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# 1 Substance Use Among Refugees in Three Lebanese Camps: A Cross- 2 Sectional Study

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29

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

36

## 37 **Authorship**

38 We attest that all authors contributed significantly to the creation of this manuscript, each having fulfilled  
39 criteria as established by the ICMJE.

40

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42 **ABSTRACT 300 words**

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

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

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

54 **RESULTS:** In general, lifetime substance use was higher among Palestinians born in Lebanon  
55 compared to Syrians and Palestinians displaced from Syria (OR 7.241, 95% CI [3.781-13.869], P  
56 <0.0001). Results from ASSIST score during last three months showed that moderate and high-  
57 risk use of cannabis and cocaine were higher among Palestinians born in Lebanon than  
58 Palestinians and Syrians displaced from Syria. The multivariate analysis showed that women  
59 had lower lifetime (OR 0.188, 95%CI [0.080-0.442], P <0.0001) and lower last three months  
60 substance use than men, whereas single people were more likely to use substances than married  
61 people (OR: 2.78, 95%CI [1.588-4.866], P <0.0001). Tobacco was significantly associated with  
62 higher risk of substance use.

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

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

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

70 **INTRODUCTION:**

71 One of the major public health issues in the Middle East is the refugees' health following conflict  
72 exposure and displacement (**McKee & Janson 2001, Salama, Spiegel & Brennan 2001**).  
73 Several studies suggested significant correlations between poor living conditions, conflict  
74 exposure and ill health (**WHO 1988, Elliott 2016, Evans et al 2000, Gemmell 2001,**  
75 **Mackenbach & Howden-Chapman 2002**). Moreover, investigations on substance use, which  
76 has been on the rise for the past several years (**Ezard et al 2011**), among conflict-exposed and  
77 displaced persons showed an increased risk of health problems, licit and illicit substance use  
78 (**Adams et al 2016**), new-onset heavy drinking, and alcohol-related problems (**Jacobson et al,**  
79 **2008, D'avanzo 1997**). This can be related to stressors in war areas, material and personal  
80 losses, adjustment, and post-traumatic stress disorder (**Teesson & Proudfoot 2003, El-Helou,**  
81 **Khechen & Mahdi 2020**). Moreover, studies in Sweden and in The Netherlands showed that the  
82 substance use rates are lower among recently settled refugees compared with refugees born in the  
83 country, and that they progressively increase with the duration of stay (**Bayard-Burfield,**  
84 **Sundquist & Johansson 2001, Hollander et al, 2011, Van Leeuwen, Nilsson & Merlo 2012**).  
85 In the Middle East, especially in Lebanon, Palestine, Syria and Iraq, civilian exposure to political  
86 violence has been heightened, with a dramatic change in the quality of life. Since the start of the  
87 current crisis, populations in Lebanon (i.e. civilians in a war zone, and particularly refugees)  
88 have experienced a gradual decrease in income that translated into the inability of poor/displaced  
89 families to secure their basic life needs. This has affected their quality of life (**WHOQOL**  
90 **Group 1998, Akinyemi et al., 2012**), and increased the risk of substance use. In Lebanon,  
91 Palestinians hold an ambiguous legal and political position within the country. From a legal point  
92 of view, Palestinians in Lebanon are considered not different from other foreigners residing in

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

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

118 In this context of political and economic instability, substance use inside camps is very frequent  
119 (**Kerbage & Haddad, 2014**). It is acknowledged that in a significant proportion of users,  
120 substance use is the result of unstable and unsafe life patterns, as well as impaired interpersonal,  
121 social and professional skills (**WHO-AIMS, 2010**). However, to date, there has been little  
122 research on the impact of displacement on refugees' health and substance use. Only one study  
123 investigated the lifetime prevalence, treatment and age of onset of mental disorders in Lebanon,  
124 and whether war in this country has affected the risk of becoming mentally ill, including  
125 substance use. It found that 25.8% of the included participants met criteria for at least one DSM-  
126 IV disorder at some point in their lives, with a lifetime prevalence of substance use disorders of  
127 2.2% (**Karam et al, 2008**). Despite the possibility to be enrolled in some treatment programs,  
128 such as the Opioid Substitution Treatment, access to the substance use disorder services provided  
129 in Lebanon remains challenging for many Palestinian refugees born in Lebanon and  
130 Syrians/Palestinians displaced from Syria who live in camps or scattered over a large area (**Dorai**  
131 **2010, Government of Lebanon 2017**). This is mainly because in Lebanon, healthcare is  
132 predominantly managed by the private sector, with limited inpatient services provided free of  
133 charge in mental hospitals for eligible low-income Lebanese patients through the Ministry of  
134 Public Health (**El Chammay & Kheir 2013**). The Living Conditions among Palestinian  
135 Refugees in Lebanon (LIPRIL) survey also assessed the health and living conditions of refugees  
136 in official camps (**Al-Madi et al, 2013, Tiltnes 2005**); however, it could not precisely evaluate  
137 the impact of exposure to a war environment on the respondents' mental health and substance  
138 use. As the European Union and United Nations priority actions are to improve the living  
139 conditions of refugees temporarily living in developed countries, a thorough assessment of

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

142 Therefore, the aim of this study was to investigate substance use among refugees exposed to war  
143 and displacement and to identify associations between socio-demographic characteristics and  
144 substance use among Palestinians and Syrians displaced from Syria where the term “Displaced  
145 person” defines a person who has been deported from, or has been obliged to leave his/her  
146 country of nationality or of former habitual residence, such as persons who are compelled to  
147 undertake forced labor or who are deported for racial, religious or political reasons (UNODC  
148 1946) and Palestinians born in Lebanon but identified also as refugees<sup>1</sup>.

#### 149 **METHODS:**

150 This was a 6-month cross-sectional observational study in three official Palestinian camps in  
151 Lebanon. Lifetime substance use and use during the past three months were assessed using the  
152 World Health Organization (WHO) Alcohol, Smoking and Substance Involvement Screening  
153 Test (ASSIST) (Humeniuk, Dennington & Ali on behalf of WHO ASSIST Study Group,  
154 2008). The Arabic version of the validated ASSIST questionnaire<sup>2</sup> (Humeniuk, Dennington &  
155 Ali on behalf of WHO ASSIST Study Group, 2000) includes eight questions on tobacco,  
156 alcohol, cannabis, cocaine, amphetamine-type stimulants, inhalants, sedatives, hallucinogens,  
157 opioids and 'other drugs'. Substances prescribed by doctors are not recorded unless used for a  
158 reason/manner other than the prescription (e.g. more frequent intake, or higher doses). The

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<sup>1</sup> 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

<sup>2</sup> 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].



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

#### 169 **Study population & Data collection:**

170 Adults living in camps that accommodate refugees were asked to participate in this study.  
171 Inclusion criteria for the displaced group were Syrians and Palestinians displaced from Syria,  
172 >18-year-old adults, living in a Palestinian camp, and having experienced displacement. For  
173 Palestinians born in Lebanon (i.e. non-displaced group), inclusion criteria were: >18-year-old  
174 adults, and living in a Palestinian camp. The study aims, methods, and procedure were explained  
175 to each participant. After signature of the informed consent, each participant completed the  
176 ASSIST (5-10 minutes) during a face-to-face interview. Country of origin for displaced persons,  
177 age, sex, education level, marital status, employment status, number of family members, and  
178 presence of chronic illnesses were recorded. All participants were enrolled in the street. Several  
179 field visits were made before starting the data collection phase in order to identify different areas  
180 in the camp and the general characteristics of the camp. All camp areas were covered during the  
181 data collection phase to ensure that samples were most possibly representative of each camp.

182

183

184 **Minimal sample size calculation:**

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

189 **Primary & secondary endpoints:**

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

197 **Data analysis**

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

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

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

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

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

## 219 **RESULTS**

### 220 **Participants' characteristics**

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

228 camps<sup>3</sup>. Analysis of their demographic characteristics (**Table 1**) showed that overall, participants  
229 were mainly men (81.5%), with a mean age of  $29.87 \pm 9.64$  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  $3.615 \pm$   
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%)<sup>4</sup>. 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

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<sup>3</sup> 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.

<sup>4</sup> These percentages were calculated after excluding Alcohol and Tobacco

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

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

261 When asked about how easy it was to get drugs and what were the most available substances,  
262 many users said that access to drugs was easy, but their percentage varied in the three camps  
263 (47% in one camp compared with 18% in the other two camps). Overall, 169 participants said  
264 that access to substances was easy, 104 said that it was possible, and 15 said that it was hard.  
265 Compared with the other two groups, participants who reported an easy access to drugs, also  
266 reported higher use of cannabis (82, 47.1% vs 70, 39.8% vs 13, 26.0% respectively;  $P= 0.02$ ),  
267 opioids (18, 10.3% vs 15, 8.5% vs 3, 6.0% respectively  $P = 0.612$ ), and amphetamines (7, 4% vs  
268 5, 2.8% vs 1, 2% respectively,  $P = 0.714$ ).

269 Regarding drug availability, 31.1% of participants said that the most available drug was  
270 cannabis, followed by heroin (10.8% of participants), benzodiazepines, salvia<sup>5</sup> and codeine  
271 products (3.6%).

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

274 The results of the bivariate analysis indicated that the refugee status (displaced from Syria/born  
275 in Lebanon), sex, marital status, nationality, living conditions, exposure to conflict, displacement  
276 duration, loss of family members, tobacco use, alcohol use, and easy access to drugs were  
277 significantly associated with lifetime substance use (**Table S1**) and last three months substance  
278 use (**Table S2**). The multivariate logistic regression analysis using all these variables showed  
279 that only five variables were significantly correlated with lifetime substance use and use during  
280 last three months (**Table 4**). Specifically, Palestinians born in Lebanon were seven times more  
281 likely to use substances anytime in life than Syrians and Palestinians displaced from Syria (OR  
282 7.241, 95% CI [3.781-13.869], P <0.0001). Moreover, women were less likely to use substances  
283 anytime in life than men (OR 0.188, 95% CI [0.080-0.442], P <0.0001). Single participants were  
284 more likely to use substances than married interviewees (OR: 2.78, 95% [1.588-4.866], P  
285 <0.0001). Similar results were obtained when assessing factors affecting last three months  
286 substance use. Simultaneously, tobacco use was significantly associated with both lifetime and  
287 last three months substance use while alcohol consumption was significantly associated with last  
288 three months substance use. A stratified analysis was also performed using two models, one for

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<sup>5</sup> *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].

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

#### 294 **DISCUSSION:**

295 To our knowledge, this is the first study to assess substance use among Palestinians born in  
296 Lebanon and Palestinians and Syrians recently displaced from Syria (all living in a camp in  
297 Lebanon). Our results showed that cannabis was the most frequently reported illicit substances  
298 (55%) followed by opioids (12%). However, when including alcohol, this was the most reported  
299 substance used (37%) followed by cannabis (35%). Several studies showed the same pattern of  
300 alcohol use among refugees. Prevalence among Iraqi refugee communities in the US was  
301 estimated at 13% (**Horyniak et al, 2016**) and was even higher among women Cambodian  
302 refugee (38%) (**D'Avanzo, Frye & Froman, 1994**). Similar results were also reported in one  
303 study on a refugee camp in Kenya (**UNHCR/WHO, 2006**) and by two studies by the United  
304 Nations Office on Drugs and Crime (**UNODC 2003, UNODC 2005**) where alcohol was the most  
305 used substance. An important limitation in substance use epidemiological research is that most  
306 studies have focused on refugees resettled in high income countries where the availability of  
307 evidence-based interventions is far greater than in humanitarian settings, refugee camps, and  
308 low- and middle-income countries (LMIC) in general. Yet, the available data suggest high rates  
309 of alcohol and other substance use among refugees in camps and LMIC (**UNODC 2018**).  
310 Moreover, an analysis by UNHCR of the primary care visit rates in 90 refugee camps suggests  
311 an inadequate substance and alcohol misuse management in camps (**Kane et al, 2014**).

312 Our study found that lifetime and last three months substance use was higher among Palestinians  
313 born in Lebanon than in Syrians and Palestinians displaced from Syria. This is not the first study  
314 showing lower use among recently displaced refugees than those born in the host country.  
315 Indeed, two studies in the US and one in Sweden found that displaced persons are significantly  
316 less likely to report the use of alcohol and injecting drugs (**Horyniak et al, 2016, Harris et al,**  
317 **2019**) in addition to other substances compared with non-refugees (**Salas-Wright & Vaughn,**  
318 **2014**). Similarly, alcohol-related hospital admissions are lower among displaced refugees than  
319 native people (**Sundquist & Frank, 2004**). Another possible reason could be underreporting by  
320 displaced participants who already feel not safe. Indeed, during the interview many said that  
321 “any miscommunication might put them at risk to lose the assistance from competent  
322 authorities” when asked about the illicit use of substances. This might have increased the risk of  
323 apprehension bias (i.e. when a participant responds differently because observed) due to the  
324 refugee’s fear under these circumstances. Moreover, a study suggests that religiosity may protect  
325 against alcohol and drug use, as reported also by displaced participants (**Cardozo et al, 2004**).

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



336 their life, followed by cannabis (12.3% of students) and tranquilizers (11%) (**Salameh et al,**  
337 **2015**). Moreover, a Lebanese population survey on benzodiazepines found that 9.6% of all  
338 participants were using these drugs (**Naja et al, 2001**). Similarly, in our study 6% of participants  
339 reported benzodiazepine use. The similar pattern of use among Palestinians born in Lebanon and  
340 the native Lebanese population could be explained by the assimilation/acculturation model  
341 (**Sowey 2005**). According to this model, as people become assimilated or acculturated into their  
342 new society, they adopt the social norms of the new country with regards to substance use. The  
343 possibility increases if the new host country has a more relaxed attitude to substance use than the  
344 country of origin (**Johnson 1996, D’avanzo 1997, Vega 1998, Center for Behavioral Health**  
345 **Statistics and Quality 2017**). In our study, substance use pattern among Palestinians born in  
346 Lebanon was similar to that of the Lebanese population (**SAMHSA 2016**). It is important to  
347 mention that services provided to refugees also differ. The UNHCR and its NGO partners  
348 provide essential household items, clothes, fuel vouchers, and assure better access to health and  
349 education to registered Syrians displaced from Syria. On the other hand, UNRWA supports  
350 Palestinian refugees from Syria with cash assistance to meet basic living costs (**MOSA/UNDP**  
351 **2008-MOPH 2016-2021**). Moreover, the Department of Palestinian Refugee Affairs (DPRA)  
352 was created in Lebanon to manage the registration of the camp inhabitants of the camps (births,  
353 marriages, deaths and changes of residence), and the right to accept or refuse the transfer of  
354 financial aid from abroad. However, neither the DPRA nor the Government of Lebanon  
355 promised to provide any social services (**Khalidi 1986**). In addition, Syrian participants reported  
356 that the residency permit, which is an essential legal document for them, is very hard to obtain,  
357 due to its cost and complicated procedures, thus limiting their movement (**UN general Assembly**  
358 **2016**).

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

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

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

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

404 **CONCLUSION:**

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

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**Table 1: Demographic Characteristics of Participants**

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

708 \*Palestinians cannot own property (real estate) because they are not formal citizens of another state. This term  
709 (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%	<b>&lt;0.0001</b>
Cocaine	(21) 10.1%	(5) 2.6%	<b>0.002</b>
Amphetamines	(11) 5.3%	(2) 1%	<b>0.017</b>
Inhalants	(8) 3.8%	(4) 2.1%	0.302
Sedatives	(12) 5.8%	(17) <b>8.9%</b>	0.235
Hallucinogens	(6) 2.9%	(4) 2.1%	0.608
Opioids	(14) 6.5%	(22) <b>11.5%</b>	0.09
Salvia	(5) 2.4%	(3) 1.6%	0.548

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**Table 3: ASSIST risk score for each substance**

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

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

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

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**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
<b>Non-displaced/Displaced</b>	<b>&lt;0.0001</b>	7.241	3.781	13.869	<b>&lt;0.0001</b>	4.861	2.750	8.593
<b>Woman/Man</b>	<b>&lt;0.0001</b>	0.188	0.080	0.442	<b>&lt;0.0001</b>	0.144	0.067	0.306
<b>Marital Status (single/married)</b>	<b>&lt;0.0001</b>	2.78	1.588	4.866	<b>&lt;0.0001</b>	2.532	1.545	4.151
<b>Non-smoker/Smoker</b>	<b>&lt;0.0001</b>	0.136	0.136	0.410	<b>&lt;0.0001</b>	0.152	0.054	0.430
<b>Exposure to conflict (non-exposed/exposed)</b>	<b>&lt;0.0001</b>	0.251	0.128	0.494	<b>&lt;0.0001</b>	0.263	0.131	0.527
<b>Alcohol Consumption (No/Yes)</b>	-	-	-	-	<b>0.02</b>	0.451	0.276	0.739
	<i>Method = Forward stepwise; Hosmer &amp; Lemeshow sig 0.491; R<sup>2</sup> (Cox &amp; Snell): 0.405</i>				<i>Method = Forward stepwise; Hosmer &amp; Lemeshow sig 0.509; R<sup>2</sup> (Cox &amp; Snell): 0.369</i>			

*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.*

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

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