

## The Ukrainian SORT IT Course

# Anxiety, depression, and quality of life among HIV positive injection drug users in Ukraine, 2017

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### Abstract

**Introduction:** People who inject drugs (PWID) are one of the key populations most vulnerable to HIV infection, with 28 times higher prevalence compared to the rest of the population. PWID are known to have many physical, psychological and lifestyle challenges that can influence access to care. Depression is common among PWID living with HIV. It has major effect on health-related quality of life (HRQoL) and is influencing adherence to antiretroviral therapy. This study was conducted to explore how anxiety and depression affect HRQoL among HIV-positive PWID in Ukraine. It will provide knowledge for the further policy development.

**Methodology:** A descriptive cross-sectional study using data from interviewer-administrated questionnaires was performed. The questionnaire was based on the Hospital Anxiety and Depression Scale. The questionnaire on HRQoL was based on the SF-36.

**Results:** Among the 90 HIV positive PWID 74% (67) and 61% (55) had anxiety and depression scores higher than 7 respectively, indicating that most patients had mental health problems. Average scores for general health (40), role limitations due to physical (44) and emotional health (34), vitality (41) and mental health (45) had mean scores less than 50 along with total physical (43) and mental health scores (35). Having an HIV positive partner or partner with unknown HIV status increases anxiety in HIV positive PWID.

**Conclusion:** There are increased depressive and anxiety symptoms and poorer QoL among HIV-positive PWID in Ukraine. Strategies focusing on psychosocial support addressing QoL as part of HIV care could improve health outcomes for these comorbid and debilitating conditions.

**Key words:** Quality of life; anxiety; depression; HIV; key population; PWID.

*J Infect Dev Ctries* 2019; 13(7S):111S-117S. doi:10.3855/jidc.11295

(Received 31 January 2019 – Accepted 25 May 2019)

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### Introduction

The human immunodeficiency virus (HIV) epidemic is one of the major public health issues globally. In 2016, an estimated 36.7 million people were living with HIV, and around 30% are not aware of their HIV positive status [1]. Despite all HIV prevention and treatment activities, one million people died of acquired immune deficiency syndrome (AIDS) related illnesses [2]. Good health is essential for advancement on ending AIDS [2]. Ensuring healthy lives and promoting well-being for all, including people living with HIV or at risk of having it is part of the sustainable development goals (SDG) [3]. According to the World Health Organization (WHO) definition health is “a state of complete physical, mental and

social well-being and not merely the absence of disease or infirmity” [3]. Access to good health and wellbeing is a human right, and the SDG agenda states that everyone is entitled to the highest standards of health and health care [4]. The SDG target 3.8 on universal health coverage (UHC) aims to ensure that all people obtain preventive, curative and rehabilitative health services without financial hardship [4].

People who inject drugs (PWID) are one of the key populations most vulnerable to HIV infection. Globally, data show that HIV prevalence among people who inject drugs is 28 times higher than among the rest of the population [5]. The number of PWID worldwide is estimated to be 11.7 million, and 14% of them are living with HIV. PWIDs represent 0,8 up to 1,2% of Ukrainian

population, it makes more than 300 000 persons. There are approximately 80 000 PWID living with HIV in Ukraine.

In 2017, the prevalence of HIV among PWID was 22.6 % in Ukraine, accounting for the second highest rate in Eastern Europe [6] Ukraine, with a population approximately 42 million, covers an area of 600000 km<sup>2</sup> making it the second largest country in Europe after the Russian Federation. [7].

There were 321382 HIV infections registered in Ukraine by April 2018, including 105166 AIDS cases and 46024 AIDS-related deaths. Infection through intravenous drugs remains the driving force of the epidemic [8,9]. It is estimated that there are approximately 80,000 PWID living with HIV in Ukraine. [9–11] In 2017 almost 25% of all new HIV cases accounted were observed in this group.

HIV testing and antiretroviral therapy (ART) were introduced through the national program in Ukraine in 2000. Despite harm reduction services widely implemented across the country, which includes rapid HIV testing, initiation of medical care among PWID is delayed. In 2016 nearly 60% of newly diagnosed PWID had a CD4 count less than 350 cells per mL. [11]. Moreover, PWID experience disparities in linking to medical care, initiating ART and achieving viral suppression. Only 10% (7472) of 80,000 HIV infected PWID received ART in 2017 [11] Loss to follow-up is the major challenge in improving HIV treatment for PWID.

Poltava, Sumy and Lviv are medium size cities with approximate populations of 318000, 293000 and 733000 respectively (according to the national census conducted in 2001), located in eastern and western regions of Ukraine. [9] From January 2018 until April 2018, the number of newly diagnosed HIV positive cases in these 3 cities were 133, 81 and 143. Estimated numbers of PWID in Poltava are 8200, in Sumy was 12200 and in Lviv was 11000. More than half of PWID are included in harm reduction programs. [11]

Despite the latest developments in treatment and prevention techniques, PWID are known to have many physical, psychological challenges and lifestyle differences that can influence access to health care. Depression is one of the most prevalent mental health disorders and is known to have major effect on health-related quality of life (HRQoL). Symptoms are reported in approximately 60% of this group of patients influencing adherence to antiretroviral therapy (ART), with consequent decrease in immune function and acceleration of disease progression [12].

Available data suggest that PWID have a lower HRQoL compared to other populations, which is known to be associated with unemployment, mental health problems and frequent injecting practices [13].

To the best of our knowledge, none of the studies explored depression and HRQoL among HIV-positive PWIDS in Ukraine. In order to fill the gap, we conducted the study in three cities of Ukraine to a) describe anxiety and depression among HIV positive PWID interviewed with the hospital anxiety and depression scale (HADS), b) to describe HRQoL, interviewed with the short form health survey (SF-36) questionnaire, and c) to assess factors associated with anxiety, depression and HRQoL.

## Methodology

### *Study Design*

A descriptive cross-sectional study using data from interviewer- administered questionnaires in three cities of Ukraine (Lviv, Sumy, Poltava) was performed.

### *Study population, sample size*

The study included 90 PWID diagnosed with HIV aged 18 years and above who were registered at healthcare facilities (N = 49) or were not engaged in HIV medical care (N = 41). The convenience sampling was used. Study participants registered at healthcare facilities were enrolled by nurses and medical doctors, respondents not engaged in medical care were enrolled by non-government organization's social workers. Inclusion criteria: > 18 years of age, HIV+ status, former or current injective drug use, exclusion criteria: incomplete clinical profile, use of non-injectable drugs, pregnancy.

### *Variables*

The questionnaire on anxiety and depression was based on the HADS. The HADS consists of 14 items, seven items each for the anxiety subscale and depression subscale. On a responsive scale, each item is scored with four alternatives ranging between 0 and 3. According to the scale; a total of 8 or above is used as a cut-off score for both HADS Anxiety and HADS Depression [14,15].

The questionnaire on HRQoL was based on the SF-36, which is a short-form health survey with only 36 questions. It gives an 8-scale outline of functional health and well-being gain as well as psychometrically allied physical and mental health summary measures. SF-36 scale is intended to evaluate eight health domains: (1) physical functioning, (2) social functioning, (3) physical-related role limitations, (4)

bodily pain, (5) general mental health, (6) emotional-related role limitations, (7) vitality (energy and fatigue), and (8) general health perception. All measures can have values from 1 to 100 where greater score indicates better quality of life related to the respective domain [16–18].

Other collected variables included social and demographic characteristics, such as age, gender, education, employment, personal monthly income, marital status, living conditions, history of incarceration, partner’s HIV status, HIV status disclosure status, and receipt of harm reduction services. Behavioral variables were smoking status and frequency of drug use.

Clinical characteristics were linkage to HIV care (registration at AIDS center and receiving HIV-related check-up), receipt of opioid substitution treatment (OST), history of tuberculosis (TB), receipt of ART, and reaching undetectable viral load (<40 copies per mL).

*Data collection*

Data was collected in June and July 2017 through an interviewer-administered questionnaire.

A team of individuals reviewed the cohesiveness of the questionnaire before conducting the interviews; four interviewers who were trained conducted the interviews and collected the information in a standardized manner. The interviewer wrote the answers in the interview form in Ukrainian. This information was later translated into English. Data was entered into IBM® SPSS® Statistics database (version 22, IBM Corporation, Armonk, US).

*Data analysis*

Data on anxiety, depression, and HRQoL was calculated according to the instructions of respective questionnaires manual. First, HADS and SF36 scores

were summarized with descriptive statistics. HADS scores on anxiety and depression were categorized as borderline or abnormal level if the score was  $\geq 8$  cut-point level. Then, differences in proportions of individuals with borderline or abnormal levels of anxiety and depression were calculated by Fisher exact tests with respect to selected covariates. As for HRQoL scores, we calculated mean differences and their 95% confidence intervals. The level of significance was set at  $P \leq 0.05$ .

*Ethics*

The study was approved by the institutional Ethics Review board of Lviv Regional Public Health Center, Ukraine. All participants gave their informed consent.

**Results**

The average age of the study participants was 38.9 (SD = 7.19). The majority of the study participants were males (73%) and unemployed (64%). Most of the study participants (67%) had vocational (technical) education.

*Anxiety and depression*

Table 1 summarizes descriptive statistics for anxiety and depression measures as well as for domains of SF-36. HADS determine the levels of anxiety and depression that a person is experiencing. The mental composite score (MCS) of SF-36 includes mental health, emotional role, social function and vitality.

Among the HIV positive PWID, average Anxiety and Depression scores were the same (9 out of 18 points, with a standard deviation (SD) of 4). Seventy-four percent and 61% had anxiety and depression scores higher than cutoff level 7 respectively, which indicates that the majority of patients had mental health problems.

**Table 1.** Descriptive statistics for HADS and SF36 scores among HIV positive PWIDS, in three cities of Ukraine, 2017.

	<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>Median</b>	<b>IQR</b>	<b>Min</b>	<b>Max</b>
Anxiety score (HADS)	89	9	4	9	4	0	18
Depression score (HADS)	90	9	4	10	6	1	18
Total Physical Health Score (SF36)	89	43	11	44	17	18	64
Total Mental Health Score (SF36)	89	35	9	34	11	10	57
Physical Functioning Score (SF36)	90	68	29	70	40	0	100
Role limitations due to physical health (SF36)	90	44	46	25	100	0	100
Body Pain (SF36)	90	58	26	62	33	0	100
General Health (SF36)	90	40	19	40	25	5	117
Vitality (SF36)	90	41	18	40	25	0	85
Social Functioning (SF36)	90	61	23	63	25	13	100
Role limitations due to emotional problems (SF36)	90	34	43	0	67	0	100
Mental Health (SF36)	90	45	17	44	24	4	80

HADS – Hospital Anxiety and Depression Scale, SF36 – Short Form Health Survey (36 items), PWID – People who inject drugs, HIV – Human immunodeficiency virus, SD – standard deviation, IQR – interquartile range, Min – minimum, Max – maximum.

*Health-related Quality of life*

With regards to the quality of life among HIV positive PWID, mean physical health score was 43 points out of 100 (SD = 11) and mean mental health score was 35 out of 100 (SD = 9). Physical health score and mental health score were lower than 50 in 67% and 92% of patients respectively. Several HRQoL domains had mean scores less than 50, which are considered lower than the general population. These included scores for general health (mean = 40, SD = 19), role limitations due to physical health (mean = 44, SD = 46)

and emotional health (mean = 34, SD = 43), vitality (mean = 41, SD = 18) and mental health (mean = 45, SD = 17).

*Factors associated with anxiety, depression and HRQoL*

More anxiety symptoms were reported by PWID who had an HIV positive partner or a partner with unknown HIV status (p = 0.012) (Table 2). None of selected variables were significantly associated with borderline/abnormal depressive symptoms.

**Table 2.** Factors associated with anxiety and depression among PWIDS in three cities of Ukraine, 2017.

		Anxiety (HADS)					Depression (HADS)				
		Borderline /abnormal		Normal		p	Borderline /abnormal		Normal		p
		n/mean	% / SD	n/mean	% / SD		n/mean	% / SD	n/mean	% / SD	
Gender	Female	20	83%	3	13%	0.167	14	58%	10	42%	0.744
	Male	47	71%	19	29%	-	41	62%	25	38%	-
Education	Secondary	24	80%	6	20%	0.462	22	73%	8	27%	0.093
	Vocational / higher	43	72%	16	27%	-	33	55%	27	45%	-
Monthly income	> 100 euros	14	64%	7	32%	0.295	12	55%	10	46%	0.467
	≤ 100 euros	53	78%	15	22%	-	43	63%	25	37%	-
Employment	Unemployed	44	76%	13	22%	0.577	38	66%	20	35%	0.248
	Employed	23	72%	9	28%	-	17	53%	15	47%	-
Marital status	Formal / informal marriage	21	64%	11	33%	0.114	22	67%	11	33%	0.411
	Single	46	81%	11	19%	-	33	58%	24	42%	-
Living conditions	Lack of own apartment	13	81%	3	19%	0.751	10	63%	6	38%	0.900
	Own house / apartment	54	73%	19	26%	-	45	61%	29	39%	-
Duration of trip to healthcare facility, minutes		33	38	31	23	0.819	27	26	41	45	0.105
Partner's HIV status	HIV negative	13	57%	10	44%	<b>0.012</b>	10	44%	13	57%	0.087
	HIV positive	19	70%	7	26%	-	20	74%	7	26%	-
	Unknown	35	88%	5	13%	-	25	63%	15	38%	-
Smoking	No	6	67%	3	33%	0.684	4	44%	5	56%	0.294
	Yes	61	76%	19	24%	-	51	64%	29	36%	-
Frequency of drug use	Daily	47	70%	19	28%	0.086	40	60%	27	40%	0.567
	Less often	19	91%	2	10%	-	14	67%	7	33%	-
Receipt of harm reduction services	No	11	73%	4	27%	0.312	7	47%	8	53%	0.233
	Yes	56	76%	17	23%	-	47	64%	27	37%	-
OST	No	30	71%	12	29%	0.426	22	52%	20	48%	0.112
	Yes	37	77%	10	21%	-	33	69%	15	31%	-
History of incarceration	No	29	83%	6	17%	0.182	21	60%	14	40%	0.863
	Yes	38	69%	16	29%	-	34	62%	21	38%	-
HIV status disclosure	No	12	75%	4	25%	1.000	9	56%	7	44%	0.689
	Yes	55	75%	17	23%	-	45	62%	28	38%	-
History of TB	No	45	73%	16	26%	0.589	37	60%	25	40%	0.771
	Yes	22	82%	5	19%	-	17	63%	10	37%	-
Linkage to HIV medical care	No	28	68%	12	29%	0.297	24	59%	17	42%	0.647
	Yes	39	80%	10	20%	-	31	63%	18	37%	-
Receipt of ART	No	16	70%	7	30%	0.461	15	65%	8	35%	0.640
	Yes	51	76%	15	22%	-	40	60%	27	40%	-
Undetectable viral load (≤ 40)	No	34	67%	16	31%	0.071	30	59%	21	41%	0.611
	Yes	33	85%	6	15%	-	25	64%	14	36%	-

HADS – Hospital Anxiety and Depression Scale, PWID – People who inject drugs, HIV – Human immunodeficiency virus, SD – standard deviation.

Greater overall physical health score was associated with age less than 38.5 years (mean difference = 4.6, 95% CI: 0.13-9.06), no receipt of Opioid Substitution Therapy (mean difference = 5.1, 95% CI: 0.63-9.47). Overall mental health score was lower in those having a HIV positive partner (mean difference = -3.8, 95% CI: -0.03 to -9.56) or having a partner with unknown HIV status (mean difference = -1.5, 95% CI: -0.35 to -10.05) (Table 3).

### Discussion

This is one of the first studies in Ukraine that is exploring anxiety, depression, and HRQoL among HIV positive PWID. Anxiety and depression are prevalent in the study population. Seven out of every ten HIV positive PWID, had anxiety and six out of ten had depression. Moreover, assessment of HRQoL disclosed that 90% people have low total mental health scores. Scores of total physical health as well as five out of

**Table 3.** Factors associated with quality of life among PWIDS in three cities of Ukraine, 2017.

		Total Physical Health Score (SF36)				Total Mental Health Score (SF36)			
		Mean	SD	MD	95% CI	Mean	SD	MD	95% CI
Gender	Female	42.2	12.0	-1.1	(-6.7, 4.5)	34.1	7.2	-2.0	(-4.8, 2.7)
	Male	43.4	10.4	ref.	ref.	35.2	9.2	ref.	ref.
Age	Below median (38.5 years)	45.3	10.1	4.6	<b>(0.1, 9.1)</b>	33.5	8.7	0.1	(-6.4, 0.8)
	Median or above	40.7	11.1	ref.	ref.	36.3	8.6	ref.	ref.
Education	Secondary	41.6	10.3	-2.3	(-7.0, 2.5)	32.2	8.6	0.1	(-8.0, -0.3)
	Vocational/ Higher	43.8	11.0	ref.	ref.	36.3	8.5	ref.	ref.
Monthly income	> 100 euros	45.7	10.5	3.5	(-1.7, 8.8)	35.9	7.8	-1.2	(-2.6, 5.4)
	≤ 100 euros	42.2	10.8	ref.	ref.	34.5	9.0	ref.	ref.
Employment	Unemployed	41.8	10.9	-3.6	(-8.3, 1.0)	34.1	9.1	1.3	(-5.8, 1.5)
	Employed	45.4	10.3	ref.	ref.	36.3	7.8	ref.	ref.
Marital status	Formal / informal marriage	42.5	10.5	-0.9	(-5.6, 3.8)	36.8	9.3	1.1	(-1.0, 6.9)
	Single	43.4	11.0	ref.	ref.	33.8	8.2	ref.	ref.
Living conditions	Lack of own apartment	38.6	11.2	-5.4	(-11.8, 0.9)	36.1	10.1	1.7	(-4.2, 7.1)
	Own house / apartment	44.0	10.5	ref.	ref.	34.6	8.4	ref.	ref.
Duration of trip to healthcare facility, minutes	Below median (20 minutes)	43.1	11.4	0.1	(-5.0, 5.2)	34.7	6.7	-2.8	(-3.8, 3.2)
	Median or above	43.0	10.6	ref.	ref.	35.0	9.5	ref.	ref.
Partner's HIV status	HIV negative	43.6	11.2	ref.	ref.	38.6	10.2	ref.	ref.
	HIV positive	42.2	11.7	-1.4	(-5.1, 7.9)	33.8	6.4	-3.8	<b>(0.0, -9.6)</b>
	Unknown	43.3	10.2	-0.2	(-5.2, 5.8)	33.4	8.7	-1.5	<b>(-0.3, -10.0)</b>
Smoking	No	47.8	8.1	5.3	(-1.2, 11.7)	40.9	10.3	1.9	(-1.2, 14.8)
	Yes	42.5	11.0	ref.	ref.	34.1	8.4	ref.	ref.
Frequency of drug use	Daily	43.0	11.0	-0.5	(-6.0, 5.0)	34.5	9.2	1.7	(-5.1, 2.9)
	Less often	43.5	10.7	ref.	ref.	35.6	7.5	ref.	ref.
Receipt of harm reduction services	No	44.8	11.7	2.1	(-4.7, 8.9)	36.2	11.2	3.0	(-4.7, 8.1)
	Yes	42.7	10.7	ref.	ref.	34.5	8.2	ref.	ref.
OST	No	45.7	10.0	5.1	<b>(0.6, 9.5)</b>	34.4	9.6	1.7	(-4.6, 2.9)
	Yes	40.7	11.0	ref.	ref.	35.3	7.9	ref.	ref.
History of incarceration	No	45.3	10.2	3.6	(-0.9, 8.2)	33.2	9.1	0.7	(-6.6, 1.0)
	Yes	41.6	11.0	ref.	ref.	36.0	8.3	ref.	ref.
HIV status disclosure	No	46.4	8.8	4.1	(-1.2, 9.3)	35.9	7.1	-2.0	(-2.9, 5.6)
	Yes	42.3	11.2	ref.	ref.	34.6	9.1	ref.	ref.
History of TB	No	44.4	10.3	4.8	(-0.5, 10.1)	35.2	9.1	1.4	(-2.5, 5.1)
	Yes	39.7	11.7	ref.	ref.	33.9	7.7	ref.	ref.
Linkage to HIV medical care	No	44.2	11.1	2.2	(-2.4, 6.7)	34.8	9.7	1.9	(-4.0, 3.5)
	Yes	42.1	10.5	ref.	ref.	35.0	7.8	ref.	ref.
Receipt of ART	No	44.7	11.1	2.3	(-3.1, 7.7)	34.3	9.8	1.5	(-5.4, 3.9)
	Yes	42.5	10.7	ref.	ref.	35.1	8.3	ref.	ref.
Undetectable viral load (≤ 40)	No	42.9	10.8	-0.4	(-5.1, 4.2)	35.0	9.4	1.5	(-3.2, 4.0)
	Yes	43.3	10.9	ref.	ref.	34.7	7.9	ref.	ref.

SF36 – Short Form Health Survey (36 items), PWID – People who inject drugs, HIV – Human immunodeficiency virus, SD – standard deviation.

eight domains on HRQoL were lower than the average in general population.

Studies conducted in countries such as China and South Africa revealed that mental health is a critical factor in the adherence of ART regimen [19–21]. Many PWID come from a background of high-risk behavior, stigmatization, legal constraints, and discrimination when positive HIV status disclosed [22]. Therefore, the findings in this study highlight the importance of targeted psychosocial work in this key population to ensure adequate level of care.

The study strengths are that we assessed HIV positive PWID using a validated questionnaire to assess QoL, depressive and anxiety symptoms. The major limitation of the study is the small sample size which did not allow adjusted analysis of the data. Another limitation of the study is that participants were individuals only from the three cities/urban areas in Ukraine, so results are not generalizable to overall population.

Nonetheless, the study has policy and practice implications. With the advent of effective treatment, HIV survival is similar to that of the general population. Although our study did not quantify the impact of HIV infection compared with other factors on anxiety, depression and QoL, it does highlight that HIV positive PWID have mental health and QoL needs greater than the general population. Thus, health services will need to focus on mental health and QoL issues present in PWID.

Finally having a HIV positive partner or partner with unknown HIV status increases anxiety rates in HIV positive PWID. Other factors are yet to be explored in larger scale studies.

## Conclusion

In conclusion, we have highlighted that there are increased depressive and anxiety symptoms and poorer QoL among HIV-positive PWID in three cities of Ukraine. Thus, strategies focusing on psychosocial support are urgently needed. Ultimately, addressing QoL as part of HIV care could improve health outcomes for these comorbid and debilitating conditions. Further research using reliable methods to identify causes of depressive and anxiety symptoms in key populations as well as effective approaches to reduce those symptoms and to improve QoL and subsequently HIV care is necessary.

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**Conflict of interests:** No conflict of interests is declared.