

Depression, anxiety, and stress from substance-use disorder among family members in Iceland

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Abstract

Aims: This research was designed to explore the extent to which the use of alcohol or drugs by one member of a family affects the psychosocial state of other family members. The study asks whether family members of substance abusers are more likely to report increased depression, anxiety and stress than the general population in Iceland? Are there significant differences between family members; e.g., spouses, parents, adult children and siblings by gender, age, education and income? **Data and methods:** The instrument used for this purpose is the Depression Anxiety Stress Scale (DASS), which is designed to measure those three related mental states. It was administered to 143 participants (111 women and 32 men) with ages ranging from 19–70 years on the first day of a four-week group therapy programme for relatives of substance use disorder (SUD) at The Icelandic National Centre for Addiction Treatment (SÁÁ) from August 2015 to April 2016. Thirty participants are adult children of a parent with SUD, 47 are a spouse, 56 are parents of a child with SUD and 10 are siblings. The subscales of the DASS for depression, anxiety, and stress were utilised to examine which family member – parent, child, partner, or sibling – presented the behaviour associated with SUD. **Results:** 36% or more of the respondents in all three subscales

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had average, serious, or very serious depression, anxiety, and/or stress. This is higher than in DASS studies of the general population in Iceland. However, the analysis indicates that it made little difference to the family's wellbeing which family member was affected by SUD.

Keywords

anxiety, DASS, depression, families, family group therapy, stress, substance-use disorder, SUD

The objective of this research was to measure the extent to which living with an individual afflicted by substance use disorder (SUD) affects the psychosocial state of other family members, especially their depression, anxiety, and stress. Substance use disorder (SUD) is a disease whose social costs are high. The negative effects of drug abuse go well beyond the health and condition of the person who suffers from SUD. Research has shown a strong link between addiction and the disruption of family relationships, including severe psychosocial and physical effects on family members described as depression, anxiety, and stress (Bortolon et al., 2016; Jhanjee, 2014; Lander, Howsare, & Byrne, 2013). Parents' depression when living with a partner suffering from SUD can contribute to the mental, physical, and social neglect of the family's children, further aggravating the family's anxiety and stress (Denning, 2010; Hrafnisdóttir & Ólafsdóttir, 2016; Ólafsdóttir & Hrafnisdóttir, 2011).

Very little research has been carried out in Iceland on substance abuse; e.g., alcohol, recreational or prescription drug abuse. Even less research has been done that is comparable with the other Nordic countries. However, there is statistical information available on alcohol consumption, which can give us an idea of where Iceland stands in relation to its Nordic cousins, albeit void of information on drug use. Table 1 shows the differences in consumption of alcohol by Nordic country and the EU 28 in 2014 (the most recent year available).

The table shows that the occurrence of the highest level of reported alcohol consumption (at least once a week) is similar in Iceland and

Norway (2.1% and 2.3% respectively). Sweden follows with 4.2%, while Denmark (9.5%) and Finland (11%) show a much greater consumption of alcohol in comparison with the other three Nordic states and the EU 28 countries (5.5%) (Eurostat, 2017).

Finland's greater consumption of alcohol in comparison with Sweden, Norway and Iceland is well documented. Since the 1990s alcohol consumption has been on the increase until 2009 when it slightly declined. According to the Finnish National Institute for Health and Welfare, Finns still drink more alcohol per capita than any of the other Nordic country (Orijasemi & Ólafsdóttir, 2017; Terveyden ja hyvinvoinnin laitos, 2015).

The psychosocial impact of substance-use disorder on family members

Studies indicate that excessive drinking can increase poor emotional health (Kenneth, Leonard, & Eiden, 2007), often manifesting as depression, stress, and anxiety that adversely affect interpersonal relationships (Denning, 2010; Ólafsdóttir & Hrafnisdóttir, 2011). A person who is in a domestic relationship with a substance abuser can encounter clashes in communication, decreased intimacy, repressed psychosocial stress, and physical violence (Dawson, Grant, Chou, & Stinson, 2007; Lander et al., 2013).

Spouses

One study found that women who lived with a substance-abusing partner tended to have much

Table 1. Alcohol consumption in the five Nordic countries from age 15 years and older in 2014.

	At least once a week	Every month	Less than once a month	Never or not in the last 12 months
EU (28 countries)	5.5%	14.4%	20.2%	59.9%
Denmark	9.5%	27.9%	35.1%	27.5%
Finland	11.0%	22.9%	28.9%	37.3%
Sweden	4.2%	16.2%	26.1%	53.5%
Iceland	2.1%	23.6%	31.9%	42.4%
Norway	2.3%	41.7%	0.0%	56.0%

Source: Eurostat, 2017. Results in percentage of population over the age of 15.

worse states of health, with more anxiety, stress, physical illness, and significant impairment of their overall quality of life as indicated by lower family incomes and higher levels of domestic abuse (Dawson et al., 2007). Yet, one finding of the Nord-Trøndelag Health Study (HUNT) showed that while alcohol consumption increased spousal mental distress, greater alcohol consumption did not necessarily indicate greater spousal mental distress in a corresponding ratio (Rognmo, Torvik, Ildstad & Tambs, 2013). This implies that the amount of alcohol is not what is causing the distress in spouses, but rather that alcohol abuse in general is.

Divorce is more likely in couples who consume large amounts of alcohol. One group of researchers found that high alcohol consumption not only increased the likelihood of divorce, but exacerbated the difficulties of the mental healing process following the divorce (Rognmo, Torvik, Røysamb & Tambs, 2013). Research by Kenneth et al. (2007) also shows how common it is for couples to separate in the early years of their relationship due to substance abuse within the relationship.

Parents with SUD

Parental substance abuse typically produces stressful family interactions with adverse psychosocial effects on children, who observe that parental conflicts, illness, and financial upsets cause the impoverished living conditions the family must endure (Hrafnisdóttir & Ólafsdóttir,

2016; Orjasniemi & Kurvinen, 2017; Sang, Cederbaum & Hurlburt, 2014). These children may find it more difficult to trust others and form healthy emotional connections (Champion et al., 2009; Lander et al., 2013; Meyers, Apodaca, Flicker, & Slesnick, 2002; Solis, Shadur, Burns, & Hussong, 2012). Children of substance abusers are at greater risk than other children for social and emotional conditions such as anxiety, anger, guilt, shame, and depression (Johnson & Stone, 2009).

Adult children of parents with SUD

Research by Wodarski (2010) implicates environmental factors as the probable cause of SUD. Research by Johnson and Stone (2009) revealed the extent to which living with drug use as a child is correlated with an increased risk of substance abuse and clinical depression as an adult. In the study, about one-fifth of participants had grown up with at least one parent who was a substance abuser or was clinically depressed, or both, and who consequently neglected or abused their children, who were much more likely to develop SUD and/or depression themselves as they grew into adults (Johnson & Stone, 2009).

Reinforcing that finding, a Finnish study published in 2008 made use of data collected in the years 2000 and 2001 from a sample of young adults between the ages of 18 and 29 years ($N = 1234$) with a response rate of 65%, using both qualitative and quantitative methodologies. It concluded that the social

circumstances in which children are raised affects their consumption of addictive substances as adults, and that their use of addictive substances tends to be worse if their parents were separated. Further, participants in the study believed that adverse circumstances of their upbringing had contributed to their development of personality traits such as depression, social inactivity, and substance abuse. This and other research indicates that growing up in a household with SUD and the neglect that often accompanies it has a strong and persistent adverse effect on children, including a greater tendency to abuse alcohol themselves as youths and adults (Kestilä et al., 2008).

The genetic basis of the tendency toward substance abuse has also been substantiated by research conducted on twins and non-human animals. If one or both parents abuses and/or is an abuser of addictive substances, the child is 40 to 60 per cent more likely to develop into a substance abuser later in life (Díaz-Anzaldúa, Díaz-Martínez, & Díaz-Martínez, 2011). A study based on clinical data from nearly 20,000 individuals treated for addiction in Iceland over the past three decades demonstrates a strong link between genetics and the risk of addictive substance dependence: 78% of the sons in the study lived in a household where fathers suffered from SUD and had substance abuse problems themselves while only 22.2% of daughters lived under the same conditions (Tyrfingsson et al., 2010).

Siblings with SUD

Sibling relationships can also significantly affect socialisation processes (Criss & Shaw, 2005). Healthy sibling relationships are correlated with better social skills, greater self-esteem, and greater facility in forming positive emotional attachments to others (Button & Gealt, 2010). On the other hand, growing up with a sibling who has shown a risk behaviour such as drug abuse contributes to hostile interactions between siblings such as verbal abuse or

other aggressive behaviour. Children who are not substance abusers themselves can develop lower self-esteem, anxiety, anger, shame and isolation from their association with abusing siblings (Button & Gealt, 2010; McHale, Updegraff, & Whiteman, 2012).

Parents of children with SUD

As presented in this section, studies have shown that the effects of substance abuse on a family depend partly on which family member is the abuser (Bortolon et al., 2016). For instance, parents of teenagers often feel responsible when their teenager is a substance abuser and may be in denial about that reality or may experience self-accusations, stress, anger, sadness and a need to assist the adolescent to overcome the addiction (Bortolon et al., 2016; Waldron, Kern-Jones, Turner, Peterson, & Ozechowski, 2006).

Therefore, this study asks, are family members of substance abusers more likely to report increased depression, anxiety and stress than the general population in Iceland? And are there significant differences between family members – e.g., spouses, parents, adult children and siblings – by gender, age, education and income? This study forms an important contribution in this field of alcohol and drug abuse research. Focus on family members was popular in the mid 20th century in family therapy (1960s–1980s) especially focusing on the affects parental SUD had on children. Around 1985 the focus moved more towards the individual with SUD rather than the family as a whole. Recently, the focus on family members in a family dealing with SUD is once again increasing (Holmila & Kantola, 2003; Itäpuisto, 2001, 2005; Orjasniemi & Kurvinen, 2017; Roine, Ilva & Takala, 2010). However, as far as we know, this is the first study using the Depression, Anxiety and Stress Scale (DASS) to analyse the mental wellbeing of the family members who live with SUD without focusing on the individual with SUD themselves. Very few studies of family and substance abuse have

been conducted in Iceland. Not only will this study contribute to the literature and understanding of the mental wellbeing of family members living with SUD, but it will also contribute to the understanding of substance abuse in Icelandic families overall. The results of the study can be used to improve and promote treatment for the whole family and for individual family members and be used to better understand the effects of substance dependence on families.

Methodology

The objective of this research was to measure the extent to which living with an individual afflicted by SUD affects the psychosocial state of other family members. This study asks, are family members of substance abusers more likely to report increased depression, anxiety and stress than the general population in Iceland? And are there significant differences between family members, e.g., spouses, parents, adult children and siblings?

Quantitative methods were used to analyse participants' answers to the questionnaire. For this research, the Depression Anxiety Stress Scale (DASS) was utilised to develop quantitative measurements of the extent to which living with a substance-abusing family member affects the psychosocial state of other family members, especially in regard to their reported levels of depression, anxiety, and stress.

Sample

To examine whether an individual's substance-use disorder (SUD) influenced the mental or emotional states of other family members with respect to depression, anxiety, and stress, this project chose participants using purposive sampling. In order to participate, an individual had to fulfil the following criteria; (1) be over 18 years old when taking the questionnaire, (2) be a member of a family with a history of SUD (i.e., a child, spouse, parent or sibling of an individual with SUD) and, (3) be a participant

of a specific family group therapy programme. Thus, the questionnaire was administered on the first day of a four-week family group therapy programme at the Icelandic National Centre for Addiction Treatment (SÁÁ) held from August 2015 until April 2016. The sample group included 143 individuals, each of whom received the DASS questionnaire. Usually in research one must work with low response rates. However, on this occasion we were able to get a 100% response rate. Most likely this was due to the presence of the lead researcher and the overall interest and willingness the subjects showed.

Of the 143 participants, 32 were men (22%) and 111 were women (78%). Each participant answered the background questions and responded to all of the DASS survey's statements.

The average age of the participants was 44.5 years old; the youngest participant was 19 and the oldest was 70. They were divided into five age groups and spread relatively equally: 18 to 29 years (17%); 30 to 39 years (19%); 40 to 49 years (17%); 50 to 59 years (27%); and 60 years and older (20%). Most participants lived with a partner and children (82%); the remaining 18% were single or separated. Women were distributed fairly equally among the age groups (17% to 24%). The highest proportion of men was found in the 50–59 years age group (38%), while the lowest number of men was found in the 30–39 age group (9%).

Thirty participants reported that they were adult children of a parent with SUD, 47 were a spouse, 56 were parents of a child with SUD and 10 were siblings. Each participant was asked why he or she had applied for the programme; their responses indicated that half of the men applied because a child was consuming addictive substances, and the other half because of a parent or partner doing the same. A similar number of women (36%) applied because of a child's drug use, or a partner's. Only 9% of participants, all women, applied for the programme because of a sibling's drug use.

The level of education amongst the participants was spread rather equally, with the

greatest proportion having completed a university-level education (41%). When the participants were grouped by income, the largest group (37%) had monthly incomes between 250,000 and 500,000 ISK (about \$2250 to \$4500 USD); 29% had a monthly income of less than 250,000 ISK; and 34% had a total income of more than 500,000 ISK per month. According to the independent governmental agency Statistics Iceland, the average monthly income was 555,000 ISK (Statistics Iceland, n.d.a). Figures for the average income of the 2014 research sample proportionately mirror the income of the participants in this research.

When participants were grouped by employment, 72% were employed full time, 16% part time, 4% were unemployed, and 8% were disabled. According to research conducted by Statistics Iceland in April 2016, 84% of individuals between the ages of 16 and 74 years were participating in the job market, and of those 5% were unemployed. Based on that research, employment and unemployment figures also mirror the employment levels of participants in this research (Statistics Iceland, n.d.b).

Measurement

The DASS survey was developed by Lovibond and Lovibond in Australia (Lovibond & Lovibond, 1995). Originally the scales were developed in order to design a self-assessment survey for research projects examining two factors: depression and anxiety (Crawford & Henry, 2003). In the process of analysing the two factors in the pre-analysis of the questionnaire, it was noted that participants tended to respond with states that are not solely connected to depression and anxiety, such as annoyance, confusion, and impatience. To counteract that tendency, more questions were added to measure a third factor: stress (Ingimarsson, 2010). The DASS has been translated into numerous languages and experimental comments have been made in many countries (Crawford & Henry, 2003).

Thus, the DASS is an instrument designed to measure depression, anxiety, and stress as three related mental states. Survey participants are asked to respond to assertions about their behaviour and state of emotional health over the previous week, divided into three parts: the first 14 statements measure depression; the next 14 measure anxiety; and the final 14 measure stress, for a total of 42 statements. Possible answers are registered on a four-point Likert scale, in which 0 = not at all appropriate; 1 = appropriate sometimes; 2 = considerably appropriate; and 3 = mostly appropriate. The highest possible score for each of the three parts is 42 per subscale (14 statements times 3 points each). The lower the score, the less likely it is that the individual experiences the mental state associated with that part.

The psychologist Pétur Tyrfingsson translated the DASS into Icelandic in 2007 and its experimental characteristics have been researched by Ingimarsson (2010). Ingimarsson's research was based on responses to the DASS by 373 students at the University of Iceland along with other self-assessment surveys for comparison. This research determined that the experimental characteristics of the Icelandic edition of the DASS were in harmony with the conclusions of other foreign research. Reliability according to Cronbach's alpha of the subscales was: depression $\alpha = 0.92$, anxiety $\alpha = 0.85$, and stress $\alpha = 0.9$.

Table 2 shows the normative data for the Icelandic edition of the DASS survey (Ingimarsson, 2010).

Statistical analysis

All statistical processing was carried out using the statistical program SPSS version 24, and descriptive statistics were used to describe all of the variables in the project, including background variables such as gender, age, monthly income, and relationship status. For that purpose the responses were grouped by SUD suffer into *parent*, *sibling*, *partner*, or *child* groups.

Table 2. Normative data for the Icelandic Depression, Anxiety and Stress Scale survey.

	Depression	Anxiety	Stress
Normal	0–7	0–6	0–12
Mild	8–11	7–8	13–16
Average	12–21	9–14	17–21
Serious	22–26	15–18	22–25
Very serious	27–42	19–42	26–42

Descriptive statistics were used to designate sample characteristics and participants’ DASS scores individually, then in comparison with the Heilsa og líðan Íslendinga (2009) (in English: Health and well-being of Icelanders [HCI], 2009) dataset (Guðlaugsson & Jónsson, 2012). Means were compared using an independent *t*-test and one-way ANOVA. Bonferroni correction was used to identify where differences, if any, lay. The significance level for all statistical tests was set at $p < .05$.

Ethics and limitations

As in all research, there are limits to the tools used. In this case, first there is the small sample size ($n = 143$), which may not reflect the experiences of all individuals who have family members suffering from SUD, but the results can give us an indication of the mental health experienced by this small subgroup within society. Second, in the case of the participants, they willing participated in the therapy. This could skew the results and an underlying bias could be hidden from the researcher in such a homogeneous group. Answers could vary from those individuals who do not participate in therapy but have family members with SUD. The scope of this study did not allow for a larger variation in participants, but the results are compared with the Icelandic population in general. From an ethics perspective, none of the participants were currently in therapy for their own SUD and none were under the age of 18 years. The questionnaire was anonymous, and all documents were properly destroyed after the end of the study period. The Icelandic National

Table 3. Breakdown of participants according to the (Icelandic) diagnostic criteria.

	Anxiety		Depression		Stress	
	N	%	N	%	N	%
Normal	76	53	58	41	63	44
Mild	15	11	20	14	21	15
Average	26	18	40	28	18	13
Serious	7	5	10	7	19	13
Very serious	19	13	15	10	22	15
Total	143	100	143	100	143	100

Bioethics Committee and Icelandic National Centre for Addiction Treatment’s Research Committee (SÁÁ) granted permission for this project. As the participants were already enrolled in a therapy group no additional therapy was offered.

Results

Table 3 shows that more than 18% of participants fulfilled the diagnostic criteria for serious or very serious anxiety. The depression numbers tell a similar story, with 18% of participants reaching the same diagnostic threshold. It is of particular concern that 28% of participants experienced serious or very serious stress. Even worse, 36% or more in all three subscales were measured as having average, serious, or very serious depression, anxiety, and/or stress.

The DASS scale has been used in the general population study “Health and well-being of Icelanders” (Guðlaugsson & Jónsson, 2012). When these results are compared to the findings of that survey a large difference can be noted between the groups in all of the subscales: anxiety ($t(3890) = -16.25, p < .001$); depression ($t(3845) = -16.66, p < .001$); and stress ($t(3858) = -22.43, p < .001$). The participants in the family group therapy scored much higher on all three scales (Table 4), suggesting that the participants were much worse off mentally or psychosocially than the participants in the study “Health and well-being of Icelanders” (Guðlaugsson & Jónsson, 2012).

Table 4. Results of the participants in the research compared to the survey (Guðlaugsson & Jónsson, 2012).

	Anxiety		Depression		Stress	
	HCI %	Group %	HCI %	Group %	HCI %	Group %
Normal	91.1	53.1	84.0	40.6	91.8	44.1
Mild	2.9	10.5	7.7	14.0	4.4	14.7
Average	3.7	18.2	6.0	28.0	1.8	12.6
Serious	1.0	4.9	1.1	7.0	1.1	13.3
Very serious	1.3	13.3	1.2	10.5	0.9	15.4
Total	100	100	100	100	100	100

Note. Table 4 shows that the participants were worse off mentally/psychosocially than those in the follow-up survey HCI (2009). No significant difference is evident between the genders and their responses to the Depression, Anxiety and Stress Scale subscales.

Table 5. Descriptive statistics for the Depression, Anxiety and Stress Scale subscales for the whole and according to gender.

	Number	Mean	Median	Std. deviation	Lowest value	Highest value	P
Depression							
Men	32	12.2	12.5	9.3	0	30	0.891
Women	111	11.9	9.0	10.1	0	42	
Total	143	12.0	10.0	9.9	0	42	
Anxiety							
Men	32	6.8	2.5	8.9	0	34	0.333
Women	111	8.5	6.0	8.8	0	42	
Total	143	8.1	6.0	8.9	0	42	
Stress							
Men	32	13.8	12.5	9.5	0	36	0.302
Women	111	15.8	15.0	9.4	0	40	
Total	143	15.3	15.0	9.4	0	40	

Table 5 shows no significant difference between the genders and their responses to the DASS subscales. A comparison of age groups reveals no significant differences regarding how they experienced the subgroups in the DASS: depression ($F(4, 138) = 1.279, p = .281$); anxiety ($F(4, 138) = 2.371, p = .055$); and stress ($F(4, 138) = 2.118, p = .082$) (Table 6).

Table 7 addresses the extent to which levels of education influence the participants' responses to the DASS. The results reveal significant differences among the groups: depression ($F(2, 140) = 5.196, p = .007$); anxiety ($F(2, 140) = 7.348, p = .001$); and stress ($F(2, 140) = 4.647, p = .011$). The Bonferroni Method shows that a participant with a university degree was

less likely to experience depression and anxiety than those whose education was completed at a lower level. Similarly, those with a university degree experienced less stress than those who had completed only primary education.

This research also examined whether an individual's income (Table 8) affected the DASS subscales: depression ($F(3, 139) = 7.751, p < .001$); anxiety ($F(3, 139) = 7.210, p < .001$); and stress ($F(3, 139) = 7.261, p < .001$). Bonferroni's Method showed that those who had the lowest total income experienced more depression, anxiety, and stress than those who belonged to the higher-income groups.

Table 9 presents the results for the DASS subscales based on which family member is

Table 6. Descriptive statistics for the Depression, Anxiety and Stress Scale subscales according to age group.

	Mean	Median	Std. deviation	Lowest value	Highest value	N
Depression						
18–29 years old	15.1	13.0	8.0	2	34	24
30–39 years old	9.6	6.0	9.1	0	30	27
40–49 years old	10.1	9.0	8.6	0	30	25
50–59 years old	12.3	12.0	10.1	0	41	39
60 years and older	13.0	9.0	12.4	0	42	28
Anxiety						
18–29 years old	12.5	9.5	7.8	0	33	24
30–39 years old	6.3	3.0	6.6	0	24	27
40–49 years old	5.9	4.0	7.3	0	34	25
50–59 years old	7.5	3.0	9.7	0	40	39
60 years and older	8.9	6.5	10.6	0	42	28
Stress						
18–29 years old	20.0	19.0	10.1	1	36	24
30–39 years old	15.4	14.0	7.2	5	28	27
40–49 years old	13.3	12.0	8.8	0	36	25
50–59 years old	13.6	12.0	9.2	0	31	39
60 years and older	15.5	15.5	10.7	0	40	28

Table 7. Impact of education of participants on the Depression, Anxiety and Stress Scale subscales.

	Mean	Median	Std. deviation	95% Confidence interval for mean		N
				Lower bound	Upper bound	
Depression						
Primary ^a	14.3	13.0	9.1	11.5	17.0	45
Upper secondary ^a	14.1	10.0	12.0	10.2	17.9	39
University ^b	8.9	6.0	8.1	6.8	11.0	59
Overall	12.0	10.0	9.9	10.4	13.6	143
Anxiety						
Primary ^a	10.2	8.0	8.7	7.6	12.8	45
Upper secondary ^a	10.6	7.0	11.3	6.9	14.3	39
University ^b	4.9	2.0	5.6	3.4	6.3	59
Overall	8.1	6.0	8.8	6.7	9.6	143
Stress						
Primary ^a	18.2	17.0	9.3	15.4	21.0	45
Upper secondary ^{a, b}	16.0	16.0	10.5	12.6	19.4	39
University ^b	12.7	11.0	8.0	10.6	14.8	59
Overall	15.3	15.0	9.4	13.8	16.9	143

^{a,b} Means with different letters were measured differently with Bonferroni's Method ($\alpha = 0.05$).

reported to have SUD. It shows that the groups are nearly equal, with no significant differences measured between them: depression ($F(3, 139) = 0.313, p = .816$); anxiety ($F(3, 139) = 0.906, p = .440$); stress ($F(3, 139) = 1.155, p = .329$).

Discussion

The participants in this research were 143 individuals taking part in a family therapy group run by SÁÁ. The participants' reactions to every subscale in the DASS showed that at least

Table 8. Impact of an individual's total income on the Depression, Anxiety and Stress Scale subscales.

	Mean	Median	Std. deviation	95% Confidence interval for mean		N
				Lower bound	Upper bound	
Depression						
100–250k ^a	17.5	13.0	10.9	14.0	20.9	41
250–500k ^b	11.4	10.0	8.8	8.9	13.8	53
500–750k ^b	8.2	5.0	8.4	5.3	11.0	37
750k or higher ^b	8.0	5.0	7.2	3.4	12.6	12
Total	12.0	10.0	9.9	10.4	13.6	143
Anxiety						
100–250k ^a	12.9	9.0	10.7	9.6	16.3	41
250–500k ^b	7.1	5.0	7.1	5.2	9.1	53
500–750k ^b	5.8	2.0	8.0	3.2	8.5	37
750k or higher ^b	3.1	2.0	3.4	0.9	5.2	12
Total	8.1	6.0	8.8	6.7	9.6	143
Stress						
100–250k ^a	20.7	22.0	9.1	17.9	23.6	41
250–500k ^b	13.6	13.0	8.8	11.2	16.0	53
500–750k ^b	12.7	12.0	9.1	9.7	15.7	37
750k or higher ^b	12.7	11.5	7.1	8.1	17.2	12
Total	15.3	15.0	9.4	13.8	16.9	143

^{a,b} Means with different letters were measured differently with Bonferroni's Method ($\alpha = 0.05$).

Table 9. Results on the Depression, Anxiety and Stress Scale subscales according to family member affected by substance-use disorder.

	Mean	Median	Std. deviation	95% Confidence interval		N
				Lower bound	Upper bound	
Depression						
Parent	11.6	10.5	9.2	8.7	15.0	30
Partner	12.4	11.0	9.6	9.6	15.2	47
Child	12.4	10.0	10.7	9.5	15.2	56
Sibling	9.3	5.5	9.9	2.2	16.4	10
Total	12.0	10.0	9.9	10.4	13.6	143
Anxiety						
Parent	8.8	7.0	8.6	5.6	12.0	30
Partner	8.9	8.0	8.4	6.5	11.4	47
Child	7.8	4.0	9.9	5.1	10.4	56
Sibling	4.1	3.0	3.5	1.6	6.6	10
Total	8.1	6.0	8.8	6.7	9.6	143
Stress						
Parent	14.9	12.0	10.3	11.0	18.7	30
Partner	17.3	16.0	9.5	14.6	20.1	47
Child	14.3	13.5	9.0	11.9	16.7	56
Sibling	13.2	11.0	8.4	7.2	19.2	10
Total	15.3	15.0	9.4	13.8	16.9	143

36% had average, serious, or very serious depression, anxiety, or stress. More precisely, over 18% of the participants fulfilled the diagnostic criteria for serious or very serious anxiety, and the same was true for depression (17.5%) and stress (28.7%).

The difference between the genders concerning depression, anxiety, or stress was insignificant – a surprising result since generally women develop clinical depression 50% more frequently than men (World Health Organization, n.d.). The difference between age groups by using one-way analysis of variance (one-way ANOVA) was insignificant. Comparing participants' responses to the general population study "Health and well-being of Icelanders" confirms previous research indicating that relatives of individuals with SUD are worse off mentally/psychosocially than others. This was evident in the much higher scores of participants for every DASS subscale, compared to the research in "Health and well-being of Icelanders" (Guðlaugsson & Jónsson, 2012). Those scores also support the findings of earlier research by Lander et al. (2013), Denning (2010), Dawson et al. (2007) and others, that the behaviour of an individual with SUD tends to degrade the mental wellbeing of other family members.

Comparing the scoring of DASS subscales in regard to educational levels reveals interesting differences between groups. Bonferroni's Method shows that those with a university degree experienced less depression, anxiety, and stress than those who had completed a lower level of education. Not surprisingly, the same may be said about total income: Bonferroni's Method shows that those with the lowest total income experienced greater depression, anxiety, and stress compared to those who earned higher incomes. This is similar to the findings of the Icelandic study on SUD, cohesion and communication in families (Hrafnisdóttir & Ólafsdóttir, 2016).

When looking at the data based on who in the family suffers from SUD it indicated that there were no significant differences between

the groups even though other research has shown that individuals who grow up with parents with SUD tend to have a worse state of mental health compared to those who have not faced that challenge (Hrafnisdóttir & Ólafsdóttir, 2016; Lander et al., 2013; Orjasniemi & Kurvinen, 2017; Solis et al., 2012). These results confirm those of previous research indicating that an individual's substance-use disorder adversely impacts other family members' states of health, which can lead to mental and physical disorders over time. Also confirmed is research showing that sharing a home with an individual who abuses substances tends to increase the likelihood of such mental and physical disorders (Dawson et al., 2007; Denning, 2010; Lander et al., 2013). At the same time, growing up with a parent or other family member who has SUD is a very significant risk factor: in their adult years individuals who have faced that challenge are much more likely to develop SUD or depression (or both) themselves, which has been confirmed by research conducted by Johnson and Stone (2009). Comparable research conducted in Finland found that SUD surrounding a child's upbringing predisposes the child to abusive consumption of drugs and/or alcohol, both in the teen years and later as an adult (Kestilä et al., 2008). Why the Icelandic group showed no significant difference in the area is unclear and would need further research.

Conclusion

The applicability of the research reported here is limited by its relatively small sample size, which in turn limits the ability to extrapolate that everyone who lives with a family member affected by SUD will be found to suffer from depression, anxiety, and/or stress. Yet the sample size does appear to be sufficiently large and well defined, and the comparisons of participants' DASS responses are made in statistically valid ways, to support the conclusion that the risk of being so affected is measurably greater.

Further research is needed on the influence of growing up with a parent who has SUD in

Iceland. Considering the discrepancy found in this study and others (Kestilä et al., 2008; Tyrfinngsson et al., 2010), this could sharpen our understanding about the Icelandic experience and whether an upbringing associated with SUD can lead to depression in the younger years and to consumption of alcohol and/or other drugs in the adult years. Such additional research could be especially valuable when it comes to measuring and managing national health and developing preventive measures.

Another recommendation is for the DASS survey to be administered to participants in the family group therapy treatment process both at the beginning and at the end of treatment to more accurately measure that programme's effectiveness. Doing so would help determine the degree to which the treatment can reduce depression, anxiety, and stress. Such a systematic evaluation of the current treatment programme could be a significant step toward an improved state of health and increased quality of life for many.

Most importantly the results show that all family members suffer when one family member has SUD. It imperative for clinicians to treat the family as a whole and to do so as early as possible. This is not only good practice for the family member who suffers from SUD, but can also be seen as a preventative measure for the next generation.

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