SAFE ENVIRONMENT MANAGEMENT IN ACUTE PSYCHIATRIC WARDS IN THE CZECH REPUBLIC, FOUNDATION FOR RECOMMENDATIONS FOR PREVENTIVE PRACTICE

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SUMMARY

Objectives: Suicides of hospitalized patients present rare but very serious adverse events in healthcare settings. The aim of this article is to describe and analyse the facilities and material equipment of acute psychiatric settings in the Czech Republic and contrast these with recommendations for effective prevention of suicidal behaviour. Since there are currently no universally accepted protocols for risk assessment and prevention of suicides in hospital settings in the Czech Republic, these recommendations draw on international guidelines. Based on the outcomes of our study we provide recommendations for risk management and effective prevention of suicidal behaviour of patients hospitalized in acute care settings.

Methods: In order to describe and analyse the environment of acute psychiatric wards in the Czech Republic we have developed a questionnaire based on international recommendations for risk management and prevention of suicidal behaviour. We also collected data on the prevalence of attempted and completed suicides and their respective methods in these hospitals.

Results: We have established that acute psychiatric wards in the Czech Republic operate within insufficient safety regimes, especially with respect to the prevention of suicide by hanging and the accessibility of objects for cutting. Our findings demonstrate that only 75% of the wards are equipped with safety glass, and only 50% of the wards with safety mirrors. Only just over 40% of hospitals have safety door handles and shower heads.

Conclusion: While it is impossible to entirely eliminate the risk of suicidal behaviour it is possible to manage it. The risk reduction is attainable by providing a safe-proofed environment and minimizing opportunities of suicide attempts by hanging and cutting. In order to effectively prevent suicides, it is essential to increase the awareness of the possibilities of safe proofing of the environment as well as standardization of risk assessment of potential suicidal behaviour of patients.

Key words: suicide, risk assessment, safe environment, Czech Republic, public health, prevention

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INTRODUCTION

Suicidal behaviour is considered a serious worldwide problem. Suicide may be defined as intentional and deliberate termination of one own's life. This act entails a clear and willed intention to die and represents a serious interpersonal disorder of self-preservation instinct as a result of various traumatic influences (1).

Suicidal behaviour is a phenomenon which requires multidisciplinary attention and multidimensional management. The suicidal act is not a singular event but rather a process that develops over time and involves suicidal imagination, consideration and adoption of specific plan to enact the intention, decision to commit suicide, and finally the suicidal act itself (2).

According to the World Health Organization (WHO), suicide is a third most common cause of death in the age range of 15–19 (3). Globally, almost 800,000 persons die by suicide annually, which represents 12th leading cause of death worldwide. In the Czech Republic between 2014–2018 suicide accounted for 1,389 deaths on average annually, 81% (1,120) of which were committed by men (4). There are no data on suicides committed in psychiatric hospitals in the Czech Republic.

The aim of the preventative approaches to suicide is not only early identification of suicidal risk, but also the endeavour to mitigate relevant risk factors (2). Some of these risk factors, such as age and sex, are predetermined. However, it is possible to influence the context in which these risks occur, such as by provision of accessible low-threshold mental health care, encouragement of supportive family relationships, and availability of high-quality leisure and cultural activities (1). Equally important is the reduction in the accessibility of means of suicide, such as guns and medication. Secondary prevention then consists in early detection and treatment of symptoms. For tertiary prevention the mitigation

of consequences of attempted suicide is of key importance, but especially stalling its repetition (5).

The risk of suicide is significant not only during the hospitalization of the patients in psychiatric hospitals but also in general medical wards, where it might not be detected early enough. The prevalence of suicide in hospitalized patients in psychiatric wards is 0.1–0.4%, i.e. one to four in 1,000 hospitalized patients (6). The most commonly used mechanism in this environment is hanging. The root causes of the suicides in hospitals are insufficient safety of the environment (84%), ineffective risk assessment and risk communication (7).

The mental healthcare system in the Czech Republic consists of a network of acute psychiatric wards in psychiatric and general hospitals and university hospitals (1,317 beds in 2018), as well as specialized psychiatric hospitals providing care for both acute and chronic conditions (8,684 beds in 2018), and is complemented by specialized psychiatric practices for outpatient treatment (8).

Although the Czech Republic is currently undertaking systematic reform of psychiatric care, the majority of care for patients with mental disorders still takes place in large hospitals with rather outdated facilities that are materially and technically inadequate. Currently, there is no standardized approach to suicide risk assessment, although it represents one of the key competences of psychiatrists and is relevant for medical professionals in other specialties as well, since this issue is encountered in a wide range of contexts (8). This is reflected in the emerging national action plan for suicide prevention, which includes also risk management for suicidal behaviour in psychiatric settings (9).

The purpose of this contribution is to draw attention to the possibilities of suicide prevention in psychiatric hospital settings with focus on the technical means to achieve this aim. In situations where there is no standardized instrument for suicide risk assessment available, it is of utmost importance to ensure reduction in the possibility of suicide attempts by various means. These can be divided into 'soft' instruments, such as therapeutic relationship and communication, and 'hard' instruments, such as pharmacotherapy, material equipment, and the management of the overall safety of the environment.

Only one study so far has been devoted to the review of the risk of suicidal behaviour of patients hospitalized in psychiatric wards in the Czech Republic which included all adult inpatient psychiatric wards in all types of hospitals (10). The results showed that between 2005–2009, 33 completed suicides of hospitalized patients were registered. The alarming finding was that only half of the institutions had internal protocols for the risk assessment of suicide. Only 63% of facilities met the criteria of safety proofing to prevent self-harm of patients, while 25% were equipped with safety mirrors and 58% safety glass on the wards (10).

The aim of our study was to assess the facilities providing adult acute psychiatric care in the Czech Republic and to focus on the possible risk factors for suicide attempt, collect data on attempted and completed suicides, methods of their execution, and the degree of safety proofing of these hospitals, and also their approaches to risk assessment and the utilization of various instruments of risk management. This study was then complemented by recommendations for preventative measures to be followed.

MATERIALS AND METHODS

In order to assess the attributes of the environment in acute psychiatric wards we used a survey which was designed to reflect international recommendations, since there is no standardized methodology for risk assessment and suicide risk management in the Czech Republic that could be used for this purpose. The questions allowed for closed-ended answers with the possibility of selection from alternatives and were focused on the assessment of the suicidal behaviour of hospitalized patients and on the safety equipment of respective hospitals within six-year period, 2012–2017. The survey was anonymous, and the questionnaires were sent by mail with prepaid return envelope to district and university hospitals. The return rate was 70%. Obtained data were analysed statistically in Microsoft Excel.

The questionnaire was designed to enquire about safety measures in place, focusing on the safety proofing of windows, glass, mirrors, and tiling; use of detachable door handles and safety tests conducted with respect to their load bearing capacities; shower heads, water taps, water reservoirs and sinks and their safety proofing in order to prevent hanging; safety proofing of electric plugs; safety proofing of beds with respect to the possibility of loop attachment; the opening range of windows and the safety proofing of window bars. Additional questions enquired about lists of items that are forbidden on the wards; whether patients are allowed to keep their belts, shoe strings and clothes strings; and whether their possessions are regularly checked for safety – not only those items that they initially brought to the hospitals but also those brought by their visitors – which is especially relevant to patients in risk of suicide.

RESULTS

The results of our study are presented in Table 1. The questionnaire was returned by 12 hospitals. Completed suicide was registered in 42% of hospitals that returned the questionnaire. This represented eleven completed suicides, including two hospitals that registered more than two suicides of patients in the respective period. All hospitals have noted a suicidal attempt. There were 48 registered suicide attempts in total, mechanisms are presented in Figure 1.

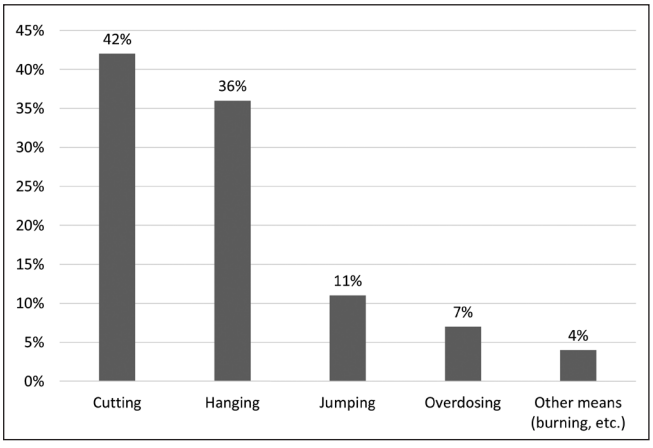

Fig. 1. *Inpatient suicidal attempts according to method of suicide.*

Safety glass surfaces were present in 75% and safety mirrors in 50% of the surveyed facilities. Door handles and other equipment with low load bearing capacity were provided in 42% of the facilities. However, none of the institutions actually tested the load bearing capacity of their equipment. The water taps were safety proof in about half of the facilities, and shower heads in less than half of the facilities. Only 17% of the facilities had no tiling.

All institutions had a list of forbidden items, however, only 92% of these regularly checked the items in possession by patients and their visitors. An interesting finding was that while only 17% of institutions allowed patients to keep their belts, about half of them allowed them to keep their shoe strings.

DISCUSSION

For the purposes of safety management of hospital environments, it is useful to identify areas which are accessible to the patients and consider whether they are supervised by staff at all times, or whether they have an opportunity to be there on their own (11). This is especially important if the hospital has not implemented processes to assess the risk of suicidal behaviour and therefore has not provided an appropriate level and intensity of supervision of the patient based on this assessment in order to eliminate the possibility of suicide (12).

In general, any spaces accessible to the patients should be ligature resistant environments (13). This refers to an environment in which no equipment, projection or protrusion is strong enough that attaching a cord or rope or any other material would create a system suitable for the purpose of hanging or strangulation (14). Among the objects requiring attentions are door handles, hooks, furniture, and other equipment – all of which are available in forms that do not allow for attachment of the loop, or which would disintegrate under certain weight. The usual load bearing capacity is 30 kg (11), which nevertheless is still problematic in case of children and adolescents (15). Strangulation is not achieved only by hanging of the whole body in the air, since the weight of the body while kneeling or lying is sufficient for achieving this purpose (7).

From the perspective of risk management, the traditional shape of the door handle is not recommended, and door handles of conic shape that do not allow attachment of the loop are considered a safer alternative. Special shower doors attached to their frame by magnets and detachable from the frame completely if the loop is placed on them are also available (11).

It is important to eliminate blind spots on the corridors and make the space entirely transparent, for example by placing parabolic safety mirrors in the corners. The attachments of these mirrors as in the case of any other equipment must not have high load bearing capacity, in order to minimize the risk of hanging (16).

The floors must provide safety for patients with diminished capacity for orientation and movement while being easily washable. Ceilings must be of an even level. In situations where for technical or structural reasons the access to wiring and other utilities must be retained in the ceiling, it is essential to prevent the possibility of attachment of a loop to them (11, 16).

Glass and various glass surfaces, including windows, must be made of tempered glass, laminated glass, or any other type of safety composite glass that either does not break or disintegrates into small round pieces which cannot be used for the purposes of self-harm. The same requirements are for mirrors. Metal mirrors are especially unsuitable because of its propensity of sharp edges that can cause serious harm, and so are mirror tiles that can be easily detached from the walls and broken into sharp pieces (11, 16).

Bathroom equipment also needs careful attention. Shower heads, water taps, wall attached soap dispensers, and toilet tissue holders might potentially be used for loop attachment. It is necessary to search for alternatives with mechanisms that are embedded or sunken. Toilet flushes, alarm bells and communication systems for alerting staff must be of low load bearing capacity and must be adjusted to prevent loop attachment. Therefore, technological solutions with sensors or embedded buttons are recommended for this equipment (11, 16).

The furniture must be safe proofed as well, and this is achievable by using either very light materials which cannot be easily used as a weapon or very heavy materials which make their manipulation and use difficult or impossible. Various bags filled

Table 1. *Inpatient suicides and safe environment in acute psychiatric wards in the Czech Republic*

Suicidal attempts and completed suicide rates	
Completed suicides	42% of hospitals
Suicidal attempts	100% of hospitals
Elements of safe environment	
Safety glass surfaces	75% of hospitals
Safety mirrors	50% of hospitals
Ligature resistant equipment (door handles etc.)	42% of hospitals
Load bearing capacity testing of ligature resistant equipment	None
Safe water taps	50% of hospitals
Safe shower heads	41% of hospitals
No tiles on the floor or walls	17% of hospitals
List of forbidden items	100% of hospitals
Patients are allowed to keep their belts	17% of hospitals
Patients are allowed to keep their shoe strings	50% of hospitals

Table 2. *Levels of hospital areas and their safe proofing*

Level 1 Areas permanently inaccessible to patients	These areas must be securely locked at all times, or alternatively permanently surveilled by the staff. Various lock systems might be used for securing these areas, ideally by electronic systems which allow for entry only after identification of chip identity card of the staff authorised to enter these areas. Once the inaccessibility of these areas is guaranteed no special safety adjustments are necessary.
Level 2 Areas where patients are under staff supervision	Among these are social and meeting rooms, corridors and smoking rooms for the acute ward patients and their enclosed gardens. The equipment of these spaces must be safe proofed to prevent self-harm, such as climbing on the furniture or the destruction of equipment for the purpose of creating weapons. The general recommendations for safe proofing must be observed.
Level 3 Areas where patients might be left without staff supervision	Among these are common rooms and other spaces where patients spend their free time. The likelihood of patients finding themselves alone in these spaces is higher since the staff is present in these spaces at irregular intervals and therefore they require higher safety levels in order to minimise the risk of suicide attempt. The ligature resistant approach must be applied in all these areas, and the windows must be secured to prevent their full opening. It is also recommended not to use plastic bags in rubbish bins. However, since the patients often share these spaces and spend time together there, some level of mutual supervision and care might be assumed.
Level 4 Areas where the supervision of staff is minimal	These are open-door wards, rooms without surveillance camera systems, bathrooms, and other similar spaces. The requirement for safety proofing of these areas is of utmost importance since suicide attempt may not be discovered by staff early enough to intervene. The ligature resistant approach is essential, with special attention to water taps and toilette water reservoirs which can be used for loop attachment and therefore should be embedded in the wall and operated by sensors. Soaps and other cleaning detergents must be non-toxic to avoid poisoning by digestion.
Level 5 Isolation rooms	Isolation rooms represents a special category as it requires permanent, continual supervision and surveillance, while patients who have to be detained in isolation rooms have extremely low self-control. Therefore, the isolation rooms must meet multiple requirements: it must be safe and comfortable for the patients, but also damage resistant in situations where patients are agitated or aggressive, and must not provide any opportunity for suicide attempt. The bed requires special attention since it must allow for attachment of restraints, while preventing any other loop to be attached. However, the continuous surveillance and checks by the staff in short regular intervals mitigate the risk that the suicide attempt would become unnoticed and allow potential attempts to be thwarted by timely intervention. Isolation rooms must be completely transparent and equipped either with a safety glass wall or with a surveillance camera system to allow constant supervision. The walls must be smooth without any recesses, and general principles of safety proofing must be observed, such as conic shaped door handles, avoidance of any hooks for clothes, and provision of radiators which do not allow for any loop attachment. It is absolutely necessary that patients accommodated in these rooms are permanently supervised by staff who also undertake regular physical checks in accordance with recommended clinical guidance and legal regulations.

Source: Hunt and Sine (11), Joint Commission (14), Khanra et al. (17)

with polystyrene or sand represent reasonable option for soft furnishing (11, 16).

One of the important areas of risk management of suicidal behaviour is a list of forbidden items which includes objects that are liable to being used for self-harm (12). These include belts, shoe strings, strings detachable from clothing, various sharp items, cables from electronics such as notebooks and earphones, also plastic bags, plastic containers which can break into sharp pieces, and other items (7). It is an imperative to actively search for these items that can be introduced to the wards at any time. The staff must have permanent access to all areas of the hospital. It is necessary to seek a balance between respect to patients, their autonomy and rights, and the imperative of providing safe environment for their care (14).

For the purposes of targeted risk management and transparency it is useful to classify hospital spaces and facilities into several levels that shall be introduced in the following text, with focus on areas requiring particular attention. Areas that are not accessible by patients do not need any special adjustment (11).

Levels of hospital areas and their safe proofing are summarized in Table 2 (11, 14, 17). It is important to emphasize that the surveillance of patients by cameras is not sufficient to reduce the risk of suicide. Regular personal contact with the patients is absolutely irreplaceable by technical means (18). The possibility of communication with staff at any time must be provided by intercom or bell that allows the patients request the attention of staff, and again these must be safe proof to avoid possibility of self-harm. It is recommended to have a regulation in place which specifies a list of items that are permitted in the isolation rooms, depending on an assessment of their respective risks (this relates to earphones, belts, shoestrings, etc.) (11).

In line with a previously published study (19) we can conclude that completed suicides of hospitalized patients are rare, yet very serious events in Czech psychiatric hospitals. In our study, lower numbers of completed suicides were registered than in the years of 2005–2009. However, our study focused only on acute wards which tend to be better equipped and have more means of supervision and surveillance of patients, and allow for higher levels of contact between staff and patients than is the case in wards for patients with chronic psychiatric conditions. A special register for attempted and completed suicides is currently being developed as part of the National action plan for the prevention of suicide.

***Table 3**. Safe environment checklist*

Parameter	Patient's room	Areas accessible to patients
Unbreakable windows		
Unbreakable mirrors		
Tiles on the floor or walls		
Ligature resistant door handles		
Ligature resistant rods, clothes hooks, etc.		
Ligature resistant furniture (beds, chairs, etc.)		
Weight testing of ligature resistant equipment		
Safety proof water taps		
Safety proof shower heads		
Safety proof electrical circuits		
Patients are allowed to keep belts according to their individual suicide risk assessment		
Patients are allowed to keep shoe strings according to their individual suicide risk assessment		

It is also important to keep in mind that suicidal behaviour occurs also in patients hospitalized in other wards of general hospitals. The adverse events register documented six suicidal attempted and one completed suicide in the Czech Republic between 2009–2010 (20). There are reasons to suspect that this low number is due to the low level of registration of these events. According to the Czech Statistical Office, 8% completed suicides in the Czech Republic happened in hospital setting (including psychiatric wards) (20).

On the other hand, it is essential to keep in mind that health care should provide a non-restrictive and non-stigmatizing environment, as restrictions may in some cases increase the risk of suicide. The purpose of managing suicide risk should not be to promote widespread restrictions, but to provide guidance for creating a safe environment and to approach patients individually on basis of risk assessment (21).

Our findings reaffirm the potential of various preventative measures. It is highly desirable to conduct complex assessment of the suicidal risk of individual patients, and examination on admission including screening for potentially unsafe items. Among these are knives and other sharp objects, glass water bottles, shoe strings, cables from various electronic gadgets (notebooks, mobile phones, earphones, etc.), belts, but also personal hygiene items which might be toxic upon digestion, plastic bags and other similar items. This list should be standardized for the entire institution and should be designed based on detailed assessment of the potential risk of suicide in patients treated in respective wards.

It is also essential to assess environmental risk factors, ideally by classifying various areas in the facilities according to the above-described levels of safety required. It is necessary to emphasize that the architectural elements of buildings can significantly affect not only the comfort of patients, but also positively and negatively affect the safety of the environment (1, 11, 16). For newly built psychiatric facilities, it is recommended to include elements of a safe environment already during construction, for the reconstruction of existing facilities, which is more common in the Czech Republic, it is appropriate to evaluate existing risks and include remedies in the plans.

It is not necessary to replace all equipment of the hospitals, given the lack of financial resources for psychiatric care, however, it is essential to assess the risk of particular environments in order to manage the safety of the environment, for example by following a checklist based on the recommendations introduced in this text (Table 3).

CONCLUSION

While it is impossible to entirely eliminate the risk of suicidal behaviour it is possible to manage it effectively. Currently, psychiatric care is provided in often outdated facilities with insufficient equipment. In the absence of universal standardized protocols for suicidal risk assessment it is essential to focus on preventative approaches, especially environmental risk management that would guarantee the safety of the hospital environment. The outcomes of our study demonstrate that it is imperative not only to introduce standardized protocols for risk assessment of suicides, but also to increase awareness of the possibilities of safe proofing the hospital environment.

Conflict of Interests

None declared

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