Substance use among refugees in three Lebanese camps: A cross-sectional study

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The corresponding author on behalf of all authors declares that they have no conflict of interests and that there have been no involvement that might raise the question of bias in the work reported or in the conclusions, implications, or opinions stated. The corresponding author has full access to all study data, takes fully responsibility for the accuracy of the data analysis, and has authority over the manuscript preparation and decision to submit the manuscript for publication.

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BACKGROUND: There is a strong link between conflict exposure and ill health, including substance use. However, this widely acknowledged problem has not been studied yet in refugee camps in Lebanon.

AIM: To investigate substance use among civilians following war or displacement, and to assess its association with socio-demographic characteristics.

METHOD: Cross-sectional observational study carried out in three Palestinian camps in Lebanon using the World Health Organization Alcohol, Smoking and Substance Involvement Screening Test (ASSIST). Participants were Palestinian adults born in Lebanon and Palestinian and Syrian adults recently displaced from Syria due to war. The percentage of people reporting substance use and the associations between lifetime and last three months substance use and demographic features were assessed using a multivariate logistic regression.

RESULTS: In general, lifetime substance use was higher among Palestinians born in Lebanon compared to Syrians and Palestinians displaced from Syria (OR 7.241, 95% CI [3.781-13.869], P <0.0001). Results from ASSIST score during last three months showed that moderate and high-risk use of cannabis and cocaine were higher among Palestinians born in Lebanon than Palestinians and Syrians displaced from Syria. The multivariate analysis showed that women had lower lifetime (OR 0.188, 95%CI [0.080-0.442], P <0.0001) and lower last three months substance use than men, whereas single people were more likely to use substances than married people (OR: 2.78, 95%CI [1.588-4.866], P <0.0001). Tobacco was significantly associated with higher risk of substance use.

CONCLUSION: These findings suggest a higher rate of lifetime substance use among Palestinians born in Lebanon than in Palestinians and Syrians recently displaced from Syria.

Substance use is influenced by different socio-demographic factors in the two groups of refugees. However, many factors other than socio-demographic characteristics and refugee status may influence substance use, particularly quality of life and health status that should be assessed in future studies.

KEY WORDS: Substance, Use, Refugees, Displacement, Conflict, Camps.

INTRODUCTION:

One of the major public health issues in the Middle East is the refugees' health following conflict exposure and displacement **(McKee & Janson 2001, Salama, Spiegel & Brennan 2001).** Several studies suggested significant correlations between poor living conditions, conflict exposure and ill health **(WHO 1988**, **Elliott 2016, Evans et al 2000**, **Gemmell 2001, Mackenbach & Howden-Chapman 2002).** Moreover, investigations on substance use, which has been on the rise for the past several years **(Ezard et al 2011),** among conflict-exposed and displaced persons showed an increased risk of health problems, licit and illicit substance use **(Adams et al 2016),** new-onset heavy drinking, and alcohol-related problems **(Jacobson et al, 2008, D'avanzo 1997).** This can be related to stressors in war areas, material and personal losses, adjustment, and post-traumatic stress disorder **(Teesson & Proudfoot 2003, El-Helou, Khechen & Mahdi 2020).** Moreover, studies in Sweden and in The Netherlands showed that the substance use rates are lower among recently settled refugees compared with refugees born in the country, and that they progressively increase with the duration of stay **(Bayard-Burfield, Sundquist & Johansson 2001, Hollander et al, 2011, Van Leeuwen, Nilsson & Merlo 2012).**

In the Middle East, especially in Lebanon, Palestine, Syria and Iraq, civilian exposure to political violence has been heightened, with a dramatic change in the quality of life. Since the start of the current crisis, populations in Lebanon (i.e. civilians in a war zone, and particularly refugees) have experienced a gradual decrease in income that translated into the inability of poor/displaced families to secure their basic life needs. This has affected their quality of life **(WHOQOL Group 1998, Akinyemi et al., 2012),** and increased the risk of substance use. In Lebanon, Palestinians hold an ambiguous legal and political position within the country. From a legal point of view, Palestinians in Lebanon are considered not different from other foreigners residing in

the country **(Al-Natrour, 1997).** However, the great majority of Palestinians in camps live in harsh conditions with high poverty rates, inadequate infrastructure and housing conditions, and limited access to quality services and social protection. Moreover, they are targeted by discriminatory laws and regulations that prevent their access to fair job opportunities and decent employment **(Khalidi, 1986)**. Similar problems are experienced by Syrian refugees displaced from Syria in recent years and living in informal tent settlements, abandoned buildings, or cramped spaces in the Palestinian camps. According to Lebanese national law, without the required entry or stay documents, refugees from Syria are considered to be 'illegally' present, giving them limited legal status in the country **(NCR 2014)**. This often has negative consequences on their ability to access their rights to protection and assistance as displaced persons. It should also be noted that the United Nations High Commissioner for Refugees (UNHCR) and United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA) make a clear distinction between refugees living in camps (45% of all refugees, according to the latest UNRWA data), and outside camps **(Hollander 2011).** Moreover, there are differences among refugee camps in Lebanon**.** The number of refugees living in Sidon, a city in Southern Lebanon, is twice the number of refugees in Mount Lebanon and three times the number in the Tyre camp, which is also in Southern Lebanon. The political situation in the Sidon camp often deteriorates into armed conflicts between various Palestinian factions. Although Palestinian and Syrian communities share broad religious beliefs, each has a special perception of the country, the government, and the institutions **(Ruegger & Bohnet, 2011).** In addition, differences in national identity and social practices, such as marriage, family, culture, traditions, and religiosity, between Syrians and Palestinians living in camps lead to a lack of community cohesion and consequently increase the risk of violence. This situation is enhanced by the high

levels of unemployment among young men and women, and mounting frustration among the host communities who feel neglected due to the support targeted to refugees **(Abi Khalil, 2015).**

In this context of political and economic instability, substance use inside camps is very frequent **(Kerbage & Haddad, 2014).** It is acknowledged that in a significant proportion of users, substance use is the result of unstable and unsafe life patterns, as well as impaired interpersonal, social and professional skills **(WHO-AIMS, 2010).** However, to date, there has been little research on the impact of displacement on refugees' health and substance use. Only one study investigated the lifetime prevalence, treatment and age of onset of mental disorders in Lebanon, and whether war in this country has affected the risk of becoming mentally ill, including substance use. It found that 25.8% of the included participants met criteria for at least one DSM-IV disorder at some point in their lives, with a lifetime prevalence of substance use disorders of 2.2% **(Karam et al, 2008).** Despite the possibility to be enrolled in some treatment programs, such as the Opioid Substitution Treatment**,** access to the substance use disorder services provided in Lebanon remains challenging for many Palestinian refugees born in Lebanon and Syrians/Palestinians displaced from Syria who live in camps or scattered over a large area **(Doraï 2010, Government of Lebanon 2017).** This is mainly because in Lebanon, healthcare is predominantly managed by the private sector, with limited inpatient services provided free of charge in mental hospitals for eligible low-income Lebanese patients through the Ministry of Public Health **(El Chammay & Kheir 2013)**. The Living Conditions among Palestinian Refugees in Lebanon (LIPRIL) survey also assessed the health and living conditions of refugees in official camps **(Al-Madi et al, 2013, Tiltnes 2005)**; however, it could not precisely evaluate the impact of exposure to a war environment on the respondents' mental health and substance use. As the European Union and United Nations priority actions are to improve the living conditions of refugees temporarily living in developed countries, a thorough assessment of

mental health and substance use would bring important information to improve the development and implementation of policies to address their problems **(UNHCR 2013, Ergin 2019).**

Therefore, the aim of this study was to investigate substance use among refugees exposed to war and displacement and to identify associations between socio-demographic characteristics and substance use among Palestinians and Syrians displaced from Syria where the term "Displaced person" defines a person who has been deported from, or has been obliged to leave his/her country of nationality or of former habitual residence, such as persons who are compelled to undertake forced labor or who are deported for racial, religious or political reasons **(UNODC 1946)** and Palestinians born in Lebanon but identified also as refugees[1].

METHODS:

This was a 6-month cross-sectional observational study in three official Palestinian camps in Lebanon. Lifetime substance use and use during the past three months were assessed using the World Health Organization (WHO) Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) **(Humeniuk, Dennington & Ali on behalf of WHO ASSIST Study Group, 2008).** The Arabic version of the validated ASSIST questionnaire[2] **(Humeniuk, Dennington & Ali on behalf of WHO ASSIST Study Group, 2000)** includes eight questions on tobacco, alcohol, cannabis, cocaine, amphetamine-type stimulants, inhalants, sedatives, hallucinogens, opioids and 'other drugs'. Substances prescribed by doctors are not recorded unless used for a reason/manner other than the prescription (e.g. more frequent intake, or higher doses). The

[1] According to the United Nations special committee on refugees and displaced persons, the term "refugee" describes a person who has left, or who is outside of his/her country of nationality or of former habitual residence, whether or not he/she has retained his/her nationality

[2] The Arabic version of the ASSIST underwent translation and back translation in accordance with WHO protocols to ensure it is consistent with the versions that were validated in the validation studies by WHO **[WHO ASSIST Study Group 2000, WHO ASSIST Study Group, 2008]**.

lifetime use of substances (i.e. substances used at least once in the lifetime) is a good tool to build a brief history of the participant's substance use and was considered as a key finding from most recent studies **(Demyttenaere et al. 2004; Kessler et al. 2007; Johnston et al. 2011)**. The substance use risk level was then calculated as the sum of the scores to questions 2-7 for each drug class. These questions concern the frequency of the investigated events in the last 3 months (from never to daily/almost daily) and allow classifying participants in three groups: 'low risk', 'moderate risk', and 'high risk' **(Humeniuk, Dennington & Ali on behalf of WHO ASSIST Study Group, 2008)**. Besides the ASSIST, the interview included three questions on i) the reason(s) behind substance use; ii) what substances were available; and iii) how easy was to obtain substances(s).

Study population & Data collection:

Adults living in camps that accommodate refugees were asked to participate in this study. Inclusion criteria for the displaced group were Syrians and Palestinians displaced from Syria, >18-year-old adults, living in a Palestinian camp, and having experienced displacement. For Palestinians born in Lebanon (i.e. non-displaced group), inclusion criteria were: >18-year-old adults, and living in a Palestinian camp. The study aims, methods, and procedure were explained to each participant. After signature of the informed consent, each participant completed the ASSIST (5-10 minutes) during a face-to-face interview. Country of origin for displaced persons, age, sex, education level, marital status, employment status, number of family members, and presence of chronic illnesses were recorded. All participants were enrolled in the street. Several field visits were made before starting the data collection phase in order to identify different areas in the camp and the general characteristics of the camp. All camp areas were covered during the data collection phase to ensure that samples were most possibly representative of each camp.

Minimal sample size calculation:

Sample size was calculated based on substance use prevalence among refugees in camps **(Horyniak et al, 2016, Arfken et al, 2011).** In total, 270 (135 displaced and 135 non-displaced) for a 10% prevalence, and 398 (199 displaced and 199 non-displaced) participants for a 20% prevalence were needed for a cross-sectional study with a power of 80% and 95% CI.

Primary & secondary endpoints:

This study aim was to assess substance use among refugees in camps by taking into account the changing situations of Palestinians and/or Syrians and the association of various socio-demographic characteristics with substance use. The primary endpoints were the use of specific substances (defined as any reported substance in question 1 of ASSIST), lifetime use of substances (question 1 of ASSIST), and association with socio-demographic features. The secondary outcome was to assess the specific substance risk level (sum of questions 2 to 7) for each drug class.

Data analysis

Descriptive statistics were used to examine the participants' demographic characteristics and the ASSIST answers. Frequencies and proportions or percentages were used to describe all characteristics.

A bivariate analysis was performed to identify the variables to be included in the multivariate analysis model and only variables with a p-value <0.2 were included in the model. The Student *t*-test and one-way ANOVA were used for comparison of categorical independent variables, and the Kruskal-Wallis was used when the Levene's test was significant. For continuous variables, the Pearson or Spearman test was used in the absence of normal distribution. Based on the results

of the bivariate analysis, a multivariate logistic regression was used to evaluate the relationship between lifetime and last three months substance use and independent variables (i.e. displacement, sex, age, social status, educational level, exposure to conflict, loss of a family member, house ownership, duration of displacement, tobacco use, alcohol use, income, and substance accessibility).

All statistical analyses were carried out using Statistical Package for Social Sciences (SPSS Inc, Chicago, Illinois) version 23, and a p-value <0.05 was considered significant.

Ethical considerations: This study was approved by the Lebanese Ministry of Public Health ethical committee. All participants were asked to sign a written informed consent before the interview. The study aim, method and time of the interview were clearly explained to each participant, and only participants who accepted to sign were interviewed. All information was treated as strictly confidential and the Arabic version of ASSIST was administered during the face-to face interview.

RESULTS

Participants' characteristics

Among the 478 refugees interviewed, 400 completed the questionnaire (response rate of 85.9%). Indeed, many interviewees refused to answer some questions or stopped completing the questionnaire for personal reasons despite having given their consent **(AAPOR, 2015)**. The sample included 208 Palestinians born in Lebanon (non-displaced), and 192 Syrians and Palestinians displaced from Syria (displaced group). Participants lived in three camps in Mount Lebanon and South Lebanon. Based on the latest UNRWA data from June 2018, our sample represented approximately 0.5% from the estimated number of refugees living in the three

228 camps[3]. Analysis of their demographic characteristics (**Table 1**) showed that overall, participants
229 were mainly men (81.5%), with a mean age of 29.87 ± 9.64 years. Lifetime tobacco use and
230 lifetime alcohol consumption (question 1 of ASSIST) were reported by 87% and 37% of
231 participants, respectively. In the displaced group, the mean duration of displacement was 3.615 ±
232 2.758 years. Comparison of the demographic characteristics between groups (displaced and non-
233 displaced) indicated that the percentage of university graduates was higher in the non-displaced
234 group (9.1% vs 0.5% in the displaced group, P <0.0001), whereas the percentage of married
235 participants was higher in the displaced group (53.6% vs. 35.1%, P= 0.003).

236 **Substances used:**

237 The most frequently reported lifetime use of illicit substances was cannabis (55%) and opioids
238 (12%)[4]. Comparison between groups (**Table 2**) showed that the percentage of cannabis, cocaine
239 and amphetamines users was significantly higher among Palestinians born in Lebanon than
240 Syrians and Palestinians displaced from Syria. Conversely, the use of sedative (many participants
241 reported using clonazepam (Rivotril®)) and opioids (including Farawla, street pills that contain
242 225-325 mg of tramadol) tended to be higher (not significant) in the displaced group (8.9% vs
243 5.8% for sedatives, P = 0.2; and 11.5% vs 6.5% for opioids, P = 0.09)

244 For each substance, a risk level was calculated based on the reported use during the last three
245 months and participants were classified in the 'low risk', 'moderate risk' or 'high risk' group
246 (**Table 3**). Comparison between groups showed the percentage of participants classified in the
247 moderate and high risk group for cannabis (36.5% vs 26% and 11.5% vs 4.2%, respectively, P
248 <0.0001) and cocaine (6.7% vs 2.6% and 2.4% vs 0% respectively, P= 0.013) was higher among

[3] This figure does not claim to represent the actual number of people present in the camps because for example, Palestinian refugees may have left over the years, and UNRWA does not track the movement of refugees out of its fields of operation.

[4] These percentages were calculated after excluding Alcohol and Tobacco

Palestinians born in Lebanon than Palestinians and Syrians displaced from Syria. Conversely, the percentage of participants in the high-risk class for sedative (7.8% vs 1.9% respectively, P=0.01) and in the moderate risk class for opioid use (7.3% vs 1.4% respectively; P= 0.015) was higher among displaced Palestinians and Syrians than among Palestinians born in Lebanon. For all substance types, the high risk groups shared similar characteristics: being a man, single, and employed. However, the group at high risk of sedative use was more exposed to conflicts (53% vs 47%; respectively; P< 0.0001). Several reasons were reported by users to justify the substance use, such as living conditions, curiosity and amusement, followed by stress and poverty.

Assessment of polysubstance use, which is defined by the WHO as the use of more than one drug or drug type at the same time or sequentially, showed that 34% of participants who reported substance use in the last three months could be classified as polysubstance users. The substances most often co-consumed were opioids, cannabis and cocaine.

When asked about how easy it was to get drugs and what were the most available substances, many users said that access to drugs was easy, but their percentage varied in the three camps (47% in one camp compared with 18% in the other two camps). Overall, 169 participants said that access to substances was easy, 104 said that it was possible, and 15 said that it was hard. Compared with the other two groups, participants who reported an easy access to drugs, also reported higher use of cannabis (82, 47.1% vs 70, 39.8% vs 13, 26.0% respectively; P= 0.02), opioids (18, 10.3% vs 15, 8.5% vs 3, 6.0% respectively P = 0.612), and amphetamines (7, 4% vs 5, 2.8% vs 1, 2% respectively, P = 0.714).

Regarding drug availability, 31.1% of participants said that the most available drug was cannabis, followed by heroin (10.8% of participants), benzodiazepines, salvia[5] and codeine products (3.6%).

Association between lifetime and last three months substance use and socio-demographic features:

The results of the bivariate analysis indicated that the refugee status (displaced from Syria/born in Lebanon), sex, marital status, nationality, living conditions, exposure to conflict, displacement duration, loss of family members, tobacco use, alcohol use, and easy access to drugs were significantly associated with lifetime substance use (**Table S1**) and last three months substance use (**Table S2**). The multivariate logistic regression analysis using all these variables showed that only five variables were significantly correlated with lifetime substance use and use during last three months (**Table 4**). Specifically, Palestinians born in Lebanon were seven times more likely to use substances anytime in life than Syrians and Palestinians displaced from Syria (OR 7.241, 95% CI [3.781-13.869], P <0.0001). Moreover, women were less likely to use substances anytime in life than men (OR 0.188, 95% CI [0.080-0.442], P <0.0001). Single participants were more likely to use substances than married interviewees (OR: 2.78, 95% [1.588-4.866], P <0.0001). Similar results were obtained when assessing factors affecting last three months substance use. Simultaneously, tobacco use was significantly associated with both lifetime and last three months substance use while alcohol consumption was significantly associated with last three months substance use. A stratified analysis was also performed using two models, one for

[5] *Salvia divinorum* (SD), is commonly known as a sacred spiritual plant native of the mountains of Mexico. It has spread in black markets worldwide in recent years, and authorities say that its consumption today is surging in Lebanon. Its recent popularity among substance users in Lebanon offers an opportunity to assess the risk of clinical dependence **[El-Khoury & Baroud 2018].** Salvinorin A cannot be detected with the commonly available toxicology kits, making it more appealing to users in countries where cannabis or other hallucinogens are criminalized. SD acute effects include psychotic experiences. Chronic and heavy use might lead to impairment, including loss of functionality **[Karam et al, 2019].**

Palestinians born in camps and the other for Palestinians and Syrians recently displaced, to assess the factors that increase substance use in these two groups. The obtained results were similar to those of the initial model that included both groups (**Tables S3.1 and Table S3.2**), but for conflict exposure that was not correlated with lifetime substance use in the Palestinians born in Lebanon group and was removed from the final model (**Table S3.2**).

DISCUSSION:

To our knowledge, this is the first study to assess substance use among Palestinians born in Lebanon and Palestinians and Syrians recently displaced from Syria (all living in a camp in Lebanon). Our results showed that cannabis was the most frequently reported illicit substances (55%) followed by opioids (12%). However, when including alcohol, this was the most reported substance used (37%) followed by cannabis (35%). Several studies showed the same pattern of alcohol use among refugees. Prevalence among Iraqi refugee communities in the US was estimated at 13% **(Horyniak et al, 2016)** and was even higher among women Cambodian refugee (38%) **(D'Avanzo, Frye & Froman, 1994).** Similar results were also reported in one study on a refugee camp in Kenya **(UNHCR/WHO, 2006)** and by two studies by the United Nations Office on Drugs and Crime **(UNODC 2003, UNODC 2005)** where alcohol was the most used substance. An important limitation in substance use epidemiological research is that most studies have focused on refugees resettled in high income countries where the availability of evidence-based interventions is far greater than in humanitarian settings, refugee camps, and low- and middle-income countries (LMIC) in general. Yet, the available data suggest high rates of alcohol and other substance use among refugees in camps and LMIC **(UNODC 2018).** Moreover, an analysis by UNHCR of the primary care visit rates in 90 refugee camps suggests an inadequate substance and alcohol misuse management in camps **(Kane et al, 2014).**

Our study found that lifetime and last three months substance use was higher among Palestinians born in Lebanon than in Syrians and Palestinians displaced from Syria. This is not the first study showing lower use among recently displaced refugees than those born in the host country. Indeed, two studies in the US and one in Sweden found that displaced persons are significantly less likely to report the use of alcohol and injecting drugs **(Horyniak et al, 2016, Harris et al, 2019)** in addition to other substances compared with non-refugees **(Salas-Wright & Vaughn, 2014)**. Similarly, alcohol-related hospital admissions are lower among displaced refugees than native people **(Sundquist & Frank, 2004).** Another possible reason could be underreporting by displaced participants who already feel not safe. Indeed, during the interview many said that "any miscommunication might put them at risk to lose the assistance from competent authorities" when asked about the illicit use of substances. This might have increased the risk of apprehension bias (i.e. when a participant responds differently because observed) due to the refugee's fear under these circumstances. Moreover, a study suggests that religiosity may protect against alcohol and drug use, as reported also by displaced participants **(Cardozo et al, 2004).**

When comparing the different substances, use of cannabis, cocaine, and amphetamines was more frequently reported by Palestinians born in Lebanon.. Similarly, the percentage of high-risk users of cannabis and cocaine was higher among Palestinians born in Lebanon than adults displaced from Syria. Conversely, displaced participants were more likely to be at high risk of sedative and opioid use. There are very few studies on the prevalence of substance use in Lebanon. It has been shown that 18% of people convicted in recent years for substance use were heroin users, making it the third most used substance after cannabis and cocaine **(El-Khoury et al, 2016).** Heroin is also the most frequently used substance, alone or in combination with other substances, among those seeking medical assistance for addiction **(Government of Lebanon, 2017)**. One study showed that 43.5% of students in Lebanese universities have consumed alcohol at least once in

their life, followed by cannabis (12.3% of students) and tranquilizers (11%) **(Salameh et al, 2015)**. Moreover, a Lebanese population survey on benzodiazepines found that 9.6% of all participants were using these drugs **(Naja et al, 2001).** Similarly, in our study 6% of participants reported benzodiazepine use. The similar pattern of use among Palestinians born in Lebanon and the native Lebanese population could be explained by the assimilation/acculturation model **(Sowey 2005)**. According to this model, as people become assimilated or acculturated into their new society, they adopt the social norms of the new country with regards to substance use. The possibility increases if the new host country has a more relaxed attitude to substance use than the country of origin **(Johnson 1996, D'avanzo 1997, Vega 1998, Center for Behavioral Health Statistics and Quality 2017).** In our study, substance use pattern among Palestinians born in Lebanon was similar to that of the Lebanese population **(SAMHSA 2016)**. It is important to mention that services provided to refugees also differ. The UNHCR and its NGO partners provide essential household items, clothes, fuel vouchers, and assure better access to health and education to registered Syrians displaced from Syria. On the other hand, UNRWA supports Palestinian refugees from Syria with cash assistance to meet basic living costs **(MOSA/UNDP 2008-MOPH 2016-2021).** Moreover, the Department of Palestinian Refugee Affairs (DPRA) was created in Lebanon to manage the registration of the camp inhabitants of the camps (births, marriages, deaths and changes of residence), and the right to accept or refuse the transfer of financial aid from abroad. However, neither the DPRA nor the Government of Lebanon promised to provide any social services **(Khalidi 1986).** In addition, Syrian participants reported that the residency permit, which is an essential legal document for them, is very hard to obtain, due to its cost and complicated procedures, thus limiting their movement **(UN general Assembly 2016).**

The result of the multivariate logistic regression showed a significant association between substance use and non-displaced status (i.e. Palestinian born in Lebanon), and exposure to conflicts. As in most studies, men were more likely to use drugs than women **(NIDA 2020, Greenfield et al, 2010, Mann et al, 2005)**, and single participants than married/in couple participants. Similarly, two studies carried out at Michigan University showed that the transition from single to married status resulted in a significant decrease in marijuana use, while divorce during the study period led to a sharp rise in marijuana use **(Bachman et al 1997, Bachman et al 2008, Heinz et al 2008)**. Tobacco use also was associated with higher risk of illicit substance use, as reported in another study **(Weinberger et al, 2017).**

On the other hand, many users reported easy access to drugs. Similar results were seen in the Lebanese general population survey on benzodiazepine use, suggesting that the high use of benzodiazepine in Lebanon can be related to specific factors, such as the lack of control on drug access **(Salemeh et al, 2016)**. In 2017, Broman et al, showed a strong association between substance use and the availability of substances at home **(Broman 2016).** They also found that the age at first consumption of alcohol, marijuana, and other illegal drugs was lower among adolescents who reported easy availability of illegal drugs. In our study, many participants reported substance use for more than one year, but most of them refused to specify the duration, by saying that they could not remember well. This is a source of recall bias. Most participants reported also easy access to drugs, but this was never an indication of drug manufacturing inside the camps. This easy accessibility could be explained by the proximity of areas marked by strong presence of dealers and traffickers, and the lack of control at the camp borders and inside.

Knowledge of substance use among displaced persons due to war remains extremely limited. A well-designed protocol for data collection and handling, and appropriate definition of variables were considered to limit possible information bias. In addition, participants were interviewed

only if living in the camp to minimize spectrum bias. However, this study has several limitations. First, the representativeness of the study samples is limited for several reasons, including restricted access to the camps that necessitated approval by political parties. Moreover, permission was granted only for short periods, and conflicts could arise that might affect our presence in the camp. Second, the studied group may represent a vulnerable subset of forced migrants. Indeed, many were unregistered and might lack the protection and support afforded to refugees under internationally recognized treaties. This imposes a potential unacceptability bias (i.e. a systematic difference in response rate or test uptake) due to questions that are deemed too personal or embarrassing especially because substance use is considered a taboo for refugees. Yet, ensuring the participants' anonymity and confidentiality was a key point to reduce self-selection bias and increase representativeness. Similarly, lack of official lists of the camp inhabitants and the uncontrolled urban growth were a great barrier for randomized selection, leading to a possible selection bias. However, field guided visits to get acquainted with the entire camp minimized this selection bias. Third, although this study used multivariate analysis to identify risk factors for substance use and took into account confounding variables, limited consideration was given to potentially important structural factors, such as living conditions, quality of life (QOL) and health status. For instance, information on comorbidities, including infectious and mental diseases, were almost absent because of lack of health screening. It is now acknowledged that QOL is an important clinical factor in the context of substance use **(Strada et al, 2017).** Indeed, many participants reporting substance use complained about poor QOL, but information was lacking for many other participants.

CONCLUSION:

This study assessed substance use and investigated predictors of substance use among refugees. Overall, the pattern of use was similar between Palestinians born in Lebanon and the Lebanese native population, whereas differences were observed between Palestinians and Syrians displaced from Syria and Palestinians born in Lebanon. Several factors, including living conditions, QOL, and mental status following conflict exposure and displacement, might explain these differences. The changes in QOL of civilians following war and displacement and their association with substance use must now be investigated. Moreover, substance use treatment and prevention should be improved in camps by taking into considerations the refugees' challenging situation.

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LIST OF TABLES:

SUPPPPLEMENTARY MATERIALS:

Table 1: Demographic Characteristics of Participants

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	Palestinians born in Lebanon	*Syrians and Palestinians displaced from Syria*	*P value*
Age	29.14 ± 9.2	30.66 ± 10.01	0.082
Gender			
Men	(156) 75%	(170) 88.5%	< 0.0001
Women	(52) 25%	(22) 11.5%	
Education			
Illiterate	(9) 4.3%	(7) 3.6%	< 0.0001
School level	(132) 86.5%	(184) 95.8%	
University level	(19) 9.1%	(1) 0.5%	
Marital status			
Single	(120) 57.7%	(79) 41.1%	0.003
Divorced/widowed	(15) 7.2%	(10) 5.2%	
Married	(73) 35.1%	(103)53.6%	
Employment			
Employed	(173) 83.2%	(171) 89.1%	< 0.0001
Non-employed	(35) 16.8%	(20) 10.4%	
Monthly income (USD)	409.3 ± 260.1	404.8 ± 215.8	0.003
Governorate			
Mount Lebanon	(100) 48.1%	(76) 39.6%	0.087
South	(108) 51.9%	(116) 60.4%	
House ownership vs. rental			
Owner*	(143) 68.8%	(4) 2.1%	< 0.0001
Rental/real estate	(65) 31.3%	(188) 97.9%	
Exposed to Conflict	(1) 0.5%	(71) 37%	<0.0001
Lost a family member	(4) 1.9%	(104) 54.2%	<0.0001

Palestinians cannot own property (real estate) because they are not formal citizens of another state. This term (owner) is mainly used inside the camps because they are not under Lebanese governmental surveillance

Table 2: Frequency of lifetime substance use among Palestinians born in Lebanon and Syrian

and Palestinians displaced recently			
	Palestinians born in Lebanon	Syrians and Palestinians displaced from Syria	P value
Tobacco	(181) 87%	(166) 86.5%	0.869
Alcohol	(78) 37.5%	(69) 35.9%	0.413
Cannabis	(105) 50.5%	(60) 31.3%	**<0.0001**
Cocaine	(21) 10.1%	(5) 2.6%	**0.002**
Amphetamines	(11) 5.3%	(2) 1%	**0.017**
Inhalants	(8) 3.8%	(4) 2.1%	0.302
Sedatives	(12) 5.8%	(17) **8.9%**	0.235
Hallucinogens	(6) 2.9%	(4) 2.1%	0.608
Opioids	(14) 6.5%	(22) **11.5%**	0.09
Salvia	(5) 2.4%	(3) 1.6%	0.548

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Table 3: ASSIST risk score for each substance			
	Palestinians born in Lebanon	*Syrians and Palestinians displaced from Syria*	*P value*
Tobacco			
Low	(27) 13%	(26) 13.5%	
Moderate	(136) 65.4%	(142) 74.0%	
High	(45) 21.6%	(24) 12.5%	0.05
Alcohol			
Low	(134) 64.4%	(129) 67.2%	
Moderate	(65) 31.3%	(58) 30.2%	
High	(9) 4.3%	(5) 2.6%	0.607
Cannabis			
Low	(108) 51.9%	(134) 69.8%	
Moderate	**(76) 36.5%**	(50) 26.0%	
High	**(24) 11.5%**	(8) 4.2%	**< 0.0001**
Cocaine			
Low	(189) 90.9%	(187) 97.4%	
Moderate	**(14) 6.7%**	(5) 2.6%	
High	**(5) 2.4%**	(0) 0%	**0.013**
Amphetamine			
Low	(198) 95.2%	(190) 99.0%	
Moderate	**(7) 3.4%**	(0) 0%	
High	(1) 1.4%	(2) 1.0%	**0.034**
Inhalants			
Low	(201) 96.6%	(187) 97.4%	
Moderate	(7) 3.4%	(2) 1.0%	
High	(0) 0%	(2) 1.6%	0.059
Sedatives			
Low	(198)95.2%	(175) 91.1%	
Moderate	(6) 2.9%	(2) 1.0%	

High	(3) 1.9%	**(15) 7.8%**	**0.01**
Hallucinogens			
Low	(203) 97.6%	(189) 98.4%	
Moderate	(4) 1.9%	(3) 1.6%	
High	(1) 0.5%	(0) 0%	0.605
Opioids			
Low	(197) 94.7%	(171) 89.1%	
Moderate	(3) 1.4%	**(14) 7.3%**	
High	(8) 3.8%	(7) 3.6%	0.015

Low (less than 3); Moderate (3-26); High (more than 26)

Table 4: Risk factors of substance* use: Logistic Regression								
	Lifetime substance use*				**Substance use* during last months**			
	P. Value	**OR**	**95% C.I.**		**P. Value**	**OR**	**95% C.I.**	
			Lower	**Upper**			**Lower**	**Upper**
Non-displaced/Displaced	**<0.0001**	7.241	3.781	13.869	**<0.0001**	4.861	2.750	8.593
Woman/Man	**<0.0001**	0.188	0.080	0.442	**<0.0001**	0.144	0.067	0.306
Marital Status (single/married)	**<0.0001**	2.78	1.588	4.866	**<0.0001**	2.532	1.545	4.151
Non-smoker/Smoker	**<0.0001**	0.136	0.136	0.410	**<0.0001**	0.152	0.054	0.430
Exposure to conflict (non-exposed/exposed)	**<0.0001**	0.251	0.128	0.494	**<0.0001**	0.263	0.131	0.527
Alcohol Consumption (No/Yes)	-	-	-	-	**0.02**	0.451	0.276	0.739
	Method = Forward stepwise; Hosmer & Lemeshow sig 0.491; R^2 (Cox & Snell): 0.405				*Method = Forward stepwise; Hosmer & Lemeshow sig 0.509; R^2 (Cox & Snell): 0.369*			
This table shows the independent variables in the final model, their Odds ratio (OR) and 95% confidence interval (CI). The non-displaced group (i.e. Palestinians born in Lebanon) represents the reference group.								

*** Substance use for all substances listed in the ASSIST questionnaire, but for alcohol and tobacco.**