

THEORETICAL MODELS OF SUICIDE: A NARRATIVE REVIEW¹

Isadora Silveira Ligório², Orcid: <https://orcid.org/0000-0002-5503-238X>

Aline Ruoso Godoi², Orcid: <https://orcid.org/0000-0003-1177-8777>

Gabriela Fernandes Soares², Orcid: <https://orcid.org/0000-0002-1055-474X>

Luísa Fernanda Habigzang^{2 3}, Orcid: <https://orcid.org/0000-0002-0262-0356>

ABSTRACT. Suicide is a serious public health problem worldwide. Understanding its manifestation is important to outline future interventions. This narrative review of the literature aimed to discuss some of the most recent and prominently referenced theoretical models in the literature about suicide: Cognitive Model of Suicidal Acts, Interpersonal Theory of Suicide, Integrated Motivational-Volitional Model of Suicidal Behavior, and Three-Step Theory. Also, we analyzed the explanatory variables the models have in common and the empirical evidence that supports them. The models indicate relationships between individual and contextual aspects and complement each other to understand suicide. While the literature extensively elucidates factors associated with suicidal ideation, the differentiation and transition from ideation to suicide attempts demand further elucidation to help identify people at risk of death and develop effective prevention and treatment actions. Despite being a premise of explanatory models, there was a lack of longitudinal studies that help predict suicide. The explanatory variables, supported by empirical evidence, can contribute to qualifying public health policies to combat the phenomenon.

Keywords: Suicide; suicide attempt; literature review.

MODELOS TEÓRICOS DO SUICÍDIO: UMA REVISÃO NARRATIVA

RESUMO. O suicídio é considerado um grave problema de saúde pública mundial. Compreender a sua manifestação é necessário para traçar futuras intervenções. O objetivo desta revisão narrativa da literatura foi apresentar alguns dos modelos teóricos mais recentes e citados sobre o suicídio: Modelo Cognitivo do Atos Suicidas, teoria Interpessoal do Suicídio, Modelo Motivacional-volitivo Integrado de Suicídio e teoria das Três Etapas. Além disso, foram analisadas as variáveis explicativas que os modelos têm em comum e as evidências empíricas que os sustentam. Os modelos indicam relações entre aspectos individuais e contextuais, e se complementam para compreensão do suicídio. De forma geral, aspectos associados à ideação suicida são mais bem estabelecidos na literatura. No entanto, a diferenciação e a transição da ideação suicida para a tentativa de suicídio precisam ser melhor esclarecidas para ajudar a identificar pessoas em risco de vida e formular ações efetivas de prevenção e tratamento. Apesar de ser uma premissa de modelos explicativos, observou-se a ausência de pesquisas longitudinais que auxiliam na predição do suicídio. As variáveis explicativas, sustentadas por evidências empíricas, podem contribuir para qualificar políticas públicas em saúde para enfrentamento do fenômeno.

¹ Support and funding: Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES).

² Pontifícia Universidade Católica do Rio Grande do Sul, Porto Alegre-RS, Brazil.

³ E-mail: luisa.habigzang@pucrs.br



Palavras-chave: Suicídio; tentativa de suicídio; revisão de literatura.

MODELOS TEÓRICOS DEL SUICIDIO: UNA REVISIÓN NARRATIVA

RESUMEN. El suicidio se considera un grave problema de salud pública en todo el mundo. Es necesario comprender su manifestación para delinear futuras intervenciones. El objetivo de esta revisión narrativa de la literatura fue presentar algunos de los modelos teóricos más recientes mencionados en la literatura sobre el suicidio: Modelo Cognitivo de Actos Suicidas, Teoría Interpersonal del Suicidio, Modelo Integrado Motivacional-Volativo del Suicidio y Teoría de Tres Pasos. Asimismo, analizar qué variables explicativas tienen en común, así como la evidencia empírica que las sustenta. Los modelos indican relaciones entre aspectos individuales y contextuales, y se complementan para entender el suicidio. En general, los aspectos asociados a la ideación suicida se encontraron mejor establecidos en la literatura. Sin embargo, es necesario aclarar mejor la diferenciación y la transición de la ideación suicida al intento de suicidio para ayudar a identificar a las personas en riesgo de vida y formular acciones de prevención y tratamiento eficaces. A pesar de ser una premisa de los modelos explicativos, faltaron investigaciones longitudinales que ayuden a predecir el suicidio. Las variables explicativas, sustentadas en evidencia empírica, pueden contribuir a calificar las políticas de salud pública para enfrentar el fenómeno.

Palabras clave: Suicidio; intento de suicidio; revisión de literatura.

Introduction

Suicide is a global public health problem. Estimates indicate that 800,000 people die each year due to suicide worldwide. Among people aged 15 to 29, it is the second leading cause of death (World Health Organization [WHO], 2014). In Brazil, from 2011 to 2015, 55,649 deaths by suicide were recorded, which is equivalent to an overall rate of 5.5 deaths for every 100,000 inhabitants (Brasil, 2017).

In relation to the factors associated with suicide, different variables interact with each other and act directly or indirectly, and cumulatively to increase the individual's vulnerability to exhibiting this behavior (WHO, 2014). The challenge in addressing factors associated with suicide as risk factors is emphasized given the scarcity of longitudinal studies in the literature that could indicate causal relationships (Wenzel, Brown, & Beck, 2010).

Some of the factors associated with the risk of suicide are psychiatric disorders (Borges et al., 2010; Burón et al., 2016; Logan, Hall, Karch, 2011), alcohol and other substance abuse (Logan et al., 2011; WHO, 2014) and interpersonal conflicts (Burón et al., 2016; Logan et al., 2011). In addition, unemployment, financial loss (Borges et al., 2010, WHO, 2014), trauma, violence (Miché et al., 2020; WHO, 2014), and history of attempted suicide (Bostwick et al., 2016; WHO, 2014) are also related to the outcome of suicide.

However, most people who present the above characteristics will not manifest this behavior throughout their lives, which raises questions about how we can identify those individuals who are truly at risk (Belsher et al., 2019). According to a meta-analysis that sought to evaluate the risk factors associated with suicide, they were found to be weak and imprecise predictors of behavior. Therefore, an accurate estimate of fatal suicidal behavior will likely require a complex combination of many factors, which may be variable over time (Franklin et al., 2017).

In order to encompass the diversity of elements associated with fatal suicidal behavior and try to explain it, theorists seek to understand the phenomenon through the construction of etiological model. Analyzing the etiology of the phenomenon is necessary to assist in the development of accurate strategies for prevention and intervention. Considering this, the aim of this narrative review of the literature is to present the most recent and cited theoretical models about suicide: Cognitive Model of Suicidal Acts, Interpersonal Theory of Suicide, Integrated Motivational-Volitional Model of Suicidal Behavior, and Three-Step Theory. Additionally, the review seeks to analyze the explanatory variables the models have in common and evaluate the empirical evidence that supports the explanatory hypotheses about suicide.

Theoretical models of suicide

One of the classic models frequently cited in the literature is that of the sociologist Durkheim (1973), who understands suicide as a social and collective phenomenon. The author sought to understand under what social conditions different types of suicide occur to construct an etiological classification of the phenomenon. For Durkheim, understanding suicide starts from the whole (collective) to reach the parts (individuals). To do this, he sought to understand how general causes are individualized to trigger suicidal behavior.

In recent years, four explanatory models regarding suicide have been prominent. Within the cognitive approach, Wenzel et al. (2010) stands out. The other three models (Joiner, 2005; O'Connor, 2011; Klonsky & May, 2015) approach the phenomenon in an integrative manner, through a biopsychosocial understanding.

In the Cognitive Model of Suicidal Acts, proposed by Wenzel et al. (2010), there are three main concepts: dispositional vulnerability factors, that is, characteristics of the individual (i.e. impulsivity, problem-solving difficulties, perfectionism, information processing bias), cognitive processes associated with general psychiatric disorders and cognitive processes specifically related to suicidal behavior.

Dispositional vulnerability is not directly linked to suicidal behavior; however, it has the potential to trigger negative schemas associated with psychiatric disorders in stressful situations. Furthermore, it can act as a stressor for the individual and influence cognitive processing during a suicidal crisis, making it difficult to use other more adaptive strategies.

Cognitive processes associated with general psychiatric disorders are related to the activation of negative schemas during stressful periods, which leads to maladaptive information processing and reactions for the individual. Activation of negative schemas can trigger other negative schemas, increasing the likelihood that the suicide schema will be activated. The suicide schema refers to cognitive structures developed from life experiences, which influence information processing and the individual's emotions and, in this case, are related to suicidal behavior (Wenzel et al., 2010).

Specific cognitive processes associated with suicidal behavior can be activated under stressful conditions, culminating in a state of hopelessness. When this schema is activated, information about suicide becomes more present, and the ability to disengage from information related to suicide is impaired, which restricts attentional focus and makes problem-solving difficult, increasing the feeling of despair and, consequently, suicidal ideation.

The interaction between dispositional vulnerability, negative schemas, and life stressors may increase the likelihood of activating suicide schemas. A suicide attempt occurs when the relationship between hopelessness, suicidal ideation, and attentional fixation exceeds the individual's tolerance threshold (Wenzel et al., 2010).

Based on the Interpersonal Theory of Suicide, Joiner (2005) presents a new way of understanding suicidal behavior. The model introduces the ideation-to-action theory of suicide, delineating a distinction between suicidal ideation and its transition to suicide attempts as separate processes, each characterized by distinct explanations and associated risk factors. Furthermore, this model is guided by three central concepts: thwarted belongingness, perceived burdensomeness, and acquired capability for engaging in suicidal behavior.

Thwarted belongingness is a dynamic cognitive-affective state that varies over time and is influenced by interpersonal (i.e. social network size) and intrapersonal (i.e., personal schemas; propensity to interpret other's behavior as indicative of rejection) factors. The perceived burdensomeness has two dimensions: beliefs that the self is full of flaws to the point of being a responsibility to others and cognitions filled with self-hatred. This perception is also understood as something dynamic, which can change over time and the type of relationship (Van Order et al., 2010).

The acquired capability for suicide involves a reduction in the fear associated with suicidal behaviors. This capability is developed through habituation to repeated exposure to pain and fear stimuli, which increases pain tolerance and enables greater involvement in increasingly painful, physically harmful, and lethal forms of self-injury. Additionally, access to the means to attempt suicide is also considered a way of enhancing the capability for suicide (Van Order et al., 2010).

According to the Interpersonal Theory of Suicide, initially, thwarted belongingness combined with high levels of perceived burdensomeness and hopelessness regarding these situations would lead to thoughts/desires about suicide. A high acquired capability for suicide, through habituation to pain and fear of death, would be related to potentially lethal suicide attempts (Van Order et al., 2010). This theory enabled the emergence of other theories, which also seek to explain the process of 'ideation-to-action' of suicide.

O'Connor's (2011) Integrated Motivational-Volitional Model of Suicidal Behavior includes three phases: pre-motivational, motivational, and volitional. In the pre-motivational phase, elements such as the biopsychosocial context, vulnerability factors (i.e., perfectionism, adverse developmental experiences), and negative triggering events are important elements for the emergence of suicidal ideation and subsequent behavior (O'Connor & Kirtley, 2018).

In the motivational phase, there is a relationship between feelings of defeat and entrapment, which drive the individual towards suicidal ideation. The transition from feelings of defeat to entrapment depends on the interaction of threat to self-moderators (i.e., approach to resolving social problems, coping mechanisms employed, memory biases, ruminative process), which are factors involved in problem-solving ability. Additionally, this transition is affected by motivational moderators such as perceived burdensomeness, little or no social support, and diminished resilience (O'Connor & Kirtley, 2018).

During the volitional phase, the transition to a suicide attempt is moderated by a group of volitional factors, which can be environmental, social, psychological, or physiological. These include access to means, exposure to suicidal behavior, acquired capability for suicide (i.e., reduced fear of death and increased tolerance to pain), planning, impulsivity, mental images (i.e., of being dead or dying), previous suicide attempts or a history of self-harm (O'Connor & Kirtley, 2018).

Finally, the Three-Step Theory (Klonsky & May, 2015) states that the combination of pain generally 'psychological or emotional pain' and hopelessness results in suicidal ideation. Different forms of pain can lead to a decrease in the desire to live, such as physical

suffering, social isolation, perception of being a burden, low belonging, feelings of defeat and entrapment, negative self-perceptions, and many other aversive thoughts, emotions, sensations, and experiences. However, according to the theory, pain alone does not lead to suicidal ideation; therefore, it depends on the presence of hopelessness within the context, which configures the first step of the model.

The second step toward potentially lethal suicidal behavior involves connectedness, which concerns not only interpersonal relationships but also connections to work, personal projects, or any sense of purpose or meaning that keeps someone invested in life. Therefore, connectedness is an important protective factor against increased active ideation. In the third stage, the progression from ideation to action is facilitated by the capability to attempt suicide, which is composed of dispositional (i.e., genetic factors such as low sensitivity to pain), acquired (i.e., habituation to pain, fear, and death through experiences such as physical abuse, self-harm) and practical (i.e., knowledge and access to means) aspects (Klonsky & May, 2015).

Convergence analysis of explanatory variables for suicide

The theoretical models presented above contribute to explaining under which conditions suicide emerges. Through elucidating the phenomenon, it becomes evident that these models share similar concepts and explanatory variables.

The models (Joiner, 2005; Klonsky & May, 2015; O'Connor, 2011; Wenzel et al., 2010) collectively demonstrate the crucial role of context; since each individual's life experiences significantly influence other important factors for suicide risk. This can be understood as experiences interfering with an individual's cognitive processes. Adverse events, especially in childhood, combined with individual predispositions can facilitate the emergence of negative and dysfunctional cognitive structures that influence the perception and interpretation of reality (Wenzel et al., 2010). In turn, negative cognitions are involved in the emergence of suicidal ideation, and the presence of current life stressors can trigger or strengthen them (Joiner, 2005; Klonsky & May, 2015; O'Connor, 2011; Wenzel et al., 2010). Furthermore, these cognitions can be exacerbated by a fixation on suicide thoughts, perceiving suicide as the only alternative (Wenzel et al., 2010).

Additionally, O'Connor (2011) and Klonsky and May (2015) highlight the significance of 'tunnel vision' and the sense of being trapped, which facilitates the consideration of suicide as an option. Information processing bias reinforces dysfunctional thoughts, makes it difficult to construct alternatives, and intensifies attention toward suicide-related issues. Wenzel et al. (2010) emphasize that this cognitive process can increase hopelessness and, together with attentional fixation, impede problem-solving abilities, which increases suicidal ideation. Similarly, O'Connor (2011) underscores how memory biases and difficulty in solving problems contribute to the transition from feelings of defeat to the feeling of entrapment.

Three of the models present hopelessness as a determining factor for the emergence of suicidal ideation (Joiner, 2005; Klonsky & May, 2015; Wenzel et al., 2010). According to Joiner (2005) and Klonsky and May (2015), suicidal ideation arises only in the presence of hopelessness. In the model by Wenzel et al. (2010), hopelessness is influenced by cognitions and adjacent cognitive processes, which can exacerbate this state and trigger acute suicidal ideation.

Regarding impulsivity, the model by Wenzel et al. (2010) is the one that most emphasizes its relationship with suicide. The authors highlight its connection to unbearability

(i.e., “I can’t take it anymore”) and, consequently, to an increased risk of a suicide attempt. O’Connor (2011) also identifies impulsivity as one of the moderators of the transition from ideation to suicide attempt.

Aspects related to social connection are highlighted in three of the models mentioned (Joiner, 2005; Klonsky & May, 2015; O’Connor, 2011). According to the Interpersonal Theory of Suicide (Joiner, 2005), the size of one’s social network plays a pivotal role in either influencing or safeguarding against feelings of thwarted belongingness. Moreover, the assessment of relationship quality significantly impacts the perception of being a burden to others. O’Connor (2011) points out that rejection can impact an individual’s feelings of defeat. Perceiving oneself as burdensome or having little or no social support acts as a moderator of the transition from the feeling of entrapment to suicidal ideation. Klonsky and May (2015) emphasize the importance of social connection as a protective factor against heightened suicidal ideation and suicide attempts.

Ideation-to-action framework models (Joiner, 2005; Klonsky & May, 2015; O’Connor, 2011) cite suicide capability as a determining factor for the transition from suicidal ideation to a suicide attempt. In addition to dispositional aspects, the capability for suicide can be developed throughout life from distressing experiences (i.e., adverse circumstances, maltreatment, previous suicide attempts, self-injury), which desensitize the individual to the fear of pain and death.

Empirical evidence of theoretical models

To analyze the empirical evidence supporting the theoretical models, empirical studies on the four models were selected in an unsystematic approach: Cognitive Model of Suicidal Acts, Interpersonal Theory of Suicide, Integrated Motivational-Volitional Model of Suicidal Behavior, and Three-Step Theory. However, no empirical articles were found referring to the model by Wenzel et al. (2010).

Interpersonal Theory of Suicide

According to the search carried out, we found studies that evaluated the model with adolescents (Barzilay et al., 2015), adults (Becker, Foster, & Luebbe, 2020; Paashaus et al., 2019; Teismann, Glaesmer., Von Brachel, Siegmann, & Forkmann, 2017; Tucker et al., 2018) and elderly individuals (Guidry & Cukrowicz, 2016). In other studies, the participants included were at different life stages: adolescents and adults (Baertschi et al., 2017); adults and elderly individuals (Chu, Hom, Hirsch, & Joiner, 2019; Hallensleben et al., 2019; Granato, Boone, Kuhlman, & Smith, 2018), adolescents, adults, and elderly individuals (Glaesmer et al., 2017). Furthermore, the samples varied between general population (Barzilay et al., 2015; Becker et al., 2020; Glaesmer et al., 2017; Guidry & Cukrowicz, 2016; Tucker et al., 2018), clinical population (Baertschi et al., 2017; Granato et al., 2018; Hallensleben et al.; 2019; Paashaus et al., 2019; Teismann et al., 2017), and sexual and gender minorities (Chu et al., 2019).

Some studies focused on the stage of development of suicidal ideation (Chu et al., 2019; Hallensleben et al., 2019; Guidry & Cukrowicz, 2016; Teismann et al., 2017; Tucker et al., 2018), while others focused on the action stage for suicide (Granato et al., 2018; Paashaus et al., 2019). Baertschi et al. (2017), Barzilay et al. (2015), Becker et al. (2020), and Glaesmer et al. (2017) analyzed the entire structure from ideation to action of the model. The studies are characterized by a cross-sectional and quantitative design. Notably, Teismann et al.’s (2017) research employed a longitudinal approach, and the study by Hallensleben et al. (2019) was a short-term prospective.

As for the development of suicidal ideation, some studies showed that the perception of being a burden was more relevant to this outcome (Baertschi et al., 2017; Hallensleben et al., 2019; Chu et al., 2019; Teismann et al., 2017). In other research (Becker et al., 2020), the perception of being a burden and thwarted belongingness were similarly associated with suicide risk. However, the perception of being a burden, thwarted belongingness, and the interaction of these variables were not predictors of suicidal ideation in the studies by Guidry and Cukrowicz (2016) and Teismann et al. (2017).

In the study by Barzilay et al. (2015), although the interaction between the perception of being a burden and thwarted belongingness is predictive of suicidal ideation, depression mediated a large part of this relationship and was considered a more satisfactory predictor. Similarly, in Hallensleben et al.'s (2019) study, hopelessness, perceived burdensomeness, and the interaction between perceived burdensomeness and frustrated belonging significantly predicted active suicidal ideation. Nevertheless, hopelessness was the variable with the most reliable effects on suicidal ideation. Additionally, other studies also corroborate the important role of hopelessness in suicidal ideation (Baertschi et al., 2017; Guidry & Cukrowicz, 2016).

The capability for suicide refers to the action stage of the model. In a study involving adolescents, acquired capability acted as a predictor of attempted suicide (Barzilay et al., 2015). Another population-based study found that the interaction between the perception of being a burden with acquired capability significantly predicted suicidal behavior (Glaesmer et al., 2017). However, the results of Paashaus et al. (2019) did not indicate differences in any aspect of the capability for suicide between individuals with suicidal ideation and those who attempted suicide. Nevertheless, individuals who attempted suicide reported a greater perceived capability for an attempt and a higher frequency of painful events.

Granato et al. (2018) observed that one of the aspects of the capability for suicide, the lack of fear of death, was related to the perpetration of violence. Regarding gender differences, men showed higher levels of fearlessness toward death and the perpetration of violence. Furthermore, the perpetration of violence partially mediated the association between the male gender and the lack of fear of death.

Based on the reviewed studies, the perception of being a burden (Baertschi et al., 2017; Becker et al., 2020; Hallensleben et al., 2019; Chu et al., 2019; Teismann et al., 2017) and hopelessness (Baertschi et al., 2017; Guidry & Cukrowicz, 2016; Hallensleben et al., 2019) exhibit substantial empirical support in the structuring of suicidal ideation. In the action stage, the capability for suicide was associated with suicidal behavior (Barzilay et al., 2015; Glaesmer et al., 2017; Granato et al., 2018). However, there are also divergent results (Paashaus et al., 2019), which may be related to the different measures used to access the variable and the focus to investigate only one aspect of the construct (i.e., perception of loss of fear of pain and death).

Furthermore, there is a lack of studies that relate the three main variables to each other, which makes it difficult to test the validity of the model as a whole. Parallel to this, most of the studies had a cross-sectional design, limiting predictive and causal analyses, which is one of the objectives of building explanatory models. It is also noted the absence of qualitative studies, which are important to explore the variables in depth, especially those related to the individual's subjectivity, such as the perception of being a burden and thwarted belongingness.

Integrated Motivational-Volitional Model of Suicidal Behavior

The reviewed articles encompassed diverse samples, including young adults (Rasmussen et al., 2019; Whetherall et al., 2018), elderly individuals (Sousa, Perrelli,

Mangueira, Lopes, & Sougey, 2020), and adults across varying age groups (Branley-Bell et al., 2019; Dhingra, Boduszek, & O'Connor, 2015; Dhingra, Boduszek, & O'Connor, 2016; Forkmann & Teismann, 2017). These studies are characterized by a cross-sectional and quantitative design, with samples drawn from the general population. Two studies stood out - one employed a longitudinal approach (Branley-Bell et al., 2019), and another targeted a clinical sample (Sousa et al., 2020).

Regarding the focus of the studies, Sousa et al. (2020) investigated the three phases of the model (pre-motivational, motivational, and volitional) to assess suicide risk. Rasmussen et al. (2019) focused on analyzing differences in the variable 'sexual orientation' in pre-motivational and motivational factors and their influence on suicidal ideation/intention. Forkmann and Teismann (2017) specifically examined the association between motivational phase variables and suicidal ideation. Other studies evaluated the motivational and volitional phases (Branley-Bell et al., 2019; Dhingra et al., 2015, 2016; Whetherall et al., 2018) in order to examine differences between the outcomes of suicidal ideation (motivational phase) and attempt of suicide (volitional phase).

In the study by Sousa et al. (2020), experiencing hostile situations and having difficulty expressing feelings was significantly associated with suicide attempts in the pre-motivational phase. In the motivational phase, apathy, sadness, unhappiness, and hopelessness showed a greater relationship with the outcome, while self-neglect increased the likelihood of a suicide attempt by more than a hundred times in the volitional phase. Additionally, the presence of plans for an attempt and severe depressive symptoms increased the risk for the outcome.

The results found by Rasmussen et al. (2019) point out that sexual orientation was the only significant sociodemographic variable in the pre-motivational phase. Psychological distress was also a significant pre-motivational predictor and was positively associated with feelings of defeat, feelings of entrapment, and suicidal ideation/intention. In the motivational phase, heterosexuals reported fewer feelings of defeat, entrapment, suicidal intention, and a lower frequency of suicidal ideation, when compared to other sexual orientations (LGBQIA+), which points to the greater risk among sexual minorities. Forkmann and Teismann (2017) found associations between the perception of being a burden and the feeling of entrapment associated with suicidal ideation. However, neither the perception of being a burden nor thwarted belongingness moderated the relationship between the feeling of entrapment and suicidal ideation, contrary to one of the model's premises.

In studies that analyzed the motivational and volitional phases, the suicidal ideation group and the suicide attempt group showed significant differences from the control group in the motivational phase. Although research evaluated different factors, feelings of defeat and entrapment were motivational variables common to the studies and significant in differentiating the groups (Branley-Bell et al., 2019; Dhingra et al., 2015; Whetherall et al., 2018).

Branley-Bell et al. (2019) observed that the feeling of entrapment significantly moderated the relationship between feelings of defeat and suicidal ideation at baseline and one-month follow-up. Dhingra et al. (2016) also found significant associations between entrapment, the perception of being a burden, thwarted belongingness, goal disengagement, and suicidal ideation. The suicidal ideation group and the suicide attempt group were differentiated by volitional factors. Knowing someone close with a history of suicidal behavior has been identified in different studies as an important volitional factor (Branley-Bell et al., 2019; Dhingra et al., 2015; Whetherall et al., 2018). Lack of fear of death (Dhingra et al., 2015, 2016) and impulsivity (Branley-Bell et al., 2019; Whetherall et al., 2018)

were also associated with attempted suicide. However, in Dhingra et al. 2016, impulsivity was not related to this outcome.

The Integrated Motivational-Volitional Model of Suicidal Behavior has a wide variety of factors involved in each phase, and for this reason, the studies found did not always analyze the same variables, which makes it difficult to compile evidence about the model. On the other hand, some results demonstrated consistency when distinguishing the suicide ideation and attempted suicide groups from the control group based on the motivational phase variables (Branley-Bell et al., 2019; Dhingra et al., 2015, 2016; Whetherall et al., 2018). The ideation group and the action group were distinguished by some of the variables of the volitional phase (Branley-Bell et al., 2019; Dhingra et al., 2016; Whetherall et al., 2018). Within the motivational phase, feelings of defeat and entrapment were frequent variables in studies and significant in differentiating risk. In the volitional phase, exposure to suicidal behavior was an important factor in different studies (Branley-Bell et al., 2019; Dhingra et al., 2016; Whetherall et al., 2018).

While research predominantly emphasizes the motivational and volitional phases, the pre-motivational phase's significance cannot be overlooked, given its influence on subsequent phases through dispositional and environmental factors. Knowledge of the context in which the ideation and attempt arise is essential for evaluating the phenomenon. Similar to studies on the Interpersonal Theory of Suicide, studies on this model were predominantly cross-sectional and quantitative methodologies.

Three-Step Theory

According to the search carried out, the age range of the study samples was diverse, ranging from adolescence to young adulthood (Yang, Liu, Chen, & Li, 2018), late adolescence to the elderly (Dhingra, Klonsky, & Tapola, 2019), and adults to the elderly (Anestis, Anestis, & Preston, 2018; Houtsma & Anestis, 2017; Klonsky, & May, 2015). These studies were conducted within the general population (Anestis et al., 2018; Houtsma & Anestis, 2017; Klonsky & May, 2015), among Chinese (Yang et al., 2018) and British university students (Dhingra et al., 2019) and presented a cross-sectional and quantitative design.

Some studies aimed to analyze the model in its entire structure from ideation to action (Dhingra et al., 2019; Klonsky & May, 2015; Yang et al., 2018), while others investigated the relationship between capability for suicide and firearm ownership (Houtsma & Anestis, 2017), as well as the interplay between capability for suicide, personality traits, and firearm ownership (Anestis et al., 2018).

The interaction between psychological pain and hopelessness was significantly associated with the prediction of suicidal ideation (Dhingra et al., 2019; Klonsky & May, 2015; Yang et al., 2018). Connectedness appeared to be protective for participants who scored high in psychological pain and hopelessness (Dhingra et al., 2019; Klonsky & May, 2015; Yang et al., 2018). However, according to Dhingra et al. (2019), connectedness offered similar protective effects for other participant groups that did not score high in these factors. The capability for suicide differentiated the suicidal ideation and suicide attempt groups (Dhingra et al., 2019; Klonsky, & May, 2015; Yang et al., 2018). According to the results of Yang et al. (2018), only the practical aspect of the capability for suicide was predictive of the lifetime history of suicide attempts.

According to Houtsma and Anestis (2017), owning a gun moderated the association between suicidal ideation in the last week and self-reported probability of a suicide attempt, indicating likely future involvement in suicidal behaviors. Despite the important results, the study presented a limited sample size for the group with gun ownership. The study by

Anestis et al. (2018) used the triarchic model of psychopathy to evaluate personality traits, corresponding to the dispositional aspect of suicide capability. According to the study, within the psychopathy model, audacity was the construct that best predicted the capability for suicide. Furthermore, men had significantly higher levels of capability for suicide, and the relationship between the number of weapons and practical capability was significantly higher among men.

Research focusing on the structure of ideation to action has demonstrated the importance of the association between psychological pain and hopelessness in predicting suicidal ideation (Dhingra et al., 2019; Klonsky & May, 2015; Yang et al., 2018). On the other hand, connectedness protects the individual from the progress of suicidal ideation (Dhingra et al., 2019; Klonsky & May, 2015; Yang et al., 2018). However, studies have investigated connectedness related to interpersonal relationships, neglecting other crucial aspects such as connections to projects, aspirations, or life purpose. Therefore, these other aspects are suggested to be investigated in future research.

The capability for suicide was shown to be important in distinguishing the suicidal ideation and suicide attempt groups, in addition to indicating risk for suicidal behavior (Dhingra et al., 2019; Klonsky & May, 2015; Yang et al., 2018). The practical aspect of the capability for suicide stood out in the research by Yang et al. (2018). Parallel to this, studies by Houtsma and Anestis (2017) and Anestis et al. (2018) focused on the practical aspect of the capability for suicide, emphasizing firearm ownership as indicative of a relevant risk. However, due to the cross-sectional and quantitative nature of these studies, establishing causal relationships between variables as predictors of outcomes remains challenging.

Final considerations

Suicide is a globally important public health problem that affects not only the individual but also the family, loved ones, and the community (WHO, 2014). Despite its relevance, it is still difficult to effectively predict the phenomenon. According to Franklin et al. (2017), suicide has been studied for many years; however, there is still little precision regarding the risk factors associated with the behavior. Consequently, many gaps regarding suicide need to be filled.

In addition to the associated factors, one of the ways to approach the explanation of the phenomenon is through theoretical models, which aim to explain the manifestation of suicidal behavior. This narrative literature review aimed to present recent theoretical models about suicide, analyze their explanatory variables in common, and check for empirical evidence supporting their explanatory proposals about suicide.

Theoretical models advance the understanding of suicide. Testing the validity of the models is necessary to understand whether the proposed explanations help in predicting the phenomenon. However, suicide is multidetermined by factors that vary over time, which act cumulatively, increasing the individual's vulnerability to a suicide attempt (WHO, 2014). Therefore, its manifestation is diverse and complex, which makes it difficult to identify individuals at risk.

Despite being a phenomenon with strong collective influence, individual analysis, which takes into account the subject's context, becomes essential for investigation and intervention. In general, the theoretical models investigated pointed to the importance of individual and contextual factors and the interrelationship between them in the manifestation of suicidal behavior.

Aspects associated with suicidal ideation are better established in the literature. Regarding attempted suicide, there are still many questions about how the transition from ideation to action occurs. In order to get closer to this understanding, the models of Joiner (2005), O'Connor (2011), and Klonsky and May (2015) propose that the capability for suicide is crucial in the suicide attempt.

According to the proposed review, the capability for suicide, in all its aspects (dispositional, acquired, and practical), helped to distinguish those who think about suicide from those who act on their thoughts. Therefore, research that takes into account aspects of action within suicide is important to improve understanding of the phenomenon and help differentiate people at higher risk.

It is also noticeable the absence in the investigation of contextual stressors or those related to life history, which are relevant for triggering suicidal behavior. There is also a lack of longitudinal studies on theoretical models, which draws attention since the objective of explanatory models is to demonstrate predictive relationships of the phenomenon. As there are several gaps regarding suicidal behavior, exploratory qualitative studies can be important to guide new fields of research and get closer to understanding suicide.

The review highlights key areas for clinical practice in identifying people at risk, such as perceptions that the subject has about themselves, the situation they are in, or their future. These perceptions are fundamental in the development of suicidal ideation. Additionally, in the action phase, being close to someone with a history of suicidal behavior is a significant factor in a suicide attempt. Knowledge of this variable points to the need for interventions with family and friends of people who died by suicide.

Access to means also increases the risk of ideation becoming action, and its restriction helps to prevent suicide, as it allows greater reflection on the act, especially in impulsive suicides (WHO, 2014). For this type of action to be developed, a local analysis of the most used means is necessary. The use of pesticides and firearms, for example, are among the most common ways of attempting suicide (WHO, 2014). Actions aimed at regulating the use of pesticides and the use of less toxic or vomit-inducing substances in their composition (Page et al., 2017; Yang et al. 2018; WHO, 2014), in addition to disarmament and firearm restriction policies, are ways of combating and preventing suicide (Anestis et al., 2015; Anestis & Anestis, 2015; WHO, 2014).

References

- Anestis, M. D., & Anestis, J. C. (2015). Suicide rates and state laws regulating access and exposure to handguns. *American Journal of Public Health, 105*(10), 2049-2058. <https://doi.org/10.2105/ajph.2015.302753>
- Anestis, J. C., Anestis, M. D., & Preston, O. C. (2018). Psychopathic personality traits as a form of dispositional capability for suicide. *Psychiatry Research, 262*, 193-202. <https://doi.org/10.1016/j.psychres.2018.02.003>
- Anestis, M. D., Khazem, L. R., Law, K. C., Houtsma, C., LeTard, R., Moberg, F., & Martin, R. (2015). The association between state laws regulating handgun ownership and statewide suicide rates. *American Journal of Public Health, 105*(10), 2059-2067. <https://doi.org/10.2105/ajph.2014.302465>
- Baertschi, M., Costanza, A., Richard-Lepouriel, H., Pompili, M., Sarasin, F., Weber, K., & Canuto, A. (2017). The application of the interpersonal-psychological theory of suicide

- to a sample of Swiss patients attending a psychiatric emergency department for a non-lethal suicidal event. *Journal of Affective Disorders*, 210, 323-331. <https://doi.org/10.1016/j.jad.2016.12.049>
- Barzilay, S., Feldman, D., Snir, A., Apter, A., Carli, V., Hoven, C. W., ... Wasserman, D. (2015). The interpersonal theory of suicide and adolescent suicidal behavior. *Journal of Affective Disorders*, 183, 68-74. <https://doi.org/10.1016/j.jad.2015.04.047>
- Becker, S. P., Foster, J. A., & Luebke, A. M. (2020). A test of the interpersonal theory of suicide in college students. *Journal of Affective Disorders*, 260, 73-76. <https://doi.org/10.1016/j.jad.2019.09.005>
- Belsher, B. E., Smolenski, D. J., Pruitt, L. D., Bush, N. E., Beech, E. H., Workman, D. E., ... Skopp, N. A. (2019). Prediction Models for Suicide Attempts and Deaths: A Systematic Review and Simulation. *JAMA Psychiatry*, 76(6), 642-651. <https://doi.org/10.1001/jamapsychiatry.2019.0174>
- Borges, G., Nock, M. K., Haro Abad, J. M., Hwang, I., Sampson, N. A., Alonso, J., . . . Kessler, R. C. (2010). Twelve-month prevalence of and risk factors for suicide attempts in the World Health Organization World Mental Health Surveys. *The Journal of Clinical Psychiatry*, 71(12), 1617-1628. <https://doi.org/10.4088/JCP.08m04967blu>
- Bostwick, J. M., Pabbati, C., Geske, J. R., & McKean, A. J. (2016). Suicide Attempt as a Risk Factor for Completed Suicide: Even More Lethal Than We Knew. *The American Journal Of Psychiatry*, 173(11), 1094-1100. <https://doi.org/10.1176/appi.ajp.2016.15070854>
- Branley-Bell, D., O'Connor, D. B., Green, J. A., Ferguson, E., O'Carroll, R. E., & O'Connor, R. C. (2019). Distinguishing suicide ideation from suicide attempts: Further test of the Integrated Motivational-Volitional Model of Suicidal Behaviour. *Journal of Psychiatric Research*, 117, 100-107. <https://doi.org/10.1016/j.jpsychires.2019.07.007>
- Brasil. Ministério da Saúde. Secretaria de Vigilância em Saúde (2017). Suicídio: saber, agir e prevenir. *Boletim Epidemiológico*, 48(30). <https://portalarquivos2.saude.gov.br/images/pdf/2017/setembro/21/2017-025-Perfil-epidemiologico-das-tentativas-e-obitos-por-suicidio-no-Brasil-e-a-rede-de-atencao-a-saude.pdf>
- Burón, P., Jimenez-Trevino, L., Saiz, P. A., García-Portilla, M. P., Corcoran, P., Carli, V., ... Bobes, J. (2016). Reasons for Attempted Suicide in Europe: Prevalence, Associated Factors, and Risk of Repetition. *Archives of Suicide Research: Official Journal of the International Academy for Suicide Research*, 20(1), 45-58. <https://doi.org/10.1080/13811118.2015.1004481>
- Chu, C., Hom, M. A., Hirsch, J. K., & Joiner, T. E. (2019). Thwarted belongingness and perceived burdensomeness explain the relationship between sleep problems and suicide risk among adults identifying as sexual and/or gender minorities. *Psychology of Sexual Orientation and Gender Diversity*, 6(1), 22-33. <https://doi.org/10.1037/sgd0000301>

- Dhingra, K., Boduszek, D., & O'Connor, R. C. (2015). Differentiating suicide attempters from suicide ideators using the Integrated Motivational-Volitional model of suicidal behaviour. *Journal of Affective Disorders*, 186, 211-218. <https://doi.org/10.1016/j.jad.2015.07.007>
- Dhingra, K., Boduszek, D., & O'Connor, R. C. (2016). A structural test of the Integrated Motivational-Volitional model of suicidal behaviour. *Psychiatry Research*, 239, 169-178. <https://doi.org/10.1016/j.psychres.2016.03.023>
- Dhingra, K., Klonsky, E. D., & Tapola, V. (2019). An Empirical Test of the Three-Step Theory of Suicide in U.K. University Students. *Suicide & Life-Threatening Behavior*, 49(2), 478-487. <https://doi.org/10.1111/sltb.12437>
- Durkheim, E. (1973). *O suicídio: estudo de sociologia*. Lisboa, PT: Presença.
- Forkmann, T., & Teismann, T. (2017). Entrapment, perceived burdensomeness and thwarted belongingness as predictors of suicide ideation. *Psychiatry Research*, 257, 84-86. <https://doi.org/10.1016/j.psychres.2017.07.031>
- Franklin, J. C., Ribeiro, J. D., Fox, K. R., Bentley, K. H., Kleiman, E. M., Huang, X., ... Nock, M. K. (2017). Risk factors for suicidal thoughts and behaviors: A meta-analysis of 50 years of research. *Psychological Bulletin*, 143(2), 187-232. <https://doi.org/10.1037/bul0000084>
- Glaesmer, H., Hallensleben, N., Forkmann, T., Spangenberg, L., Kapusta, N., & Teismann, T. (2017). Testing the main prediction of the Interpersonal Theory of Suicide in a representative sample of the German general population. *Journal of Affective Disorders*, 211, 150-152. <https://doi.org/10.1016/j.jad.2017.01.010>
- Granato, S., Boone, S., Kuhlman, S., & Smith, P. N. (2018). Violence victimization and perpetration in relation to fearlessness about death in suicidal psychiatric inpatients. *Journal of Aggression, Conflict and Peace Research*, 10(3), 202-209. <https://doi.org/10.1108/JACPR-07-2017-0307>
- Guidry, E. T., & Cukrowicz, K. C. (2016). Death ideation in older adults: psychological symptoms of depression, thwarted belongingness, and perceived burdensomeness. *Aging & Mental Health*, 20(8), 823-830. <https://doi.org/10.1080/13607863.2015.1040721>
- Hallensleben, N., Glaesmer, H., Forkmann, T., Rath, D., Strauss, M., Kersting, A., & Spangenberg, L. (2019). Predicting suicidal ideation by interpersonal variables, hopelessness and depression in real-time. An ecological momentary assessment study in psychiatric inpatients with depression. *European Psychiatry : the Journal of the Association of European Psychiatrists*, 56, 43-50. <https://doi.org/10.1016/j.eurpsy.2018.11.003>
- Houtsma, C., & Anestis, M. D. (2017). Practical capability: The impact of handgun ownership among suicide attempt survivors. *Psychiatry Research*, 258, 88-92. <https://doi.org/10.1016/j.psychres.2017.09.064>
- Joiner, T. (2005). *Why people die by suicide*. Cambridge, MA: Harvard University Press.

- Klonsky, E. D., & May, A. M. (2015). The Three-Step Theory (3ST): A new theory of suicide rooted in the “ideation-to-action” framework. *International Journal of Cognitive Therapy*, 8(2), 114-129. <https://doi.org/10.1521/ijct.2015.8.2.114>
- Logan, J., Hall, J., & Karch, D. (2011). Suicide Categories by Patterns of Known Risk Factors: A Latent Class Analysis. *Archives of General Psychiatry*, 68(9), 935-941. <https://doi.org/10.1001/archgenpsychiatry.2011.85>
- Miché, M., Hofer, P. D., Voss, C., Meyer, A. H., Gloster, A. T., Beesdo-Baum, K., ... Lieb, R. (2020). Specific traumatic events elevate the risk of a suicide attempt in a 10-year longitudinal community study on adolescents and young adults. *European Child & Adolescent Psychiatry*, 29(2), 179-186. <https://doi.org/10.1007/s00787-019-01335-3>
- O'Connor, R. C. (2011). The integrated motivational-volitional model of suicidal behavior. *Crisis: The Journal of Crisis Intervention and Suicide Prevention*, 32(6), 295-298. <https://doi.org/10.1027/0227-5910/a000120>
- O'Connor, R. C., & Kirtley, O. J. (2018). The integrated motivational–volitional model of suicidal behaviour. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 373(1754). <https://doi.org/10.1098/rstb.2017.0268>
- Paashaus, L., Forkmann, T., Glaesmer, H., Juckel, G., Rath, D., Schönfelder, A., ... Teismann, T. (2019). Do suicide attempters and suicide ideators differ in capability for suicide?. *Psychiatry Research*, 275, 304-309. <https://doi.org/10.1016/j.psychres.2019.03.038>
- Page, A., Liu, S., Gunnell, D., Astell-Burt, T., Feng, X., Wang, L., & Zhou, M. (2017). Suicide by pesticide poisoning remains a priority for suicide prevention in China: Analysis of national mortality trends 2006–2013. *Journal of Affective Disorders*, 208, 418-423. <https://doi.org/10.1016/j.jad.2016.10.047>
- Rasmussen, S., Cramer, R. J., McFadden, C., Haile, C. R., Sime, V. L., & Wilsey, C. N. (2019). Sexual Orientation and the Integrated Motivational-Volitional Model of Suicidal Behavior: Results from a Cross-Sectional Study of Young Adults in the United Kingdom. *Archives of Suicide Research : Official Journal of the International Academy for Suicide Research*, 1-19. <https://doi.org/10.1080/13811118.2019.1691693>
- Sousa, G. S., Perrelli, J. G. A., Manguiera, S. O., Lopes, M. V. O., & Sougey, E. B. (2020). Clinical validation of the nursing diagnosis risk for suicide in the older adults. *Archives of Psychiatric Nursing*, 34(2), 21-28. <https://doi.org/10.1016/j.apnu.2020.01.003>
- Teismann, T., Glaesmer, H., Von Brachel, R., Siegmann, P., & Forkmann, T. (2017). A Prospective Examination of Perceived Burdensomeness and Thwarted Belongingness As Risk Factors for Suicide Ideation In Adult Outpatients Receiving Cognitive-Behavioral Therapy. *Journal of Clinical Psychology*, 73(10), 1393-1402. <https://doi.org/10.1002/jclp.22441>
- Tucker, R. P., Hagan, C. R., Hill, R. M., Slish, M. L., Bagge, C. L., Joiner Jr, T. E., & Wingate, L. R. (2018). Empirical extension of the interpersonal theory of suicide: Investigating the role of interpersonal hopelessness. *Psychiatry Research*, 259, 427-432. <https://doi.org/10.1016/j.psychres.2017.11.005>

- Van Orden, K. A., Witte, T. K., Cukrowicz, K. C., Braithwaite, S. R., Selby, E. A., & Joiner, T. E., Jr (2010). The interpersonal theory of suicide. *Psychological Review*, 117(2), 575-600. <https://doi.org/10.1037/a0018697>
- Wenzel, A., Brown, G. K., & Beck, A. T. (2010). *Terapia cognitivo-comportamental para pacientes suicidas*. Porto Alegre, RS: Artmed.
- Wetherall, K., Cleare, S., Eschle, S., Ferguson, E., O'Connor, D. B., O'Carroll, R. E., & O'Connor, R. C. (2018). From ideation to action: Differentiating between those who think about suicide and those who attempt suicide in a national study of young adults. *Journal of Affective Disorders*, 241, 475-483. <https://doi.org/10.1016/j.jad.2018.07.074>
- World Health Organization [WHO] (2014). *Preventing suicide: A global imperative*. Geneve, CH.
- Yang, L., Liu, X., Chen, W., & Li, L. (2018). A test of the three-step theory of suicide among chinese people: a study based on the ideation-to-action framework. *Archives of Suicide Research: Official Journal of the International Academy for Suicide Research*, 23(4), 648-661. <https://doi.org/10.1080/13811118.2018.1497563>

Recebido em 20/10/2020

Aceito em 25/02/2022

Contribuição dos autores

Isadora Silveira Ligório, concepção, delineamento, análise e interpretação dos dados; redação do manuscrito, revisão crítica do conteúdo e aprovação da versão final a ser publicada.

Aline Ruoso Godoi, concepção, delineamento, análise e interpretação dos dados; redação do manuscrito, revisão crítica do conteúdo e aprovação da versão final a ser publicada.

Gabriela Fernandes Soares, concepção, delineamento, análise e interpretação dos dados; redação do manuscrito, revisão crítica do conteúdo e aprovação da versão final a ser publicada.

Luísa Fernanda Habigzang, concepção, delineamento, análise e interpretação dos dados; redação do manuscrito, revisão crítica do conteúdo e aprovação da versão final a ser publicada.