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DEPRESSION, POST-TRAUMATIC STRESS DISORDER, AND LIFE SATISFACTION IN GREENLANDIC ADULTS

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Suicide is a major public health problem in Greenland. Despite the fact that suicide is highly associated with depression, post-traumatic stress disorder (PTSD), and life satisfaction there are virtually no data about the extent to which Greenlandic individuals experience these mental health problems or a sense of well-being. In this study, a group of 137 Greenlandic adults completed measures of depression, PTSD, and life satisfaction. In addition, they also provided memories of traumatic or stressful and positive life events they had experienced during their lives. No sex differences were found in any of the measures. Results showed that 25.8 % of the participants reported symptoms of mild or major depression, while 13% reported high PTSD scores, and 10% of the sample reported being dissatisfied with their lives.

Keywords: depression, PTSD, life satisfaction, Greenlandic middle-aged and older adults, life events

Introduction

A friend of mine committed suicide on the night of our high school graduation. He was 19 years old. As a psychologist and researcher, I often wonder what psychological factors contributed to the decision to end his life. Suicide is a highly complex phenomenon, in which social, historical, psychological, biological, genetic, and even climate factors play a role (Courtet, 2016; Wasserman, 2016). From the psychological perspective, there is an extensive body of research that shows associations between suicide or suicide attempts

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and depression (Harwitz & Ravizza, 2000; Olié, Travers, & Lopez-Castroman, 2016), post-traumatic stress disorder (Kotler, Iancu, Efroni, & Amir, 2001; LeBouthillier, McMillan, Thibodeau, & Asmundson, 2015; Stevens et al., 2013; Tarrier & Picken, 2011; Wilcox, Storr, & Breslau, 2009), and life satisfaction (Valois, Zullig, Huebner, & Drane, 2004), especially in cases in which post-traumatic stress disorder (PTSD) and depression or schizophrenia are co-morbid (Stevens et al., 2013). Unfortunately, this kind of research studies rarely examine samples in Greenland, where suicide is highly prevalent and has been identified as an indicator of poor mental health, already almost 20 years ago (Bjerregaard & Young, 1998).

Suicide and Mental Health in Greenland: The case of depression, PTSD, and life satisfaction

Suicide is a pressing public health problem in Greenland (Dahl-Petersen & Bjerregaard, 2016; Leineweber & Arensman, 2003). It has been argued that suicide rates are related to modernization of the Greenlandic Inuit culture experienced after World War II, as Greenlanders were forced to abandon traditional means of sustenance and alcohol consumption increased (Leineweber & Arensman, 2003), resulting in the alienation of individuals from their Inuit culture, especially of men whom seem to have been more affected than women by the change in traditional roles that modernization and an economy based on salaried work brought about (Bjerregaard & Young, 1998). The same trend is also present in other Inuit populations in the Arctic, for example, in Canada (Kirmayer, Malus, & Boothroyd, 1996).

During the mid-70s and the 80s, there was an increased rate of suicides, especially in young men, aged 15 to 24 years old, with higher rates in towns in Eastern and Northern Greenland, compared to Southern Greenland (Leineweber, 2000). Bjorksten, Bjerregaard, and Kripke (2005) reported that during the period of 1968 – 1995, a total of 833 suicides were registered. More recent figures, as reported by Statbank Greenland (National Board of Health, 2015), showed that a total of 883 deaths of Greenlandic individuals, mean age = 31 years old, from 1996-2013 were registered as suicides, which continues to be alarming. In the last decades, a large body of literature has originated seeking to investigate the factors contributing to several health problems, among them suicide, in Greenland and other Inuit communities in Canada, Alaska, and Russia; for instance, this literature reported on the status of the health care system in Greenland during the 1990s and indicated that about 6% of medical consultations involved mental illness (Bjerregaard & Young, 1998). Some researchers have also identified that growing up in dysfunctional homes with parental alcohol consumption and violence, and childhood sexual abuse might contribute to the psychological vulnerability of a person who decides to end his or her life (Dahl-Petersen & Bjerregaard, 2016).

A study by Leineweber (2000) reviewed police records, a national register of causes of death by suicides and death certificates for the period of 1993-1995 and identified 110 cases of suicide, of which nine were recorded as having depression as a mental health problem, based on family reports. In other eight cases, individuals had been previously exposed to suicide, which could have contributed to symptoms of PTSD, as previous studies investigating suicide and past exposure to potentially traumatic events have identified (see LeBouthillier et al., 2015). Victimization and trauma studies in Greenland also report high rates of assaultive violence and sexual abuse, which are linked to an array of mental health problems (Curtis, Larsen, Helweg-Larsen, & Bjerregaard, 2002). For example, a study by Karsberg, Armour, and Elklit (2014) concluded that a sample of young Greenlandic people were exposed to a range of traumatic events, such as physical assault, rape, threats of violence, physical abuse, childhood sexual abuse, neglect, and bullying. However, the literature, available in English, on symptoms of depression and PTSD in Greenland is virtually inexistent, with the exception of one study reporting on PTSD symptomatology of Greenlandic youth (Karsberg, Lasgaard, & Elklit, 2012). Some of the health surveys (Dahl-Petersen & Bjerregaard, 2016) have included the 12-item General Health Questionnaire (GHQ-12; Goldberg et al., 1997) that screens for mental health problems; however, this instrument seems insufficient to establish the extent to which they are indicative of depression or PTSD. This lack of information is especially surprising as suicides and suicide attempts have been associated with depression and PTSD resulting from violent trauma, especially in cases in which these are co-morbid (Stevens et al., 2013).

Depression. Depression is mood disorder characterized by sadness and lack of interest or pleasure in daily activities. In some cases, it is also accompanied by suicidal thoughts (*Diagnostic and statistical manual of mental disorders (4th ed.)*, 1994). According to the World Health Organization (*Depression and other common mental disorders: Global health estimates*, 2017), depression affects 322 million people in the world in all age groups, it is one of the leading causes of disability, and is more prevalent in women. The same estimates report that 5% of the population in Denmark suffers from depression. No current estimates are provided for Greenlandic samples by the organization. Earlier estimates by Curtis, Iburg, and Bjerregaard (1997), reported that 27% of participants had been depressed or suffered from anxiety. According to Olié et al. (2016), 70% of individuals who attempt suicide experience depressive symptoms at the time of the attempt and 15% of those suffering from depression will commit suicide. In conclusion, depression and suicide are associated. Consequently, there is the need to investigate about depressive symptoms in Greenlandic samples more intensely.

Post-Traumatic Stress Disorder (PTSD). After experiencing or witnessing a life-threatening event, some individuals will go on to meeting diagnostic criteria for PTSD, a mental health problem characterized by re-experiencing of the trauma, avoidance, and arousal (*Diagnostic and statistical manual of mental*

disorders (4th ed.), 1994). PTSD is associated to suicide attempt and suicidal thoughts (Stevens et al., 2013; Wilcox et al., 2009). A study by LeBouthillier et al. (2015) investigated different types of trauma in a US sample in order to establish which traumas were associated with higher levels of suicidal ideation and suicide attempts. Their results indicated that "childhood maltreatment, assaultive violence, and peacekeeping traumas had the highest rates of suicidal ideation (49.1% to 51.9% and suicide attempt (22.8% to 36.9%)" (p. 183).

Exposure to trauma and PTSD are also understudied in Greenland. The only available study reported that the estimated lifetime prevalence of PTSD was 17%, with 10% of the sample also reporting having experienced sexual abuse or rape (Karsberg et al., 2012). Other studies investigating traumatic events such as violence and sexual abuse in Greenland have established that violence is highly prevalent in both women and men, and that sexual abuse is more prevalent in women (25%) than in men (6%), with 8% for women and 3% for men of cases occurring during childhood (Curtis et al., 2002; Karsberg et al., 2014).

Life satisfaction. Life satisfaction is an index of subjective well-being, defined as an individual's evaluation of his or her satisfaction with life, and his or her mood and emotions (Diener & Suh, 1999). Well-being has been investigated scientifically by psychologists for about the last 40 years. Decreased levels of life satisfaction have been associated with suicide and suicide attempts (Valois et al., 2004). A number of studies have surveyed life satisfaction in Greenland; these studies indicate that Greenlandic samples report higher than average levels of life satisfaction and greater affect balance in men (Biswas-Diener, Vittersø, & Diener, 2005), and that they are significantly more satisfied with their lives than a Chinese sample, but not more so than Danish, Mexican (Zaragoza Scherman, Salgado, Shao, & Berntsen, 2015a), and Norwegian samples (Vittersø, Biswas-Diener, & Diener, 2005). However, Vittersø et al. (2005) also concluded that Greenlandic people reported less life satisfaction than Norwegian people when a different analysis using interval scales instead of ordinal raw scores was conducted.

The Present Study

This report is based on data collected with a Greenlandic sample for a larger cross-cultural study (Zaragoza Scherman et al., 2015a). The main objective of this re-analysis is to report on symptoms of depression and PTSD, along with levels on life satisfaction, as an index of well-being, of a group of adults in Greenland. Subsequently, based on the scores to relevant questionnaires and their respective cut-off points, participants have been assigned to high scores and low scores groups, in order to identify those participants that meet screening criteria for depression, PTSD and report low levels of life satisfaction. Finally, we enumerate the positive and traumatic or stressful events reported by these participants.

Method

Participants

A total of 143 Greenlandic middle-aged and older adults participated in the study. They were recruited in Nuuk, Aasiaat, Ilulissat, Qaqortoq, and Sisimiut, in community centers, via public radio announcements, posters, and by word of mouth. Six participants were excluded from the final analysis because they failed to complete at least 95% of the survey. The final sample consisted of 137 participants (63% females; mean age = 50.56, *SD* = 6.82, age range = 40 – 74), who reported having attended formal education for, on average 15 years (*SD* = 2.95).

Materials

Center for Epidemiologic Studies Depression Scale (CES-D). The CES-D (Radloff, 1977) is a self-report measure of depression in the general population. This scale consists of 20 items. Each item required the participant to indicate, on a 4-point Likert scale (0 for "rarely" and 3 for "all the time"), how often they felt a particular way (e.g., "*I did not feel like eating; my appetite was poor*" and "*I felt that everything I did was an effort*") during the previous week. The total sum score is reported. The score can range from 0 to 60 points. A total sum score of 16 points or above indicates clinical symptoms of depression. This scale was found to be reliable (20 items; $\alpha = .86$).

Post-Traumatic Stress Disorder Checklist – Civilian (PCL-C). The PCL-C (Blanchard, Jones-Alexander, Buckley, & Forneris, 1996; Weathers, Litz, Huska, & Keane, 1994) is a self-report measure of post-traumatic stress disorder symptoms in response to stressful life experiences from the past. It consists of 17 items, corresponding to the 17 symptoms of the PTSD diagnosis in the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., text rev.; DSM-IV-TR; American Psychiatric Association, 2000). Each item required the participants to indicate, on a 5-point Likert scale (1 for "not at all" and 5 for "extremely"), how much they have been bothered by a symptom, for example: "*having difficulty concentrating*" and "*trouble falling or staying asleep*". The total sum score is reported. A total sum score of 36 points or more, in addition to responses above three in at least one of questions 1-5, three of questions 6-12 and two of questions 13-17 indicate clinical symptoms of PTSD. (National Center for PTSD, 2014). The score can range from 17 to 85 points. This scale was found to be highly reliable (17 items; $\alpha = .90$).

Satisfaction with Life Scale (SWLS). The SWLS (Diener, Emmons, Larsen, & Griffin, 1985) is a self-report measure of life satisfaction as a component of well-being. The scale consists of five items. Participants indicate, on a 7-point Likert scale (1 for "strongly disagree" and 7 for "strongly agree"), how satisfied they are with their lives (e.g., "*The conditions of my*

life are excellent” and “*If I could live my life over, I would change almost nothing*”). The total sum score is reported. It can range from 5 to 35 points, where 5-9 is extremely dissatisfied, 10-14 is dissatisfied, 15-19 is slightly below average, 20-24 is average, 25-29 is satisfied, and 30-35 is highly satisfied. This scale was found to be highly reliable (5 items; α = .85).

Prior to completing the measures described above, participants also completed, in counterbalanced order, questionnaires designed to generate cultural life scripts and to elicit autobiographical memories of life story events (Zaragoza Scherman, Salgado, Shao, & Berntsen, 2017). In addition, they also provided memories for highly emotional positive and negative (traumatic or stressful) life events and completed measures of centrality for both events (see Zaragoza Scherman et al., 2015a; Zaragoza Scherman, Salgado, Shao, & Berntsen, 2015b). Demographic information was also collected.

Procedure

Data collection procedure. Survey materials were back-translated from English to Greenlandic, following the procedures outlined by Brislin (1970). Trained research assistants administered the survey individually or in small groups (no more than five people). Research sessions consisted of the research assistant reading information about the study and instructing the participants to read the survey booklet and complete the questionnaires.

Results

We conducted independent t-tests to compare the mean scores of female and male participants (see Table 1). All tests showed no sex differences in any of the measures. A series of One-Way ANOVAs also showed no differences based on the city or town where data were collected (all *F*s (3,128-132) = 0.17 – 1.56, *p*s = .203 – .917). As a result, we proceeded to analyse the data of all the participants as one group.

Table 1. Independent T-test, comparing females and males for all measures

	Females				Males						
	N	*M*	*SD*		*N*	*M*	*SD*		*t*		*p*
Depression	82	11.02	8.85		50	13.70	8.59		-1.70		0.09
PTSD	84	30.36	10.04		51	31.61	10.69		-0.69		0.50
Life Satisfaction	85	28.53	6.51		51	27.49	6.00		0.93		0.36

Symptoms of Depression, Post-traumatic Stress Disorder, and Life Satisfaction

Depression. Using the score cut-off of 16 points, provided by Lewinsohn, Seeley, Roberts, and Allen (1997), for the CES-D to screen for depression showed that about 74% (*n* = 98; 62 females and 36 males) of the sample reported scores below 16 points, which indicates no clinical symptomatology of depression, while 26% (*n* = 34; 20 females and 14 males) of the sample reported scores above the cut-off point, which may indicate symptomatology of mild or major depression.

Post-Traumatic Stress Disorder (PTSD). Based on scoring instructions for the PCL-C (Blanchard et al., 1996; Weathers et al., 1994), 87% (*n* = 119; 76 females and 43 males) of the sample reported scores below 36 points, while 13% (*n* = 18; 10 females and 8 males) of the sample reported scores above 36 and met criteria that indicated clinical symptoms of PTSD.

Life satisfaction. Based on total sum scores, two groups were formed. Participants who scored between 5 and 19 were sorted into a group with low scores of life satisfaction, whereas participants who scored above 19 were sorted into a group with high scores of life satisfaction. This resulted in 10% (*n* = 13; 7 females and 6 males) of participants in the low scores group and 90% (*n* = 123; 78 females and 45 males) participants in the high scores group.

Correlations between depression, PSTD, and life satisfaction. Consistent with the literature, depression was significantly correlated with PTSD ($r = .70$, $p < .001$), and with life satisfaction ($r = -.41$, $p < .001$). PTSD was also significantly correlated to life satisfaction ($r = -.19$, $p < .05$) in the expected directions.

Taken as a group, 12% (*n* = 16; nine females, seven males) of the participants reported high scores either in the measures of depression, PTSD or low scores in life satisfaction. Of these, 13 (six females, seven males) reported high scores for both depression and PTSD, while eight (five females, three males) reported high scores in depression and low scores in life satisfaction, and five (two females, three males) reported high scores in PTSD and low scores in life satisfaction. Finally, the same five participants reported high scores in depression and PTSD and low scores in life satisfaction.

The traumatic and stressful life events reported by these 16 participants included sexual abuse, murder attempt, domestic violence, epilepsy, medical procedures, parental or own alcohol or drug abuse, neglect, suicidal thoughts, suicide and death in the family. The positive life events reported by these 16 participants included confirmation, being in a relationship, getting an education, working, getting married, having children, nephews, and grandchildren, rehabilitation and treatment, love, happiness, and forgiveness (see Zaragoza Scherman et al., 2015b; for a list of the negative and positive life events reported in a cross-cultural study where the sample in this study was presented).

Discussion

Suicide is a public health problem worldwide. As such, research that has investigated the contributing factors and conditions in which a person commits suicide is plentiful (Wasserman, 2016). Results from the psychological literature conclude that someone's risk to commit suicide might be increased if the person suffers from depression, or PTSD resulting from trauma exposure in the form of assaultive violence, childhood sexual abuse and maltreatment (Harwitz & Ravizza, 2000; Karsberg et al., 2012; Kirmayer et al., 1996; Kotler et al., 2001; LeBouthillier et al., 2015; National Board of Health, 2015; Valois et al., 2004; Wilcox et al., 2009). Low levels of life satisfaction also exacerbate the situation of a vulnerable individual as his or her subjective well-being deteriorate. During the 1980s, Greenland experienced an alarming increase in suicides to the point that by 1998, "49% in all age groups combined have experienced suicide in a relative or close friend" (Bjerregaard & Young, 1998, p. 53). Fortunately, research about suicide in Greenland is now routinely collected in the National Health Surveys and a large knowledgebase has been gathered in other studies as well, including some mental health information (Bjerregaard & Lynge, 2006; Bjorksten et al., 2005; Dahl-Petersen & Bjerregaard, 2016; Grove & Lynge, 1979; Kirmayer et al., 1996; Leineweber & Arensman, 2003; Leineweber, 2000; National Board of Health, 2015). However, for Greenlandic samples, still very little is known about specifically about symptoms of depression, PTSD, and life satisfaction, which have been associated to suicide and suicide attempt, and ideation (Boney-McCoy & Finkelhor, 1996; Harwitz & Ravizza, 2000; Helliwell, 2007; Kirmayer et al., 1996; Kotler et al., 2001; Valois et al., 2004; Williams & Broadbent, 1986). Based on measures of depression, PTSD, and life satisfaction, 16 participants with high scores in depression, PTSD and/or low levels of life satisfaction were identified. According to the literature on suicide and suicide attempts, these participants would constitute a group at risk, especially the five participants who reported high scores for PTSD and depression and low scores of life satisfaction. Further psychological testing and interviews would be required to ascertain a diagnosis; however, these individuals could benefit from suicide prevention programs or interventions (Calati, 2016; Ftanou et al., 2017; Oyama & Sakashita, 2017). In a literature review, Henson, Sabo, Trujillo, and Teufel-Shone (2017) have identified protective factors that influence depression and suicide attempts, among other health problems in adolescents in Alaska. The factors identified were a) current and/or future aspirations, b) personal wellness, c) positive self-image, d) self-efficacy, e) non-familial connectedness, f) family connectedness, g) positive opportunities, h) positive social norms, and i) cultural connectedness. Even thought some National Health Surveys in Greenland do investigate mental health, studies specific to depression and PTSD are scarce. A study by Oyama and Sakashita (2017) concluded that screening for depression alone was associ-

ated with lower suicide rates in a community sample of middle-aged adults in Japan. Therefore, they argue for community-wide screening for depression as a potential form of intervention for suicide prevention. Identifying people at risk for suicide through psychological testing would be beneficial.

Conclusion

Given the high rate of suicide and suicide attempts in Greenland, along with the documented association between suicide and depression, PTSD, or life satisfaction, it is surprising that so little information exists regarding the prevalence of these disorders and levels of well-being in Greenland. Screening instruments for depression such as the Center for Epidemiologic Studies – Depression (CES-D; Lewinsohn et al., 1997; Radloff, 1977), the Post-traumatic Checklist for Civilians (PCL-C; Blanchard et al., 1996) and the Satisfaction With Life Scale (SWLS; Diener et al., 1985) could provide mental health professionals with valuable information to identify vulnerable individuals at risk, as well as provide psychological support and treatment, such as suicide prevention programs (see Henson et al., 2017, for a review). Using the measures mentioned above, this study presented a preliminary examination of symptoms of depression, PTSD, and levels of life satisfaction in a group of adults in Greenland; however, large epidemiological studies in Greenland are sorely needed. Health professionals and people in the community require knowledge that will guide decision making as to how best to allocate resources to help reduce suicide rates in Greenland.

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