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# Burns as a consequence of suicidal acts – the problem of self-immolation

Oparzenie jako konsekwencja czynu suicydalnego – problem samopodpaleń

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Abstract Suicide attempts and suicides present a significant issue in modern societies. Self-immolation is a particularly stark and distressing method of taking one's life. The aim of this article is to present the cases of three patients who committed the act of self-immolation and to analyse their mental state. The research utilised the General Health Questionnaire (GHQ-28), Perceived Stress Scale (PSS-10), Hospital Anxiety and Depression Scale (HADS), along a purpose-built questionnaire. The findings showed that all three patients scored high on the GHQ-28. In terms of the PSS-10, it was noticed that two out of the three examined patients also achieved high scores. The obtained results indicate the high intensity of stress experienced by these patients. Additionally, results from the HADS showed that all patients scored above 10 on the HADS-A subscale.

Keywords: burn, mental state, self-immolation, suicide

StreszczeniePróby samobójcze i samobójstwa stanowią poważny problem współczesnych społeczeństw. Samopodpalenie jest szczególnym<br/>i wstrząsającym sposobem odebrania sobie życia. Celem pracy było przedstawienie trzech pacjentów, którzy dokonali<br/>samopodpalenia, oraz analiza ich stanu psychicznego. Zastosowano następujące metody badawcze: Kwestionariusz Ogólnego Stanu<br/>Zdrowia (General Health Questionnaire, GHQ-28), Skalę Odczuwanego Stresu (Perceived Stress Scale, PSS-10), Szpitalną Skalę<br/>Lęku i Depresji (Hospital Anxiety and Depression Scale, HADS), a także kwestionariusz skonstruowany na potrzeby badania.<br/>Okazało się, że wszyscy trzej pacjenci uzyskali wysoką wartość stenową w GHQ-28, dwóch badanych osiągnęło wysokie wyniki<br/>w PSS-10 (sten 10. jest interpretowany jako maksymalny), a wszyscy badani uzyskali wyniki >10 punktów w podskali HADS<br/>oceniającej objawy zaburzeń lękowych (HADS-A). Badani pacjenci po próbie samobójczej przez podpalenie oceniali swój ogólny<br/>stan psychiczny jako gorszy – u wszystkich występowały zaburzenia lękowe, a dwóch doświadczało wysokiego nasilenia stresu.

Słowa kluczowe: oparzenie, stan psychiczny, samopodpalenie, samobójstwo

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## INTRODUCTION

Such attempts and suicides present a significant issue in modern societies. According to the World Health Organization (World Health Organization, 2019), every 40 seconds one person dies by suicide. In Poland, in 2018, more people died by suicide than in car accidents. In 2019, the Polish Police Department recorded 11,961 suicide attempts, of which 5,255 resulted in death. Unfortunately, the number of suicide attempts remains high. In 2020, there were 12,013 cases, of which 5,165 were fatal (Policja, 2023). Motivations for suicide are extremely hard to verify. They are mostly linked to family conflicts or alcoholism, but also somatic and mental diseases (Grzywa et al., 2009). Several risk factors are significantly associated with suicide (Makara-Studzińska, 2001; Pużyński, 2000; Ringel, 1987), including:

- season of the year: spring and autumn;
- days of the week: Monday and Tuesday;
- age >45 years;
- male sex;
- divorce and widowhood;
- loneliness;
- financial difficulties;
- job loss;
- suicide among close acquaintances;
- chronic somatic diseases;
- presuicidal syndrome;
- severe depression with a sense of guilt and low self-confidence, anxiety, insomnia, and suicidal thoughts;
- alcohol abuse;
- schizophrenia, especially with commanding auditory hallucinations;
- personality disorders.

Suicide itself is not classified as a disease; however, it is often associated with mental disorders. Research shows that there are more suicides among individuals suffering from mental disorders than in the general population. This applies particularly to those with affective disorders or psychosis (schizophrenia) and to alcohol and psychoactive drug addicts. Suicides are also connected with personality disorders (especially dissocial personality) (Hor and Taylor, 2010; Kopera et al., 2018; Palmer et al., 2005; Pawlak et al., 2013; Sawicka et al., 2013; Schneider, 2009).

The aim of this article is to present the cases of three patients who committed self-immolation, along with an analysis of their mental state. The patients were treated in the East Centre of Burns Treatment and Reconstructive Surgery in Łęczna.

## PATIENT INFORMATION

## Patient No. 1

A 52-year-old married man with two children, basic vocational education, professionally active, living in the countryside. He had not been treated psychiatrically before. He was initially admitted to the intensive care unit for severely burned patients and intubated due to respiratory failure caused by burns to the upper respiratory tract. The injuries were the result of a gas explosion. Burns covered 13% of the patient's body surface, with his head and two legs affected by second- and third-degree burns. After his general condition improved, the patient was transferred to the surgical department for further treatment.

## Patient No. 2

A 49-year-old married man with two children, basic education, professionally active, living in the countryside. He had not received psychiatric treatment before. Initially, he was admitted to the intensive care unit with suspected burns to the upper respiratory tract. After this was ruled out, he was transferred to the burn unit for further treatment. The act of self-immolation took place outside a courthouse. The patient doused himself with denatured alcohol and set himself on fire. Nine percent of the patient's body was covered with third-degree burns, affecting the chest and both arms.

#### Patient No. 3

A 36-year-old single man with primary education, unemployed, living in a district town. He had not been treated psychiatrically before. He was admitted to the burn unit for further treatment. Thirty eight percent of the patient's body surface was affected by burns. He suffered second and thirddegree burns to his upper limbs and head. The patient underwent two psychiatric consultations, during which he reported sleep disorders, nightmares, and a depressed mood. Regarding stressful situations before hospitalisation, the patient mentioned personal difficulties such as problems with his former partner.

#### **CLINICAL FINDINGS**

The results of the conducted psychological tests (General Health Questionnaire, GHQ-28; Perceived Stress Scale, PSS-10; and Hospital Scale of Anxiety and Depression, HADS) in the studied patients are presented in Tab. 1.

Analysis of the results from the GHQ-28 revealed that all three patients obtained high scores (sten 7–10), indicating a deterioration of their mental state. Patients 2 and 3 both

Variable	Patient 1	Patient 2	Patient 3
GHQ-28	25	57	73
GHQ-28 STENS	7	10	10
PSS-10	14	31	36
PSS-10 STENS	5	10	10
HADS-A	10	11	14
HADS-D	2	8	13

*Tab. 1. Comparison of examination results in patients after selfimmolation* 

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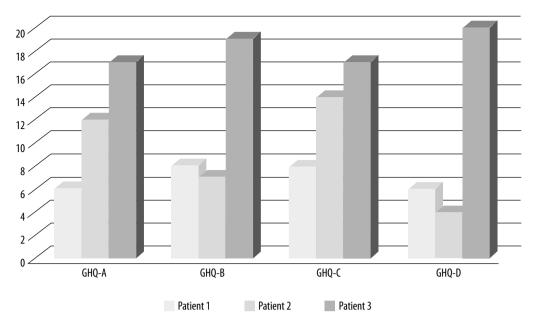


Fig. 1. The examined patients' results on the individual GHQ-28 subscales

obtained a sten score of 10, representing the maximum possible score.

In terms of the PSS-10, two of the three examined patients achieved high scores, with sten 10 interpreted as the maximum level of stress. These results prove the high intensity of stress experienced by these individuals. Patient 1 presented an average result, suggesting a moderate level of stress. The results obtained in the HADS showed that all patients scored above 10 points on the HADS-A subscale, which indicates the presence of anxiety disorders. The HADS-D subscale result of Patient 2 indicated a borderline state between health and depression, whereas the score of Patient 3 pointed to the possibility of depressive disorders. The result obtained by Patient 1 (a score of 2 points) did not indicate depression. The GHQ-28 is a research tool consisting of four subscales: GHQ-A - somatic symptoms, GHQ-B - anxiety and insomnia, GHQ-C - disorders of everyday functioning, and GHQ-D - depressive symptoms. The results on the individual subscales are presented in Fig. 1.

These findings draw attention to the fact that Patient 3 achieved higher scores than the remaining subjects on all four subscales. Therefore, the deterioration in this patient's mental state was associated not only with the appearance of somatic symptoms, anxiety, and sleep disturbances, but also with impaired daily functioning and the presence of depressive symptoms. Patient 1 presented the lowest scores in comparison among the group on two subscales (GHQ-A and GHQ-C), whereas Patient 2 scored lowest on the subscales GHQ-B and GHQ-D.

The observed differences are not statistically significant due to the insufficient number of subjects who committed self-immolation. However, these findings offer noteworthy insights into this specific group of patients and may serve as the starting point for further research.

#### TIMELINE

The observations were conducted during the hospitalisation in the burn unit.

- Case 1 The patient was treated in East Centre of Burns Treatment and Reconstructive Surgery for 21 days.
- Case 2 The patient was treated in East Centre of Burns Treatment and Reconstructive Surgery for 16 days.
- Case 3 The patient was treated in East Centre of Burns Treatment and Reconstructive Surgery for 47 days.

## DIAGNOSTIC ASSESSMENT

The following research methods were used: GHQ-28, PSS-10, and HADS, as well as a questionnaire designed specifically for the needs of this study. The assessment was conducted during the final week of the patients' hospitalisation. The overall condition (somatic and mental) of the patients has to be good enough to take psychological tests and complete questionnaires, which is why these tasks were conducted in the last week of hospitalisation.

Ethical statement: The principles outlined in the Declaration of Helsinki were respected. It was a retrospective study. The study protocol and patient participation were approved by the Ethics Committee of the Medical Chamber in Lublin (reference number: 211/2018KB/VII).

#### THERAPEUTHIC INTERVENTION

#### Case 1

During hospitalisation, the patient required surgical treatment – necrectomy and skin grafts. He received three psychiatric consultations in the ward. The initial psychiatric **351**  evaluation of the patient after his suicide attempt, his history of alcohol addiction (interview with the family), and the emergence of symptoms of anxiety and depression were the reasons for the consultations. Due to symptoms of anxiety and depression, the patient was prescribed 100 mg of sertraline daily.

#### Case 2

The patient required surgery, with surgical wound dressing, necrectomy, and skin grafting. During hospitalisation, the patient was consulted twice for a preliminary assessment after the suicide attempt, as well as for alcohol addiction (interview with the family) and anxiety symptoms. He did not consent to the administration of sedatives. The patient mentioned financial difficulties and troubles with the law as stressors preceding hospitalisation.

#### Case 3

Necrectomy and skin grafting were performed. Trazodone (150 mg/day), as well as diazepam (10 mg/day) were included in the treatment regimen. During hospitalisation, surgical treatment in the form of a necrectomy was administered.

#### FOLLOW-UP AND OUTCOMES

#### Case 1

The patient mentioned family issues with his spouse and children as key stressors influencing his decision to set himself on fire. Upon completion of physical treatment, the patient was transferred to the psychiatric ward for further observation following the suicide attempt.

#### Case 2

After the end of treatment in the burn unit, the patient was transferred to a mental health facility for further observation and treatment.

#### Case 3

Following hospital treatment in the burn unit, the patient was transferred to a psychiatric hospital for further observation and treatment related to the suicide attempt.

## DISCUSSION

Suicide attempts also affect individuals with somatic diseases. Chronic conditions, unfavourable prognosis, long-term pain or disabilities associated with illness may affect the likelihood of suicidal tendencies. A higher risk of suicide occurs in epilepsy, multiple sclerosis, spinal injuries, AIDS, cancer, peptic ulcer, systemic lupus, and end-stage renal failure requiring dialysis, among others. The risk increases dramatically when a somatic disease coexists with mental disorders (Kutcher and Chehil, 2009). Suicidal behaviours are not a homogenous group. They represent a phenomenon that varies in aetiology. There are a number of suicide classifications based on causal criteria. One of the first divisions was proposed by Emil Durkheim, a pioneer in suicide research, in the early 1950s (Durkheim, 1951).

Currently, the division suggested by the Innopolis Foundation is applied (Ruiz-Robledillo et al., 2019). Key aspects highlighted include:

- respite suicides (I cannot stand it any longer);
- decompressive suicides (I don't want to be a problem for my family);
- altruistic suicides (I'm dying, but I want you to help my sister);
- destabilisation suicides (I can't stand this separation);
- fatalistic suicides (this world makes no sense, global warming, autocracies, wars).

Suicidal acts can be carried out in various ways. In Poland, from 2000 to 2013, suicides by hanging were the most common, accounting for 73.7% of all suicides. Other frequent causes of death included jumping (7.2%), ingesting sleeping pills (3.6%), and self-mutilation (2%). Other methods include throwing oneself under a vehicle and drowning. Gas or noxious substance poisonings were the least common (Putowski et al., 2015). In police statistics for 2017–2020, hanging remained the most prevalent method, however, the use of drugs, gas, and toxic substances increased (Policja, 2023).

Self-immolation is a specific and alarming method of taking one's life. It involves severe pain for the victim, and if the attempt is unsuccessful, it may lead to a permanent disability. According to data from the Police Department, there were 214 cases of self-immolation in Poland between 2017 and 2020, most of which (74) occurred in 2020 (Policja, 2023). Global research brings attention to differences in the epidemiology of self-immolation based on economic or cultural status. Self-immolation accounts for approximately 1% of suicides in highly developed countries, whereas in some areas of developing countries, it may reach 40% (Ahmadi, 2007; Ahmadi et al., 2009a). In developed nations, men are the primary victims of self-immolation, whereas in developing countries it is more commonly seen among women. Moreover, in countries with higher income levels, self-immolation is more often connected with the presence of mental disorders and psychoactive substance addiction (Poeschla et al., 2011). Other studies also confirm the presence of mental disorders (95% of the tested cases), but at the same time draw attention to the aspect of loneliness (95% of the tested cases) (Parvareh et al., 2018).

Family problems and misunderstandings are also among the most common risk factors for self-immolation (Poeschla et al., 2011; Saadati et al., 2019). Self-immolation may also be influenced by cultural aspects (Romm et al., 2008). An example is India, where Sati was one of the most violent

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practices, which accompanied the Indian funeral ritual. The term "sati" referred to widows who willingly ended their lives on their husbands' funeral pyres (Stawarz, 2017). Death by flames may also carry symbolic or political significance (Romm et al., 2008). In contrast to most suicides, where people take their lives alone and without witnesses, self-immolations are often performed in public places. The locations chosen are usually connected with the motives of the person committing the act. Through their actions, individuals seek to highlight a specific issue and the worldview of the society with which they identify.

In Poland, one of the most infamous cases was the self-immolation of Ryszard Siwiec on 8 September 1968, at the 10th Anniversary Stadium, during the National Harvest Feast. Ryszard Siwiec, a philosopher and former Home Army soldier, self-immolated to protest the military intervention of the Warsaw Pact Army in Czechoslovakia. The party leadership witnessed the incident, as did the invited diplomatic representatives and approximately 100,000 attendees. During the incident, Siwiec shouted out the words of his protest and did not allow himself to be extinguished. He died several days later in Praga Hospital (Dzieje.pl, 2018). Self-immolation as a suicidal act always evokes strong emotions due to its extreme nature.

A suicidal act is an extremely complex phenomenon, very delicate in nature, and may be a manifestation of helplessness and submission, but also a fight for freedom and disagreement. Rather than being a singular event, suicide is a multifaceted process shaped by various factors. Biological, psychological, and social aspects must all be taken into account. Moreover, suicide can be a rapid act, or a gradual, planned action (Lofchy et al., 2017). Regardless, it always leaves a number of questions and doubts about the motive, but also the mental state of the individual involved. It is essential to consider the so-called pre-suicidal syndrome, which includes, among others, pessimism, negative assessment of experienced events, a feeling of being in a no-wayout situation, escape tendencies, withdrawal into oneself, or the intensification of tension and aggressive tendencies (Anders, 2017; Juczyński, 1998). Many researchers point to the lack of a single, unambiguous, and universally accepted definition of suicide, which complicates the assessment of whether an individual truly intended to take their own life (Turecki and Brent, 2016).

Furthermore, research shows that most suicide victims suffer from various types of mental health disorders. Therefore, suicide risk in depression is associated with other traits of the depressive syndrome such as pessimism, a sense of hopelessness, a high level of anxiety, and a negative outlook on the future. In psychoses, patients experience symptoms such as hallucinations, delusions, and mood swings, which increase the risk of unnatural death (Golec and Kokoszka, 2002; Harmer et al., 2023). In the context of suicidal behaviours, personality disorders may also be relevant, especially those with deeply ingrained patterns of behaviour. Characterised by rigid reactions that are not adapted

to the situation, they may even increase the risk of suicide by up to seven times. An emotionally unstable personality, particularly of the borderline type, is linked to self-destructive tendencies, where there is a disturbed self-image, instability in relationships, and a tendency to self-harm (Aleksandrowicz, 2019; Turecki and Brent, 2016; Weber et al., 2017). In the present study, none of the subjects had received prior psychiatric treatment; however, two out of the three patients who had attempted self-immolation were addicted to alcohol. All types of dependencies, including those related to alcohol and other psychoactive substances, might result in a state of depression, can have a destructive effect on interpersonal relationships, and are associated with the risk of suicide. Alcohol and psychoactive substances alter behaviour, which results in the emergence of a tendency to impulsive reactions (Accident or suicide?, 1977).

Another aspect that may motivate suicide attempts involves events referred to as "interpersonal problems". These include various difficulties in social relationships, problems with a loved one, and the threat of separation or loss (Turecki and Brent, 2016). Furthermore, the fast pace of life and numerous work-related stressors turn out to be significant risk factors as well (Harmer et al., 2023). This seems to be particularly important considering that all three surveyed individuals confirmed previous issues in relations with their family or partners, as well as financial difficulties or problems with the law. Psychological tests showed that the general mental condition of these patients had deteriorated.

Moreover, they confirmed elevated stress levels. During their stay in the burn unit, all patients required psychiatric consultations and pharmacological intervention due to their anxiety and mood swings. These symptoms could be a consequence of having experienced difficult situations, but also a reaction to the hospital stay itself and of coping with pain. All three patients were eventually transferred to a psychiatric hospital for further care.

A follow-up assessment of their mental state, for example six months post-hospitalisation, could provide valuable insights. Individuals who commit self-immolation are brought to wards dealing with the treatment of burns several times a year and always raise a lot of questions among the staff precisely because of the extreme cruelty they inflict on themselves. Unfortunately, some of these patients die as a result of extensive injuries and burns to the respiratory tract. Those who survive must face long-term, multi-stage treatment, but also complications such as scarring. This can additionally affect their mental state, experienced emotions, and outlook on the future.

This study aims to shed more light on the complex issue of self-immolation, which lies at the intersection of several disciplines. The available literature draws attention mainly to the epidemiology of self-immolations, whereas only a limited number of publications describe clinical cases and include an assessment of the patients' mental state, based solely on the DSM classification (Pilowsky et al., 2011). 353 This study is the beginning of a more extensive exploration of individuals who resort to self-immolation. Due to the fact that the problem of self-immolation remains relatively unstudied in Poland, plans have been made to continue the research and analyse the results on a larger group. Observation of these patients in the context of an additional stressor – the coronavirus pandemic, could yield further interesting findings, as recent research has shown a rise in self-immolation cases during this period (Mahla et al., 1992).

The question of whether acts of self-immolation be prevented remains open. The literature on the issue of self-immolation is sparse. Existing publications address the limitation of resources or the nature of educational programmes that present the stories of individuals who have been affected by this form of suicide (Ahmadi and Yttestad, 2008; Jackson et al., 2022; Karim et al., 2015). However, a thorough understanding of the self-immolation - its causes and consequences - is still needed to apply effective prevention strategies. Otherwise, sufficient knowledge about the problem is a suicidal act, the spread of effects that lead to it may also occur to a complete look and prevention of self-immolation (Ahmadi et al., 2009b). Suicide is preventable, but preventing the threat requires comprehensive, multi-level control at government and non-government levels. University notification, community outreach, selective strategies targeted at at-risk groups, and testimonial approaches for those already vulnerable to attacks or who have been previously attacked are important. The entire health care system should be an essential element of each programme (Campbell and Hale, 2021). Mental disorders, including depression and alcohol use, have contributed to many suicides around the world (Campbell and Hale, 2021). High-quality care should be provided to those seeking help, including during followup procedures. Training related to suicide should be available not only to the medical sector, but also to teachers, fire brigades, and journalists. It is also worth sharing information about communities that can provide support, participants in post-hospital care, combat stigma, and address violations affecting those grieving the suicide of a loved one. There is a need to store programme data, adapted to the specific context of a given country, so that further research can build upon it to report on the problem of suicide in Poland.

#### CONCLUSIONS

Mental state deterioration was observed in all cases of the examined patients who had previously set themselves on fire. All subjects experienced anxiety disorders, and two of them exhibited high levels of stress.

#### **Conflict of interest**

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The authors do not report any financial or personal connections with other persons or organisations which might negatively affect the content of this publication and/or claim authorship rights to this publication.

#### Ethical approval and consent to participate

The study protocol and individuals' participation were approved by the Ethics Committee of the Medical Chamber in Lublin (reference number: 211/2018KB/VII). Written informed consent was obtained from the patients for publication of this case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

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#### **Consent for publication**

Written informed consent was obtained from the patients for publication of this case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

#### Author contribution

Original concept of study: MS, MMS. Collection, recording and/or compilation of data; writing of manuscript: MS. Analysis and interpretation of data: AS. Critical review of manuscript: MMS, JS, AS. Final approval of manuscript: MMS, JS.

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