

**Table S1.** Characteristics of studies reporting suicide reasons, indices, and prevalence among heroin users in the systematic review

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Author and year	Roy, 2010 <sup>22</sup>	Pan, 2014 <sup>30</sup>	Pavari, 2021 <sup>31</sup>	Kazou, 2015 <sup>32</sup>	Kalyoncu, 2007 <sup>23</sup>	Brådvik, 2007 <sup>33</sup>	Maremmani, 2007 <sup>34</sup>	Heale, 2003 <sup>35</sup>	Ong, 2013 <sup>36</sup>	QUAGLIO, 2001 <sup>37</sup>	Latkin, 2005 <sup>38</sup>	Oppenheimer, 1994 <sup>39</sup>	Dark, 2000 <sup>40</sup>	Vingoe, 1999 <sup>41</sup>	Dark, 2004 <sup>42</sup>	Dark, 1996 <sup>43</sup>	James, 1967 <sup>44</sup>
Place	New Jersey	Taiwan	Italy	Lebanon	Turkey	Sweden	Italy	Australia	Texas	Italy	Baltimore	London	Australia	London	Australia	Australia	Britain
Study design	cross-sectional	cohort	Cohort	cross-sectional	cross-sectional	cross-sectional	cohort	cohort	cross-sectional	cohort	cross-sectional	cohort	cohort	cross-sectional	cross-sectional	cross-sectional	cohort
Sample size	527	2750	15940	61	108	149	616	256	239	2708	148	128	188	48	615	329	342
Number of males	361	61	12401	55	78	108	459	197	152	2270	58	30	156			213	321
Number of females	166	8	3539	5	30	41	157	59	87	438	90	13	32			116	21
Mean age (SD)	45.9±7.99	33.9±8.3	35.37	25.02±4.71	20.04±1.68	36±9	29±6	24.7	22.1±4.51	30.3±7	27	25	31.5±7.4	35±5.7		30.2±6.7	29.1
Population	Opiate dependent individuals	Heroin dependent individuals	Heroin dependent individuals	Heroin dependent individuals	Heroin dependent individuals	Heroin dependent individuals	Heroin addicts	People who had experienced nonfatal heroin overdose	Non-injecting heroin using Mexican-American adults	Heroin injecting drug users (IDUs)	Non-injecting drug users (77.7%) (heroin dependence)	128 heroin addicts	188 heroin-related deaths	48 injecting drug misusers	80 not in treatment (NT) for heroin dependence	Heroin injectors	Non-therapeutic heroin addicts

The onset of heroin use				17.1	16.82±3.6 in	17.50±2.90	Early (<20 years)								13.7±3.3	19.3±4.5	
Duration of heroin use				7.8						9.2±5.3					9.6±7.4	10.9±7.0	4.1
Type of suicide attempt	Attempting suicide	Completed suicide	Completed suicide	37% suicidal attempt, 14.8% suicidal ideation	Suicide attempt	Suicide attempt	199 Suicidal thoughts, 17 suicidal thoughts to end life (suicidal intentions)		Suicidal ideation	Completed suicide	Suicidal ideation	Completed suicide	Completed suicide	History of suicide attempts and history of heroin overdose	Attempted suicide	Attempted suicide	Completed suicide
Prevalence of suicide attempt or successful suicide	39.30%			37%	37%	34%	29.1%		30%	5.50%	21.6%		3%	60%	11% attempted suicides in 12 months, 4% attempted suicides in 1 month, 15% suicidal ideations	68% reporting having an overdose	10.90%

Outcome		69 deaths due to suicide	46 deaths due to suicide		40 (37.0%) had history of attempted suicide	51 had made at least one attempt to commit suicide (but not using heroin)	199 suicidal thoughts during the past week	42 having had an intentional overdose	30% had lifetime suicidal ideation	151 deaths due to suicide	26 heroin dependents with Suicidal Ideation	2 deaths with suicide	9 deaths	Twenty-nine subjects (60%) had had thoughts		Thoughts	9 deaths
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Reasons for attempting suicide	Younger, more females, reported childhood trauma, a family history of suicidal behavior, a history of aggression, and treatment with an antidepressant	Patients with heroin dependence had a 16-fold greater SMR (16.2) than that of the general population and the highest SMR among all. Adjusted risk ratio [RR] = 4.29, p = 0.035 and depressive syndrome any time during life (adjusted RR = 2.61, p = 0.019)	Women that were separated or divorced	Long duration, multiple drug use, and family history of suicide	Psychopathology, family dysfunction, social isolation/dysfunction and drug dependence, unemployment and homelessness	The more overdoses, the greater the risk of suicide attempts	Bipolar spectrum diagnoses (OR = 1.42), depressive and aggressive symptoms (multiple R = 0.47), subjects receiving public welfare benefits (OR = 1.69), unemployed patients (OR = 1.37), those with early onset of heroin dependence (OR = 1.36), living alone (OR = 1.33), and experiencing problems in organizing social contacts and leisure time (OR = 1.28).	Events and emotions prior to heroin use seem to have relatively little relationship with heroin overdose	Stress, depression	To be female and to have dropped out of any kind of treatment	Two or more drugs (adjusted odds ratio 2.93, 95% confidence interval 1.25, 6.88) / Received drugs for sex Homosexual (past 6 months), Emotional abuse, Alcohol dependence, Wounded by weapon (adjusted odds ratio 13.04, 95% confidence interval 1.17-145.50) Female gender (adjusted odds ratio 1.20, 95% confidence interval 0.49-2.96)	One person killed himself while the balance of his mind was disturbed, and the other person died by drowning. One of these subjects was known to be using drugs at the time of death.	Release from prison constitutes a high-risk period for overdose among heroin users	Subjects with a history of suicide attempts did not differ significantly from those with no history of suicide attempts concerning age. However, an overdose of heroin was not a common method for attempting suicide.	entering drug-free residential rehabilitation, female gender, younger age (The mean age of the first intoxication among the sample was 13.7 years (S.D. 3.3), range 2-34, lower education, more extensive polydrug use, benzodiazepine use, recent heroin overdose, Major De	Longer heroin using careers, greater heroin dependence and higher levels of alcohol consumption	All four died of drug overdose. All of them decided to commit suicide, some of them from psychiatric ward of the hospital who had taken drugs in order to monitor suicide, and the rest of them committed suicide in prison
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