

SELF-POISONINGS BEFORE AND DURING THE INITIAL YEAR OF THE COVID-19 PANDEMIC IN NORTHERN POLAND

ŁUKASZ SEIN ANAND^{1,2} and JACEK SEIN ANAND^{1,2}

¹ Medical University of Gdansk, Gdańsk, Poland

Department of Clinical Toxicology

² Pomeranian Center of Toxicology, Gdańsk, Poland

Abstract

Objectives: The objectives of this study included evaluating and reporting on the initial impact of the COVID-19 pandemic and preventive measures in the form of a lockdown on self-poisoning tendencies in northern Poland. **Material and Methods:** The authors retrospectively analyzed medical records of all patients (N = 2990) admitted to the Pomeranian Center of Toxicology in 2018–2020. Of those, further analysis included 2140 patients who had been admitted because of a suicide attempt by self-poisoning. The authors also selected a group of 40 patients on the basis of a self-reported direct relationship of the suicide attempt with the COVID-19 pandemic or the imposed lockdown. **Results:** The rates of suicide attempts in toxicological patients over the years ranged 68.18–75.3%. The patients were predominantly female, with age between $M \pm SD$ 33.2 ± 16.9 and 36.0 ± 16.4. Each year, over 60% of patients were admitted during their first attempt and were treated psychiatrically prior to their attempt, with differences observed in the COVID-19-related group. The alcohol intoxication during the suicide attempt was confirmed in 37.40–43.53% of the patients, with a higher rate of 52.50% observed in the COVID-19-related group. The main self-reported reason for the suicide was a romantic relationship conflict or breakup, and a conflict and/or violence in the family. The most frequent agents were over-the-counter painkillers, antidepressants, antipsychotics and benzodiazepines or Z-drugs. **Conclusions:** During the initial year of the COVID-19 pandemic, there was a fall of suicide attempts by self-poisonings in northern Poland, significant only in the case of women. The self-reported reasons were similar in all years, with mainly minor changes. There was also an increase in attempts made using benzodiazepines or Z-drugs seen in 2020 and in the COVID-19-related group. The authors believe that there is a need for multi-center, large-scale prospective studies that would provide better insight into the pandemic-related suicidal trends. *Int J Occup Med Environ Health.* 2022;35(5)

Key words:

psychiatry, suicide attempts, toxicology, self-poisoning, COVID-19, pandemic

INTRODUCTION

On March 11, 2020, during the media briefing, the World Health Organization announced COVID-19, a disease caused by the SARS-CoV-2 virus, a global pandemic [1]. Since then, many countries have been implementing different preventive measures, such as social distancing, a mandatory use of personal protective equipment and severe restrictions in both services and traveling, in order to limit the spread of the disease [2].

The primary purpose of those actions was to “flatten the curve,” which should mitigate the overloading of the hospital capacity and decrease the overall mortality [3]. While those preventive measures were proven to be an effective way of lowering the mortality and medical costs of the pandemic [3–5], the same measures caused an economic crisis and may cause a suicide epidemic in the future [6,7].

The rise of suicidal tendencies after such events is not novel and was already seen after the 1918 Spanish flu

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Corresponding author: Łukasz Sein Anand, Medical University of Gdansk, Department of Clinical Toxicology, Kartuska 4/6, 80-104 Gdańsk, Poland (e-mail: lsanand@gumed.edu.pl).

and the 2003 SARS-CoV-1 [8,9]. There are various proposed mechanisms underlying such an increase in suicide attempts. Factors such as decreased social interactions [8,10], the rise of financial instability and the increased likelihood of employment loss during an economic crisis [11] are thought to be the major reasons for this effect. There is also a visible effect of the nationwide quarantine on anger, anxiety, and depression, which could also influence the suicidal incidence [12].

In this study, the authors provide a summary of non-fatal suicide attempts by self-poisoning in 2018–2020 in a northern region of Poland, and try to showcase the changes in trends seen during the initial year of the COVID-19 pandemic.

MATERIAL AND METHODS

The authors analyzed medical records of all patients ($N = 2990$) hospitalized in the Pomeranian Center of Toxicology (PCT) in January 1, 2018–December 31, 2020. Of those, they chose these patients ($N = 2140$, including 803 males) who had been admitted because of a suicide attempt by self-poisoning.

Data extracted from the medical history included general demographic data, a history of previous psychiatric treatment, agents used in the suicide attempts and self-reported reasons for self-poisoning. The authors then extracted and analyzed the records of all patients ($N = 40$, including 16 males) who explicitly connected their reasons for self-poisoning to the COVID-19 pandemic, regarding their job status, living environment and psychiatric diagnoses made by a psychiatric consultant in the ward.

Because of the complexity and delicacy of the suicidality subject, and in order to ensure full anonymity of the patients included into the study, each reason reported by the patient was attributed to one of 22 generalized groups of reasons. If anything could not fit into those or the patient was unable or did not want to specify the reason, it was recorded and labeled suitably.

The extracted information from medical records was then arranged in the form of 2 tables – the first one containing information about demographics and self-reported reasons for suicide attempts, and second one listing agents used in these attempts.

Because of the retrospective character and full anonymity of the patients, this study was exempt from the validation by the Bioethics Committee.

RESULTS

The general information and self-reported reasons for suicide attempts were presented in Table 1.

The rates of self-poisonings in toxicological patients over the years ranged from 68.2% (2019) to 75.3% (2020). The patients were predominantly female (1327 females vs. 803 males), with age of $M \pm SD$ 33.2 ± 16.9 in 2018, 33.6 ± 16 in 2019, and 36.0 ± 16.4 in 2020. In the COVID-19-related group, the mean age was higher, 42 ± 15.9 . Each year, >60% of patients were admitted during their first suicide attempt and were treated psychiatrically prior to their attempt. In contrast to that, in the COVID-19-related group, 77.5% of patients were admitted during their first attempt, and 50% were treated psychiatrically prior their attempt.

Alcohol intoxication during the attempt was confirmed in 37.4–43.5% of the patients, with a higher rate of 52.5% observed in the COVID-19-related group.

The main reason reported as a trigger for suicide was “a romantic relationship conflict or breakup, and a conflict and/or violence in the family.” In opposition to that, in the COVID-19-related group, the patients mostly reported “financial problems,” “job loss,” and “loneliness and social isolation.” The agents used in the attempts were summarized in Table 2.

The most often used agents included over-the-counter (OTC) painkillers, antidepressants, antipsychotics and benzodiazepines or Z-drugs. The use of OTC painkillers had been falling each year, while that of antipsychotics

Table 1. Demographic data and self-reported reasons for suicide attempts among patients hospitalized in 2018–2020 in the Pomeranian Center of Toxicology, Gdańsk, Poland

Variable	2018	2019	2020	2020 (COVID-19-related group)
Patients admitted during the year [n]	1045	1103	842	
Self-poisonings [n (%)]	754 (72.2)	752 (68.2)	634 (75.3)	40 (100)
Gender [n (%)]				
males	276 (36.6)	267 (35.5)	260 (41)	16 (40)
females	478 (63.4)	485 (64.5)	374 (59)	24 (60)
Age [years]				
M	33.2±16.9	33.6±16	36.0±16.4	42±15.9
min.–max	12–90	11–90	13–87	17–76
Alcohol intoxication during the attempt [n (%)]	282 (37.4)	282 (37.5)	276 (43.5)	21 (52.5)
First suicide attempt [n (%)]	473 (62.7)	496 (66)	414 (65.3)	31 (77.5)
Treated psychiatrically prior to the attempt [n (%)]	483 (64.1)	463 (61.7)	432 (68.1)	20 (50)
Self-reported reason or reasons for self-poisoning [n (%)]				
romantic relationship conflict or breakup	211 (28)	230 (30.6)	180 (28.4)	6 (15)
conflict and/or violence in the family	120 (15.9)	100 (13.3)	73 (11.5)	4 (10)
numerous reactive factors	47 (6.2)	34 (4.5)	33 (5.2)	0 (0)
financial problems	45 (6)	23 (3.1)	21 (3.3)	18 (45)
no perceptible reason	41 (5.4)	41 (5.5)	28 (4.4)	0 (0)
conflict with peers	36 (4.8)	26 (3.5)	14 (2.2)	0 (0)
impossible to specify the reason because of the patient's condition	35 (4.6)	28 (3.7)	22 (3.5)	0 (0)
unspecified mood worsening	33 (4.4)	15 (2)	25 (3.9)	0 (0)
inability to cope with one's own disease	32 (4.2)	24 (3.2)	29 (4.6)	3 (7.5)
refused to specify reasons	31 (4.1)	60 (8)	75 (11.8)	0 (0)
loss of will to live	31 (4.1)	39 (5.2)	35 (5.5)	0 (0)
existential problems	31 (4.1)	41 (5.5)	28 (4.4)	0 (0)
reaction to a specified stressful situation	29 (3.9)	20 (2.7)	17 (2.7)	0 (0)
inability to cope with an addiction	21 (2.8)	17 (2.3)	17 (2.7)	0 (0)
problems with school or university	21 (2.8)	19 (2.5)	4 (0.63)	2 (5)
death or a serious disease of an important person	21 (2.8)	24 (3.2)	17 (2.7)	2 (5)
loneliness and social isolation	17 (2.3)	5 (0.7)	11 (1.7)	7 (17.5)
attempt to influence one's family or friends	16 (2.1)	3 (0.4)	6 (1)	0 (0)
anxiety and restlessness	16 (2.1)	12 (1.6)	24 (3.8)	0 (0)
job-related stress	14 (1.9)	14 (1.9)	13 (2.1)	1 (2.5)
psychotic episode	13 (1.7)	19 (2.5)	17 (2.7)	0 (0)
job loss	11 (1.5)	3 (0.4)	14 (2.2)	10 (25)

Table 1. Demographic data and self-reported reasons for suicide attempts among patients hospitalized in 2018–2020 in the Pomeranian Center of Toxicology, Gdańsk, Poland – cont.

Variable	2018	2019	2020	2020 (COVID-19-related group)
Self-reported reason or reasons for self-poisoning [n (%)] – cont.				
problems with the law	11 (1.5)	12 (1.6)	5 (0.8)	0 (0)
other	5 (0.7)	3 (0.4)	1 (0.2)	0 (0)
fear of a COVID-19 infection or transmission	0 (0)	0 (0)	4 (0.6)	4 (10)

Table 2. Agents used in suicidal attempts by self-poisoning among patients hospitalized in 2018–2020 in the Pomeranian Center of Toxicology, Gdańsk, Poland

Group	Drugs [n (%)]			
	2018	2019	2020	COVID-19-related group
OTC painkillers	231 (30.6)	185 (24.6)	135 (21.3)	12 (30)
Antidepressants	201 (26.7)	187 (24.9)	177 (27.9)	11 (27.5)
Antipsychotics	192 (25.5)	202 (26.9)	184 (29)	6 (15)
Benzodiazepines or Z-Drugs	135 (17.9)	134 (17.8)	157 (24.8)	15 (37.5)
Opioids	55 (7.3)	43 (5.7)	41 (6.5)	4 (10)
Anticonvulsants	45 (6)	80 (10.6)	46 (7.3)	5 (12.5)
Hypotensives	41 (5.4)	36 (4.8)	42 (6.6)	7 (17.5)
Antihistamines	43 (5.7)	50 (6.6)	34 (5.4)	2 (5)
Mood Stabilizers	36 (4.8)	38 (5.1)	37 (5.8)	2 (5)
Stimulants	20 (2.7)	6 (0.8)	19 (3)	0 (0)
β-blocker	20 (2.7)	35 (4.7)	28 (4.4)	4 (10)
Antimicrobial	15 (2)	8 (1.1)	5 (0.8)	0 (0)
HRT	13 (1.7)	4 (0.5)	12 (1.9)	1 (2.5)
Miorelaxant	7 (0.9)	19 (2.5)	9 (1.4)	2 (5)
Hypoglycemic	2 (0.3)	13 (1.7)	19 (3)	1 (2.5)
Antacids	9 (1.2)	2 (0.3)	3 (0.5)	0 (0)
Barbiturates	2 (0.3)	3 (0.4)	2 (0.3)	0 (0)
Others	45 (6)	38 (5.1)	34 (5.4)	1 (2.5)
Unknown	1 (0.1)	6 (0.8)	1 (0.2)	0 (0)

HRT – hormone replacement therapy; OTC – over-the-counter.

had been rising. The exception of the trend was observed in the COVID-19-related group, where OTC painkillers were as frequently used as in 2018, and antipsychotics were less common. The use of benzodiazepines and

Z-drugs was constant in both 2018 and 2019, with a visible rise in 2020. The COVID-19-related group used similar agents, with hypotensives being used more often than antipsychotics.

More than half ($N = 22$, including 9 males) of the patients reporting reasons related to the COVID-19 were not actively employed at the time of their suicide attempts. More specifically, 8 of them lost their jobs during the pandemic, 6 did not specify the time of losing their jobs, and 8 were students. The structure of the patients' job status was presented in Table 3.

Of all 40 COVID-19-related patients, 35 (14 males) were psychiatrically diagnosed in the ward. The most common diagnoses made by a psychiatrist consultant were mental and behavioral disorders due to the abuse of alcohol ($N = 13$, 7 males), and a reaction to severe stress and adjustment disorders ($N = 13$, 4 males).

Five of the patients (2 males) discharged themselves on their own demand before the consultation and were transferred to the psychiatric ward for further examination.

Unfortunately, the authors could not obtain the corresponding results. The psychiatric diagnoses of the patients examined in the unit in question were summarized in Table 4.

DISCUSSION

Self-poisoning is the second most commonly used method of suicide attempts worldwide, with hanging being the leading method and cause of suicidal mortality [13]. While it is one of the most commonly used methods, most of the self-poisoning outcomes are non-fatal, and thus, paradoxically, it remains one of the "safest" ways of attempting suicide. Albeit, the first self-poisoning is regarded as a predictor of future suicide attempts and premature death. It should not be disregarded as it may precede other, more lethal forms of suicide attempts in the future [14].

In this study, the authors present the general characteristics of patients hospitalized because of acute self-poisoning in 2018–2020, and further analyze those patients who in 2020 had explicitly connected the COVID-19 pandemic to their attempt.

Table 3. The structure of the job status of the patients that related their suicide attempt to the COVID-19 pandemic, hospitalized in 2018–2020 in the Pomeranian Center of Toxicology, Gdańsk, Poland,

Occupation	Patients ($N = 40$) [n]
Jobless	14
Student	8
Entrepreneur	4
Pensioner	4
Ship's steward	2
Teacher	2
Builder	1
Nurse	1
Fish processing worker	1
Taxi driver	1
Maid in a nursing home	1
Unknown	1

The most notable finding is that the number of self-poisonings fell throughout 2020 (634 in 2020 vs. 752 in 2019 and 754 in 2018). While it may be influenced by the general reduction of admittances and transfers between the wards, as seen during the pandemic, it could also be related to the initial decline of suicide rates, which was also observed in different countries [15]. While this initial decline may seem optimistic, the observations such as those made in Japan highlight a possibility of an increase following the decline [16]. It should be taken into consideration, as increases in suicidal tendencies related to the pandemic were previously observed [8,9].

The vast majority of the patients involved in the analysis, regardless of the year, were female with varied ratios across the years, which was close to 2:3. The females were the predominant gender in both 2020 and the COVID-19-related group, which is consistent with Japanese findings of women being more susceptible to suicidal attempts during a pandemic [17]. However, it is worth mentioning that the ratio of men to women in 2020 was higher than in

Table 4. Psychiatric diagnoses made by a psychiatrist consultant of the patients that related their suicide attempt to the COVID-19 pandemic, hospitalized in 2018–2020 in the Pomeranian Center of Toxicology, Gdańsk, Poland

ICD-10 code	Code description	Consulted patients (N = 40) [n (%)]
F10	mental and behavioral disorders due to the abuse of alcohol	13 (37.2)
F43	reaction to severe stress, and adjustment disorders	13 (37.2)
Z03.2	observation for suspected mental and behavioral disorders	9 (25.7)
F61	mixed and other personality disorders	3 (8.6)
F41	other anxiety disorders	2 (5.7)
F33	recurrent depressive disorder	2 (5.7)
F32	depressive episode	2 (5.7)
F19	mental and behavioral disorders due to multiple drug use and the use of other psychoactive substances	2 (5.7)
Z63	other problems related to the primary support group, including family circumstances	1 (2.9)
F50	eating disorders	1 (2.9)
F44	dissociative disorders	1 (2.9)
F20	schizophrenia	1 (2.9)
F13	mental and behavioral disorders due to the use of sedatives or hypnotics	1 (2.9)
F06	other mental disorders due to brain damage and dysfunction, and due to physical disease	1 (2.9)
F34	persistent mood disorder	1 (2.9)

both 2018 and 2019. While the number of men attempting suicide in 2020 was only insignificantly lower (2.7% fewer cases) than in 2019, the number of women presented a significant drop (22.9% fewer cases) in 2019–2020.

The average age of the patients in each year was similar, corresponding to their fourth decade of life. The distribution was also even each year, with a group in their second decade of life being the most numerous, and each subsequent decade becoming smaller in numbers. In opposition to this was the COVID-19-related group, in which the average age corresponded to the fifth decade, and these patients also formed the most numerous subgroup in the cohort. It is worth noting that this subgroup is especially susceptible to the job loss and inability to find a new one. Many of these people are unable to work remotely, have no financial support from either parents or children, and are often unpreferable during recruitment because of their age.

This is important in the pandemic context, as the biggest group of patients in the COVID-19-related group were jobless people who had lost their job due to, or could not find a new one because of, the lockdown. It is worth mentioning that the second biggest group was composed of students. While a minority of them reported an economic reason, the majority pointed to loneliness, social isolation or struggling with remote studying at the university as their major causes.

The most often reported reasons for suicide attempts included a romantic relationship conflict or breakup, and a conflict and/or violence in the family. Opposed to that, in the COVID-19-related group, most patients reported financial instability and losing their job, both of which represent a socio-economic burden of the pandemic on mental health. While those 2 reasons were predominant in the COVID-19-related patients, it is worth noting that, in 2018 and 2019, the absolute numbers of patients re-

porting such reasons were higher than in 2020. There was also a high rate of the occurrence of loneliness and social isolation in the COVID-19-related group, albeit again, there were more patients reporting such reasons in 2018. Only 4 patients reported a fear of the COVID-19 infection or transmission, all of which were attempting suicide in the first 3 months of the pandemic. While some patients reported problems at school or university as their main reasons in 2020, there was a significant drop compared to 2018 and 2019.

The alcohol intoxication rate during attempts in 2020 was higher than in both 2018 and 2019. This is even more prominent considering the COVID-19-related group, where more than half of the patients were intoxicated with alcohol during their attempt, and nearly a third of the patients has been diagnosed with “mental and behavioral disorders due to the use of alcohol” (ICD-10 code F10).

While it is impossible to rule out the possibility of a suicide attempt being made without the influence of alcohol, the authors believe that it is an important observation that highlights the role of alcohol in suicidal trends. It is especially important considering the rise of alcohol consumption rates observed during the COVID-19 pandemic [18].

It is also noteworthy that the COVID-19-related patients were more often admitted after their first suicide attempt than the general population in each year. While this may be incidental, there is also a possibility of it being related to the influence of alcohol.

Nearly a third of the COVID-19-related patients were diagnosed with a “reaction to severe stress, and adjustment disorders” (ICD-10 code F43). Those patients reported no suicidal thoughts after hospitalization and, during the psychiatric exam, their attempt was identified as an impulsive reaction to prolonged and severe stress related to the pandemic. Nearly a fourth of the patients were diagnosed with “observation for suspected mental and be-

havioral disorders” (ICD-10 code Z03.2), which suggests an underlying psychiatric condition that needs further observation for identification.

While reviewing the data regarding psychiatric diagnoses of the patients, there is a need to consider the limitations, as only 1 psychiatrist had been making all the examinations and the time of observation was relatively short. The authors also could not get the patients’ previous psychiatric diagnoses, as most of them had no medical documentation available. Unfortunately, they could not compare the COVID-19-related group to the previous years, as there was a problem with incomplete data and access to psychiatric records of those patients.

The groups of agents most often used in self-poisonings were OTC painkillers (mainly paracetamol and ibuprofen), antidepressants (mainly sertraline and trazodone), antipsychotics (mainly chlorprothixene and levomepromazine) and benzodiazepines or Z-drugs (mainly zolpidem and alprazolam). It is worth mentioning that there was a rise in benzodiazepines and Z-drugs self-poisonings seen both during the whole 2020 and in the COVID-19-related group, which may suggest higher prescription rates for both anxiety and sleep disorders during the pandemic.

It is worth mentioning that in the COVID-19-related group, patients treated psychiatrically prior to the attempt used mainly psychiatric drugs, with benzodiazepines, antipsychotics and anticonvulsants being the foremost. Even though the patients untreated psychiatrically prior to the attempt mainly chose the OTC painkillers, the combined amount of antidepressants and benzodiazepines used in their attempts outweigh the former. While those drugs need a prescription, mainly from a psychiatrist, in order to be used, many of the patients were prescribed either group of drugs by a family doctor as a treatment for anxiety, depression or insomnia, with an emphasis on the last, as most of those were zolpidem or trazodone, both widely used in sleep disorders. A similar

observation, but to a lesser extent, was made in the general cohort, as both trazodone and zolpidem were often reported by patients to be used based on prescriptions from family doctors as a treatment for insomnia.

While reviewing the data, some major limitations of the study need to be taken into consideration.

First, while PCT is the only toxicology ward in northern Poland, and covers that entire region for admittances of acute poisoning cases, the group reporting COVID-19 as a reason for self-poisoning is limited in its size and is in no way representative. While comparing it to the whole 2020 and previous years, the small size itself may be the reason for observed differences.

Second, the retrospective model does not allow for further inquiry into either reasons or other details of the patient's history, limiting the authors to study medical records, which after longer periods may not contain every part that interests them from the point of view of this study.

Third, the study is based on information reported by the patients, which may be incomplete or false, as the patients themselves may either be unaware or may not remember the details of their history, or may intentionally refuse to specify, be selective or lie about their reasons, psychiatric history, previous attempts or agents used. The condition of the patients, e.g., being in coma or psychosis, also sometimes made it impossible to get their medical history. It is worth mentioning that the rates of refusals of cooperation were the highest in 2020, as compared to both 2018 and 2019.

For these reasons, the authors think that, in order to form some definite conclusions, there is a need for a large-scale, multi-center study of suicidal trends during and after the COVID-19 pandemic.

CONCLUSIONS

During the initial year of the COVID-19 pandemic, there was a fall in the suicide attempts by self-poisonings in northern Poland, significant only in the case of women.

The self-reported reasons for suicide in 2020 remained similar to those in 2018 and 2019, although shifts in some tendencies were observed. There was also an increase in attempts made using benzodiazepines or Z-drugs seen in 2020 and in the COVID-19-related group, as opposed to 2018 and 2019, which suggests a higher use of those drugs in the pandemic.

Because of some limitations of this study, the authors think that there is a need for multi-center, large-scale prospective studies that would provide better insight into pandemic-related suicidal trends, and might help devise a realistic plan to counteract the possible suicidal rise.

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