Suicidal Crisis in the Digital Age

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Abstract

Suicide is a growing problem around the world. A suicidal crisis is a situation where a person attempts to kill himself/herself or contemplating to do so. The digital age has played a role in increasing suicidal crisis not only because of cyberbullying but also because of the loss of interpersonal connection that can happen as a result of a digitalized society. This situation requires various methods of prevention and intervention to protect people from harming themselves. There is a great need to identify warning signs as early as possible. Prevention factors such as community support or medical or psychiatric intervention can help patients who are heading toward a crisis. We suggest that novel detection methods that leverage everyday technology and are widely accessible should be developed.

6.1 Introduction

A suicidal crisis is an intense period of imbalance. Intense emotional and physical pain and suffering that can lead to an emergence of suicidal ideation and planning an act of self-harm (Karch et al. 2012). The state leading up to a suicidal crisis is fragile, wherein a single event at work or with family can accelerate the process and trigger suicidal thoughts. This vulnerable situation makes it difficult to identify warning signs because symptoms of distress may not be outwardly noticeable. The progression of a suicidal crisis is illustrated by Fig. 6.1.

In France, where the suicide rate is higher than all of Europe and twice that of the UK and Spain, suicide is the second leading cause of death among 25–34-year-olds and the third most common cause of death among 15–24-year-olds (Centers for

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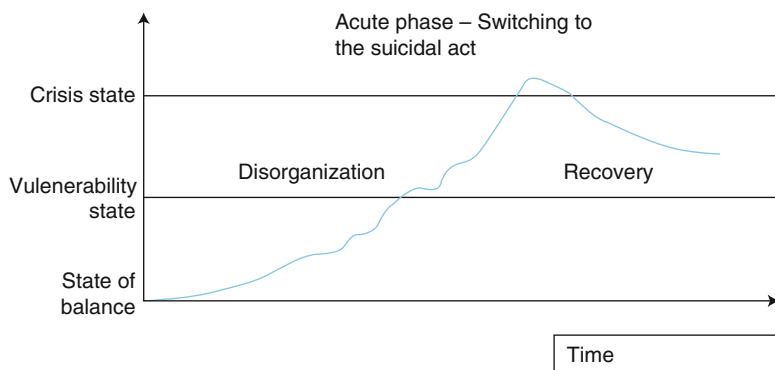
Fig. 6.1 Model of the evolution of the psychological state of the suicidal crisis (Séguin and Terra 2004)

Disease Control and Prevention 2007; Karch et al. 2012). Among French farmers, suicide is the third leading cause of death, overall (Brossard et al. 2013). In the USA, suicide is the tenth leading cause of death, averaged across all age groups (CDC 2013). Males commit suicide at four times the rate of females, representing 77.9 % of all suicides (CDC 2013). In 2012 suicide was the second leading cause of death among ages 15–29 globally (WHO). In the USA suicide is the third leading cause of death for ages 10–14 and the second among ages 15–34 (CDC 2013). Even higher rates exist within particular risk categories. Veterans are at 41–61 % higher risk of suicide relative to the US general population (Kang et al. 2015). Although youth and veterans both represent high-risk groups, the highest rate of suicide in the USA is actually among white males 45–64 years old.

It is estimated that over 90 % of people who commit suicide had a mental illness at the time of their death (Bertolote and Fleischmann 2002; Sharma 2015), depression being the most common. Sadly, these disorders are often unrecognized, undiagnosed, or treated inadequately. After depression, the most common disorders among those who commit suicide are mood disorders, substance use disorders, schizophrenia, and personality disorders (Bertolote and Fleischmann 2002). Most of these findings regarding the connection between underlying mental disorders and suicide have come from "autopsy" studies. This is because detection of mental illness before suicide occurs presents many challenges, one being refusal of the patient to seek help and another being the subjective methods of diagnosis used by clinicians today. The most common cause of suicide is depression, often accompanied by the loss of connection to others, employment, or a loved one (Sharma 2015). Patients with neurological disorders such as schizophrenia, bipolar disorder, Huntington's disease, PTSD, TBI, epilepsy, and countless others are at a significantly higher risk of suicide. The period of vulnerability that precedes a suicide attempt requires the identification of psychiatric disorders, sexual addictive behaviors, and a history of aggression. Courtet et al. (2010) remind us that these are important because they constitute priority risk factors and areas for effective therapeutic intervention.

In our globalized world of today, most perspectives concerning the issue of suicide are homogenized across societies. However, there are some distinct ethnic groups that attach a different meaning to suicide that differs from the westernized ideation of suicide. The prevalence of suicide in these populations shows that under the term "suicidal behavior," multiple realities can coexist depending on the patient's culture. Take the example of Japan, which today still has a very rich vocabulary to describe suicide: "kobara" suicide for the sake of children, "inseki jisatsu" suicide to avoid shame, or "funshi" suicide to express revolt.

6.2   The Effect of the Digital Age

Today, technology is a driving force of the ever-increasing pace of change in the world. Cultural, and geopolitical shifts follow in its wake. The world is changing more rapidly than ever before in history and this rate of change will only continue to accelerate.

Social media, mobile phones, smart tablets, and smart watches – the list continues to grow. What is the effect of technology on suicide? Certainly technology has advanced medicine and psychiatry; with the advent of telemedicine, patient-physician relations are being transformed as new and more personalized therapies are being implemented (Agius-Muscat 2000; Ahmed et al. 2014; Singhroha 2014). Technology has also had a significant influence on education, social interaction, the workplace, and even family life (Chen and Tseng 2012; Greenwood et al. 2012; Mears 2012). Communication has probably been most affected by the digital age as we now live in a hyper-loquacious network of e-mailing, texting, Facebook, Instagram, Twitter, and other forms of social media that are nonstop 24/7.

Most of the suicide literature to date has focused on the effect of social media on suicide rates in youth, particularly cyberbullying (Alao et al. 2006; Keith and Martin 2005; Vandebosch and Van Cleemput 2008; Wang et al. 2011). Not only has there been an increase in chatrooms and forums about preventing suicide, there are also resources that encourage and aid in committing suicide suggesting that the internet may even be a source of suicide contagion (Robertson et al. 2012). Bonanno and Hymel (2013) found that involvement in cyberbullying, as either a victim or a bully, significantly contributed to the prediction of both depressive symptomatology and suicidal ideation, far more than involvement in traditional forms of bullying (physical, verbal, relational).

As technology continues to proliferate, manufacturing will keep getting more automated, transportation is becoming automated, construction will be more automated, and as a result countless people will find themselves jobless. Without a clear, contributive position in society, depression can develop and grows as financial dominos fall, one after the other, until a new job/career is found or some other kind of life break. This is evidenced in the fact that globally middle-aged men show a suicide rate that is 3.0–7.5 times higher than women (Nock et al. 2008). The largest demographic for suicide in the USA is white males between the ages of 45 and 59 (Hu et al. 2008). Being in pre-retirement age, these groups of men are likely to be working or actively looking for employment, but in far too many cases, those who are eligible and wanting a job, find themselves unemployed. Therefore society is faced with a group of experienced, yet decreasingly valued

workers, many of whom are still responsible for their family, mortgages, etc. Unfortunately, it seems that the number of these dispossessed workers will only continue to grow in the years to come. Suicide rates will increase in step with the number of these dispossessed in society, as hopelessness comes from an inability to see any positive future.

This problem is not unique to the developed world – the steady advance of society has also impacted native peoples as rainforests and other lands have been cleared to farm cattle, bananas, sugar, coffee, or other commodities for outsourcing. Clearing these lands has deeply affected the local ecosystems and indigenous peoples for many miles in every direction. Not only have hunting grounds disappeared but the security of isolation has as well. Tribal children grow up seeing things on TV that seem so much more spectacular than what they have in their village and so ultimately want to leave their community, family, and culture behind to pursue another lifestyle. An uneducated native has very little chance of making it big in the city, so they often become a homeless beggar, addict, or thief. While a lifetime of hunting and fishing and singing within the tribe seemed more than enough just a few years ago, the allure of modern society can infect the native mind. Rates of suicide in these encroached cultures are among the highest in the world, as they can no longer see a future for themselves.

6.2.1   Aboriginal and Torres Strait

In Australia the rates of suicide are significantly higher in Aboriginal and Torres Strait Islander peoples. The standardized suicide rate from 2001 to 2010 for Aboriginal and Torres Strait Islanders (21.4 per 100,000) was more than double the non-indigenous rate (10.3 per 100,000) (ABS 2012 Op. Cit.). The Australian Board of Statistics 2012 report found that 1 in 20 of all Aboriginal and Torres Strait Islanders will die from suicide.

6.2.2   French Guiana

French Guiana is an overseas region of France on the North Atlantic coast of South America. The Amerindians are the indigenous peoples of Guiana with a population between 3500 and 7000 people. These indigenous people lead a lifestyle based on subsistence activities: hunting, fishing, and slash-and-burn agriculture. Some communities living along the coast have been exposed to westernization but maintain strong links with their culture of origin. In 2013, Action for Development, Education and Research (ADER) published a data report collected from 2009 to 2013 regarding rates of suicide and attempted suicide among the indigenous populations of the Maroni people. The average annual rate was 2.6 suicides and 8.6 attempted suicides among a population of 1200 inhabitants, in other words a rate 13 times higher than the French national average. Young people under the age of 25 accounted for more than half of all cases. The most commonly used methods used were shooting and hanging. Some have suggested that illegal gold washing, river contamination, an inappropriate education system, addiction, a generation gap, and difficulties in accessing the health system are all factors that may have been influential.

Tribal man still very much exists within modern man, as we are conditioned to have an identity within a relatively small set of people, a family, small group of friends, or tribe. However online (or when competing for a job), we exist among billions of others and so whatever was special or unique about ourselves in our small group/family quickly fades into nothing special, once seen against the macro. We simply can't ever be the smartest, funniest, strongest, or best looking in a group of billions, so identities are more difficult to define than ever before. With times changing so quickly, we need to be ready for an epidemic of dispossessed people and conduct more research to understand and develop more effective treatments for depression. The world will be spinning even faster tomorrow than it is today and millions of people will find themselves displaced as this rate of change accelerates causing widespread vulnerability to depression and possibly even higher rates of suicide.

6.3   Adolescence

Attempted suicide remains a significant problem in adolescence, distinct from that of a child or an adult. Adolescence is a stage of life characterized by various changes and requires great adaptability. Adolescence is often synonymous with changes at a mental and physical level, curiosity in sexuality, exploration of identity, and redefining relationships to others. Emotions occupy the entire field of inner experience. Teenagers seek to find and define their place in the world. Their path has a series of ups and downs, doubts and uncertainties, anxiety, and trust issues.

However, there is hope after an adolescent experiences a suicidal crisis. F Ligier et al. (2009) conducted a ten-yearlong study on the personal and professional well-being of patients who attempted suicide in their adolescence. They found that over three quarters of patients later reported that they were happy in their personal lives and more than half considered themselves to be satisfied or very satisfied with their professional lives. About 17.2 % of the patients reported a chronic psychiatric condition sometimes accompanied by repeated suicide attempts. In a more recent study, Fabienne Ligier et al. (2015) collected 10 years of data on a cohort of 249 patients who attempted suicide during adolescence. They found that the most significant risk factor of suicidal attempt reoccurrence was losing contact early (LCE) with clinicians. Furthermore, they found that most of those who LCE were female and had a psychiatric comorbidity. These results emphasize the importance of detection and early treatment of psychiatric disorders in preventing suicide in young adults.

6.4   Warning Signs and Risk Behaviors

Suicide is most often the final stage of a progressive depression, spawned from either the inability to live with a past trauma or a feeling of hopelessness in the face of an uncertain future (or both). To be mentally healthy, people need to have something to look forward to. Hope is a condition necessary for life. Studies have shown that a predominance of reference to past events over future ones is an indicator of

Table 6.1 Indicators and signs of suicidal crisis (Séguin and Roy 2005)

Behavioral signs	Psychological signs	Direct and indirect verbal messages
Any radical or unusual changes in terms of moods, attitudes, or behaviors	Pessimism	"Soon I will have peace with you"
Dangerous driving or "accidents" frequently	Conflicting emotions: angry outbursts, tears	"I'm going on a long trip"
Isolation: withdrawal, loneliness exaggerated	Spontaneous remission: better to be radical without proper reason after a period of depression	"This is no longer important to me"
Thoughts concerning death	Boredom, guilt feeling	"I give you this. I will not need it anymore"
Donations significant items: letters, gifts	State of indecision, discouragement	"In a few days I will be quiet"
Reconciliation with relatives	Sudden changes in mood	"Sometimes I tell myself that I would be better off dead"
Sudden interest in weapons	Loss of emotional control	
Unusual addictive behavior	Difficulty in attention and concentration	"I lost the joy of living"
Dissociation	Memory loss	"Sometimes I think about killing myself"
Neglected dress	Depersonalization	"I'm afraid to go there"
Imprecise painful complaint	State aggressive, rage	"Is that you're already happened to you, think of the suicide"
Planning means of suicide	Low self-esteem	"If something happens to me, my will is here"
	Fear of suicide	"I'm going to kill myself… "

mental health, which may allow for the development of linguistic analysis methods to identify potential suicide risks.

Warning signs of suicidal thoughts or tendencies include individuals talking about any of the following: wanting to hurt themselves; feeling trapped and/or in unbearable pain; being a burden to others; feeling hopeless, helpless, or worthless with no reason to live; or expressly saying that they want to die, perhaps even how they would do it. Nonverbal warning signs take place over time and include: withdrawing from friends or social activities, showing an increased use of alcohol or other substances, acting anxious or agitated, showing rage or talking about revenge, behaving recklessly, and/or having extreme changes in mood, diet, or sleeping patterns (Rasmussen et al. 2014; Séguin and Terra 2004; Stanley and Brown 2012). Table 6.1 gives common behavioral and psychological warning signs of suicide ideation.

If anyone you know exhibits a combination of these symptoms, you should pay close attention to them and consider contacting a specialist. They will often be able to perform more specific tests and recommend a treatment including changes in diet, behavior, and the increase of activities that strengthen connections among people, families, and communities. Medicinal and counseling therapies may also be prescribed. The primary challenge is one of awareness and proper diagnosis, as most people suffering from depression never recognize it themselves and so live with the condition undiagnosed and untreated. The good news is 80–90 % of the people who seek treatment for depression can be treated successfully (Essau and Petermann 1999; Valente and Saunders 1997). Many great resources are available online.

When symptoms of crisis are identified, prevention is often built around suicide ideation and therapies that focus on acts of self-harm. However, the majority of those who express suicidal thoughts (66 %) will not seek help (Koslow et al. 2014). In some cases the individual will deny having thoughts of suicide to avoid hospitalization or treatment.

6.5   Prevention

Prevention factors, such as social support, can play a major role in suicidal crisis. Studies have shown that when an individual is integrated within a community, they are less likely to accelerate toward suicidal crisis (Chehil and Kutcher 2012; Christensen et al. 2013). In contrast, difficulty "finding their place" in a community and experiencing isolation have been recurring themes of suicidal patients (Gitlin 2014). Being able to integrate into a family unit or a community where it is necessary to play a role in its operation seems to be at the core of social support. Many suicidal patients display qualities of isolation and a lack of family or community support. Fostering social support is a prevention factor that should be emphasized more often.

Another prevention factor is spirituality and religion. As Moron (2000) said, "'Religion' may well incidentally produce the best effects on both the spiritual health and on mental balance, the aim is not healing the psyche, but the salvation of the soul." It is a powerful factor and often a successful method of prevention for many suffering from suicidal crisis (Dervic et al. 2014; Wu et al. 2015). Spirituality, and all that it implies, suggests a search for greater meaning of life. Many religions even condemn the idea of choosing to end your own life, which can have a great influence on someone who is thinking suicidal thoughts.

The suicidal crisis can be conceptualized as an integrative model in which vulnerability factors, precipitating factors, and prevention factors interact (Terra and Le Vinatier 2003). Under this model, vulnerability and protective factors are opposed, creating a dynamic balance. Suicidal crisis arises from an imbalance in the relationship of forces induced by the addition of a third vector: the precipitating event. Schematically, the arrival of an extra psychological stress upsets the status quo of protective factors and vulnerability. One can then observe psychic tensions, which can lead to suicidal crisis. To avoid acts of suicide, the three factors mentioned

Table 6.2 Main protective factors (Terra 2011)

Factors identified for adult protection:
Support from family and social relationships
Presence of a family member, a spouse, a confidant
Pregnancy, children living at home
Family responsibilities
Integration into the community and society
Strong religious belief
Culture severely punishes suicide
Resilience and problem-solving ability

above are therapeutic areas of work for the clinician. These three dimensions should be explored in order to become aware of the full situation, which may help to prevent a suicidal crisis (Table 6.2).

Given the progressive nature of depression and self-destructive thoughts and behavior, it is critical to be able to diagnose and treat the condition early. According to a 2006 report from the National Center for Health Statistics, 90 % of the suicide victims studied in postmortem had a diagnosable psychiatric disorder at the time of their death. More advanced methods of diagnosing and tracking the progression of mental disease are needed, both clinically and at home. So perhaps the most effective method of prevention is earlier detection.

6.6   Detection

Suicide as a result of depression is incredibly tragic, even more so knowing that 80–90 % of these cases could have been successfully treated. The condition is treatable. If more people were aware of the warning signs and were more knowledgeable of the condition and causes, far more people would be seeking and receiving proper treatment.

Clinical interviews and testing are useful but highly subjective methods of diagnosing states of mind, especially since the severity of these conditions changes over time, due to any number of dietary, environmental, or hormonal factors. A patient can seem upbeat and healthy 1 min and then crash into a dark spiral the next – if the physician doesn't witness the patient (and condition) at the right time or know exactly what to look for, it can often be missed. Depression doesn't show up on an MRI. Once more advanced methods for automated diagnosis are developed; neuropsychological examinations could become a regular part of any doctor visit or even be seamlessly integrated into smartphones.

However, neuroscience may end up providing us with an answer to this diagnostic problem, as initial studies of brainwave data suggest biomarkers may be found to predict and correct many abnormal behaviors. Peripheral tissues focused on the levels of neurotransmitters and their metabolites have been found to predominantly show functional abnormalities of these in many cases of suicide. Receptors and receptor-linked signaling systems for serotonin and norepinephrine have great

potential as biomarkers for suicidal behavior, as do platelet 5HT2A receptors and CSF 5HIAA. Other useful biomarkers, such as HPA-axis components and cytokines, have potential as biomarkers for suicide, but need to be studied further.

Other potential methods for clinically detecting the disease (and its degree of severity) would include neuroendocrinal examination of serotonin function and transport throughout the body and noradrenergic examination of norepinephrine and MHPG. Genetics could also provide a greater understanding of risk, as depression and suicide have both been known to run in families. Victims of suicide who had suffered a major depressive disorder have been shown to have a reduction of QKI mRNA levels in their cortical, hippocampic, and amygdala regions, as compared to control subjects (Klempan et al. 2009).

6.7   New Methods of Detection

As the suicidal crisis epidemic continues, it is necessary to develop clinical tools that can detect mental disorders as early as possible in order to manage or intervene before an act of suicide is committed. Accessible, nonintrusive methods would allow for more widespread and effective detection, perhaps even tools that don't require a clinician to administer. Taking EEG, MEG, and skin conductivity readings while performing specific tasks could be used to develop disease biomarkers. Howard et al. (2014) suggest that the most effective way to detect suicidal ideation would be to access rich modes of expression such as language and facial features.

Linguistic analysis likely provides the greatest opportunity for automating the process of diagnosing mental health, as verbal expression is a direct correlate to internal dialogue (Howard 2012; Howard and Guidere 2011). With the explosion of conversational text available for digital analysis (emails, text messages, social media, etc.) and accessibility of speech input from phone calls, recorded therapy sessions and live ambient speech enable vocal and linguistic analysis. Methods of determining the state of mind of an individual through automated lexical analysis have already been developed, but aren't yet in widespread use, clinically or otherwise. One day it may be possible to quickly screen for suicide warning using a smartphone or tablet. More effective screening could be integrated into military health, public schools, and even the workplace. Perhaps detection of suicidal crisis could not only detect suicidal thoughts or behaviors but also give a personalized recommendation of what method of prevention would be most effective.

Conclusion

In conclusion, if we can improve diagnostic technologies and increase the awareness of depression, we will be able to change a significant number of potential suicides into positive outcomes, for so many people and their families. Left undiagnosed and unattended, this condition will only continue to destroy millions of lives and waste billions of dollars, every year. Communities such as schools or veteran associations have to be instructed and educated on how to detect signs of suicidal crisis and how to initiate prevention. A more accessible method of

detecting suicide may also lessen the stigmatization that is associated with having a mental disorder. Although technology may recently have played a role in increased rates of suicide, particularly among adolescents, the mental health community should seize the opportunity to use technology for earlier detection and prevention.

References

Agius-Muscat H (2000) The impact of information technology on medicine. Images Paediatr Cardiol 2(1):1

Ahmed MU, Saaem I, Wu PC, Brown AS (2014) Personalized diagnostics and biosensors: a review of the biology and technology needed for personalized medicine. Crit Rev Biotechnol 34(2):180–196

Alao AO, Soderberg M, Pohl EL, Alao AL (2006) Cybersuicide: review of the role of the internet on suicide. Cyber Psychology & Behavior 9(4):489–493

Bertolote JM, Fleischmann A (2002) Suicide and psychiatric diagnosis: a worldwide perspective. World Psychiatry 1(3):181

Bonanno RA, Hymel S (2013) Cyber bullying and internalizing difficulties: above and beyond the impact of traditional forms of bullying. J Youth Adolesc 42(5):685–697

Brossard C, Santin G, Guseva CI (2013) Surveillance de la mortalité par suicide des agriculteurs exploitants-Premiers résultats. InVS. Octobre

(CDC)., C. f. D. C. a. P (2013) Web-based injury statistics query and reporting system (WISQARS)

Centers for Disease Control and Prevention, N. C. f. I. P. a. C. (2007) Web-based injury statistics query and reporting system

Chehil S, Kutcher S (2012) Suicide prevention. Suicide risk management: a manual for health professionals 2e. John Wiley & Sons. pp 110–114

Chen H-R, Tseng H-F (2012) Factors that influence acceptance of web-based e-learning systems for the in-service education of junior high school teachers in Taiwan. Eval Program Plann 35(3):398–406

Christensen H, Batterham PJ, Soubelet A, Mackinnon AJ (2013) A test of the interpersonal theory of suicide in a large community-based cohort. J Affect Disord 144(3):225–234

Courtet P, Guillaume S, Malafosse A, Jollant F (2010) Genes, suicide and decisions. Eur Psychiatry 25(5):294–296

Dervic K, Oquendo MA, Grunebaum MF, Ellis S, Burke AK, Mann JJ (2014) Religious affiliation and suicide attempt. Am J Psychiatry 161(12):2303–2308

Essau C, Petermann F (1999) Depressive disorders in children and adolescents: epidemiology, risk factors, and treatment. Jason Aronson, Northvale

Gitlin MJ (2014) A psychiatrist's reaction to a patient's suicide. Am J Psychiatry 156(10):1630–1634

Greenwood J, Guner N, Kocharkov G, Santos C (2012) Technology and the changing family: a unified model of marriage, divorce, educational attainment and married female labor-force participation: National Bureau of Economic Research

Howard N (2012) LXIO: the mood detection robopsych. Brain Sci J 1(1):98–109

Howard N, Guidere M (2011) Computational methods for clinical applications: an introduction. Funct Neurol Rehabil Ergon 1(2):237–250

Howard N, Jehel L, Arnal R (2014) Towards a differential diagnostic of PTSD using cognitive computing methods. Paper presented at the international conference on cognitive informatics and cognitive computing ICCI CC

Hu G, Wilcox HC, Wissow L, Baker SP (2008) Mid-life suicide: an increasing problem in US Whites, 1999–2005. Am J Prev Med 35(6):589–593

Kang HK, Bullman TA, Smolenski DJ, Skopp NA, Gahm GA, Reger MA (2015) Suicide risk among 1.3 million veterans who were on active duty during the Iraq and Afghanistan wars. Ann Epidemiol 25(2):96–100

Karch DL, Logan JE, McDaniel D, Parks S, Patel N, Control C. f. D. et al (2012) Surveillance for violent deaths – national violent death reporting system, 16 states, 2009: US Department of Health and Human Services, Centers for Disease Control and Prevention

Keith S, Martin ME (2005) Cyber-bullying: creating a culture of respect in a cyber world. Reclaiming Child Youth 13(4):224–228

Klempan TA, Ernst C, Deleva V, Labonte B, Turecki G (2009) Characterization of QKI gene expression, genetics, and epigenetics in suicide victims with major depressive disorder. Biol Psychiatry 66(9):824–831

Koslow SH, Ruiz P, Nemeroff CB (2014) A concise guide to understanding suicide: epidemiology, pathophysiology and prevention. Cambridge, UK: Cambridge University Press

Ligier F, Vidailhet C, Kabuth B (2009) Devenir psychosocial, dix ans après, de 29 adolescents suicidants. Encéphale 35(5):470–476

Ligier F, Guillemin F, Angot C, Bourion S, Kabuth B (2015) Recurrence of suicide attempt in adolescents lost to contact early by clinicians: the 10-year REPEATERS cohort of French adolescents. J Adolesc 43:111–118

Mears D (2012) The influence of technology in pop culture on curriculum and instruction. J Phys Educ Recreat Dance 83(8):15–31

Moron PP (2000) La crise suicidaire (Définition et limites)

Nock MK, Borges G, Bromet EJ, Cha CB, Kessler RC, Lee S (2008) Suicide and suicidal behavior. Epidemiol Rev 30(1):133–154

Rasmussen ML, Dieserud G, Dyregrov K, Haavind H (2014) Warning signs of suicide among young men. Nord Psychol 66(3):153–167

Robertson L, Skegg K, Poore M, Williams S, Taylor B (2012) An adolescent suicide cluster and the possible role of electronic communication technology. Crisis 33(4):239–245

Séguin M, Roy F (2005) Intervenir à la suite d'un suicide. Les Editions Logiques, Québec

Séguin M, Terra J-L (2004) Formation à l'intervention de crise suicidaire: manuel du formateur: Ministère de la santé et de la protection sociale

Sharma D (2015) A concise guide to understanding suicide: epidemiology, pathophysiology and prevention. Educational Psychology in Practice 31(2):211–212

Singhroha M (2014) Telemedicine and e-health: today and tomorrow. Compusoft 3(11):1228

Stanley B, Brown GK (2012) Safety planning intervention: a brief intervention to mitigate suicide risk. Cogn Behav Pract 19(2):256–264

Terra J-L, Le Vinatier C (2003) Prévenir le suicide: repérer et agir. Actualité et dossier en santé publique, pp 20–23

Terra J-L (2011) Crise suicidaire. Rev Prat févr 61:185–8

Valente SM, Saunders JM (1997) Diagnosis and treatment of major depression among people with cancer. Cancer Nurs 20(3):168–177

Vandebosch H, Van Cleemput K (2008) Defining cyberbullying: a qualitative research into the perceptions of youngsters. Cyberpsychol Behav 11(4):499–503

Wang J, Nansel TR, Iannotti RJ (2011) Cyber and traditional bullying: differential association with depression. J Adolesc Health 48(4):415–417

Wu A, Wang J-Y, Jia C-X (2015) Religion and completed suicide: a meta-analysis. PLoS One 10(6):e0131715