing in households without their child. A previous study of parents living with HIV in Ontario identified several correlates of stress and anxiety such as
unstable housing, living in unsafe neighborhoods, poverty, HIV-related stigma, racism, and barriers against support services (Greene et al., 2010).

In our analysis, low CD4 counts were associated with moderate to high levels of psychological distress. It is one of many HIV disease outcomes in women and mixed gender longitudinal US studies previously associated with depression and stressful life events independent of socio-demographic factors, disease status, and highly active antiretroviral treatment regimen (Anastos et al., 2005; Cook et al., 2004; Ickovics et al., 2001; Ironson & Hayward, 2008; Ironson et al., 2005; Kimerling et al., 1999; Leserman, 2003, 2008; Leserman et al., 2007; Mugavero et al., 2007; Remor, Penedo, Shen, & Schneiderman, 2007).

This study has several limitations. Women in the OCS are accessing care and may not reflect HIV-positive women from the general population in Ontario and thus possibly under- or over-estimating psychological distress. Furthermore, our small sample size may affect study outcomes such as age and ethnicity. Finally, important psychosocial variables were not included such as stigma, social support and coping, psychiatric history and anti-depressant use due to brevity of the used questionnaire. In addition, further in depth analyses of HIV clinical outcomes in our cohort is required.

Our findings show concerning psychological distress levels in 42.4% of women in the OCS who would benefit from initiatives addressing its correlates. Mothers living with HIV may need referral and assistance for parenting and custody issues and services may need to consider why women living with HIV are unemployed. Addressing psychological health must consider the inclusion of the socio-cultural, socio-economic, and socio-demographic factors shaping the reality of women living with HIV.
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The Ontario CHIWOS Research Team

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Disclaimer statements

The findings, opinions and conclusions are those of the authors and no endorsement of these by the Ontario HIV Treatment Network is intended or should be inferred.

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