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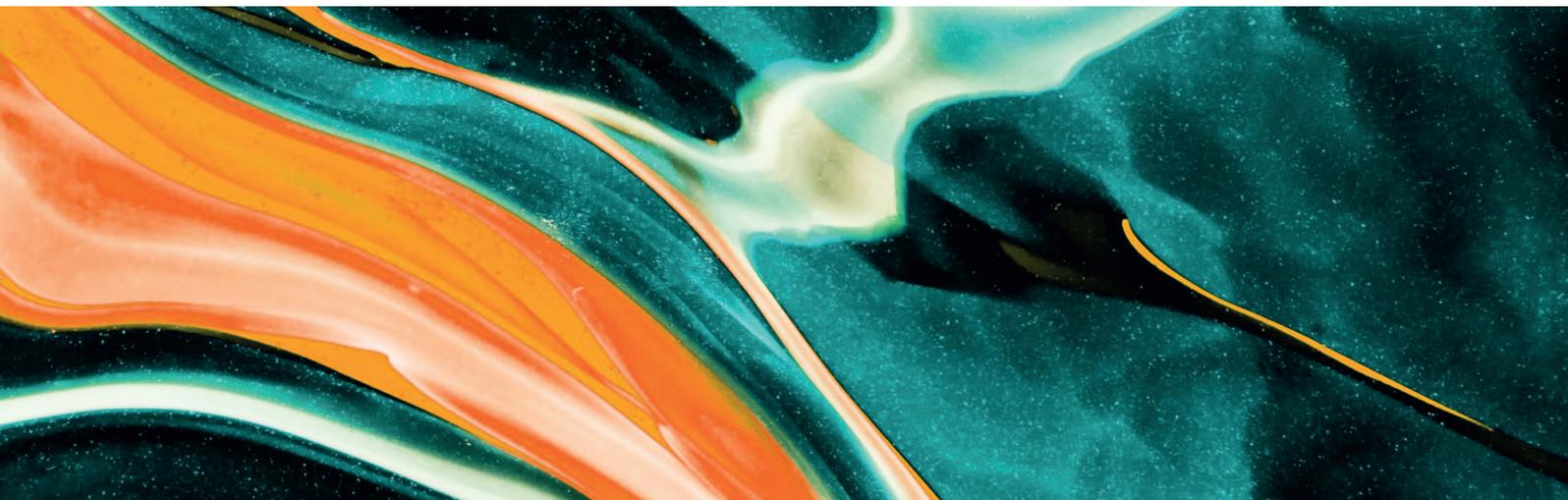
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**DEAR COLLEAGUES!**

I am proud to introduce another issue of *Consortium Psychiatricum*, dedicated to the socially significant topic of suicides and disasters.

The rate of suicides in society can be treated as a marker of the mental health of the population and of social stability. Social changes and disasters can become a trigger for the manifestation of mental disorders as well as other adverse reactions that may ultimately result in increased suicide rates. Therefore, combining two topics — disasters and suicides — on the pages of the journal reflects the real-life experience of contributory factors that we, as mental health professionals, observe and aim to address.

I would like to thank our guest editor, Professor Vsevolod Rosanov, a co-chair of the WPA section on Suicidology, for his expertise in the field and contribution to this thematic issue.

In this issue, we cover a broad range of topics from suicide prevention and early detection, dealing with issues ranging from self-harm behavior and epidemiological data to the basic scientific findings. The COVID-19 pandemic that the world has been facing since 2020 became a significant environmental factor, whose influence can't be ignored if we aim to explore the topic of suicides. In this issue, we publish a series of papers that explore the influence of the pandemic on the mental wellbeing of the general population, patients, and medical professionals. The topic of refugees represents another tragic present-day agenda, and therefore we share the experience of mental health professionals from the Chechen Republic on organizing psychological and psychiatric assistance for refugees in temporary accommodation centers.

The traditional rubric on community mental care in different countries is also shared by colleagues from Egypt and Romania.

I do hope that this issue will help to once again stress the importance of developing suicide prevention programs that take into consideration contributory environmental and biological factors.

I wish you pleasant reading!

George Kostyuk,

Editor-in-Chief, Consortium Psychiatricum



DEAR READERS!

As a guest editor, I am pleased to introduce a new volume of Consortium Psychiatricum dedicated to suicidology, disasters, and suicide prevention. Suicide is a serious public health problem worldwide; therefore, suicide prevention is imperative for any individual and an important aim of many agencies and communities, including medical and educational system, volunteer organizations, and law and social security systems. It is particularly important when considering the protection of the world's younger generations and the saving of young lives.

Suicide is a multifaceted phenomenon with a variety of dimensions, ranging from spiritual beliefs and existential meanings to neurobiological and neurogenomic mechanisms. This multilateralism is depicted in the current volume, which starts with a discussion about the problematic issues of suicide prevention programs in schools and the expected fatality in suicide attempts, to further explore the prospects for using telomere length as a marker of suicidality in psychiatric patients.

Recently, humanity as a whole has been under serious stress due to the COVID-19 pandemic, and therefore it should be of little surprise that a number of papers have been dedicated to the suicide risks associated with this global disaster. Though on a population level the pandemic did not cause any substantial increase in suicide rates — on the contrary, in many states, cities, and territories, there was a significant drop in suicides — on a personal level, various psychiatric specialists have noticed an increase of suicidal tendencies among individual after catching this disease. Moreover, in Russia, signs of higher suicidality were found in the course of population-based surveys, which indicates higher risks that should be taken seriously.

Taking this into consideration it is crucial that, for the sake of suicide prevention, additional action and greater awareness regarding suicide risks should be promoted in various public spheres, including medical and social care and the mass media. This is depicted in another set of papers included in this volume that are dedicated to the monitoring of intentional non-fatal self-injuries in Stavropol (Russia), mental well-being of frontline medical staff during the pandemic crisis in Kyrgyzstan, and the elderly people in Indonesia. This topic is also discussed from the perspective of the pros and cons of the online contact that has surpassed physical contact globally during the pandemic.

Three additional papers describing the features and practical implementation of community-based psychiatric care in Egypt and Romania, and the experiences of psychological and psychiatric assistance among refugees in the context of temporary accommodation centers, provide closure to the volume. These papers give an indication of just how important organizational measures are in the psychiatric and psychosocial domains.

In conclusion, let me thank all the contributors to this volume for their interesting publications, and the editorial staff for their enthusiasm and intensive preparatory work. I do hope that this thematic multicultural volume will serve as a useful and stimulating resource for psychiatrists, clinical psychologists, and public health administrators worldwide. I also believe it may promote further discussion and studies in the field of suicide prevention and may represent a considerable step forward in the development of a national suicide prevention program in Russia.

Prof. Vsevolod Rozanov,
MD, PhD, Guest editor

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Problems with Suicidal Behavior Prevention in Adolescents: a Narrative Literature Review

Проблемы профилактики суицидального поведения у подростков: нарративный обзор литературы

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Review

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ABSTRACT

BACKGROUND: Among the existing issues related to the health and quality of life of Russian adolescents, suicidal behavior is being actively discussed; however, the available comprehensive measures for prevention of suicide and attempts at suicide at this age do not provide an adequate solution. This is due to the fact that suicide is an integrative phenomenon, and the act of suicide itself is interpreted, in essence, as the “tip of the iceberg”. What is especially clearly manifested in adolescence is the fact that the readiness to commit suicide is associated not so much with the level of severity of mental pathology and personality dysfunction, but with the general social context lack of well-being of total trouble. Therefore, suicide prevention cannot be based purely on the timely identification of persons at risk for mental pathology.

AIM: The purpose of this work is to analyze the available literature on current approaches that have demonstrated their efficacy in reducing suicidal behavior in adolescents.

METHODS: The authors performed a narrative review of the relevant literature published between 2012 and 2021. They analyzed the works presented in the PubMed, MEDLINE, and Web of Science electronic databases. Descriptive analysis was used to generalize the data obtained.

RESULTS: The article discusses preventive approaches to suicidal behavior in adolescents, which are most often studied, and which are also used in practical healthcare. It outlines the problems associated with the implementation and evaluation of the efficacy of these preventive programs.

CONCLUSIONS: The continuing high rate of suicide among adolescents calls for an urgent concerted effort to develop, disseminate, and implement more effective prevention strategies. School-based approaches are the most convenient in practical terms, but they require systematic and long-term use of anti-suicidal programs. Digital interventions can reduce the economic burden of their use, including assessing suicidal risk and identifying psychopathology associated with suicidality.

АННОТАЦИЯ

ВВЕДЕНИЕ: В ряду имеющихся проблем, связанных со здоровьем и качеством жизни российских подростков, тема суицидального поведения достаточно активно обсуждается, однако имеет недостаточное решение при реализации комплексных мер по профилактике суицидов и суицидальных попыток в этом возрасте.

Связано это с тем, что суицид является интегративным феноменом, а непосредственно сам суицидальный акт интерпретируется по сути как «вершина айсберга». Особенно ярко проявляется в подростковом возрасте тот факт, что суицидальная готовность связана не столько с уровнем выраженности психической патологии и личностной дисфункции, сколько с общим социальным контекстом тотального неблагополучия. В связи с этим, профилактика самоубийств не может базироваться только лишь на своевременном выявлении лиц из группы риска по психической патологии.

ЦЕЛЬ: Целью данной работы является анализ доступных литературных источников, касающихся современных подходов, показавших свою эффективность в уменьшении уровня суицидального поведения в подростковой среде.

МЕТОДЫ: Был выполнен нарративный обзор релевантных литературных источников, опубликованных в период с 2012 г. по 2021 г. Авторы проанализировали работы, представленные в электронных базах данных PubMed, MEDLINE и Web of Science. Для обобщения полученных данных применялся метод описательного анализа.

РЕЗУЛЬТАТЫ: В статье рассмотрены профилактические подходы к суицидальному поведению подростков, которые наиболее часто исследуются, а также используются в практическом здравоохранении. Обозначены проблемы, связанные с внедрением и оценкой эффективности данных профилактических программ.

ВЫВОДЫ: Сохраняющийся высокий уровень самоубийств среди подростков требует срочных согласованных усилий по разработке, распространению и внедрению более эффективных стратегий профилактики. Школьные подходы являются наиболее удобными в практическом плане, однако они требуют системного и долгосрочного использования антисуицидальных программ. Цифровые вмешательства могут уменьшить экономическую нагрузку при их применении, в том числе при оценке суицидального риска и выявлении ассоциированной с суицидальностью психопатологии.

Keywords: *suicide; suicide attempt; adolescents; prevention*

Ключевые слова: *суицид; суицидальная попытка; подростки; профилактика*

INTRODUCTION

Although suicide rates have declined worldwide in recent decades within the general population, some countries show the opposite trend in adolescent suicides [1, 2]. Suicide in adolescents is a serious social and medical problem. Suicide is the third-most common cause of death at the age of 10–19 years [3], and the second most common at 15–29 years [4]. In adolescence, there are 50–100 suicide attempts per death due to suicide [5].

However, our knowledge of how to prevent suicide and suicidal behavior in adolescents is extremely limited. Many questions remain unanswered, research results are often disputed and contradictory, and despite a significant volume of scientific papers published every year on the subject, suicide continues to be one of the most common causes of death among young people in various regions of the world [2].

One of the existing problems is the difficulty in evaluating the effectiveness of preventive anti-suicidal

programs. Given the relative rarity of suicide in the general population, in order to obtain data on the probability of reducing the number of suicides by 15% in 1 year, a preventive intervention must be used in a sample of 13 million people in the general population. A risk group, e.g., people with a history of suicide attempt, requires a sample of 45,000 [6]. The organization and conduct of such studies are thus extremely difficult.

In addition, the most commonly used factorial model of suicidal risk, which focuses on the significance of individual factors in suicidal dynamics, showed relatively little effect on suicide prevention. A meta-analysis of 365 studies over the past 50 years found that, in terms of hazard ratio and diagnostic accuracy, the factorial model prediction of suicidal risk was only slightly better than the probability for all studies, with no categories or subcategories of suicidal factors accurately predicting the event with much higher probability [7]. In this case, there may be a need to shift the emphasis when creating

preventive programs from a factorial to a functional model that takes the experiences and thoughts of an adolescent, the context of their situation and the particularities of their relationship with other people into account, which requires an individual approach, or at least group or family interventions within school-based approaches.

Given the particularities of adolescence and the environment in which suicidal behavior occurs, the daily task for educators, clinicians, and young people and their parents is to find constructive ways to respond to increasingly complex and unprecedented challenges (e.g., mass killings/suicides, cluster suicidal behavior, and cyberbullying on social networks).

The **purpose** of this narrative review is to analyze the available literature on current approaches that have demonstrated their efficacy in reducing suicidal behavior in adolescents.

METHOD

The authors performed a narrative review of the relevant literature published between 2012 and 2021. They analyzed the works presented in the PubMed, MEDLINE, and Web of Science electronic databases. Search queries included keywords such as “adolescents”, “suicide”, “suicidal behavior”, “suicide attempt”, “suicidal thoughts”, and “prevention”. Studies were considered eligible if they evaluated preventive programs to reduce suicidal behavior during adolescence. Descriptive analysis was used to generalize the data obtained.

RESULTS

In practical terms, there are three types of evidence-based strategies aimed at preventing suicide in adolescents; each is associated to some degree with a number of specific risk factors for suicide. Universal strategies aim to reach all adolescents in a specific group (e.g., school, neighborhood, community) with measures to improve overall health and minimize the risk of suicide by removing barriers to receiving help, facilitating access to qualified counseling, and strengthening protective processes such as social support [8–11]. They may also be related to provision of support for the upbringing of children, improvement of educational and training opportunities, creation of a favorable school climate, and other conditions associated with maintaining mental health [12, 13]. Selective suicide prevention strategies target vulnerable groups of adolescents at increased risk

of suicidal behavior, such as adolescents with substance abuse or other mental health problems [14–16]. Finally, individual prevention strategies are addressed to individuals who show early signs of suicidal tendencies or, indeed, who have attempted suicide. A systematic review of these interventions among young people aged 12–25 supported the implementation of these strategies in schools, communities, and healthcare institutions. Moreover, the review concluded that these interventions are relatively safe and cannot increase suicidal activity in adolescents [17].

The article consequently reviews strategies for suicidal behavior prevention in adolescents within school programs, restrictions on access to means of suicide, digital technologies, as well as approaches focused on the connection between psychopathology and suicidality.

School-based approaches

Schools have become one of the most common places to deal with adolescent suicide, and several systematic reviews of school-based suicide prevention programs have recently been published [18–20]. School-based approaches to suicide prevention can take many forms, including those based on the integration of mental health education into the curriculum. These classes can be aimed at raising the suicide awareness of all students and defining their role in supporting their peers in a suicidal crisis. In addition, other approaches are currently being extensively researched, such as school-based screening programs designed to identify adolescents at potential risk of suicide; social support and skills building programs for high-risk adolescents; training for school staff for recognizing potentially suicidal students and form supportive contact; and various multilevel programs that combine several of the above strategies [21–24]. While the ultimate goal of these programs is the prevention of suicidal behavior, intermediate goals typically include one or more of the following: increasing student awareness of potential indicators of suicidal behavior; reducing stigma of seeking help; eliminating inappropriate perceptions of suicide; and improving the skills of social support, overcoming difficulties and solving problems.

For example, the Saving and Empowering Young Lives in Europe (SEYLE) project developed and tested a multicomponent mental health education program for young people [25]. A randomized control study was

conducted in 11 European countries, consisting of three active interventions and one minimal control intervention. Active interventions included training for ‘watchmen’ (first contact persons), a mental health outreach program, and occupational screening for at-risk adolescents. Compared with adolescents who received only minimal intervention, those who took part in the mental health education program demonstrated significantly lower rates of both suicidal thoughts and intentions and attempts at suicide over the following 12 months [26].

The use of Empowering a Multimodal Pathway Towards Healthy Youth (EMPATHY) program, which included eight sessions of cognitive behavioral therapy designed to increase resilience to depression, as part of the school-based approach, resulted in a significant reduction in the number adolescents classified as at high and moderate risk of suicide within 12 weeks after the intervention [27]. It was also justified to include interventions aimed at teaching adolescents’ parents to increase support for their children and reduce the level of conflicts in the family in prevention programs, which led to a significant decrease in the severity of suicidal thoughts in schoolchildren during follow-up after 1 and 9 months [28].

According to recent reviews of the available evidence [12, 22, 29, 30], some adolescent suicide prevention programs do appear to be promising, although various methodological weaknesses place limitations on the findings and conclusions [31]. It has been shown that school-based programs are effective in improving students’ knowledge and understanding of the particularities of suicidal behavior formation; however, little is known about their effects on the frequency of suicidal thoughts and attempts in the future. As the authors of one review note, “future suicidal behavior (including thoughts, attempts, or actual suicide) has not been directly investigated in most studies, and studies that have assessed these variables have provided little evidence of suicidal behavior risk reduction in young people” [32]. In other words, there is currently no conclusive evidence that any particular strategy is effective in reducing adolescent suicide mortality [19]. However, according to a recent systematic review, there is moderate-certainty evidence that school-based interventions can prevent suicidal thoughts and suicide attempts in the short term, and low-certainty evidence that they can prevent suicide attempts in the long term [33].

Restriction on access to lethal means

Broader approaches to the prevention of suicide in adolescents may include those associated with a decrease in the availability of certain means to commit suicide. A suicidal act in children and adolescents is most frequently committed in the place where the child lives, and hanging is most often used [34, 35]. Boys are most likely to use hanging and firearms, while girls are more likely to use pesticides or drug poisoning and jumping from height [1]. Limiting access to such drugs is believed to be an effective universal prevention strategy [36]. For example, a significant association between reduced household availability of firearms and suicide among children and adolescents has been noted in the United States. Each 10% decrease in the number of households with firearms corresponded to an 8.3% decrease in gun suicide and a 4.1% decrease in the overall suicide rate among children aged 0–19 years [37]. Structural interventions at jump sites and restricting access to highly hazardous pesticides have also proven to be effective [38, 39]. At the same time, reducing access to lethal means has limited possibilities for some methods of suicide, for example, in the case of hanging. We did not identify other studies that assessed the effects of reducing access to such drugs in the specific case of adolescents. However, studies in the general population, including adults, show that this can be an effective strategy.

Digital methods

More and more preventive approaches to suicide based on the use of digital technologies are being developed. Moreover, given the recent public health crisis due to the COVID-19 pandemic, clinicians are in dire need of new tools for service delivery and preventive interventions. Adolescents are the most active users of Internet technologies: almost a quarter of adolescents are online all the time [40]. Young people are technologically savvy, and a significant proportion of them have smartphones or other devices that allow for various types of interaction. Thus, there is no doubt about the importance of interventions based on new technologies in suicide prevention among adolescents. It should be noted that telepsychiatry may be considered particularly suitable for reaching populations characterized by low attendance at traditional health facilities, such as adolescents [41, 42]. Web platforms can also be used in school-based programs aimed at preventing student

suicide [43]. There are several studies that have tested various mobile smartphone applications in screening for symptoms of depression and suicidal ideation, as well as clinical monitoring of suicidal dynamics using text messages [44–46]. For example, to reduce suicide attempts in adolescents after hospital discharge, a special smartphone application was used that asked participants to assess their emotional stress levels daily and differentially selected personalized emotion regulation strategies and safety planning in the event of a suicidal crisis [47].

The results showed that the use of mobile applications represents a quick and easy way to contact adolescents, keep in touch with them, and monitor their behavior [45, 47]. Moreover, given the very high rates of attempts at suicide and suicide-related deaths after discharge from psychiatric institutions, it seems important to develop new digital tools to screen and support adolescents from this high-risk group.

Studies have recently been published on the use of linguistic analysis to identify suicidal tendencies among Internet users [48]. With the growth in the use of social media and the increasing complexity of their communication component, adolescents have increasingly begun to express suicidal thoughts on online forums, in tweets and other social networks, which has led to the formation of an extensive set of phrases that define the motives associated with suicide. Despite limited evidence, algorithms have been developed that can recognize people at risk of suicide by examining their social media posts; they are accurate and timely enough to promise some clinical efficacy [49]. However, there is a need for useful ways of responding to such online communications in adolescents, if they occur.

Overall, new and rapidly developing technological tools (including language programs) may become part of adolescent suicide prevention strategies in the future. It is likely that new technologies will complement existing strategies rather than replace them. Such digital tools can improve subjective approaches to suicide prevention, including by allowing faster contact with clinicians. Several ethical issues arise with the implementation of these approaches, such as the need for privacy protocols and the rationale for suicide prevention algorithms using social networks. At the same time, there is no doubt that new technologies are well received by adolescents

and can be quickly adapted to prevent suicidal behavior in them. However, there is currently little evidence as to the effectiveness of such interventions in clinical practice, which requires further research.

Syndromic approach

In developing and implementing suicide prevention programs over the past twenty years, many researchers have been exclusively concerned with suicide's association with mental disorders. In this conceptualization, suicidal behavior is directly associated with mental illness, usually depression, and is not seen as a variant of the normal response to stress or emotional distress. At the same time, suicidal thoughts reported by adolescents themselves are relatively common and occur in almost one in four aged 13–19 years [50], which casts doubt on the notion that these thoughts should, in all cases, be considered a consequence of mental disorder. In addition, the question arises, how does the statement that suicidal thoughts are the result of mental illness affect young people? In theory, such a notion should contribute to an increase in the number of calls to specialists for appropriate treatment. In some cases, however, this can lead to self-stigmatization and, on the contrary, contribute to the worsening of the suicidal crisis, especially in the absence of access to structures for providing psychiatric and crisis care. It is even more revealing when thoughts of suicide, which, paradoxically, can help a young person reduce their stress levels by presenting a comforting opportunity to “escape”, are taken as clear evidence of illness.

Most mental disorders are believed to be somehow correlated with the presence of suicidal thoughts, but not with suicidal actions [51], so approaches that prioritize psychiatric disorders may not be sufficiently specific to the mechanisms that cause suicidal behavior in adolescents, which may result in a reduction in the severity of psychiatric symptoms but, at the same time, the preservation of suicidal risk [52].

Of course, mental disorders have a significant impact on suicidal behavior in adolescents; however, one of the consequences of the prevailing biomedical approach to posing the problem of suicide at this age is that the developed methods of prevention tend to favor expert intervention and individual treatment of the problems and difficulties encountered by almost all adolescents. Unfortunately, this is a rather limited answer given the complexity of adolescent suicide. More specifically, when

suicidal behavior occurs (at least in part) as a reaction to or escape from “unbearable living conditions” such as discrimination, harassment, sexual abuse, or bullying, then in this context the allocation of major resources to mental illness treatment may be extremely inappropriate. It can be stated that therapeutic practices very often privatize problems and leave untouched a number of the more general socio-economic difficulties that support and perpetuate the “*locus minoris*” in social relations, which cannot but concern such a vulnerable group as adolescents [53].

It is also worth noting the fact that approximately 20–40% of adolescents who seek medical help at all have a high level of emotional stress and/or suicidal thoughts, while primary care specialists identify these problems in only 24–45% of these young people [54]. In this case, clinicians need to pay attention to indirect indicators of a suicidal crisis or experienced stress, such as sleep disturbances, changes in eating behavior, withdrawal from friends and family, withdrawal from habitual activities, aggressive or oppositional behavior, alcohol and/or drug use, trouble concentrating, and frequent complaints of physical symptoms that may be related to a negative emotional state (abdominal pain, headaches, or constant fatigue).

Thus, it is implied that internists play an important role in the assessment of suicidal risk in adolescents who present with complaints of a non-psychological nature. However, in this case, the main problem may be the lack of routing of adolescents in need of specialized assistance.

Summarizing the discussion of the relevance of identifying mental illness in adolescents for suicide prevention, at present, the evidence for the effectiveness of screening for symptoms of depression (as the disorder most commonly associated with suicidal response) in this age cohort is generally very low, so the benefits and harms of such interventions are unknown [33].

DISCUSSION

The continuing high rate of suicide among adolescents calls for an urgent concerted effort to develop, disseminate, and implement more effective prevention strategies. Comprehensive programs that combine elements of screening, follow-up, activation of protective factors, and mobilization of the social environment are considered to be the most appropriate for the adolescent environment. A comprehensive review of

the existing literature shows that the introduction of such programs in schools is the most reproducible and effective approach.

A better understanding of the role of various risk and protective factors is essential to the development and implementation of comprehensive suicide prevention strategies. At the same time, it is necessary to take the particularities of adolescence into account, which can determine the significance of some suicidal risk factors and anti-suicidal factors. In this case, issues related to relationships in the family and with peers, the formation of the ability to make decisions, and the use of adaptive strategies, as well as victimization in the school environment, acquire greater significance in comparison with adults.

At the same time, studying only the risk factors for suicide in the hope of creating the most accurate measuring instruments possible is not justified. Based on accumulated data on risk factors, it is necessary to identify specific program components that may be responsible for reducing suicide so that they can then be generalized and exported to multiple, dynamic, and diverse social contexts. From our point of view, it is necessary to shift the scale and emphasis of the programs that have demonstrated their effectiveness in preventing suicide in adolescents, depending on local conditions, social aspects of relations, cultural norms, and organizational processes. The goal is not to replace one research or practical structure with another, but to expand existing approaches. For example, an adolescent’s suicidal behavior can be considered within the framework of an existential crisis, and appropriate preventive work can thus be organized [55].

Undoubtedly, formal and specialized interventions (including mental health services and hospitalization) can save the life of a suicidal adolescent. At the same time, it should be remembered that professional service delivery models may not seem very attractive to some young people due to the fact that many of them are based on the “bottleneck” of biomedical approaches. It is well documented that adolescents express a clear and consistent preference for the kind of help provided by informal networks and friends when they have suicidal thoughts [56]. It might also be helpful to ask the young people themselves what, specifically, they find helpful about how their friends, peers, and classmates respond to what is happening to them when they report their

suffering. Thus, within the development of school-based suicide prevention programs, adolescents themselves can be positioned as knowledgeable “authorities” and “agents of influence” with a valuable understanding of what is important to them, as opposed to the role of passive recipients of adult advice and recommendations. This is in line with the trend towards the increasing use of approaches that emphasize the importance of youth self-governance systems, organizational flexibility, and social change, which can be of great value in adolescent suicide prevention practices. Based on the positive experience of school-based approaches, when planning programs for adolescent suicide prevention, we can move away from principles that promote a one-sided and didactic dissemination of facts about suicide and move towards pedagogical strategies that actively encourage communication, critical thinking, and exchange of opinions among adolescents, not only about the nature of despair, hopelessness and suicidal tendencies, but also about the possibilities for overcoming them.

CONCLUSION

Additional studies are required to develop an effective and comprehensive public health approach to adolescent suicide prevention. School-based approaches are the most convenient in practical terms, but they require systematic and long-term use of anti-suicidal programs. Digital interventions can reduce the economic burden of their use, including assessing suicidal risk and identifying psychopathology associated with suicidality. More active participation by adolescents themselves in the implementation of mental health programs, including, among other things, preventive aspects of suicidal behavior, can be considered a promising option for building a dialogue of qualified professionals directly with young people.

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Modeling Suicidality Risks and Understanding the Phenomenon of Suicidality Under the Loupe of Pandemic Context: National Findings of the COMET-G Study in the Russian Population

Моделирование суицидального риска и понимание феномена суицидальности через призму пандемии COVID-19: национальные результаты международного исследования COMET-G в российской популяции

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Original research

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ABSTRACT

BACKGROUND: Suicidality is a complex clinical phenomenon reflecting vulnerability to suicidal behavior which can be explained via the biopsychosocial paradigm and in relationship with a variety of country-specific factors. Data on suicides within the Russian population are inconsistent (from 11.7 up to 25.1 per 100.000), whereas the population's suicidality risks have not been investigated in detail. Suicidality estimates during the multifactorial influence of the COVID-19 pandemic could serve as a basis to learn more about this mental health indicator.

METHODS: The current study is a part of the COMET-G international project (40 countries, $n=55.589$), which represents an analysis of data collected from Russia's general population ($n=7714$, 33 ± 12 y.o., 61% female) to estimate suicidality using the Risk Assessment Suicidality Scale (RASS) and its relationships with socio-demographic, clinical, and life-habit characteristics during the COVID-19 pandemic. The evaluation of the statistical data (descriptive statistics, ANOVA, LASSO linear regression, significant at $\alpha=0.05$) was undertaken using TIBCO Statistica.

RESULTS: According to the RASS, at least 20.68%, and up to 29.15%, of the general population in Russia demonstrated increased risk of suicidality during the pandemic. Modelling these risks pointed to the key vulnerabilities related to mental and behavioral disorders, such as (i) current severe depression and a history of mental disorders, (ii) bipolar disorder, (iii) use of illicit drugs surprisingly outranking the alcohol misuse, and psychiatric compounds (hypnotics), highlighting sleep quality deterioration, (iv) a history of suicide attempts and self-harm — though not self-reported changes in depression — in response were predictors of the risk of suicidality, which can be explained by the phenomenon of "learned suicidality", a habitual behavioral suicidality pattern completion accumulated over the background. Such (v) socio-demographic indicators as younger age (disregarding the gender factor), a marital status of single, having no children, living with fewer people in the household, a recent increase in family conflicts, increased need for emotional support, decreased need for communication, and not believing in precautionary measures against COVID-19, contributed to the increase of suicidality risk in the context of the pandemic.

CONCLUSIONS: The findings of this study revealed new suicide risk factors that should be taken into account in suicidality risk assessments for the Russian population and in the implementation of suicide prevention programs in the region.

АННОТАЦИЯ

ВВЕДЕНИЕ: Суицидальность — сложный клинический феномен, отражающий уязвимость к суицидальному поведению, который следует объяснять с позиций биопсихосоциальной парадигмы и во взаимосвязи с целым рядом специфических для каждой конкретной страны факторов. Данные о суицидах в российской популяции противоречивы (от 11,7 до 25,1 на 100 000), а популяционные риски суицидальности детально не изучались. Изменения суицидальности в ответ на многофакторное влияние пандемии COVID-19 дают основание для более глубокого изучения этого показателя психического здоровья на национальном уровне.

МЕТОДЫ: Настоящее исследование является частью международного проекта COMET-G (40 стран, $n=55\ 589$). В нем изучались собранные в общей российской популяции ($n=7714$, 33 ± 12 лет, 61% женщин) данные оценки суицидальных тенденций с помощью шкалы оценки риска суицидальности (RASS) и анализировались взаимосвязи данного показателя с социально-демографическими, клиническими, жизненными характеристиками в период пандемии COVID-19. Статистическая обработка данных (описательная статистика, ANOVA, регрессия LASSO, линейная регрессия, значимость при $\alpha=0,05$) проводилась с помощью программы TIBCO Statistica.

РЕЗУЛЬТАТЫ: В период пандемии повышенный суицидальный риск, оцененный по шкале RASS выявлен у от 20,68% до 29,15% населения России. По результатам линейной регрессии суицидального риска со стороны

психических и поведенческих расстройств выявлены ключевые факторы, ассоциированные с высоким риском: (i) текущая тяжелая депрессия и психические расстройства в анамнезе, (ii) биполярное расстройство, (iii) употребление наркотиков, значимость которых превышала таковую для фактора употребления алкоголя, и прием гипнотиков, сопряженный с ухудшением качества сна. (iv) Суицидальные попытки и эпизоды самоповреждающего поведения, но не усиление депрессии, предсказывали связанное с пандемией увеличение суицидальных мыслей и высокий риск суицидальности, что можно объяснить феноменом "выученной суицидальности" — паттерном привычной реализации суицидального поведения, выработанным в течение прошлого опыта. (v) Такие социально-демографические показатели, как более молодой возраст (вне зависимости от гендерного фактора), одинокое проживание вне семьи, отсутствие детей, общее небольшое число членов семьи, недавнее увеличение семейных конфликтов, повышенная потребность в эмоциональной поддержке, сниженная потребность в общении, неверие в меры предосторожности против COVID-19, также ассоциировались с увеличением суицидального риска в условиях пандемии.

Выводы: Результаты данного исследования выявили новые факторы суицидального риска, которые следует учитывать при оценке риска суицидальности для российского населения и при реализации национальных программ предотвращения суицидов.

Keywords: *COVID-19 pandemic; depression; family conflicts; self-harm; sleep disturbances; social support; suicide prevention; suicidality; young age*

Ключевые слова: *пандемия; COVID-19; депрессия; семейные конфликты; самоповреждения; нарушения сна; социальная поддержка; профилактика самоубийств; суицидальность; молодой возраст*

INTRODUCTION

Suicidal thoughts, attempts, suicides, suicidality, and other related self-harm behavior represent complex biopsychosocial phenomena, but the key point is that, despite the fluctuating rates of deaths due to suicides across the world, and the variety of correlations to different etiologies and clinical states, they are preventable phenomena [1]. The WHO has published its "Practice manual for establishing and maintaining surveillance systems for suicide attempts and self-harm" and invited national healthcare systems to focus on monitoring suicidality among vulnerable population groups (1). The Russian Federation adapted the WHO's self-harm monitoring tool and joined the suicide prevention program in the mid-2020s [2].

Known risk factors for suicide include a history of attempted suicide, psychiatric disorders, current suicidal thoughts, and a range of social factors including income level, life stressors, illness, family relationships, social isolation, etc. [3]. However, the presence of these risk factors is statistically associated with suicide attempts in only 10% of cases [3]; nevertheless, the identification of risk factors remains an important task for suicide prevention.

A large number of known risk factors have been present during the COVID-19 pandemic, as there are many reports that it is associated with high level of distress, increased anxiety, and increased rates of clinical depression brought by the threat to life, the associated social restriction measures, and crucial life changes [4–9]. A systematic review of the impact of the COVID-19 pandemic on self-harm and suicidal behavior demonstrated that, despite the fact that number of deaths due to suicides did not change or indeed even decreased in the early months of the pandemic, there was evidence of an increase in suicides in hospitals, and a rise of suicidal ideation among COVID-19 patients, whilst at the same time suicide rates varied across different studies, and the relationship between suicide and economic problems was the only statistically significant finding in the majority of studies [10]. Beyond the deaths due to suicides, a recent meta-analysis of 54 studies found increase in suicidal ideation in a community sample with 11.84% for suicidal ideation, 2.68% for suicides, and 6.11% for self-harm [11]. The authors of this research noted that these rates were nearly twice as great as in the most recent prepandemic meta-analysis of 93 studies [12]. The differences in the rates

of suicidal behavior may not only be due to an increased rate of post-COVID anxiety, depression, neurocognitive disturbances, and other neuropsychiatric manifestations evoked by the neurotropic nature of SARS-Cov-2 but also due to “psychodemic” issues — a specific epidemic of mental and neuropsychiatric disorders as caused by the stress of the pandemic [4, 13–17]. Previous studies demonstrated that the stress of chronic social isolation (e.g., quarantine) might lead to polar emotional and behavioral deviations such as depression with the freezing effect of decreased activity and stupor, and an aggression with attendant proactive destructive behaviors, excitement, and hostility [18]. Moreover, the factor of social isolation is strongly associated with suicidal behavior [19]. Apparently, in the context of pandemic conditions, lockdown measures, and the spread of infodemic, the sensitive population groups developed either autoaggressive behavior and suicidality, accumulating in the increased number of mental disturbances over this period, or heteroaggressive actions and protests, when individuals struggled against wearing masks, their rights regarding a choice of vaccination, and even sociopolitical issues, in particular, appealing to conspiracy beliefs about the artificial origins of the novel coronavirus, its purposes to provide a control over community, a pathway to arrange the economic crisis, etc. [14, 20–25]. These oppositional anti-mask and antivaccine attitudes might be also related to the hypoactive instinct of self-preservation which is also linked to some forms of autoaggressive intention (“capability for suicide”) due to the lack of self-care, decreased healthy volition to stay safe, not to contract the virus, to prevent severe disease, or cause a death; thus, this behavior also might be explained within the context of self-harm and parasuicidal phenomena arising due to the current pandemic [26–29]. The increase in suicide rates and suicide-related phenomena within the “dual suicide and COVID-19 pandemic” have been observed across different countries, including Western representatives of the European Union and the eastern nations of South Asian countries, as well as, far from Eurasian epicenters in a distant and prosperous Australia [5, 8, 30–32].

Studies of suicidality risks in the Russian Federation are rare and have significant limitations due to addressing focus group populations or small sample sizes [33]. During prepandemic times, the suicide rate within the general population in Russia has been gradually decreasing over the last two decades (2000: 39.1 per 100,000; 2010: 23.4 per

100,000; 2020: 11.3 per 100,000) [34]. However, the number of suicides among the male population of Russia has always been higher than that for females, despite the reverse data on higher rates of suicidal attempts amongst women compared to men [33, 35, 36]. Higher suicide rates amongst men have been discussed in terms of cultural and other country-specific issues, including their links to the factors of unemployment, financial problems, excessive alcohol consumption among men, divorce, and the predominant protection of maternity and single mothers by law versus the lack of support for fatherhood [37–40]. Importantly, the last few decades (that is, long before the start of the pandemic) have seen younger people committing suicide and, indeed, a frightening rise in the rate of suicide amongst youths, particularly among teenagers, in Russia and has been interpreted according to a wide variety of factors, including social media propaganda containing suicidal content, advertisements, and active participation in suicide internet games, etc. [41–43].

Russia has also demonstrated a response to the stress of pandemic through mental health disturbances and behavioral changes among various vulnerable populations of people living with mental and somatic disorders, females, youth, healthcare professionals, the elderly, and others [4, 7, 44–48]. Nevertheless, the high levels of anxiety and depression in Russia amongst the general population have been less frequent than in some other Eastern Europe countries [49, 50].

Among the various studies focusing on the mental health of the general population during the COVID-19 pandemic, the majority of scientific reports have described significant links between suicidality and the stress of the pandemic, but only few observations have attempted to estimate the population's suicidality risks and the mediating role of socio-demographic, economic, psychological, and clinical characteristics acting as protective versus risk factors for changes in suicidality in the context of the pandemic [5, 8, 21]. Data published from the COMET-G study demonstrated the international perspective on suicidality, whereas country-specific data profiles on suicidality risks have not been presented [8]. Understanding the dynamic of suicidality risks and suicidality rates and their connections with the risk factors in the context of the pandemic is a separate, and difficult, task for the international professional community. Better knowledge of risks of suicide can result in more close monitoring of the risk groups and the development of the targeted preventive measures.

The aims of this study were to estimate suicidality rates in the midst of the COVID-19 pandemic within the Russian population to evaluate the demographical, clinical, behavioral, and environmental factors associated with suicidality risks. The results obtained were projected onto the general population of the Russian Federation and regression models of suicidality risks were created.

METHODS

Data collection procedures

The data was collected within the multi-center cross-sectional study “COvid-19 and MEntal health in Ternational (COMET-G) study in General population” of 40 countries. The design of this study has been described in detail and published in the supplementary materials to the earlier publications [4, 51]. Data was obtained through an online self-report questionnaire that consisted of 120 items. Responses were collected anonymously via an online link with automatic recording of responses via Google Forms. The first page of the online questionnaire included the declaration of voluntarily consent for participation, so respondents could only proceed to the main questionnaire after indicating their consent. Study approval was granted by the Ethics Committee of the Faculty of Medicine, Aristotle University of Thessaloniki, Greece.

The link to the questionnaire was distributed via personal and professional contacts of investigators using messengers, social media groups, websites, and the mobile application Appbonus. The response registration period in Russia started on May 29th (first response) and lasted till December 16th, 2020 through several waves of the questionnaire’s circulation based on regular reminders. As far as the majority of valid (complete and unique) responses ($n=7714$, 99%) were registered during the period from May 29th to August 21st 2020, we used this particular sample in order to restrict the effects of eventual external confounders and to provide the consistent data analysis. Thus, responses from those who were ≥ 18 years old and who sent a response between May 29th and August 21st, 2020, were included in the analysis.

Measurement tools

The online self-report questionnaire consisted of 120 items, including (i) socio-demographic characteristics of participants, (ii) the Risk Assessment Suicidality Scale (RASS) [52], State-Trait Anxiety Inventory (STAI,

STAI-S subscale for the state of anxiety) [53], Center for Epidemiologic Studies Depression Scale (CES-D) [54], (iii) the items reflecting subjective feelings of the COVID-19 pandemic: related worries and fears, recent changes in anxiety, depression and suicidality over the period of pandemic, as well as (iv) a history of mental disorders, somatic disorders, attitudes towards recommended protective behavior against COVID-19 virus, and (v) personal beliefs about the pandemic’s origins, life habit changes like changes in physical activity, eating behavior, sleep and sex quality, deviations in social media, and substance use.

The Risk Assessment Suicidality Scale (RASS) has been developed as a self-report instrument with an emphasis on items describing suicide-related behavior itself [52]. This scale consists of 12 items rated on a four-point Likert scale with responses ranging from 0 to 3 (Not at all, A little bit, Much, Very much, respectively) and assess fear of death, intention regarding suicide, enjoyment gained from life, and a history of suicide attempts and self-harm behavior, with higher scores reflecting a greater tendency towards suicidality. According to the RASS scale developers’ recommendations, we have also applied an item-based standardization procedure by applying specific scores to each response to calculate the total suicidality risk score [52].

Depression was measured using CES-D with cut-off in the total CES-D score of >23 , as proposed by Fountoulakis et al. for clinically relevant depression [55]; anxiety was measured using STAI, with a cut-off in the total STAI score of >39 for clinically relevant anxiety [56].

As has previously been described elsewhere [4], the questionnaire was translated into Russian and double checked by back translation into English by bilingual speakers.

Statistical analysis

To prepare database to the analysis, we reviewed and transformed (reversed scoring) all the ordinal and some dichotomic variables scores (B1, B2, B4, C1, C2, C3, C4, D1, D2, D3, D4, E1, E2, E3, E4, E5, E6, E7, F21, G21, H1, H2, H3, H4, I1, I2, I3, J1, J2, J3, J4, J5, J6, J7, K1, K2, K3, K4, K5, L1, L2, L3, L4, M1, M2, M3, M4, M5, M6, N1, N2, N3, N4, O11, O12, O13, Spiritual/Religiousness increase, see Supplementary 1 for the variables codes) to unify all the measurements in a consistent manner: higher values/levels correspond to a higher severity/risk.

First, to characterize the general study population we used descriptive statistics with continuous variables described as means and standard deviations (S.D.) and categorical variables as absolute and relative frequencies per category.

As a second step, we projected our survey data onto the entire adult (≥ 18 years old) population of Russia using population data registered by the Federal State Statistics Service on December 31st, 2020 [57]. We calculated a population distribution by set age groups (18–19, 20–24, 25–29, 30–34, 35–39, 40–44, 45–49, 50–54, 55–59, 60–64, 65–69, 70–74, 75–79, 80–84, >84 years), gender (male, female) and residence (urban, village) and made a raking weighting of our survey data by applying a weight to every case in terms of descriptive analysis of socio-demographic variables and total RASS scores. Also, insofar as the RASS scale has no clearly defined cut-offs, we analyzed total RASS score (both raw and standardized) distributions and D'Agostino Skewness against the normal distribution to determine normal scores' cut-offs and the proportion of the population with abnormal scores.

Finally, to determine demographical, clinical, behavioral, and external factors associated with suicidality risks we processed standardized RASS scores using several regression models. The flow-chart for the regression analysis can be found in the supplementary materials (Figure S1). Insofar as most of variables were ordinal and could be treated either as categorical or continuous variables, we used them in two different types of regression analyses. The first approach was based on coding all the ordinal variables as of a continuous type in order to evaluate the linear relationships between them and the total RASS score, whilst the second analysis treated the ordinal variables as a categorical data type in order to determine specific responses that act as either risk or protective factors.

Prior to each regression analysis we screened for strongest predictors among the list of the three continuous (year of birth, STAI-S, and CES-D total scores) and 73 categorical/ordinal variables (items of the questionnaire — socio-demographical features ($n=9$), general health ($n=3$), COVID-19-related worries and fears ($n=4$), COVID-19 associated protective behavior ($n=4$), family relationships and stressors ($n=7$), recent changes in emotional state ($n=2$), physical activity changes ($n=4$), eating behavior changes ($n=3$), common misconceptions and misbeliefs ($n=7$), sleep quality ($n=4$), substances use

history and patterns ($n=4$), sex ($n=4$), recent change in suicidal behavior ($n=1$), religiousness ($n=1$), depression and anxiety scores threshold ($n=2$), history of self-reported mental health disorder and psychiatric treatment ($n=11$); for the entire set of variables, see Supplementary 1). For this purpose, we used the Lasso regression method with a Max of 100 for the Lambda constant, 0.0001 Lambda ratio, 10.000 Max iterations with a 10-fold cross-validation to a Max of 30 variables to retain. This method was intended to perform a penalized estimation of the linear regression by applying the cycles of regularization in order to minimize the objective Lambda function and to determine a feasible set of explanatory variables based on a large set of variables by removing those variables with weak explanatory capacity and thus to enhance the prediction accuracy and interpretability.

Those variables that survived in the LASSO regression after minimal Lambda values were achieved were entered as either categorical or continuous predictors, respectively, into two General linear regression best subset models with R^2 selected as a goodness criterion and the total standardized RASS score as the dependent variable. For the general regression model with the ordinal variables treated as categorical, an ANOVA with post-hoc Bonferroni correction for multiple comparisons was performed to calculate the total RASS score mean values (Mean) with 95% confidence intervals (CIs) across the categories and to evaluate the between-group comparisons.

All statistical procedures were estimated as significant at $\alpha=0.05$. Statistical analysis was performed using TIBCO Statistica (TIBCO Software Inc., 2018; Statistica data analysis software system, version 13. <http://tibco.com>).

RESULTS

Socio-demographic and mental health characteristics of the study sample

Among overall 7777 valid cases from the Russian study sample of the COMET-G dataset (age ≥ 18 years old, complete cases), 7714 fulfilled the inclusion criteria for the analysis (Mean (SD) age: 32.98 (11.96), 60.77% ($n=4688$) females, 36.57% ($n=2821$) males, and 2.66% ($n=205$) of non-binary gender who preferred not to disclose this information. See socio-demographic (raw and weighted results) and general medical/mental health characteristics (raw results) of the study sample in Tables 1 and 2, respectively.

Table 1. Socio-demographic characteristics of the Russian study sample

Variables	N=7714	Population ≥18 years data (N=116 082 939 on December 31st, 2020)	Weighted study data (N=117 107 057)
Age, Mean (SD)	32.975 (11.96)		47.273 (17.710)
Gender, n (%)			
Female	4688 (60.77%)	63 686 983 (54.86%)	65 251 223 (55.46%)
Male	2821 (36.57%)	52 395 956 (45.14%)	52 395 956 (44.54%)
Other	205 (2.66%)		0 (0%)
Residence (A3), n (%)			
Capital City	1131 (14.66%)		15 485 117 (13.22%)
City >1 million population	2304 (29.87%)		30 935 599 (26.42%)
City (100 000 – 1 million population)	2058 (26.68%)		25 391 823 (21.68%)
Town (20 000 – 100 000 inhabitants)	969 (12.56%)		12 272 249 (10.48%)
Town (<20 000 inhabitants)	327 (4.24%)		4 700 320 (4.01%)
Urban subtotal	6789 (88.0%)	87 206 206 (75.12%)	89 261 572 (75.87%)
Rural area — Village	925 (11.99%)	28 876 733 (24.88%)	28 385 608 (24.13%)
Education (A7), n (%)			
Elementary school (<9 years)	700 (9.07%)		10 505 956 (8.93%)
High school (9–12 years)	2804 (36.35%)		39 960 656 (33.96%)
Bachelor's Degree	1365 (17.70%)		18 975 764 (16.13%)
University	2512 (32.56%)		41 993 808 (35.69%)
Scientific degree	333 (4.32%)		6 225 524 (5.29%)
Marital status (A4), n (%)			
Married (or in a civil partnership)	3204 (41.53%)		58 005 900 (49.53%)
Single	2259 (29.28%)		24 146 909 (20.62%)
Live with someone without an official relationship	850 (11.02%)		8 238 633 (7.04%)
Divorced (or estranged)	594 (7.70%)		12 041 073 (10.28%)
Widower	108 (1.40%)		8 040 584 (6.87%)
Other	699 (9.06%)		6 633 958 (5.66%)
Living with (A5), n (%)			
Alone	1076 (13.95%)		21 986 990 (18.78%)
2	2328 (30.18%)		39 125 928 (33.41%)
3	1955 (25.34%)		25 355 665 (21.65%)
4	1503 (19.48%)		17 970 605 (15.35%)
5+	852 (11.04%)		12 667 869 (10.82%)
Number of children (A6), n (%)			
0	3957 (51.30%)		34 946 699 (29.84%)
1	1817 (23.55%)		34 593 877 (29.54%)
2	1460 (18.93%)		36 652 231 (31.30%)
3	346 (4.49%)		7 846 593 (6.70%)
4	134 (1.74%)		3 067 659 (2.62%)

Table 2. Mental health characteristics of the Russian population study sample

Variables	Overall (N=7714)
General perception of health condition (B1), n (%)	
Bad	279 (3.62%)
Moderate	1370 (17.77%)
Good	2483 (32.20%)
Very good	1205 (15.63%)
Perfect	2373 (30.78%)
RASS total normalized score, Mean (SD)	386.97 (277.51)
Current anxiety level. STAI Mean total score (SD)	44.92 (11.71)
Clinically relevant anxiety. STAI >39, n (%)	5047 (65.43%)
Current depression level. CES-D, Mean total score (SD)	18.01 (11.82)
Clinically relevant depression, CES-D >23, n (%)	2327 (30.17%)
Anxiety changes during pandemic (F21), n (%)	
Much worse	905 (11.73%)
A little worse	2271 (29.44%)
The same	3940 (51.08%)
A little better	373 (4.84%)
Much better	225 (2.92%)
Depression changes during pandemic (G21), n (%)	
Much worse	991 (12.85%)
A little worse	1836 (23.80%)
The same	4200 (54.45%)
A little better	428 (5.55%)
Much better	259 (3.36%)
Reported mental disorder in history (B5), n (%)	
No reported mental disorder in history	5933 (76.91%)
Reported anxiety disorder in history	970 (12.57%)
Reported depression in history	961 (12.46%)
Reported psychosis in history	179 (2.32%)
Reported bipolar disorder in history	167 (2.16%)
Reported other mental disorder in history	280 (3.63%)
Reported psychiatric treatment in history (B6), n (%)	
No psychiatric treatment reported	6798 (88.13%)
Reported psychotherapy history	365 (4.73%)
Reported antipsychotics use in history	233 (3.02%)
Reported antidepressants use in history	457 (5.92%)
Reported anxiolytics use in history	245 (3.18%)

Weights calculation results based on the raking analysis can be found in the Supplement (Table S1). The socio-demographical characteristics of the weighted study population are very close to those of the general population (Table S1) making it reasonable to project the study results onto the general population.

Almost half ($n=3435$, 44.53%) of the respondents lived in either the capital or cities with populations of greater than 1 million people. 54.58% of the respondents were educated to at least high school level ($n=4210$). The largest proportion of respondents were in a relationship ($n=4054$, 52.55%) and lived with someone else ($n=6638$, 86.05%), 51.3% did not have children ($n=3957$). The majority described their general health as being better than moderate ($n=6061$, 78.57%), while poor medical health was observed only in 279 persons (3.62%). Nevertheless, nearly two-thirds of participants ($n=5047$, 65.43%) reported clinically relevant anxiety levels based on the STAI-S total score of >39 , while less than one-third ($n=2327$, 30.17%) of participants demonstrated depression with a CES-D depression score of >23 . More than a half of the study population felt that their anxiety or depression levels had not changed or had even improved during the pandemic ($n=4538$, 58.83%; $n=4887$, 63.35%), while 3176 (41.17%) participants and $n=2827$ (36.65%) experienced a deterioration in either anxiety or depression, respectively. Most of the

respondents indicated no history of any mental disorder ($n=5933$, 76.91%) or psychiatric treatment ($n=6798$, 88.13%), while a known history of anxiety disorder, depression, “psychosis”, bipolar disorder, or other mental disturbances were reported by 970 (12.57%), 961 (12.46%), 179 (2.32%), 167 (2.16%), and 280 (3.63%), respectively. A history of antidepressant treatment was among the most common of treatments ($n=457$, 5.92%), followed by psychotherapy ($n=365$, 4.3%), anxiolytics ($n=245$, 3.18%), and use of antipsychotics ($n=233$, 3.02%); some of the respondents received more than one type of treatments.

Statistical model of the suicide risk in the Russian population

The distribution of RASS total normalized scores in the study population is skewed (Skewness=0.825, D’Agostino Skewness=26.06, $p < 0.0001$) to the right after the score of >500 (29.2%) (Figure 1a). Projection of these results onto the Russian population aged older than 18 suggest that 20.68% of the general population might have an increased suicidal risk (RASS standardized total score >500) (Figure 1b).

Suicide risk and protective factors in the Russian study sample

Overall, among the 76 variables of the COMET-G protocol, the following variables were selected based

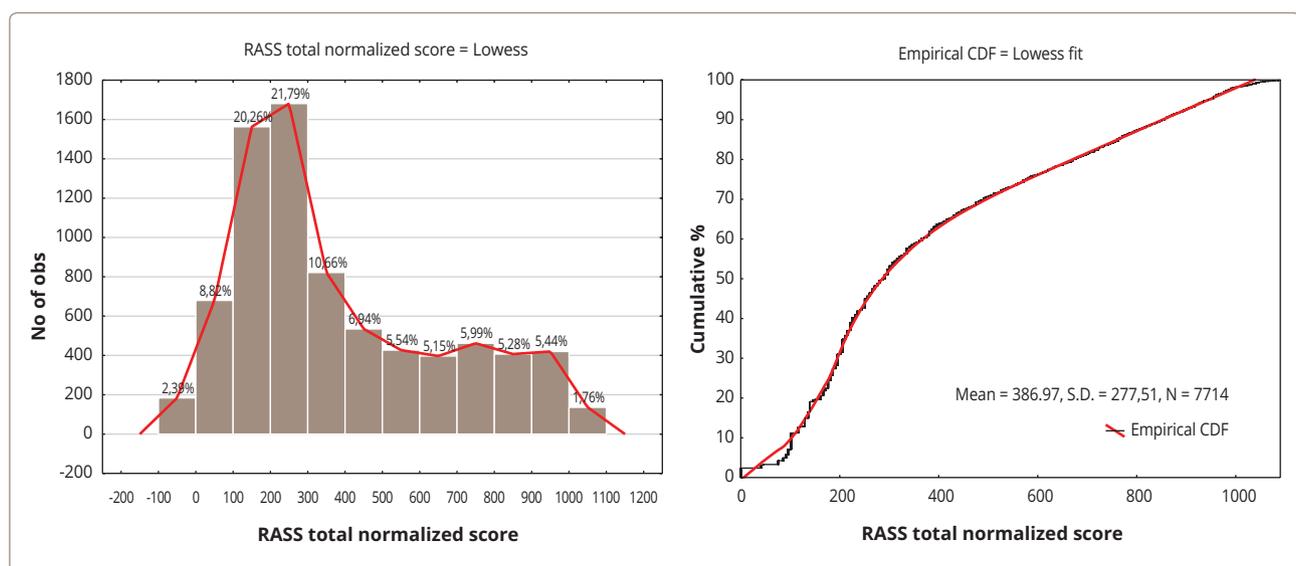


Figure 1a. The total RASS normalized score in the Russian population study sample adjusted to the Russian general population statistics: histogram (left) and the cumulative distribution function (CDF) diagram (right).

Note: The lines represent locally weighted scatterplot smoothing (Lowess) fit.

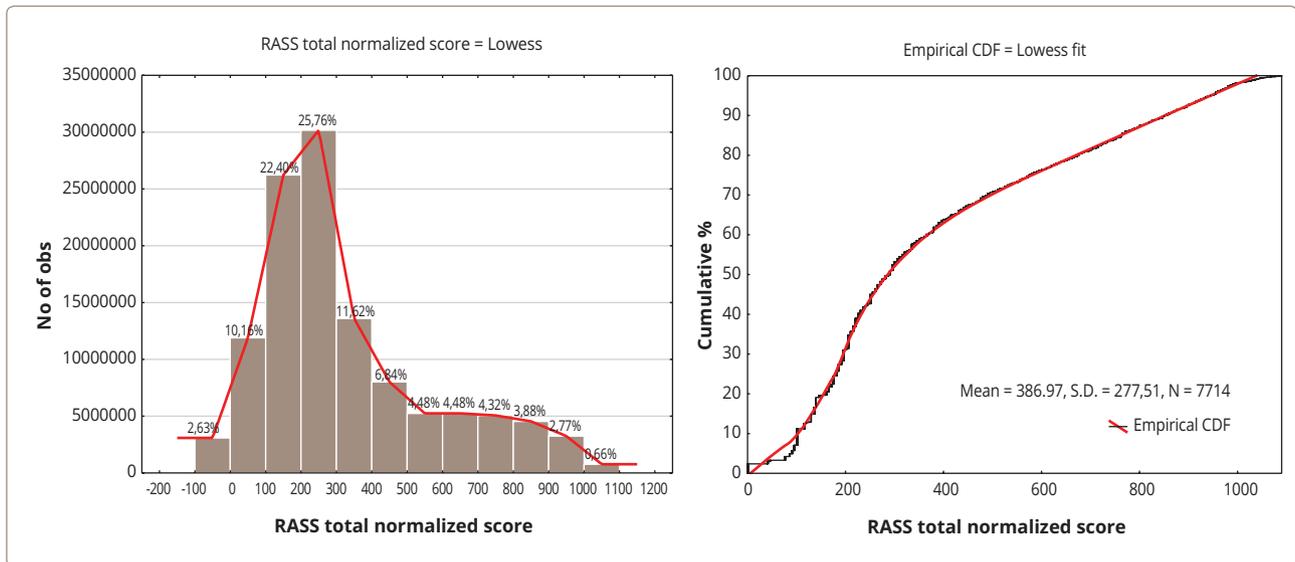


Figure 1b. The total RASS normalized score in the Russian population study sample adjusted to the Russian general population statistics: histogram (left, presented in percentage) and the cumulative distribution function (CDF) diagram (right). Note: The lines represent locally weighted scatterplot smoothing (Lowess) fit.

on the LASSO regression: (A2) Year of birth, (A4) Marital status, (A6) Number of children, (B5) Reported history of bipolar disorder, (B5) Reported history of depression, (B5) Reported history of other mental disorders, (B6) Reported antipsychotics use in history, CES-D >23, CES-D total score, (L3) Use of hypnotics, (L4) Nightmares, (M2) History of alcohol use, (M3) History of illicit drug use, No reported history of mental disorder, (O11) Recent change in suicidal thoughts, from the analysis of ordinal variables coded as continuous (see Figure S2 in Supplements for detailed results), and (A2) Year of birth, (A4) Marital status, (A7) Number of people in household, (B5) No reported history of mental disorders, (B6) Reported history of use of antipsychotics, (B5) Reported history of bipolar disorder, (B5) Reported history of depression, (B5) Reported history of other mental disorders, CES-D >23, CES-D total score, (D3) Precautions can help to prevent the spread of the virus, (E1) Need to communicate, (E2) Need for emotional

support, (E3) Family conflict, (L3) Use of hypnotics, (L4) Nightmares, (M2) Alcohol use in history, (M3) Illicit drugs use in history, from the analysis of ordinal variables coded as categorical (see Figure S3 in Supplements for detailed results).

These regressors were included in the two final best subset general linear regression models. The final best subset models were significant and explained 42.8% and 44.0% of the RASS suicidal risk score variability (Table 3). Univariate data analyses of the model are summarized in Tables 4 and 6. Tables 5 and 7 report the effects of parameter estimates where B and β measurements can be used to explain the nature of an association between each regressor and the RASS total score, with positive values reflecting an increased risk while negative values indicate a protective effect.

The following variables predicted the RASS total standardized score in a linear manner: CES-D total

Table 3. The best subset general linear regression model for fitting regressor variables and explaining the variety of the RASS total suicidality scores in the Russian population study sample

Model type	Mult. R ²	Adj. Mult. R ²	SS	Df model	MS	SS residual	Df residual	MS residual	F	p
All variables as continuous	0.428	0.426	253957392	22	11543518	340020457	7691	44210.2	261.1	<0.0001
All variables as categorical	0.443	0.440	263011138	32	8219098	330966711	7681	43089	190.7	<0.0001

Table 4. Univariate continuous data analysis of the general linear model predicting the RASS total standardized suicidality scores in the Russian population study sample

Effect	SS	df	MS	F	p	Partial η^2	Non-centrality	Observed power ($\alpha=0.05$)
Intercept	4078652	1	4078652	92.256	<0.001	0.012	92.26	1.00
CES-D Total score	16781198	1	16781198	379.578	<0.001	0.047	379.58	1.00
A2. Year of birth	4726106	1	4726106	106.901	<0.001	0.014	106.90	1.00
M3. Illicit drugs use in history	4583386	1	4583386	103.673	<0.001	0.013	103.67	1.00
B5. Reported depression in history	4483258	1	4483258	101.408	<0.001	0.013	101.41	1.00
M2. Alcohol use in history	2766860	1	2766860	62.584	<0.001	0.008	62.58	1.00
L4. Nightmares	2699870	1	2699870	61.069	<0.001	0.008	61.07	1.00
E3. Family conflicts	2009256	1	2009256	45.448	<0.001	0.006	45.45	1.00
L3. Use of hypnotics	1492063	1	1492063	33.749	<0.001	0.004	33.75	1.00
A4. Marital status	1470723	5	294145	6.653	<0.001	0.004	33.27	1.00
B5. Reported bipolar disorder in history	1301404	1	1301404	29.437	<0.001	0.004	29.44	1.00
B5. Reported other mental disorder in history	1299200	1	1299200	29.387	<0.001	0.004	29.39	1.00
D3. Precautions can help to prevent the spread of the virus	1109357	1	1109357	25.093	<0.001	0.003	25.09	1.00
A7. Number of people in household	690377	1	690377	15.616	<0.001	0.002	15.62	0.98
E2. Need for emotional support	682440	1	682440	15.436	<0.001	0.002	15.44	0.98
CES-D >23	393136	1	393136	8.892	0.003	0.001	8.89	0.85
B6. Reported antipsychotics use in history	321795	1	321795	7.279	0.007	0.001	7.28	0.77
E1. Need to communicate	258079	1	258079	5.838	0.016	0.001	5.84	0.68
B5. No reported mental disorder in history	113791	1	113791	2.574	0.109	0.000	2.57	0.36
Error	340020457	7691	44210					

Note: Predictors are estimated as continuous variables and sorted by partial η^2 effect size.

score, CES-D total score >23, year of birth, history of use of illicit drugs and alcohol, history of depressive disorders, nightmares, and use of hypnotics, believing that precautions can help to prevent the spread of COVID-19, recent changes in family conflicts, number of people in household, need for emotional support and communication (Tables 4 and 5). Regression with the ordinal variables, coded as categorical, showed that the factors of recent changes in suicidal thoughts and the number of children predicted the RASS total normalized score in a non-linear manner (Tables 6 and 7). Finally, the history of some mental disorders and the use of antipsychotics also predicted the RASS total standardized score.

Table 8 demonstrates the marginal mean values of RASS total scores based on the level of the categorical regressor. Figure 2 notably depicts an association

between the RASS score and age (year of birth), as well as the interactions between age and gender. Being married, being a widower, and having 1–3 children served as protective factors against the development of suicidality, the variables describing good sleep quality without use of hypnotics, no history of alcohol or illicit drug use, and having no current depression or history of any mental disorders were associated with a statistically significant lower RASS total standardized score, whereas other responses have been correlated with higher suicidality risk scores. Distribution of the RASS total standardized scores by age and gender demonstrated no apparent difference between males and females, but presented a clear increase of suicidality among youngers (Figure 2). As only 2.66% ($n=205$) described their gender as “other”, the age-by-gender distribution of this subpopulation may show inconsistent results, however.

Table 5. General regression model predicting the RASS total standardized suicidality scores in the Russian population study sample based on continuous variables output

Predictor	Level of effect	B	S.E. of B	t	p	LCL 95% of B	UCL 95% of B	β	S.E. of β	LCL 95% of β	UCL 95% of β
Intercept		-4582.89	477.14	-9.60	<0.001	-5518.21	-3647.58				
A2. Year of birth		2.48	0.24	10.34	<0.001	2.01	2.95	0.11	0.01	0.09	0.13
M3. Illicit drugs use in history		76.68	7.53	10.18	<0.001	61.92	91.44	0.10	0.01	0.08	0.12
CES-D total score		7.68	0.39	19.48	<0.001	6.90	8.45	0.33	0.02	0.29	0.36
B5. Reported depression in history	No	-50.21	4.99	-10.07	<0.001	-59.98	-40.43	-0.12	0.01	-0.14	-0.10
M2. Alcohol use in history		60.21	7.61	7.91	<0.001	45.29	75.13	0.07	0.01	0.06	0.09
L4. Nightmares		22.02	2.82	7.81	<0.001	16.50	27.54	0.08	0.01	0.06	0.10
E3. Family conflicts		15.97	2.37	6.74	<0.001	11.33	20.62	0.06	0.01	0.04	0.08
L3. Use of hypnotics		17.02	2.93	5.81	<0.001	11.28	22.76	0.06	0.01	0.04	0.08
B5. Reported bipolar disorder in history	No	-48.07	8.86	-5.43	<0.001	-65.44	-30.70	-0.05	0.01	-0.07	-0.03
B5. Reported other mental disorder in history	No	-37.66	6.95	-5.42	<0.001	-51.28	-24.04	-0.05	0.01	-0.07	-0.03
D3. Precautions can help to prevent the spread of the virus		11.77	2.35	5.01	<0.001	7.16	16.37	0.05	0.01	0.03	0.06
A7. Number of people in household		-8.53	2.16	-3.95	<0.001	-12.76	-4.30	-0.04	0.01	-0.05	-0.02
E2. Need for emotional support		-13.02	3.31	-3.93	<0.001	-19.52	-6.52	-0.04	0.01	-0.06	-0.02
A4. Marital status	Married (or in a civil partnership)	-20.55	5.30	-3.88	<0.001	-30.93	-10.16	-0.04	0.01	-0.06	-0.02
CES-D >23	Yes	14.31	4.80	2.98	0.003	4.90	23.72	0.05	0.02	0.02	0.08
B6. Reported antipsychotics use in history	No	-20.63	7.65	-2.70	0.007	-35.62	-5.64	-0.03	0.01	-0.04	-0.01
E1. Need to communicate		7.53	3.12	2.42	0.016	1.42	13.64	0.03	0.01	0.00	0.05
A4. Marital status	Single	11.71	5.91	1.98	0.047	0.13	23.30	0.02	0.01	0.00	0.04
A4. Marital status	Live with someone without an official relationship	12.43	7.44	1.67	0.095	-2.16	27.01	0.02	0.01	0.00	0.03
B5. No reported mental disorder in history	No	6.88	4.29	1.60	0.109	-1.53	15.29	0.02	0.01	0.00	0.05
A4. Marital status	Divorced (or estranged)	9.00	8.33	1.08	0.280	-7.33	25.33	0.01	0.01	-0.01	0.03
A4. Marital status	Other	0.28	8.17	0.03	0.972	-16	16	0.00	0.01	-0.02	0.02

Note: Positive values of B or β indicate an increase in suicidal risk, whilst negative values denote protective factors; the predictors are sorted by p-level.

Table 6. Univariate categorical data analysis of the general linear model predicting the RASS total standardized suicidality scores in the Russian population study sample

Predictor	SS	df	MS	F	p	Partial η^2	Non-centrality	Observed power ($\alpha=0.05$)
Intercept	2635321	1	2635321	61,160	<0.001	0,008	61,16	1,00
CES-D total score	13943609	1	1,4E+07	323,600	<0.001	0,040	323,60	1,00
O11. Recent change in suicidal thoughts	11823509	4	2955877	68,599	<0.001	0,034	274,40	1,00
M3. Illicit drugs use in history	5163497	2	2581748	59,917	<0.001	0,015	119,83	1,00
Reported depression in history	4384887	1	4384887	101,764	<0.001	0,013	101,76	1,00
A2. Year of birth	3471227	1	3471227	80,559	<0.001	0,010	80,56	1,00
M2. Alcohol use in history	3070752	1	3070752	71,265	<0.001	0,009	71,27	1,00
L4. Nightmares	2777783	4	694446	16,117	<0.001	0,008	64,47	1,00
B5. Reported other mental disorder in history	1652906	1	1652906	38,360	<0.001	0,005	38,36	1,00
B5. Reported bipolar disorder in history	1546127	1	1546127	35,882	<0.001	0,005	35,88	1,00
L3. Use of hypnotics	1377382	4	344345	7,992	<0.001	0,004	31,97	1,00
A4. Marital status	832964	5	166593	3,866	0,002	0,003	19,33	0,94
A6. Number of children	421692	4	105423	2,447	0,044	0,001	9,79	0,71
B6. Reported antipsychotics use in history	394881	1	394881	9,164	0,002	0,001	9,16	0,86
CES-D >23	141110	1	141110	3,275	0,070	0,000	3,27	0,44
B5. No reported mental disorder in history	25797	1	25797	0,599	0,439	0,000	0,60	0,12
Error	330966711	7681	43089					

Note: Predictors are estimated as categorical variables and sorted by partial η^2 effect size.

DISCUSSION

To our knowledge, the current work represents the first large-scale study that evaluates suicidality rates in the Russian general population in the context of the COVID-19 pandemic. Our study sample included 7714 respondents whose socio-demographic characteristics were consistent with the data for the general population of Russia and have been weighted for data analysis purposes [57].

Graphic analysis of the RASS total suicidality score distribution in our study sample shows that it is clearly skewed towards to the right after a score of 500, while in the score range from 0 to 500 the shape of the distribution is normal (Figures 1a, 1b). Thus, normalized scores over 500 on the RASS scale may reflect an increased suicidality. In our study sample, 2249 (29.15%) respondents had a normalized total RASS score higher than 500. The RASS scores distribution violated the hypothesis of a normal distribution, but even if we would accept this hypothesis, we would observe 1595 (20.68%) respondents with a total score higher than 664.5 (Mean 387.00 plus 1SD=277.51).

Therefore, our results indicate that, at least 20%, and as high as 30%, of the study population demonstrated an increased suicidality risk during the pandemic in 2020. Similar results were observed in an Australian study [32], where 27.5% of population sample during COVID-19 (March 19th, 2020 – April 15th, 2020) reported suicidal thoughts. In the UK, suicidal thoughts and ideas of self-harm have been occurring more frequently in patients with COVID-19 diagnosis (33%) than in the general population (18% — suicidal thoughts, 5% — self-harm ideas). The same tendency was observed in China (up to 27% with suicidal thoughts among infected patients; 24.5% among Wuhan hospital patients; 29.7% among adolescents during the first pandemic wave vs. 22.5% across the second wave), and suicidality has increased in the Danish, Greek, Indian, and the Japanese general populations and in other countries of Eurasia [10, 51, 59–62]. However, there was no evidence of any significant increase in suicide rates in response to the pandemic; the Czech Republic, Italy, Poland, and

Table 7. General regression model predicting the RASS total standardized suicidality scores in the Russian population study sample based on categorical variables output

Effect	Level of effect	B	S.E. of B	t	p	LCL 95% of B	UCL 95% of B	β	S.E. of β	LCL 95% of β	UCL 95% of β
Intercept		-3903	499	-7.82	<0.001	-4881	-2924				
A2. Year of birth		2.26	0.25	8.98	<0.001	1.76	2.75	0.10	0.01	0.08	0.12
CES-D total score		7.04	0.39	17.99	<0.001	6.27	7.80	0.30	0.02	0.27	0.33
M2. Alcohol use in history	I did not drink much	-31.68	3.75	-8.44	<0.001	-39.03	-24.32	-0.08	0.01	-0.10	-0.06
M3. Illicit drugs use in history	I did not use it	-67.47	7.64	-8.83	<0.001	-82.45	-52.50	-0.08	0.01	-0.10	-0.07
O11. Recent change in suicidal thoughts	Very much decreased	-79.97	7.63	-10.49	<0.001	-94.92	-65.03	-0.11	0.01	-0.13	-0.09
O11. Recent change in suicidal thoughts	Decreased a bit	99.32	10.51	9.45	<0.001	78.71	119.94	0.11	0.01	0.09	0.14
O11. Recent change in suicidal thoughts	Neither increased, nor decreased	-45.87	4.76	-9.63	<0.001	-55.20	-36.54	-0.10	0.01	-0.12	-0.08
B5. Reported depression in history	No	-49.76	4.93	-10.09	<0.001	-59.43	-40.09	-0.12	0.01	-0.14	-0.10
O11. Recent change in suicidal thoughts	Increased a bit	57.04	7.11	8.02	<0.001	43.10	70.97	0.08	0.01	0.06	0.10
L4. Nightmares	Almost never	-45.64	6.07	-7.52	<0.001	-57.55	-33.74	-0.09	0.01	-0.11	-0.06
B5. Reported other mental disorder in history	No	-42.48	6.86	-6.19	<0.001	-55.93	-29.04	-0.06	0.01	-0.08	-0.04
B5. Reported bipolar disorder in history	No	-52.46	8.76	-5.99	<0.001	-69.63	-35.29	-0.06	0.01	-0.07	-0.04
L3. Use of hypnotics	Almost never	-30.37	6.09	-4.99	<0.001	-42.31	-18.43	-0.05	0.01	-0.07	-0.03
M3. Illicit drugs use in history	Occasionally and rather rarely	38.40	8.82	4.35	<0.001	21.11	55.68	0.04	0.01	0.02	0.06
A4. Marital status	Married (or in a civil partnership)	-17.33	5.52	-3.14	0.002	-28.15	-6.50	-0.03	0.01	-0.05	-0.01
B6. Reported antipsychotics use in history	No	-22.99	7.60	-3.03	0.002	-37.88	-8.10	-0.03	0.01	-0.05	-0.01
CES-D >23	Yes	8.61	4.76	1.81	0.070	-0.72	17.93	0.03	0.02	0.00	0.06
A6. Number of children	0	11.18	6.49	1.72	0.085	-1.54	23.90	0.02	0.01	0.00	0.05
L4. Nightmares	Rarely	12.26	7.20	1.70	0.088	-1.85	26.37	0.02	0.01	0.00	0.03
A6. Number of children	2	-10.74	6.38	-1.68	0.092	-23.26	1.77	-0.02	0.01	-0.04	0.00
A4. Marital status	Single	9.67	6.14	1.58	0.115	-2.36	21.71	0.02	0.01	0.00	0.04
A6. Number of children	1	-9.28	5.97	-1.56	0.120	-21	2	-0.02	0.01	-0.03	0.00
L3. Use of hypnotics	Sometimes	11.92	8.33	1.43	0.153	-4.42	28.26	0.01	0.01	0.00	0.03
L4. Nightmares	Often	12.36	9.75	1.27	0.205	-6.76	31.48	0.01	0.01	-0.01	0.03
A4. Marital status	Divorced (or estranged)	10.58	8.38	1.26	0.207	-5.85	27.01	0.01	0.01	-0.01	0.03
L3. Use of hypnotics	Often	10.21	10.96	0.93	0.352	-11.27	31.70	0.01	0.01	-0.01	0.03
A4. Marital status	Live with someone without an official relationship	5.86	7.44	0.79	0.431	-8.72	20.44	0.01	0.01	-0.01	0.02
B5. No reported mental disorder in history	No	3.28	4.24	0.77	0.439	-5.03	11.58	0.01	0.01	-0.02	0.04
L4. Nightmares	Sometimes	-5.13	7.01	-0.73	0.465	-18.88	8.62	-0.01	0.01	-0.02	0.01
L3. Use of hypnotics	Rarely	5.30	7.88	0.67	0.501	-10.14	20.74	0.01	0.01	-0.01	0.03
A4. Marital status	Other	3.83	8.14	0.47	0.638	-12.12	19.78	0.00	0.01	-0.01	0.02
A6. Number of children	3	-2.02	9.83	-0.21	0.837	-21.30	17.25	0.00	0.01	-0.02	0.02

Note: Positive values of B or β indicate an increased suicidal risk, whilst negative values denote the protective factors; the predictors are sorted by p-level.

Table 8. Descriptive statistics of the RASS total standardized suicidality scores in the Russian population study sample, linking the variables selected by the best subset general regression model within the post-hoc ANOVA analysis

Effect	Level of effect	N	Mean	S.D.	S.E.	LCL 95%	UCL 95%	Bonferroni homogenous groups ($p < 0.05$)*
A4. Marital status	Divorced (or estranged)	594	385,18	271,93	11,16	363,26	407,09	A
	Live with someone without an official relationship	850	436,14	285,91	9,81	416,89	455,38	B
	Married (or in a civil partnership)	3204	311,81	235,90	4,17	303,64	319,98	C
	Other	699	454,03	294,87	11,15	432,14	475,93	B
	Single	2259	458,09	296,83	6,25	445,85	470,34	B
	Widower	108	317,96	266,43	25,64	267,14	368,79	C
A6. Number of children	0	3957	448,39	294,13	4,68	439,22	457,55	A
	1	1817	333,60	249,80	5,86	322,11	345,10	B
	2	1460	302,89	230,30	6,03	291,07	314,71	C
	3	346	313,82	235,47	12,66	288,92	338,71	BC
	4	134	402,01	268,74	23,22	356,10	447,93	A
L3. Use of hypnotics	Almost never	5993	335,56	247,89	3,20	329,28	341,84	A
	Rarely	693	552,42	303,07	11,51	529,81	575,02	B
	Sometimes	556	519,50	292,08	12,39	495,17	543,83	B
	Often	269	621,06	294,94	17,98	585,65	656,47	C
	Almost always	203	666,80	284,41	19,96	627,44	706,16	C
L4. Nightmares	Almost never	5434	314,84	232,70	3,16	308,66	321,03	A
	Rarely	856	562,84	299,28	10,23	542,77	582,92	B
	Sometimes	882	495,81	290,34	9,78	476,62	514,99	C
	Often	350	626,47	289,48	15,47	596,04	656,90	D
	Almost always	192	707,63	277,31	20,01	668,15	747,11	E
M2. Alcohol use in history	I did not drink much	6698	365,69	268,03	3,27	359,27	372,11	A
	I drank a lot	1016	527,28	297,51	9,33	508,97	545,60	B
M3. Illicit drugs use in history	I did not use it	7089	363,45	264,82	3,15	357,29	369,62	A
	Occasionally and rather rarely	495	642,77	280,95	12,63	617,96	667,58	B
	Often	130	695,50	267,11	23,43	649,15	741,85	C
O11. Recent change in suicidal thoughts	Very much decreased	626	325,10	253,99	10,15	305,16	345,03	A
	Decreased a bit	275	643,47	255,11	15,38	613,19	673,76	B
	Neither increased, nor decreased	5530	338,71	250,34	3,37	332,11	345,30	A
	Increased a bit	773	611,66	282,48	10,16	591,72	631,61	B
	Very much increased	510	507,39	306,90	13,59	480,69	534,09	C
CES-D >23	Yes	2327	594,69	293,23	6,08	582,77	606,61	A
	No	5387	297,24	215,53	2,94	291,49	303,00	B
B5. No reported mental disorder in history	No	1781	553,80	303,78	7,20	539,68	567,92	A
	Yes	5933	336,89	248,14	3,22	330,57	343,21	B
B5. Reported depression in history	No	6753	354,52	258,09	3,14	348,36	360,68	A
	Yes	961	615,01	301,29	9,72	595,94	634,08	B
B5. Reported bipolar disorder in history	No	7547	379,31	272,98	3,14	373,15	385,47	A
	Yes	167	733,20	259,87	20,11	693,50	772,91	B
B5. Reported other mental disorder in history	No	7434	377,62	271,72	3,15	371,44	383,79	A
	Yes	280	635,36	312,68	18,69	598,57	672,14	B
B6. Reported antipsychotics use in history	No	7481	377,62	271,80	3,14	371,46	383,78	A
	Yes	233	687,19	291,57	19,10	649,55	724,82	B
Total		7714	386,97	277,5067	3,1596	380,7767	393,1641	

Note: * Reflect statistically significant differences if there are no common letters at Bonferroni corrected $p < 0.05$ (i.e., A vs. B are different at $p_{\text{Bonferroni}} < 0.05$, while A vs. AB are not different at $p_{\text{Bonferroni}} < 0.05$).

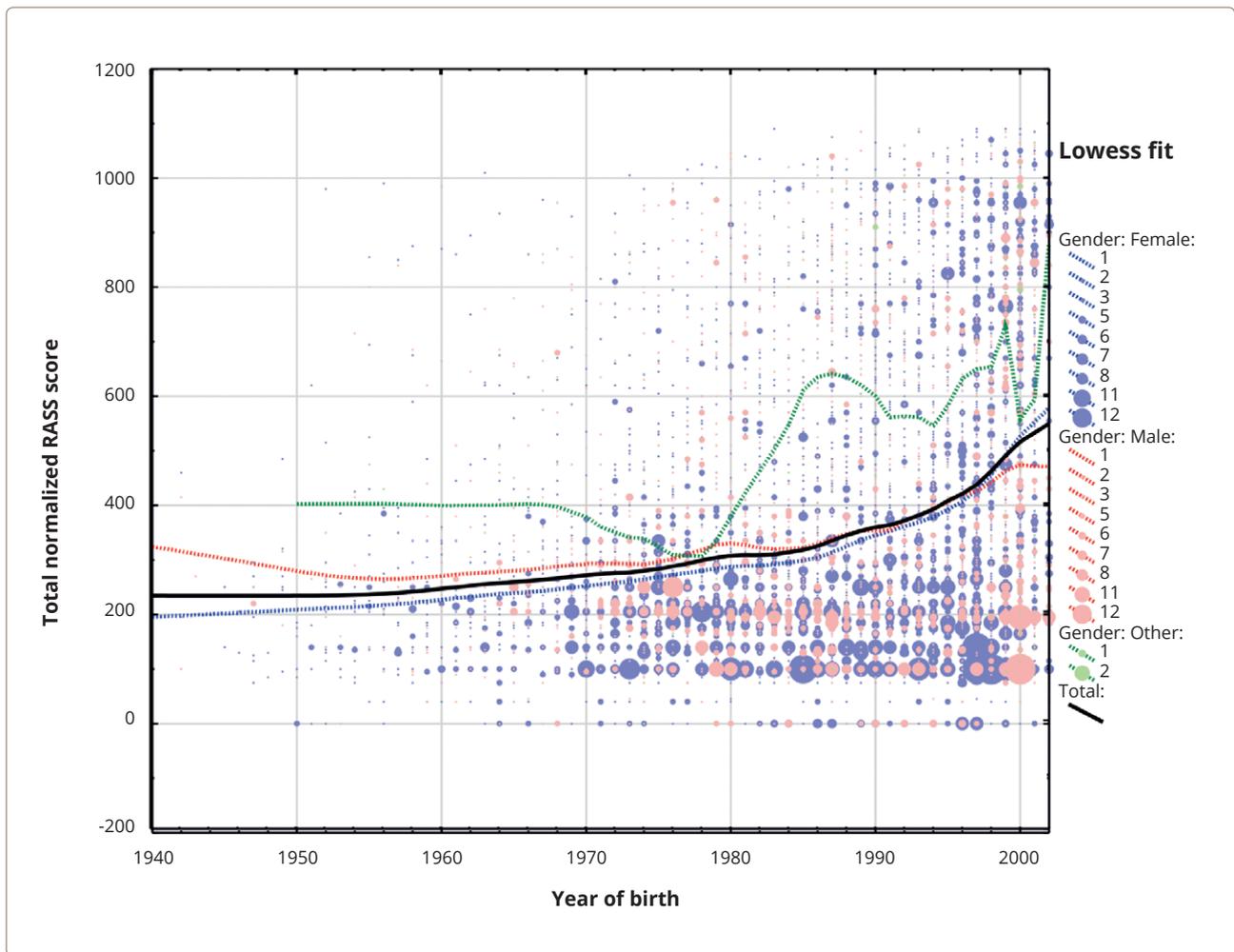


Figure 2. Bubble-plot of associations between the RASS total standardized score and a year of birth categorized by the gender factor.

Note: Bubbles reflect the density of the study population according to the year of birth per total normalized score from $n=1$ to $n=12$; the lines represent locally weighted scatterplot smoothing (Lowess) fits.

other international research groups reported either decreased rates or fluctuating numbers between pandemic waves, but the studies had different methodologies and did not always take into account country statistics on death rates due to COVID-19 [10].

Our regression models, based on 7714 responses from the Russian general population, explain 43–44% of variability in suicidality risks measured according to the RASS scale. The following variables demonstrated significant, but with small effect size, linear relationships with current suicidality risk (placed by the descending effect size order): CES-D total score (depression level), age (A2), illicit drugs use in history (M3), reported depression in history (B5), history of alcohol use (M2), nightmares (L4), family conflicts (E3), use of hypnotics (L3), attitude towards

to precautions' effectiveness in preventing the spread of the COVID-19 (D3), number of people in household (A7), and recent changes in the need for emotional support and communication (E2 and E1). Also, the factors of history of mental disorders, number of children, marital status, current depression status, and absence of antipsychotics use in history demonstrated associations with current suicidality risks. This data supports previous findings that have been obtained both in Russia and internationally, and demonstrated the relationships between deaths from suicide and suicide attempts (not suicidality as a widely understood phenomenon itself) and factors of current depression, history of mental disorders (including depression), substance, illicit drugs, alcohol use, as well as socio-demographic

(e.g., young age) and socio-psychological (e.g., family circumstances) factors [33, 43, 61, 63–65].

Thus, we found that the same factors which have been demonstrated to be related to the rates of committed suicides and suicidal attempts appear in our research in the context of the suicidality phenomenon, including self-harm and suicidal ideation within the items of the RASS scale. Recent meta-analysis of international studies also demonstrated similar findings, namely that suicidal ideation as a part of suicidal behavior was related to the factors of low social support, quarantine measures, loneliness, sleep disturbances, mental health problems, and poor somatic health during the COVID-19 pandemic [66].

Based on model beta coefficients, the variables of psychiatric history and current mental state have been identified as significant risk factors for a higher current suicidality risk, and that a higher severity of current depression (CES-D total score) was the strongest predictor of suicidality risk in the Russian population. Among mental disorders, depression and bipolar disorder have been ranked higher on the list of suicidality risk factors compared to other psychiatric disturbances. These findings are consistent with the general understanding that depression and bipolar depression are the most evident contributors to suicidal ideation and suicidality risks [61, 64]. It is an interesting fact that many studies indicate alcohol use to be a particular suicidal risk factor, particularly in the Russian Federation and in relation to alcohol overconsumption; whilst our results support this data, according to our sample analysis, alcohol misuse was outranked by the use of illicit psychoactive compounds [33, 65]. Consistent with international findings from many Asian studies we found that recent changes in certain other mental health-associated variables, such as the recent increase in suicidal thoughts, deterioration of sleep quality with the need to use sleeping pills, and having nightmares due to COVID-19-related pandemic contexts are also associated with higher current suicidality risks [10, 62, 67, 68]. In Russia, a hypnotics prescription is strictly supervised by psychiatrists. Given that depression and nightmares are stronger predictors of suicidality during the pandemic than the use of hypnotics, this means that the fact of the use of sleeping pills reflects a sequela of present mental disturbances.

The vast majority of previous studies indicated that the history of suicides and self-harm act as the

strongest predictors of suicidal ideation [10]. Our study results support these findings, and, indeed, the factors of history of suicidal attempts and self-harm behavior were the strongest predictors, increasing the R^2 of the model to 65%, but these variables have been removed from the analysis to avoid multicollinearity as far as these factors have been already incorporated into the RASS total score. It is interesting that subjective feelings about the recent change in melancholy (G21 — “How much has your emotional state related to the experience of joy or melancholy changed in comparison to before the COVID-19 epidemic?”) has not appeared among the risk factors for suicidality within the Russian population, although this question implied the detection of depression. In our opinion, the combination of these two findings, that the history of suicidal attempts and self-harm but not recent changes in melancholy, provide a significant input in the variability of suicidal risk may be explained by the habitual pattern completion of suicidal behavior in the form of learned impulsive reaction to life stressors, the “learned suicidality”, which reminds the phenomenon of learned helplessness [69].

With regard to socio-demographic factors, a review of suicidal behavior in Russia and the WHO statistics for the country indicate that men committed suicides 4.7 times more often than women did (43.6 vs. 9.1 per 100,000 population) [33, 58]. However, the number of suicide attempts was apparently higher among females [35, 36]. According to the most recent review about suicides in Russia, the number of suicide attempts increases with age, with its peak at 50 years old [33]. This data does not correspond to our results, which demonstrate that the total suicidality risk score does not differ between the sexes and is highest among the younger population. Nevertheless, these data are generally consistent with the rates of self-harm behavior in a number of international studies, and prominent suicidality risks among the youth both in Russia and abroad [8, 41, 42, 51, 70, 71]. These inconsistencies in suicide attempts and suicidal risk distribution according to RASS score may indicate that these two phenomena are not necessarily linked. Single marital status was a weak risk factor for an increase in suicidality risk score, while being married was a protective factor against suicidal thoughts [33, 43]. Consistent with this, having no children, as opposed to having one or two children, and the factor of living with a smaller number

of people in the household, were significant, but weak, risk factors for an increase in suicidality. These results may possibly be biased by the age factor. We found that a younger age was associated with an increased suicidality, which is similar to the findings of some studies, for example, from Japan, where youths less than 40 years old demonstrated a rise in suicidality risks during the COVID-19 pandemic [10, 72]. Moreover, a younger age corresponds to a lesser likelihood of being married and having children, which have been identified as risk factors for developing suicidality.

In a large study whose aim was to predict suicidal attempts in a foreseeable period of time using an ensemble of machine learning models, the highest-ranking variables were mental health disorders, recent suicidal thoughts and associated changes in behavior, a history of suicidal attempts, and use of psychotropic drugs. In general, the risk factors derived in our study are consistent with these predictors. However, it seems important that the set of these variables in the above study was obtained outside the pandemic context, whilst our study considered a period during the pandemic [73]. This would suggest that the pandemic did not introduce additional distorting factors into the risk profile of suicidal behavior.

Some other factors that were assessed in the context of the ongoing pandemic also predicted current suicidality. The recent increase in family conflicts during the pandemic lockdown, not believing that precautions can help to prevent the spread of the COVID-19 (D3), increased need for emotional support (E2), and decreased need for communication (E1) during the COVID-19 pandemic represented the main risk factors for suicidality. Indeed, family problems, family violence, lack of social support and home confinement during the pandemic have frequently been found to represent suicidal risk factors at the international level [10, 66, 74]. Thus, the monitoring of vulnerable focus groups, both for mental health and socio-psychological changes, is important to prevent increased suicidality in response to such major social stressors as the COVID-19 pandemic.

Our study has several limitations. First, it was an online survey, with inherent risks of bias in the results. Second, the projection of the results onto the entire Russian Federation population was based on the distribution of responses by age, gender, and the scale of settlement (rural or urban), but did not consider

the region of Russia, ethnicity, education, or religious views that could have potentially affected the results. Another study limitation is that RASS, as the main tool of suicidality estimation, includes questions about the history of previous suicide attempts and self-harm episodes, which precluded the inclusion of these risks in our regression model.

In our study, we measured the suicide risk in the general population, and identified factors that associated with an increase or decrease in suicidality. These findings can serve as a basis for the development of suicide preventive strategies on the national level, and the key vulnerabilities detected in our study can help to ensure preventive measures are more focused on individuals with described suicidality risk factors.

CONCLUSIONS

According to the Risk Assessment Suicidality Scale data, at least, 20.68% and potentially up to 29.15%, of the Russian general population demonstrated increased risk of suicidality during the COVID-19 pandemic. Modelling the suicidality risks pointed to the key vulnerabilities related to the mental and behavioral disorders, such as (a) current severe depression and (b) a history of mental disorders, (c) bipolar disorder, (d) illicit drug and psychiatric compound (hypnotics) use, (e) alcohol misuse, and (f) highlighting a deterioration in sleep quality. Socio-demographic indicators such as (g) younger age (disregarding the gender factor), (h) single marital status, (i) having no children, (j) living with less people in the household, (k) recent increases in family conflicts, (l) increased need for emotional support, (m) decreased need for communication, and (n) not believing in precautionary measures to stop the spread of COVID-19, contributed to an increase in suicidality risks in the context of the pandemic.

Our findings point to the additional risk factors which should be considered when assessing suicidality risks in Russia.

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Supplementary data

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Telomere Length as a Marker of Suicidal Risk in Schizophrenia

Длина теломер как маркер суицидального риска при шизофрении

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Original research

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ABSTRACT

BACKGROUND: Schizophrenia and suicidal behavior are associated with shortening in the length of telomeres. The aim of the study was to compare the content (pg/mcg) of telomeric repeat in DNA isolated from peripheral blood cells in three groups of subjects: patients with schizophrenia and a history of suicide attempts, patients with schizophrenia without suicidal tendencies, and healthy control volunteers.

METHODS: Relapses according to gender and age were examined in 47 patients with schizophrenia with suicidal behavior, 47 patients without self-destructive conditions, and 47 volunteers with healthy control and maintenance for the content of telomeric and the number of copies of mitochondrial DNA (mtDNA) in peripheral blood leukocytes.

RESULTS: Analysis of determining the content of telomeric repeat (TR) in the DNA of massive weight gain in the series: patients with schizophrenia and suicidal attempts — patients with schizophrenia without suicidal observations — healthy controls (225±28.4 (227 [190; 250]) vs. 243±21 (245 [228; 260]) vs. 255±17.9 (255 [242; 266]), $p < 0.005$. The same trend is observed for the number of mtDNA copies (257±101.5 (250 [194; 297])) vs. 262.3±59.3 (254 [217; 312]) vs. 272±79.9 (274 [213; 304]); $p=0.012$), but no significant differences were recorded.

CONCLUSIONS: For the first time, the phenomenon of telomere shortening was discovered in schizophrenics with suicidal risk. The length of the telomere corresponds to the parameter of a biological marker — an objectively measured indicator of normal or pathological processes, but gaining an idea of its reliability is still necessary for verification with an assessment of its sensitivity, specificity, and positive and negative predictive value. The telomere may be considered a putative predictive indicator of suicidal risk.

АННОТАЦИЯ

ВВЕДЕНИЕ: Шизофрения и суицидальное поведение сопряжены с укорочением длины теломер. Целью исследования стало сравнение содержания (пг/мкг) теломерного повтора в ДНК, выделенной из клеток периферической крови, у трех групп испытуемых: пациентов с шизофренией и суицидами в анамнезе, пациентов с шизофренией без суицидов и добровольцев из числа здорового контроля.

МЕТОДЫ: Обследованы сопоставимые по полу и возрасту 47 пациентов с шизофренией с суицидальным поведением, 47 больных без аутодеструктивных тенденций и 47 добровольцев здорового контроля клинически и на предмет содержания теломерного повтора в ДНК лейкоцитов крови.

РЕЗУЛЬТАТЫ: Анализ определения содержания теломерного повтора (TR) в ДНК свидетельствует о статистически значимом увеличении длины теломер в ряду: пациенты с шизофренией и суицидами — пациенты с шизофренией без суицидов — здоровый контроль (225 vs 224 vs 255; $p=0,024$). Такой же тренд прослеживается для концентрации митохондриальной ДНК (мтДНК) (257 vs 262 vs 272; $p=0,012$).

ВЫВОДЫ: Впервые установили феномен укорочения длины теломер при шизофрении, сопряженной с суицидальным риском. Длина теломер отвечает параметрам биологического маркера — объективно измеряемого показателя нормальных или патологических процессов, но его валидность еще необходимо проверить с оценкой его чувствительности, специфичности, положительной и отрицательной прогностической ценности. Рассматривать длину теломер как прогностический индикатор суицидального риска преждевременно.

Keywords: *schizophrenia; suicide; telomere length; mtDNA*

Ключевые слова: *шизофрения; суицид; длина теломер; мтДНК*

INTRODUCTION

When publishing the study methodology and results, we should note two important features of schizophrenia, which are hardly comparable in terms of the universal human values of the 21st century, but are relevant separately, especially in light of the active search for biomarkers in psychiatric disorders and the development of contemporary approaches to reduce the risk of adverse outcomes in schizophrenia.

On the one hand, real-world psychiatric clinical practice shows that self-destructive behavior is a major cause of premature death among patients with schizophrenia. The suicide rate among patients with schizophrenia is 5–10 times higher than in the general population [1–4], and 25–50% of schizophrenia patients will attempt suicide during their life time, with 5.6% of suicide attempts ultimately proving fatal [5]. The mean age of schizophrenic patients who commit suicide is just 33 years, which is 10 years lower than in the general population [6–8], and completed suicide accounts for 30.9% of deaths during the first-episode psychosis [9–12]. Comparison of suicidal risk indices between the different nosologic groups shows poor results: the proportion of patients with schizophrenia can constitute 45–65% of suicidal patients with all other established psychiatric disorders [13, 14], and the lifetime rate of suicide in individuals with schizophrenia is between 9% and 13% [12, 15].

Meanwhile, the scientific literature discusses the hypothesis of accelerated aging due to oxidative stress and chronic neuroinflammation as a cause of

schizophrenia [16–19]. According to this hypothesis, the oxidative stress associated with schizophrenia leads to premature degradation of cells and tissues, and endocrine and humoral abnormalities. All these factors, along with multiple decompensations, may lead to death 10–15 years earlier than otherwise expected [17, 20, 21]¹.

Telomeres (TR), which are repetitive non-coding nucleotide sequences at the ends of the linear chromosomes (TTAGGG)_n coated with binding proteins, are considered to be a 'biological counter' of the cell division number. Telomere shortening is directly and reliably associated with aging. A critical telomere length triggers the process of programmed cell death, which is accelerated in chronic cardiovascular disorders, metabolic syndrome, diabetes mellitus, and psychiatric disorders [24]. Telomere length homeostasis is achieved via a balance between the telomere erosion over successive eukaryotic cell divisions and telomere lengthening via telomerase, which adds repetitive nucleotide sequences to the 3' end of the DNA strand [24]. Oxidative stress is a major cause of direct telomere shortening. It has been established that 8-oxo-7,8-dihydro-2'-deoxyguanosine, a product of guanosine oxidation via hydroxyl radicals, is formed in larger amounts in a telomeric DNA sequence than in a non-telomeric DNA sequence [25].

¹ Other factors associated with schizophrenia may lead to abnormalities, e.g. higher smoking rates among patients with schizophrenia than in general population [22], poor quality of healthcare [23].

The length of the telomeres is defined by their content in the total DNA volume.

Mitochondrial DNA (mtDNA) copy number variation is considered to be a tandem marker for assessing the function of the 'biological counter' of telomere shortening. This marker reflects mitochondrial dysfunction, i.e., loss of reserve energy-generating capacity, especially in settings such as stress and psychiatric disorders [26–28].

Mitochondria not only provide the cell with necessary energy reserves, but also play a key role in the processes of apoptotic and necrotic cell death, regulation of gene expression, and the signaling pathways of cell proliferation and differentiation [29]. Mitochondrial biogenesis, determined by mtDNA copy number, may serve to compensate for increased energy demand or decreased mitochondrial function and is associated with aging and age-related diseases [30]. Several groups of researchers reported reduced leukocyte and whole blood mtDNA copy number in patients with psychiatric disorders, compared to healthy controls [31–34].

An analysis of publications on telomere shortening in schizophrenia and suicide reveals certain features. Controversial data² on telomere length in schizophrenia relative to healthy controls has been reported in the literature, but the results of meta-analyses [19, 41] demonstrate a significant telomere shortening in young patients with schizophrenia spectrum disorders [42]. These results were replicated in a tandem (combined) analysis of the telomere content and leukocyte mtDNA copies in young and middle-aged individuals [43, 44]. More significant correlation was observed in groups of patients with signs of psychiatric or developmental disorders [45].

The results of the studies on the telomere length and mtDNA in suicidal individuals without schizophrenia are sustained and reproducible. Comparison of samples obtained from 528 suicidal individuals and 560 subjects who died from other causes demonstrated significant telomere shortening in the brain tissue and blood cells [46]. Analysis of completed suicide cases showed shorter telomeres in female/young suicides and higher mtDNA content in male/elderly suicides [46]. These results were confirmed by comparison of telomere

length in 71 suicidal individuals [47], which leads to the conclusion that telomere length is inversely associated with the risk of suicide in patients younger than 50 years old, including those with affective disorders [48].

As there are no available data on telomere length comparisons in suicidal patients with schizophrenia, we **hypothesized** that telomeres are shorter in patients with schizophrenia and a history of suicidal behavior relative to patients with schizophrenia without self-destructive behavior or healthy controls.

The aim of the study was to compare the content (pg/μg) of the telomeric repeats and the mtDNA copy number in the genome of peripheral blood cells in three groups of subjects: patients with schizophrenia and a history of suicidal behavior, patients with schizophrenia without suicidal tendencies, and healthy volunteers.

MATERIALS AND METHODS

The study population includes 94 patients with schizophrenia (55 males, 39 females, mean age 27.3±8.6 years) who were admitted to the acute pathology units of the SBHI 'Psychiatric Clinical Hospital No.1 of the Moscow Healthcare Department' from February to March 2019.

Inclusion criteria

The patient's condition on evaluation meets the ICD-10 diagnostic criteria for schizophrenia; the patient has signed the Informed Consent Form.

Non-inclusion criteria

Severe decompensated somatic disorder; signs of psychoactive substance or alcohol abuse; pregnancy; refusal to participate.

To confirm the proposed hypothesis three groups of patients were formed based on the presence of suicidal behavior:

- group 1 ($n=47$, mean age 25±6.6 years, 30 males (64%)): patients with schizophrenia and a history of at least one suicide attempt;
- group 2 ($n=47$, mean age 29.5±9.8 years, 25 males (53%)): patients with schizophrenia without a history of suicidal ideation or behavior;
- control group ($n=47$, mean age 26±3.9 years, 22 males (47%)): healthy subjects without signs of psychiatric disorders and non-relatives of patients.

Study design: non-interventional, cross-sectional, case-control study.

² A number of studies have reported [21, 35, 36] an association between telomere shortening and schizophrenia, but these data have not been confirmed in other studies that have demonstrated longer telomeres in patients with schizophrenia [37], or no differences between these patients and healthy controls [38–40].

Methods

Clinical and psychometric approaches were used to assess the patient's condition and analyze their history. The Positive and Negative Syndrome Scale (PANSS) was used to evaluate the patient's condition, taking into account the Positive (PANSS P), Negative (PANSS N) and General Psychopathology (PANSS G) subscale scores [49].

Blood sampling from the cubital vein was performed once at 8.00 to 8.30 a.m. after overnight fasting; samples were drawn into heparin tubes and sent to the laboratory within two hours in compliance with requirements regarding biomaterial preservation.

Molecular biology method was used to measure the telomere and mtDNA content in samples obtained from patients in three study groups.

The result of telomere content measurement was expressed as pg/μg of DNA, and the result of mtDNA content measurement was expressed as the copy number in the genome.

We used the quantitative non-radioactive hybridization (NQH) assay, specially designed for the quantitative analysis of tandem repeats in the genome. The NQH method has been detailed in several publications [50–52]. DNA was isolated from blood by extraction with organic solvents. The DNA concentration in the solution was measured via fluorimetry using PicoGreen dye (Invitrogene). The NQH method is based on the hybridization of denatured DNA samples applied to a filter (50 ng/spot) with a biotinylated DNA probe that is complementary to the DNA fragment of interest. The biotin-(TTAGGG)₇ oligonucleotide (Sintol, Russia) was used as a DNA probe. The streptavidin-alkaline-phosphatase conjugate (Sigma) was used to detect biotin after hybridization. Alkaline phosphatase substrates (BCIP/NBT) in the presence of the enzyme form an insoluble precipitate, which is adsorbed on the filter at the DNA target location. When the reaction ends, the filter is scanned and integral intensity (I) of the spots is determined using a special program. Several DNA calibration standards with a known TR content are applied to the same filter. The calibration dependence relates the signal (I) to the number of repeats in 50 ng of DNA. An example of a calibration dependence for telomeres is given in one of our previous publications [53]. The standard error of the NQH method is 5% of the measured value. The total error of the method, which includes DNA isolation,

determination of the DNA concentration in solution, and hybridization, is 11%.

Assay for mtDNA quantification

Quantitative PCR assay (RT-PCR) was used to analyze the mtDNA copy number in DNA. The methodology and primers for mtDNA analysis are described in detail in the publication [53].

Statistical data analysis was carried out using the Jamovi software (The Jamovi Project (2022)). jamovi. (Version 2.3) [Computer Software], <https://www.jamovi.org>. Descriptive statistics include medians and quartiles. T-test with indication of the degrees of freedom (df), t-test parameter (t) and a 95% confidence interval (95% CI) were used for analysis of the psychometric scale scores, as well as clinical and dynamic characteristics. The Mann-Whitney test (U-test) with the calculation of all test parameters was used to compare the molecular testing results in gender groups. The Kruskal-Wallis test was used for statistical analysis of group data via continuous variables, and the Dwass, Steel, Critchlow-Fligner test (DSCF pairwise comparison) was used to test paired hypotheses. Correlation between variables was assessed using Pearson's χ^2 test. For all tests, data were considered statistically significant at a two-sided $p < 0.05$.

RESULTS

The results of clinical, psychometric, and molecular testing are presented in Tables 1, 2, 3, and 4.

The groups were matched for gender, although the number of men in group 1 (patients with suicide attempts) was higher than in the control group — 64% vs. 47%), however, this difference was not statistically significant.

The vast majority of patients in each of the groups have impaired social functioning and live reclusive lives (the proportion of single patients was 80.9% in the study population, and 87.3 and 74.5% in the respective groups) and are persistently disabled in some cases (the proportion of disabled persons was 15% in the study population, and 13 and 17% in the respective groups). Analysis of environmental factors affecting telomere content and mtDNA copy number (smoking and metabolic syndrome) did not reveal significant differences between the groups (Table 1).

Clinical and dynamic characteristics of two groups were heterogeneous (Table 2).

Group 2 patients were significantly older than group 1 patients and the healthy controls.

Table 1. Socio-demographic characteristics and description of factors affecting the telomere length and cfDNA concentration in the study groups

Characteristics	Group 1 n=47	Group 2 n=47	χ^2 (p)	Control n=47	χ^2 (p1)	χ^2 (p2)
Socio-demographic characteristics, abs. (%)						
Males	30 (64%)	25 (53%)	1.096 (0.3)	22 (47%)	2.755 (0.1)	0.383 (0.5)
Single	41 (87.3%)	35 (74.5%)	2.474 (0.1)	27 (57.4%)	10.421 (0.001) *	3.032 (0.1)
Disabled	6 (13%)	8 (17%)	0.336 (0.6)	0	-	-
Telomer shortening risk factors, abs. (%)						
Smoking	13 (27.6%)	7 (14.8%)	2.287 (0.1)	8 (17%)	1.533 (0.2)	0.079 (0.8)
Metabolic syndrome	4 (8.5%)	4 (8.5%)	0 (1)	3 (6%)	0.111 (0.7)	0.111 (0.7)

Note: p — differences between the study groups; p1 — differences between the control group and the group of patients with schizophrenia and a history of at least one suicide attempt; p2 — differences between the control group and the group of patients with schizophrenia without a history of suicidal ideation or behavior; * — statistically significant difference when using Chi-Squared test.

Table 2. Clinical and dynamic characteristics of schizophrenia in study groups

Value	Group 1 n=47	Group 2 n=47		Control n=47		
	Years±SD	Years±SD	p (df) (t) [95% CI]	Years±SD	p1 (df) (t) [95% CI]	p2 (df) (t) [95% CI]
Mean age	25±6.6	29.5±9.8	0,010* (92) (2.6) [7.9-1.1]	26±3.9	0.404 (92) (0.8) [3.2-1.3]	0,023* (92) (2.3) [0.5-6.6]
Mean age at onset	18.7±6.5	19.1±6	0.743 (92) (0.3) [3-2.1]	-	-	-
Disease duration	6.3±6.0	10.4±8.5	0,008* (92) (2.7) [7.1-1.1]	-	-	-
Mean AP dose, mg/day**	400±27.3	300±19.5	< 0.001* (92) (20.5) [90.7-110]	-	-	-

Note: p — differences between the study groups; p1 — differences between the control group and the group of patients with schizophrenia and a history of at least one suicide attempt; p2 — differences between the control group and the group of patients with schizophrenia without a history of suicidal ideation or behavior; * — statistically significant difference when using the t-test; **AP — antipsychotic chlorpromazine equivalents [54].

Further, in both groups the onset of schizophrenia was found to begin during late puberty or adolescence (18.7±6.5 vs. 19.1±6; $p=0.74$), and therefore the disease duration is significantly shorter in patients with suicide attempts than in patients without suicidal ideation (6.3±6.0 vs 10.4±8.5; $p=0.0083$). Moreover, the statistically significant difference in antipsychotic dosage should be noted: group 1 patients receive more intensive treatment (400±27 vs. 300±20 mg/day of chlorpromazine equivalent; $p<0.0001$).

Table 3 shows the results of psychometric testing in the two groups of patients: statistically significant differences

were found in the severity of negative symptoms, as measured by the PANSS-N subscale mean score (27.4 vs 22.8 points; $p=0.0052$), while no differences were found in the total score or Positive and General Psychopathology subscale scores.

Results of telomere content measurement (Table 4) show a statistically significant difference in telomere length between the three groups ($p<0.001$; $\chi^2=24.8$; $df=2$). DSCF pairwise comparisons revealed significant differences in telomere length between some groups. Statistically significant differences in telomere content were found

Table 3. Results of psychometric testing in the study groups

Scale	Group 1 n=47 Total score mean±SD (Me [Q1; Q3])	Group 2 n=47 Total score mean±SD (Me [Q1; Q3])	p (df) (t) [95% CI]
PANSS total score	101.2±23.1 (97 [86; 112])	94.9±26.3 (94 [76; 112])	0.223 (92) (1.2) [3.9–16.4]
PANSS P	23.8±7.6 (23 [18; 27])	24.9±8.5 (23 [20; 29])	0.522 (92) (0.6) [4.4–2.2]
PANSS N	27.4±8.8 (26 [22; 33])	22.8±6.6 (11 [19; 28])	0.005* (92) (2.9) [1.4–7.8]
PANSS G	50±10.9 (49 [44; 59])	47.2±15.3 (48 [39; 59])	0.318 (92) (1) [2.7–8.2]

Note: * — Statistically significant difference when using the t-test.

Table 4. Molecular testing results

Biomarker concentrations	Group 1 n=47 Total score mean±SD (Me [Q1; Q3])	Group 2 n=47 Total score mean±SD (Me [Q1; Q3])	Control n=47 Total score mean±SD (Me [Q1; Q3])	p* (χ^2 *) (df*)
Telomers (pg/mcg DNA)	225±28.4 (227 [190; 250])	243±21 (245 [228; 260])	255±17.9 (255 [242; 266])	< 0.001** (24.8) (2)
mtDNA (copy number)	257±101.5 (250 [194; 297])	262.3±59.3 (254 [217; 312])	272±79.9 (274 [213; 304])	0.579 (1.09) (2)

* — The Kruskal-Wallis test was used for the analysis, the statistics for which are given in parentheses: χ^2 — chi-squared; df — degrees of freedom.

** — The Kruskal-Wallis test revealed a statistically significant difference in the three study groups. The BSCF test was used for pairwise comparison, and a significant difference in telomere content was found between group 1 and group 2, group 1 and the control group, and group 2 and the control group.

between the group of patients with a history of suicide attempts and the group of patients without suicidal ideation (225 pg/mcg±28.4 (227 [190; 250]) vs. 243 pg/mcg±21 (245 [228; 260])); $p=0.007$; $W=2.3$). Statistically significant differences in telomere content were found between the group of patients with a history of suicide attempts and the control group (225 pg/mcg±28.4 (227 [190; 250]) vs. 255 pg/mcg±17.9 (255 [242; 266])); $p < 0.001$; $W=6.7$) and between the group of patients without suicidal ideation and healthy controls (243 pg/mcg±21 (245 [228; 260]) vs. 255 pg/mcg±17.9 (255 [242; 266])); $p=0.041$; $W=3.4$). There were no significant differences in mtDNA copy number between the three study groups ($p=0.579$; $\chi^2=1.09$; $df=2$).

Comparison of the telomere and mtDNA content in male patients (Table 5) shows statistically significant differences:

the telomere content was significantly lower in males with a history of suicide attempts compared to those without suicidal ideation (216±27.1 (208 [193; 242]) vs. 240.9±25.7 (250 [219; 260])); $p=0.002$, U -test=198), while the mtDNA content was reduced without statistically significant differences. Amongst women, there were no statistically significant differences in the telomere and mtDNA content between the two groups.

DISCUSSION

Before the discussion of the results, we would like to emphasize that the significant telomere shortening demonstrated in our study cannot serve as definitive biological evidence of completed suicide predetermination in patients with schizophrenia, even though other studies

Table 5. Molecular testing results by gender

Biomarker concentrations in male patients in the two study groups			
Data	Group 1 Males (n=30) Total score mean±SD (Me [Q1; Q3])	Group 2 Males (n=26) Total score mean±SD (Me [Q1; Q3])	p (Mann-Whitney U) (U-test) [95% CI]
Telomers (pg/mcg DNA)	216±27.1 (208 [193; 242])	240.9±25.7 (250 [219; 260])	0.002* (198) [43–10]
mtDNA (copy number)	246±104.1 (252 [158; 289])	280±61 (255 [244; 255])	0.130 (298) [85–6]
Biomarker concentrations in female patients in the two study groups			
Data	Group 1 Female (n=17) Total score mean±SD (Me [Q1; Q3])	Group 2 Female (n=21) Total score mean±SD (Me [Q1; Q3])	p (Mann-Whitney U) (U-test) [95% CI]
Telomers (pg/mcg DNA)	241±24 (249 [227; 253])	245±15 (245 [233; 254])	0.692 (165) [15–10]
mtDNA (copy number)	276±97 (234 [226; 339])	277±66 (254 [225; 318])	0.837 (171) [55–38]

Note: * — Statistically significant difference when using the U-test.

demonstrate telomere shortening and a decrease in the mtDNA copy number in the cells of postmortem specimens from suicide completers compared with those who died from other causes [46].

Clinical assessment of risk of suicide in schizophrenia is based on the identification of symptomatic, environmental, and behavioral factors such as gender, age, history of suicide attempts, family history of suicides, etc. A meta-analysis has shown that the risk of suicide is highest in young men with a history of suicide attempts and a poor compliance with psychopharmacotherapy [55]. According to the literature, clinical and dynamic risk factors of suicide in schizophrenia are the signs of an unfavorable disease course (early disease onset with frequent relapses and hospitalizations, need for high-dose antipsychotics [56–59] and long-term psychiatric hospitalization [60–62]), which are associated with the negative symptom severity and social maladaptation [63], and which may lead to telomere shortening to a greater extent [64].

In this study, we identified the risk factors of unfavorable course of schizophrenia in both groups, but their significance in terms of risk of suicide cannot be considered reliable. Thus, male patients are predominant in the study population, but this parameter is statistically insignificant (64% vs. 53%; $p=0.3$). Patients with a history of suicide attempts were younger at the onset of schizophrenia, but the difference in this parameter was not statistically

significant (18.7±6.5 vs. 19.1±6.0 years; $p=0.74$). Meanwhile, in the group of patients with a history of suicide attempts, statistically significant differences in the PANSS-N score — a measure of negative symptom severity associated with an unfavorable course of schizophrenia — was observed (27.4±8.8 (26 [22; 33]) vs. 22.8±6.6 (11 [19; 28]) points; $p=0.0052$). According to the literature, this parameter can be directly correlated with reduced telomere and mtDNA content [65].

Significant differences in disease duration were found; however, disease duration was shorter in patients with a history of suicide attempts (6.3 vs. 10.4 years; $p=0.0083$), that is, the more prominent telomere shortening in this group compared to the patients without suicidal ideation can be explained not only by the course of psychiatric disorder, but by a combination of several factors, which is consistent with the results of telomere evaluation at different stages of schizophrenia [65].

First, antipsychotic agents provide active telomerase expression via transcription factor 4 (TCF4) activation in the presence of protein kinase-B (alpha serine/threonine-protein kinase, Protein kinase B alpha, Akt1) and glycogen synthase-3-β-catenin (glycogen synthase kinase GSK3β) that block type 2 dopamine and/or serotonin receptors [66]. In schizophrenia, GSK3β is activated and Akt1 is inhibited both in the cells of the cerebral cortex and the blood [67], and this is can be directly correlated

with TCF4 deactivation and telomere shortening [64]. Antipsychotics increase serine phosphorylation of GSK3 β [68] and block both D2- and 5-HT2A receptors, thus increasing telomerase synthesis, which, in turn, leads to telomere shortening. In this study, patients with a history of suicide attempts received antipsychotics in typical therapeutic doses (400 mg/day vs. 300 mg/day of chlorpromazine equivalent; $p > 0.05$), which could lead to telomere shortening. On the other hand, treatment response is an important predictor of telomere length, and there is some evidence that therapy-resistant patients have shorter telomeres compared to healthy individuals and patients in remission [69, 70]. It has been found that many antipsychotics, including clozapine, risperidone, haloperidol, olanzapine, and chlorpromazine, may inhibit the respiratory chain and cause mitochondrial damage by increasing oxidative stress [71], which may also explain the reduced mtDNA content, as shown in a similar study [28].

Secondly, factors exacerbating the consequences of oxidative stress [72], such as smoking [35, 37, 38, 40, 70] and metabolic syndrome as a pro-inflammatory process [73], cause telomere shortening. There was no statistically significant difference in the number of smokers and patients with metabolic syndrome between all groups, hence the difference in telomere and mtDNA content may be a coincidence and not a trend, as shown in a number of studies [74].

Although our results partially reproduce the literature data, it must be reiterated that the causes of telomere shortening in schizophrenia or suicide may be different. In addition to the natural telomere shortening with each cell division, oxidative stress, and chronic inflammation play a significant role [75]. It seems more likely that the reduction in telomere content and mtDNA copy number may be the result of cumulative exposure to the chronic stress associated with schizophrenia [76].

CONCLUSIONS

In this study, we, for the first time, identified the phenomenon of telomere shortening in schizophrenia associated with suicidal risk. However, we emphasize that it would be premature to consider telomere length a prognostic indicator of risk of suicide. Undoubtedly, telomere length has all features of a biomarker, i.e., objectively measured index of normal or abnormal processes, but its validity still needs to be verified through an assessment of its sensitivity,

specificity, and positive and negative predictive value. An analysis of the factors affecting telomere length (smoking, metabolic disorders, antipsychotic therapy) in the study participants does not demonstrate a direct relationship between telomere shortening and risk of suicide amongst those with schizophrenia.

The study limitations were relatively small sample size and failure to account for additional factors that affect the qualitative characteristics of the studied markers. The latter include, for example, gender differences in suicidal behavior or the father's age at conception [40, 77, 78]. The telomere content and mtDNA copy number in the nucleus of peripheral blood leukocytes may differ from those in other tissues (for example, neurons) due to the fact that antipsychotics reduce telomerase expression in leukocytes [64].

It seems promising to search for possible protective factors (for example, telomerase inhibitors), which may act as triggers for the development of a specific therapy to reduce suicidal tendencies by slowing the rate of telomere shortening. However, identification of such trends may contribute to the development of alternative agents that will reduce the impact of oxidative stress and slow telomere shortening within this patient population.

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Psychosocial and Psychiatric Factors Associated with Expected Fatality during Suicide Attempt in Men and Women

Психосоциальные и психиатрические факторы, связанные с ожидаемым летальным исходом у молодых мужчин и женщин во время суицидальной попытки

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Original research

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ABSTRACT

BACKGROUND: Differential factors that influence intention and subjectively perceived fatality during non-fatal suicidal acts amongst men and women have rarely been explored in the extant literature. Exploring these factors may help to understand how they influence medical outcomes and may also be used in a post-crisis counselling. This study aims to assess factors influencing intent in relation to expected fatality during suicidal acts in men and women.

METHOD: In the current study, 433 individuals who attempted suicide (age 24.89±0.98 years, male/female ratio=1.29) were surveyed using the WHO-5 Well-Being Index, Beck Depression Inventory, Beck Suicide Intent Scale, Plutchik Feelings and Acts of Violence Scale, and Spielberger State/Trait Anger Scale. Life stress was evaluated as an accumulation of negative life events, whilst psychiatric disorders were assessed using CIDI 2.1 inventory.

RESULTS: It was found that the higher expected fatality was associated with higher suicide intention scores, whereas the medical severity of attempts and violent/non-violent attempts distribution did not differ between groups. Although there was no difference in suicide intent scores and medical severity between men and women, men demonstrated a 2.4–3.5 times higher proportion of violent attempts, depending on the group. Higher perceived fatality was associated with lower general well-being, higher depression and violence, hopelessness, and total life stress in men, whereas among women higher perceived fatality was only associated with total life stress. Moreover, in men and women, higher intent and expected fatality was associated with a differential set of negative life events that occurred during childhood. The prevalence of mental health disturbances in the entire sample was about 50% and equally distributed among men and women. However, addictions prevailed among men, while neurotic and stress-related disorders were more common among women. Among those who expected more fatality the number of people with diagnoses and comorbidity was higher, especially in men.

CONCLUSION: There is a difference in risk factors for expected fatality and intent in men and women attempting suicide, which may not necessarily result in severe medical outcomes but may help during the post-crisis counseling of suicide attempters. Expected fatality deserves more attention as a component of general intent. An in-depth study of this phenomenon may help to understand motives of men and women attempting suicide and help prevent future suicidal attempts.

АННОТАЦИЯ

ВВЕДЕНИЕ: Факторы, влияющие на намеренность суицидального акта и ожидание летального исхода у мужчин и женщин в момент суицидальной попытки недостаточно изучены. Их изучение позволит лучше понять, насколько они влияют на исход попытки, а также как они могут быть использованы при посткризисном консультировании с целью превенции повторных попыток и заверщенного суицида. Целью работы было изучение намеренности в связи с ожидаемым летальным исходом во время суицидальной попытки у мужчин и женщин.

МЕТОДЫ: Были опрошены 433 человека после попытки суицида (возраст $24,89 \pm 0,98$ года, соотношение мужчин и женщин=1,29). Используются индекс благополучия WHO-5, шкала депрессии и шкала намеренности суицидальных действий Бека, шкала оценки насильственных действий Плутчика и шкала характеристик гнева Спилбергера. Стресс оценивали по накоплению негативных событий жизни, психиатрический статус определяли с помощью опросника CIDI 2.1.

РЕЗУЛЬТАТЫ: Чем более вероятным представлялся летальный исход, тем больше баллов по шкале намеренности набирали респонденты, однако при этом нарастания степени тяжести медицинских последствий попытки и доли попыток, совершенных более насильственными способами (X70–X84) не наблюдалось. Значимых отличий в степени намеренности и тяжести попыток между мужчинами и женщинами внутри групп не выявлено. В то же время, среди мужчин доля насильственных способов была в 2,4–3,5 выше в зависимости от группы. У мужчин ожидание летального исхода было ассоциировано со сниженным психологическим благополучием, высокими баллами депрессии и склонности к насильственным действиям, а также с общим уровнем жизненного стресса, в то время как у женщин — только с уровнем стресса. Кроме того, у мужчин и женщин ожидание летального исхода было связано с различным набором негативных стрессовых событий жизни, с которыми им пришлось столкнуться в детском возрасте. Примерно 50% мужчин и женщин имели тот или иной психиатрический диагноз, но среди мужчин преобладали аддикции, а среди женщин — невротические и постстрессовые расстройства. Среди тех, кто считал летальный исход более вероятным, доля лиц с диагнозами и степень коморбидности была выше, среди мужчин значимо.

ЗАКЛЮЧЕНИЕ: Выявлены различающиеся факторы субъективно ожидаемой летальности и намеренности у молодых мужчин и женщин при совершении суицидальной попытки, которые не обязательно приводят к более тяжелым медицинским последствиям, но которые могут быть использованы при посткризисном консультировании. Субъективное ожидание летального исхода в момент попытки как компонент намеренности суицидального акта заслуживает большего внимания, как в плане лучшего понимания психологии мужчин и женщин при совершении попытки, так и с позиций превенции повторных попыток и заверщенного суицида.

Keywords: *suicide attempt; intention; expected fatality; early negative life events; psychosocial factors; psychiatric status*

Ключевые слова: *суицидальная попытка; намеренность; оценка вероятности летального исхода; ранние события жизни; психосоциальные факторы; психиатрический статус*

INTRODUCTION

Differences in suicidal behavior based on sex (known as the gender paradox in suicide [1–3]) are discussed in the context of the influence of different risk factors on men and women; they include the biological (estrogen's and androgen's role), the psychosocial (life stress), the cultural (gender roles), the psychopathological (anxiety,

depression, alcohol consumption) and the psychiatric (mental health disorders) [4–7]. A recent meta-analysis of 67 studies has identified female- and male-specific risk factors for suicide attempts (SA). Female-specific risk factors include eating disorders, post-traumatic stress disorder, bipolar disorder, being a victim of dating violence, depressive symptoms, interpersonal problems,

and previous abortion; whereas male-specific risk factors comprised of disruptive behavior/conduct problems, hopelessness, parental separation/divorce, a friend's suicidal behavior, and easy access to means of suicide [8]. However, the overwhelming majority of studies included in this analysis were from the USA, Canada, and Western European countries, while only four studies were from China and one from Brazil [8]. Slavonic countries populations have barely been explored in this sense.

Another factor that is poorly described in the existing literature is the differences in the intention to die and perceived fatality during a suicidal act among men and women. Intent refers to the desire to end one's life and includes the person's acknowledgement of the risk and the means to achieve the desired outcome [9]. According to the most widely used definition, SA is "a potentially self-injurious behavior, associated with at least some intent to die as a result of the act" [10]. Intent is presumably correlated with the consequences of self-harm (i.e., medical severity or even lethality of the attempt), but personal understanding of the lethal potential of different methods may change the results dramatically. Moreover, cultural preferences and beliefs influencing the prevalence of methods of self-harm among men and women in the given population, as well as the situational availability of means and organizational capacities of urgent medical aid, may have an impact [11, 12].

In confirmation, some studies find a correlation between the intention to die and the medical severity (medical lethality) of an attempt, while others do not [13]. For instance, Brown et al. (2004) reported a modest correlation between intent and lethality among 180 low-income middle-aged individuals from an urban area who attempted suicide [11]. However, a higher level of suicidal intent was associated with attempts that are more lethal only for those individuals who had "more accurate expectations about the likelihood of dying from their attempts" [11]. In a Chinese study, a different pattern was observed: medically severe suicide attempts in patients living in rural areas were associated with a low intent to die, possibly due to the role of impulsivity [14]. Differences in intent between men and women remain unclear due to heterogeneity in the results — some studies find no difference, while others find a slight predominance of this indicator in men [13–15]. Specific traumatizing events experienced by men and women

are rarely evaluated while investigating factors that may influence intent. However, this may give knowledge about gender-specific risk factors and psychological background depending on early life adversities. Furthermore, although the expectation of a fatal outcome has been discussed as a component of intent in various research articles, it has not been defined as a possible independent factor, especially in the context of the gender paradox in suicide.

We have built the whole study around the question "What did you think were the chances that you would die as a result of your act?", which is a component of the suicidal intent. We have hypothesized that the question that focuses on the probability of dying or expected fatality (EF) may have a special meaning to a person who is planning or performing self-harm. Despite using different self-reported measures of intent during the last few decades, the possible special role of EF has not previously been defined. Moreover, studies show discrepancies between circumstantial and subjective measures of such questionnaires and between different questions of the subjective part, for instance, the purpose of the attempt, an expectation of death, the desire to live or die, etc [16]. Therefore, the central aim of the study was to assess factors influencing intent in relation to the expected fatality (EF) during the suicidal act in men and women.

The aim will be achieved by addressing the following objectives:

- 1) To evaluate whether higher EF is associated with the higher intention to die and may lead to more severe medical outcomes.
- 2) To assess whether general life stress and certain specific negative life events that happened in the period of personality development, as well as depressive symptoms, hopelessness, anger, and propensity for violence, may act as gender-specific risk factors for higher EF.
- 3) To evaluate whether the psychiatric status of the attempter may influence EF and intent in men and women.

METHODS

The study analyses data that were accumulated by the GISS genetic project. Within this project, 1200 trio families of Slavonic origin (proband and both parents) from different cities in Ukraine were assessed via psychometric instruments and genotyped between 2001 and 2009.

Sampling and recruitment

The sampling strategy of the GISS project was intended to allow the collection of a culturally and ethnically homogenous sample of suicide attempters with highly verified SA that would be, at the same time, diverse in terms of methods and medical outcomes to ensure non-selective naturalistic representation of suicidal behavior in the current population. For this purpose, suicide attempters of Slavonic origin were approached by trained interviewers (clinical psychologists and psychiatrists) in different settings, i.e., medical hospitals, ambulance services, emergency departments of general hospitals, and psychoneurological care units in different cities of Ukraine, and were included in the study.

The recruitment process for the current study was based on the results of detailed questioning about early life adversities, which provided sufficient data for the analysis. Records of the first 446 consecutively recruited suicide attempters were used for the purposes of this study. The sample size was determined according to the number of cases required for stratification into three groups and accounting for possible drop-out rate (5–10%) after quality control.

Inclusion criteria

Participants were eligible if: a) they have attempted suicide and were 16 years old and over; b) the medical severity of SA was scored as two or over according to the Medical Damage Scale [17, 18]; and c) an informed consent form was signed by all members of the family.

Procedure

Patients were interviewed according to the GISS study protocol, which included questions regarding last (index) and previous suicide attempt(s), family suicide history, physical health, negative life events, as well as several psychometric tests, as described previously [19].

The following psychometric instruments were used:

- 1) Medical Damage Scale (MDS) — to evaluate the lethality of the attempt with a rating from 0 (no damage) to 8 (lethal) adjusted to each different method of self-harm [17, 18].
- 2) Beck's Suicide Intention Scale (BSIS) — to evaluate intention during a suicidal act [17].
- 3) Negative Life Events questionnaire — to evaluate life stress in different periods of life based on the WHO Multicentre Study of Parasuicide protocol [20], with some additions [19].

- 4) WHO-5 Well-Being Index — to evaluate general well-being.
- 5) Beck Depression Inventory (BDI) [21] — to evaluate symptoms of depression.
- 6) Four questions from the Beck Hopelessness Scale [22] previously found to be critical to a dichotomy evaluation of a person as experiencing hopelessness or otherwise [23].
- 7) Plutchik Feelings and Acts of Violence Scale (PFAV) [24] — to assess proneness to violence and violent actions.
- 8) Spielberger State/Trait Anger Scale (STAS) [25] — to evaluate anger.
- 9) WHO composite CIDI 2.1 inventory [26] — for evaluation of main psychiatric diagnoses.

All instruments were either validated Russian versions or were double-translated into Russian by a team of psychologists and psychiatrists proficient in English.

The central instrument of the study was BSIS, which has a long story of application in various clinical studies [16]. This instrument consists of two parts, which address two broad domains: 1) preparatory measures, and 2) subjective feelings and intentions [16]. The first domain evaluates measures taken by an individual including isolation, timing, precautions against discovery or, conversely, acting in favor of discovery, such as communicating before the attempt with a possible rescue and leaving pathways to rescue open, etc. The second domain is dedicated to the aims, goals, perceptions, and anticipations during self-harm, which are subjectively proclaimed by respondents, including the alleged purpose of the attempt, expectations of fatality, and attitudes towards living or dying, etc. Among the BSIS items, the question formulated such as “What did you think the chances that you would die as a result of your act were?” with the answer options: “1 = thought that death was unlikely or did not think about it”; “2 = thought that death was possible but not probable”; and “3 = thought that death was probable or certain”; “4 = other, specify” warrants special attention. This question is directly aimed at evaluating expected fatality (expectation of death) during the suicidal act.

Data analysis

The analysis was performed in two steps: 1) focusing on the age differences, general BSIS score and sub-scores, medical severity, and violent vs. non-violent methods of attempts ratio; and 2) focusing on the associations between

perceived fatality and psycho-social variables, as well as NLEs experienced by the attempters. This part also included an analysis of the psychiatric status in relation to EF.

Statistical methods included descriptive statistics and post hoc Tukey multiple comparisons analysis. For associations with interval variables, Kendall's tau-b (τ_b) coefficient and its p-value were calculated; for alternative variables, the Somers' D coefficient with asymptotic standard error (ASE) was used, and its p-value calculated via T-test. When necessary, the chi-squared test was used. The Statistical Package for the Social Sciences (SPSS) for Windows, version 17.0, was utilized.

Research governance

The study was approved by the Ethical Committee of Karolinska Institute, Stockholm, Sweden (Dnr 97-188), and confirmed by the Ministry of Public Health of Ukraine [19].

RESULTS

Overall, 446 probands (mean age 24.89 ± 0.98 years) from consecutively recruited family trios were included,

251 of whom were males (56.27%, age 24.80 ± 0.76 years) and 195 were females (43.72%, age 25.01 ± 1.18 years). From the whole sample, 433 participants were included in the study. Based on the response to the BSIS question, "What did you think the chances that you would die as a result of your act were?" the final sample was split into three subgroups: 1) those, who responded that "death was unlikely or did not think about it" — 159 people; 2) those, who responded that "death was possible but not probable" — 92 people; and 3) those, who responded that "death was probable or certain" — 182 people. Thus, the distribution between groups was 36.7% : 21.3% : 42.0%. The general male/female ratio in the studied sample was 1.29, while in the subgroups it fluctuated from 1.15 to 1.33, and was higher in group 3 than in groups 1 and 2 (Figure 1).

It is important to note that 13 participants were not included for the final sample: six participants chose an answer "4 = other reason" for the abovementioned BSIS question and have claimed that they were driven by voices that urged them to self-harm and seven participants did not complete this part of the questionnaire.

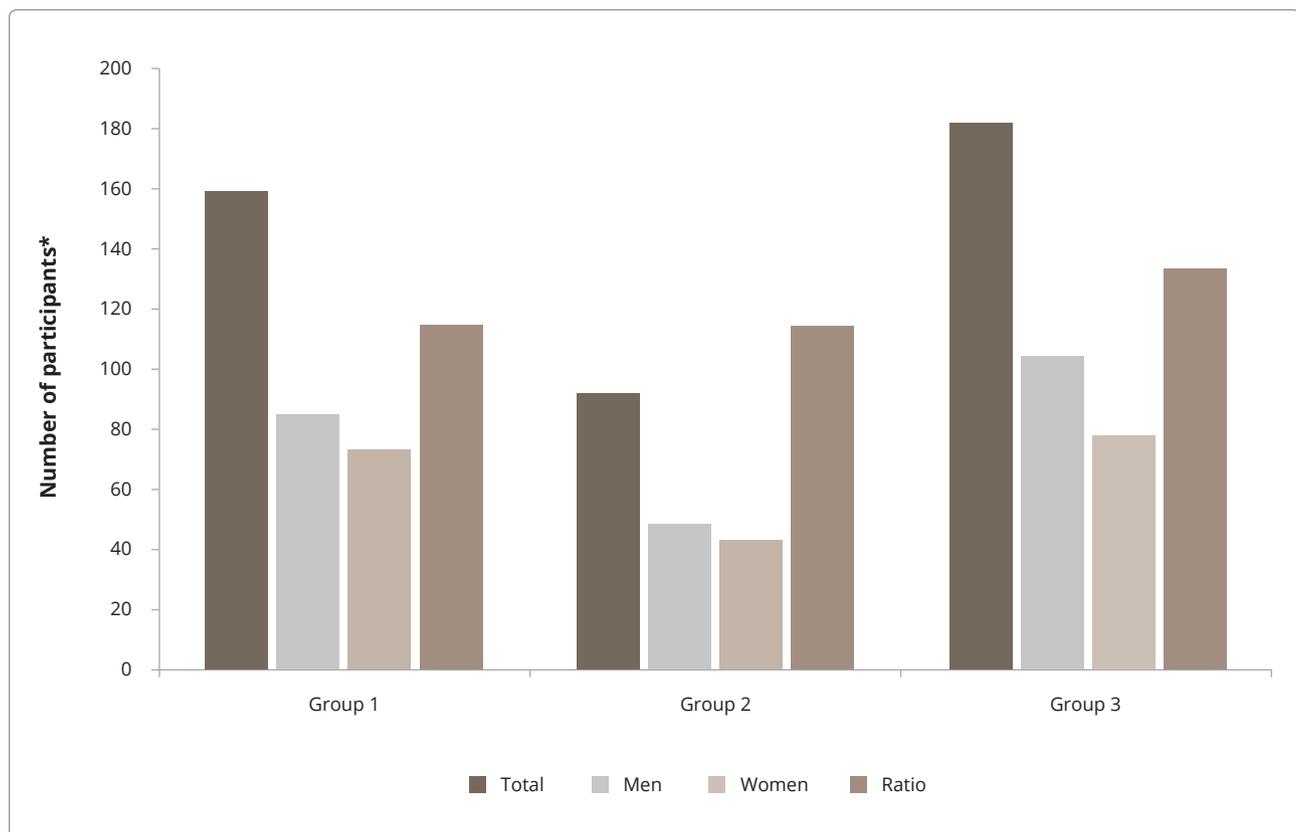


Figure 1. Studied groups — gender distribution.

Note: * M : F ratio is multiplied by 100 to adjust scaling.

The results of the current study will be presented as follows. Firstly, we will look at the differences between the studied groups in terms of demography, suicidal intent, medical severity, and violent/non-violent attempts distributions. This will be followed by the analysis of associations of EF with such parameters as general well-being, severity of symptoms of depression, violence and anger, as well as with total life stress. In the next part, the associations between EF and stressful events under the age of 18 will be explored. The final part will be dedicated to the differences in psychiatric status between groups.

When comparing differences between studied groups in terms of demography, we noted that there was a slight difference in terms of age. In particular, those who imagined that death was probable or certain tended to be older than those who thought that death was unlikely (males — 12.4% older, $p < 0.05$, females — 4.8% older, $p > 0.05$) (Table 1).

Another clear tendency was that general, objective, and subjective BSIS scores increased from Group 1 to Group 3. The difference is significant between Groups 1–2, 1–3, and 2–3 ($p < 0.05$). However, there were no significant differences in BSIS scores between men and women in all three groups. The medical severity of the SA in all three groups did not differ either. To evaluate the proportion of violent vs. non-violent methods of self-harm in men and women, we have summed all cases of self-intoxication (X60–X69), referred to as non-violent, and all other cases where hanging, strangulation, self-cutting, submersion, falling from high places and under moving transport, as well as using firearms, etc. (X70–X84), referred to as

violent. As reported in Table 1, the proportion of violent and non-violent cases differed significantly between males and females. The violent methods constituted 60–62% in males, whereas this proportion in females was 18–25%. However, the distribution of methods was identical in all three groups (Table 1).

Further analysis focused on patients' psychosocial characteristics in all three groups (Table 2).

As can be seen, in males there was a negative association with the subjective well-being ($\tau_b = -0.107$; $p = 0.037$) and positive association with depression ($\tau_b = 0.123$; $p = 0.015$), hopelessness ($D = 0.169$; $p = 0.014$), and with violence index ($\tau_b = 0.113$; $p = 0.031$). In females, a progression of expected fatality also tended to be associated with hopelessness, but the association was insignificant. Furthermore, there was a strong and significant positive association with total life stress score (SUMLE), both in males and females (Table 2). It should be noted that there was no association with the previous SA either in males or females.

In men and women, a higher intention to die and higher expected fatality were associated with different NLEs under the age of 18 (Table 3).

In men, there was only one strong and significant association with "being neglected or left alone by a caring adult" ($D = 0.297$; $p = 0.001$). In women there were associations with "sexual harassment" (weak, on the edge of significance, $D = 0.160$; $p = 0.065$) and "physical attack and assault" (significant, $D = 0.183$; $p = 0.05$). Notably, in women, two other significant associations with "hatred towards one of one's parents" ($D = 0.169$; $p = 0.038$) and "failure to achieve an important goal in life" ($D = 0.187$; $p = 0.017$) were defined.

Table 1. Differences between studied groups in demography, suicide intent, medical severity (M±SD) and the distribution of violent/non-violent attempts (%)

Indicator	Group 1		Group 2		Group 3		Significance between groups*
	M1 (85)	F1 (74)	M2 (50)	F2 (42)	M3 (104)	F3 (78)	
Age	22.96±5.77	24.20±7.55	23.88±6.75	25.28±10.07	25.75±6.87	25.34±8.68	M1<M3
BSIS total score	18.08±3.28	17.72±2.87	19.74±3.11	20.08±3.34	23.58±3.14	23.74±3.07	M1<M2<M3; F1<F2<F3
BSIS preparatory	11.22±2.53	11.27±2.35	12.34±2.56	12.53±2.76	13.72±2.66	13.78±2.51	M1<M2<M3; F1<F2<F3
BSIS subjective	6.89±1.83	6.42±1.50	7.40±1.47	7.55±1.50	9.86±1.21	9.95±1.48	M1<M3; F<F2<F3
MDS	3.21±1.20	3.11±1.03	3.06±1.19	3.41±0.83	3.22±1.22	3.25±1.07	
Violent/ Non-violent	62.0/38.0	25.4/74.6	60.0/40.0	24.4/75.6	62.4/37.6	17.8/82.2	

Note: * Group 1 — "death was unlikely or did not think about it"; Group 2 — "death was possible but not probable"; Group 3 — "death was probable or certain". Significant ($p < 0.05$) differences between the means were confirmed by Tukey pairwise comparisons.

Table 2. Associations between the subjective expectations of the fatality of the suicide attempt and psychosocial characteristics of the patients in relation to gender

Indicator	Gender groups			
	Men		Women	
Kendal's τ_b coefficients and significance	τ_b	<i>p</i>	τ_b	<i>p</i>
WHO general well-being	-0.107*	0.037	-0.078	0.175
Beck Depression Scale	0.123*	0.015	0.091	0.109
Violence (PFAV)	0.113*	0.031	0.062	0.297
Angry temperament	0.007	0.901	0.013	0.825
Angry reactivity	0.003	0.957	-0.005	0.937
Total anger	0.001	0.984	0.014	0.812
Total stress (SUMLE)	0.119*	0.018	0.192*	0.001
Somers' D coefficients and significance	D	<i>p</i>	D	<i>p</i>
Previous suicide attempt	0.066	0.402	-0.048	0.550
Hopelessness (yes/no)	0.169*	0.014	0.142	0.072

Note: Significant associations ($p < 0.05$).

Table 3. Negative life events until 18 y.o. associated with the expectation of the fatality during suicide attempt in young men and women

Indicator	Gender groups			
	Men		Women	
Life events until 18 y.o.	D	<i>p</i>	D	<i>p</i>
Being raped	0.143	0.467	0.097	0.354
Sexual harassment	-0.058	0.743	0.160	0.065
Serious physical attack or assault	0.065	0.416	0.183*	0.050
Separation from parents for a year or more	0.215	0.065	-0.043	0.731
Being brought up by others than parents	0.108	0.428	-0.049	0.727
Divorce of the parents	-0.038	0.721	-0.107	0.340
Parents being away from home for a long time	0.225	0.101	0.127	0.242
Taking care for brothers and sisters for a long time	-0.057	0.622	0.191	0.060
Feeling that parents do not love him/her	0.073	0.352	0.138	0.081
Parents having serious financial problems	0.005	0.939	0.008	0.919
Being neglected or left alone by caring adult	0.297*	0.001	0.146	0.111
Parents having serious relationship problems	0.029	0.688	0.087	0.277
Hatred to one of the parents	0.011	0.883	0.169*	0.038
Suffering from physical illness leading to incapacity	-0.018	0.850	-0.142	0.250
Staying at home or in the hospital for a long time	-0.037	0.693	0.093	0.389
Staying in the psychiatric hospital for 3 months or more	-0.095	0.523	0.179	0.278
Failure to achieve an important goal	-0.067	0.349	0.187*	0.017
Being convicted for a criminal offence	0.134	0.213	-0.295	0.210
Been sentenced to jail or other correctional institution	0.120	0.388	-0.347	0.277
Being a victim of a crime	-0.153	0.167	0.139	0.187

Note: Significant associations, Somers' D coefficient.

Psychiatric diagnoses in the general sample were registered in 51.8% of cases (52.2% among men and 51.3% among women). At the same time, clear differences in the distribution of diagnoses between genders were observed. Among men, the most prevalent (33.3% of all cases) were substance abuse disorders (F10–F19). These were followed by an almost equal representation (26–27% each) of affective (F30–F39) disorders and neurotic/stress-related/somatoform disorders (F40–F49). Schizophrenia, schizotypal, and delusional disorders (F20–F29) in the male sample comprised 12%, while eating disorders (F50) were detected in 1% of cases. In women, the most prevalent (45.8%) issues were neurotic and stress-related disorders, followed by affective disorders (34.3%), and addictions (17.9%), while schizophrenia and eating disorders were found to be 1% each.

In the group of those who believed that “death was unlikely, or did not think about it”, 53.2% of men and 51.1% of women had any diagnosis with comorbidity of 1.81 and 1.68 diagnoses per person, respectively. In the group of those who “believed that death was probable but unlikely” 46.0% of men and 47.5% of women were diagnosed with some form of disorder. Comorbidity in this group was 1.69 among men and 2.21 among women. In those who believed that “death was probable or certain” the proportion of diagnoses was higher (65.3% among men and 57.9% among women), with comorbidities of 2.03 in men and 2.20 in women. The differences between groups were studied via the chi-squared test. The differences between groups 1 and 2, and 1 and 3 were insignificant ($p > 0.05$); but when comparing groups 2 and 3, the differences were significant in men ($p < 0.05$).

DISCUSSION

Summary of the main findings

EF at the moment of self-harm is growing in parallel with general intent. Subjectively reported intent does not differ in men and women attempters. In men and in women, EF and intent are not associated with previous SA. However, EF has some distinct sex-based features. In men it is associated with different measures of poor mental health (lowered general well-being, symptoms of depression, negative expectation about the future expressed in hopelessness, and being prone to violence). In women, EF is associated mostly with life stress, where

this association is stronger than in men. The prevalence of psychiatric disorders in men and women attempting suicide was equal, but had clear distinctions in terms of the distribution of diagnoses. Addictions were strongly prevalent among men, whereas neurotic and stress-related disorders were dominant among women. Notably, increased EF and intent were only associated with higher psychiatric morbidity in men, which coincides with other signs of poor mental health in them. Both in men and in women, EF is associated with general life stress measured as the accumulation of negative life events. At the same time, it is remarkable that EF in men and in women is associated with a different set of childhood (before 18 y.o.) adversities and negative feelings. In particular, in men it is determined by parental neglect (being left alone by a caring adult), while in women associations were found with physical violence against them and frustrated hopes (failure to achieve an important goal).

Strengths and Limitations

The main strength is that we have performed this study using a carefully assembled and well-characterized sample of suicide attempters, taking into account a variety of medical (SA medical severity), psychosocial, and cultural characteristics. Suicide attempters were identified in different types of medical care units, including both psychiatric/psychoneurological, and non-psychiatric institutions (such as toxicological resuscitation units, ambulance services, and emergency departments of general hospitals). Their suicide attempts were confirmed by medical staff and parents. This provided a naturalistic representation of a variety of suicide methods, psychiatric diagnoses, and stressful life events inherent to the local culture. Moreover, involvement of the whole family and supportive interviewing ensured better contact with respondents, which was important while answering sensitive questions. As a result, we have linked not only general life stress, but also specific negative events and frustrations that occurred during childhood with suicidal intent and subjectively perceived fatality. Moreover, we have identified differences between men and women regarding stressful events that occurred during childhood and their relevance to higher intent and EF. This is a valuable step towards a better understanding of the differential risk factors of suicide attempts in men and women. This also acts as a basis

for further psychological studies of deep underlying psychological mechanisms of suicidal behavior.

There are also several limitations to the present study. Firstly, the sample may be skewed due to the fact only those suicide attempters whose parents were available were recruited in the study. Therefore, the findings might not be generalizable to all suicide attempters admitted to emergency departments. Another weakness is a recall bias, which is rather typical to all retrospective studies.

Comparison with the existing literature

In the group of patients who reported that “death was probable or certain”, patients were older, which is consistent with other authors’ findings [27]. However, despite an increased intention to die, the medical severity of the SA in all three groups did not differ. Thus, our results support studies that find no or only a very mild correlation between suicidal intent measured by BSIS and the medical severity of the attempt [14, 27, 28]. Within the groups, we did not find any differences between men and women, either in intent or in the medical severity of attempts. Therefore, our study is consistent with those that do not find any gender-related difference in intent during a suicidal act [14, 15, 29]. This means that women may have the same intent to die as men, which implies that the choice of the method may be the main factor affecting the subsequent lethality.

Studies suggest that females survive suicide attempts more frequently than males because they typically use less lethal means, and further that their outcomes are less lethal compared to males even when using an identical method [30, 31]. In our sample, the proportion of more violent and potentially lethal methods (all methods except poisonings, including self-cutting, hanging and suffocation, using firearms, smoke vapors and gases, etc., coded X70–X84 according to ICD 10) in men was 1.5–1.7 times higher than in women. In women, in contrast, non-violent (i.e., self-poisonings with different medicines and other toxic substances) occurred 2.9–4.6 times more often. Interestingly, in men, this distribution was the same in all three groups, while in women the proportion of less violent methods increased progressively from group 1 to 3 (from 2.93 to 4.62 times). This gives the impression that the greater the intention driving the women and the greater the EF

they claim, the more strongly they stick to traditional “female” types of methods of suicide.

When considering selected psychosocial variables that may influence intent and EF, we identified several differences between men and women. Men appeared to be influenced more by depressive emotions, low general well-being, and pessimism (hopelessness). As previously described in a recent study, the role of hopelessness as a mediating factor between life stress and severe suicide attempts is particularly prominent amongst men [32]. Moreover, the fact that in men we find associations with more factors than in women may partly explain their higher risk of suicide as they seem to be influenced by a more diverse set of determinants. Other studies provide evidence that poor well-being is generally associated with higher suicidal intent, depression, hopelessness [33], and life stress [34]. In our sample, life stress was strongly associated with intent and EF in both men and women. However, studies suggest that men may develop more chronic and severe emotional responses to life stress due to their higher tendency to not recognize or respond to their own negative emotions or distress [35].

In this respect, analysis of gender-specific life events that happened to a person prior to the age of 18 seems to be particularly important. In our study, higher EF in men was strongly associated with separation from parents for a year or more (strong but insignificant) and being neglected or left alone by a caring adult (strong and highly significant). This may indicate that poor or dysfunctional parent-child interrelations and a lack of parental warmth during childhood for males could be transformed into a higher intent and EF during a suicidal crisis. In women, the strongest associations were found with quite a different set of events, including failure to achieve an important goal, serious physical attack or assault, and hatred of one of their parents (all of the same strength, and significant). The strong association with physical attack, assault and hatred for one of their parents may be an indication of serious problems and conflicts within the family [36]. It results in physical and emotional abuse, which are often found in suicide attempters [36]. Nevertheless, association with the failure to achieve an important goal indicates that frustration is a serious risk factor of the higher intent and EF during a suicidal crisis in women.

As to the psychiatric disorders, our findings suggest that a higher proportion of patients with psychiatric diagnoses

and comorbidities are inherent to the group with the highest EF and intent. This is consistent with other studies that point out that a higher rate of psychopathologies and diagnosed psychiatric disorders predicts higher suicide intent [27, 28, 37]. It is important to note that in our sample this tendency was significant only among male suicide attempters. Although CIDI 2.1 allows only a limited number of disorders to be assessed, it helps to reveal major differences between men and women in this respect. In particular, it points out that addictions were more prevalent among men, while neurotic and stress-related disorders were more common among women. This is consistent with other studies of the same population [38] and further contributes to the understanding of differential risk factors for higher intent and EF in men and women. In particular, it confirms one of the suggestions regarding possible reasons for the gender suicide paradox (i.e., representation of easier-to-treat disorders among women) [3].

The interpersonal-psychological theory recently developed by T. Joiner [39] proposes that differences between the sexes with regard to suicide are the result of differences in acquired capability for suicide, which is supposed to consist of two components: fearlessness about death, and physical pain insensitivity [39, 40]. Higher acquired capability for suicide among men makes it more likely that men will kill themselves when suicide is being considered. Thwarted belongingness and perceived burdensomeness are also factors contributing to Joiner's theory and suicide risk factors for men, while stoicism and sensation-seeking are considered to be mediating factors [40]. Expected fatality, in this sense, is of special interest as a factor that may be related to these feelings.

Relations between measured intent, severity of attempts, and the choice of method amongst men and women are either fully denied [41] or admitted and acknowledged [8, 10]. Such conflicting results may be caused by the differences in conceptualization and assessment of the intent [28, 32, 42]. However, in longitudinal studies, high BSIS scores predict higher overall mortality rates and death by suicide, indicating that intent is an important factor [43]. All this determines the importance of further research in this field with an emphasis on expected fatality, especially with due consideration for some of the novel models of suicide that have recently begun to emerge.

Implications for research and practice

Our findings carry a number of implications for future research. Firstly, suicidal intent and expected fatality could be included in the set of variables alongside thwarted belongingness and fearlessness about death in men and women. Secondly, gender-specific risk factors for suicide attempts and completed suicide with regard to intent and EF may need to be studied further. Thirdly, exploring risk factors for high intent and expected fatality in men and women, including specific life events during early life and family patterns, seems necessary as this may help to understand the nature of vulnerabilities to stressful factors in the early social environment. From a practical perspective, such knowledge may provide valuable insights for a consultant or a therapist dealing with a suicidal person. Questioning regarding EF could be useful while briefly evaluating the seriousness of suicidal intent amongst suicide attempters in the clinical setting. It may serve a useful instrument for first contact with suicide attempters, such as by paramedics, policemen, or rescuers. In this sense, it may facilitate effective and timely medical aid and may help to prevent future suicide attempts and completed suicides.

CONCLUSION

Our findings suggest that there is a difference in risk factors for high expected fatality and intent in men and women attempting suicide. These factors may not necessarily lead to severe medical outcomes but may help during post-crisis counseling of suicide attempters. Motives and perceptions, and especially EF during a suicide attempt in men and women appeared to be associated with a different set of objective psychosocial characteristics and psychiatric disorders. This helps to better understand the nature and determinants of intrapsychic conflict and ambivalent thinking at the peak of a suicidal crisis. Therefore, expected fatality deserves more attention as a component of general intent as an in-depth study of this phenomenon may help to prevent future suicidal attempts and suicides. Further studies are needed to better characterize expected fatality, especially in relation to such factors as fearlessness about death and pain insensitivity.

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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

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

AIM: 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"¹. The introduction of innovative medical technologies, including an early diagnosis system, is one of the strategic tasks

in the area of "health care"², which were established for the achievement of the national goal of preserving the population, and people's health and well-being³.

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"

¹ 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

² 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)

³ 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-10⁴. 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

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

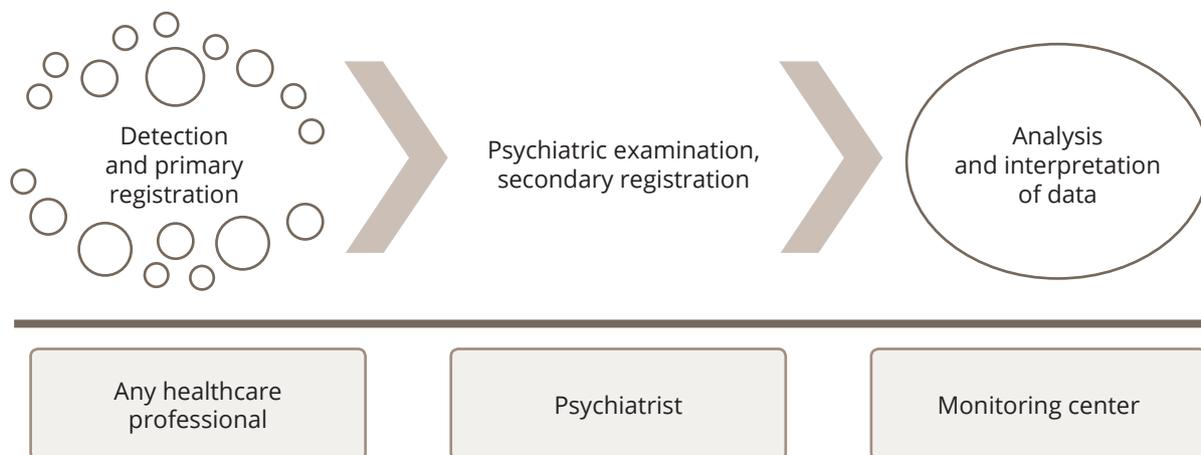


Figure 1. The intentional self-harm monitoring process enacted in the Stavropol Territory.

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 Territory⁵.

⁵ 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 items⁶, 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, mentally ill 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, mentally ill *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, mentally ill *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).

⁶ 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.

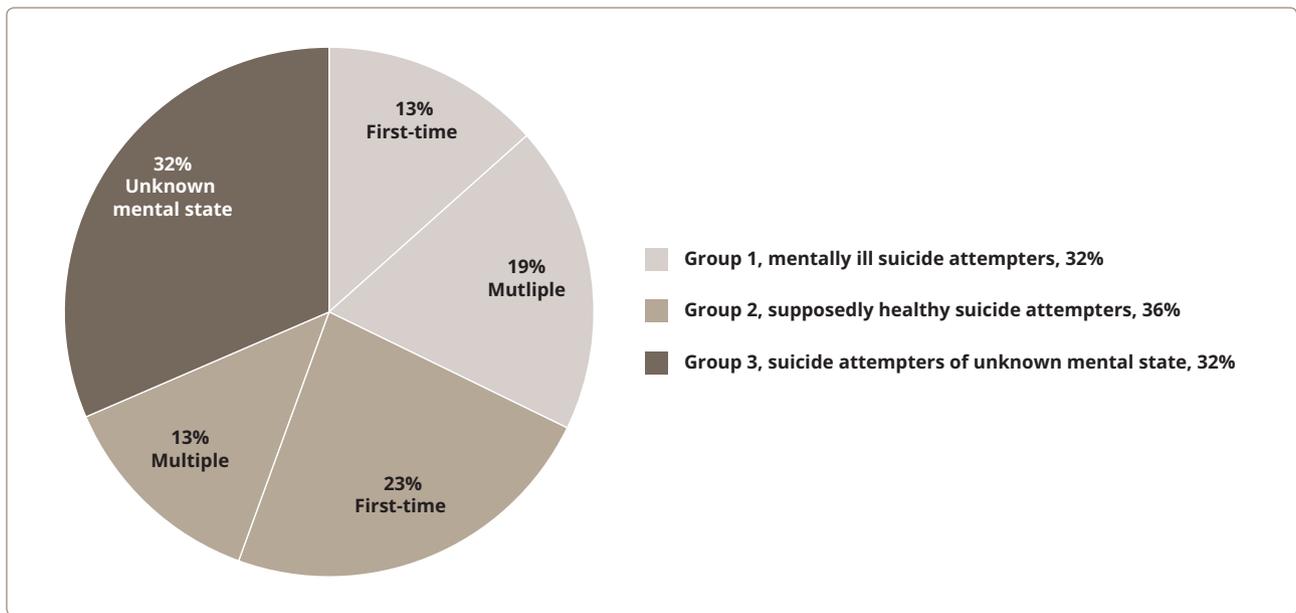


Figure 2. Structure of suicide attempts in the study population.

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 subjects

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 (mentally ill 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).

RESULTS

The average annual (2016–2021) number of suicide attempts among persons who were followed-up on and received counseling and treatment⁷ from Stavropol Territory psychiatrists is 65.5, according to federal state

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

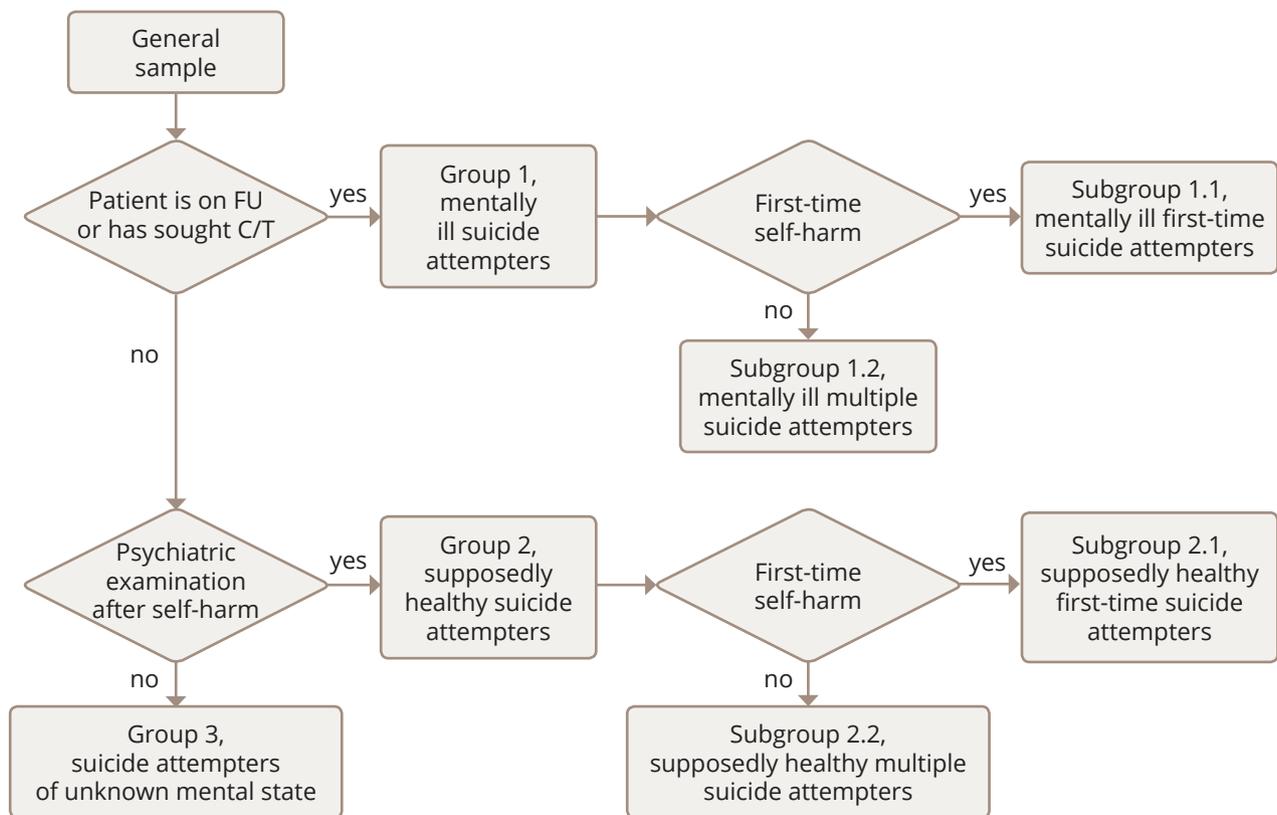


Figure 3. Study group formation (patient flow chart).

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

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 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 (mentally ill 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 Federation⁸, 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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⁸ 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.

Perceptions of the COVID-19 Pandemic and Psychological Distress amongst Russian Citizens during Spring 2020

Представления о пандемии COVID-19 и психологический дистресс у граждан России весной 2020 года

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Original research

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ABSTRACT

BACKGROUND: The COVID-19 pandemic has affected the emotional state of a wide range of people around the world. Studying the social and psychological factors of psychological distress is required in the context of the pandemic in different countries. This study aims to explore the relationship between the emotional state of Russian citizens during the COVID-19 pandemic and their perceptions of it, and its dependence on various socio-demographic characteristics.

METHODS: A socio-demographic questionnaire, the Russian version of the Perceived Stress Scale, the State Scale from Spilberger State-Trait Anxiety Inventory, and the modified version of the Brief Illness Perception Questionnaire were used for the purposes of this study. The data was analyzed via descriptive statistics, ANOVA, Exploratory Factor Analysis, Correlation Analysis, Scale Consistency Analysis, and Structural Equation Modeling (Path Analysis Method).

RESULTS: The study sample consisted of 1192 Russian-speaking respondents. The findings suggest that psychological distress affects all components of the ideas about the pandemic. The "Psychological distress" variable positively influences the "Threat to life" and "Fear of an unknown disease" components of the ideas about the pandemic, whereas the "Control" component (ideas about the ability to control events) is ambivalent. On the one hand, the severity of psychological distress reduces the idea of being able to control events; on the other, the psychological distress experienced increases the feeling of threat and uncertainty, and stimulates the control of these feelings to be realized. In addition, significant differences were revealed in the nature of perceptions of the pandemic and psychological distress, as dependent on gender, age, type of employment, daily routine during self-isolation, income, as well as a fear of possible stigmatization with regard to COVID-19. It has been shown that underestimating the disease leads to improvement of psychological well-being. However, respondents who underestimated the danger of coronavirus paid less attention to the measures taken against the virus. If the respondent had relatives infected with COVID-19, they were found to perceive the COVID-19 pandemic as more threatening and less understandable.

CONCLUSIONS: Through assessing a level of threat and fear of an unknown disease, we defined that psychological distress has a direct and mediated influence on the feeling of control over the pandemic. However, the results on the role of psychological distress and perceptions of the COVID-19 pandemic, taken together, appear rather contradictory. Further research exploring additional predictors of psychological well-being and distress during the COVID-19 pandemic is required to provide solid conclusions.

АННОТАЦИЯ

ВВЕДЕНИЕ: Пандемия COVID-19 оказала влияние на эмоциональное состояние широкого круга людей во всем мире, что делает необходимым изучение социальных и психологических факторов психологического неблагополучия населения разных стран. Настоящее исследование направлено на изучение связи между эмоциональным состоянием граждан России во время пандемии COVID-19 и их представлениями об этой пандемии, в их зависимости от различных социально-демографических характеристик.

МЕТОДЫ: Для целей исследования использовались: социально-демографический опросник, русскоязычная версия Шкалы воспринимаемого стресса, Шкала состояний из опросника тревожности Ч. Спилбергера, модифицированная версия Краткого опросника восприятия болезни. Данные были проанализированы с помощью методов описательной статистики, дисперсионного анализа, эксплораторного факторного анализа, корреляционного анализа, анализа согласованности шкал, а также с помощью моделирования структурными уравнениями (процедура путевого анализа).

РЕЗУЛЬТАТЫ: Выборку исследования составили 1192 русскоязычных респондента. Полученные данные свидетельствуют о том, что психологический дистресс оказывает значимое влияние на все составляющие представлений о пандемии. Так, переменная «Психологический дистресс» положительно влияет на такие компоненты представлений о пандемии, как «Угроза жизни» и «Страх неизвестной болезни», тогда как компонент «Контроль» (представления о способности контролировать события) испытывает на себе амбивалентное влияние. С одной стороны, тяжесть психологического дистресса снижает представление о способности контролировать события. С другой стороны, выраженный психологический дистресс усиливает чувство угрозы и неуверенности и, далее, стимулирует к реализации контроль над этим чувством. Кроме того, выявлены существенные различия в характере представлений о пандемии и в выраженности психологического неблагополучия в зависимости от пола, возраста, вида занятости, режима дня в период самоизоляции, уровня доходов, а также страха перед возможной стигматизацией в случае заболевания COVID-19. Показано, что психологическое благополучие выше у респондентов, недооценивающих степень опасности COVID-19. Однако респонденты, недооценившие опасность коронавируса, меньше внимания уделяли мерам защиты от вируса. Респонденты, имеющие родственников, болеющих или болевших COVID-19, воспринимали эту пандемию как более угрожающую и менее понятную.

ВЫВОДЫ: Оценивая уровень угрозы и страха перед неизвестным заболеванием, мы определили, что психологический дистресс оказывает прямое и опосредованное влияние на представления о способности контролировать события в условиях пандемии COVID-19. Однако результаты о вкладе психологического дистресса в представления о пандемии COVID-19, в совокупности, представляются довольно противоречивыми. Для получения убедительных выводов необходимы дальнейшие исследования, изучающие дополнительные предикторы психологического благополучия и дистресса во время пандемии COVID-19.

Keywords: *perception of the COVID-19 pandemic; cultural-historical concept; stress; psychological distress; pandemic threat; pandemic control; suspense; structural equation modeling; Russian citizens*

Ключевые слова: *представления о пандемии COVID-19; культурно-историческая концепция; стресс; психологический дистресс; угроза, исходящая от пандемии; контроль пандемии; неопределенность; моделирование структурными уравнениями; граждане России*

INTRODUCTION

It is now clear that the COVID-19 pandemic and its social restrictions have changed the lives of millions of people around the world in just a few months [1]. The pandemic, and its associated restrictions, not only carry the risk of death from the coronavirus but also put enormous psychological pressure on people. Living through a lockdown can pose a serious challenge to adapting and maintaining mental health [2, 3]. According to the first nationwide survey on well-being during the COVID-19 pandemic, almost 35% of 52,730 respondents in China claimed to have experienced psychological distress. Women were more prone to experiencing stress than men. People under the age of 18 experienced the least stress, while people aged 18–35 and the elderly experienced it the most. Similar results were shown in studies originating from Italy [4, 5], Spain [6, 7], Canada [8], the USA [9], Portugal, and Brazil [10]. A higher level of distress was observed following the release of official data on the increase in the number of cases and the high mortality rates from COVID-19, as well as the introduction of quarantine measures and lockdown regimes [6, 11]. It was emphasized that stress levels may considerably increase as the quarantine continues [6].

Getting such results inevitably brings the problem of perception of the COVID-19 pandemic to the focus of scientific research. Exploring perceptions of the COVID-19 pandemic in a sample of Chinese citizens revealed that specific, relevant, and accurate medical information on preventive measures contributed to lower levels of anxiety, stress, and depression [12]. At the same time, social media reports representing COVID-19 as a “killer virus” increased the sense of danger and reduced tolerance for uncertainty [13]. This is consistent with the fact that young people and those with a higher education may have higher levels of stress because they have greater access to a variety of information sources, including social networks [11]. Another Chinese study found that the awareness of the risk of getting sick and knowledge of managing the risk of infection became a powerful protective factor against emotional distress and a motive for preventive behavior [14]. A survey of the Italian population revealed a different picture. It was suggested that the higher awareness of COVID-19 leads people to become more insecure and adopt stricter preventive measures [15]. Thus, the existing literature cannot be considered consistent, which raises the question of possible cultural differences in perceptions of the COVID-19 pandemic. Furthermore,

although there are Chinese [14] and Italian [15] studies on this matter, we did not find any work on a Russian sample.

Perceptions of the COVID-19 pandemic can be hypothesized and constructed in the light of the following theoretical models: the concept of the Subjective Pattern of Disease (SPD) [16–18], and Leventhal’s model of disease perception [19].

From a clinical psychology point of view, the COVID-19 pandemic is in many ways unique. The conditions of the pandemic, with all its associated limitations and risks, provide researchers the opportunity to observe the development of a clinical and psychological phenomenon such as SPD [16–18, 20]. In this case, the SPD is formed based on the absence of any “experiential fabric” of the disease due to the activities of the mass media and the “circulation of rumors” emerging in society. However, the peculiarity of the current situation with regard to SPD formation lies in the fact that neither the general population nor the medical community had any clear “models of disease representations” by the time the pandemic was declared [21]. Thus, COVID-19 is a disease that not everyone gets but everyone prepares for and assesses the risks of. It can be assumed that, at the moment, we are witnessing the formation of a “Collective Pattern of Disease”, reflecting a system of collective ideas about the new type of virus. The presence of this “Collective Pattern of Disease” will undoubtedly be a contributory factor to the formation of individual SPDs in the context of the COVID-19 pandemic.

However, the SPD as a systemic entity seems to be an extremely difficult phenomenon to assess. In non-Russian studies, the basic category for describing self-regulation in relation to health and disease is considered to be “disease perception”, which is understood to be a combination of cognitive and emotional perceptions of disease [22, 19, 23]. The “disease perception” construct is certainly not as rich from a theoretical and methodological point of view, but is relatively simple compared to the SPD design, which makes it easier to assess, including the use of questionnaires as a primary research method. In light of this, H. Leventhal’s model of disease perception has become the most widespread in the modern scientific discourse. This model combines five key components: (1) identification of the disease; (2) the cause of the disease; (3) the duration (time perspective) of the disease; (4) the consequences of the disease; and (5) the controllability/curability of the disease. In later studies, three additional components were introduced into the “perception of

disease” construct: (1) the clarity of the disease; (2) concern for the disease; and (3) emotional responses to the disease. The use of this model and the resulting Disease Perception Questionnaire by E. Broadbent [22, 24] seems to be adequate for assessing COVID-19 perceptions in terms of both heuristics and content.

Against this background, the aim of this research is to explore the relationship between the emotional state of Russian citizens during the COVID-19 pandemic and their perceptions of it and its dependence on various socio-demographic characteristics.

METHODS

The aim of the study was addressed via online survey on the HT-Line.ru platform. An online format was chosen due to the need to maintain self-isolation (<http://www1.ht-line.ru/>). The surveys included the following parts:

1. A socio-demographic questionnaire containing 20 questions [21].
2. Perceived Stress Scale [25, 26].
3. Modified version of the Brief Illness Perception Questionnaire [21–23].
4. Modified version of State Scale from State-Trait Anxiety Inventory [27, 28].

We modified all the methods specifically for this study and tested their reliability via the Cronbach’s Alpha coefficient. This procedure is described in detail in the article published in July 2020 [21].

Sampling

The convenience sampling was adopted for the purposes of this study.

Recruitment

The online survey was conducted between April 27 and May 27, 2020. Participants were recruited through ads on social networks. Participants were eligible if: 1) their skill in reading in Russian was at an advanced level; 2) they were more than 18 years; 3) the presence of consent to the personal data processing, and 3) they showed an absence of symptoms and diagnosis of COVID-19 and community-acquired pneumonia at the time of the study. All of the above characteristics were indicated by the respondents themselves.

Procedure

The study took 10–20 minutes. Immediately after passing the online testing, respondents received their results

with individual interpretations and recommendations for improving their health. All participants gave their informed consent to participate in the study and to publish the data in an anonymous and summarized form. Questionnaires of respondents who did not pass all stages of testing were excluded from the study.

Research governance

The research is supported and ethically approved by the Russian Science Foundation, Project No. 21-18-00624.

Data analysis

The data were analyzed by descriptive statistics, ANOVA, Exploratory Factor Analysis, Correlation Analysis, Reliability Scale Analysis, and Structural Equation Modeling (Path Analysis Method) [29, 30]. The results were processed using the statistical software packages EQS 6.2 and SPSS 22.0.

RESULTS

The study involved 1,192 people. A description of the sample is presented in Table 1.

Table 1. The sample characteristics

Total	1,192
Sex	
Women	981(82%)
Men	211(18%)
Area of living	
Central District	58%
North-Western District	11%
Urals District	8%
Volga District	6%
Southern District	5%
Siberian District	4%
Far Eastern District	1%
Caucasus District	1%
Lived abroad	4%
No answer	3%
Education	
Below secondary level	1%
General secondary education	4%
Specialized secondary education	4%
Incomplete higher education	9%
BA, MA, or equivalent degree	75%
Ph.D. or equivalent degree	6%
Age: From 18 to 81 y.o. 36.5±11.0, (Q1=28, Q2=36, Q3=44).	

Factor extraction of the collective COVID-19 pattern categories

Since the questionnaires used in the study were modified to study the perception of the COVID-19 pandemic and the emotional state of people during it, we analyzed the factor structure of the questionnaires.

The factor structure of the modified version of the Brief Illness Perception Questionnaire [21–23, 31] was checked in the present study using Principal Component Analysis and the Rotation Method (Oblimin with Kaiser Normalization). Adopting these methods allowed us to highlight three factors that explained 59% of the total variance [21]: (1) Perceptions of the pandemic-related threats (further — Threat); (2) Perceptions of the control over the pandemic (further — Control); and (3) Perceptions of pandemic-related suspense (further — Suspense).

It was defined that Threat and Control factors are unipolar and positively correlated ($r=0.210, p < 10^{-10}$). The third factor, Suspense, turned out to be bipolar: at the positive pole there was the “Fear of an unknown disease”, and at the negative one, “Understanding the pandemic as a known phenomenon” (“Absence of fear”). The Pearson correlation between the first and third factors turned out to be positive ($r=0.115, p < 10^{-4}$). This can be interpreted as follows: the greater the perceived threat, the greater the fear of the unknown (or vice versa: the greater the fear of the unknown, the greater the perceived threat). No significant correlation was found between the second and third factors ($r=0.029, p=0.3$), i.e., no correlation was found between the possibility of controlling the pandemic and understanding what it is. Analysis of the nature of the relationships between the factors in the resulting three-part factor structure suggests that the life threat

assessment may have the status of an intermediate variable, mediating the relationship between suspense and pandemic control [21].

The factor structure of the modified version of the Perceived Stress Scale and State Anxiety Scale was explored in our previous study [21, 31] and indicated that “Psychological Distress” as a factor explains 73% of the general dispersion. Therefore, four factors, including Psychological Distress, Threat, Control, and Suspense were used as variables for further analysis. These factors represent centrally distributed normal values with a mean sample value of 0 and a standard deviation of 1 (Z-scores).

Construction of the Path Model defining relationships between psychological distress and perceptions of the COVID-19 pandemic

The Path analysis method was performed using the EQS 6.2 program to check the relationships between the selected variables [29, 30]. The created Path Model is represented below in Figure 1. All paths are significant and indirect effect is positive, significant and equal 0.186 ($\chi^2(1)=1.756, p=0.185, CFI=0.999, RMSEA=0.025$).

The model constructed reveals the direct and indirect effects of Psychological Distress on the perceptions of the Control over the pandemic, as mediated by Suspense and Threat. Psychological distress decreases the feeling of Control over a pandemic. At the same time, Psychological Distress can indirectly increase the feeling of Control through strengthening the feelings of Threat and Suspense. Thus, if a person perceives the pandemic as threatening, they will pay more attention to controlling it, but if a person’s mental state worsens, it may lead to a feeling of lack of control over the pandemic.

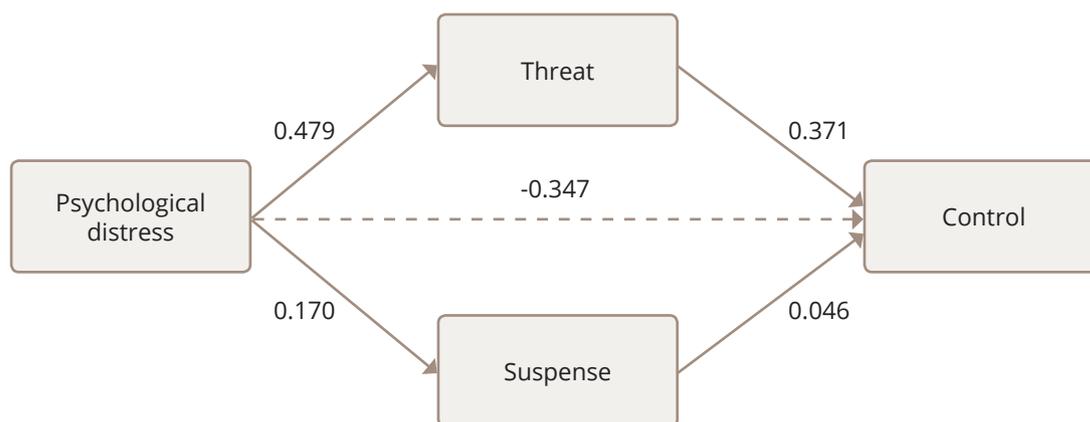


Figure 1. A Path Model of the perceptions of COVID-19 pandemic determined by Psychological Distress.

Table 2. Descriptive statistics for all the scales in the male and female samples (N=1192)

Scale name	Minimum	Maximum	Women (N=981)		Men (N=211)	
			Average	Standard deviation	Average	Standard deviation
Psychological distress	-2.07	3.32	0.09***	0.99	-0.41	0.93
Threat	-2.9	2.4	0.06***	0.98	-0.27	1.04
Control	-2.5	3.6	-0.04	0.98	0.20**	1.08
Suspense	-2.2	3.2	0.03	1.00	-0.13*	0.99

Note: Asterisks indicate the largest of the two compared values (mean or standard deviation), p-value <0.05 is marked *, <0.01 is marked **, <0.001 is marked ***.

The next step in our research was to identify socio-demographic predictors of the emotional state of the Russian-speaking population and its perceptions of the COVID-19 pandemic. Table 2 shows the means and standard deviations for all scales in the male and female samples. The variance in both subsamples do not significantly differ from each other or from the total sampled variance equal to one. However, the means in each subsample are significantly different from 0 and from each other. According to the Student's criterion (with the following check by the non-parametric Mann-Whitney criterion) significant differences in the values of the variables were established: Psychological Distress ($t=6.609$; $p < 0.0001$), Threat ($t=4.423$; $p < 0.0001$), Control ($t=-3.213$; $p < 0.0001$), and Suspense ($t=2.073$; $p < 0.038$). In the female sample, Psychological Distress, and perceptions of the Threat and Suspense are significantly more pronounced. Men tend to be calmer and think that the situation is under control and that they understand everything about this disease.

To determine how age affects psychological distress and perceptions of the pandemic, respondents were divided into four age groups. Figure 2 shows the number of each group and representations of the values on the scales under analysis in each group. Since the survey was conducted online, the vast majority of our respondents (over 99%) are people of active age, that is, under 64. Therefore, the age periodization in our survey is limited by this age. The results show that Psychological Distress ($F=8.647$; $p < 0.0001$) and Threat representations ($F=3.782$; $p < 0.010$), as well as the perceptions of Control ($F=11.984$; $p < 0.0001$), are mostly characteristic of younger respondents. It is worth noting that despite lower levels of Psychological Distress and Threat assessment in the older age group, the

Suspense is higher in this group, though not to a significant degree.

No significant differences by region of residence have been identified.

With regard to living arrangements, the results revealed a significant difference in Control scale ($F=4.598$, $p < 0.0001$). It was shown increasing in Control scale in the group of respondents "living with parents" and "living with friends" compared with groups of respondents living alone ($p < 0.002$), with a spouse ($p < 0.013$), with a spouse and children ($p < 0.0001$), and alone with children ($p < 0.001$) (Figure 3). The high indicators on the "Control" scale in these groups of respondents can be explained by the fact that this type of respondents are mostly from the group of young people (see the previous paragraph).

Since the respondents filled in the online questionnaires over the course of a month, this allowed the dynamics of the emotional state of the population over time to be estimated. Since the total number of respondents per day differed significantly on a day-to-day basis, we divided the study period into seven stages (Figure 4). The one-way ANOVA has revealed significant changes in the Psychological Distress variable at different stages of time ($F=2.815$; $p=0.010$). It is important to note that the highest level of Psychological Distress was observed after May 12, 2020 (Figure 4). This phenomenon might be explained by the highest level of COVID-19 infections being detected on that day (11,656 people) and the official end of the "non-working days" in Russia.

Respondents with a very low income had the highest level of psychological distress, and increasing income till the average causes decreasing distress. But after the average point, the psychological distress does not depend on income more (Figure 5).

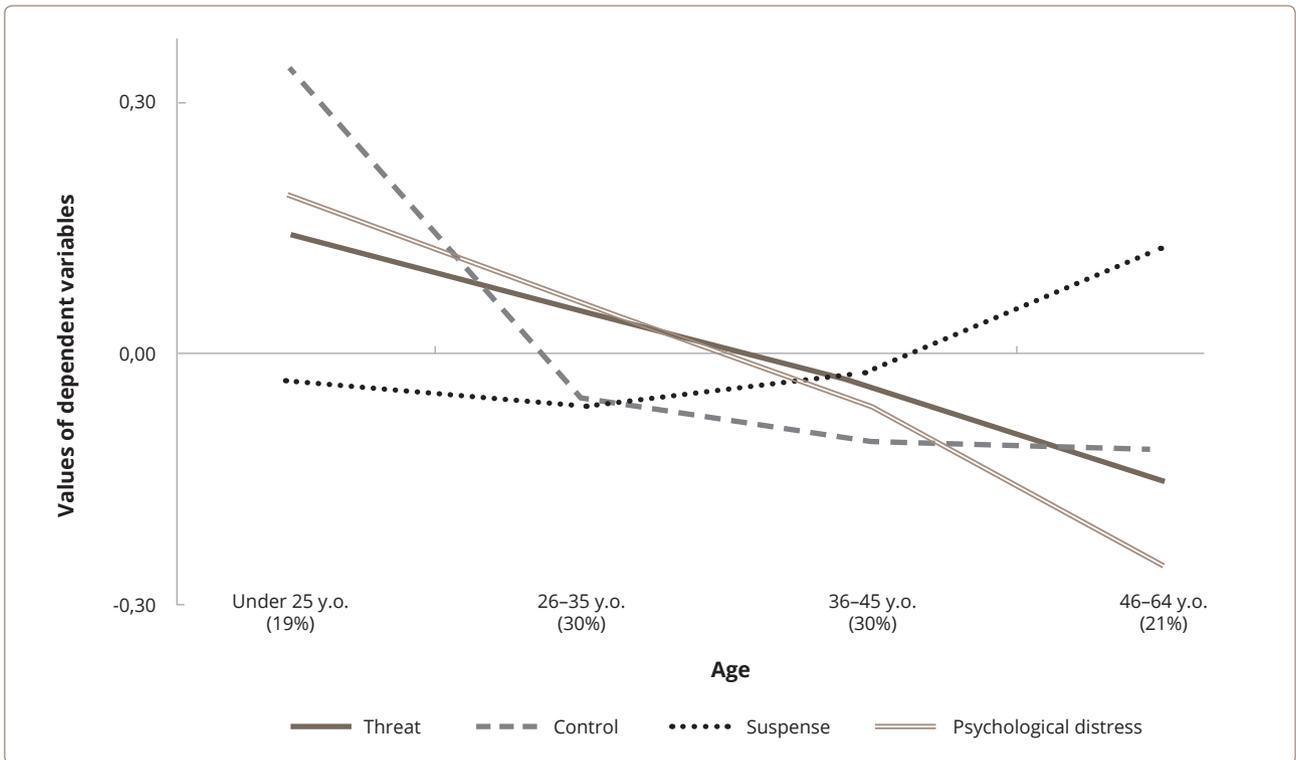


Figure 2. Levels of Psychological Distress and the perceptions of the COVID-19 pandemic in different respondents' age groups.

Note: Here and in the following figures, the values of dependent variables are plotted along the Y-axis. These variables are calculated as factor scores. Therefore, they are standardized and normally distributed variables (Z-score).

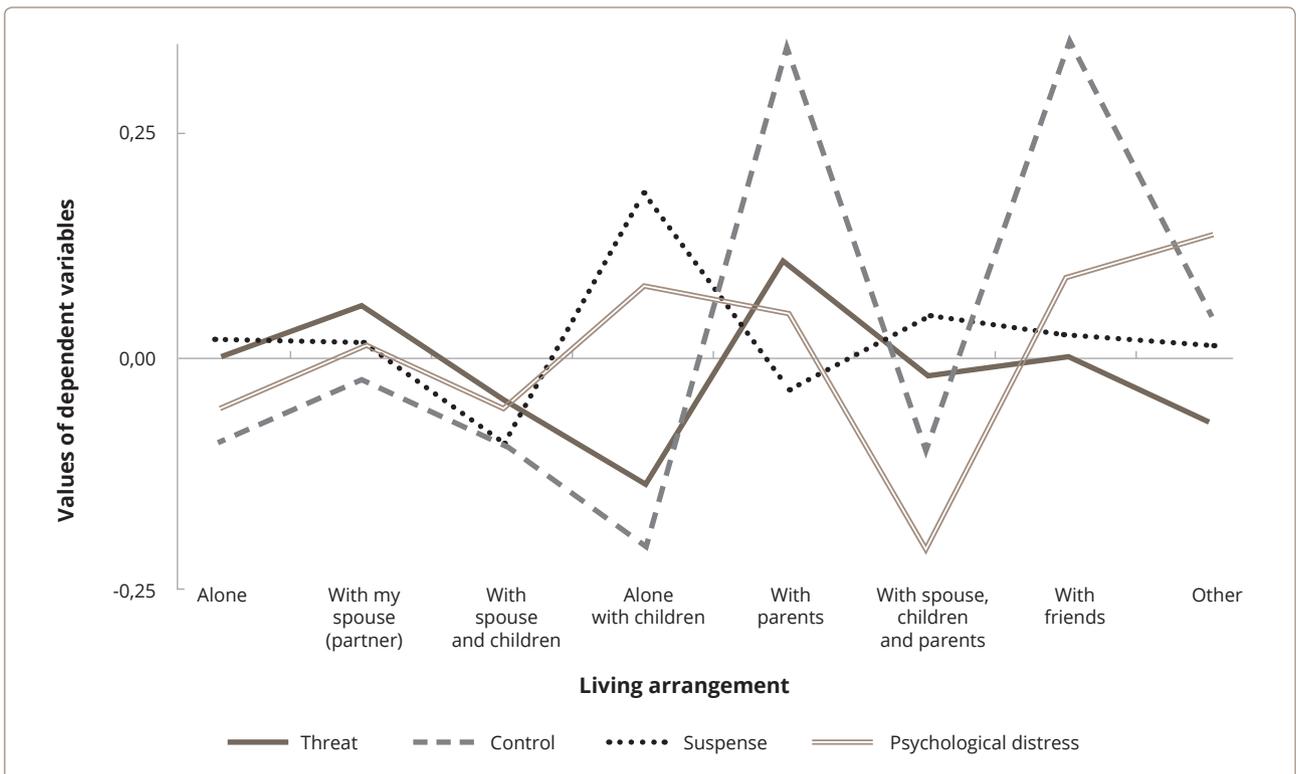


Figure 3. Levels of Psychological Distress and perceptions of the COVID-19 pandemic in different respondents' groups according to living arrangement.

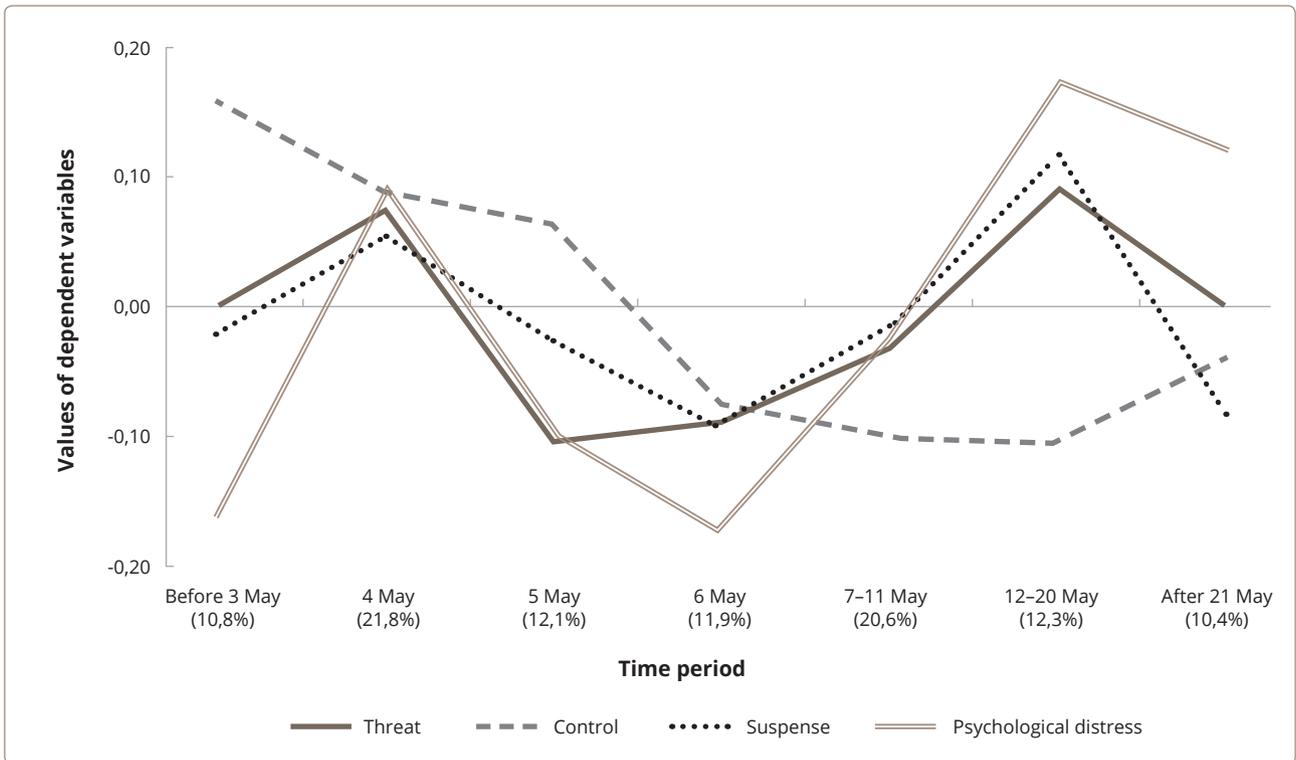


Figure 4. Dynamics of Psychological Distress and perceptions of the COVID-19 pandemic during the period from April 27 to May 27, 2020.

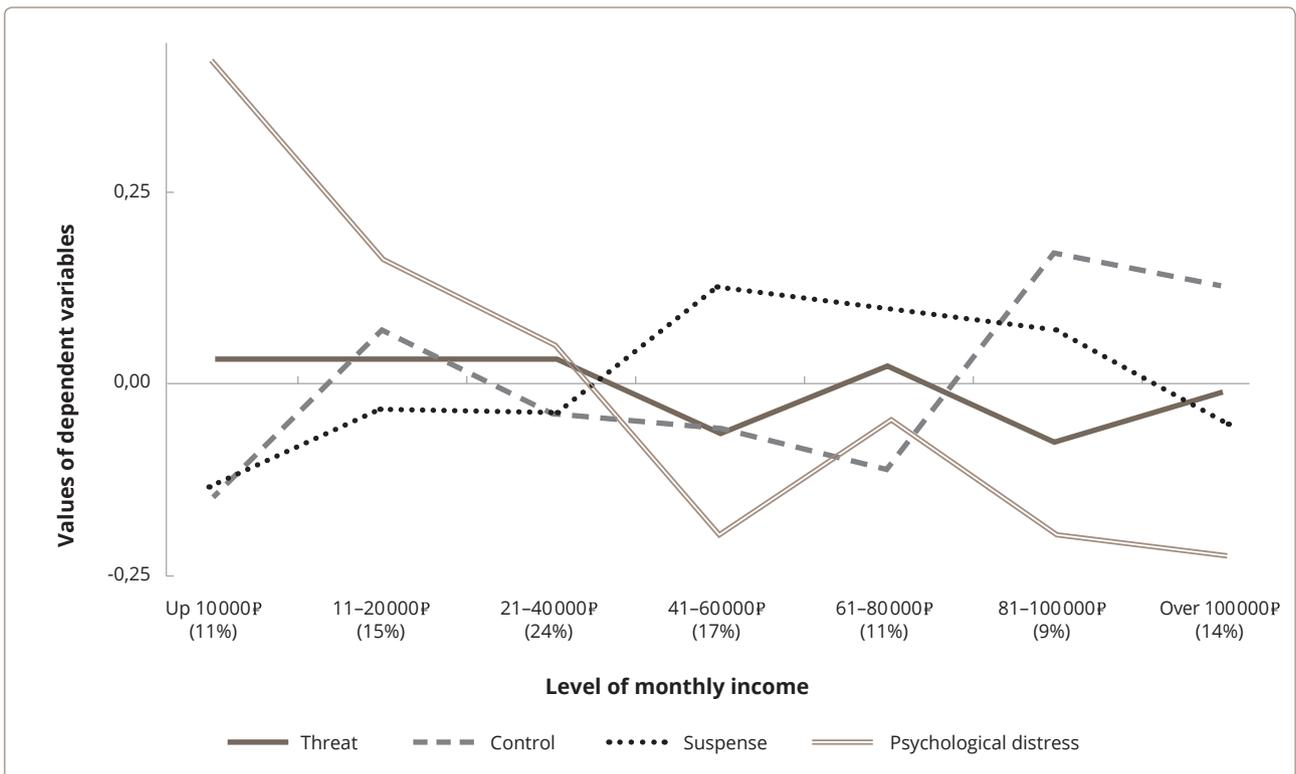


Figure 5. Changes in Psychological Distress and perceptions of the COVID-19 pandemic with the increase in income.

Significant differences across the scales were found depending on the type of employment at the time of the pandemic. For example, such variables as Threat ($F=3.102, p=0.009$), Control ($F=4.598, p <0.0001$) and Psychological Distress ($F=4.896, p <0.0001$) were less pronounced, whereas Suspense ($F=2.540, p <0.027$) was greater in the groups of respondents who “take care of the household/stay on maternity leave” ($p <0.034$) and “working” ($p <0.05$) compared to “non-working students” (Figure 6).

A reliable increase of values in the Psychological Distress variable ($t=-1.913, p <0.05$) was revealed for respondents answering the question about “job-related risks of contamination by virus” positively.

In response to the question “Do you stick to your daily regime in self-isolation?”, there was a significant increase in the Threat ($F=10.264, p <0.0001$), Suspense ($F=3.807, p <0.004$), and Psychological Distress ($F=26.772, p <0.0001$) variables if one is unable to stick to one’s daily routine. This was identified among the groups of respondents answering the question with either “yes” or “rather yes” compared to the groups of respondents answering “probably not” ($p <0.001$) or “not” ($p <0.006$) (Figure 7).

That is, those respondents who want to but cannot stick to their daily regime are the most stressed.

One of the questions asked whether the respondent had relatives who were ill or had already had COVID-19. 14% of the respondents stated that they had infected relatives. Comparative analysis of the severity of the scales analyzed for the groups of respondents with and without sick relatives by the Student’s criterion (confirmed by the non-parametric Mann-Whitney criterion) showed significant differences in the Threat ($t=-2.213; p <0.027$), Control ($t=-2.453; p <0.014$), and Suspense ($t=-2.050; p <0.041$) scales. In all cases, having a sick relative lead to higher scale values; that is, people with an ill relative are more likely to think about the pandemic, perceive the threat more acutely with greater suspense, and make more attempts to control the COVID-19 pandemic.

Gender differences in perceptions of the pandemic were found among respondents with or without sick relatives (Figure 8). Having an ill relative significantly increases the Psychological Distress for both women and men; however, the level of such remains lower in men, even in the case of a diseased relative.

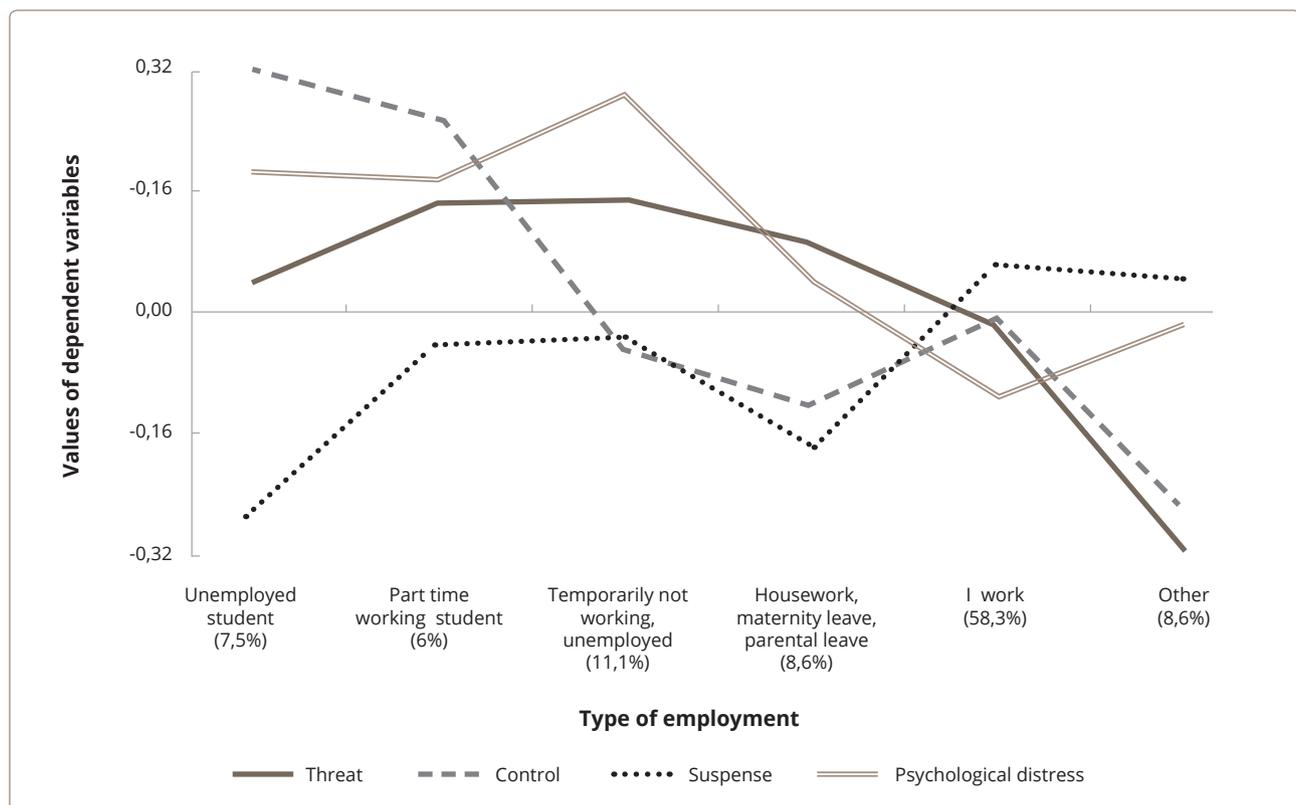


Figure 6. Levels of Psychological Distress and perceptions of the COVID-19 pandemic in different respondents' groups according to the type of employment.

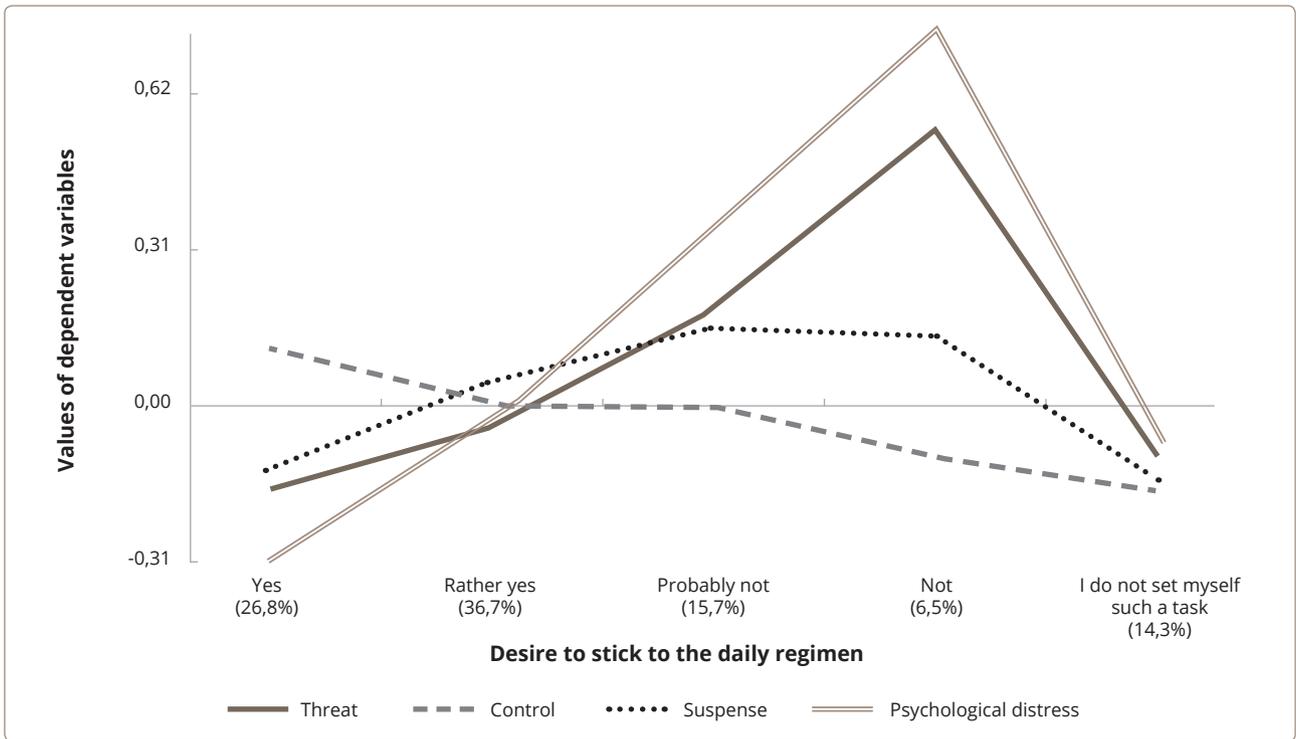


Figure 7. Levels of Psychological Distress and perceptions of the COVID-19 pandemic in different respondents' groups according to the question on the desire to stick to the daily regimen during the self-isolation.

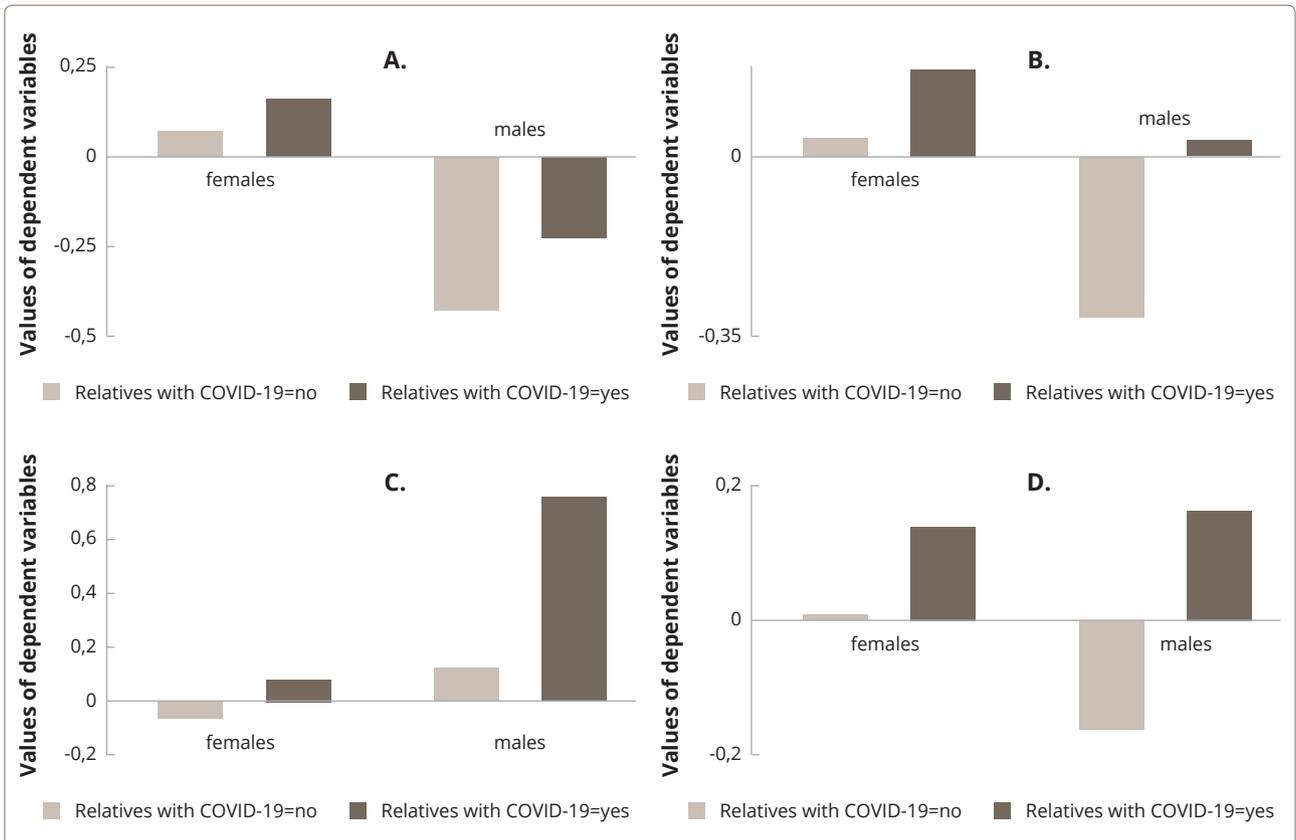


Figure 8. Levels of Psychological Distress (A) and perceptions of the COVID-19 pandemic (B-D) in different respondents' groups according to their gender and having relatives infected with COVID-19.

For men, having a diseased relative is associated with a significant revision of the Threat from the COVID-19 pandemic. This indicator reaches the same level of Threat among women without a sick relative. Furthermore, men with an infected relative have greater suspense than men who do not have an infected relative and have no Suspense. It is interesting that in men who do not have an infected relative, the feeling of Control over the pandemic is basically higher than in women.

One-way ANOVA revealed significant differences in groups declaring different attitudes toward coronavirus across all scales of perception of the COVID-19 pandemic (Figure 9). Respondents who believed that the coronavirus risk was exaggerated felt less threatened ($F=40.310, p < 0.0001$); such respondents believed that they “know everything about coronavirus” ($F=45.048, p < 0.0001$). Respondents who perceived the risk from coronavirus to be very high felt more threatened; they considered it less clear, requiring more action to Control it ($F=53.428, p < 0.0001$).

A statistically reliable difference was found between the Threat ($F=11.135, p < 0.0001$) and Psychological Distress ($F=30.200, p < 0.0001$) variables in response to the

question about “increasing quarrels in the family during self-isolation”. Thus, the values of both variables increased significantly when comparing the “yes, quarrels have become more frequent” group with the “no, everything is as it was before” ($p < 0.0001$) and the “no, we have become even more united” ($p < 0.001$) groups (Figure 10). Thus, people who have quarreled more during the pandemic perceive it as more Threatening and experience more Psychological Distress.

With regard to the question “whether a person who falls ill with COVID-19 will face condemnation and avoidance from others”, a statistically significant increase in the Threat ($F=15.959, p < 0.0001$) and Psychological Distress ($F=16.177, p < 0.0001$) variables was revealed. The level of Psychological Distress and Threat according to the degree of increase in the Threat (pairwise comparison of the groups with responses “no, we will not face it”, “probably not” with the groups who said, “rather yes” ($p < 0.0001$) and “yes, will face it” ($p < 0.0001$)) (Figure 11). Hence, people who face condemnation and feel the effect of COVID-19-related stigma will experience the greatest Psychological Distress and Threat from the pandemic.

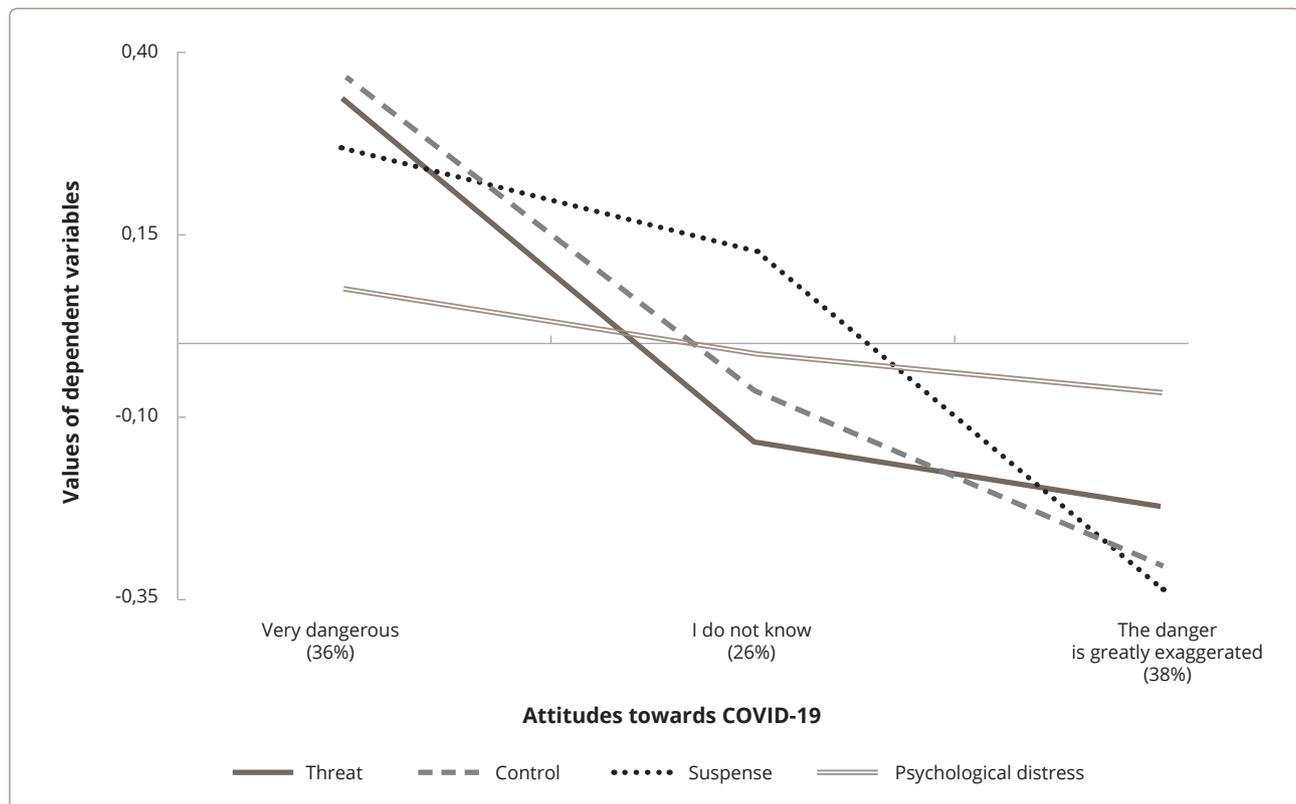


Figure 9. Levels of Psychological Distress and perceptions of the COVID-19 pandemic in groups with different declared attitudes towards coronavirus (consider it exaggerated danger).

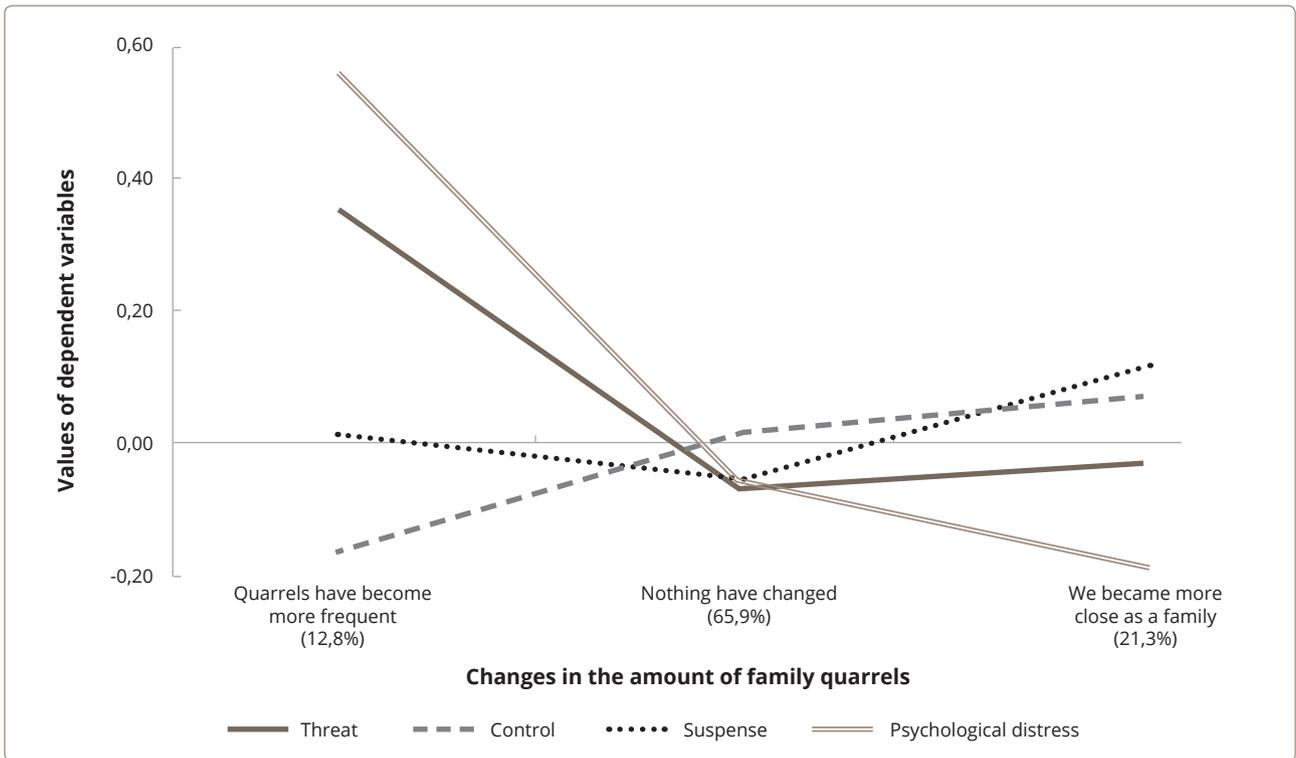


Figure 10. Levels of Psychological Distress and perceptions of the COVID-19 pandemic in groups with different numbers of family quarrels before and during the pandemic.

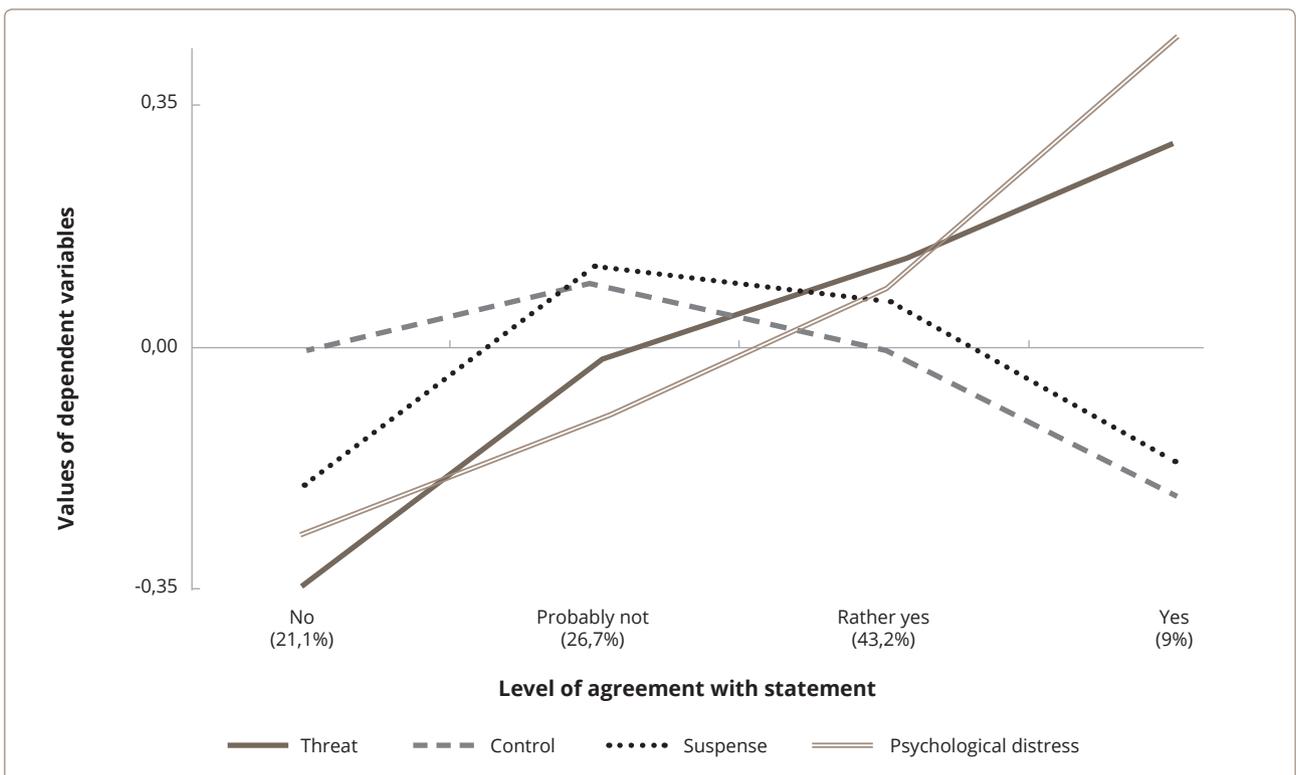


Figure 11. Levels of Psychological Distress and perceptions of the COVID-19 pandemic in groups with different answers to the question "Will a person suffering from coronavirus disease face condemnation?".

With regard to the question about “the desire to receive psychological support in the conditions of COVID-19”, statistically reliable differences in the Threat ($F=36.527, p < 0.0001$), Suspense ($F=14.111, p < 0.0001$) and Psychological Distress ($F=79.019, p < 0.0001$) variables were found. All three variables show a significant decrease in value as negative answers increased based on the pairwise comparison of extreme groups ($p < 0.04$) (Figure 12). Thus, people who are more aware of the pandemic Threat are experiencing greater Psychological Distress and require psychological help.

DISCUSSION

Summary of main findings

The findings suggest that psychological distress affects all components of the ideas about the pandemic. The “Psychological Distress” variable positively influences the “Threat to life” and “Fear of an unknown disease” components of the ideas about the pandemic, whereas the “Control” component (ideas about the ability to control events) is ambivalent. On the one hand, the severity

of psychological distress reduces the idea of being able to control events; on the other, the psychological distress experienced increases the feeling of threat and uncertainty and stimulates the control of these feelings to be realized. In addition, significant differences were revealed in the nature of the perceptions of the pandemic and psychological distress, depending on gender, age, type of employment, daily routine during self-isolation, income, as well as a fear of possible stigmatization for contracting COVID-19. It is shown that underestimating the disease leads to improvement of psychological well-being. However, respondents who underestimated the danger of coronavirus paid less attention to the measures taken against the virus. If the respondent had relatives infected with COVID-19, they perceived the pandemic as more threatening and less understandable.

Strengths and limitations

The research conducted has several strengths. Firstly, to our knowledge it is one of the first studies exploring perceptions of the COVID-19 pandemic in Russia.

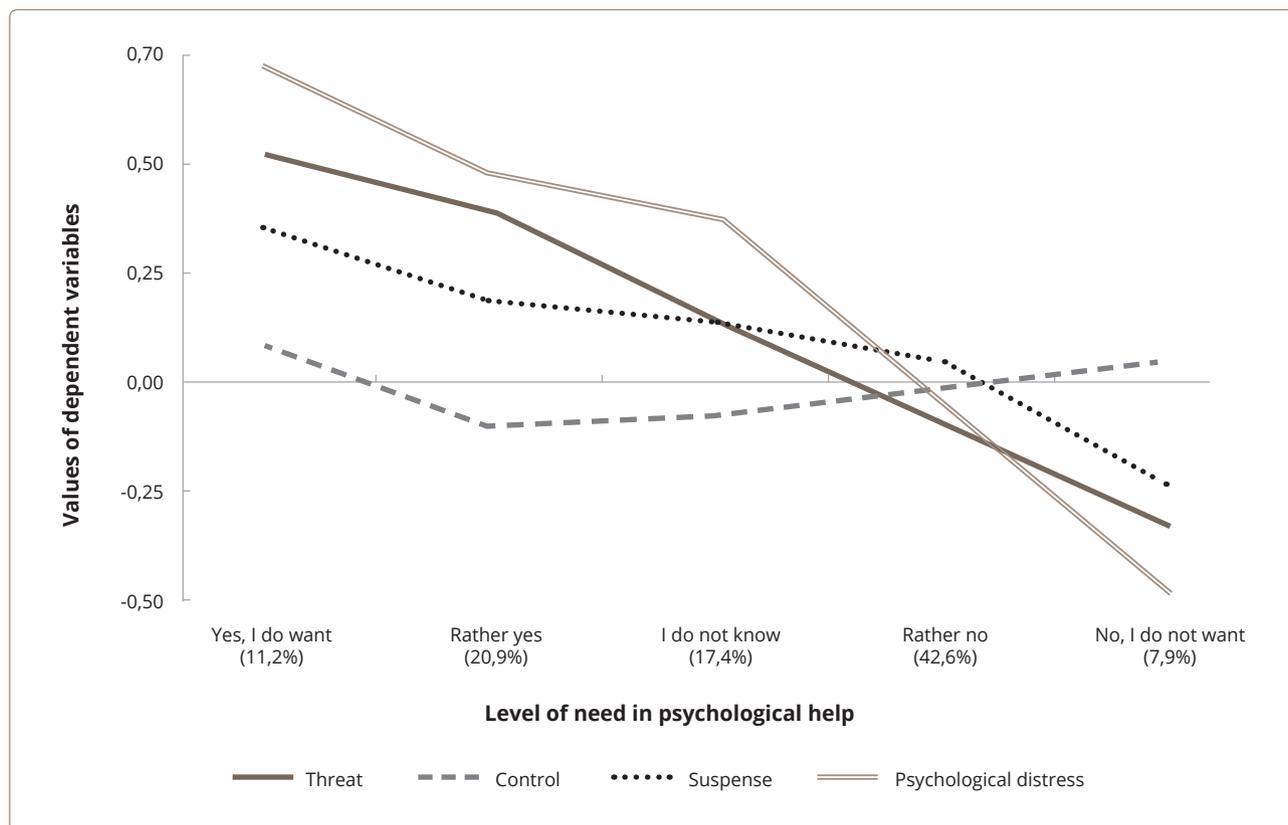


Figure 12. Levels of Psychological Distress and perceptions of the COVID-19 pandemic in groups with the need for psychological help.

Secondly, the study was representative, as it covered a large number of people across all regions of Russia, within different age groups, psychological types, professional affiliations, levels of education, etc. Thirdly, respondents received immediate feedback after the survey was completed, which allowed for psychological assistance and support to be provided.

The conducted research also has several limitations.

The first limitation relates to the inability to check the respondents' answers for deliberate distortions and lies. This is especially important for the parameters fixed at the beginning of testing, namely for the items of the socio-demographic questionnaire. However, this limitation is common to the vast majority of online surveys. On this basis, we can consider our data to be comparable with data from other similar studies.

Secondly, since the online survey was conducted, the information received was limited to a declared attitude toward the phenomena being studied. Therefore, despite the importance of assessing the respondents' emotional state, only an explicit evaluation was performed in this study because implicit data were not obtained.

Thirdly, convenience sampling was adopted for the purposes of this study. However, we believe that convenience sampling did not affect the representativeness of the study sample as people's consent to participate in our study did not correlate with the variables studied. In addition, the high values of Cronbach's Alpha and the normal unbiased nature of the sample data distribution on the scales used are similar to those obtained by the developers of these scales. This allows us to conclude that our sample does not significantly differ in its characteristics from the samples on which the scale data were adopted.

Fourthly, the final sample was not balanced by gender, which raises the question of the study participants' motivations. The larger number of women in the sample may be explained by their higher levels of stress and anxiety, which were the motives for participating in the study.

Fifthly, only negative mental states, including stress and anxiety, were taken into account in this study. The study did not diagnose a wide range of psychopathological symptoms that could be actualized under stress in the conditions of the COVID-19 pandemic and self-isolation.

Finally, we were unable to obtain a structural model that would have good explanatory power based on

the psychological features and socio-demographic characteristics identified for the analysis. In this regard, it seems necessary to continue the study with the expansion of the diagnostic base and the construction of more complex structural models.

Comparison with the existing literature

The higher level of psychological distress in women that has been identified in the current study is consistent with the population studies carried out in China [11, 12] and Italy [5]. Women in our study were significantly more likely to perceive the COVID-19 pandemic as a threat, whereas men see COVID-19 as a controlled and understandable disease. This data is similar to previous findings for the Russian population [2, 3, 32]. For example, M.Yu. Sorokin and colleagues [3] revealed, that various groups of people were under psychological stress during the pandemic, including people suffering from affective disorders, young people (≤ 20 years old), the unemployed, single/unmarried, without higher education, and women. The significant role of level of income in causing psychological distress found in the present study was similar to the results of another Russian study [2]. According to Karpenko and colleagues [2], the risk of financial problems in the future leads to distress during the pandemic.

Based on our findings, young respondents are more prone to psychological distress, perceiving a higher threat to their lives than the older generation, and who are more focused on pandemic control. Older people, in turn, concentrated less on control over the pandemic, yet have a greater feeling of suspense. Also, respondents in our study paid more attention to pandemic control when living with parents, demonstrating intensified sense of responsibility. This finding is consistent with Russian [2] and foreign studies [9, 33], reporting that fear of spreading the infection to others, including older relatives, may be a significant motivating factor with regard to following prevention measures.

Students experienced the greatest sense of control over the pandemic, while working people, in contrast, rated the sense of control over the pandemic as less pronounced. Thus, young women and students who are at risk of infection in the workplace are the most stressed. These findings are consistent with the existing studies reporting a higher risk of psychological distress among students [34] and women [3, 11] during the pandemic.

The study found that the emotional state of the population changed as the pandemic spread, depending on the measures taken at the national level and on the information available. Based on our results, the lowest level of psychological distress was registered on May 4, 2020, while the peak of distress among respondents fell on May 12, 2020. The improvement in the emotional state by May 4 can be explained by the so-called “May holidays” in Russia. Russians traditionally spend a lot of time relaxing and socializing with friends on these days. This phenomenon, from our point of view, is similar to the decrease in the anxiety level described in China during the “Lantern Festival” in February 2020 [3]. An increase in psychological distress on May 12, 2020, in turn, might be caused by the two public announcements made that day: (1) quarantine measures were mitigated, and online mode of work was cancelled, and (2) a maximum number of people were infected with coronavirus in Russia. The cancellation of the lockdown regime on the day when the maximum number of infected people was detected may have created the effect of the so-called “double message” [35]. It provoked anxiety and contributed to the deterioration of people’s psychological well-being. Such sensitivity to the information agenda was demonstrated in several studies [36–38].

Comparison of the current research findings with the above studies highlights that individual perceptions of the pandemic are important factors in mediating the “stress response” to COVID-19 [6, 11, 39]. This is consistent with empirical data obtained in stress psychology and the theoretical theories on emotions and transactional models of stress [40].

The present study showed that assessing the stressor in the form of a threat from the disease outbreak is linked to the individual choice of preventive measures, which is, in turn, important in preventing the spread of the disease. In our view, the link between threat and choice of preventive measures is similar in nature to the link between adherence to treatment and perception of the real disease.

The most pronounced factor in the perception of the pandemic is the presence of someone infected with COVID-19 among the family and friends. Increased psychological distress and perceiving the disease as unknown led to greater control over the pandemic. This data is consistent with findings from across the world indicating that having an infected relative or friend becomes a factor in psychological distress and the emergence

of distress, anxiety, and depressive feelings [5, 11, 41]. Furthermore, it has been defined that the presence of an infected relative or friend contributes to the perception of the pandemic as more threatening [42].

The construction of the Path Model revealed differences in the direct and indirect impacts of psychological distress on pandemic control. An increase in psychological distress affects a decreased sense of control over the pandemic. At the same time, a sense of threat from the pandemic and the lack of understanding of the disease leads to a desire for greater control, which is consistent with the findings of foreign researchers [43]. In addition, a psychological disadvantage indirectly increases the sense of threat from a pandemic and the feeling of suspense, which, in turn, increases control. This suggests that awareness of the risks of a pandemic may lead to greater control. However, if psychological distress increases, the opposite is true: the individual feels that they have little control over what is happening.

The perceptions of COVID-19 as an excessively exaggerated danger are associated with a lower intensity of psychological distress, a sense of understanding of the disease, and less control. This belief may have psychological benefits for reducing anxiety and stress but may result in fewer safety precautions being adopted and thus a greater risk of infection. At the same time, the exposure to real-life experiences in loved ones dramatically increases the suspense.

Impact for future practice and research

The results on the role of psychological distress and perceptions of the COVID-19 pandemic, taken together, appear rather contradictory, necessitating further research and the search for additional predictors of psychological well-being and distress during the COVID-19 pandemic. Obtaining such data will make it possible to formulate recommendations helping to maintain psychological well-being during the COVID-19 pandemic. The online system developed for the survey has become a tool for monitoring. Currently, the study is ongoing, and data is being collected further, which makes it possible to study these psychological characteristics in terms of their dynamics.

CONCLUSION

Through assessing a level of threat and fear of an unknown disease, we defined that psychological distress has a direct and mediated influence on the feeling of control over the pandemic. Psychological distress

directly leads to a decrease in the feeling of control over the pandemic. At the same time, psychological distress can indirectly lead to a feeling of greater control through an increased feeling of threat and suspense. Thus, if a person perceives the pandemic as threatening, they will pay more attention to controlling it, but if a person's mental state worsens, this may lead to feelings of lack of control over the pandemic.

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Psychological Wellbeing and Psychological Distress in the Elderly during the COVID-19 Pandemic

Психологическое благополучие и психологический дистресс у лиц пожилого возраста в период пандемии COVID-19

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Original research

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ABSTRACT

BACKGROUND: The elderly population is deemed to be the most vulnerable to the effects of the COVID-19 pandemic. From March 2020 to April 2022, the implementation of psychological distancing is still being applied in Indonesia. In the light of the pandemic, mental health problems among the elderly require further exploration. This study examines the mental health status of the elderly during the COVID-19 pandemic in Indonesia and the factors that affect their mental health, such as loneliness and attachment to God.

METHODS: A sequential explanatory type of the mixed-method approach was adopted for the purposes of this study. In particular, the researchers first conducted a quantitative survey, analyzed its results, and then explained them in more detail using qualitative research.

RESULTS: The results show that loneliness is a predictor of mental health in the elderly, while attachment to God does not correlate with mental health. More specifically, we described that minimal activity, inability to meet children and grandchildren, and inability to recite the Qur'an were the main factors triggering sadness among the elderly during the COVID-19 pandemic. Furthermore, we defined that elderly people use productive and religious activities, and communication as main coping strategies.

CONCLUSION: Loneliness has been a serious problem for the elderly during the COVID-19 pandemic, impacting their mental health. The findings of this research can be used as a basis or reference for maintaining the mental health of the elderly during the pandemic.

АННОТАЦИЯ

ВВЕДЕНИЕ: пожилые люди считаются наиболее уязвимой для влияния пандемии COVID-19 группой населения. С марта 2020 г. по апрель 2022 г. в Индонезии действовала и продолжает действовать политика психологического дистанцирования. Проблемы психического здоровья пожилых лиц в условиях пандемии требуют дальнейшего изучения. В данном исследовании рассмотрено состояние психического здоровья пожилых лиц в период

пандемии COVID-19 на территории Индонезии, а также факторы, влияющие на их психическое здоровье, такие как одиночество и набожность.

МЕТОДЫ: в данном исследовании использовали смешанный метод анализа с последовательным количественно-качественным анализом. В его рамках исследователи сначала проводили сбор количественных данных, анализировали результаты, а затем уже рассматривали их более детально в рамках качественного исследования.

РЕЗУЛЬТАТЫ: исследование показало, что одиночество является предиктором психического здоровья пожилых лиц, тогда как набожность с ним не коррелирует. В частности, отмечено, что минимальная активность, невозможность проводить время с детьми и внуками, а также невозможность участвовать в чтении Корана были основными факторами, вызывавшими грусть у людей пожилого возраста в период пандемии COVID-19. Кроме того, установлено, что пожилые люди используют продуктивную и религиозную деятельность, а также общение в качестве основных стратегий преодоления стресса.

ЗАКЛЮЧЕНИЕ: одиночество в период пандемии COVID-19 стало серьезной проблемой для лиц пожилого возраста, которая влияла на их психическое здоровье. Результаты данного исследования можно использовать в качестве базового справочного материала для поддержания психического здоровья пожилых лиц во время пандемии.

Keywords: *mental health; loneliness; attachment to God; COVID-19 pandemic; elderly*

Ключевые слова: *психическое здоровье; одиночество; набожность; пандемия COVID-19; пожилые лица*

INTRODUCTION

In Indonesia, the COVID-19 pandemic began in March 2020 and is still ongoing as of April 2022. The government has taken various measures to overcome the its effects, including implementing PSBB (large-scale social restrictions), transitional PSBB, and PPKM (enforcement of restrictions on community activities) (up to four-level). Despite all measures taken, the incidence of COVID-19 remains high in Indonesia.

There are three significant impacts of the COVID-19 pandemic that were felt globally: the economic impact (massive layoffs and reduced salaries), the environmental impact (industrial closures, tourism, etc.), and the psychological impact (increased fear of death, loneliness, and issues related to future security) [1]. Despite causing a severe economic downturn, the environmental effects of the COVID-19 pandemic were rather positive due to reduced levels of pollution across the globe [1, 2]. The psychological impact of the pandemic, in turn, is of particular concern to many researchers, especially in the social and health sciences. Many studies report that the COVID-19 pandemic has had a negative impact on mental health [2–11], triggering anxiety, stress,

depression [12–19], loneliness, and worry [20–23]. In addition, a study of 157,213 participants living in America concluded that calm, happiness, and optimism decreased during the COVID-19 pandemic [3].

Studying the state of mental health during the COVID-19 pandemic has become highly relevant and important, especially amongst the elderly population. The elderly population is deemed to be the most vulnerable to the effects of the pandemic [24]. It has been shown that more than 80% of the deaths caused by COVID-19 in America were among people over the age of 65 years (CDC COVID-19 Response Team, 2020). Those who are aged 60 had the highest level of confirmed deaths compared to other age groups. Even in Indonesia, the number of COVID-19 deaths as of 5 November 2021 had reached 143,534, including the elderly population (<https://covid19.go.id/peta-sebaran-covid19>).

The higher the mortality, the more worried the population seems to be. This is evidenced in research reports indicating high rates of anxiety in the elderly with comorbidities such as hypertension, heart disease, and diabetes mellitus [26]. Other studies report that increased rates of mental health problems were caused

by social isolation, impacting their bio-psycho-social vulnerability [27]. In particular, Lumbantoruan et al., 2021 defined that social isolation leads to loneliness, which increases the risk of depression, anxiety disorders, and suicide, especially among elderly patients living in nursing homes. Similar results were reported by Stolz et al., who interviewed 557 participants aged 60 years and over, showing that loneliness increased during the lockdown. Another factor that affects the mental health of the elderly is an attachment to God. Individuals believe that their closeness to God will provide a sense of security and help them in times of difficulty [29]. Homan [30] and Kent et al. [31] demonstrated that there is a link between attachment to God and mental health. Individuals with a secure attachment to God can treat themselves with kindness and care, especially when facing severe problems.

Although there are studies examining the effect of the COVID-19 pandemic on the mental health of the elderly, this research topic has barely been studied in the context of Indonesia. The specific purpose of this research is to examine the mental health status of the elderly during the COVID-19 pandemic in Indonesia during the implementation of the four-level PPKM system and the factors that affect their mental health, such as loneliness and attachment to God.

METHOD

Study design

A sequential explanatory form of mixed-method approach was adopted for this study. Using this approach allowed the combination of quantitative and qualitative elements in a sequential manner and the building of subsequent phases of the research on what had previously been determined. In particular, the researchers first conducted quantitative research, analyzed the results, and then explained them in more detail using qualitative research [32].

Sampling

Incidental sampling was chosen as a sampling strategy for this study. Participants in this study found it difficult to communicate well, so the selection of participants was based on communication skills. Interviews were conducted with the elderly participants who had extreme high and low mental health status, as based on the survey.

Recruitment

We recruited participants by spreading the recruitment link online. We approached colleagues, friends, and psychology students who have elderly family members and asked them to act as guides when completing the questionnaires. Each participant signed a consent form before completing the questionnaire.

Procedure

We used Google Forms to share the above link with colleagues, friends, and psychology students. An online format was chosen to minimize any risk of spreading the COVID-19 virus. After the data was collected, we analyzed the data using mental health level categorization. The data collected was also used to determine potential participants for the planned interviews. Interviews were conducted by psychology students whom we had befriended beforehand.

Measurement

Mental Health Inventory (MHI)

MHI-5 was chosen as a data collection tool to measure the mental health status of the elderly. The MHI-5 is a shortened version of the 38-item based on fundamental theory [34], then expanded to five items [35]. This measurement tool reveals two important aspects: psychological well-being (2 items) and psychological distress (3 items). The MHI-5 has a reliability value of 0.67.

Attachment to God

Attachment to God was measured using the Muslim Spiritual Attachment Scale (M-SAS) developed by Miner et al., which includes 16 items arranged based on four factors: Proximity, Positive model of God, Positive Model of Self, and Separation Protest [36]. Each factor of the M-SAS Scale consists of four items. The M-SAS has a reliability of 0.62.

Loneliness

Loneliness was measured using the University of California, Los Angeles (UCLA) Loneliness Scale 6, also known as ULS-6. The ULS-6 measuring instrument was developed by Hudiñana et al. [37]. The ULS-6 measuring instrument has shown good quality in terms of measuring loneliness in cross-cultural studies and has been tested in three countries, namely Indonesia, Germany, and America. ULS-6 has a reliability of 0.89.

Guide Interview

In-depth interviews were used as a data collection tool. The interview guide was developed following Veit and Ware [34], indicating that mental health is measured based on two opposing dimensions. The positive dimension is represented by psychological well-being and the negative dimension by psychological distress. The interview guide is shown in Table 1.

Data analysis

Data from two different approaches was analyzed separately following the guidance offered by Creswell and Creswell [32]. The analysis was completed via three steps. Firstly, quantitative data was analyzed using JAMOVI to categorize it and create correlations between variables and perform regression analyses. Secondly, qualitative data was analyzed via the content analysis. Content analysis includes several steps such as coding of

the interview transcript, merging codes into categories, and developing themes [37]. Thirdly, quantitative and qualitative results were integrated.

RESULTS

Participants

Overall, 82 elderly individuals with an age range of 60 to 90 years old were recruited for the purposes of the quantitative part of this study. The majority of participants were women (73.2%). Quantitative sample characteristics are shown in Table 2.

Further, nine elderly participants with very low (three participants) and very high (six participants) mental health status categories were invited to the qualitative interviews. This was done to examine the differences in the groups' responses and capture diverse perspectives. Qualitative sample characteristics are presented in Table 3.

Table 1. Interview Guide

No	Question
1	How did you feel during the COVID-19 pandemic?
2	What makes you feel peaceful and calm during the COVID-19 pandemic?
3	How can you stay happy during the COVID-19 pandemic?
4	What made you feel very sad or uneasy during the COVID-19 pandemic?
5	What do you do when you feel sad and uneasy during the COVID-19 pandemic?

Table 2. Quantitative sample characteristics

Demographics	Levels	Counts	% of Total	Cumulative %
Gender	Man	22	26.8%	26.8%
	Woman	60	73.2 %	100.0%
Age	60-65	36	43.9 %	43.9 %
	66-70	12	14.6%	58.5 %
	71-75	12	14.6%	73.2 %
	76-80	15	18.3%	91.5%
	81-85	4	4.9%	96.3%
	86-90	3	3.7%	100.0%
Internal Medicine History	Not	44	53.7%	53.7%
	Yes	38	46.3%	100.0%
Living with Children	Not	23	28.0%	28.0%
	Yes	59	72.0%	100.0%
Retirement	Not	57	69.5%	69.5%
	Yes	25	30.5%	100.0%

Table 3. Qualitative sample characteristics

Participant	Age	Mental Health Status
participant 1	61	Very low
participant 2	77	Very low
participant 3	73	Very low
participant 4	62	Very high
participant 5	61	Very high
participant 6	73	Very high
participant 7	67	Very high
participant 8	65	Very high
participant 9	63	Very high

Quantitative result

Intercorrelation between variables

According to the results of correlation analysis, the mental health variable has a correlation with loneliness ($R=-0.447$, with a significance of $<.001$). This indicates a negative correlation between mental health and loneliness. This means that the higher the loneliness in the elderly, the lower or worse their mental health. On the other hand, the lower the loneliness in the elderly, the higher or better their mental health. The correlation between attachment to God and mental health did not show the expected results as no significant correlation was found. No significant results were found with regard to the relationship between loneliness and attachment to God (Appendix A).

Regression Analysis

Based on the regression analysis, there is a significant effect of loneliness on mental health ($R^2=0.20$; $p < 0.001$). However, the effect is relatively small. The magnitude of the influence of loneliness on mental health is 20%, while other factors influence the remaining 80% (Table 4).

Qualitative result

We deepen the results of quantitative research with qualitative methods. The results of the interviews can be described according to two major themes, namely psychological distress and psychological well-being.

Psychological distress

Based on the results of interviews with nine elderly individuals, it was found that limited activities (not being able to recite the Qur’an together, visiting neighbors, etc.), being anxious and suspicious of others who may have tested positive for COVID-19 and being unable to visit or be visited by children and grandchildren made the elderly unhappy during the COVID-19 pandemic. Religious activities can be one of the ways to avoid and prevent the elderly from experiencing such sadness, which included prayer, reading the Qur’an, and Dzikir. The elderly also mentioned other activities such as going to the fields or doing productive activities at home. Furthermore, using telecommunications equipment to make voice or video calls with family members who are far away and communicating with children and grandchildren at home were mentioned as useful to avoiding psychological distress. Some example quotations are presented below:

“To avoid feeling sad, I pray, read the Qur’an and do more dzikir”

(Female, 73 years)

“When I feel sad, I pray, recite and pray and do dhikr so that my heart feels joy”

(Female, 65 years)

“...by doing activities in the kitchen and around the yard”
(Female, 63 years)

Table 4. Regression analysis results

Model	R	R ²	Adjusted R ²	Overall Model Test			
				F	df1	df2	P
1	0.44	0.20	0.19	20	1	80	<0.001

Psychological well-being

Based on the results of interviews conducted with nine elderly people, what makes them happy and how to prevent from being sad could be evaluated. Doing activities such as going to the fields, making coffee, and selling crackers were all mentioned as helping to maintain psychological well-being. Otherwise, avoiding suspicion (some people tend to hide their positive COVID-19 diagnoses to avoid suspicion), staying connected online with family members, playing with grandchildren, and being cared for were specified as making the elderly happy. Some example quotations are presented below:

"Feel peaceful when you go to the rice fields"

(Male, 61 years)

"Can still communicate with other family members even through the internet"

(Male, 62 years)

"...carry out commercial activities such as selling crackers and making ground coffee"

(Female, 63 years)

Based on the results of interviews with nine elderly people related to psychological distress and psychological well-being, the flow of themes found in the interviews is shown in Figure 1. It can be seen that elderly individuals could feel sad (part of psychological distress) for various reasons such as limited activities, being unable to meet distant family members, and a suspicion of being among people affected by the COVID-19 virus, then coping with these could be themed into three forms to relieve sadness. The first form of coping includes pursuing

productive activities as a form of diversion. The second form of coping is performing religious activities, including prayer, reading the Qur'an, and dhikr. The third form of coping is communication activities, such as making voice or video calls with smartphones, communicating with family members at home, and diverting communication about COVID-19. Coping strategies create happy feelings such as healthy family members, being close to children and grandchildren at home and far away, feeling cared for, and not feeling suspicious in communication with neighbors.

DISCUSSION

Main findings

Based on the results of the quantitative research, mental health is only affected by loneliness. Qualitative results showed that reduced activity, not being able to meet children and grandchildren, and not being able to recite the Qur'an were amongst the main factors triggering sadness among the elderly during the COVID-19 pandemic. Furthermore, we defined that elderly people use productive activities, religious activities, and communication as their main coping strategies.

Strengths and limitations

This study has two main strengths. Firstly, to our knowledge, it is the first study to explore the mental health status among elderly individuals in Indonesia. Secondly, the results of this study can be used as the basis for understanding mental health in the elderly to take further appropriate action.

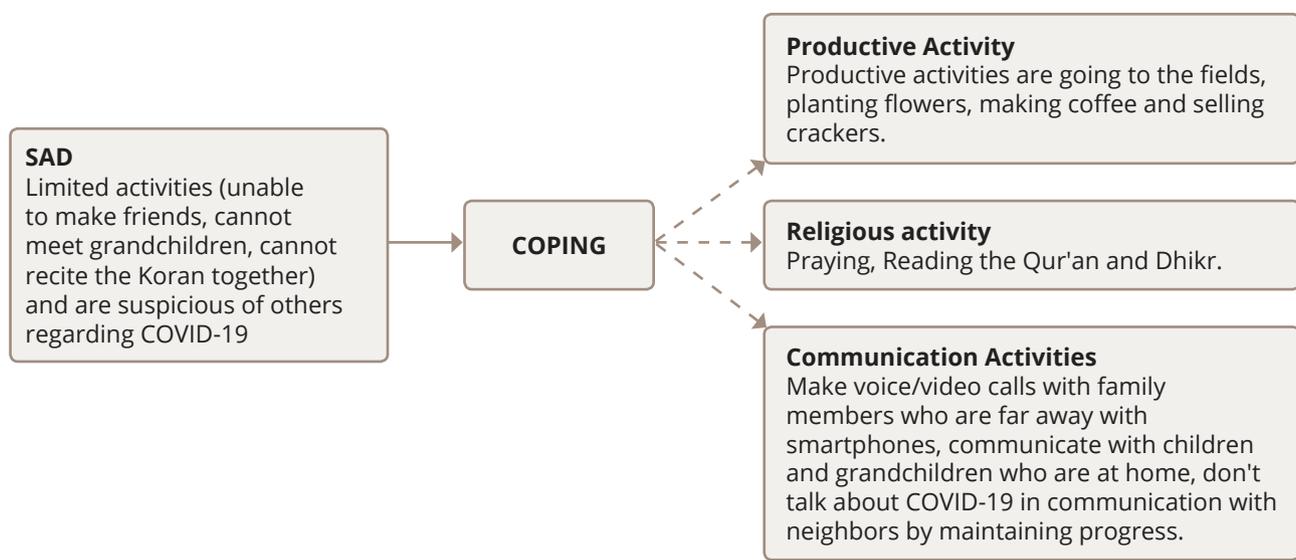


Figure 1. Qualitative research results.

The results of our study have several limitations. The research sample was defined using non-probability sampling with an accidental sampling technique, so the conclusions drawn are difficult to generalize. The absence of additional training in conducting interviews with the elderly led to difficulties during the interview process, which may have influenced the results.

Comparison with the existing literature

The results of this study generally confirm that psychological distancing causes problems such as feeling lonely [38], especially amongst adults who cannot use technology [39]. Similar results were found among elderly people in Europe who reported a higher loneliness due to physical distancing during the pandemic [40]. Although other studies confirm that loneliness in the elderly occurs only in those with multiple physical and mental health diagnoses, it is associated with reduced loneliness in those with larger social networks [41].

No correlation between attachment to God and mental health was confirmed in this study. In contrast, another study noted that there was an effect of attachment to God on mental health [30, 31]. According to the qualitative data results, in order to cope with loneliness, elderly individuals use worship-related practices, showing their attachment to God. Therefore, we suspect that attachment to God might well be a moderating variable, while religious coping is a mediator between loneliness and mental health.

Implications for future research

We suggest the following implications for future research. Firstly, the attachment to God variable may need to be reviewed using different approaches. Such studies might confirm why Attachment to God has no relationship with mental health status (or indeed otherwise). Secondly, the religiosity variable can be studied further and compared with the attachment to God variable. Finally, considering that Indonesia is known to be a religious country, exploring certain religious concepts could be helpful to a description of how religious concepts influence mental health.

CONCLUSION

This study confirms that the loneliness caused by lockdown is a factor in mental health issues among the elderly population, whereas attachment to God has no apparent effect. The results show that reduced activity, inability to meet children and grandchildren, and inability to recite the Qur'an are the main factors triggering sadness among

the elderly during the COVID-19 pandemic. Furthermore, we defined that elderly people use productive and religious activities and communication as their main coping strategies. The implications of this research can be used as a basis or reference for maintaining the mental health of the elderly during the pandemic. The results of the study should be interpreted in light of its limitations with regard to the number of participants and other variables that may have an impact on mental health.

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Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi: 10.17816/CP176

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Experiences of Kyrgyzstani Frontline Healthcare Workers during the “Black July” of 2020: a Qualitative Study

Опыт медиков Кыргызстана, оказывающих медицинскую помощь во время «Черного июля» 2020 года: качественное исследование

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Original research

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ABSTRACT

BACKGROUND: The peak of the pandemic in Kyrgyzstan occurred in July 2020 with highest infection rates, almost 1000 cases daily, compared to 100 cases prior to this date. The state health system was fatally unprepared to accommodate patients, mobilize medical staff, or provide clear instructions to the population. This study explores personal narratives of healthcare practitioners who were affected by and survived COVID-19 during the “Black July” of 2020 in Bishkek, Kyrgyzstan.

METHOD: Healthcare workers ($n=10$) were interviewed using a semi-structured interview protocol. Interviews were transcribed then analyzed in accordance with interpretative phenomenological study guidelines.

RESULTS: The narratives demonstrated both post-traumatic depreciation and post-traumatic growth, resulting in changes of attitudes, lifestyle, and identity. An important aspect of identity shift included an emerging desire for increased self-care, which was characterized by resistance against a heroic Hippocratic ideal to “to save everybody”.

CONCLUSION: COVID-19 is perceived as a psycho-socio-cultural phenomenon, which has transformed the identities of healthcare workers in the Kyrgyz Republic. Further research is recommended into developing rehabilitation programs for healthcare workers.

АННОТАЦИЯ

ВВЕДЕНИЕ: Пик пандемии в Кыргызстане пришелся на июль 2020 года, когда были зарегистрированы самые высокие показатели заболеваемости. Государственная система здравоохранения оказалась фатально не готова к приему пациентов, мобилизации медицинского персонала и предоставлению четких инструкций населению. В данном исследовании рассматриваются индивидуальные нарративы медицинских работников, которые пострадали от COVID-19 и пережили его во время “черного июля” 2020 года в Бишкеке.

МЕТОД: Медицинские работники ($n=10$) были опрошены с использованием протокола полуструктурированного интервью. Интервью были проанализированы в соответствии с принципами интерпретативного феноменологического анализа.

РЕЗУЛЬТАТЫ: Истории участников исследования продемонстрировали как посттравматическое обесценивание, так и посттравматический рост, изменивший как образ жизни, так и отношение медиков к себе. Желание позаботиться о себе сопротивлялось героическому идеалу Гиппократов "спасти всех".

ЗАКЛЮЧЕНИЕ: COVID-19 воспринимается как психо-социо-культурный феномен, который трансформировал идентичность медицинских работников в Кыргызской Республике. Рекомендуется проведение дальнейших исследований по разработке реабилитационных программ медиков.

Keywords: COVID-19; pandemic; healthcare workers; post-traumatic growth; post-traumatic depreciation; Eric Fromm

Ключевые слова: COVID-19; пандемия; медицинские работники; посттравматический рост; посттравматическое обесценивание; Эрик Фромм

INTRODUCTION

The COVID-19 pandemic significantly influenced the physical and mental health of healthcare workers (HCWs) worldwide. Despite being forced to wear personal protective equipment (PPE), HCWs had direct contact with patients diagnosed with COVID-19 and/or related pneumonia, thereby increasing their own risk of infection [1]. HCWs experienced difficulties in allocating time to seek psychological help, while a culture of shame has made it difficult to commiserate with colleagues [2]. The combination of resource shortages, increased workload, and possibly the Hippocratic ideal of saving lives provoked anxiety and uncertainty, which cumulatively took a severe toll on the psychological wellbeing and identities of HCWs [3].

Kyrgyzstan, officially the Kyrgyz Republic, since its independence on August 31, 1991, has changed six presidents, four by means of violent street protests. The country's chronic political instability has eroded its governance structures, including healthcare: salaries for public HCWs are approximately 200 USD per month [4], while the average cost of living in the capital, Bishkek, is approximately 300 USD per month [5]. Unsurprisingly, the financial situation has pushed highly trained professionals to emigrate. Additionally, since the turn of the century, there has been an unregulated increase of private clinics, many of which disappear as quickly as they appear.

"Black July", as it is popularly referred to, is generally considered to represent the peak of the pandemic in Kyrgyzstan [6]. This designation partially depends on how cases were calculated before then, as until mid-June the official number of COVID-19 cases did not exceed 100 cases per day. On July 17, 2020, the Ministry of Health merged the statistics of patients with confirmed COVID-19 and pneumonia, and on the very next day, this

figure leapt to 900 [7]; by July 19, it leapt further to 1926. During this period, one in four of the people in the Kyrgyz Republic who were infected with COVID-19 was an HCW [8]. In a study [9] conducted in 2020, it was found that following the crest of the pandemic in July 2020, 16% of Kyrgyz HCWs showed symptoms of post-traumatic stress disorder (PTSD) and 48% of HCWs reported anxiety-depression spectrum symptoms in August 2020. These findings are similar to data from China, wherein 19.9% of HCWs also showed symptoms of PTSD [10].

Although PTSD is of significant concern, the aftermath of the COVID-19 pandemic represents an opportunity to explore not only post-traumatic depreciation (PTD), but also the phenomenon of post-traumatic growth (PTG). The notion of PTG was first mentioned in a study by Tedeshi and Calhoun conducted in 1996 and has generated a lot of scientific interest ever since [11]. PTG can be defined as positive personality changes enacted by trauma survivors to cope with their trauma experiences [12]. Such personality changes usually include personal appreciation, a transformation of individual goals and life projects, increasing social intelligence and social interests, greater enjoyment of simple activities, and even changes in spirituality. Put simply, post-traumatic growth typically entails *a greater appreciation for life*, as well as an active use of "lessons learned" in the aftermath of the traumatic situation [13, 14]. Studies show that PTG has occurred during the COVID-19 pandemic, alongside PTD, which is traditionally associated with PTSD. A Turkish study proves that growth and depreciation co-occurred with post-traumatic stress during the pandemic among the general population [15]. On the contrary, a Greek study finds that HCWs are more likely to undergo post-traumatic growth than the general population, even

when compared to highly educated non-HCWs [16]. However, empirical research in general into PTG and PTSD among HCWs after the pandemic still remains limited, especially in the Kyrgyzstani context.

Against this background, the study explores personal narratives of healthcare practitioners who were affected by and survived COVID-19 during the “Black July” of 2020 in Bishkek, the capital of Kyrgyzstan.

The questions that guide the present study were:

1. How did the doctors who fell ill during “Black July” perceive themselves and those around them?
2. How do healthcare workers who have survived COVID-19 pneumonia outbreak assess their mental health status?
3. How do healthcare workers who have survived COVID-19 pneumonia outbreak consider the importance of different sources of support?
4. Did their lives change, and if so, how did their lives change after their illness?

METHOD

Design rationale

We decided to use an interpretative phenomenological analysis (IPA) that focuses specifically on personal lived experiences [17]. This method of analysis allows for an understanding not only of the mental status of medical workers but also the exploration of the perceptions of “Black July”. This type of understanding is crucial, as such perceptions offer unique perspectives that might be overlooked in quantitative research. Furthermore, IPA does not require satiety as does, for instance, grounded research, which makes it possible to interview a smaller sample of participants.

Sampling

A convenience sampling approach was adopted for the purposes of this study.

Recruitment

Participant recruitment began by posting calls on Facebook and Instagram, and via Telegram channels. Specifically, participants were either self-recruited by replying to posts on social media ($n=7$) or intentionally selected by our team ($n=3$). All participants were first given a short introduction about our study and asked about their willingness and ability to participate. They were made aware that they would not be compensated for their participation.

The participants were HCWs who had been diagnosed with COVID-19 during “Black July”. The inclusion criteria were as follows: 1) having possessed work experience in healthcare (physicians, and/or mental health professionals) during Black July; and 2) having been diagnosed SARS-CoV-2 during the same time period, either through self-diagnosis using a clinical manual, or through chest/lung scans via computer tomography, including (CT)/X-ray, and/or Polymerase Chain Reaction (PCR) and/or IgG/IgM blood test results; and/or being self-diagnosed according to the clinical manual. Additionally, 3) considerations were given with respect to whether they had been hospitalized, and their willingness and ability to discuss their lived experiences of COVID-19.

Procedure

Out of ten interviews, six interviews were taken in December 2020 and four in June 2021. Funding of the study was delayed in December, causing a time gap of six months.

Prior to the interview, an informed consent form was obtained. This form contained the following information: a) our study's procedure; b) the benefits and risks of participation; c) an explanation of how to acquire the results of the research; d) the availability of counseling services following the research; e) the nature of the participation as voluntary; and f) the contact information of the researcher conducting the interview.

Face-to-face interviews were conducted both online ($n=1$) and offline ($n=9$) depending on each participant's preferences. All interviews were conducted in Russian, and whose duration ranged between 80 to 90 minutes. All interviews were audiotaped and kept strictly confidential. At the outset of each interview, our study's research goals, confidentiality, the potential risks of the research, and the participants' right to withdraw at any time were explained. The interview guide was developed and discussed with the group of graduate psychology students and associate professor, and then piloted with the current study researcher who contracted and survived COVID-19 during “Black July”, 2020. Key questions were as follows: “How do you feel after hearing “COVID”? “What impact do you believe COVID has on your life?”; “What was the most pleasant thing after COVID?”; “What makes you engage in work after contracting COVID?”; “What type of support was needed during that time?”; and “Would you like to share any lessons learnt?” Participants were also asked unique follow-up questions tailored to their individual expressions. Each interview session was

managed by therapeutic techniques, such as acceptance, active listening to establish rapport, and promotion of the authenticity of the data.

Transcription and translation

All interviews were held and transcribed in Russian. Transcription was then translated in English by one of the researchers and the accuracy of translation, in accordance with attributed meaning, was reconciled with two other researchers.

For data confidentiality reasons, participants' names were replaced with pseudonyms, and each participant received an alphabetical code referring to their gender. Their actual job placement was deleted from all transcripts, and all mentioned names and organizations were anonymized. Following the close of each interview, verbatim transcriptions were made to facilitate phenomenological analysis. Everything was transcribed, including verbal tics such as "hm", "ok", "ah", "yeah", "um", and throat clearing. In addition, all researchers reflected in their interview notes on non-verbal communication and behavioral observations of the participants. After transcription, all relevant records were deleted from the researchers' desktops and other electronic devices.

Data analysis

To analyze the data, interpretative phenomenological analysis (IPA) was used. IPA is based on a thorough interpretation of qualitative interviews and centered on the lived experiences of the interviewee [17]. We followed the six steps of data analysis presented by [18], including: 1) reading and rereading, 2) initial noting, 3) developing

emergent themes, 4) searching for connections among emergent themes, 4) moving to the next case, and 5) looking for themes across cases.

Transcripts were read by researchers fully to understand the lived experiences of participants. Afterward, researchers identified and labeled meaningful units in each transcript [19]. These meaningful units were phenomenologically interpreted by giving them codes that both described and reflected the meanings of the participants' words. The analysis has yielded 450 meaningful units, representing statements deemed significant in connection to the participants' experiences during "Black July". Each statement has been interpreted into phenomenological codes. Similar codes, in turn, were grouped together into themes. Any coding disagreements were reconsidered until the final list was completed.

Research governance

Ethical approval for the study was received by the Institutional Review Board of the American University of Central Asia. All research protocols were approved by an Institutional Review Board in December 2020 (#2020A1130).

RESULTS

Sample characteristics

Overall, ten individual interviews were conducted. Three of our participants were mental health professionals (MHPs), while seven were physicians. They were aged between 25 and 70 years old and all lived in Bishkek. Details of their demographics are presented below in Table 1.

Table 1. Participant demographic information

Name	Sex	Age	Occupation
Ms. A	Female	26	Psychotherapist
Ms. B	Female	26	Family Doctor
Ms. C	Female	67	Psychiatrist
Mr. D	Male	46	General practitioner
Ms. E	Female	35	General practitioner
Mr. F	Male	28	Resuscitator
Ms. G	Female	46	Medical Psychologist
Ms. H	Female	39	Medical cosmetologist
Mr. I	Male	28	General Surgeon
Ms. J	Female	21	Nurse

Table 2. Key themes identified during the study

HCW's life changes after COVID-19	Societal "insanity" in the face of pandemic	Adaptation of new identity by HCWs	HCWs' coping with trauma through connection
Death alike experience	Inaccessibility of help	Depreciation of efforts	Emotional help is a new option
Physical health toll	Self-medication	Professional identity as an imperative	Social media as a tool for collective treatment
Mental health toll	Stigmatization by colleagues and society	Self-centered approach	Collective empathy
Collective trauma	Apathy from policymakers		

Narrative descriptions of themes culminated in the synthesized essence of the COVID-19 survivors' experiences. The following themes have been identified and verified through member checking: a) changes in the HCW's life after COVID-19; b) societal "insanity" in the face of pandemic; c) adaptation of a new identity by the HCWs; and d) HCWs' coping with trauma through connection (see Table 2 below). We will now discuss each of these themes, as presented below in Table 2.

Changes in the HCW's life before and after COVID-19

Death alike experience

Our participants tended to divide their life according to "before" and "after" the pandemic. For example, Mr. D. remarked:

"Well, let's imagine, we were all participants in a very serious [car] accident, and we were forced to (...) lie for several hours in a wrecked car among many patients and even corpses. Currently, we have come back to life, and it [the car accident] has become a part of our lives..." (man, general practitioner, 46 y.o.)

Intriguingly, those of our participants who were infected during Black July actively referred to themselves as "infected in July" in contradistinction to those "infected in other months".

All the participants evinced the feeling that COVID-19 in general was a terrifying, physically overwhelming, and emotionally devastating experience, as Ms. B. elaborated:

"Honestly, I thought about it a lot (laughs). Well, first of all, for example, I was asked already in the summer [2020], because, well, we had a discussion and so on. For instance, I had replied that for me, well, the coronavirus was mostly death and fear. It was, well, at the time." (woman, family doctor, 26 y.o.)

Intense negative emotions were prevalent in all interviews as all participants exhibited resistance to the prospect of retelling their pasts. They consistently used terms such as "catastrophe", "all-consuming fear of death", "ambulance sirens", "deaths". For example, Ms. A. explained:

"It was such an existential fear that the world wouldn't remain the same, it would change. Activities like walking along the streets, driving in the car, were banned. The restrictions exacerbated my [physical] state, and also stimulated such thoughts: What if I did not see my relatives [ever again]? What if I did not walk as before? These moments affected me heavily, you know." (woman, mental health practitioner, 26 y.o.)

Physical health toll

The critical moment for many of our participants came from their own physical health disturbances, many of which persisted for six to 18 months. Bodily symptoms varied (e.g., mild vs. severe), as did etiology (e.g., the novel coronavirus itself vs. community-acquired pneumonia) and rate of infection (e.g., one-time infection vs. recurrent infections). For example, Mr. I. described his condition as light:

"Well, I had mild COVID. I saw how people suffered from severe cases. I was also afraid at that moment, to be honest. Because even young guys, girls were sick, and their recovery was very troublesome. That is why I was afraid of having such severe symptoms as others..." (man, general surgeon, 28 y.o.)

Ms. E. (woman, general practitioner, 35 y.o.) by contrast, described her condition as more severe:

“My legs and muscles hurt every day, I have tremors. I would like to work without any problems... I can't get well because I still need to do a lot of [blood] tests. Recently, ... a neurologist said I had neurological changes; all reflexes have been inhibited... I haven't recovered yet, so I can't come to this [perfect] day,” i.e., a return to normalcy.”

Consistently, though, it was not even the intensity of infection as much as being infected itself that struck our participants as truly significant. This can be seen with respect to how infection, in itself, rather than its severity, seemed to impact their relationships, both in society and with intimates.

Due to the physical disturbances, it became difficult to invest the same amount of time and energy into their work. Intellectual capacities were also weakened. A normal working day was perceived as long and exhausting. In Mr. D.'s words:

“Mm, I wish we could have a part-time job, only until 12 pm for covidniks [COVID patients]. Don't expect from people who have suffered [from COVID] to work full-time. Especially, don't expect [job performance] from people who have survived severe COVID-19 cases. After 12 pm, they'd better have lunch, walk, and attend a support group, how they are called, hm... ‘Hello, I survived COVID’ — and all people respond: ‘Oh, hello, how are you doing?’”
(man, general practitioner, 46 y.o.)

Mental health toll

In addition to physical disturbances, our participants struggled with negative moods and thoughts for approximately one year after infection. Ms. B. described her psychological state in the following manner:

“As if something is wrong with me and I perceive the world differently. I don't know, but I have such feelings. (Pause). Of course, the coronavirus has changed a lot in our lives, my life has completely changed. I guess I have some mental malfunction; probably it's better to say I developed a mental disorder.” (woman, family doctor, 26 y.o.)

We should note that the negative psychological changes also had a ripple effect beyond our participants.

For example, Ms. E. (woman, general practitioner, 35 y.o.) describes how her infection impacted her family dynamics:

“[Relatives] are tired that I have been ill for a long time... Even if I tell my husband that I am sick, he doesn't react. My mother-in-law looks at me with disapproval... (pause), she forces me to leave the house. For example, she constantly says to him: She is very bad and sick. She is 40 years old, she will not give birth anymore. Well, I'm only 35.”

At the time of their interviews, some of our participants were considering undertaking psychotherapy. In fact, three had already visited mental health counselors. Ms. H. explained:

“I approached a psychologist because of mood changes. I had been going through this stress for six months. I had believed that it would pass, but it didn't. I have been in therapy for two-three months and observed how my mental health improved. I am no longer scared, (pause), well, apathy ceased ... Gradually, I have been recovering, I am back to normal life which is no longer the same as before. Anyway, I am still cautious about PPE and pay attention to someone's sneezes and coughs.”
(woman, medical cosmetologist, 39 y.o.)

Ms. E. (woman, general practitioner, 35 y.o.) was among those who had sought counseling. She had had a severe form of the COVID-19 that negatively impacted her physical functioning, which, in turn, caused depression and suicidal thoughts. Although they had not seen any fatalities, the fact there were fatalities at all caused them severe distress.

Collective trauma

In sum, the before-after dynamic evinced by our participants revolved around how the pandemic had significantly impaired their work, social, and family life. All of them made a point to describe COVID-19 in medical terms as a disease that activated a stress response. Mr. D. expressed concerns about the long-term impacts not only to himself as an HCW, but to Kyrgyzstan as a society with respect to the skilled labor pool and called for a psychotherapeutic intervention:

"It is a real problem because we can simply lose a third of the society in the next three-five years. This third is the working part of the society, most people aged 40–50, who have been severely infected... They are experts, they can share knowledge, they have to. I guess they will endure fears that make them outcasts... A whole generation of human capital will simply vanish... Middle-aged people... yes, they are in urgent need of therapeutic interventions." (man, general practitioner, 46 y.o.)

Societal "insanity" in the face of the pandemic

Inaccessibility of help

Our participants consistently perceived COVID-19 as a psycho-social issue that revealed deficiencies in all spheres of everyday life.

"It was impossible to get a state ambulance visit. Only private medical care was available, but their services were unaffordable. Thus, I concluded that patients who could pay for their services survived, and those who [couldn't pay], well. I had such patients, and tried to help an old lady, aged 90. She lived alone, without care, she also died. [I lost] in total two patients." (Ms. E, woman, general practitioner, 35 y.o.)

Participants also highlighted obstacles to care thrown up by the governmental response, and how it intensified a sense of uncertainty. Ms. A. elaborated:

"Well, initially, I hadn't yet encountered restrictions to stay at home after 9 pm. When we were permitted to leave for personal needs... I was able to tolerate them. By that time, it had been considered a norm, and a wise decision, again, for the safety of citizens. [But] then curfew was announced, and it caused discomfort, chaos, as it was unclear what happened next. Regarding the restrictions, I didn't get the point of the transport ban between cities. It was very difficult to accept this norm." (woman, psychotherapist, 26 y.o.)

When one of our participants, Mr. D., was infected, he needed to fend for himself in the face of an overwhelmed healthcare system, essentially serving as his own doctor:

"Since all the hospitals had been booked, it was impossible to be hospitalized... It was tough to stay in day-night stations, so I negotiated with good friends to secure a bed in a private clinic... All doctors were working in intensive care units, so none of them were able to help me. I was a moderate patient, not an emergency case. I started to take antibiotics, well, in general, to employ treatment: [examining my own] medical history, [conducting my own] health examination and [blood] tests... I started to solve this issue as a health specialist." (man, general practitioner, 46 y.o.)

Similarly, Mr. I. needed to depend on his roommates for help when he fell ill, *"I went to the hospital to have a drip put, and all the rest I managed at home. Parents were not in Bishkek. Well, I bought everything myself... I share an apartment with roommates; I asked them to buy groceries, and they did."*

Self-medication

Self-medication was prevalent among the general population, as well. Ms. A. highlighted how public panic led to the compulsive purchases of medications: *"I remember that we didn't have enough drugs [because] panic attacks triggered everyone to take drugs off the shelf, when, in fact, people did not need them. So, I decided to avoid medication..."*

Ms. C. explained that the panic began when, *"[They] prescribed drugs, whatever they wanted. People started to take those drugs and even engaged in self-medication: drips, antibiotics, then hormones, and all other stuff."* Ms. C. further suggested there was a lack of understanding between HCWs and the general population, the former *"hav[ing] a more cold-hearted approach,"* the latter *"discriminat[ing] against proper medication."* (woman, psychiatrist, 67 y.o.)

Stigmatization

This divide in approaches between HCWs and the general population points to the sub-theme of stigmatization, which was also quite salient among our participants' responses. They repeatedly remarked that non-HCWs focused on their personal safety and easily became frightened whenever they heard about COVID-19 infections. They also reported use of sarcasm and disdain directed toward survivors from those who had not yet been infected.

Ms. C. explained:

"People who had already been ill were stigmatized as dangerous. They were considered to be contactable only at a distance. Some were determined to engage in such [stigmatization], while other people, well, made fun, treating infected people with irony... Some people weren't able to tolerate their fears; consequently, they started to request social distanc[ing] in private communications." (woman, psychiatrist, 67 y.o.)

According to our participants, their relatives, colleagues and friends believed that COVID-19 differed substantially from seasonal cold or any other disease with respect to its potential danger. Ms. C. described themselves as being treated by their intimates as though they had been disabled. Ms. J. remarked that they were actively referred to as "covidnik" or "crowned" (a reference to the crown-like structure of the novel coronavirus). Ms. E. (woman, general practitioner, 35 y.o.) illustrated this:

"My husband hadn't even come within 10 meters of me for two-three months... They delivered food from an open window leaf as I lived in a separate room. It was good that we were all isolated; consequently, they either got infected [with] a mild form or were not infected at all. Nonetheless, they started to treat me as if I had plague or leprosy. Had they been doctors, they would understand that [COVID-19] was a regular viral infection, and even after infection, you would still have some consequences".

The general population exhibited two negative tendencies. On the one hand, HCWs could be the focus of blame for supposedly transmitting infections; they were also frequently accused of giving ineffective treatments or being professionally incompetent. Ms. J. described her experience in this respect: *"And (pause), I realized that some people, not all, didn't develop the capacity to accept help. I came during lunchtime, in non-working hours, and delivered free medical care. I was very upset; they belittled me... I just wanted to help and was paid off by arrogance. I wanted to cry."* On the other hand, HCWs could also be the focus of conspiracy theories, as in the case of Ms. G.:

"I shared a very open and detailed post [about COVID-19 infection] on social media. Many haters bombarded me via direct messages. Mainly, people supported, even consoled. Yet, many people sent me messages like, 'How much did the Ministry of Health pay you for?' and 'Nobody is sick.' They wrote it to the person, me... who was severely infected. They wrote, 'Come on, it might have been a lie; we couldn't see that you were sick.'" (woman, medical psychologist, 46 y.o.)

Apathy from policy makers

Finally, our participants also complained about the behavior of state hospital administration. In the words of Ms. E (46 y.o.), hospital administrators consistently took *"the patient's side, not their employees"*, which amplified their sense of being on their own. Our participants also alleged that hospital administrators attempted to manipulate statistics by strictly considering positive PCR results as evidence of infection, thereby excluding community-acquired pneumonia and other health complications potentially linked to the novel coronavirus. Nevertheless, HCWs continued to work, albeit with increased distrust for their supervisors, to whom they also allotted a portion of the blame for the high mortality rates:

"Primary care hospitals, for example, almost all hospitals for in-care patients were closed, and the patients were left, well, simply, without anyone, without anything; they could not even get treatment properly, as if they had just been left behind, and that's it. (...) People, well, patients have already started self-medication, well, many get mistreated unfortunately. And this is a problem not only of our leadership, but also of the Ministry [of Health]" (woman, 35 y.o.)

We should note that some of our participants came to understand that they needed more than purely physiological self-medication. However, they expected that the Ministry of Health would organize free-of-charge rehabilitation and counseling groups for HCWs. However, these hopes went unmet. Worse yet, HCWs were, and indeed remain so at the time of writing, largely uncompensated for their risk, an issue that intersected with their chronically low salaries and the problems of service access. Ms. B. explained:

"I wish (laughs) the Ministry of Health would implement some projects aimed at mental health and improvement of health workers' status... Death is often an unexpected and frustrating event for anyone, even health professionals... I noticed that the cost per [psychotherapy] session was 2000 soms (25 USD). Taking into account the salary of a medical worker, I think it is oh-oh-very expensive." (woman, 26 y.o.)

Adaptation of a new identity

Depreciation of efforts

Even before "Black July", Kyrgyz HCWs risked burnout from a workload consisting of long hours, night shifts, and employment at multiple workplaces (WHO, 2018). During the height of the pandemic, HCWs came to feel devalued by the general population, believing this to be due to how patients consistently failed to comply with quarantine measures. As Mr. I. explained:

"[Patients] are arrogant, demanding, and eventually, the doctors are to blame. Well, it happens all the time. I work in intensive care surgery. They say, 'You have to treat us; you are the doctors.' For sure, we are doctors, but doctors have specializations. We refer them to other doctors, and they complain. [This] often happens, almost every day." (male, general surgeon, 28)

Similarly, Ms. B remarked:

"After exiting the red zone, I had already started to work fully in the duty stations, and suddenly a wave of disappointment swept me. My colleagues and plenty of health professionals worked hard, some of them died. Despite these facts, [regular maintenance of] social distance hasn't been accomplished yet. People are reluctant to wear PPE, sanitize their hands; none of them do it. I feel that we [HCWs] have come a long way for nothing. People are unlikely to comprehend, well, (pause) the essence of the coronavirus, the lockdown, and all this stuff." (woman, 26 y.o., family doctor)

Our participants confessed to being unprepared for the pandemic in every way, ranging from their own training and specializations to the lack of proper management,

such as having appropriately detailed clinical protocols. In the words of Mr. I:

"My friends are proctologists and urologists who have never been familiar with respiratory diseases. And they [told me]: 'Believe it or not, we had to learn how to treat [COVID-19]. The clinical protocol was not detailed, [but] we treated accordingly, and people died. Then we started to treat it incidentally, and we failed.'... We have been wondering and searching for the right treatment modality." (man, 28 y.o.)

Professional identity as an imperative

The research team discerned the "wounded healer" at work in our participants' accounts. As part of their personal narratives, they consistently included patients' stories. They also invoked many of the beliefs traditionally encoded into an HCW identity, using terms such as "all-responsible", "know-it-all": "Just as a physician, I think it should be a little different than for anyone else. Because, well, after all, it turns out that, well, the life of another person depends on me...", as Ms. A (psychotherapist, 26 y.o.) stated. These thought patterns initially led many of them to resist seeking psychological assistance and to instead focus solely on treating the physiological dimension of their own infections. Some even showed signs of possible denial, even at the time of the interview, as in the case of Ms. C.: "I didn't have pneumonia; only my stomach and muscles were infected. Therefore, I didn't consult with anyone, I made a treatment plan. I didn't take drips or any medications, only a ton of vitamins, multivitamins. None of my relatives got infected during that time."

Of our participants who self-medicated at home, they reported experiencing isolation and lack of support, even from intimates, in ways that eventually impacted upon their identities. According to our participants, there a perception of "doctors as doctors," i.e., of those who gave care but needed to receive none in return. Ms. B. demonstrated how this lack of belief that HCWs could actually become infected manifested itself both in bureaucracy and at home: "I didn't [say] I was infected, because [the management] would require proof of the infection (negative PCR), despite symptoms. [Even] my acquaintances, my friends, colleagues, well ... they would also request evidence besides PCR, for example, X-ray, CT scan, or IgG blood tests." This reveals the social

nature of personal identity: our participants were not only “healers” because of personal conviction, but also because of societal expectations.

Self-centered approach

Slowly, new identities began to form, as our participants reported. These new identities were characterized by resorted life priorities and altered self-perceptions and relations to the notion of disease. All our participants evinced a more person-centered approach to their patients, such that the person, rather than the illness, was the main subject in the communication. Ms. E. remarked: *“(Pause). I learned to understand diseased people. Before, it was principal-agent relations; they needed medical care, and we provided it. I relate to them as my patients, but there is more compassion now. I am inclined to get them out of trouble.”* Ms. E. also noted the persistence of her sense of duty as an HCW: *“At the moment, I have been struggling with ill-health, yet still, I’m trying to help others...”* (woman, general practitioner, 35 y.o.)

Another significant shift occurred in taking more time for self-care, as when Ms. H. (woman, medical cosmetologist, 39 y.o.) explained: *“I meditate regularly. I do meditation, sports, go to work, and meet with friends. It helps me to restore my social life, it is the way to reconnect with people.”* As a group, they expressed pride, worth, and significance in the way their profession tried to rise to meet the challenge of the pandemic. As individuals, they consistently expressed greater appreciation for intimates, a renewed capacity to search for help, and a desire to advocate positive changes in Kyrgyz society. In the words of Ms. C.:

“Well, I concluded that one should care for health... For example, I developed pneumonia after... I caught a cold and didn’t care much about the temperature regime. I advise everyone (pause) to eliminate stress as it negatively impacts the immune system, well, if possible.” (woman, psychiatrist, 67 y.o.)

Coping through connection

Emotional support is a new option

According to our participants, the availability and variety of support significantly improved their psychological and physical functioning during the pandemic. As our sample included both physicians and mental health practitioners

(MHP), we identified two distinct approaches. Mental health specialists appear to have been more competent in searching for emotional support, whereas physical health specialists, already more competent in treating their infections, appear to have focused on success stories and practical progress.

Mental health specialists found it relatively easy to establish networks of support with their supervisors, other therapists, family members, and colleagues. For example, Ms. A, who was experiencing generalized panic, informed her supervisors of her condition and then actively sought individual psychotherapy. Mental health specialists also had a greater capacity for psychological self-care, limiting their self-criticism and consciously practicing self-compassion.

They also avoided engaging in avoidant behaviors, such as excessive working or social isolation, and even set aside one to two months for rehabilitation. For example, Ms. G. initially resisted psychological treatment, explaining that sessions were *“hard, frankly speaking... Taking into account memory and attention problems which were important to the working process, you began to feel sorry for yourself.”* But as her feelings of self-pity increased, her psychological training kicked in: *“I realized that I needed help. Well, damn, well, I had to care about myself, and only then about others.”*

In contrast, some health professionals succeeded in self-medication and physical health recovery, whereas emotional and psychological help was not considered as an option. Physicians deprioritized their mental well-being. Mr. F. explained:

“In regard to [my] mood, I was [more] concerned about the situation of my society. At that time, [I felt] we shouldn’t grieve or feel sad; we ought to work as there was a shortage of doctors... I worked as usual, although [I] got exhausted sooner. Sometimes I had to work despite feelings of not wanting to and while enduring fatigue.” (man, 28 y.o.)

Social media as a tool for collective treatment

Instead, they tended to throw themselves into learning more about COVID-19, sharpening their diagnostic skills, devising treatment plans, and sharing information with colleagues, who were focal points of contact. For example, they shared the most recent clinical manuals, success stories, and new COVID-19 medications.

Physical health specialists were also quick to use social media to disseminate information, as well as to work with patients. Mr. F. explained:

"Social networks were beneficial to overcome[ing] this period. I couldn't imagine any other effective medium of communication... Volunteers, many doctors used social media... I consulted patients on WhatsApp, shared posts about pseudo-medications that became popular. I made live broadcasts on the mayor's web page. When I was sick, people contacted me. Social media was useful, that's for sure." (man, 28 y.o.)

Ms. H. used social media to collaborate with her own colleagues: *"And, my girls, they are health professionals and work in Moscow [and] together we developed a treatment plan."* (woman, medical cosmetologist, 39 y.o.)

Both types of HCWs were reluctant to seek support as they did not want to risk their intimates' health. As Ms. B. explained:

"[My] parents, of course, were worried... [They] asked many questions, such as whether I was passing blood tests, CTs, and other screening tools. But I replied that everything was fine, and I worked as a doctor, even in the red zone; therefore, I could make a self-assessment. And (pause), well, I guess that stopped them." (woman, 26 y.o.)

Collective empathy

In general, our participants tended to prioritize the well-being of their intimates over their need for emotional support. Nevertheless, some of our participants expressed appreciation for the love that was shown to them, as in the case of Ms. J.:

"I noticed that my relatives and friends worried [about], supported, and cared [for me] a lot. My girlfriends looked after me, cooked at this time. Mom wanted to move into my apartment. (Laughs)... I realized how much they cared about me, and I started to appreciate them more. I honor my family and friends; yes, our friendship is getting stronger." (woman, 21 y.o., nurse)

The participants mentioned that they became the beneficiaries of and received help from their neighbors, colleagues, and friends. In response, they also tried

to fulfill the needs of patients during their illness and recovery. Ms. J. commented: *"And due to the fact that I got infected, my girl mates with whom I lived, they — I infected them all, and to some extent it was my responsibility, dep. Forgetting about them, I saved others and infected loved ones..."*

DISCUSSION

Summary of the main findings

The present study indicates that Kyrgyz HCWs perceive "Black July" to be a turning point in their lives, expressing changes in their attitudes, lifestyles, and identities, both as individuals and as HCWs. Our participants repeatedly emphasized the interconnection between individual health, both physical or mental, and the collective, including governmental systems, general society or family. Intriguingly, they tended to highlight positive changes with respect to themselves as individuals and professionals, yet emphasized negative changes with respect to Kyrgyz society.

Strengths and limitations

Our study contributes to the understanding of psychological responses to pandemic-related trauma, particularly PTG among HCWs, as well as understanding how the COVID-19 pandemic impacted healthcare systems beyond the Western context, particularly in the former Soviet Union and in Central Asian countries.

Our study has a number of limitations. Firstly, we were unsuccessful in controlling for possible biases from our research team. All members of the research team are citizens of Kyrgyzstan, and three of the four team members were at some point infected by COVID-19. Secondly, the results cannot be generalized to all HCWs in our country or to society.

Existing literature on mental health consequences of the COVID-19 pandemic in Central Asia

Despite a growing number of quantitative studies, qualitative studies, especially those focused on physicians, are still somewhat lacking. Moreover, there are only a few scientific articles that discuss the mental health consequences of COVID-19 pandemic in the Central Asian context. Thus, Bazarkulova and Compton [20] explored the effects of the pandemic on the mental well-being of male and female doctors in Kazakhstan via survey data. The

article demonstrates that occupational and household stressors are reported differently by males and females. Another study conducted with a sample of 466 students in the Kostanay region of Kazakhstan showed that levels of anxiety had not significantly risen since the beginning of the pandemic; female students experienced stronger fear; and there was no growth in substance use among Kazakh students [21]. The literature on the Kyrgyz population is even less readily available. Uzakov et al. [22] surveyed 643 Kyrgyz respondents and 189 Kazakh respondents aged 17–25 about anxiety levels related to COVID-19. The associated findings indicate that anxiety levels among people in Kyrgyzstan are higher than in Kazakhstan. According to the authors, this may be explained by the poorer quality of the information about COVID-19 that the Kyrgyz sample received (social media and society; we have reported earlier that media exposure may influence the distress felt by the individuals), a failure of the Kyrgyz government to respond to the pandemic properly, and lower conformity to sanitary rules. The research includes several limitations such as an unrepresentative sample, the potentially significant difference in the number of Kyrgyz and Kazakh respondents, and the focus on a particular age group, the latter of course ruling out older people in this instance.

Frommian “insane society”, post-traumatic depreciation (PTD), post-traumatic growth (PTG)

Fromm [23] described the term “*insane society*”, and postulates that not only can individuals suffer from mental disorders, but so can a society. Moreover, individuals in such a society will be unable to stay mentally healthy, as they will be not able to satisfy their needs. In light of this, we hypothesize that the Kyrgyzstani society fits the status of “*insanity*” [24–27]. In particular, due to the continuous endemic social problems and chronic political corruption, Kyrgyzstani health workers suffer from traumatic stress (TS). Consequences of TS on the societal level can be considered representative of collective TS. HCWs can be considered an indicator of sorts via which researchers can trace the thread of trauma that runs between, and unites, individuals and the collective. We have detected a dualism of an HCW’s self-identity, which was earlier described as the “*wounded healer*” [28]¹.

There was an existing discrepancy between acknowledging of one’s own woundedness on the one hand, and containing the latter’s hopes and expectations of being a healer on the other [29]. According to Williams [30], no patients’ illness is solely theirs as an individual; societal factors play a decisive role in how they become sick or wounded.

What can we expect to find when we examine HCWs’ identity after they have been “*wounded*” by TS? Crucially, the metaphorical incorporation of the patients’ woundedness into themselves does not always have a pathological result. Trauma has its own dualism as it can cause not only a sense of depreciation, but also growth [10, 11]. Post-traumatic growth (PTG) is usually associated with positive personality changes following the experience of highly challenging traumatic events. Such personality changes usually include personal appreciation, a transformation of individual goals and life projects, increasing social intelligence and social interests, greater enjoyment of simple activities, and even changes in spirituality. PTG typically entails a greater appreciation for life in the context of “*lessons learned*” in the aftermath of the traumatic situation [12]. At first glance, post-traumatic growth stands in contrast to post-traumatic depreciation (PTD), which is characterized by negative personality changes such as increased fear of other people, increased cynicism, increased isolation, obscurantist thinking, loss of interest in one’s most cherished activities and even career, and so on. Although PTG and PTD can be seen in different proportions in the demographic group that has undergone a challenging traumatic event, they are nevertheless two sides of the same coin [31].

This intertwining of the individual and collective aspects of the pandemic expressed itself in a “*wounded healer*” phenomenon within the very identities of our participants. On the one hand, an image of the healer is evident from the narratives, indicating that HCWs were resilient even in the face of a disempowering situation. On the other, there was a greater self-awareness in at least two aspects: firstly, our participants’ limitations as HCWs, as evidenced by the some turning to psychotherapy and others toward collaboration, in both cases signaling a shift away from the individual self-reliance fostered by the traditional image of the “*almighty healer*”. Another was with respect to their own values and perspectives, as evidenced by greater appreciation for their intimates, and taking more time for self-care. Although the breadth and

¹ The first identity is “*a healer*” and another is “*wounded person*”.

depth of these changes varied among participants, the occurrence of a collective change within their professional community cannot be denied.

IMPLICATIONS FOR FUTURE RESEARCH AND PRACTICE

Future research may need to be devoted to assessing both posttraumatic growth and posttraumatic depreciation using culture-sensitive scales. Such data will help to create quantitative scales that measure changes in perceptions of self and the world during a pandemic. Furthermore, the research will help to develop rehabilitation programs for healthcare workers with an eye toward future pandemics and ascertaining the possible ramifications that identity changes, such as those found in this research, may have on broader society.

CONCLUSION

Based on the findings of the current study, Kyrgyzstani society was largely unable to meet the needs of its individual members. Governmental policies and administrative apparatuses have become an obstacle to HCWs' ability to perform their duties, alongside the fact that ordinary people panicked and/or failed to grasp the HCWs' and patients' situations. All told, Kyrgyz society was already "insane" in Frommian terms before COVID-19, and became more "insane" during the pandemic. We were unsuccessful in controlling for possible biases from our research team and the results cannot be generalized to all HCWs in our country or to the society. This research will help to develop rehabilitation programs for healthcare workers with an eye toward future pandemics and ascertaining possible ramifications, such as identity changes.

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Connection of Suicidal Behavior with COVID-19: Clinical Cases

Связь суицидального поведения с COVID-19: клинические случаи

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Case report

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ABSTRACT

The spread of the coronavirus infection has led to significant changes in people's lives. Prolonged isolation, fear of infection, frustration, changing the usual stereotype life style, lack of information, loss of revenues, and fear of stigmatization, as well as the disease itself have all influenced people's emotional and physical well-being. The impact of the viral infection itself on the human body, as well as the perception of a new reality, in some cases led to the formation of reactive, organic, or the exacerbation of existing chronic mental disorders. People with mental health problems are most susceptible to environmental influences and react acutely to rapidly changing circumstances. Often in critical situations, in a state of despair, patients see only one way to solve all problems — voluntary retirement committing taking own life. In this article, we present clinical cases that are descriptive in nature and are intended to illustrate the connection between depressive experiences and suicidal behavior amongst patients in a crisis situation when external circumstances were the reason for suicide attempts: loneliness as a result of restrictive measures, fear of infection or the disease itself, and the reason was a mental disorder that debuted earlier or re-emerged as a result of a viral infection. We have presented three clinical cases. All patients suffered from a new coronavirus infection of various severities and were treated in a psychiatric hospital, where they were transferred from an infectious diseases hospital or hospitalized directly in connection with suicidal actions. In each case, attention was paid to the organizational measures carried out, with an emphasis on the need for earlier screening of mental disorders, prevention of suicidal behavior in providing assistance to this contingent, and the development of the interaction between general medical and psychiatric services by the type of integrative care. The study is of interest to a wide range of specialists providing care to patients with COVID-19 or similar pathologies.

АННОТАЦИЯ

Повсеместное распространение коронавирусной инфекции привело к возникновению значительных изменений в жизни людей. Длительная изоляция, страх инфицирования, разочарование, изменение привычного образа жизни, дефицит информации, денежные потери и боязнь стигматизации, а также само заболевание — все эти факторы оказали влияние на эмоциональное и физическое благополучие людей. Воздействие самой вирусной инфекции на организм человека, а также восприятие новой реальности в ряде случаев приводили к формированию реактивных, органических или обострению имеющихся хронических психических расстройств. Лица, имеющие проблемы в области психического здоровья, наиболее подвержены влиянию окружающей среды и остро реагируют на быстро меняющиеся обстоятельства. Часто в критических ситуациях, в состоянии безысходности пациенты видят только один способ разрешения всех проблем — добровольный уход из жизни. В данной статье нами представлены клинические случаи, которые носят описательный характер и направлены на иллюстрацию связи депрессивных переживаний и суицидального поведения пациентов в ситуации кризиса. Когда поводом для попыток самоубийства явились внешние обстоятельства: одиночество в результате

ограничительных мероприятий, страх заражения или сама болезнь, а причиной — дебютировавшее ранее или вновь возникшее вследствие вирусной инфекции психическое расстройство. Нами представлено три клинических случая. Все пациенты страдали новой коронавирусной инфекцией различной степени тяжести и проходили лечение в психиатрическом стационаре, куда были переведены из инфекционной больницы или госпитализированы напрямую в связи с суицидальными действиями. В каждом конкретном случае уделялось внимание проведенным организационным мероприятиям с акцентом на необходимость осуществления более раннего скрининга психических расстройств, профилактики суицидального поведения при оказании помощи данному контингенту, развития взаимодействия между общемедицинской и психиатрической службами по типу интегративной помощи. Исследование представляет интерес для широкого круга специалистов, оказывающих помощь пациентам с COVID-19 или аналогичной патологией.

Keywords: *suicide attempt; COVID-19; new coronavirus infection; mental disorders; psychiatric hospital*

Ключевые слова: *суицидальная попытка; COVID-19; новая коронавирусная инфекция; психические расстройства; психиатрический стационар*

INTRODUCTION

The WHO officially announced the COVID-19 pandemic on March 11, 2020. Due to the need to prevent the spread of the disease worldwide, appropriate restrictive measures were taken. In Russia, from March 30, 2020, a non-working day regime was announced. It was assumed that the complete isolation would last no more than a week, but the restrictions were not lifted until May 11. From the point of view of reducing the spread of COVID-19, isolation was justified, but the measures taken affected the country's economy and citizens' welfare, as well as their mental health. This is how the quarantine period is described in the literature: prolonged isolation, fear of infection, frustration, boredom, inadequate information, loss of revenues, fear of stigmatization, and most importantly fear for one's life and the lives of loved ones [1, 2]. All of the above favored ground for the development of new, and the aggravation of existing mental disorders. Since the beginning of the pandemic, and indeed afterwards, a large number of studies have appeared concerning the impact of COVID-19 on mental health. There are two poles of thought in the modern literature: some authors report an increase in requests for psychiatric help, whilst others report a sharp decline in the period of self-isolation [3–5]. When comparing the lockdown period and the one following it, we can say that the lowest rates of requests for psychiatric help fell during the months in which more stringent social distancing measures were applied [6]. So, when compared with similar periods in 2019, during the lockdown period,

the number of requests decreased by 37.5%, and after it by 17.9% [7]. The volume of inpatient psychiatric care also decreased during the period of strict restrictive measures [7]. According to the analytical data of the Federal State Statistics Service of Russia, the number of visits to dispensaries and outpatient psychiatric care offices decreased in 2020 [8].

Thus, during the period of self-isolation, the appeal for psychiatric help decreased due to the fear of people leaving home. However, the decrease in the number of requests does not mean that help was not needed. Most authors agree that the current situation led to the development of certain mental disorders, among which asthenic, anxiety, and depressive disorders were the most prevalent. Such symptoms are both a consequence of exposure to a viral infection, and a person's reaction to the disease [9].

In addition, during the first wave of the pandemic in the spring of 2020, many complained of slow reactions, difficulties in maintaining the usual pace of activity, sleep disorders, and increased anxiety. The first recommendations on maintaining mental health suggested informing the population that such a condition is a normal response by the body to an emergency [10, 11]. In contrast to 2019, in 2020, the most common reasons for urgent psychiatric consultations were aggressive behavior and adjustment disorders with anxiety and depressive mood [12]. One of the identified features was a noticeable increase in neurotic, stress-related, and somatoform disorders in men who had not previously consulted psychiatrists [3].

Patients with personality/behavior disorders more often than others pointed to the connection between psychological well-being and COVID-19, and the reasons for their problems were the changes resulting from a lockdown in the healthcare system [3]. According to domestic data, the growth of depressive symptoms is due to various fears and is mediated by non-constructive ways of coping with stress [13]. Data on the increase in the sale of antidepressants and tranquilizers in Russia for the period 2020–2021 compared to previous years indirectly confirm the relevance of the problem of depression during the pandemic [14], although statistics on the frequency of depression of various genesis were underestimated due to a decrease in the treatment of the population as planned.

Symptoms of anxiety during the pandemic were often observed in the framework of adaptation disorders, generalized anxiety disorders, somatoform disorders, including panic attacks [11]. The course of somatogenically provoked depression parallels the severity of the underlying disease (psychosomatic parallelism) [15]. The authors proposed to involve internists who own screening diagnostic tools with automated conclusions (scales, mobile applications to smartphones, etc.) in the diagnosis of such disorders [16].

Suicidal mood is associated with a high level of stress, and for the development of thoughts about suicide, it is not necessary to have a real threat, it is enough to have the fear of the possibility of infection, or the fear of dying from an incurable disease or losing your relatives for this same reason [13]. Many authors, both in our country and abroad, have pointed to an increase in suicidal mood in general [17]. However, according to international studies, there was no increase in the number of completed suicides [18]. In the literature, suicides committed in unusual ways, for delusional reasons or group ones are more often described [19, 20]. The presented cases, being common, demonstrate the dynamics of suicidal behavior, the reason for which was external circumstances: restrictive measures, the threat of infection or the disease itself, due to a mental disorder that debuted earlier or during the quarantine period. The cases are described with details of tactics in the general medical and psychiatric network and features of interaction between internists and psychiatrists. The purpose of the report was to demonstrate cases of late detection of mental disorders in patients in the

outpatient and inpatient network that were risk factors for suicidal behavior.

The selection of clinical cases was carried out as part of a retrospective analysis of patients with coronavirus infection who were consulted by a psychiatrist about self-harming behavior. The author selected patients who had not been observed by a psychiatrist for mental disorders before the pandemic and had not previously been found to have suicidal or autodestructive behavior, for whom psychiatric care was provided for the first time in their lives.

CLINICAL CASE 1

A 35-year-old patient was hospitalized in an infectious hospital with incised wounds on both forearms, which he inflicted on himself for suicidal purposes. At the time of self-injury, he was on outpatient treatment with a diagnosis of COVID-19. Anamnestic information: He had not previously applied to psychiatrists, his heredity is not burdened with mental illnesses, he grew up and developed without peculiarities, attended kindergarten, went to school on time, graduated from 11th grade, studied “good” and “excellent”. Higher education, engineer. After training, he worked as a middle manager. Married for seven years, has a preschooler son.

He considered himself ill for about three months, when, against the background of his wife’s “infidelity”, and depression of mood, motor inhibition appeared. It became hard to work, he was sluggish in the morning, could not do anything, and locked himself in. He continued to work, but at work he lost his initiative, made mistakes and miscalculations. At home, the relationship did not work out. The condition worsened against the background of self-isolation, when he was forced to stay at home all the time with his family (wife and son). There was irritability, anxiety for himself and for his future. After one of his colleagues fell ill with COVID-19, the patient was tested, which showed a positive result. With a slight deterioration of the somatic condition (loss of sense of smell, general slight malaise and weakness), anxiety appeared, which reached its highest point by the time of hospitalization. Against the background of anxiety, thoughts began to arise that “everything will end soon”, he began to consider himself doomed, began to see the future in “black tones”. The “last straw” was the suspicion that the wife did not break off her relationship “on the side”. After that, the patient realized that no one needed him and there was no point in fighting because “there is no way out anyway, because he was already sick” and “decided not to wait.” He inflicted incised wounds on his forearms and “went to die in the bathroom”, turned on the water so that “no one would hear anything”. The ambulance was called by his wife, who went into the bathroom.

In the infectious diseases hospital, which was previously a multidisciplinary hospital (it had changed its profile during the pandemic), the patient received surgical assistance in the form of suturing wounds. After examination by a psychiatrist at the infectious diseases hospital, the patient was transferred to a psychiatric hospital with a department for the treatment of patients with a new coronavirus infection with the diagnosis: “Mixed anxiety and depressive reaction due to adaptation disorder. Anxiety-depressive syndrome. F43.25 Suicide attempt”. Related: “Coronavirus infection, COVID-19, virus identified.”

Indications for the transfer were persistent suicidal tendencies, low mood, lack of plans for the future, as well as the lack of prospects (from

the patient's point of view) of continuing life, since he considered himself terminally ill. In addition, the patient expressed thoughts that "he will die in agony from lack of air, and this is very scary." Having assessed all possible risks and predicting a possible unfavorable outcome for the patient, the psychiatrist made the only decision in this situation to transfer to a psychiatric hospital (the patient agreed with this decision). Further management of the patient on an outpatient basis was not possible due to his suicide risk, as well as the self-isolation regime, which prevented both the patient from visiting psychiatric and psychotherapeutic services at the place of residence, as well as active dispensary monitoring of the patient at home.

Against the background of treatment of coronavirus infection in a psychiatric hospital, the patient was assisted according to the protocol of management of a patient with neurotic, stress-related, and somatoform disorders (F40, F41, F43, F44, F45, F48).

CLINICAL CASE 2

A 78-year-old patient was hospitalized in an infectious hospital for the treatment of a new severe coronavirus infection. At the time of hospitalization, the condition was of moderate severity, temperature 38.2°C, breathing difficulties, heart rate — 90 per minute, BH — 20. According to the results of the computed tomography, the lung lesion area was 20% (CT-1 picture) [21]. According to anamnestic data, she has been suffering from hypertension for a long time, type 2 diabetes mellitus. She has not taken antihypertensive therapy for a long time. Lived alone. Until the moment of hospitalization, she took care of herself completely. She went to the store, pharmacy, and walked on her own. Previously, she had not applied for psychiatric and psychotherapeutic help. She was hospitalized at the insistence of a local general practitioner due to the severe course of COVID-19. She behaved calmly at the department. On the 14th day from the start of inpatient treatment, she turned to the attending physician with complaints of pronounced weakness, decreased mood, anxiety, sleep disorders (difficulty falling asleep, frequent awakenings). On this occasion, she was consulted by a psychotherapist. During the examination, she said: "I thought when I was lying awake at night that I would die. It got better in the morning, so I decided that I would live some more." At the time of the examination, she was emotionally labile, but suicidal tendencies or psychoproductions were not detected. The diagnosis was made: "Organic asthenic disorder, F06.6". Against the background of therapy correction, the condition with positive dynamics, sleep stabilized, appetite appeared, became more active, mood improved.

The condition began to worsen again in the fourth week. Shortness of breath grew, chest pains appeared, complained of lack of air, became anxious, fussy. It was further examined, according to the results of computed tomography, the degree of changes was critical (CT-4) [21]. After the appearance of the above symptoms, on the 22nd day from the start of hospitalization in the evening, the patient, with a suicidal purpose, inflicted cuts to her neck and told the doctor that she "did not want to live anymore." She was transferred to the intensive care unit for further treatment and observation, and a psychiatrist on duty was called. On examination, she was conscious, oriented correctly in her own personality. She correctly indicated the current year and month, she made a mistake with the date. She understood that she was in the hospital, in the intensive care unit. The mood background was lowered. She entered into conversation reluctantly, answered questions in monosyllables, was easily irritated and angry. She said, "two days ago I had already told my daughter on the phone not to be offended at me if I did something bad to myself." She called her state of health the reasons for the attempt at suicide, saying, "It doesn't get any better, everything hurts! I could walk before, I lived alone, I did everything myself, and here! I can't even get up

without shortness of breath! They can't find the cause of my pain in my stomach and chest! And they don't want to let me go home! I decided that at least I would leave!". She did not express delusional ideas, she did not detect deceptions of perception in her behavior. She was quickly exhausted, kept her attention with difficulty, easily distracted from the conversation. Her thinking was concrete, rigid, and she was extremely fixated on her well-being. Without gross intellectual and mnemonic decline. Without criticism of his condition and suicidal actions. There was also no visible intellectual and mnemonic decline, as well as criticism of her condition and suicidal actions. The diagnosis was made: "Other specified mental disorders due to damage and dysfunction of the brain and physical illness F06.8. Suicide attempt." Related: "Coronavirus infection, COVID-19, virus identified."

The psychiatrist on duty decided to transfer the patient to a psychiatric hospital. Indications for transfer, as in the first case, were persistent suicidal tendencies, low mood, lack of plans for the future. Despite this, the patient signed a consent for hospitalization in a psychiatric hospital, but was sure that "it would not help her." She was passively submissive, reluctantly obeyed doctors' orders. She received help according to the management protocol for a patient with a diagnosis of "F06.8 Other specified mental disorders caused by damage and dysfunction of the brain or somatic disease." However, the severe course of the new coronavirus infection, as well as the presence of concomitant pathology, led to a fatal outcome at 5 weeks from the start of inpatient treatment.

CLINICAL CASE 3

The patient is 34 years old. He had not previously come to the attention of psychiatrists, and did not turn to narcologists for medical help. At the time of self-harm, he was quarantined due to a positive test for COVID-19. From anamnesis: grew up and developed without peculiarities, went to school on time, studied "well" and "satisfactorily". Graduated from a technical college. He did not work in his specialty. Previously, he worked as a salesman, tried to be a private entrepreneur, and at the time of the lockdown announcement he worked as a warehouse manager, and did not lose his job. Married, no children.

His mental state has worsened since the detection of COVID-19, and therefore he had to take sick leave. The somatic condition did not suffer. Two days after the start of the forced sick leave, he began to complain of dissonant disorders, and anxiety appeared. Being at home, he constantly monitored the performance of the warehouse, found "flaws" in the work, felt guilty in front of colleagues for "wrong leadership". He shared his concerns with his wife, who at first listened to the patient, then reacted to such conversations with irritation. According to the patient, on the third day of forced isolation, when his wife was in the next room, he was lying on the bed and hitting himself on the temple with a mug, "for the first time there was a desire to commit suicide." He told his wife about it, she offered to see a doctor, but he refused medical help. Ten days later, in front of his wife, he tried to squeeze out his eyes, "so as not to suffer, he wanted to die." His wife called an ambulance for psychiatric help. When examined by an ambulance doctor, it was concluded that his mood was lowered, and suicidal intentions were confirmed. Delusions, and deceptions of perception could not be identified. The emergency psychiatric doctor decided to hospitalize the patient in a psychiatric hospital with a department for the treatment of patients with a new coronavirus infection. Such a decision was justified in connection with patient's mental state, whose abandonment without specialized care could lead to a deterioration in mental state.

Despite the absence of somatic symptoms, it was necessary to comply with epidemiological requirements. The patient was taken to a psychiatric hospital voluntarily. In the emergency department, he was conscious,

and orientation of all types was preserved. The mood background was lowered. The voice was quiet, the speech slow. He said: "I stopped sleeping in the last few days, there are no thoughts in my head, I even knocked myself on the forehead to put my head in its place. I got my wife whining. I'm worried about my job, it wasn't all good there anyway, and now I'm afraid they won't be able to cope without me. Anxiety appeared, I didn't want to live." He speaks about suicidal thoughts more willingly, reports information in more detail: "Well, they just appeared. I even hit myself on the temple while lying down to commit suicide. I also squeezed out my eyes." He found it difficult to answer questions about the reasons for choosing such methods, however, he said that both times "his wife was in the next room or nearby." About the use of narcotic substances, he reports extremely reluctantly, with irritation, "there were some I don't remember," and he tries to change the subject. Thinking is slow in pace. Intellectually-mnestically, it seems to be reduced. He interprets proverbs literally, he cannot explain the figurative meaning: "It's clear enough here, the forest is being cut down — chips are flying." He confirmed his consent to treatment and hospitalization. He claimed that he understands, "the stupidity of his actions" but "I can't do anything." Diagnosis: "Non-psychotic depressive disorder due to a mixed disease, (perinatal, intoxication genesis), anxiety-depressive syndrome F 06.3". Related: "Coronavirus infection, COVID-19, virus identified."

In a psychiatric hospital, against the background of treatment of coronavirus infection, the patient was assisted according to the management protocol of a patient with organic (affective) mood disorders, including symptomatic mental disorders (F06.3; F06.4).

DISCUSSION

According to the literature, self-isolation plays an important role in the formation of suicidal behavior [1–5, 7], which can be traced in each of the presented cases. The presence of anxiety and sleep disorders accompany patients with COVID-19, and also often precede suicidal actions [4, 5, 7, 9], which was also reflected in all three patients.

In all the cases presented, suicidal actions were preceded by fear of death from an "incurable" disease due to the lack of reliable information about COVID-19 and fear of stigmatization, which was also reported by other authors [19, 22]. According to research, due to fear of stigmatization, patients often refuse specialized care, hide the fact of a new coronavirus infection, and also mask their suicidal actions [22]. Patients with affective disorders are more likely to commit suicide [3, 5, 22], and stress-related disorders during the pandemic were more common for men who had not previously sought psychiatric help [3]. The onset of psychogenic depressive disorder (clinical case 1) proceeds with anxiety symptoms, which later give way to indifference and apathy [23].

Many researchers emphasize the need to provide specialized care to patients after they attempt suicide and the effectiveness of psychiatric intervention in the early post-suicide period to prevent repeated attempts

at such [24–27]. The doctors of the infectious diseases hospital and ambulance were guided by similar motives when transferring patients from a multidisciplinary hospital (cases 1, 2) and hospitalization directly to a psychiatric hospital (case 3). However, there is another point of view about the need to include a psychiatrist in a multifunctional team to assist patients with COVID-19 for timely intervention and prevention of mental disorders and their consequences in the form of attempts at suicide [28, 29].

Be that as it may, careful monitoring of the mental state of patients with COVID-19 and persons in quarantine is necessary [30]. The improvement of the legislative framework, and the introduction of training programs for primary care specialists in the diagnosis of anxiety-depressive symptoms will bring the provision of psychiatric care closer to the population [31, 32]. These measures can contribute to reducing the risk factors of suicidal behavior.

CONCLUSION

In clinical case 1, it can be said that the disorder itself that occurred in the patient was not directly related to a coronavirus infection. However, the attempt at suicide was provoked by the deterioration of the somatic state. Clinical case 2 illustrates a situation when, against a background of long-term treatment for coronavirus infection, asthenic symptoms and deterioration of the somatic state, the patient decided to inflict life-threatening injuries (from her point of view, fatal) to stop the torment. In addition, in this case, it should be noted that there was insufficient alertness of non-psychiatric medical workers regarding the possible occurrence of mental disorders in patients with COVID-19, especially if such disorders (insomnia and anxiety) have already occurred in the clinic of the disease. For a patient (clinical case 3) who had not previously suffered from mental disorders, they then suffered a lockdown period and further restrictions, as it seemed, without tangible consequences. When directly infected with COVID-19, despite the mild course of the disease, this led to pronounced mental disorders that further led to self-harming actions. In each of the presented cases, anxiety and dissomnic disorders were present in the clinical picture, which were the first symptoms of incipient mental disorders. The surrounding picture of the world during the period when patients performed suicidal actions was characterized by a violation of the usual stereotype changing the ordinary

way of life, a feeling of loneliness, uncertainty, and the inevitability of death as a result of infection with a new coronavirus infection. Due attention from non-psychiatric specialists to the listed symptoms and timely referral to mental health specialists, the risk of suicidal behavior in patients could be reduced. Verifying the effectiveness of this assumption requires additional research.

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Organization of Psychological and Psychiatric Assistance to Refugees in a Prolonged Emergency

Организация психолого-психиатрической помощи беженцам в условиях длительной чрезвычайной ситуации

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Short Communication

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ABSTRACT

The article describes the experience of organizing psychological and psychiatric assistance to refugees in temporary accommodation centers (TACs). From 1999 to 2004, about 200,000 people, fleeing military operations during the counter-terrorist operation in the Chechen Republic, moved to neighboring Ingushetia, where they were placed in TACs. Analysis of the work with refugees shows that during a long stay in the TAC, refugees develop psychopathological and psychological issues including stress disorders, irritability, aggressiveness, disorders of adaptive functions, depression, anxiety, decreased initiative, "victim" complex, and damaged interpersonal relationships that significantly reduce their adaptive capabilities. Organizing comprehensive medical, social, psychological, and psychiatric care based on existing disorders can significantly improve the psycho-emotional state of refugees in a short time and prevent the aggravation and chronicity of these disorders.

АННОТАЦИЯ

В статье описан опыт организации психолого-психиатрической помощи беженцам в центрах временного размещения (ЦВР). С 1999 г по 2004 г. около 200 тысяч человек, спасаясь от военных действий в период контртеррористической операции в Чеченской Республике переехали в соседнюю Ингушетию, где были размещены в ЦВР. Анализ работы с беженцами показывает, что в период длительного проживания в ЦВР у беженцев формируются психопатологические и психологические изменения, такие как раздражительность, агрессивность, расстройства приспособительных функций, депрессия, тревожность, снижение инициативы, формирование комплекса «жертвы», нарушение межличностных отношений, которые существенно снижают их адаптивные возможности. Организация комплексной медико-социальной и психолого-психиатрической помощи с учетом имеющихся нарушений способна за короткий срок существенно улучшить психоэмоциональное состояние беженцев и предотвратить утяжеление и хронификацию этих расстройств.

Keywords: *refugees; temporary accommodation centers; psychological and psychiatric assistance; Chechen Republic*

Ключевые слова: *беженцы; центры временного размещения; психолого-психиатрическая помощь; Чеченская Республика*

RELEVANCE OF MEDICAL AND PSYCHOLOGICAL ASSISTANCE TO REFUGEES

Emergencies of any origin, whether technology-related, natural, or anthropogenic, are characterized by a high intensity of psycho-traumatic events, and if an emergency is also long-term and large-scale, then a complex of social, economic, and psychological negative factors affects people living in the emergency zone, significantly worsening their quality of life and ultimately resulting in mental and somatic disorders of varying severity [2, 5, 7]. As noted by many specialists and people directly affected by emergencies, anthropogenic emergencies (wars, terrorist acts, torture) are the most severe in terms of perception, the severity of the trauma, and the consequences [1, 3, 6]. Studies of the mental consequences of hostilities among civilian populations are mainly focused on refugees. According to the majority of researchers, the most common diagnoses among refugees are PTSD, and depressive and somatoform disorders. Long-term overstrain, psychosomatic disorders, and physical illnesses lead to abuse of psychoactive substances and suicidal tendencies and actions [9–11].

Studies investigating the mental state of internally displaced persons emerged as a result of local armed conflicts in the South and North Caucasus.

Analysis of the changes over time in neurotic disorders in internally displaced persons in the Caucasian Mineralnye Vody region revealed a significant increase in syndromic neurotic conditions after a year or more, which was the result of deepening and structuring neurotic symptoms under the influence of adverse social factors. Neurotic reactions were rediagnosed a year later in 43.6% of the refugees, while in 20% of cases there was a worsening of the condition manifested by the complication and deepening of psychopathological symptoms, reaching the severity of syndromic conditions combined with pronounced social maladaptation amongst the refugees. Neurosis itself was diagnosed in 22.9% of the refugees a year later during re-examination. At the same time, a deterioration in the health of refugees was reported in 27.6% of cases, including deepening affective disorders, and stabilization and development of personality changes with pronounced social maladaptation. In general, neurotic disorders amongst refugees during the follow-up examination were distributed as follows: dysthymic disorder (67.4%), obsessive-compulsive disorder (16.3%), neurasthenia (11.6%), and hysterical neurosis (4.6%) [10].

As noted by V.P. Kokhanov, V.N. Krasnov, “Practically all forced migrants and residents of Chechnya (82.4%) had non-psychotic forms of mental disorders of varying severity, manifested by neurotic disorders, characterological and behavioral deviations” [8]. The counter-terrorist operation carried out in the territory of the Chechen Republic (ChR) from 1999 to 2004 was associated with hostilities of varying intensity, which led to the displacement of a significant number of the population outside the Chechen Republic. People left the dangerous region because of a well-founded fear for their lives and a sharp deterioration in their quality of life: lack of social infrastructure, quality food, clean water, and medical care. Some of these people were placed in the territory of neighboring Ingushetia in temporary accommodation centers. According to various estimates, the number of temporarily displaced people ranged from 150,000 to 200,000. People were accommodated in Temporary Accommodation Centers (TACs) in the form of tent camps in an organized manner. Naturally, people were not left without help. Since the establishment of the TACs, people have received assistance from the EMERCOM of Russia, the World Health Organization (WHO), the Office of the United Nations High Commissioner for Refugees (UNHCR), and Russian and foreign non-governmental humanitarian organizations.

The purpose of this article is to describe the work of a team of specialists of FSBEI HE Chechen State University n.a. A.A. Kadyrov as part of the non-governmental humanitarian organization “Medecins du Monde” with refugees during the counter-terrorist operation in the territory of the Chechen Republic in 1999–2004. The article provides an organizational model for the provision of psychological and psychiatric assistance to refugees in temporary accommodation centers.

ORGANIZING MEDICAL AND PSYCHOLOGICAL ASSISTANCE IN REFUGEE ACCOMMODATION CENTERS

Our experience of working with refugees was gained in the Centers for Medical and Psychological Assistance (CMPAs) deployed in the two largest TACs in Karabulak (5,000 people) and Sleptsovskaya (12,000 people) in the Republic of Ingushetia. Each CMPA had a team of specialists consisting of psychologists, a psychiatrist, a general practitioner, a pediatrician, nurses, and volunteers involved in this work as social workers. The CMPAs were in operation from November 1999 to March 2004.

Each CMPA had three large tents that housed a medical station for medical care, a psychological care center, and a separate tent for a psychiatrist. Medical workers, psychologists, and volunteers provided help to refugees at the level of their competence, and if the refugees showed severe psychopathological symptoms, including delirium, hallucinations, PTSD, depression, panic attacks, or if the patient's condition required clarification in terms of diagnosis, such patients were referred for a consultation with a psychiatrist.

PSYCHOLOGICAL REACTIONS AND THEIR CHANGES IN TACS

The experience of working with people living in TACs showed that in the process of adaptation to a new place, people experienced a number of psychological states that changed during their stay in the TAC and consisted of the following stages of psychological reactions:

State of fear, despair, and helplessness

People are scared, they are still under the impression of there being extant enduring threats to their lives. For the most part, people who left the danger zone had only personal belongings and documents with them, so they were concerned about the state of the property that had to be left in their homes, their loved ones who, for whatever reason, were unable to leave the danger zone, and because they could not understand the reasons for the hostilities;

State of doubt, suspicion, and mistrust

With high emotional stress, people constantly form doubts and suspicions about other refugees, government officials, and even people and organizations trying to help them. Various rumors are constantly circulating among the refugees that "cleansing" will be carried out among them, that refugees are "abducted" at night, that they are "purposefully" gathered in one place. Although these rumors are not confirmed, most refugees believe them, and often such rumors are deliberately spread by provocateurs;

State of stabilization and productive activity

At this stage, people's emotional state evens out, aggression and suspicion decrease, people begin to rally, establish interpersonal relationships, are busy arranging their lives, receiving humanitarian assistance, finding employment, and educating their children.

State of feeling of personal infringement and sacrifice

This is perhaps the most difficult state that refugees begin to experience. Long-term residence in poor conditions: lack of money, living in a tent, high density of people living in one tent, lack of personal space, lack of household amenities, and dependence on humanitarian aid makes people feel inferior and unable to solve their problems on their own. This leads to the formation of the "victim complex" as a form of compensation, when refugees begin to demand additional conditions and material benefits for themselves, referring to the fact that they are victims, and "everyone is obliged" to them;

State of nostalgia for home and formation of a desire to return home

At this stage, refugees get tired of living in the TAC and keep feeling like returning home, which leads to a significant decrease in the interest in productive activities, a decrease in the emotional state, and sleep disturbance.

The duration of the states described above amongst the refugees with whom we worked varied, and often the psychological reactions overlapped during the transition from one stage to another.

ORGANIZATION OF REFUGEES SEEKING PSYCHOLOGICAL AND PSYCHIATRIC ASSISTANCE

Psychological and psychiatric assistance must be organized from the very first days of a TAC's creation and the resettlement of refugees, taking the particularities of their current mental states into account. During the first stage, an active form of identification of refugees with mental disorders is appropriate, and even necessary. We used the following method for these purposes. Our specialists split into pairs, if possible a man and a woman, and went to the TAC. Seeing a group of refugees, they approached them and struck up a conversation. Soon, other refugees would begin to approach them, and a group of 8–10 people formed. Refugees talked about their problems, needs, and our specialists assessed the mental status of the refugees during the conversation: their reactions, tonality, emotionality of statements, level of aggression, and if any of the refugees showed pronounced emotional reactions such as emotional lability, verbal aggression, verbal expression, crying, despair. If so, a separate conversation was held with

these refugees and they were invited to our CMPA, where an in-depth examination was carried out and necessary assistance was provided [4].

The second way to identify refugees with mental health problems was through our health center. People sought medical help, and in the process of examination and provision of medical care, employees of the medical center revealed signs of mental disorders such as fear, anxiety, low mood, sleep disturbance, irritability, aggressiveness, and persistent memories of previously experienced traumatic events. Refugees were referred to a psychologist or psychiatrist for consultation if such symptoms were detected. To improve the professional competencies of medical workers in diagnosing the symptoms of mental disorders, we developed and conducted brief educational seminars on recognizing mental disorders and provided methodological recommendations for diagnosing the common mental disorders that develop in emergencies.

The third way of referring for psychological and psychiatric help was self-referral, when, being aware of their own need for psychological and psychiatric help, refugees turned to our CMPA on their own initiative.

The fourth way of referring was by recommendation from other refugees who had already been referred to our CMPA and received effective assistance.

GENERAL PRINCIPLES FOR THE PROVISION OF PSYCHOTHERAPEUTIC ASSISTANCE IN TACS

It turned out to be important, when organizing psychological and psychiatric care, to divide the flow of those seeking help by sex and age in accordance with the ethno-cultural and religious characteristics of the population living in the Chechen Republic. This division necessitated the formation of permanent open therapeutic groups for children, adolescents, youths, and adults, where the latter two groups were also divided by sex.

Therapeutic approaches were selected in accordance with age characteristics. A playground was created for children and adolescents, where games were used for both diagnostic and therapeutic purposes. Various group trainings were used for boys and girls, such as confident behavior training, perspective formation training, interpersonal relations training, and aggression management training. Meetings with various famous and popular people who have achieved success in sports, art, and culture turned out to be very

impressive to young men and women, since it was very important to give the young men practical examples that there are many ways to achieve success, realize their personal potential, and effectively serve their people, not through participation in the hostilities but in a peaceful way. For adult patients, individual and group cognitive-behavioral psychotherapy was carried out with the purpose of working out mental trauma and forming an awareness of the connection of their neurotic condition and a number of physical illnesses with past traumatic events. Jacobson progressive muscle relaxation was used to relieve feelings of tension, irritability, and sleep disturbances. This work was carried out in therapeutic groups. Open male and female groups were formed. A group consisted of 6–8 people (the size of the tent did not allow larger groups). Psychotherapy sessions were held twice a week for each group. Taking the gender characteristics of patients into account, a female psychologist worked with the female group, and a male psychiatrist worked with the male group. The presence of different specialists in the team allowed us to implement a team-based approach in helping refugees, when a team of specialists (psychiatrist, psychologist, social worker) formed a therapeutic route for patients and controlled its implementation. The compact accommodation of refugees in the TAC allowed our volunteers to observe our patients at the place of residence and register the changes in their condition. The listed organizational and therapeutic approaches contributed to the maximum coverage of people in need of psychological and psychiatric assistance and the timely processing of experienced traumatic events.

Organizing assistance for refugees is complex in nature, and we can expect the best positive effect only when we organize comprehensive psychosocial assistance for refugees, when, simultaneous to organizing the lives of refugees, providing them with food, clothing, and hygiene products, we also provide the psychological, psychiatric, and medical assistance that can contribute to the rapid improvement of their conditions and the prevention of chronic mental and psychosomatic disorders.

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Community Mental Health Services in Egypt

Организация амбулаторной психиатрической службы в Египте

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Short communication

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ABSTRACT

As far back as the 14th Century, Egypt had already developed mental health care in a community-based sense in Kalaoon Hospital in Cairo, 600 years before similar institutions were founded across the globe.

By 2001, an Egyptian-Finnish bilateral comprehensive reform program was incorporated. A few years later, in 2007, the Minister of Health and Population initiated a proper appraisal of the mental health services in Egypt, which was aimed at achieving better integration and coordination in the mental health sector, as well as supervision and training on the national, governmental, and primary care levels.

By 2009, the Mental Health Act of 2009 (Law 71) brought basic conceptual changes to the care of people with a mental illness in Egyptian institutions, replacing the outdated 1944 law that had been used in Egypt for decades. However, despite all of the important steps Egypt is taking to move toward more integrated mental health services, more effort and resources are still needed to fight against stigma and to develop a comprehensive multidisciplinary approach that is approachable and effective to all those who need it.

АННОТАЦИЯ

Уже в 14-м веке в Египте существовала развитая служба психиатрической помощи, организованная по территориальному принципу, в больнице Калаун в Каире, то есть за 600 лет до создания подобных учреждений по всему миру.

К 2001 году была внедрена египетско-финская двусторонняя программа современного реформирования. Несколькими годами позже, в 2007 году, министр социальной политики и здравоохранения инициировал комплексную оценку служб психиатрической помощи в Египте. Данная акция была направлена на достижение более высокого уровня интеграции и координации в секторе психического здоровья, а также включала обучающую деятельность и контроль качества на национальном, правительственном уровне и в условиях первичного звена медицинской помощи.

Утвержденный в 2009 году Акт о психическом здоровье (Закон 71) внес основные концептуальные изменения в оказание медицинской помощи лицам с психическими заболеваниями в лечебных учреждениях Египта. Данный акт заменил закон от 1944 года, который действовал в Египте на протяжении нескольких десятилетий. Несмотря на все эти важные шаги, Египет продолжает двигаться в направлении более тесной интеграции служб психиатрической помощи. В стране по-прежнему сохраняется необходимость в привлечении большего количества ресурсов и усилий для борьбы со стигматизацией лиц с психическими расстройствами, а также для создания комплексного мультидисциплинарного подхода, который может быть применен в отношении всех нуждающихся в помощи.

Keywords: *Egypt; mental health; community services*

Ключевые слова: *Египет; психическое здоровье; службы помощи по месту жительства*

BACKGROUND

In Egypt, the concept and management of mental health in are presented from the Pharaonic era. Papyri from the Pharaonic period show that they described mental disorders though theories of causation which were mystical in nature, yet were treated on a somatic basis [1]. In the 14th century, 600 years before similar institutions were founded in Europe, the first psychiatric unit was established, in Kalaoon Hospital in Cairo [2, 3]. It had sections for surgery, ophthalmology, and medical and mental illnesses. Astonishingly, the care of mentally ill patients appears to have been community based, probably for the first time in history [4]. However, the building of asylums away from residential areas, to separate those with mental illnesses from their communities, only began in the late 19th century [5]. At the beginning of the British protectorate in Egypt, the modern practice of asylum care was introduced, to the extent that the Department of Mental Health at the Medical School of Cairo University was closed in 1880 and psychiatrists were directed towards the newly built asylums, where training for their profession was more vocational in nature than academic [6]. In 1944, mental health legalization was introduced in Egypt, after agreement from the Egyptian parliament, in advance of the majority of Arab and African countries [7]. The law formed the basis of hospital practice of psychiatry for about 30 years. Not so astonishingly, by the 1980s, psychiatric hospitals were detaining numerous patients who were not suffering from psychotic disorders but rather had addictions or behavioral disorders (largely because of loopholes in the relevant legislation); in fact, the involuntary detention of patients on moral grounds became common practice [8].

Egypt is the most populous nation in the Arab world; its population is equivalent to 1.25% of the total world population. The nation is administratively divided into 26 governorates (regions) and Luxor City, and 203 districts. The four Urban Governorates (Cairo, Alexandria, Port Said, and Suez) have no rural population [9]. With its rapid increase in population, and economic, political, and military challenges in its modern history, economic growth has been significantly affected, and hence the country's medical and mental services have accordingly suffered.

Until 2000, there was an alarming treatment gap in mental health services, as evident in the huge discrepancy between the number of people who needed therapy and those who actually received it. The total number of hospital beds for

a population of over 75 million was 6156 (including the 680 forensic psychiatric patients at Khanka, 95 forensic beds at Abbassia, and 13 forensic beds at Ma'amoura). This was an average of less than 1 bed per 12,000 of the population across the country as a whole, compared with a WHO recommendation of 5–8 beds per 10,000 population [10]. Mental hospitals were mostly based in Cairo and Alexandria, with not enough attention being given to integration into primary care, and hence inadequate prevention, early detection, or prompt management. With this concentration of mental health services and staff in hospitals in the three largest cities, there was hugely insufficient decentralization across the country to all governorates, districts, and communities [11]. Moreover, in real practice, when the national hospitals are excluded from the calculation, since it is not good practice to use them to admit people a long way away from their communities, the number of beds per population is probably even lower in most governorates [12].

An appraisal of the situation took place in 2001 after studying all the necessary data and conducting site visits and workshops, resulting in a six-year reform program (Egyment) 2002–2007. This was initiated by Egyptian- Finnish bilateral aid, and then continued by the Ministry of Health and Population (MOHP) from 2007-present, with sustained technical support from the WHO Collaborating Centre (WHOCC), Institute of Psychiatry, the WHO Eastern Mediterranean Regional Office (EMRO) and WHO Geneva. The project was able to put into place a reform program which has been sustained beyond the end of the funding with considerable focus on appropriate treatment at the primary care level, strengthening of the referral system, interministerial and intersectoral liaison, rehabilitation, and media work to mobilize community engagement [11].

In May 2009, the Mental Health Act of 2009 Law 71 [8] brought basic conceptual changes to the care of people with a mental illness in Egyptian institutions. This, like its predecessor, focused on the rights of those with a mental illness, independent second opinions from psychiatrists, and patients' right to consent to treatment. The real change in the environment of mental hospitals followed the policy of opening the gates to visitors, the press, and international professional organizations such as the Royal College of Psychiatrists, the Arab Board of Psychiatry, the Institute of Psychiatry in London, and the World Federation for Mental Health, all of whom offered to support the work. Training workshops were conducted throughout Egypt

for psychiatrists about use of the new mental health act, which included providing educational material about the various sections of the law and practical training on how to apply these sections in different clinical scenarios [6]. In 2011, the Code of Practice of the Mental Health Act was redrafted (Ministerial Decree, Number 210) The new Code allowed the compulsory use of psychotropic medication to facilitate bringing people to hospital from their private homes without prior permission from the district attorney. Involuntary electroconvulsive therapy (ECT) without second opinion for up to three initial sessions also became legitimate. In addition, the role of patients' rights committees was diminished. This is because the new law provided additional guarantees for the rights of mental health patients by providing adequate protection to patients against ill-treatment and exploitation [6].

THE ORGANIZATION OF MENTAL HEALTH CARE

Mental health services in Egypt are provided through more than one system. First, the main provider is the General Secretariat of Mental Health (GSMHT), which is a part of the Ministry of Health (MOH), managing 18 hospitals and centers in 14 governorates. Second, there are mental health departments in the general hospitals, which are administratively under the supervision of the MOH. The General Administrative section of the Ministry of Health (MOH) supervises private mental hospitals, non-governmental organizations (NGOs), and outpatient clinics countrywide. In addition to these, there are psychiatric departments in the medical schools of public universities [13], which are under the supervision of the Ministry of High Education, and also some psychiatric departments in military hospitals, under the supervision of the Ministry of Interior and Ministry of Defense [14]. Unfortunately, there was a lack of systematic linkages between the Ministry of Health and other departments within the MOHP (recently split into the Ministry of Health and the Ministry of Population), and other key ministries and key agencies, until the mid-2000s [11]. According to the latest report, the GSMHAT now has 18 hospitals and centers providing mental health and addiction treatment services in 13 governorates (out of 27) with about 5237 beds and 22 outpatients clinics [15].

Mental Health Services in Primary Care

Egypt has a relatively well-developed primary care system made up of two tiers, the first of which is the family health unit (FHU), and the second, the family health center (FHC).

Each family health unit comprises doctors, nurses, social workers, and health educators, and each family health center has a similar core team of doctors, nurses, social workers, and health educators. In addition to this core team, there are some specialists based in family health centers (e.g., pediatricians). The current role of the family health center health team is largely to take referrals from family health units, to see direct consultations, and to make referrals to the district level. The difference between FHUs and FHCs in terms of mental health provision is that in FHUs primary care physicians assess patients and, if necessary, refer them to the FHC. FHCs have a psychiatrist visiting two days a week from the local mental hospital to run outpatient clinics within the FHC, and to liaise with GPs over difficult cases [11].

Ideally, they would also take responsibility of overseeing the catchment area population and the FHUs within the catchment area, but this is not yet a specified part of their role. As regards the integration of mental health services within primary care services, this is run under the General Secretariat of Mental Health and Addiction Treatment (GSMHAT), which is a governmental body dedicated to the provision of mental health services and drug dependence treatment and rehabilitation. Its scope includes inpatient psychiatric hospitals, outpatient mental health care centers and primary health care services. GSMHAT supervises the 18 governmental mental health hospitals in Egypt. In addition, GSMHAT works as the main educational body in the area of mental health and addiction treatment. It does not only provide training to its own employees but extends it to all other service providers.

The total number of primary care units in Egypt (2017) was 5391, distributed across all cities according to population density in each city. Human resources per unit consist of a family physician, an internal medicine specialist, a surgery specialist, and six nurses and social workers. The actual number of physicians assigned in primary care units was 9022, whereas the target number which should have been assigned was 16,000 [15].

Day Centers

There has been a development of addiction day care centers in four GSMHATs (El Matar hospital-Abbassia hospital, El-Maamoura hospital and El Khanka hospital) To join this program, the client is required to complete the rehabilitation phase inside the hospital or achieve

physical and psychological stability outside the hospital. The program includes psychiatric education, improving life skills for high-risk situations, motivation, CBT, family therapy, family consultation, and relapse prevention techniques [15].

Specialized Services

Addiction

15 out of 18 GSMHAT hospitals provide a service for addiction treatment (outpatient, inpatient, and day care units) with a total number of 563 beds. The majority of inpatient services for addiction treatment are provided by Abbassia Hospital, which is a large centralized mental health hospital [15].

Forensic Psychiatry

Forensic psychiatry is mainly implemented in the Al Khanka and Al Abbassia hospitals, consisting of ten wards. The operating power of units by 2016 was 594–613 beds, with occupancy rates range from 90% to 100% [15].

Child Psychiatry

Forty percent of the Egyptian population are under the age of 18 [9] and 15–20% of them need mental health services; unfortunately, only 5% of these individuals receive them. Child and adolescent mental health services are provided by the public health sector (40%) and the public sector (60%), which comprise pediatricians (50%), general psychiatrists (20%), non-professionals (20%), child and adolescent psychiatrists (7%), and primary care physicians (3%). Meanwhile, educational services are provided by national governmental schools (70%), private sector schools (20%), and public sector schools (5%) [16].

According to the Pathway to Child and Adolescent Mental Health Services among Patients in Urban Settings in Egypt, in about 67% of mental health cases the first contact is either with a pediatrician or a psychiatrist, while 5% of cases seek traditional healers. Most patients are referred to the clinic by relatives (30%) followed by pediatricians (21%), schoolteachers (12%), and traditional healers (5%) [17].

Human Resources

The total figure for human resources working as mental health providers in mental health facilities is 3,836: 2790 nurses, 117 psychologists, and 224 social workers, according to the latest report by Noby [15]. The total

number of psychiatrists registered in Egypt is around 1100 (Egyptian Psychiatrists' Association, personal communication, 2018), 889 of whom work within GSMHAT facilities.

Over the years outlined in this paper, the psychiatry component of the undergraduate curriculum has been improved, as well as the structure, content, and delivery of the postgraduate psychiatry training, and salaries have been doubled for trainees working in psychiatry at the MOH.

DISCUSSION

Over the past two decades, Egypt has been moving forward in a steady steps, aiming to improve mental health services. The Egyptian program, together with the development of the Mental Health Act (Act No. 71 of 2009), has led to a major shift in the development of mental health services in Egypt. This change has been manifest in the increase in investments in mental health services, and the organization of various awareness-raising campaigns for mental disorders, and national programs to combat the stigma of mental illness and to prevent discrimination against people suffering from mental health conditions. The 2009 mental health legislation and its code of practice provided not only a legislative process but also an opportunity to fight against stigma and increase public awareness, and to secure the rights of the patients [13].

This is also in parallel with considerable efforts in education and training, where, as previously mentioned, both undergraduate and postgraduate education and training in psychiatry are much advanced, alongside a significant increase in trainee salaries. Trainees are now encouraged to start their postgraduate training early, and are given protected training and learning time. They are encouraged to take the Egyptian Fellowship Degree in Psychiatry. The Ministry of Health is establishing a recognized training program in all districts; an appraisal system for trainees has been piloted, which is planned to be generalized to all trainees, and it is also planning to establish a CPD system for all psychiatrists, including trainees [11].

Nevertheless, there are still many gaps that prevent the complete fulfilment of the Egyptian government's legal obligations with respect to mental healthcare. One of the main gaps can be seen in its structure itself, as the National Mental Health Counsel, which

is the monitoring body, is chaired by the Minister of Health himself, who should in fact be monitored by the council. Mental hospitals are often based in urban areas. Their numbers are insufficient in areas such as Sinai, Matrouh, Hurghada, and New Waadi. Therefore, those who live in rural areas and seek to gain access to mental health care are burdened by travel and lodging expenses, in addition to time and travel effort. Similarly, forensic psychiatric services are centralized (at Khanka, Abbassia, and Ma'amoura). The patients, especially those from rural areas, often go to traditional healers before or after seeking medical advice from the health system. Outpatient services are hospital-based, so the same issues (travel, expenses, effort and use of traditional healers) also apply to these services [13].

Another problem is that there is still a lack of systems for outreach to people with severe mental illness living at home, for home-based rehabilitation, and for intermediate services at governorate or district level. There are no community rehabilitation centers, day care centers, or halfway houses across the country, apart from those linked to the national hospitals of Abbassia, Heliopolis, and Khanka. When patients are discharged from hospital, there is a problem with them being unable to continue to access medicines. However, the mental health services in the Aswan governorate are conducting useful outreach, enabling hospital admissions to be greatly reduced, as is a pilot outreach project at Abbassia hospital [11].

Meanwhile, action needs to be taken to address the insufficient child and adolescent mental health services. Services need to be included in the country's mental health agenda. The state has an obligation to provide specialized care for children and young people in light of the overwhelming data that suggests 50 percent or more of adult mental disorders begin before the age of 14 [18], and that children and adolescents with untreated mental disorders become an economic and social burden to society [19]. Legislative and policy reform also needs to be accompanied by training, awareness-raising campaigns, and research, for which adequate financial resources also need to be allocated. Yet, unfortunately, economic restrictions affect our ability to document and evaluate the existing resources and outcomes, and prohibits overseas electives in child and adolescent mental health or becoming affiliated with international recommendations and standards, hence, affecting the uniformity of our practice [20].

Another very important problem is the lack of adequately trained mental health nurses and social workers. Nurses need to be oriented to psychosocial skills, rehabilitation, and issues of patient welfare, including risk assessment and humane management of violence. There is no occupational therapy training program either, and other professionals lack an OT orientation. There are psychologists, but it is unclear how many are in the health sector and what roles they are playing [11].

There are no systematic mechanisms for delivery of CPD for mental and neurological health for other relevant public sector workers, including teachers, police, and prison staff. Traditional and religious healers are common, and people regularly consult them either before or during consultation with official services.

CONCLUSION

A national appraisal of the current situation, including the deficiencies, needs to be implemented to gain a full understanding of the gaps in the system. The lack of human resources implemented in highly qualified psychiatrists, social workers, mental health nurses, and occupational therapists need to be addressed. Adequate financial resources are needed for better documentation and appraisal of the current situation, and for improvements in training and application of guidelines to be in line with the appropriate international standards.

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Community-Based Psychiatric Treatment in Romania: Past, Present, Future

Внебольничная психиатрическая помощь в Румынии: прошлое, настоящее, будущее

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Commentary

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ABSTRACT

Community psychiatry has its origins in the West, in the 1950s, when many institutions for the mentally ill were closed down in an effort to shift the focus from hospital-based care to community-based. The aim of the current paper is to review the available literature on the community-based psychiatric treatment in Romania.

The Romanian Ministry of Health is dedicated to promoting mental health education and to creating a mental health system that ensures that every patient has access to care and treatments designed for their own particular needs. Today, in Romania, as across the entirety of Central and Eastern Europe, mental health systems are transitioning from hospital-based care to community-based services. The RECOVER-E project, the SEE Mental Health Project, the "Horizons" project, among others, showcase Romania's mental healthcare system in terms of improving the chances of mental health patients' recovery.

Community Psychiatry in Romania is a budding field that can greatly aid in the management and treatment of patients with mental disorders from both urban and rural areas. By applying the principles of deinstitutionalization and community health care at a systemic level, resources may be invested in the creation of a strong network of specialists that treat patients in their own living spaces.

АННОТАЦИЯ

История внебольничной психиатрической помощи берет начало в 1950-х годах в странах Запада, когда многие учреждения для пациентов с психическими расстройствами были закрыты с тем, чтобы попытаться сместить приоритет со стационарного лечения на амбулаторную помощь по месту жительства. Целью данной статьи является обзор доступной литературы по внебольничной психиатрической помощи в Румынии.

Министерство здравоохранения Румынии содействует образованию в области психического здоровья и стремится к созданию системы охраны психического здоровья, обеспечивающей каждому пациенту доступ к помощи и лечению, соответствующим его индивидуальным потребностям. Сегодня в Румынии, как и во всех странах Центральной и Восточной Европы, системы охраны психического здоровья переходят от стационарной помощи к внебольничным формам обслуживания населения. Проект RECOVER-E, проект по психическому здоровью SEE, проект «Horizons» и другие инициативы свидетельствуют о том, что система психиатрической помощи в Румынии совершенствуется, повышая шансы на выздоровление и социальную адаптацию пациентов с психическими заболеваниями.

Внебольничная психиатрическая помощь в Румынии — это перспективная область, которая может оказать существенную помощь в ведении и лечении пациентов с психическими расстройствами, проживающих как в городских, так и в сельских районах. Придерживаясь принципов деинституционализации и общественного здравоохранения на системном уровне, инвестируемые ресурсы можно направить на создание развитой сети специалистов, которые будут оказывать помощь пациентам по месту жительства.

Keywords: *community psychiatry; Romania; deinstitutionalization; rehabilitation*

Ключевые слова: *внебольничная психиатрическая помощь; Румыния; деинституционализация; реабилитация*

INTRODUCTION

Community psychiatry has its origins in the West in the 1950s, when many institutions for the mentally ill were closed down in an effort to shift the focus from hospital-based care to community-based. The idea behind this worldwide trend was that a community-based care system enables patients to be as independent as possible within their own living environments, and this, in turn, would help them to fulfill their potentials [1]. The process of deinstitutionalization is based on three concepts: depopulation (releasing patients from state-run psychiatric hospitals), diversion (returning psychiatric patients to their communities), and decentralization (fragmentation of the responsibility for the patient across multiple entities) [2].

Today, the trend is towards implementing a Balanced Care Model [3, 4] that acknowledges the need for hospital care but strives to provide as much community care as possible [5]. To this end, the goal of the review is to gain a comprehensive view of the principles of community psychiatry in Romania, as well as the manner in which these principles are applied to the social rehabilitation and integration of psychiatric patients.

PRINCIPLES OF COMMUNITY PSYCHIATRY

As deinstitutionalization greatly changed the way in which the needs of psychiatric patients were met by the healthcare system, a conceptual framework was

put in place to guide future interventions [6]. Ideally, community psychiatrists take responsibility for lowering the rates of mental disorders within the community and aim to reveal the needs of psychiatric patients so as to elaborate effective intervention plans and gather feedback in order to better understand how those needs were improved or changed within the community [7]. In other words, they adopt a Pro-Active Policy. In addition to the active role the psychiatrist and other community mental health teams (CMHT) members play in the community they serve, they must operate within a set of principles that guide the interventions they implement. The ten principles of community psychiatry state that care offered to mental patients must be: (1) recovery-oriented; (2) strengths-based; (3) community-focused; (4) person-centered; (5) allows for reciprocity in relations; (6) culturally-responsive; (7) grounded in the person's life-context; (8) relationally-mediated; (9) optimizes natural support; and (10) recognized as a responsibility by the people involved in delivering care services [8].

With all this in mind, since the beginning of the shift of focus from the hospital to the community, in May 2013, the World Health Organization elaborated upon and promoted a Mental Health Action Plan that supports deinstitutionalization and the development of community-based services for mental patients that aim to improve clinical outcomes, as well as combating discrimination [9].

WORLDWIDE HISTORY OF COMMUNITY PSYCHIATRY

Hospital closures, focusing on reducing the number of patients that can be admitted into institutions, shed light to the numerous difficulties that people with severe mental disorders experience in various life domains, such as persistent symptoms that require long or frequent admissions, and deterioration of interpersonal relationships and social functions [10–12]. At the same time, lengthy admissions to hospital affect the patient's professional and social activities and negatively impact their integration into the community [13–15]. This fact can lead to a diminished sense of purpose with bleak repercussions for recovery [16]. Furthermore, due to the nature of their illness, psychiatric patients are not always able to advocate their rights or seek medical treatment [17, 18].

In Romania, during the state socialist period psychiatry and psychology were used to discipline and police the Romanian people, as psychiatric hospitals were used to repress political dissidents that were deemed too problematic for the Ceausescu regime. The view of mental illness mainly followed a biological model, with little to no talk therapies and that relied mainly on some form of medication as treatment, leading to the over-medication of patients who would otherwise have benefited from a combination of medication, psychotherapy, and social interventions [19].

In 2004, at the summit of the European Council of Heads of State, Romania's prospects of admission into the European Union were discussed. At the end of the summit, a 47-point list of accession was submitted, with two of the 47 points concerning the treatment of people with mental illness, as well as the need for reform in the Romanian mental health care system [20].

The Ministry of Health in Romania is dedicated to promoting mental health education and to creating a mental health system that ensures that every patient has access to care and treatments designed for their own particular needs [21]. The Mental Health Law, active since 2002, describes the statute of the psychiatric patient in Romania [22]. According to legislation, the patient can be treated and cared for in their own living environment through community psychiatry services. As these services are located within the patient's living environment they are easily accessible, and range from general practitioner offices to treatment centers, day care centers, home care services, and occupational

therapy workshops. The purpose of community psychiatry does not necessarily constitute complete remission of psychiatric symptoms but rather to cultivate and amplify remaining abilities that can best integrate the psychiatric patient into society [23].

KEY CONCEPTS IN ROMANIAN COMMUNITY PSYCHIATRY

In order to resolve these issues, light had to be shed on the needs of psychiatric patients, what constitutes a recovery from mental illness, and indeed how one gets from the former to the latter:

"Needs" are potentially remediable issues that affect a person's clinical and social functioning below a specific level [24]. A study published in 2000 assessed the needs of psychiatric patients and what healthcare staff believed their need to be, and with surprising results: patients declared that they had a higher number of needs in the service domain, such as owning a telephone, being able to use transport, or having access to information, whereas healthcare staff identified a higher number of needs in domains such as psychiatric symptoms, physical health or drug and alcohol use [25].

"Recovery" or *"rehabilitation"* in the context of mental health is a complex and continuous process that exceeds the clinical remission of symptoms. Stigma attached to mental problems, and lack of employment or opportunities are issues that require addressing in order for a person with a severe mental disorder to function at full capacity and participate in their community [6, 26]. A strong relationship with mental health specialists, and access to employment and financial support are characteristics that aid in the recovery process [27–29]. During recovery, each patient must be encouraged to set their own goals and be given opportunities to act within the community through employment, involvement in social activities, responsibilities and independence in fulfilling their day-to-day activities [30]. The skills needed to reach these goals are major points of interest in the field of psychiatric rehabilitation and are known to contribute greatly to a person's quality of life [26, 31, 32]. One important point to make is that involvement in the recovery of psychiatric patients has to be continuous, as one study found that positive assessments of life domains at one-year post-discharge were reduced to baseline after five years [33]. During recovery, other brain functions that have previously decreased, such as cognition, may improve considerably [34].

THE COMMUNITY MENTAL HEALTH TEAM

In response to the issues faced by psychiatric patients, the CMHT was created within the domain of community psychiatry. The CMHT is a multidisciplinary team comprised of a psychiatrist, a psychologist, social workers, occupational therapists, and nurses that are responsible for a section of the population, the latter being frequently defined by geographical vicinity. Additional members can intervene in special cases, such as crisis management, early interventions, or assertive treatment [35]. A special consideration must be given to the role of “case manager”, whose complex and multifaceted role lies beyond the scope of this article, but which has been analyzed elsewhere [36].

COMMUNITY PSYCHIATRY IN ROMANIA: STATE OF THE ART

Today in Romania, as in all Central and Eastern European countries, mental health systems are transitioning from hospital-based care to community-based services [37]. These services combine social and environmental elements with the biological and psychological aspects of mental health and psychiatric pathology [38].

Examples of community mental health services in Romania include:

- 1) preventive care (e.g., general practitioners offices — that aid patients with different disabilities; specialist doctors; CMHTs, comprised of specialists from varied disciplines like psychiatry, psychology, social work, that provide healthcare services in the community; specialized mental health teams, whose aim is to provide healthcare services in a particular field of medical problems, such as patients suffering from a particular type of psychiatric issue);
- 2) self-help groups (people with similar life experiences gather to empower each other and offer mutual support in order to avoid falling within the anomic minorities);
- 3) daycare centers (locations in the community designed to substitute psychiatric hospitals and aim to help patients reintegrate into society — one example of such service is the “Shield Centre” in Brasov, part of the “Estuar” Foundation center network, a non-profit organization whose aim is to offer prevention, recuperation, and psychosocio-vocational rehabilitation for people with disabilities and disadvantaged young adults) [39];

- 4) advocacy groups (groups that speak and act on behalf of mental health patients and inform about mental health, collaborate with non-governmental organizations (NGOs), and organize events and meetings. Advocacy groups use various strategies to reach their goals, such as informational — using promotion and media actions to inform the general public about a particular condition; collaborative — that involve setting meetings between NGOs or the support of an expert that is involved in a certain social cause or press conferences; and confrontation — making use of demonstrations or boycotts to support a cause, in situations where dialogue and negotiation are not possible);
- 5) promotion of mental care and mental health (providing informational materials and resources to the families of, or support networks for mental patients, creating campaigns based on mental health issues, influencing policy makers)
- 6) offering support and care after hospitalization (community workers, social workers, volunteers who offer continuous support for patients with previous hospital admissions and CMHTs and specialized mental health teams that provide psychiatric support within the community) [2].

Community mental health services in Romania are organized by a case manager (routinely a psychiatrist), who is familiarized with the patient’s medical and social status. When a patient is discharged from hospital, they are directed toward a day center that schedules regular meetings with the patient and provides monitoring services in order to comprise a personalized healthcare plan. The aim of the plan is to identify the most suitable manner through which the needs of the patient can be met. The plan is comprised of objectives, problems specific to the patient, the services provided, and the people responsible for implementing the services. Consequently, community health specialists, such as general practitioners, community nurses, and social workers who work with the patient, are informed of the personalized healthcare plan through direct meetings. The following step concerns the direct implementation of appropriate healthcare services, whereby the patient receives medical care suitable to their particular needs (direct medical care, administration of injections, monitoring of physiological parameters, blood glucose monitoring, symptom management and pain management,

to name but a few). In addition to medical services, the patient can be offered social assistance through counseling, case management, information, advocacy, psychotherapy, occupational therapy, and legal assistance [40].

MODERN COMMUNITY PSYCHIATRY PROJECTS IN ROMANIA

One community psychiatry project that took place in Romania with the contribution of the European Union was the RECOVER-E project (start date 01.01.2018 – end date 31.12.2021). The aim of the project, which was implemented in Siret, Romania, was to train CMHTs to provide evidence-based mental care services within the community [37]. The conceptual backbone of the training program was based in the principles of assertive community treatment (ACT). The ACT model was a program designed in the 1970s by Stein and Test as a specialized care package designed to meet the needs of severe psychiatric cases, characterized by either high service use or chronic or severe diagnosis. Health care is implemented by a multidisciplinary team comprised of psychiatrists, nurses, case managers, and employees of community-based services, and sharing of caseloads and 24-hour coverage among clinicians [36]. In this study, services were offered to patients, who shared any decision making, and included aid in domains such as psychiatric symptoms, personal or social functioning, and were recovery-oriented. Changes in functioning were measured using the World Health Organization Disability Assessment Schedule 2.0 (WHODAS 2.0), where outcomes were assessed using the three-level EuroQoL five dimensions (EQ-5D-3L) and costs were also measured with the Trimbos/iMTA Questionnaire on Costs associated with Psychiatric illness (TiC-P) [41]. The most stringent needs of psychiatric patients were in the following domains: participation in society, life activities, managing the household, and going to school or pursuing a career [37]. Another study assessed the confidence of mental health staff in terms of providing various services to patients, with interesting results that highlighted differences in confidence between nurses and peer workers (low confidence) and psychiatrists or psychologists (high confidence) [42]. Overall, the RECOVER-E project was a promising initiative that offered a varied and complex perspective on the therapeutic dynamic of healthcare personnel and patients outside the hospital setting.

The SEE Mental Health Project (“Enhancing Social Cohesion through strengthening Community Mental Health Services in Southeastern Europe”) was a project carried out by the WHO between 2002 and 2008 and involved nine countries, among which Romania was a participant. The aims of the project were to ensure that mental health policies and legislations were in line with European Community standards and to implement programs concerning mental health that addressed the needs of patients within their community. Results of studies on the SEE Project showed that patients value the relationship with mental health staff. However, one important issue that negatively affects the quality of life and treatment satisfaction of patients is unemployment [43]. There are two key requirements to consider when assessing a patient’s response to therapy for a psychiatric disorder: the need for community integration, and the need for intimacy [44].

An important project with interesting and varied implications in the domain of Community Psychiatry in Romania is the “Horizons” project carried out by the “Orizont” Foundation. The organization functions as an NGO and aims to support mentally ill people in regaining self-confidence and acquiring skills that enable them to lead active and independent lives. The objectives of the project are to inform and educate mental health patients about the issues they are facing, to use occupational therapy to teach skills, to raise awareness within the community about mental health issues, and to aid in the social and professional reinsertion of mental health patients. To achieve these goals, the foundation has created workshops in domains such as health, education, pottery, weaving, iconography, gastronomy, tailoring, and computer science, among others. Furthermore, the foundation offers protected living spaces for patients and is involved in fighting stigma and advocates changes within the community to benefit psychiatric patients [40].

In 2007, the RO-UA *Mente* project took place in the Campulung Moldovenesc Psychiatric Hospital. Its aim was to facilitate information and experience exchange between mental health professionals from Romania and Ukraine [40, 45].

In Bucharest, the TREPTE Center operated within the “Alexandru Obregia” Psychiatric Hospital. It was a day care service founded by the Romanian Association of Community Psychiatry that offered services such as psychological evaluations, education groups for patients and their families, health education, individual and

group psychotherapy sessions, as well as activities that trained social and practical abilities, self-help groups, and recreational activities [46]. However, in the case of comorbid psychiatric disorders with a somatic pathology, the resolution of the latter can, at the same time, lead to the remission of psychiatric symptoms [47]. On the other hand, in severe cases, in terminally ill patients, the responsibility for care should not end with their death but continue by offering appropriate support to the family [48].

CONCLUSION

Romanian mental health workers and specialists are educated and experienced in implementing community psychiatry methods in the complex treatment of the mental health patient. Additionally, there are numerous and varied community-based treatment options, from day centers to advocacy groups, which are involved in the rehabilitation of patients.

Community Psychiatry in Romania is a budding field that can greatly aid in the management and treatment of psychiatric patients in urban and rural areas. In order to create a strong and efficient network of specialists invested in this cause, efforts must be made to apply the principles of deinstitutionalization and community health care. In order to support this endeavor, policies must be put in place to combat the stigmatization of people with mental illnesses in order to allow for their better integration into society and easier access to employment. Furthermore, training medical staff such as nurses and primary care physicians to care for and manage mental health patients must be a priority in this regard in order to develop the practical skills required to deal with the requirements of such a community-based approach. Finally, there is a considerable need for complex systems analysis that use population statistics in order to gain a more comprehensive view of the situation of mental health patients in Romania today.

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Formation of a New Paradigm of Social Interaction: On Touching and on not Touching

Формирование новой парадигмы социального взаимодействия:
духовные и телесные контакты

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Commentary

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ABSTRACT

The COVID-19 pandemic greatly accelerated the use of online technologies for communication, as opposed to contact involving physical presence and touch. This commentary further considers the consequences of this change in individual human terms, in everyday as well as medical situations. It is a kind of discussion paper, specially written for this journal. It develops two directions of argument, the first about the reality of embodiment, the second about figures of speech involving touch and movement, figures of speech about the actions of whole people rather than about mind (spirit) or body separately. The discussion reviews the nature of differences between communication involving physical proximity and physical distance (and electronic media), with comments on the positive and negative aspects of each. An emphasis on the significance of touch (and movement, since all touch involves movement) to people is linked to the basic aspects of the lifecycle in birth, reproduction, and death. In conclusion, the discussion emphasizes the traditional importance of touch and physical participation to people's feeling for reality. New digital forms of relations disturb this feel, with significant consequences.

АННОТАЦИЯ

Пандемия COVID-19 в значительной мере способствовала стремительному внедрению онлайн-технологий для их использования с целью общения, заменив контакты, предполагающие физическое присутствие и прикосновение. В данной статье, носящей дискуссионный характер, подробно рассматриваются последствия этого изменения для отдельного человека, как в повседневных бытовых и социальных, так и в медицинских ситуациях. В ходе обсуждения развиваются два направления аргументации: первое — о реальности телесного взаимодействия (прикасаний), второе — о фигурах речи, связанных с коммуникативными взаимодействиями и движением, а также о действиях людей в целом, а не движения разума (духа) или тела по отдельности. Подробно рассматривается природа различий между общением, которое включает физическую близость, и которое осуществляется на расстоянии (дистанционно, с использованием электронных средств передачи информации), с комментариями о положительных и отрицательных аспектах каждого из способов коммуникации. Особое внимание уделяется значению для человека факта прикосновения (и движения, поскольку любое прикосновение предполагает движение), которое связано с основными аспектами жизненного цикла рождения, воспроизведения потомства и смерти. В заключении дискуссии подчеркивается традиционная важность прикосновений и физического участия для создания у людей ощущения реальности. Новые цифровые форматы отношений нарушают это ощущение, что влечет за собой значительные последствия — нарушение ощущения реальности, непринятие социально обусловленных границ взаимодействия и др.

Keywords: *touch sense; kinesthesia; feel for reality; COVID-19; digital technology; lifecycle*

Ключевые слова: *осознание; кинестезия; ощущение реальности; COVID-19; цифровые технологии; жизненный цикл*

THE PANDEMIC AND TOUCHING

At the end of 2020, the first year of the COVID-19 pandemic, this medical journal published a commentary by a non-medical observer, "The virus COVID-19 and dilemmas of online technology" [1]. Under the conditions of the pandemic, as indeed is generally the case with health issues, it is neither possible nor desirable to sharply demarcate medical and non-medical topics and questions. The overlap of medical concerns and daily life is especially evident in connection with touch and touching. Touching, such as feeling the pulse or palpating the chest, has a large place in different traditions of medical diagnosis, and "the healing hand" a large place in different therapies. Equally, touching is central to human relations. This commentary continues discussion of the consequences, accelerated by the COVID pandemic, of changes in the balance of freedom and restrictions on actual physical contact or physical presence between people. The purpose is to encourage discussion, not to report scientific results, and the style is therefore open-ended. New rules on contact in response to the pandemic almost overnight multiplied concerns about the impact of changes coming about through new digital media of communication. More than a year has passed since the first discussion, with signs that governments and people are now adapting to the presence of the virus, rather than hoping that it (or new forms of it) will disappear. This may make it of interest to comment further and, on the basis of more experience and reflection, deepen some of the earlier observations. The discussion will concentrate on touching and not-touching. In particular, it will consider the importance of the touch sense — and the sense of movement too, since touching involves movement — to the feel each person has for reality [2–5].

I first restate two large, related points, before taking each further.

The first point concerns *embodiment*. Any discussion of the effects of the presence or absence of touch and physical closeness has to start from the existential condition that people exist with bodies, the condition known in touch, movement, and bodily senses. Any restriction on touching and movement is, in effect, a denial or at least an attempt to marginalize this condition. (Asserting human embodiment, it is perhaps necessary to add, says nothing about what else in addition human beings might be — possessors

of a soul, language users, computers, moral agents or whatever other characteristic belief directs us to accept.) It is therefore awareness of the *disembodied* nature of relations made possible by new technologies, and demanded by police powers in lockdown, that is of interest in the following discussion. Communications technology, like VKontakte, Odnoklassniki, YouTube, Zoom, and the telephone, makes "contact at a distance" possible, and it has a fantastic capacity to enable people to communicate around the world. The issue that will now be discussed, however, is whether this communication, this contact, is indeed rightly called "contact". For this author, and for many people in the society in which he lives (in which, in everyday English, "he moves"), the sense of reality is bound up with the experience of the body, its birth, life and death. This appears to be universal, but we do not really know, and anything said about experience is said in terms of the language and cultural assumptions of one group of people rather than another. The question, though, is what happens to the sense of reality of people likely to read this journal when patterns of touch change.

The second point concerns language and *figures of speech* involving touch and movement. People commonly discuss this as a matter of "metaphor", though this may not be quite the right word and not strictly accurate. At issue is ordinary language: "She moved him to tears"; "I'm touched by your concern"; "the nurse has a healing touch"; "hands off her!"; "that was a stupid move"; "an approach to an agreement"; "she has no grasp of reality"; "he has hands-on experience"; "a new political movement"; and so on. These figures of speech are ubiquitous and almost without number, in Russian as well as in English. Create your own list. It is of huge significance that these figures of speech apply equally to mind and body, that is, they apply to embodied *persons*. (For example, the injunction, "Stand on your own two feet!" is given to a person not to a mind or to a body.) The figures of speech refer to *actions of people*, rather than to mental or bodily phenomena. It is therefore not at all clear that these expressions are simply metaphors based on bodily senses, as many people writing in the light of biological ways of thought argue [6]. These figures of speech express everyday rather than specifically medical or scientific knowledge about the importance of touch and movement, though they certainly also have many medical uses and implications.

At the beginning of the pandemic, to the naive question why being physically present with other people, face to face, in contrast to being “in touch” online, mattered or made a difference to anyone, I received the simple answer: “*We are embodied!*” This is profoundly correct. In a way, nothing more needs to be said.

The digital human image, let alone the telephone voice or message, is a partial representation and not the whole person. Digital images, for instance, certainly have no smell. There is usually not even a picture of the whole body. Most importantly, there is no third dimension, no representation of the way in which in actual presence we appreciate space, thickness, depth, weight, and solidity (and note how each of these words has significant metaphorical resonance), and hence there is a lessening of appreciation of physical presence or physicality. Everyday figures of speech have a lot to say about this: something is judged negatively to be two-dimensional, while something is judged positively as having three dimensions. The digital image is usually a very different size from an actual person, usually much smaller, though in a cinema it may be larger. Further, the online image comes “framed”. It is artificial in the sense that a considerable part of the geography or ecology, that is, the surrounding conditions, of a person’s life is cut out, or at least the penumbra of sensations jostling at the edges of awareness in actual presence is diminished or changed.

Online sound is often not that good and requires concentrated attention. People online frequently devote much time and effort to handling the technology rather than to communicating with each other. Silences or spaces of non-communication and awkward posture abound. By contrast, when two or more people are physically together, the repertoire of movement and gesture of the whole body may participate in a continuously changing flow. (Of course, direct communication can also be embarrassingly awkward.) Offline, there may be considerable unanticipated activity. Online, many people feel, there is less gesture, less spontaneity, less dialogue. When teachers teach or lecture online, they do not see the audience. They are very uncomfortable speaking into “empty space”, since good speaking has the audience in mind — it invites a response, and the speaker requires that response, and even if the response takes the form of silence this at least is visibly shared. The gesture of speech asks to

meet the gesture of reception. This is badly disturbed online. Nevertheless, it is also true that people find new opportunities online and say that there are openings for surprise and novelty, with less embarrassment or modesty, not to mention access to new audiences.

Indeed, generalities break down. If for many people there is greater formality in online relations and less spontaneity or play, for others there is liberation. Yet, there is still something to be said about the general significance of touching in human life and how this is affected.

THE SIGNIFICANCE OF TOUCH

It is intrinsic to the nature of online media that there is no means to touch. To be sure, when people are physically present together there may also be no touching, and indeed it may be strictly controlled. Yet an imagination for touching colors all the relations a person has with things and people, online and offline, and there is something more vivid or pressing about this imagination when people come together. The three-dimensional perception of facing a whole person or object, the “physicality” of a perception, makes a difference. The absence of actual touching, online or offline, may bring on feelings of deprivation, feelings that vary from the mild sense of something missing to the painful absence that most clearly disturbs young children and older adults. These feelings of presence and absence profoundly inform the erotic dimension in relations. In spite of the ubiquitous availability of online “contact”, large groups of people persist in objecting to online sexual relations and claim that it is not the “real” thing — and by “real” here, they evidently mean morally or psychologically as well as physically real (once again using ordinary language to talk about persons, not minds or bodies). As a host of human interactions, including medical ones, move online, the same issues recur: do the new media reproduce the “real” encounter?

A person sees another person move online, and the other person sees the movement of the first. But the movement feels rather “detached”. What does this mean? There is the opportunity on video or TV to see the most wonderful movers, like ice-skaters, close-up, which might be very difficult to manage, and certainly very expensive, to do live. Most of us are not otherwise going to experience a cheetah racing to the kill than by watching a video. But these moving animals or people are “at a distance”,

and this is an emotional distance as well as a physical one. The distance is not just a matter of physical space but of imaginative space. There seems to be a gradation in imagination, linked to physical presence or absence, for closeness in all its manifestations.

How people feel about closeness and distance clearly varies with personal habits and social customs. The variety of positive and negative responses to internet usage show this. Is it the case, then, that with time, practice and, if necessary, retraining, people will fully adapt to online life? All people, for everything or for most things? It is in the interests of many institutions that they should adapt in order to accomplish many daily activities: governments that want to move to online voting, universities that want the low-cost option of online teaching, overworked public medical centers that do not want to make time for patients to be physically present, businesses that want to employ fewer staff. Once an older generation, which finds adaptation to new technology difficult, has died out or become economically marginal, we might think that there will be a “brave new world” of digitally competent, happily adapted, and fully satisfied electronically competent people living at a distance from each other. Well, no.

This response returns to embodiment. A person is born from a womb, lives an embodied life, and dies when the body ceases to function. The very nature of the lifecycle is in its embodied character. This is the way it is, even if this is an area of very expensive, and hence geographically and socially localized, technological innovation, with a lot more promised, involving artificial wombs, artificial insemination, and the significant prolongation of life. I do not predict the future. But, speaking about the present, the reality for the overwhelming majority of people is a reality tied to the embodied lifecycle. The social practices that accompany the lifecycle directly reflect this. Life begins in a relationship, once again both psychological and physiological, between child and mother, and much of society is organized around this. New life originates when embodied people come together, elaborately orchestrated in courtship and marriage. Death all too painfully cuts across lives, accompanied by significant ritual. At each step, people wish to come together and do come together. It was one of the most obvious costs of the pandemic, and for many the costs were painful, that regulations prevented these practices. Put bluntly, people are not born, do not reproduce, and do not die

online. Further, the ritual sharing of these events with physical presence is central to the social fabric. In Russia, the father goes to the hospital to receive the new child; he does not watch a video.

I am present at a funeral. Consider only the last step, the burial of the ashes. The ashes are *physically present* within a container in a blue plastic urn. Before the urn is placed in a physical hole *in the earth*, in a physical place under trees, a place walled around to preserve it from the encroaching city, the members of the close family of the deceased in turn *extend* an arm and *touch* the urn. After the ashes are *laid* to rest, the attendant *forms* a small mound of earth over it and *covers* the mud around the mound with clean white snow. The living then *lay* roses on the mound. Their *posture*, not words, *says* farewell. This is the everyday form of human relations.

This concern with presence and with touching is as important for mundane relations as well as for significant events. It is very striking that students, who are highly adapted to online technologies, given the chance, still choose to gather together. People like to gather physically precisely because the outcome is not predictable, and the manner of relating is not necessarily instrumental and for a fixed purpose. There is scope for playfulness, spontaneity, dialogue, flirting, rule-breaking and, it must be said, violence. All these things are in principle possible online, and indeed do exist there; yet, at least at present, it seems to be the case that they flourish offline, and that people, given the chance, go to cafes, dance together, sit around the kitchen table, push each other about, and seek physical intimacy. It is as if people wish to declare in their actions that they are embodied and alive.

An intellectually smart young computer programmer comes to visit (he has to come because sometimes paperwork is still necessary). He works all day at his job, which involves programming a kind of virtual reality so that pilots can safely learn how to handle aircraft. At the end of the day, he affirms, programmers have a strong desire to have contact with “the real world” (his phrase), to return to real as opposed to virtual presence, to have contact with things and people. Though images move, gesture, talk, perform, and give pleasure and pain, just like physically present people, it seems there is still appetite for face-to-face relations, even among the most sophisticated users of new technology. There is still concern with the feel for reality.

THE EMBODIED BEGINNING OF LIFE

This emphasis on the persisting expression of embodiment suggests it is appropriate to consider a psychoanalytic “approach” (another figure of speech involving movement) to understanding the significance of physical presence. Before birth, the child and the mother are in the most intimate possible contact, an intimacy so close it is a kind of identity. The fetus begins to make some movements of its own after about eight weeks. It is also generally agreed that the fetus develops some kind of sensory awareness, perhaps through movement, pressure, or the rhythm of the mother’s heartbeat and breathing. Both movement and awareness are unarguably present at, and immediately after, birth. It was the large contribution of Melanie Klein to focus on the early days and to discern in them the formative experiences for the subsequent character of the child and adult. The essential mechanism (I very much simplify) is said to be that the initial pleasurable or painful, satisfying or frustrating, quality of the baby’s contact with the mother, and subsequently with other caregivers, establishes an appreciation of what a relationship is. The early relations, made through touching and movement, create a model against which the individual tests and judges all subsequent relationships. It is a stock joke about a boy seeking a close relation with a girl that he seeks his mother. The child projects the image it has of its first relationships onto the world of other things and people. Children deprived of contact, as painful stories from orphanages and dire backgrounds of violence attest, may develop an incapacity for good-quality relationships. In therapeutic practices, the analyst tackles the difficulties people have relating to each other and to themselves, and the pain that certain kinds of relations cause, through the reconstruction of the roots of the relations in the early days of movement and resistance in embodied relationship with the mother.

If we accept some form of this persuasive argument in psychology, movement and touch emerge as the template for the formation of relations of all kinds. Donald Winnicott’s theory of transitional objects, for instance, understood the attachment young children have to an object such as a blanket or a soft toy, as the projection onto something else of affective qualities earlier found in attachment to the mother. The objects effect the achievement of children’s wider relations. It becomes possible to connect the theory of transition to the

empirical study of touch practices, implicating kinesthesia (or the conscious sense of movement) to a person’s ecology, to the feeling a person has for relations with the world in space and time. For instance, Winnicott himself associated the earliest movements of the fetus with movements later interpreted as aggression, thus associating the sense of movement with core emotional or affective experience. For Winnicott, the very activity that shows that an embryo is alive sets up the pattern of aggression fundamental to personality: “A baby kicks in the womb ... A baby of a few weeks thrashes away with his arms ... A baby chews the nipple with his gums; it cannot be assumed that he is meaning to destroy or to hurt. At origin aggressiveness is almost synonymous with activity” [7]. Moving, the baby produces a response, which in turn enters awareness, and the sense of this, permeated with emotion, is the core of the subjective world. Almost inevitably in Russia, one wonders how the once common practice of tight swaddling of infants fits into the account.

If, as some psychoanalysts claim, early days before and after birth lay down patterns of relations which shape all of a person’s subsequent life, then the pattern of experienced movement would seem to enter every aspect of a person’s character and social relations. As people move, so they are. For Maxine Sheets-Johnstone, both a philosopher and a dancer, who argued at length about the centrality of sensed movement in human life, “we humans learn ‘which thing we are’ by moving and listening to our own movement. [8]” It inevitably follows from this that any change in a person’s scope for movement, and through movement coming into physical relations with other people, has deep consequences for them. It is clear why touching and not touching matters.

Speculatively, we might wonder about the difference new reproductive technologies will make. If babies are born from one woman’s body and then cared for by another, or if babies come to birth in an artificial and extremely expensive womb (‘in a test-tube’, as humor has it), how will their felt movements and resistances, and hence the quality of their relations, differ? Some people will recall fearfully how Frankenstein gave birth to his monster [9]. The monster was not ‘born of a woman’ (Job, 14) but assembled, like a machine in a factory, from parts, parts torn from cadavers, fastened together, and then made alive by electricity. Other observers take a much more optimistic view and anticipate the coming transcendence

of the human species. But if we do not know what will be in the future, we do know that the quality of embodiment, and the consequences of that embodiment in touch and movement, will make a difference.

The technology of virtual realities has extraordinary effects. Yet, relishing or having fun with virtual reality depends on the contrast virtual reality offers with “real” reality (if you will allow this play with words). However sophisticated the machine that mediates reality, the body of the subject interacting with the machine remains present. Even were we to imagine a machine replacing all the senses at once — though what kind of presently imaginable machine would replace all the sensations of the body, and most especially the body’s sense of itself? — the body, with all its posture, biochemistry, hormones, and dispositions, would still be there. Our programmer says that professionals like himself, compared to people who play with virtual realities or create artwork, are especially sensitive to the difference and want to return to reality after work. This response establishes a parallel with the fact that there is a continuing or, after the pandemic, renewed desire for *live performance* in the sports and in the arts. Why indeed, should this be, apart from the obvious financial interest theatres, companies, teams and stadiums have in getting a return on investment and in providing many people with a living? Individual performances in both sport and the arts are much more visible on the screen at home than live. Yet people pay to be present for embodied performance.

At the time of writing, the Winter Olympic Games were in progress in China. They looked like a model of controlled relations for purposes which traditionally have involved great numbers of different people physically coming together, but for which, on this occasion, numbers have been restricted. Journalists talked of people moving in “bubbles”, that is, in groups hermetically sealed from other people, and of robots rather than other people serving in canteens. There was only token public participation: live viewing was restricted to performers and their trainers, government Party members, and a few elite visitors and students. Of course, there was mass viewing worldwide through the media. Different people have different opinions about the benefits and costs of what went on. The athletes, to be sure, performed brilliantly, and their agreement to do so in such circumstances suggests just how intensely they had committed themselves to competitive performance. The point I

think it relevant to make here is that the arrangements “worked” because they achieved a very closely defined purpose, competitive sport, without interference from viral infection or political commentary. The arrangements were narrowly “instrumental”. The arrangements formed a living model of a “closed” as opposed to an “open” society, and an engineering as opposed to an organic model of human relations. Yet, even so, the athletes *physically gathered*. They did not send in videos of their best performances for the judges to compare.

There are many circumstances where, people agree, or at least significant groups of people agree, lack of physical contact is desirable. Considerable numbers of individuals and scientists, as well as governments, agreed that the pandemic created such circumstances. Many people value the conditions that put an end to unwanted touch in relations with others. Anyone who has experienced the condescending hand on a shoulder, let alone women who have experienced the offensive hand claiming ownership of the body, knows about this. But there is still a desire for touching. Why?

TOUCHING REALITY

The concluding section draws the threads together in order to address this question by saying something about reality. “Reality” is a very complex philosophical notion, about which people make many different kinds of claims. The purpose in this commentary, I want to be clear, is therefore not to naively state what reality is. The purpose is to point out that the *feel for reality* that people express in their lives, in present-day modern societies, and in the traditions of these societies, is bound up with the senses of touch and movement. Many of the figures of speech which have reference to touch and movement, and make the world familiar, implicate beliefs about reality. We refer, for example, to “palpable” evidence, or “grasping” reality, or “getting a grip on” events. In such language, we see how everyday thinking presupposes an “I” participating in a world through its action and by resistance to it. Knowledge of action-resistance in human being appears to originate with feelings of the body and its motions, and with touching and being touched. (As suggested, this origin may be very early, in the womb.) As a result, it is a commonplace part of everyday life to assert that something is real if it can be touched. (To be precise: if it can be touched, it is likely to satisfy common sense that something is real, even if this will not satisfy philosophical

argument about what constitutes reality and how we can know it.) This is the position famously exemplified in English lore by Samuel Johnson, who, in 1763, *kicked* a stone in order to demonstrate material reality and refute the idealist philosophy of Bishop Berkeley. If in kicking a stone a person says they do not feel the stone is real, we think them mad. Indeed, disturbances to a feel for reality, and a stated sense of unreality, can be part and parcel of psychotic conditions.

This association of touch or movement and reality has a long history and deep cultural meaning. It comes supported by the highest authority. When Thomas, among other disciples, saw Christ appear after his resurrection, he doubted what he saw. “Doubting Thomas” made the surely forgivable demand: “Except I shall see in his hands the print of the nails, and put my finger into the print of the nails, and thrust my hand into his side, I will not believe” (John, 25). Christ offered his resurrected body to human touch (which required movement: “to put”, “to thrust”) in order to confirm its reality. In the inclined body, the handshake, the embrace, the nose-rubbing, the kiss, and now the elbow-touching, we re-assert the cultural forms of mutual human recognition through touch and movement. Though the particular forms of gesture vary hugely according to local custom and tradition, each gesture is, in its nature, a form of touching and movement. An obvious question follows: when new technology or restrictive regulations affect the senses of touch and movement and therefore the expression of gesture, how far and in what ways does this change people’s feel for reality?

Electronic media certainly bring people into relations and sustain them in circumstances where relations would otherwise collapse. But, as the previous discussion has attempted to illuminate, these electronically mediated relations are not identical to relations involving physical presence. Most obviously, there is no touching, and no possibility of being able to do so. Indeed, from the beginning of sound recording, photography, film, and TV, there has been discussion about the way the media convey a different picture of reality and foster new imagination about it. Media *mediate*. But the sheer capacity of digital media to create new images and realities has gone much further in leading people to question the nature of previously taken-for-granted differences between the real and the manufactured, and the natural and the artificial. One large and prominent consequence is the

worldwide discussion of the role of fake information and fake news. Awareness of the mediating nature of media encourages some commentators to state that no one notion of reality is sustainable, or that all claims about reality cannot be trusted. Yet, people carry on their everyday lives, and certainly respond to social conditions like poverty, or to pressures to immigrate, or to medical conditions, not to mention to events in the lifecycle, in ways that do presuppose that there is *a reality for them*. The feeling for reality continues to matter personally, in spite of new media. This is not the place to develop this particular discussion, but statements and actions that devalue people’s feel for reality have consequences. This is dramatically evident, for example, in the inability of governments to successfully persuade people of the medical value of vaccination. Facts have significance only if there is an agreed-upon feel for reality. And that feel is bound up with touching.

Ask yourself: Why do I feel real? It seems to me likely that you will answer: Because I have a body. And you know about this embodiment for many reasons, though certainly because you have bodily and tactile senses, which centrally include the sense of movement and of resistance to that movement, but also include such conditions as pain. Ill people know a lot about resisting bodies. And what could be more real than pain? By contrast, in some cases disturbed people do not feel real at all, or they have what other people think a very distorted sense of reality (as in an anorexic person’s feeling of being overweight). That individuals conduct their lives in terms of what bodily senses reveal as real is not in doubt. It seems an obvious step to frame an understanding of this in terms of the key features of the lifecycle — the manner of birth and the boundary of death. Everyone was once a baby and everyone has a body, and everyone will die, and that past, this present and that future is there, and everyone we judge sane is aware that it is there through movement, contact, resistance, and other bodily senses.

Certainly, videos or virtual games also display movement, often beautiful or violent movement, but this movement is at one “remove” from the way each person originally felt movement. To experiment with some of the differences, watch yourself move in a mirror; then take away the mirror and look “inside yourself” at the same movement. There are different kinds of awareness, and there is a feeling that some kinds are more essential to a feel for reality than others.

There is a branch of electronic engineering called haptics. In due course, manufacturers will market everyday products communicating touch. (In a way, they already do, since phones and other tools require touching to work, and there is remarkable proprioceptive knowledge — largely non-conscious knowledge — at work in people’s use of touchscreens.) Perhaps new tactile media will produce a lot of sensual entertainment and even pleasure. At the moment, however, it does not seem likely that new devices, any more than those used for existing media, will persuade people that a tactile image of a person is the real person. There is more to the feeling of touch than the sense of literal contact with surfaces, and this more comes from the inclusion of touch in the body senses, including the sense of movement. Such new devices will have to be very good indeed to reproduce the sheer range of tactile sensation (texture as well as pressure, for example), let alone the complexity of the body senses and sense of movement. The engineers face difficulties: “Compared to ordinary visual and auditory sensations, haptics is difficult to synthesize. Visual and auditory sensations are gathered by specialized organs, the eyes and ears. On the other hand, a sensation of force can occur at any part of the human body, and is therefore inseparable from actual physical contact. These characteristics lead to many difficulties in developing a haptic interface. [10]” When “the feelies” (in parallel to “the movies”) come online, it is probable that the range of sensation will be limited in comparison to existing forms of touch and bodily sensation. Even so, the new media will lead to further questioning of the nature and experience of reality. It is not possible to change people’s experience of the touch and movement senses without also changing the very nature of the relationship they have with the world and their feeling for whom and what they are.

The commentary offers a framework for closer inquiry into how touching and not touching affects individual lives, especially lives where isolation, resulting from either social or medical circumstances, has a large place.

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