**Association Between Psychiatric Symptoms and Sexual Risk Behaviors in Immigrants and Refugees from Africa Living in Sweden**

by

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**Abstract**

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**Background:** Research reveals that 1 in 10 refugees have Post Traumatic Stress Disorder (PTSD), and 1 in 20 have depression, but there is little understanding about the predictors of PTSD and depression in refugees and immigrants, and the association between psychiatric symptoms and sexual risk behaviors.

David Finegold, MD

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**Methods:** Immigrants and refugees from Africa residing in Sweden were interviewed between 2002-2006, and the interviews assessed immigrant and refugee’s health and quality of life. Stratified quota sampling based on the 2001 Swedish census was used to recruit a representative

sample of participants by gender and country of origin. The semi-structured interviews included valid and reliable instruments that measured depression, anxiety, PTSD, acculturation, traumatic events, and sexual health. Secondary data analysis was performed at the University of Pittsburgh. Statistical analyses consisted of binomial regression to examine the predictors of psychiatric symptoms. Mann Whitney U test and Chi-square tests were performed to compare sexual risk behaviors between refugees with PTSD/depression and refugees without PTSD/depression.

**Results:** 420 participants completed the questionnaires. Demographic information showed that most of the participants were from Eastern Africa and a religious makeup of 51% Christians, 46% Muslims, and 3% other. Twenty percent of the sample reported symptoms in the clinical range for depression, while PTSD symptomatology and functional impairment was reported by 47% of the participants. After adjusting for age, gender, religion, country of origin, and length of residence in Sweden, a binomial regression model revealed that acculturation was a predictor for both PTSD [β = -0.094, SE = 0.036, p = 0.01] and depressive symptoms [β = -0.078, SE = 0.036, p = 0.033]. Females who reported higher levels of depressive symptoms had a greater number of lifetime sexual partners [U=3844, p= 0.001], regular sexual partners [U=3771, p=0.002] and concurrent partners [χ2 = 4.39, p = 0.027]. PTSD and depressive symptoms were not significant predictors of sexual risk behaviors for men.

**Conclusion:** Depressive and PTSD symptoms have a significant association with acculturation and sexual risk behaviors. Understanding these relationships can facilitate the development of public health interventions to reduce sexual risk behavior in immigrant and refugee populations.

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# Preface

A special thanks to:

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A special thanks to my family for the emotional support you have given me throughout my education, I will always be appreciative of you, and I love you all dearly.

# Introduction and Background

Untreated psychiatric disorders can contribute to poor quality of life, and poor health; Those with psychiatric disorders are at higher risk for earlier death, particularly to preventable conditions compared to those without a diagnosis of a psychiatric disorder (Parks, Svendsen, Singer, Foti, & Mauer 2006). Those with psychiatric disorders lose as much as 20 years of potential life (World Health Organizations, 2015). One of the less mentioned consequences of psychiatric disorders are the higher rates of sexual risk behaviors such as unprotected intercourse, having multiple sexual partners, and commercial sex work (Carey, Carey, & Kalichman, 1997). For example, a study conducted in a South African township showed that those with Post Traumatic Stress Disorder (PTSD) were more likely to exchange sex for money or have sex with someone they knew for less than a day. (Smit et al., 2006) Another study in a correctional institute in the U.S. found that women in a correctional facility with PTSD were more likely to engage in prostitution. (Hutton et al., 2001)

A particularly vulnerable population with higher rates of psychiatric disorders are refugee and immigrant populations. Due to the inherent exposure to trauma prior to emigration and the stress of migration, immigrants and refugees have a higher risk of psychiatric disorders when compared to their non-immigrant and non-refugee counterparts. (Furnham & Bochner, 1986; Iglesias, Robertson, Johansson Engfeldt, & Sundquist, 2003; Porter & Haslam, 2005). Findings from a recent meta-analysis suggest that one in ten refugees who have resettled in western countries have PTSD (Fazel et al., 2005). Furthermore, specific pre-migration trauma experiences such as death of loved ones, personal experience of torture, exposure to combat, rape during wartime, and natural disasters have been shown to affect an individual’s psychological and sexual functioning (Mollica et al., 2001).

Given that sexual risk behaviors are more common in persons with psychiatric disorders, it would be logical to assume that populations at higher risk of psychiatric disorders would engage in greater sexual risk behaviors. Unfortunately, the current research on the intersection between psychiatric disorders, immigration, and sexual risk behaviors is lacking. A study conducted in Sweden suggests an association among history of trauma, psychological sequelae and sexual risk behaviors. Of 44 persons involuntarily committed under the Communicable Disease Act (e.g. persons engaging in sexual risk behaviors), a disproportionate number of persons (43%) were foreigners, primarily from African countries (Sylvan, 1998). One recent study found that Latina immigrants living in Miami-Dade County were significantly more likely to engage in risky sexual behaviors but there was a lack of statistical significance found in the association between depression and risky sexual behavior (Kim, 2019). Kim et. al cite a small sample size and a lack of statistical power that may have led to these non-significant findings. A relationship between depression and sexual risk behaviors have been found in other populations, such as adolescents (Schuster, Mermelstein, & Wakschlag, 2013) and men who have sex with men (Brown et al., 2006).

Due to the lack of research, a better understanding of the psychiatric disorders and sexual health of immigrants and refugees is needed. This is a public health concern that warrants greater attention and is not being adequately addressed in the literature. In this study we aim to investigate the demographic information in this population, rates of psychiatric disorders in this population, acculturation and its associations with psychiatric disorders, rates of sexual risk behaviors, and finally psychiatric symptoms and its association with sexual risk behaviors

# Methods

This study was performed between October 2002 until April 2005. This study aimed to understand how psychosocial factors affect psychiatric disorders, sexual health, and the quality of life of immigrants and refugees from Africa who live in Sweden. Ethical approval was attained from the National Institutional Review Board in Sweden. The secondary data analyses performed in this essay was approved by the University of Pittsburgh Institutional Review Board.

## Design Participant Recruitment

This study was a cross-sectional design with subjects of the study recruited based on non-probability stratified quota sampling using the census of the 2001 Swedish population. Refugees and immigrants from African countries that made at least one percent of the entire refugee and immigrant population from Africa living in Sweden were able to enroll in the study. Participants were required to be 16 years of age or older, residing in Sweden, and either an immigrant or refugee. Community leaders of African communities were contacted and asked for assistance in recruitment of participants. Both documented and undocumented participants were recruited. Participants were compensated with a gift card to a food or clothing store. Those who helped with recruiting participants and the translators who helped in the study were financially compensated as well.

## Questionnaires

Interviews utilized questionnaires that were performed with all subjects of the study. A majority of these questionnaires were previously validated with immigrant and refugee populations in other studies. These questionnaires included:

The Cultural Life Style Inventory (CLSI) was employed to measure acculturation levels (Mendoza, 1989). The CLSI reports a total acculturation score and three subscale scores reflecting acculturation based on social integration, language acquisition, and adoption of host country customs and traditions. The CLSI has previously been shown to be reliable and valid when used in other immigrant populations (Ghaffarian, 1998; Lessenger, 1997; Walters, 1999).

The Harvard Trauma Questionnaire (HTQ) was used to measure trauma and PTSD symptoms (Mollica, et al., 1996). The HTQ has also been shown to be valid among different immigrant and refugee populations (Mollica, et al., 1996). Post-Traumatic Stress Disorder items on the HTQ incorporate diagnostic criteria from the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) (American Psychiatric Association, 1994). Notably, the PTSD duration criterion for the DSM-IV assesses symptoms which occur in the last month. This may not entirely correlate with the HTQ, which assesses PTSD symptoms based on DSM-IV criteria that have occurred in the past week.

The Hopkins Symptom Checklist (HSCL-25) is used to assess symptoms of anxiety and depression (Derogatis, Lipman, Rickels, Uhlenhuth, & Covi, 1974). HSCL-25 correlate with major depressive disorder and severe emotional distress (Harvard Program in Refugee Trauma, 1998). HSCL-25 total scores, anxiety subscale scores, and depression subscale scores over 1.75 are positive for unspecified emotional distress, anxiety, and depression, respectively (Harvard Trauma Manual: Bosnia-Herzegovina Version, 1998).

The Family Health International (FHI) HIV/AIDS/STD Behavioral Surveillance Survey was modified and used to assess the sexual risk behaviors of participants in the study (Family Health International, 2000). This survey has been used in other studies to understand sexual behavior on a population level and is a public health tool used to monitor sexual risk behavior trends over time (Mills et al., 1998).

## Statistical Analysis

Secondary data analysis was performed at the University of Pittsburgh. Descriptive statistics using SPSS was used to determine demographic information and the rates of psychiatric disorders. Linear regression was performed to test the predictors of PTSD and depressive symptoms. Two-sided t-tests were performed to understand if there was a significant difference in acculturation levels between participants with a probable diagnosis of depression and without depression and participants with a probable diagnosis of PTSD and without PTSD. The cutoffs for probable diagnosis for depression were performed using the HCL-25 and cutoffs for probable PTSD diagnosis was performed using the HTQ. Descriptive statistics were used to determine rates of sexual risk behaviors. Chi-square tests and Mann-Whitney U tests were performed to compare sexual risk behaviors between refugees with PTSD/depression and refugees without PTSD/depression.

# Results

This section consists of the main results of the study which includes, 1) demographic information, 2) rates of psychiatric disorders, 3) acculturation and its associations with psychiatric disorders, 4) rates of sexual risk behaviors, 5) psychiatric symptoms and its association with sexual risk behaviors

## Demographics

In total, 420 people participated in this study, whose demographic characteristics are outlined in Table 1. The ages of the participants ranged from 16-80 years old, with an average age of 33. 52% of the participants were male, and 48% were female. Using the United Nations regional definitions (United Nations, 2000), a majority of the study participants were those from Eastern Africa (72%) with Somalia (30%), Ethiopia (19%), and Eritrea (9%) being the highest countries of origin in the study. Participants with a high school education made up 49% of the study, and 31% of the participants had a degree beyond high school. The religious makeup of the participants was nearly equal between Christians (51%) and Muslims (46%).

Table 1. Demographic Characteristics

|  |  |  |  |
| --- | --- | --- | --- |
|  | Male  N = 219 (52%) | Female  N = 201 (48%) | Total (%)  N = 420 |
| **Age (years)**  Mean  Range | 32  16-65 | 34  16-80 | 33  16-80 |
| **Years Living in Sweden**  Mean  Range | 6.4  0.2-33 | 8.4  0.4-42 | 7.3  0.2-42 |
| **Region of Origin (n, %)**  Eastern Africa  Middle Africa  Northern Africa  Southern Africa  Western Africa | 154 (71)  6 (3)  20 (9)  5 (2)  34 (16) | 149 (75)  6 (3)  11 (5)  5 (2)  30 (15) | 301 (72)  12 (3)  31 (7)  10 (2)  64 (15) |
| **Highest Education Completed (n,%)**  Primary  Secondary  High School or Equivalent  Some College  College Degree  Graduate/Professional Degree | 18 (9)  20 (9)  81 (38)  23 (11)  39 (18)  31 (15) | 17 (9)  25 (13)  70 (37)  21 (11)  39 (21)  13 (7) | 35 (9)  45 (11)  151 (38)  44 (11)  78 (20)  44 (11) |
| **Religion (n,%)**  Christianity  Islam  Other | 108 (49)  100 (46)  11 (5) | 105 (52)  92 (46)  4 (2) | 213 (51)  192 (46)  15 (3) |

## Rates of Psychiatric Disorders

Twenty percent of the sample reported symptoms in the clinical range for depression using the Hopkins Symptoms Checklist. Post-Traumatic Stress Disorder symptomatology and functional impairment was reported by 47% of the participants. A binomial regression model with age, gender, religion, country of origin, and length of residence in Sweden were entered into a multivariate model and a shorter duration of residence in Sweden was found to be a significant predictor of PTSD symptoms and depressive symptoms, as seen in Table 2.

Table 2. Binomial Regression for Depression and PTSD Symptoms

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Depressive Symptoms** | | | **PTSD Symptoms** | | |
|  | B | SE | p | B | SE | p |
| **Gender** | -0.48 | 0.394 | 0.224 | -0.77 | 0.355 | 0.829 |
| **Age** | 0.21 | 0.02 | 0.299 | 0.039 | 0.015 | 0.011 |
| **Education Level** | 0.734 | 0.492 | 0.136 | -0.500 | 0.420 | 0.235 |
| **Time Living in Sweden** | -0.78 | 0.36 | 0.33 | -0.094 | 0.036 | 0.01 |
| **Religious Affiliation** | 0.667 | 0.853 | 0.434 | -0.474 | 0.308 | 0.124 |

## Acculturation and Psychiatric Disorders

Given that a shorter length of time spent in Sweden was associated with PTSD and depression, it was thought that lower acculturation may also be associated with increased rates of PTSD and depression. Both PTSD [β = -0.233, SE = 0.061, p < 0.001] and depression [β = -0.179, SE = 0.066, p = 0.007] were significant predictors of total acculturation. To analyze this further, the acculturation scores were stratified based on acculturation subscales; acculturation to Swedish language, social acculturation and acculturation to Swedish customs and traditions. Two-sided t-tests showed that participants with a probable diagnosis of depression using the Hopkins Symptoms Checklist (p = 0.002) and probable diagnosis of PTSD using the Harvard Trauma Questionnaire (p < 0.0001) were both associated with significantly lower language acculturation subscale scores than their non-depressed and non-PTSD counterparts. This relationship was not observed when analyzing social or tradition acculturation scores.

## Rates of Sexual Risk Behaviors

Descriptive data of sexual risk behaviors are outlined in Table 2. The age of first sexual intercourse, which is defined as either anal or vaginal intercourse was 17.67 years old for males and 19.41 years old for females. Females also reported a lower number of total, regular, and casual partners than their male counterparts. Self-reported condom use for the last sexual encounter for all participants in the study was 40%, but when accounted for gender, 51.77% of men and 28% of women reported using a condom at their last sexual encounter.

Table 3. Rates of Sexual Risk Behaviors

|  |  |  |  |
| --- | --- | --- | --- |
|  | Male  N = 219 | Female  N = 201 | Total  N = 420 |
| **Age of First Intercourse**  Mean  Standard Deviation | 17.67  4.15 | 19.41  3.24 | 18.5  3.84 |
| **Total Number of Partners**  Mean  Interquartile Range | 7  13 | 2  3 | 4  8 |
| **Number of Regular Partners**  Mean  Interquartile Range | 3  4.75 | 2  3 | 2  4 |
| **Number of Casual Partners**  Mean  Interquartile Range | 2  8 | 0  0 | 0  0 |
| **Condom Use at Last Sexual Encounter? (n,%)**  Yes  No | 114 (52.05)  105 (47.95) | 56 (27.86)  145 (72.14) | 168 (40)  252 (60) |

## Association Between Psychiatric Disorders and Sexual Risk Behaviors

Analysis showed there was no relationship between a probable PTSD diagnosis and condom use at last sexual encounter [χ2 = 4.39, p = 0.11] or a probable depression diagnosis and condom use at last sexual encounter [χ2 = 0.44, p = 0.505]. Females who reported higher levels of depressive symptoms also had a greater number of total sexual partners [Mann-Whitney U=3844, p= 0.001] and regular [Mann-Whitney U=3771, p=0.002] sexual partners (Figures 1 and 2). This association was not statistically significant for men for total [Mann-Whitney U=2177, p=0.365] or regular [Mann-Whitney U=2197, p=0.374] sexual partners. These associations were not found with PTSD as well for men nor for women.

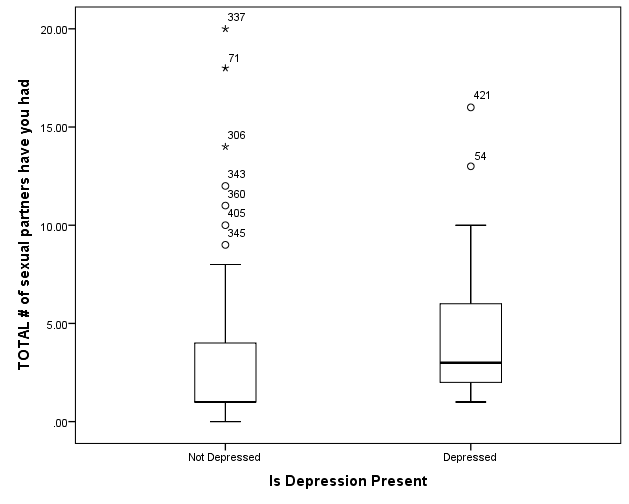


Figure 1. Association Between Depressive Symptoms and Total Number of Sexual Partners in Females

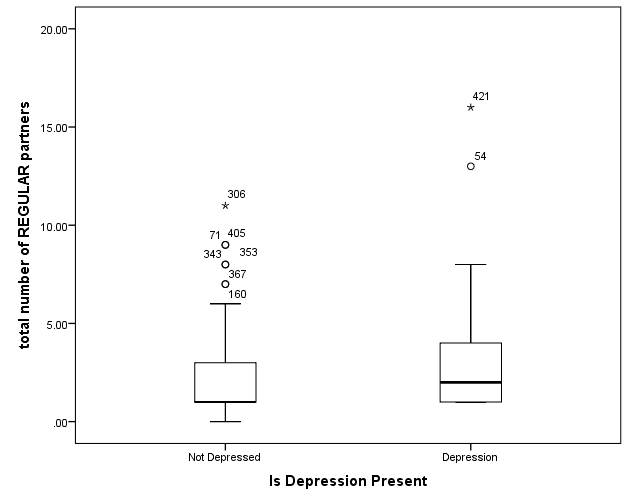


Figure 2. Association Between Depressive Symptoms and Number of Regular Sexual Partners in Females

# Discussion

This study is one of the first to evaluate psychiatric disorders and sexual risk behaviors in immigrants and refugees from Africa. Depression and PTSD symptoms were the primary psychiatric symptoms evaluated in this study as these are the most prevalent symptoms reported by refugee and immigrant populations (Fazel et al., 2005). The rates of depressive symptoms were similar to those in other refugee and immigrant groups that have settled in developed countires. (Gerritsen et al., 2006; Matheson, Jorden, & Anisman, 2008; Schweitzer, Melville, Steel, & Lacherez, 2006). These rates were higher than the rates of depression found in the general population of Sweden during the same time (Psykologförbundet, 2009), but lower than what was found in non-African immigrant and refugee populations who have settled in other Western countries. (Lie, 2002; Mollica et al., 2001; Sabin, 2003)

Unlike depressive symptoms, rates of PTSD symptoms were higher than found in other refugee and immigrant groups from Africa living in Western countries. (Gerritsen et al., 2006; Schweitzer, Melville, Steel, & Lacherez, 2006). The rates of PTSD symptoms in this study was comparable to refugees living in refugee camps in Sierra Leon (Fox and Tang, 2000) indicating this cohort of immigrants and refugees from Africa living in Sweden are experiencing PTSD at similar rates to refugees who have more recently experienced trauma. An explanation of this finding may be due to refugees and immigrants not utilizing psychiatric services, which previous studies have shown when they are available (Segal & Mayadas, 2005). A lack of use of psychiatric resources coupled with a stressful environment of living in a new city could exacerbate psychiatric disorders. Whether a reluctance to use psychiatric services is due to a cultural attitude towards these services or whether these psychiatric disorders are worsened by post-migration stressors, such as discrimination, needs to be further elucidated.

One result that was interesting was that rates of depressive and PTSD symptoms were increased in participants who lived in Sweden for a lesser amount of time, and the rates decreased for participants that have been living in Sweden for a longer time. This could indicate that recently arrived immigrants and refugees were more recently exposed to trauma and may have experienced a greater number of post-migration stressors that are likely to exacerbate depression and PTSD such as resettling into a new country, developing social networks, and finding social support. As one lives longer in Sweden, these stressors may resolve as they become acclimated to their new home. This explanation is supported by a study on refugees from the Middle East who live in Sweden; post migration stressors formed a sizeable amount of the variance for depression (Lindencrona, Ekblad, & Hauff, 2008).

Psychiatric symptoms were shown to be linked with acculturation; higher levels of depression and PTSD were linked with lower total acculturation levels. These relationships were similar to other studies on immigrants and refugees (Kim, 2009; Lee et al., 2009; Miller et al., 2006). Lower language scores were consistently linked to higher levels of PTSD and depression, while lower tradition and social acculturation subscale scores were not. It may be reasoned that adoption of language is a key facet of becoming integrated into society, and a poorer understanding of the Swedish language may lead to isolation and barriers to daily life such as working or making friends. This may lead to an exacerbation of psychiatric disorders due to isolation and prevent acceptance into Swedish society. Swedish traditions and social life on the other hand may not be as necessary as language to become integrated into Swedish society, and as a result may not be as linked to psychiatric disorders.

In this study, the age of first sexual experience differed between those in the African and immigrant men and women and their European counterparts. It was higher when in studies of Swedish and Danish general populations (Jæger et al., 2000), who were on average 16 years old at their sexual debut. The number of total sexual partners was also much higher for those in the Swedish general population (Lewin, Helmius, Lalos, & Månsson 2000) when compared to refugees and immigrants from Africa. This difference could be attributed to the differing cultures regarding sexuality, with the Swedish and other western populations being more liberal and open to sexual relationships than the African migrants. Furthermore, the situational stress that many of these African immigrants and refugees face in their home country or during their migration may have prevented them from engaging in sex.

Fifteen percent of adults in Sweden reported using a condom on their last sexual encounter (Lewin, Helmius, Lalos, & Månsson, 2000). These percentages appear to be similar in other western countries; a national study in France found that overall condom use was 28.9% in males and 25.8% in females (Gremy & Beltzer, 2004) and a study done in the US found that 19.7% of all adults reported using a condom at their last sexual encounter (Anderson, 2003). The higher rates of condom use in immigrants and refugees from Africa was quite surprising, suggesting that immigrants and refugees from Africa have a higher rate of condom use. One explanation is the focus of certain African governments to provide productive educational programs for condom use. One study evaluating condom use in Ethiopia alluded to the HIV/AIDS interventions leading to high rates of condom use in their study (Kassie, Mariam, & Tsui, 2008). Perhaps these public health interventions towards HIV/AIDS prevention has led to a behavioral change in these populations that is not stressed in Sweden.

The main finding of interest when trying to understand the link between sexual risk behaviors and psychiatric disorders was the finding that women who were depressed were more likely to have multiple sexual partners, but these findings were not replicated in men. Previous studies found that in adolescent females, any risky activity whether it be sexual or drug use, was associated with depressive symptoms, while their male counterparts did not have sexual risk behavior associated with depressive symptoms (Waller et al., 2006). One reason that could allude this issue is gender inequality present in the population. Women are more often disadvantaged in decision making in relationships (Varga 2003), particularly the timing of sex (Varga, 1997). Particularly a study of South African men showed that considerable emphasis is placed on men being in control of sexual interactions with women. (Wood & Jewkes, 2005). This could indicate that sex from a female’s perspective is indicative of a power dynamic that puts the females under pressure and could exacerbate depressive symptoms. Alternatively, the depressive symptoms in the context of the power differential would lead to women becoming more likely to participate in sexually risky behaviors. Due to the nature of the linear regression model, we are unable to assess the directionality of the association. Furthermore, this does not explain the lack of association of PTSD with sexual risk behavior. More research is needed on this topic as there is little background in the current literature particularly in African immigrant and refugee populations.

While this study did have important findings, it was not without limitations. Firstly, the study required translators to conduct the interviews. This could possibly limit the amount of information the participants were willing to discuss, as the study discussed sensitive information which participants may have not been comfortable doing in the presence of a third party. Despite this, no differences in rates of psychiatric symptoms was found between translated and non-translated interviews.

Secondly, this study did not differentiate participants based on their reason for migration; asylum seekers, refugees, and immigrants coming to Sweden for marriage or educational purposes were grouped similarly. This is an issue as other studies have shown that these groups have significant differences in the rates psychiatric symptoms (Gerritsen et al., 2006; Silove, Sinnerbrink, Field, Manicavasagar, & Steel, 1997). These differences should be taken into account for future studies as public health interventions can be tailored based on the reason for migration.

Finally, while acculturation measures have been used cross culturally in other immigrant populations, it has not been validated among refugees from Africa. This is a gap in the current literature as acculturation has no measure that is used cross culturally. This is probably due to the heterogeneity among the host countries and different refugee groups, which would make it difficult to establish a measure that is universally used among all of them.

Despite these limitations, the rates of psychiatric symptoms in the research was high enough to demonstrate that psychiatric interventions are needed to address these health disparities and sexual health. This study provides information that can be used for future interventions in these populations.

This study is unique in that no other study in Sweden examined psychiatric disorders and its association with sexual risk behaviors. However, further research is needed on this topic. There are many other factors that are linked with sexual risk behaviors and psychiatric symptoms, that were not able to be addressed in this study. This includes but is not limited to coping skills, social support, and resources. There are also higher-level policy and community influences that were not addressed such as immigrant and refugee policies, political turmoil in the immigrant or refugee home country, and the attitude of the host country towards migrants. Being one of the first studies to evaluate this, it would also be beneficial to have longitudinal studies to understand how rates of psychiatric symptoms and sexual risk behaviors change over time. Additionally, given that symptoms of PTSD and depression were associated with lower levels of acculturation scores, it may be good to incorporate longitudinal studies to be able to better understand the direction of this association over time.

Sweden’s integration policy aims to focus on employment, education, and combating discrimination, but psychiatric health is not addressed (Andersson & Weinar, 2014). This is of concern as many immigrants and refugees suffer from psychiatric disorders and cannot be expected to effectively manage resettlement into a new country without appropriate psychiatric services.

To combat this, psychiatric assessments should occur upon the arrival of the refugees and immigrant’s arrival to Sweden. This would allow for referral to appropriate psychiatric services if needed. These assessments should be done by trained professionals who are aware of the effects of culture and trauma on the expression of psychiatric symptoms.

Culturally appropriate services should also be provided for immigrants and refugees. Treatment methods that are common in Sweden or other Western societies may not be ideal for immigrant and refugee populations. One example is that non-Western cultures may prefer using social and personal relationships to resolve their personal issues rather than therapists they do not personally know, even if these therapists are qualified professionals (Segal & Mayadas, 2005). It may be beneficial to train respected community members so that immigrants and refugees would have a familiar person that they would be comfortable discussing their personal issues. Furthermore, narrative therapy (Woodcock, 2001) and cognitive behavioral therapy (CBT) (Basoglu, Ekblad, Bäärnhielm, & Livanou, 2004) are effective in treating psychiatric disorders among refugees, and perhaps these methods could be emphasized for refugee populations in Sweden.

Additionally, considering the association between acculturation and psychiatric symptoms, it may behoove Swedish officials to emphasize more language acculturation into their integration programs, as there was a statistically different language acculturation subscale when between participants with probable depression and PTSD. This could be performed with more Swedish lessons and establishing partnerships between local immigrant and refugee communities and immigration authorities. In addition to increased trust between these groups, it will allow for a better acculturation into Swedish society for the immigrant and refugee community as a whole.

# Conclusions

The participants in this study were found to experience high levels of depression and PTSD related symptoms when compared to the general population of Sweden, and other western countries. Given the ongoing conflicts that continue to plague many African countries, it can be expected that there will continue to be more immigrants and refugees resettling not only in Sweden, but in other western countries. It is essential for these host countries to not only provide resources, but to provide the appropriate resources based on the challenges these populations have. For example, acculturation was found to be associated with depression and PTSD. Particularly adoption of the host country’s language was found to be strongly associated with psychiatric symptoms. Thus, an intervention aimed at improving learning the language of the host country could be beneficial in reducing stress and depression. Furthermore, while rates of sexual risk behaviors are higher in the western populations, there is a gender inequality among sexual risk behaviors and depression among women in the immigrants and refugees from Africa that is not found in men. Whether that is due to cultural attitudes towards sex between the genders or if there are other characteristics contributing to this disparity remains to be seen, but it is an area of research that needs further elucidation.

# Bibliography

American Psychiatric Association (1994). Diagnostic and statistical manual of mental disorders (4th ed.). Washington, DC: Author.

Andersson, R., & Weinar, A. (2014). *Integration policies: Sweden country report.*

Anderson, J. E. (2003) Condom use and HIV risk among US adults. *American Journal of Public Health,* 93(6), 912-914.

Basoglu, M., Ekblad, S., Baarnhielm, S., & Livanou, M. (2004). Cognitive-behavioral treatment of tortured asylum seekers: a case study. *Journal of anxiety disorders*, 18(3), 357-369.

Brown L.K., Tolou-Shams M., Lescano C., Houck C., Zeidman J., Pugatch D., Lourie K.J., Project SHIELD Study Group (2006). Depressive symptoms as a predictor of sexual risk among African American adolescents and young adults. *Journal of Adolescent Health, 39(3),* 444-e1

Carey, M. P., Carey, K. B., & Kalichman, S. C. (1997) Risk for human immunodeficiency virus (HIV) infection among persons with severe mental illnesses. *Clinical Psychology Review* *17(3)*, 271-291.

Derogatis, L. R., Lipman, R. S., Rickels, K., Uhlenhuth, E. H., & Covi, L. (1974). The Hopkins Symptom Checklist (HSCL): a self-report symptom inventory. Behav Sci, 19(1), 1-15.

Fazel, M., Wheeler, J. & Danesh, J. (2005) Prevalence of serious mental disorder in 7000 refugees resettled in western countries: a systematic review. *The Lancet*, 365(9467), 1309–1314

Family Health International. Behavioral Surveillance Surveys BSS Guidelines for repeated behavioral surveys in populations at risk of HIV. Arlington ; 2000

Furnham, A., & Bochner, S. (1986). Culture shock: Psychological reactions to unfamiliar environments. *Culture shock: Psychological reactions to unfamiliar environments.*

Gerritsen, A. A., Bramsen, I., Deville, W., van Willigen, L. H., Hovens, J. E., & van der Ploeg, H. M. (2006). Physical and mental health of Afghan, Iranian and Somali asylum seekers and refugees living in the Netherlands. *Social psychiatry and psychiatric epidemiology*, *41(1)*, 18-26.

Ghaffarian, S. (1998). The acculturation of Iranian immigrants in the United States and the implications for mental health. *The Journal of social psychology, 138*(5), 645-654.

Gremy, Isabelle, and Nathalie Beltzer. (2004) HIV risk and condom use in the adult heterosexual population in France between 1992 and 2001: return to the starting point?. *Aids 18*(5) 805-809.

Harvard Program in Refugee Trauma (1998). Harvard Trauma Manual: Bosnia-Herzegovina Version. Cambridge, MA: Harvard Program in Refugee Trauma.

Hutton, H. E., Treisman, G. J., Hunt, W. R., Fisherman, M., Kendig, N., Swetz, A., & Lykestos, C. G. (2001) HIV risk behaviors and their relationship to posttraumatic stress disorder among women prisoners. *Psychiatric Services,* 52(4). 508-513.

Iglesias, E., Robertson, E., Johansson, S. E., Engfeldt, P., & Sundquist, J. (2003). Women, international migration and self-reported health. A population-based study of women of reproductive age. *Social Science & medicine, 56*(1), 111-124.

Jæger, A. B., Gramkow, A., Sørensen, P., Melbye, M., Adami, H. O., Glimelius, B., & Frisch, M. (2000). Correlates of heterosexual behavior among 23–87 year olds in Denmark and Sweden, 1992–1998. *Archives of Sexual Behavior, 29*(1), 91-106.

Kassie, G. M., Mariam, D. H., & Tsui, A. O. (2008). Patterns of knowledge and condom use among population groups: results from the 2005 Ethiopian behavioral surveillance surveys on HIV. *BMC Public Health 8*(1), 429.

Kim, E. (2009). Multidimensional acculturation attitudes and depressive symptoms in Korean Americans. *Issues in Mental Health Nursing, 30*(2), 98-103.

Kim, H., He, Y., Pham, R., Ravelo, G. J., Rojas, P., Rodriguez, P., ... & Cyrus, E. (2019). Analyzing the Association Between Depression and High-Risk Sexual Behavior Among Adult Latina Immigrant Farm Workers in Miami-Dade County. *International journal of environmental research and public health, 16*(7), 1120.

Lee, C. S., Chang, J. C., Liu, C. Y., Chang, C. J., Chen, T. H., Chen, C. H., et al. (2009). Acculturation, psychiatric comorbidity and posttraumatic stress disorder in a Taiwanese aboriginal population. *Social Psychiatry and Psychiatric Epidemiology, 44*(1), 55-62.

Lessenger, L. H. (1997). Use of Acculturation Rating Scale for Mexican Americans-IT with Substance Abuse Patients. *Hispanic Journal of Behavioral Sciences, 19*(3), 387-398.

Lewin, B. F. M., Helmius, K., Lalos, G., & Ann Månsson, S. A. (2000). Sex in Sweden-On the Swedish sexual life.

Lie, B. (2002). A 3‐year follow‐up study of psychosocial functioning and general symptoms in settled refugees. *Acta Psychiatrica Scandinavica*, *106*(6), 415-425.

Lindencrona, F., Ekblad, S., & Hauff, E. (2008). Mental health of recently resettled refugees from the Middle East in Sweden: the impact of pre-resettlement trauma, resettlement stress and capacity to handle stress. *Social psychiatry and psychiatric epidemiology*, *43*(2), 121-131.

Matheson, K., Jorden, S., & Anisman, H. (2008). Relations between trauma experiences and psychological, physical and neuroendocrine functioning among Somali refugees: Mediating role of coping with acculturation stressors. *Journal of immigrant and minority health*, *10*(4), 291-304.

Mendoza, R. H. (1989). An empirical scale to measure type and degree of acculturation in Mexican-American adolescents and adults. *Journal of Cross-Cultural Psychology, 20*(4), 372-385.

Miller, A. M., Sorokin, O., Wang, E., Feetham, S., Choi, M., & Wilbur, J. (2006). Acculturation, social alienation, and depressed mood in midlife women from the former Soviet Union. *Research in nursing & health, 29*(2), 134-146.

Mills, S., Saidel, T., Bennett, A., Rehle, T., Hogle, J., Brown, T., & Magnani, R. (1998). HIV risk behavioral surveillance: a methodology for monitoring behavioral trends. *Aids*.

Mollica, R. F., Caspi-Yavin, Y., Bollini, P., Truong, T., Tor, S., & Lavelle, J. (1996). Harvard Trauma Questionnaire: Brief summary of it development, statistical properties, use, and scoring. In N. Goldfield, M. Pine & J. Pine (Eds.), Measuring and managing health care quality: Procedures, techniques, and protocols, Volume 1. Gaithersburg, MD: Aspen Publishers.

Mollica, R., Sarajlic, N., Chernoff, M., Lavelle, J., Vukovic, I., & Massagli, M. (2001). Longitudinal study of psychiatric symptoms, disability, mortality, and emigration among Bosnian refugees. *Jama, 286*(5), 546-554.

Parks, J., Svendsen, D., Singer, P., Foti, M. E., & Mauer, B. (2006). Morbidity and mortality in people with serious mental illness. *Alexandria, VA: National Association of State Mental Health Program Directors (NASMHPD) Medical Directors Council*, *25*(4), 1-87.

Porter, M., & Haslam, N. (2005). Predisplacement and postdisplacement factors associated with mental health of refugees and internally displaced persons: a meta-analysis. *Jama, 294*(5), 602-612.

Psykologförbundet (2009). Depression: en rapport om mänskliga och ekonomiska vinster. Retrieved February 18, 2010, from <http://www.psykologforbundet.se/forbundettycker/Primarvard/Depression%20-%20en%20rapport%20om%20m%C3%A4nskliga%20och%20ekonomiska%20vinster.pdf>

Schuster, R. M., Mermelstein, R., & Wakschlag, L. (2013). Gender-specific relationships between depressive symptoms, marijuana use, parental communication and risky sexual behavior in adolescence. *Journal of youth and adolescence*, *42*(8), 1194-1209.

Schweitzer, R., Melville, F., Steel, Z., & Lacherez, P. (2006). Trauma, post-migration living difficulties, and social support as predictors of psychological adjustment in resettled Sudanese refugees. *Australian & New Zealand Journal of Psychiatry*, *40*(2), 179-187.

Segal, U. A., & Mayadas, N. S. (2005). Assessment of issues facing immigrant and refugee families. *Child Welfare, 84*(5), 563-583.

Silove, D., Sinnerbrink, I., Field, A., Manicavasagar, V., & Steel, Z. (1997). Anxiety, depression and PTSD in asylum-seekers: associations with pre-migration trauma and post-migration stressors. *The British Journal of Psychiatry, 170*(4), 351-357.

Smit, J., Myer, L., Middelkoop, K., Seedat, S., Wood, R., Bekker, L. G., & Stein, D. J. (2006). Mental health and sexual risk behaviours in a South African township: a community-based cross-sectional study. *Public health*, *120*(6), 534-542.

Sylvan, S. P. (1998). The high rate of antibodies to hepatitis E virus in young, intravenous drug-abusers with acute hepatitis B-virus infection in a Swedish community: a study of hepatitis markers in individuals with intravenously or sexually acquired hepatitis B-virus infection. *Scandinavian journal of infectious diseases*, *30*(4), 429.

United Nations (2000). United Nations world macro regions and components. Retrieved May 16, 2019, from <https://unstats.un.org/unsd/methodology/m49/>

Varga, C. A. (1997) Sexual Decision-Making and Negotiation in the midst of AIDS: youth in KwaZulu-Natal, South Africa. *Health Transition Review*, *7*(3), 45-67.

Varga, C. A. (2003). How gender roles influence sexual and reproductive health among South African adolescents. *Studies in family planning*, *34*(3), 160-172.

Waller, M. W., Hallfors, D. D., Halpern, C. T., Iritani, B. J., Ford, C. A., & Guo, G. (2006). Gender differences in associations between depressive symptoms and patterns of substance use and risky sexual behavior among a nationally representative sample of US adolescents. *Archives of Women's Mental Health*, *9*(3), 139.

Walters, K. L. (1999). Urban American Indian identity attitudes and acculturation styles. *Journal of Human Behavior in the Social Environment, 2*(1-2), 163-178.

Wood, K. & Jewkes, R. (2005) 'Dangerous' love: Reflections on violence among Xhosa township youth.

Woodcock, J. (2001). Threads from the labyrinth: therapy with survivors of war and political oppression. *Journal of Family Therapy, 23*(2), 136-154.

World Health Organization Meeting Report on Excess Mortality in Persons with Severe Mental Health Disorders (2015). Retrieved May 16, 2019 from <https://www.who.int/mental_health/evidence/excess_mortality_meeting_report.pdf>