

# Monitoring of Intentional Self-Harm as a Tool to Detect Mental Disorders and Improve Access to Psychiatric Care

Мониторинг преднамеренных самоповреждений как инструмент выявления психических расстройств и повышения доступности психиатрической помощи

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Original research

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## ABSTRACT

**INTRODUCTION:** This article discusses the early diagnosis of mental disorders in connection with non-fatal intentional self-harm and suicide prevention.

**OBJECTIVE:** To substantiate the efficacy of an intentional self-harm monitoring system as a tool for detecting mental disorders and improving access to psychiatric care for people who have attempted suicide.

**METHODS:** A cohort study was performed using materials obtained after the introduction of an intentional self-harm monitoring system and its implementation in the Stavropol Territory. We studied 2738 cases of intentional self-harm reported between 2016 and 2021. Study data were grouped using dual criteria based on a history of psychiatric follow-up, a history of psychiatric counseling, first/recurrent intentional self-harm, psychiatric examination after intentional self-harm, and a diagnosis of a mental disorder on psychiatric examination.

**RESULTS:** The official suicide attempt registration system was found to identify less than 15% of attempts. The primary incidence of mental disorders in suicide attempters was 61.4 times higher than the primary incidence of mental disorders in the general population of the Stavropol Territory. A supposedly healthy suicide attempter was 169 times more likely to be diagnosed with a mental disorder than a member of the general population. Primary diagnoses of mental disorders were 14.8 times more common in multiple suicide attempters without a diagnosis of a mental disorder at the time of the last attempt than in first-time attempters. Access to psychiatric care increases the mental disorder diagnosis rate in general and in suicide attempters in particular.

**CONCLUSION:** Monitoring of intentional self-harm is instrumental in the early diagnosis of mental disorders, suicide prevention, and improving access to psychiatric care for suicide attempters, also having an enormous research potential.

## АННОТАЦИЯ

**ВВЕДЕНИЕ:** В настоящей статье проблема ранней диагностики психических расстройств рассматривается в связи с фактом совершения нелетального преднамеренного самоповреждения и предупреждением суицида.

**ЦЕЛЬ:** обосновать эффективность использования системы мониторинга преднамеренных самоповреждений как инструмента выявления психических расстройств и повышения доступности психиатрической помощи для лиц, совершивших суицидальную попытку.

**МЕТОДЫ:** Когортное исследование выполнено с использованием материалов, полученных от внедрения системы мониторинга преднамеренных самоповреждений и реализации её в Ставропольском крае. Изучено 2738 случаев преднамеренных самоповреждений, зарегистрированные в период с 2016 по 2021 годы. Группировка исследуемых данных выполнялась по дуальным признакам: установление диспансерного наблюдения врачом-психиатром в анамнезе, обращение за лечебно-консультативной помощью к врачу-психиатру в анамнезе, первичность/повторность текущего преднамеренного самоповреждения, проведение психиатрического освидетельствования после совершения преднамеренного самоповреждения, установление при психиатрическом освидетельствовании диагноза психического расстройства.

**РЕЗУЛЬТАТЫ:** Установлено, что официальный порядок учета суицидальных попыток выявляет менее 15% попыток. Первичная заболеваемость психическими расстройствами суицидентов в 61,4 раза выше, чем первичная заболеваемость психическими расстройствами населения Ставропольского края. Совершённая условно здоровым лицом попытка суицида повышает вероятность установления у этого лица диагноза психического расстройства в 169 раз по сравнению с общей популяцией. Первичная диагностика психических расстройств при повторном совершении попытки суицида лицом, не имеющим диагноза психического расстройства на момент попытки, оказалось в 14,8 раз выше, чем при первой попытке. Доступность психиатрической помощи повышает выявляемость психических расстройств в целом, а также среди лиц, совершивших попытку суицида, в частности.

**ЗАКЛЮЧЕНИЕ:** Мониторинг преднамеренных самоповреждений является инструментом ранней диагностики психических расстройств, профилактики суицидов, повышения доступности психиатрической помощи лицам, совершившим суицидальную попытку, имеет огромный исследовательский потенциал.

**Keywords:** *prevention; suicide; monitoring; self-harm; psychiatric disorders*

**Ключевые слова:** *профилактика; суицид; мониторинг; самоповреждение; психические расстройства*

## INTRODUCTION

Early diagnosis of psychiatric disorders is one of the tasks of the departmental targeted program "Improving the provision of medical care to drug-dependent persons and patients with psychiatric and behavioral disorders"<sup>1</sup>. The introduction of innovative medical technologies, including an early diagnosis system, is one of the strategic tasks

in the area of "health care"<sup>2</sup>, which were established for the achievement of the national goal of preserving the population, and people's health and well-being<sup>3</sup>.

This article discusses the early diagnosis of mental disorders in connection with non-fatal intentional self-harm and suicide prevention. The term "intentional self-harm"

<sup>1</sup> Order No. 232 "On approval of the departmental targeted program 'Improving the provision of medical care to drug-dependent persons and patients with psychiatric and behavioral disorders'" of the Ministry of Health of the Russian Federation, dated March 24, 2020

<sup>2</sup> Decree No. 204 "On the national goals and strategic objectives of the development of the Russian Federation for the period until 2024" of the President of the Russian Federation, dated May 07, 2018 (as amended on July 21, 2020)

<sup>3</sup> Decree No. 474 "On the national goals of the development of the Russian Federation for the period until 2030" of the President of the Russian Federation, dated July 21, 2020

was regarded by the authors to be the most acceptable, since it is used to refer to a suicide attempt in the ICD-10<sup>4</sup>. Scientific publications use the following synonyms of the term “non-fatal intentional self-harm”: parasuicide, non-lethal intentional self-harm, suicide attempt.

Early diagnosis is inextricably linked to and interdependent with access to medical care. It is generally accepted that a healthcare professional who becomes aware of a patient with suicidal ideation should inform the competent authorized entities so they can intervene. Failure to act or inform can lead to criminal and civil consequences. In some countries, the follow-up to suicide attempters involves mandatory regular monitoring and, if necessary, psychiatric treatment for two years after the suicide attempt [1].

This practice is uncommon in Russia, although the legal regulation in the healthcare sector provides for a similar approach. In this regard, it is important to study the impact of systematic work to detect intentional self-harm (including suicide attempts) on the access to psychiatric care for people with risk factors associated with repeated attempts at suicide.

### **Brief overview of studies**

Historically, the study of suicidal behavior was based on a search for a mental disorder in suicide attempters, as suicide was considered a manifestation of a psychiatric issue [2]. Subsequently, the results of social and experimental psychological research supplemented the ideas existing at the time, revealing new mechanisms of suicidal behavior and making the issue under study multidisciplinary [3]. Currently, there is a wide variety of psychological and psychotherapeutic approaches to suicidal behavior [4]. Mental health studies in suicide attempters followed two main approaches to evaluating self-harm: one based on medical history, the other on follow-up. The aim of follow-up studies is to study the prevalence of mental disorders in suicide attempters.

According to V.A. Makasheva (2016), approximately 90% of self-harmers have psychiatric disorders [5]. D.N. Kisilev found (2019) that all suicide attempters had abnormal mental health [6]. At the same time, historical data used by the author revealed that only 22.3% of suicide attempters were on psychiatric follow-up at the

time they attempted a suicidal act, whilst another 20.7% had previously received psychiatric counseling. Thus, 57% of suicide attempters had never consulted a psychiatrist before attempting suicide.

According to E.B. Lyubov et al. (2018), 55.5% of men and 60% of women, i.e., more than half, received a neuropsychiatric dispensary follow-up at the time of self-harm [7]. According to other domestic sources, up to 85% of suicide attempters had not previously consulted a psychiatrist [8]. In his work, as published in 2008, B.S. Polozhiy reported that 51% of suicide attempters had never consulted a psychiatrist; 49% had previously been diagnosed with a mental disorder, including 20% who had had consultations and medical assistance and 29% who had received a follow-up [9]. Comparable results have also been reported by foreign researchers on the issue of suicides in Russia: more than one-third of Russian suicide attempters had consulted a psychiatrist in the year before the suicide attempt [10].

According to the 2017 study results reported by V.V. Vasilyev, suicides committed by patients with a diagnosed mental disorder over a period of 11 years had the following pattern: patients with organic mental disorders accounted for 45%; patients with schizophrenia, schizotypal, and delusional disorders, 30%; patients with affective disorders, 5.8%; patients with neuroses, somatic symptom disorder and stress-related disorders, 7.5%; patients with mature personality disorder, 3.3%; and patients with mental retardation, 8.4% [11]. It has been shown that 20% to 60% of self-harmers will make a second suicide attempt over the following three years. Half of all intentional self-harmers continue their attempts. The ratio of parasuicides to completed suicides is 10–20:1 [7].

### **Study rationale**

The interest of researchers in the mental health of suicide attempters continues unabated. This study is essential due to the need to develop effective suicide prevention strategies. Such strategies should take into account the mental health of suicide attempters. In addition to confirming a number of conclusions from previous studies, this research gives investigators a new reliable tool for conducting similar studies, namely an intentional self-harm monitoring system. The systematic and structured registration of self-harm has enormous research potential. However, self-harm monitoring

<sup>4</sup> International Statistical Classification of Diseases and Related Health Problems, 10th revision, adopted by the 43rd World Health Assembly.

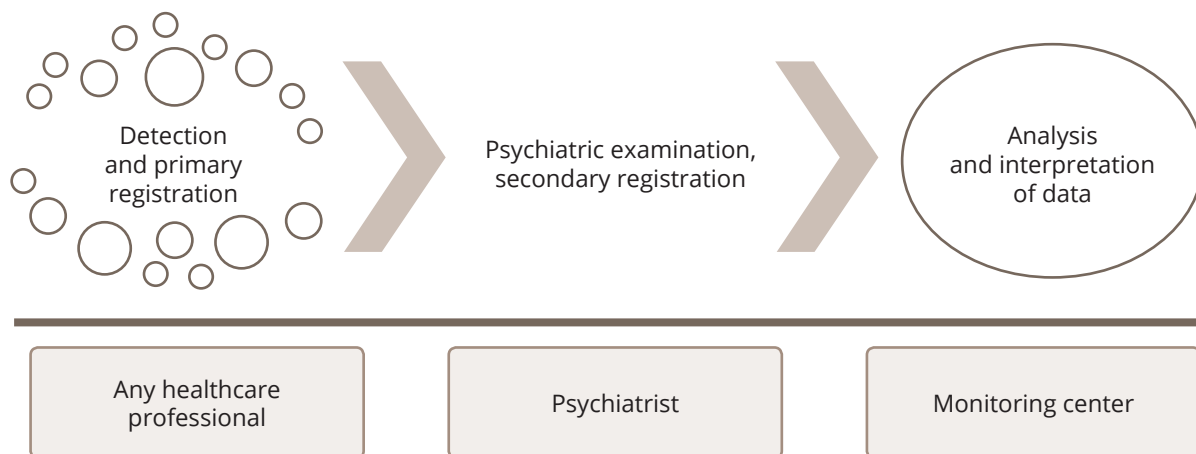


Figure 1. The intentional self-harm monitoring process enacted in the Stavropol Territory.

is even more important in terms of improving access to specialized (psychiatric) care, which every suicide attempter certainly needs, albeit to different extents and in different forms.

*Study objective:* to demonstrate the efficacy of an intentional self-harm monitoring system as a tool for identifying mental disorders and groups at risk of repeated self-harm, and to improve access to psychiatric care for suicide attempters.

### Study hypothesis

Multiple suicide attempts indicate an increased likelihood of a mental disorder. Self-harmers are more likely not to seek medical attention from a psychiatrist on their own. Active identification of such persons using a monitoring system and referral to a psychiatrist provide more opportunities for early diagnosis of mental disorders and improve the population's general access to psychiatric care.

## MATERIALS

### Study design

The study was carried out at the State Budgetary Healthcare Institution of the Stavropol Territory "Stavropol Territorial Clinical Specialized Psychiatric Hospital No. 1" (SBHI ST "STCSPH No. 1") using materials obtained from the implementation of an intentional self-harm monitoring system in the Stavropol Territory<sup>5</sup>.

<sup>5</sup> Order 01-05/1694 "On some measures to improve the regional suicide prevention service in the Stavropol Territory" of the Ministry of Health of the Stavropol Territory, dated December 24, 2020.

The public suicidal activity monitoring system of the Stavropol Territory includes the identification, registration, reporting of information about identified acts of intentional self-harm, as well as the analysis and interpretation of the data so obtained. Participants (entities) of the medical system for self-harm monitoring in the Stavropol Territory include healthcare organizations that detect acts of self-harm; healthcare organizations providing psychiatric care; and healthcare organizations acting as self-harm monitoring centers (Figure 1).

The main objects of public suicidal activity monitoring in the Stavropol Territory are persons who seek medical assistance and present with signs of intentional self-harm, regardless of the presence and severity of suicidal ideation. Intentionality is established on the basis of signs including consciousness, independence, purposefulness of the self-harm act, and implies a consciously targeted goal.

The cohort of this study consists of cases of intentional self-harm registered during the monitoring in the Stavropol Territory between 2016 and 2021.

The factors assessed in this study included single/multiple intentional self-harm, a diagnosis of a mental disorder at the time of self-harm (retrospective assessment), psychiatric examination of the suicide attempter, and a diagnosis of a mental disorder made on psychiatric examination (prospective assessments).

### Study methods

Intentional self-harm monitoring involves the recording of a set of structured variables characterizing patients who meet the study's eligibility criteria and forwarding this information to a self-harm monitoring center.

The list of registered main and additional self-harm characteristics includes 43 items<sup>6</sup>, of which the following data were analyzed within the framework of this study:

- A. Basic self-harm data
  1. Date of self-harm
  2. First/repeated act of self-harm based on subjective history
- B. Information from the psychiatric medical record maintained at the place of residence
  3. Psychiatrist follow-up (including a diagnosis)
  4. Counseling and medical assistance (including a diagnosis)
  5. First/repeated self-harm according to the information in the medical record
- C. Information obtained during the psychiatric examination
  6. First/repeated self-harm
  7. The psychiatric diagnosis made, if any.

The nature of the act of self-harm (first/repeated) is recorded at all stages of monitoring in order to obtain the most reliable information from the patients themselves, their relatives, and the available medical documentation. In the final determination of the nature of the attempt at self-harm (first/repeated), priority is given to any (at least a single) mention that the patient has already inflicted intentional self-harm, regardless of the source of this information.

Health records (if any) maintained at the healthcare institution providing psychiatric care in the territory of the patient's residence were used as a source of information about whether the patient sought psychiatric help during the time preceding the suicide attempt. If the patient had sought medical help from a psychiatrist, the type of psychiatric care that had been or was being provided and the established psychiatric diagnosis, as well as any information about previous suicide attempts found in the health records, were taken into consideration.

The mental state of suicide attempters was also assessed after the attempt. Psychiatric examination served to clarify a number of parameters recorded at the previous stage and record additional data to be used for a more detailed analysis of the suicidal behavior in the

population. The post-attempt psychiatric diagnosis factor was used in this study.

All cases of intentional self-harm registered during monitoring in the Stavropol Territory between 2016 and 2021 were analyzed and broken down into the following categories:

1. General sample: all registered intentional acts of self-harm during the period 2016–2021.
2. Cases of intentional self-harm in patients who had already sought psychiatric help and had an established diagnosis of a mental disorder at the time of the self-harm (Group 1, diagnosed suicide attempters), including:
  - 2.1. Cases of *first-time* intentional self-harm in patients who had already sought psychiatric help and had an established diagnosis of a mental disorder at the time of the self-harm (Subgroup 1.1, diagnosed *first-time* suicide attempters).
  - 2.2. Cases of *recurrent* intentional self-harm in patients who had already sought psychiatric help and had an established diagnosis of a mental disorder at the time of the self-harm (Subgroup 1.2, diagnosed *multiple* suicide attempters).
3. Cases of intentional self-harm in patients who had not sought psychiatric help (from state-run healthcare facilities) and who had no established diagnosis of a mental disorder at the time of the self-harm but who had been examined by a psychiatrist after the attempt (Group 2, supposedly healthy suicide attempters), including:
  - 3.1. Cases of *first-time* intentional self-harm in patients who had not sought psychiatric help (from state-run healthcare facilities) and had no established diagnosis of a mental disorder at the time of the self-harm but who had been examined by a psychiatrist after the attempt (Subgroup 2.1, supposedly healthy *first-time* suicide attempters).
  - 3.2. Cases of *recurrent* intentional self-harm in patients who had not sought psychiatric help (from state-run healthcare facilities) and had no established diagnosis of a mental disorder at the time of the self-harm but who had been examined by a psychiatrist after the attempt (Subgroup 2.2, supposedly healthy *multiple* suicide attempters).

<sup>6</sup> Order 01-05/1694 "On some measures to improve the regional suicide prevention service in the Stavropol Territory" of the Ministry of Health of the Stavropol Territory, dated December 24, 2020.

4. Cases of intentional self-harm in patients who had not sought psychiatric help (from state-run healthcare facilities), had no established diagnosis of a mental disorder at the time of the self-harm, and who had not been examined by a psychiatrist after the attempt (Group 3, suicide attempters of unknown mental state).

### Characteristics of study objects

The study encompassed all cases of intentional self-harm registered from monitoring the Stavropol Territory between 2016 and 2021. The general sample consisted of 2738 suicide attempts registered during the observation period. On average, 456 suicide attempts per year were recorded in the Stavropol Territory.

**Group 1** (diagnosed suicide attempters) was represented by 882 cases (32.2% of the general sample). Of these, 367 patients were first-time attempters (Subgroup 1.1, diagnosed first-time suicide attempters, 13.4% of the general sample), and 515 attempts were recurrences (Subgroup 1.2, diagnosed multiple suicide attempters, 18.8%).

**Group 2** (supposedly healthy suicide attempters) was represented by 994 cases, which accounted for 36.3% of the general sample. Of these, 639 patients were first-time attempters (Subgroup 2.1, supposedly healthy first-time suicide attempters), accounting for 23.3% of the general sample, and 355 attempts (13.0%) were recurrences (Subgroup 2.2, supposedly healthy multiple suicide attempters).

**Group 3** (suicide attempters of unknown mental state) was represented by 862 cases, which accounted for 31.5% of the general sample.

The proportions of the study groups in the general study sample are illustrated in Figure 2.

### Statistical analysis methods

The basic scientific method used was observation. Study results were obtained by the method of centralized summary of statistical observation materials. The data was summarized manually. Study data were grouped using dual criteria (yes/no) based on a history of psychiatric follow-up, a history of psychiatric counseling, first/recurrent intentional self-harm, psychiatric examination after intentional self-harm, and a diagnosis of a mental disorder on psychiatric examination (Figure 3).

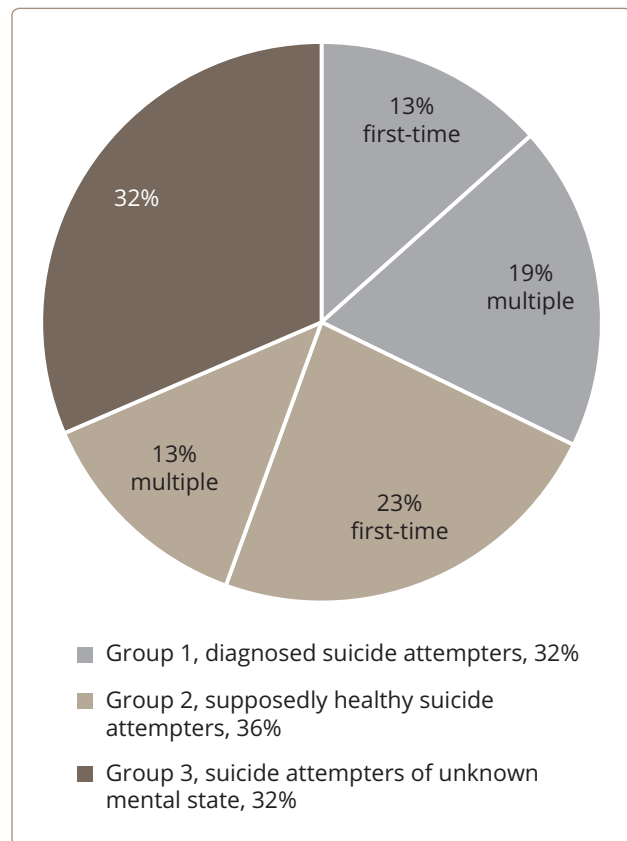


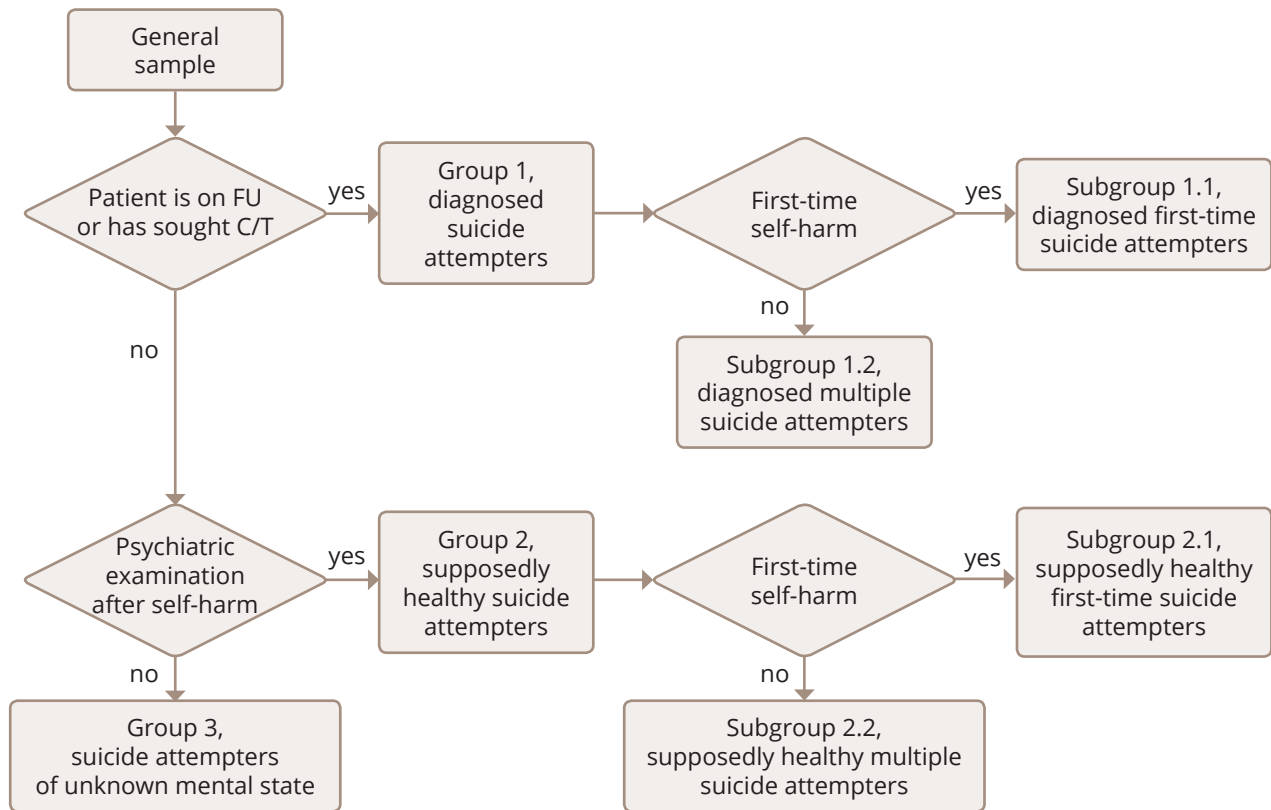
Figure 2. Structure of the study object.

### RESULTS

The average annual (2016–2021) number of suicide attempts among persons who were followed-up on and received counseling and treatment<sup>7</sup> from Stavropol Territory psychiatrists is 65.5, according to federal state statistics. The monitoring system registers 147.6 attempts per year in this group of patients, which is 2.3 times higher than the number of suicide attempts registered by the official accounting system among people who were followed-up on and who received counseling and treatment.

Since state statistics operate only with the above forms and indicators, using them to evaluate the extent of suicide attempts, there is a seven-fold difference between the officially adopted state system for registering suicide attempts (65.5 cases per year, or 2.3 per 100,000 population of the Territory) and the data recorded in the regional self-harm monitoring system (456.3 cases per

<sup>7</sup> The wording is in accordance with Federal Statistical Observation Form No. 36 "Information on the contingents of psychiatric patients", Table 2150.



**Figure 3. Study group formation (patient flow chart).**

Note: FU, follow-up. C/T, counseling/treatment.

year, or 16.3 per 100,000 population). Thus, the generally accepted statistics for suicide attempts reveal that less than 15% of attempts are registered in the regional intentional self-harm monitoring system created in the Stavropol Territory.

Assuming that the availability of information about the psychiatric status of a suicide attempter means the availability of psychiatric care for them, that is, they were in any case examined by a psychiatrist who decided whether the suicide attempter suffered from a mental disorder and whether they needed psychiatric help, psychiatric care was available for 68.5% of patients in the general sample and the combined Group 2 + 3 (diagnosed and supposedly healthy suicide attempters) can be considered to have had complete access to psychiatric care.

The frequency of mental disorders in the general sample was 42.8%, and psychiatric care was available to 68.5% of the patients.

The corresponding rate in the aggregate group with complete access to psychiatric care, that is, Group 2 + 3, was found to be 62.4%.

The results of this study confirm the common understanding that access to psychiatric care increases the rate at which mental disorders are diagnosed in general and among suicide attempters in particular.

Active detection of mental disorders among people displaying risk factors, which include intentional self-harm, can be considered part of early diagnosis. To assess this parameter, we analyzed cases of primary diagnosis of a mental disorder in suicide attempters. A diagnosis of a mental disorder was established for the first time from among a total of 289 analyzed cases. Of these, 31 cases were diagnosed after a primary suicide attempt and 258 cases after repeated intentional self-harm.

The proportion of persons with a newly diagnosed mental disorder in the general sample was 10.6%. The primary incidence of mental disorders in suicide attempters was 10,555.2 per 100,000 population, which is 61.4 times higher than the primary incidence of mental disorders in the population of the Stavropol Territory, the latter being 172.0 per 100,000 population for the same period (2016–2021).

To estimate the extent to which a completed suicide attempt increases the likelihood of a diagnosis of a mental disorder, we calculated the primary incidence of such among apparently healthy suicides, which was found to be 29,074.5 per 100,000. Thus, a supposedly healthy suicide attempter was 169 times more likely to be diagnosed with a mental disorder compared to the general population. Therefore, the introduction of an intentional self-harm monitoring system contributes to the detection not only of suicide attempts, but also mental disorders.

The proportion of persons with a newly diagnosed mental disorder in the group of supposedly healthy suicide attempters was 29.1%. The proportion of persons with a newly diagnosed mental disorder in the group of supposedly healthy *first-time* suicide attempters was 4.9%. The proportion of persons with a newly diagnosed mental disorder in the group of supposedly healthy *multiple* suicide attempters was 72.7%. Primary diagnoses of mental disorders were 14.8 times more common in multiple suicide attempters without a diagnosis of a mental disorder at the time of the last attempt than in first-time attempters.

## DISCUSSION

The study demonstrated that the use of an intentional self-harm monitoring system increased the suicide attempt detection rate seven-fold. Since a suicide attempt is a risk factor for a diagnosis of a mental disorder and multiple self-harm attempts, monitoring becomes an important resource for the preparation of suicide prevention programs and early diagnosis of mental disorders. The very fact of active detection of intentional self-harm contributes to the timely referral of the patient to psychiatric care, thus improving the associated access to such. Improving access to psychiatric care for suicide attempters is essential due to the prevalence of mental disorders among them, which ranges from 62.4%, as shown in this study, to 100%, as reported by the authors of other studies [5, 6].

In this regard, the issue of providing psychiatric care to persons at risk, including involuntary psychiatric examination of first-time suicide attempters, is even more pressing. Whether suicide attempters may be allowed to possess weapons and perform certain other potentially dangerous activities should also be a matter of public discussion.

The specifics of the group formation of this study may have resulted in a smaller proportion of suicide attempters who had sought psychiatric care before the attempt (32.2% in this study), as compared with other reported research (about half of all subjects [6, 7]). The data were collected over six years from 84 healthcare institutions within the Stavropol Territory. Thus, we obtained a sample that included all detected intentional self-harm cases, including those that did not require specialized medical care due to the nature of the inflicted harm.

The scale of coverage and the large body of data are the strengths of this study. However, this also reveals a particular limitation: such large-scale studies are only possible after many years of preparatory work to implement an intentional self-harm monitoring system.

Among all results obtained in this study, the authors single out one particular one that, in their opinion, carries the potential for future research, namely the difference in the proportion of persons with a newly diagnosed mental disorder between the group of supposedly healthy *first-time* suicide attempters (4.9%) and *multiple* suicide attempters (72.7%). It is important to investigate the causes of this difference to understand whether a mental disorder leads to suicidal behavior or vice versa. Other possible factors include the quality of the diagnostic process and subjective attitudes of psychiatrists examining a first-time or multiple suicide attempter.

## CONCLUSION

Registration of suicide attempts and the study of the characteristics of suicidal behavior are quite relevant and currently in demand from a scientific point of view. The novelty of this study with regard to the outlined problem lies in the systematic approach to obtaining research material and the numerous opportunities for modeling datasets to be registered.

Applying a systematic approach to self-harm monitoring, mental health professionals are able to take care of individuals with mental and behavioral disorders who would be unlikely to be examined under different circumstances.

In the context of predictive, preventive, and personalized medicine currently developing in the Russian Federation<sup>8</sup>,

<sup>8</sup> Order No. 186 "On approval of the Concept of predictive, preventive, and personalized medicine" of the Ministry of Health of the Russian Federation, dated April 24, 2018.



an intentional self-harm monitoring system could become an effective tool for early diagnosis of mental disorders, suicide prevention, and improving access to psychiatric care for suicide attempters. Systematic and structured registration of intentional self-harm has an enormous research potential in this area.

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