VALIDATION AND USABILITY STRATEGY FOR A CLINICAL MODEL FOR DIFFERENTIATION OF SUICIDALITY: METHOD/STUDY DESIGN

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Abstract

Even though various types of suicidality are observed in clinical practice, suicidality is still considered a uniform concept. To be able to improve the differentiation of suicidality -and consequently the detection, and management of suicidality in all its' forms- we developed a clinical differentiation model for suicidality and believe using the model to differentiate suicidality allows a more targeted assessment of suicidal conditions and use evidence based treatment.
The earliest description of the model, and a proposal for research, was first presented in a book chapter. A detailed description of a research protocol as a follow up of the introduction of the model in the book-chapter, and the most recent, updated version of the model are presented in this paper.

The differentiation model is based on the practical experience with suicidality we encountered in clinical practice, and it distinguishes between 4 subtypes of suicidality:
5) Perceptual desintegration (PD)
6) Primary depressive cognition (PDC)
7) Psychosocial turmoil (PT)
8) Inadequate communication (IC)
We will test the validity of the subtypes. For the pilot study 25 cases and for the follow-up study 75 cases (derived from a database of 100 cases) of anonymized patients, presenting to emergency services with acute suicidal behaviour, will be reviewed. The summary and conclusions of the letters to the GP will be used for the study and independently reviewed by three psychiatrists and three nurse-scientists for absolute scores and dimensional/gradual scores.
Intraclass Correlation Coefficients (ICC) for absolute and gradual scores will be calculated to examine the validity of the model. After completion, the results of the study will be discussed and feedback will be given to the raters.
A follow-up study will be rolled out when the results of the pilot are promising and relevant.
The theoretical roots of the model presented in this paper, stem from classic and contemporary theoretical models.
Our experience is that everyone who worked with the model, found it straightforward to understand the concept, and/or easy to apply in clinical practice.
Validation of the model was lacking unfortunately, making it difficult to apply -or use- the model on a larger scale, despite its' potential to change the management, treatment and diagnosis of suicidal behaviour/suicidality.

Because the model is easy to use and supports more tailored and precise treatment, our hypothesis is that application of the model will ultimately change the dynamics between practitioners (or anyone delivering care) and patients. Not just because practitioners will find it easier to put the suicidality and risks into context, but also because patients will feel more understood when practitioners have a better insight into the drivers of their suicidality.
Additionally, the model can be used as a base to determine the" best fit" for any treatment strategy focused on various types of suicidal behaviour.
And last but not least, the differentiation of suicidality may improve scientific research at different levels.

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A CLINICAL MODEL FOR DIFFERENTIATION OF SUICIDALITY. A STUDY PROTOCOL OF A VALIDATION AND USABILITY STRATEGY

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1) ABSTRACT

Background

Even though various types of suicidality are observed in clinical practice, suicidality is still considered a uniform concept. To be able to improve the differentiation of suicidality -and consequently the detection, and management of suicidality in all its' forms- we developed a clinical differentiation model for suicidality and believe using the model to differentiate suicidality allows a more targeted assessment of suicidal conditions and use evidence based treatment.

The earliest description of the model, and a proposal for research, was first presented in a book chapter. A detailed description of a research protocol as a follow up of the introduction of the model in the book-chapter, and the most recent, updated version of the model are presented in this paper.

Objective

Testing the validity of subtypes of suicidality and Usability for clinical practice in a pilot study and follow-up study.

Methods

The differentiation model is based on the practical experience with suicidality we encountered in clinical practice, and it distinguishes between 4 subtypes of suicidality:

1) Perceptual desintegration (PD)
2) Primary depressive cognition (PDC)
3) Psychosocial turmoil (PT)
4) Inadequate communication (IC)

We will test the validity of the subtypes. For the pilot study 25 cases and for the follow-up study 75 cases (derived from a database of 100 cases) of anonymized patients, presenting to emergency services with acute suicidal behaviour, will be reviewed. The summary and conclusions of the letters to the GP will be used for the study and independently reviewed by three psychiatrists and three nurse-scientists for absolute scores and dimensional/gradual scores.

Intraclass Correlation Coefficients (ICC) for absolute and gradual scores will be calculated to examine the validity of the model. After completion, the results of the study will be discussed and feedback will be given to the raters.

Results

A follow-up study will be rolled out when the results of the pilot are promising and relevant.

Conclusions:

The theoretical roots of the model presented in this paper, stem from classic and contemporary theoretical models.

Our experience is that everyone who worked with the model, found it straightforward to understand the concept, and/or easy to apply in clinical practice.

Validation of the model was lacking unfortunately, making it difficult to apply -or use- the model on a larger scale, despite its' potential to change the management, treatment and diagnosis of suicidal behaviour/suicidality.

Because the model is easy to use and supports more tailored and precise treatment, our hypothesis is that application of the model will ultimately change the dynamics between practitioners (or anyone delivering care) and patients. Not just because practitioners will find it easier to put the suicidality and risks into context, but also because patients will feel more understood when practitioners have a better insight into the drivers of their suicidality.

Additionally, the model can be used as a base to determine the" best fit" for any treatment strategy focused on various types of suicidal behaviour.

And last but not least, the differentiation of suicidality may improve scientific research at different levels.

Keywords: *differentiation, suicidality, suicidal behaviour, subtypes, subcategories, validation study, mental health.*

2) INTRODUCTION

Thoughts of death and or suicide, planning or preparing suicide, attempting suicide, and completing suicide are defined as “suicidality” (1), and while suicidal thoughts, plans and attempts are common, completed suicide is rare.

Suicidality is a symptom often found in patients suffering with mental disorder (2), though not often used for diagnosis. Except for a diagnosis of Major Depressive Disorder and/or Borderline personality disorder (3), suicidality is not a symptom required to meet the DSM-5 criteria for any other psychiatric diagnosis.

Suicidality is also still defined as a uniform concept (3-5), even though it is complex, multilayered and there are multiple variables including mental disorder, personality traits, biological factors, psychosocial factors -to name a few-, playing a role in the onset and duration of suicidality (6, 7). It is widely accepted and acknowledged that clinical differentiation of somatic disorders has resulted in improved diagnosis and treatment strategies for example for breast cancer (8), diabetes (9) and dementia (10). However, when it comes to suicidality, general texts, scientific research and prevention & treatment guidelines covering suicidality, hardly differentiate between different suicidal behaviours/suicidality (11, 12). A practical system to differentiate the complexities of suicidality though would help with risk assessment, diagnosis, treatment and risk management of suicidality.

Scientific knowledge – for example theoretical concepts derived from neuro-imaging and research into genetic vulnerability for suicide- may be difficult to apply in clinical practice (13, 14) and still has not been able to distinguish different kinds of suicidality or pin-point the drivers or etiology.

The model as described in the manuscript helps with differentiating different forms of suicidality and can be used for management of suicidal patients who do not suffer with a mental disorder, because it also includes differentiation criteria for patients who may have no psychiatric diagnosis.

Mental health professionals confronted with suicidality, are expected not only to adequately assess the suicide risks but also to manage the risks of the patients and all complexities around those risks (3). Even when protective factors and risk are identified, the assessment of suicide risks remains complex, and the risks are unpredictable. The professional responsibility and liability are a legal minefield when it comes to suicide prevention, and this adds another layer to the complexity of suicide risk assessments.

This is why the emphasis of management of suicidal patients is (most of the time) focused on safety planning and -when applicable- treatment of underlying mental health problems.

The pathway of referral to services partially defines the responsibilities of professionals involved at any point of the pathway and they not just need to share responsibilities for prevention of suicide/a fatal outcome with other professionals and referrers, but also share this responsibility in a rational and reasonable manner with the patient and/or their relatives (15-17). Everyone involved needs to be aware that not all suicidal patients can be safe-guarded by admission and there is not enough capacity to admit every suicidal patient to a mental health facility.

Admission may protect (temporarily) against suicide but can engender an iatrogenic effect resulting in maintaining the suicidal state rather than reducing it, which is unwanted (18, 19).

The complex dynamics around the risks resulting from suicidality and estimated severity, and the focus on safety, may lead to formalized and restrictive, 'defensive' practice. This is why we believe that it will be helpful to discern different types of suicidality and determine to what extent the suicidal patient is able to take responsibility for his own safety during the recovery from a suicidal condition. It is also important to have clear unambiguous language about suicidality for clinicians working in a network with each other.

We believe that differentiation of suicidality may support better clinical practice, more reliable taxation of severity of the risk, more accurate scientific research and more effective treatment.

The process of entrapment seems important as aetiology and as key element for the development and progression of suicidality (20).

The inspiration of the model for differentiation of suicidality-as described in the book chapter-came from the above-mentioned considerations and from the complexities and diversity of suicidality we encountered in clinical practice. The result is the (hypothetic) 4-type model of entrapment of suicidality (h4ME)/(SUICIdal DIfferentiation (SUICIDI) model)(3).

As mentioned earlier, classic, contemporary and empirical typologies of suicide have been established (21) and were important for the development of the h4ME. We described this typologies (22-29) in a former book chapter (3).

The result of the scientific quest for suicidal typologies was the development of several theoretical models. Those models offered improved insight into the complex processes leading to suicide (30-32) as described before, and theoretical concepts of subtypes of suicidality.

Most theoretical concepts or theories of " subtypes of suicidality" don't make the distinction between suicide and non-fatal suicidality. The recent model developed by Rory o' Connor though -the Integrated Motivational-Volitional Model of Suicidality- (30) distinguishes between people with suicidal thoughts and the dynamic process of engaging in suicidal acts.

Development of an additional clinical -rather than theoretical- differentiation of subtypes of suicidality would be helpful for investigation and further development of more effective treatment protocol.

No lucid clinical differentiation model for 'suicidality' is yet available though (21). This may be the reason why suicide prevention guidelines (31, 32) do not differentiate suicidality.

Availability of a differentiation model though, potentially will enable clinicians to develop more effective risk management strategies and enhance scientific research at all levels whether it is biological, psycho-therapeutic or social research (2, 33-37).

The development of the h4ME model was the start of a long process, involving many scientists and practitioners. The model was revised during two-by the Delphi method inspired- meetings with psychiatrists, psychologists and other mental health workers (these were not involved in this study). One meeting was in March 2017 with a selection of psychiatrists, people with lived experience, peer supporters, nurses and psychologists employed by Mental health institute Parnassia. Feedback from participants of the meetings was provided by mail. At the annual psychiatric conference in the Netherlands ("Voorjaars Congres") in 2018, the second meeting took place and was attended by only psychiatrists. (38) Feedback from attendees was given by mail.

Another contributor to the development and evolution of the h4ME model was the Dutch suicide prevention guideline (Multi Disciplinary Guideline for Assessment and Treatment of Suicidality) (31), and the PITSTOP-study which is part of the guideline.

The PITSTOP-study (Professionals In Training to STOP suicidality) (39) looks at the impact of an e-learning add-on train the trainer model, educating and training mental health professionals in the practical application of the national guideline. It compares the application after training with the "usual" implementation policy of guidelines (40).

The guideline explains the onset of suicidal behaviour by a conjunct model of stress-vulnerability (40-42) and entrapment (3): different causes can be related to the etiology of the entrapment process of suicidal behavior.

We believe different subtypes of suicidality have different vulnerability traits and identifying those will lead to improved research into the etiology of different forms of suicidality (3).

With the PITSOP training, Mental health care professionals are trained to assess suicidality in accordance with the CASE method (Clinical Assessment of Suicidal Episodes) during this training.

Identification of the level of entrapment and suicidality is an important focus for assessment of short -and long term suicide risk, and is a skill gained from the PITSTOP-training (43), used for assessment of patients presenting to mental health services with suicidality.

Identification of the level of entrapment of suicidality inspired us to make the distinction between different “aetiologies of entrapment of suicidality”; “ aetiologies” referring to the study of causation and onset of a condition.

The h4EM is based on the theory of entrapment, stating that the more the patient perceives ‘entrapment’, the higher the actual suicide risk (42). We set out to develop a 4-type model of entrapment of suicidality and hypothesized that any form of suicidality encountered in clinical practice (as well as cases of completed suicide), can be assigned to one of the four types (44). Where the h4EM model perhaps is not elaborate enough, the CASE methodology offers a more detailed method for assessment in time, and a better identification of the entrapment of different forms of suicidality.

As described before: the h4ME* distinguishes between four types of suicidality (3).

1 Perceptual Disintegration (PD); entrapment of suicidality originating from the context of disturbed perceptions and/or (affective) psychotic behaviors;
2 Primary Depressive Cognition (PDC); entrapment of suicidality in the context of (a) depressive cognition(s);
3 Psychosocial Turmoil (PT), entrapment of suicidality in the context of acute reactivity to a (perceived or actual) loss, offence, adversity or doom;
4 Inadequate communication(IC)/; entrapment of suicidality in the context of communicating intense suffering/emphasizing emotional pain.

*(*use of narcotics and/or other substances and/or somatic symptoms can be viewed as adjustors of which the effect depends on the differentiation of suicidality.)*

These subtypes are more in detail described in Table 1

Table 1 Descriptions of the four subtypes of suicidality

<TABLE 1 about here>

Figure 1 The four subtypes of entrapment of suicidality and theoretical aspects

<FIGURE 1 about here>

The SUICIDI-II (SUicidalDIfferentation-version 2) instrument was developed to measure the entrapment modes to type PD, PDC, PT or IC.

The main objective of this study is to demonstrate an empirically supported clinical differentiation of suicidality.
It is unknown whether the model will encompass the full range of suicidal behaviors occurring in mental health care services though.
What we also aim for, is the investigation into the feasibility of the SUICIDI-II.
In this paper, we look at the theoretical and practical background of the development of the model, and describe a protocol for a study on the h4ME model's validity (3). This study is named the Validation Model of Suicidality (VAMOS). The aims of the VAMOS study are:

1. Examine whether the provisional h4ME accurately describes the complete spectrum of suicidality as encountered in specialist mental health services.
2. Examine whether the SUICIDI-II instrument allows clinicians to assign entrapment states to the suicidal entrapment subtypes as described in h4ME;
3 Investigate whether the h4ME model and/or the SUICIDI-II should be adjusted if it appears that subtypes of entrapment overlap.

Table 2 Examples of vignettes of subtypes

<TABLE 2 about here>

3) METHODS

Design

Explorative qualitative study.

Selection

Between January 2018 to January 2020, 503 cases of suicidal patients who were examined and assessed by the outreach psychiatric emergency service of The Hague in The Netherlands, were included in the study. Patients were included in order of entry.

A previous study conducted by The Hague emergency services found that one third of assessed patients presented with suicidality (45, 46) .

The included cases fell under the medical responsibility of RdW. Cases were anonymized and summarized conclusions were taken from the GP discharge letters, which sent after assessment; the GP discharge letters are stored on the electronic patient file, RdW co-signed these letters. The summarized conclusions- copied from the electronic patient record- are pasted in a Word file. For the validation study, the first 25 cases are included in a pilot. After finishing the pilot and collecting feedback, the remaining cases (26-100) will be investigated for validation. The identity of the referrer, the patient, the (nurse) practitioner and/or the general practitioner cannot be deduced from the summarized conclusion.

SUICIDI-II; an instrument to assign cases to entrapment types of suicidality

From 2018 onwards, the SUICIDI-II (and previous versions) and the h4ME-model were presented and discussed during presentations in the context of suicide prevention in the Netherlands and abroad (16, 38). Feedback of attendees was collected during the meetings; feedback was processed by RdW and MdG and lead to adjustments of subsequent versions of the SUICIDI.

The SUICIDI-II should be considered as a preliminary, systematic description of the four entrapment types. Each type is described on the basis of three propositions. The propositions are hierarchically formulated to indicate what type is applicable, resulting in a score of 0 = not applicable, or 1= a description that leaves room for other entrapment types, or 2 = a

description that likely excludes other type.

An alternative form of gradual scoring other than the 0,1, 2 scoring of the SUICIDI will be looked at and there will be an evaluation whether this improves the scoring. Raters need to score a total of four points for the “type agreement” (TA) for each case, and award these points to one or more subtypes.

Rating

Raters (n=6) will be asked to independently assign cases to entrapment of suicidality types using the SUICIDI-II instrument in order to investigate type agreement (TA) in between raters. Raters will be recruited from RdW's professional network (psychiatrists n=3; registered nurses n=3) and are also working for psychiatric emergency services. They will all have extensive knowledge and experience in assessing suicidality due to clinical and/or scientific positions elsewhere. The raters are not involved with any of the cases included in the study. RdW will not rate. Before scoring, raters will be trained in the model and in using the SUICIDI-II.

Outcome measures

Type agreement (TA) will be investigated in two ways: One absolute type agreement (aTA) and two different dimensional/gradual type agreements (dTA’s). Absolute type agreement (aTA) will be measured by asking raters to assign each case to only one subtype (subtype PD, PDC, PT or IC). The two dimensional type agreements (dTA’s) were introduced as we expect that there will be cases that fit in more than one subtype. To make this explicit, we ask raters to score two different dimensional ways by

1) dividing a total of 4 points over the subtypes (min 0-max 4); the higher the score the more a subtype applies.

2) to indicate which proposition (1 or 2) most likely applies to the types they scored for the dTA as scored in the SUICIDI-II questionnaire.

(see also https://suicidaliteit.nl/2022/SUICIDI2/SUICIDI%20translationversie2.pdf, NB: subtypes that were not indicated for the dTA automatically score 0=not applicable).

Data analysis

Intraclass correlation coefficients (ICC) are calculated to quantify the degree of agreement

between the raters on the selected subtypes: the aTA and the two different dTA's.

Differences between measurements can be due to real differences (between persons, or within persons on repeated measurements) or from noise (differences due to imperfections in the description of the types). This is the reason why we also calculate an ICC for the extent to which raters agree on which statement (1 or 2) best describes the chosen type. In SPSS version 23.0 the analyses are performed with a two-way-mixed-effects model, absolute type agreement according to the guideline of selecting and reporting ICC from Koo and Li (47) (ICCs are numbers between 0.0 and 1.0 and a 95% CI). In a perfect model, all differences are completely 'real' when the ICC =1. In a completely invalid model, all differences are noise, and the ICC=0. In other words, the higher the ICC, the more raters agree. An ICC < 0.50 is indicated as poor, 0.50-0.75 is indicated moderate, 0.75-0.90 is good and > 0.9 excellent (47).

The model is valid if the ICC for absolute type agreement (aTA) and 2 dimensional/gradual types of agreement (dTA) >= 0.70. The model will be adjusted if the ICC of the aTA or dTA <= 0.70. The propositions in the SUICIDI-II are usable if the ICC > 0.70. Propositions will be adjusted if ICC <=0.70.

Timetable

The first step is to conduct a pilot study in which we examine the validity and feasibility of a clinical differentiation model of suicidality. We aim at answering the following questions:

-Is a selection of mental health care workers capable to deal with the differentiation model?

-Can conclusions of patient records of suicidal high risk patients assessed by the outreach psychiatric emergency services , be rated in an absolute and dimensional/gradual way?

-Are the proposed subtypes (PD, PDC, PT and IC) validly definable, when various clinicians/researchers allocate cases independently to subtypes? How are subtypes distributed?

-Are these subtypes dimensionally/gradual delineated by using two different modes of scoring, and is there consensus when different clinicians/investigators independently score them? What is de reliability of the different modes of scoring?

-Which choice can be made in which form of dimensional/gradual scoring? And is there any way to improve the SUICIDI-II questionnaire?

-Can we perform a qualitative analysis after getting the results? When performing a qualitative analysis of scoring for the model can we provide feedback to the raters if there is any indication that incorrect scoring may have occurred?

Step 2 is an extended follow-up study with more cases, when the results of the validation are sufficiently encouraging , for replication. In the follow up study explore demographic and clinical relations will be explored, and the dimensions of psychopathology and dimensions of personality. We will describe and propose a novel protocol when the VAMOS study is successful.

Ethical considerations

The Medical Research Ethics Committee Leiden-the Hague-Delft involving the Human subjects Act (WMO) was consulted prior to the start of the study protocol. The decision of the committee in 2020 was that no approval was needed for this study (no. G21.021/PV/pv.).

The medical directorates and privacy officers of the Mental Health institute Rivierduinen and Mental Health institute Parnassia also approved the study and both institutes financed the study as described before (3).

4) DISCUSSION

As mentioned in a previous publication: theoretical and empirical typologies of suicidality have limited use (3), for various reasons:

1) Suicide typology based on variables not related to “entrapment” may result in unreliable suicide risk assessments or estimates.
2) The context – and not the theoretical and empirical typology- determines whether specific, individual factors change or mitigate the suicide risk (48). Sudden unemployment for example may become an acute risk if someone unexpectedly loses their job, and long-term unemployment may result in chronic stress, mental illness and ongoing increased risk. For people who find it hard to maintain themselves in a work environment though, unemployment can be a blessing in disguise and as such become a protective factor.

For most clinicians working in acute care, their priority is the practical management of acute suicide risks, rather than appraising theoretical or scientific concepts about the aetiology of suicidal behaviour.

They would benefit most from a theoretical outline or framework like the h4ME which helps them to differentiate suicidal behaviour in a logical and accessible way, identifies drivers for suicidal behaviour, and assists with finding practical solutions for management of specific types of suicidal behaviour.

The theoretical foundation of the H4e model is based on an amalgation of a number of well-known and generally accepted theoretical concepts of suicidality and distinguishes “pathways to entrapment”. Main inspiration for the model were the concepts of “dimensions of psychopathology” and the “temperament and character inventory”, and the model incorporates two clinical subtypes, frequently found in clinical practice and most often associated with suicidality (PD and PDC) and two dimensions (of five) of psychopathology: “affective dysregulation” and “perceptual disintegration” (PT and IC) (49). The latter are derived from the “temperament and character inventory” developed by Robert Cloninger (50). There may be a relationship between the personality dimensions mentioned above and dimensions of temperament (Harm-Avoidance (HA), Novelty Seeking (NS), Reward Dependence (RD)) and dimensions of character (Self-Directedness (SD) and Cooperativeness (CO)) and further research is needed.

We do not rule out that the ‘entrapment of suicidality types’ as defined in the proposed h4ME model will need be further specified.

Clinical experience was the foundation for the subdivision of suicidality in 4 categories, to make the model easy to understand, accessible and simple to use in clinical practice however the “entrapment of suicidality types” probably will need further definition and specification.

Unfortunately, to this day, little is known of the nature and origin of suicidality, and this is a serious weakness of the model. We are well aware the model will not deliver an explanation of suicidality or provide answers to the many questions about suicide and suicidality; however, the model may shine a light on different ways suicidal behaviour presents and offer a practical approach for specific management of each of the four categories.

What needs to be taken into consideration, is that the model, and research of the model is still in its’ infancy, and this is just the start of its’ development. Therefore, we very much welcome feedback, criticism, discussions and advice from clinicians, scientists, researchers -and managers- to help us. We will certainly discuss the model and the limitations in more detail in future publications when we have collected and analysed more data.

We hope that in the future, the model will be used as a basis to determine which treatment strategy or risk management is most promising and suitable for the various entrapment of suicidality types. In a book chapter (3) we elaborated on risk management and treatment algorithms (see table 3) and on practical application of the model which is based on clinical experience, and evidence of best practice. In this paper there is no room to elaborate on all forms of psychotherapeutic or pharmacological treatment available to us, however, we carefully suggested some, which were also described in a former chapter (3).
As described before, the development of the h4ME model is a venture into unknown territory . Rather than taking the usual route of applying theoretical knowledge into practice, we took the reverse route by proposing a theoretical model based on practical experience (3). We believe that clinical practice will improve if clinicians differentiate between types of suicidality.

We will need to look outside the network of the primary investigators for other raters to replicate the validation process and we believe most people working in mental health care and other health professionals (social workers, psychologists, psychiatrists in training, nurse specialists, medical specialists, remedial educationalist, general practitioners, etcetera) are

equipped to take part in a follow-up validation of the model. We very much welcome them to take part in further (validation) studies.

We see great potential in the model. One of our goals is for the model to improve diagnosis, treatment, practical management of suicidality , education, and initiation of discussions around professional and personal responsibilities.
We also hope the model will help with scientific research and that we can evidence its' usefulness for research.
And last but not least. Differentiation of suicidal behaviour will hopefully provide a better insight into etiological relationships between various underlying psychological and/or biological dysregulation processes.

As described before (3) the h4ME also distinguishes pathways to entrapment and can help clinicians to decide on the most appropriate, evidence- based policy strategy of suicide risk taxation. In addition, it allows a critical appraisal of roles and responsibilities of all stakeholders involved (the community, specialist and non-specialist health services, neighborhoods, patients, relatives of the patient) in a practical and non-judgmental way. We assume that this may result in a change of dynamics and allow for best practice solutions and evidence-based treatment. However, we do not rule out that the 'entrapment of suicidality types' as defined in the proposed h4ME model can be further specified.
Based on years of clinical experience and on a theoretical base we have subdivided suicidality into 4 subtypes. This was done to investigate whether we can make improvements for the clinical practice of suicidality. After the follow up study and preferably a more extensive validation study, we may find a number of other delineable subtypes. To get a better idea of how suitable the model is for practical application, we need many more people to test, use the model, and more importantly give us feedback of their experience of working with the model. We are at the start of the development and very much want to remove the inconsistencies and weaknesses of the model through research and follow up studies, and lift it to the next level.
The model may be used as a basis to determine the most promising effective management and treatment strategies for the various suicidality types. Risk management and treatment algorithms were described and discussed in a book chapter (see also table 3). This paper does not allow to elaborate on all forms of psychotherapeutic or pharmacological treatment available, but still we've carefully suggested a few, also described in a former chapter (3).

Table 3 Hypothetical risk management and treatment algorithm as described before with revisions (de Winter et al 2021, (3))

<TABLE 3 about here>

So far, reception of the model has been positive and people who have tested it or worked with it find it practical and easy to apply. It clarifies the different types of suicidality, the underlying drivers, the aetiology and the different treatment and management needs. It has a potential to help with diagnosis, scientific research and delivering the most effective treatment.

One of the most poignant results of the model though is that with the differentiation of subtypes of suicidality, a differentiation of subtypes of professional responsibilities has emerged.

Improved clarity about those professional and personal responsibilities allows a more constructive discussion about responsibilities and how to work together as a team, about sharing responsibilities when required, and supporting others when needed. Ultimately this is what makes the model truly stand out and gives it added value.

5 ETHICS AND DISSEMINATION

The decision of the committee was that no approval was needed for this study (no. G21.021/PV/pv.).

Contributions

All authors made substantial contributions in drafting and critically revising the content of the paper. RdW, MdG, DdB, MH contributed in conceptualizing and designing the study, and in data acquisition, analysis and interpretation. DS contributed as experience expert, peer supporter and in conceptualizing, in the study. GvS contributed in the data interpretation. CM, AvdB, JE, NK and MG contributed as evaluators and as rater in the study. All authors approved the final manuscript as submitted and agreed to be accountable for all aspects of the work.

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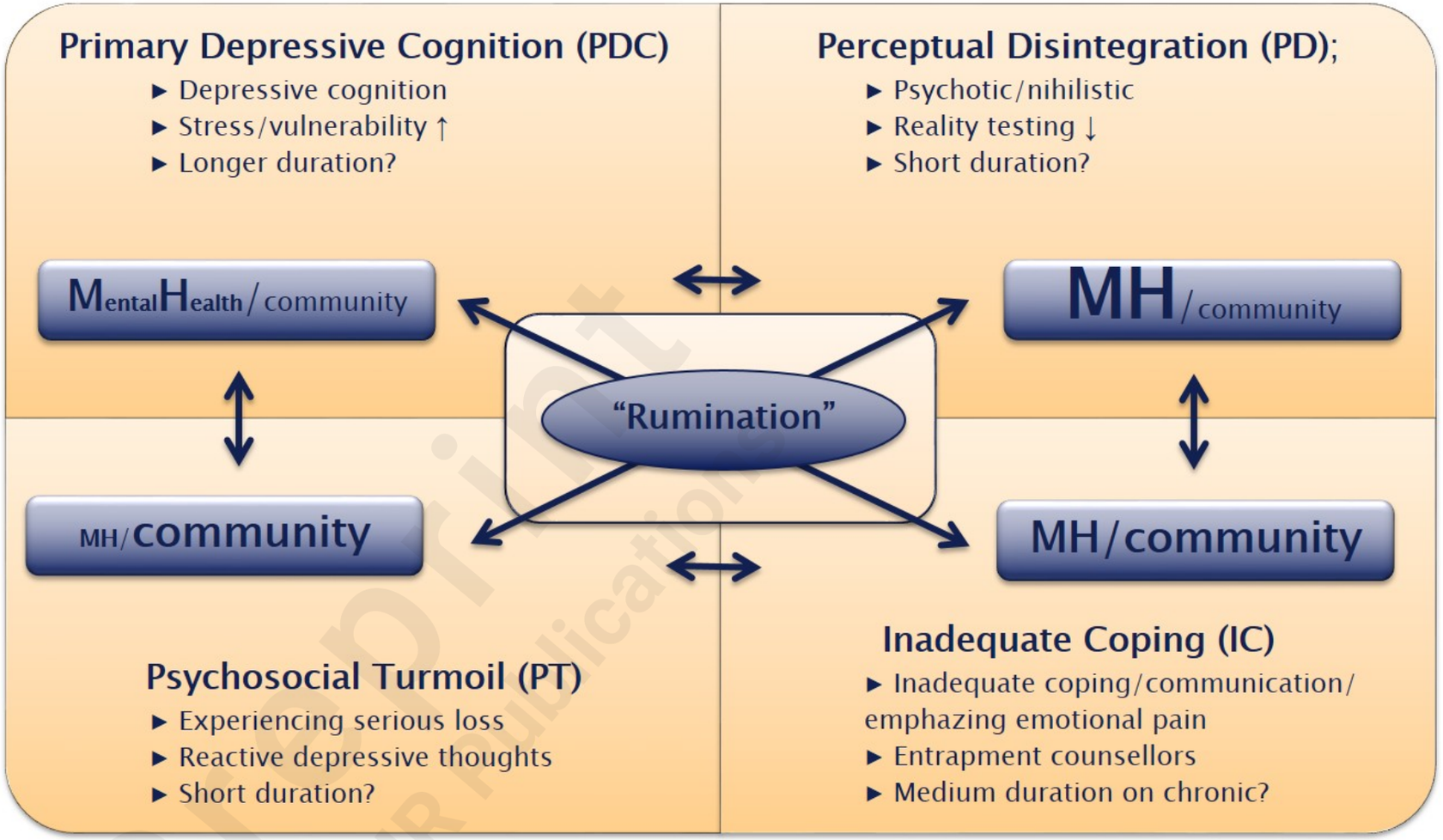

FIGURE 1

The four subtypes of entrapment of suicidality and theoretical aspects

T**ABLE 1:** Descriptions of the four subtypes of suicidality

PDC) Primary depressive cognition Suicidality stems primarily from a depressive thought-process an there are no psychotic features (yet). The depressive state can be present for while (for example weeks or months). Characteristic is that the thoughts about suicide are part of the cognition and are present every day. There is a very clear suffering, which can be perceived by the examiner through the depressive thought-process. A classic state is a depressive disorder, but this may also be part of an anxiety disorder. There can be a feature of a personality disorder mixed in the depressive state, or the depressive state is caused due to a personality disorder and becomes part of a returning thought-pattern in which negative cognitions and/or 'Beck's cognitive triad' can be present (negative views about oneself, negative views about the world and negative views about the future).	**PD) Perceptual disintegration (psychotic disturbed perception/behavior)** Suicidality originates from psychosis, which can often be accompanied by affective (depressive) dysregulation or can be largely affected by it. Usually the psychotic state has only been present for probably a short time (rather days or weeks than months) and it is notable, because of its severity. It may originate from depressogenic cognition, but in that case the severity has developed to such a level that it can be seen as mood-congruent or -incongruent psychotic state. The suffering can be understood, but the severity cannot be perceived by the examiner. A classic state is a depression with mood-congruent psychotic features. However, it can also appear among people who, while in a psychotic state, receive instructions to hurt themselves.
PT) Psychosocial turmoil Suicidality stems primarily from a severe loss and/or blow to the ego that leads to a complete upheaval of someone's life. The person experiences enormous guilt, severe shame and/or doesn't dare to look another in the eye anymore or experiences a downfall without being in a psychotic state. There is an unbearable anguish, which leads to a need for release from that pain or the need to not exist anymore, to not be able to feel, or escape, the awful misery or pending dread. Usually, someone has been in this state for a short time (hours/days/weeks). Drug use can be extra provoking. The stress is perceivable for the examiner from the perspective of loss and/or a blow to the ego and there maybe slight psychotic features, but one can follow the narrative. Underlying dysregulation of the impulsivity can worsen the state and increase the risk of lethality.	**IC) Inadequate communication and/or coping** Suicidality stems from a severe feeling of suffering and not being able to communicate this properly. There is difficulty with formulating an adequate request for help and one seems to be hoping for a solution by demonstrating suicidality. This behavior usually exists for a longer period (months) and fluctuates severely. This type of a more chronic suicidality is often seen as part of a personality disorder, such as a borderline personality disorder. Also, drug use can be an important provoking factor. suicidality is perceived as externalizing and fake and it can make aid workers feel trapped. The behavior can coincide with experiences of loss with which the powerlessness is externalized and not internalized. Often the support system is also exhausted and aid workers are viewed as failing. The risk is that aid workers feel manipulated and the assessed feel like they are not taken seriously which leads to an amplification of the behavior, that is accompanied by an increased risk for suicide. The person is genuinely suffering. Suicide can take place as the ultimate communication about the misjudgment of the person. (Especially recognizing and exploring the countertransference and offering help to the underlying motivators of suicidality are essential with this type).

TABLE 2 Examples of conclusions and vignettes of entrapment of suicidality typology

Vignette 1 (PD?)
This case concerns a mental health act assessment of a 25-29 year old woman of non-Western origin with no previous history of mental illness, except for an previous one-off assessment. She has 2 young (biological) children under 4 years old. She came to the notice of the police when she -in company of the children- started to ring the bells at the houses of total strangers after a one-sided car accident (totall loss) and expressed suicidal and homicidal thoughts, leaving the children behind in a confused state. People involved with the incident were shocked by the bizarre presentation. When we did the mental health act assessment we saw a very tense woman, who was clearly trying to keep up a facade and couldn't reason or answer questions adequately. The presentation was suspect of a paranoid state, which possibly already existed for some time. . During the police investigations her statements were bizarre, for example, mentioning she was "murdered". There was some suspicion of substance abuse. The assessment could not confirm a direct symptoms of acute suicidality, though taking into consideration the events, earlier statements and the ensuing silence, suicide risks was assessed as acutely increased. Because she showed no insight and refused voluntary admission, an involuntary admission was arranged and agreed. The children were placed with foster parents by social services/child & family services.
Vignet 2 (PDC?)
This case concerns a 50-54 year old Dutch man who was referred by the mental health nurse working in the GP practice. Patient was referred for an emergency assessment within the community team because of low mood and suicidal ideation. He suffered with consistent ideas of different ways to kill himself, though considered himself a coward. During the assessment we saw a depressed man, with low self-esteem, who normally pushes away his emotions. After a small incident at work he completely broke down and has been on sick leave for the last 4 weeks with low mood, anhedonia, ruminations and sleep problems. 15 years ago he experienced a similar episode and at the time he did a suicide attempt with medication and alcohol after the death of his father. At the time he was referred and treated by the community team. 6 years ago he had an myocardial infarction. He was diagnosed with depression. It was possible to agree to a safety plan and the suicide risk was considered not to be acutely increased. Patient was referred to the community team -with a safety plan in place- for treatment of his depression.

Vignet 3 (PT?)

This case concerns a home-assessment of the suicide-risk of a 20-24 year old woman with no previous psychiatric history. The GP asked for an assessment after she made suicidal statements following several serious and negative life events over the last few weeks (relationship break-up, termination of pregnancy, debts, death of grandfather, suicide of friend, loss of accommodation)

During the assessment we saw a tense, desperate woman with insufficient coping strategies to manage the situation, becoming overwhelmed as a result. She is unable to pull herself out of the situation, and feels so miserable that she doesn't have any hope of a good outcome. She expresses suicidal ideas and her support system is unable to support her. Her limited coping skills are possibly due to a disturbed personality development and below average intelligence. A respite admission (time out admission) is indicated to stabilize this patient and work towards follow up treatment in the community. It was not possible to arrange admission or involve the IHT because of limited capacity within those services, though it was possible to set up a safety plan until the next morning and arrange for alternative follow up care in the community.

Vignet 4 (IC?)

This concerns a suicide-risk assessment at "services for acutely disturbed people" of a 45-49 year old female who wants to be addressed as male, without a gender-reassignment/transformation having taken place yet. They are known with PTSD, personality problems, autism-spectrum disorder, gender dysphoria and dissociative episodes. In the past they attempted suicide on several occasions and auto-amputated fingers and toes. Patient was discharged from the admission wards 7 days ago/7 days before the current assessment. Specialized in-patient treatment for patients with severely disturbed behavior was terminated because adequate treatment was not possible due to splitting, dismissing and devaluating the treatment plan, projection and denial demonstrated by the patient. Patient now comes to the attention of community mental health services, referred by the police, after she made serious suicidal statements and threw the phone down when called by the crisis services. The crisis team contacted the police, who found the patient near a canal, in possession of a knife

During the assessment, the patient displays complex, claiming behavior possibly because she is unable to acquire Dormicum from the assessing team.

Precription of Dormicum was denied because of the inappropriateness of the request. Patient states they cannot agree to a safety plan a long as they are not provided with Dormicum.

Admission is not considered to be suitable because of the recent discharge and the lack of cooperation with the proposed treatment plan at in patient ward. The outcome of the assessment is to send the patient home and contact the responsible professional of the community team. When the outcome was communicated with the patient, they decided to agree with some form of a safety plan.

TABLE 3:

Hypothetical risk management and treatment algorithm as described before in a book chapter of de Winter et al 2021(3) with revision.

	Perceptual Disintegration	**Primary Depressive Cognition**	**Psychosocial turmoil**	**Inadequate communication**
Severity of the suicide risk	++++	++	+++	+
Duration	Days/weeks	Weeks/months	Days	Day's/hours; often exacerbation of chronic suicidality
Influence culture/ Religion/spiritual affiliation	+	++	++++	+++
-Economic conjuncture -Social disorder (war, pandemia etc_) -Live events/loss experiences	+	++	++++	+++
Genetic biochemical factors	Yes	Yes	Maybe	probably

Influence Personality	+	++	+++	++++
Major life events	Yes	Yes	Yes	Yes
True mental disorder	Yes	Yes	Maybe	Mostly
Expected course	-Reduction after treatment of psychosis	-Reduction after biological and/or psychological treatment	-Reduction when tunnel-vision decreases - Reduces when peak of mourning has passed	-Non-specific reduction within hours/days or when behavior has been exposed or when underlying problems have come to the surface. -Risk of acute shift to chronic risk and shift to another type

Recurrence	-New psychotic episode -Triggering of trauma	-Recurrent affective disorder	-Recurrent episode of psychosocial stress or continuation of severe stress -received 'narcissistic' affront	-Interpersonal stress and perceived powerlessness -Lack of external recognition of underlying suffering.
Reassessment of suicide risk	-Several times a day -Continuous during treatment -After recovery -With the recurrence of a new episode -as precaution during trauma therapy	-Several times a day -Regularly during treatment -After recovery -New episode, when the mood deteriorates	- Several times a day - Ranging from a few times a day to zero. - in the aftermath of an acute suicidal episode - During a new episode of severe psychosocial stress and/or new setback	-After the suicidal episode -When continued or renewed lack of recognition of underlying suffering -During interpersonal stress and perceived powerlessness

Pharmacotherapy	-antipsychotics (clozapine) and/or mood stabilizer (lithium) - possibly additional benzodiazepines in the event of major anxiety.	-Antidepressant and / or mood stabilizer (lithium) - Restrained use of benzodiazepines when increased risk of impulsivity -Short-term benzodiazepines for sleep deprivation	-Restrained use of medication - Possibly symptom relief for sleep deprivation and/ or great anxiety	Hold back medication when possible (changes in or addition to) pharmacological treatment
Actions during crisis	- Admission (if needed) -Intensive home treatment if risk is acceptable.	Emergency care, - Intensive home treatment	- Organize mourning support from family/relatives -Brief admission	-(F)ACT, crisis plan -Maintain autonomy
Relatives	-involving relatives for discussing acute risk, safety and treatment	-involving relatives for safety and treatment	-involving relatives for direct support and interaction	-involving relatives more for exploring dynamic interactions

Follow-up	-Outpatient treatment of psychotic symptoms, -Trauma treatment	-Outpatient treatment of depressive symptoms with CBT, CAMS etc.. -EMDR	-General practitioner	-(F)ACT, - Additionally DBT or CAMS or collaborative care, etc. -EMDR -Vigilant for change of symptoms
Responsibility patient	- Increasing when disintegration reduces	- Increasing when depressive symptoms reduce	-Increasing when 'tunnel vision' fades	-holding back of taking over control -offer maximum support -recognize emotional suffering