

## Review

## Suicide prevention and the Internet, risks and opportunities: a narrative review.

Stefano Totaro <sup>1,✉</sup>, Elena Toffol <sup>2</sup>, Paolo Scocco <sup>3</sup>

<sup>1</sup> Psychologist. Unit of Antalgic therapy and Palliative care, Conegliano, Italy. Researcher at the Department of Mental health, Padua, Italy. Charter member of the Italian SOPROXI NGO, association for suicide prevention and postvention, Padua, Italy.

<sup>2</sup> MD, PhD, Psychiatrist, researcher at the Institute of Behavioural Sciences, University of Helsinki in Helsinki, Finland and charter member of the Italian SOPROXI NGO, association for suicide prevention and postvention, Padua, Italy.

<sup>3</sup> MD, Psychiatrist, Community Mental Health Centre. Charter member and President of the Italian SOPROXI NGO, association for suicide prevention and postvention, Padua, Italy.

Submitted to SOL: March 15<sup>th</sup>, 2015; accepted: October 10<sup>th</sup>, 2016 ; published: November 3<sup>rd</sup>, 2016

**Abstract:** In the past century the development of technology, most notably the Internet, has broadened the horizons for the prevention of suicidal behaviors. At the same time, the Internet has become a double-edged sword especially for vulnerable people, given the difficulty of inspecting the real contents of each site, along with the growing number of pro-suicide websites. The aim of this work is therefore to narratively review the literature regarding the role of the Internet in suicide prevention, as well as possible strategies to counteract the expansion of suicide-promoting websites. Specific attention has been paid to especially vulnerable populations, such as adolescents and young adults.

**Keywords:** Internet, chat, forum, suicide, suicide attempt, prevention

Copyrights belong to the Author(s). Suicidology Online (SOL) is a peer-reviewed open-access journal publishing under the Creative Commons Licence 3.0.

During the past century the rapid development of technologies, particularly the Internet, has deeply changed the way people, especially the younger generations, seek and exchange information. The use of the Internet as a communication tool is a broad cultural phenomenon, representative of the current evolutionary process. The Internet not only has become a new family member, or a friend without

whom we cannot get along (Tam, Tang & Fernando, 2007), but it has also significantly impacted on everyday life and changed the way people communicate and interact (Mora-Merchán & Jäger, 2010). As an example, if the first social networks, such as MySpace and YouTube, have considerably facilitated communication in general, with the advent of the most recent social networks, such as Facebook and Twitter (Patchin & Hinduja, 2010) the creation of non-spaces (virtual spaces) where users can search for and build their own identities (Chiv, 2010) has become simpler.

According to a report on the Internet use in the US in 2009-2010, 93% of young Americans aged 12 to

✉ Paolo Scocco MD, Psychiatrist, Community Mental Health Centre. Charter member and President of the Italian SOPROXI NGO, association for suicide prevention and postvention, Padua, Italy. Via Buzzaccarini 1, 35124 Padova Italy. Department of Mental Health, Padua, Italy (0039) 0498217070. Mail: scocco.paolo@virgilio.it

17 years, and 95% of those aged 18 to 33 years have gone online during the study period (Zickuhr, 2010), and more than 60% of the teens reported a daily Internet use in 2007 (Lenhart, Madden, Macgill & Smith, 2007). These percentages are in line with those presented in a more recent consensus data report on the computer use in the US in 2013 (File & Ryan, 2013). Similar figures have emerged in Europe (Livingstone & Bober, 2005), where 90% of young people aged 16–24 years reported a regular Internet use in 2010 (Eurostat statistics, 2010). In this context, Italy ranks as the 11th country in the world and the 6th in Europe in numbers (about 23 million) of Facebook users ([www.socialbakers.com](http://www.socialbakers.com); [www.internetworldstats.com](http://www.internetworldstats.com)).

In spite of its broad expansion, a number of downsides of the Internet use must be acknowledged (Durkee, Hadlaczky, Westerlund & Carli, 2011). In fact, the excessive use of Internet seems to be directly correlated with a number of social and psychological problems (Engelberg & Sjöberg, 2004), including depressive symptoms (Morrison & Gore, 2010; Van den Eijnden, Meerkerk, Vermulst, Spijkerman & Engels, 2008; Ybarra, Alexander & Mitchell, 2005) loneliness (Moody, 2001), anxiety (Lee & Stapinski, 2012), attention deficit hyperactivity disorder (Gundogar, Bakim, Ozer & Karamustafalioglu, 2012), obsessive–compulsive disorder (Cecilia, Mazza, Cenciarelli, Grassi & Cofini, 2013) and hostility/aggression (Adalier & Balkan, 2012). Additionally, according to a recent research (Morrison et al., 2010) the online communication, including through the social networks, is at times associated with the so-called “compulsive Internet use” (Caplan, 2003; Chou & Hsiao, 2000; Ward, 2001), in turn correlated with comorbid psychopathology and suicidality (Kaess, Durkee, Brunner et al., 2014). It is of note that the unique context of disinhibition and anonymity offered by the Internet is particularly attractive especially for the more vulnerable users (Van den Eijnden et al., 2008). In fact, the Internet goes beyond any physical and geographical barriers and allows, through the possibility of an anonymous and 24/7 access, a potentially immediate feedback at any time (Burns, Morey, Lagelée, Mackenzie & Nicholas, 2007). For this reason, the Internet is frequently used to find and share information in a context of privacy and anonymity (Borzekowski & Rickert, 2001). However, this bears the risk of running into inaccurate information or even deliberate abuse, especially with regard to medical issues. According to Rideout (2002), about 70% of young Americans aged 15 to 24 years retrieve medical information, and 25% of them seek

information on mental health via the Internet (Gould, Munfakh, Lubell, Kleinman & Parker, 2002; Nicholas, Oliver, Lee & O'Brien, 2004). Importantly, a great proportion of those who retrieve medical information via the Internet, trust it to be valid and reliable (Morahan-Martin, 2004), and therefore do not seek any further professional consultations. This phenomenon has to be taken into serious consideration, because adolescents and young adults who experience mental distress are known to be especially reluctant to seek professional help (Rickwood, Deane & Wilson, 2007). The most commonly reported reasons for not seeking professional help include problems deemed too personal, lack of confidentiality, (perceived) inability of other people or services to provide appropriate help, and the feeling of being able to handle the problems by themselves (Dubow, Lovko & Kausch, 1990). In this context, using the Internet to seek medical information is perceived as a way to preserve own confidentiality and independence. This is especially important for young people, for whom stigma and embarrassment, poor mental health literacy and preference for self-reliance are the most important barriers to help-seeking (Gulliver, Griffiths & Christensen, 2010).

Altogether, these data highlight the importance of considering the current state of knowledge about the Internet use and its role in the promotion of health behavior. Even though to date a number of reviews has been published on this topic, the continuous broadband development and spread of the Internet requires a constant update of the state of the art. In fact, in the Internet context in particular, new phenomena are quickly replaced by newer ones, riding the wave of media that contribute to their spread/born, e.g. the phenomenon of cyberbullicide. This is especially important for the more vulnerable populations, i.e. for those individuals who, because of their state of mood or age-related vulnerability, make the most use of the Internet, and are more likely to be attracted and influenced by risky websites or other Internet-related phenomena (e.g. a suicidal person that would search for information regarding suicide on the Internet is more likely to give importance and/or to be attracted from pro-suicide website).

The aim of this work is therefore to review the literature regarding the potential advantages and possible risks, particularly for vulnerable subjects such as adolescents and young adults, associated with the Internet use. Specifically, we focused on the role of the Internet in suicide prevention (van Spijker, van Straten & Kerkhof, 2014), as well as

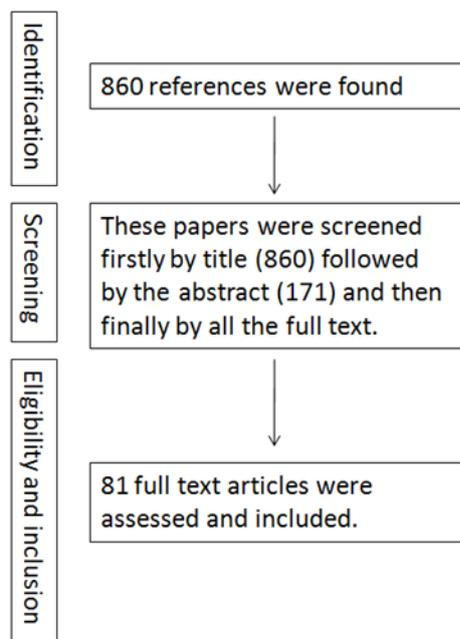
possible strategies to counteract the expansion of suicide-promoting websites.

## Method

We performed a literature search on Internet use in relation to suicide and suicide prevention, using MEDLINE via PubMed, PsycINFO and Google Scholar database. The search via PubMed and PsycINFO was limited by using specific keywords with boolean operators (“Internet use AND psychopathology”; “Internet AND suicide”, “suicide prevention AND Internet”); the search via Google Scholar was used in order to refine the results and to find articles not included in MEDLINE. Only articles published before 31 December 2014 were included in the review.

The modified PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) statement (Moher, Liberati, Tetzlaff & Altman, 2009) was used as the methodological approach for this review, as reported in figure 1.

The authors examined all the selected abstracts and went through each specific article in detail. Because our aim was to narratively review the state of the art on the Internet use in relation to suicide risk, and to propose possible Internet-related preventive strategies, only articles addressing the role of either pro-suicide websites or Internet-based suicide prevention were included. Studies on the effectiveness of e-learning modules were excluded.



**Figure 1. Identification, screening, eligibility and inclusion assessment of the reviewed articles.**

## Results

### *The Internet and the risk of suicide*

#### *a. Pro-suicide websites*

As mentioned above, the use of Internet is especially common among adolescents, who are per se a vulnerable and easily influenceable population (Alao, Soderberg, Pohl & Alao, 2006; Dobson, 1999; Thompson, 1999). The prevalence rates of depressive symptoms and risky behaviors, including substance abuse and suicidal behavior are also particularly high among adolescents. Suicide is a complex phenomenon thought to arise from a combination of biological, psychological, intrapsychic, interpersonal, sociological, cultural and philosophical factors (Leenaars, 1996). Mutual interaction of triggering factors (e.g. unemployment, economic troubles, stress) and circumstances (e.g. availability of suicidal means, isolation) may lead vulnerable people to commit suicide (Shaffer, Garland, Gould, Fisher & Trautman, 1988). In this context, pro-suicide websites may influence vulnerable individuals to consider suicide as a heroic or desirable rather than a dreadful act (Becker & Smith, 2004). Pro-suicide websites commonly exhibit death certificates and photographs of suicides, and in some cases may even include a box for posting pro-suicide messages (Alao et al., 2006). As such, they are particularly appealing especially for vulnerable people who are seeking relief to an intense state of emotional turmoil.

According to a recent review on the possible influence of Internet sites on suicidal behavior, by entering keywords related to suicide and death in the four most popular search engines (Google, Yahoo!, MSN and Ask) it is possible to retrieve numerous suicide-promoting sites (Biddle, Donovan, Hawton, Kapur & Gunnell, 2008). Specifically, the authors analyzed the first ten sites listed after entering 12 suicide- and death-related keywords: 20% of the 240 retrieved sites specifically focused on suicide and suicide methods. About half of them encouraged or promoted suicide, while the remaining ones described suicide and suicide methods using neither an encouraging nor a preventive attitude. Only 13% of these 240 sites focused on suicide prevention and support, and 12% specifically discouraged suicide. Lastly, 15% were academic or policy sites. Similar figures were found in a recent Turkish study, where about half of the results retrieved after searching for suicide and suicide-related phrases were pro-suicide websites, while only 13% were anti-suicide websites (Sakarya, Güneş & Sakarya, 2013). Similarly, Recupero, Harms & Noble (2008) found an elevated risk of running into pro-suicide sites when using the

Internet. Even though most of the web-pages reviewed by the authors were suicide-neutral (or included both pro- and anti-suicide information) or anti-suicide, 16% were clearly pro-suicide or provided information on how to kill oneself, and 14% included detailed descriptions of suicides or instructions on how to suicide. Similar or even more alarming results emerged in an Italian study (De Rosa et al., 2011), where 25% (n = 124) of the examined websites were pro-suicide (7.4% encouraging, promoting or facilitating suicide; 12.6% describing suicidal methods without directly encouraging suicide; 4.8% describing suicidal methods in fashionable terms), 11% (n = 55) provided information on suicide without clearly discouraging it (2% included practical information on how to suicide; 9% presented the issue in a joking fashion, with factual and non-factual descriptions), and 12.2% (n = 61) reported individual cases of suicide. Only 98 sites (19%) expressly focused on suicide prevention and support, and 8.2% (n = 41) were scientific, academic or policy sites. A newer exploratory study (Westerlund, Hadlaczky & Wasserman, 2012) showed how the Internet risk in relation to suicide content has changed at three different time points (2005, 2009 and 2012 years). From 2005 to 2012 the search of the word suicide on Google search engine grew from 25 million to 270 million hits, and the search results were not always encouraging: despite most of the results retrieved suicide prevention sites, pro-suicide websites were high up on search engine result lists.

The broad picture provided above highlights the need for specific strategies and interventions aimed at limiting the possible negative influence of certain websites. However, the extreme variability of the Internet and its content has to be considered. Indeed, while new sites are continuously created, others are obscured, leading to continuous change in the order of site appearance in the search engines. It is therefore plausible that many other pro-suicide websites may be found with a more accurate search.

#### *b. Forums, chat-rooms and suicidal pacts*

In addition to pro-suicide websites, chat-rooms may also influence vulnerable individuals. Indeed, forums and chat groups have been reported to host conversations that may encourage people who are contemplating suicide, and eventually lead them to commit suicide (Becker & Schmidt, 2004). A chat-room allows confidential communication, and no control is exerted on its content. Several cases of suicides and attempted suicides were reported following online suicidal

pacts between complete strangers, contracted during chat-room sessions (Alao et al., 2006). In the past, only two or more persons who personally knew each other could engage in a suicidal pact, i.e. an agreement to commit suicide together in a certain place at a certain time (Rajagopal, 2004). The first case of a suicidal pact on the Internet was reported in Japan in 2000 (Lester, 2008). Afterwards, a total of 34 suicidal pacts via the Internet were reported in 2003, and the number has grown to 91 Internet suicidal pacts in 2005 (Hitosugi, Nagai & Tokudome, 2007). It therefore seems that the development and accessibility of technology has contributed to the development of a modern "folie à deux" (Salih, 1985). Loneliness was found to be a common correlate of Internet suicidal pacts (Ozawa-De Silva, 2008). An online agreement creates a special sense of cohesion and a new type of relationship: when meeting online and planning their suicide, people can live the sense of community and relationship missing in their real lives, and in this context, "dying together is better than dying alone" (Ozawa-De Silva, 2008).

#### *c. Cyberbullicide*

A further novel example of the possible negative influence of the Internet is the "cyberbullicide", i.e. cases of direct or indirect suicide in relation to online aggression/bullying (Hinduja & Patchin, 2010). Bullying and cyberbullying are often associated with depression, low self-esteem, hopelessness and loneliness (Hawker & Boulton, 2000; Langhinrichsen-Rohling & Lamis, 2008), which in turn are all well-known suicidal risk factors (Bauman, Toomey & Walker, 2013; Brunstein Kolmek et al., 2007). Even though bullying and cyberbullying share similar causes and effects, the victims of cyberbullying can be extremely easily reached at any place and at any time via messengers, social networks, mobile phones and e-mail, this significantly increasing the frequency of the abuse (Palmeri, 2012).

In summary, a complex relationship exists between the Internet and suicidal behavior. However, even though the use of the Internet may on the one hand encourage vulnerable individuals to attempt or commit suicide, it must be acknowledged that the implementation of innovative Internet-based strategies (such as online projects, support groups via chat rooms, e-mails, asynchronous groups moderated by mental health professionals) represents a powerful preventive strategy, able to reach an extremely large number of people beyond all barriers of space and time (Gilat & Shahar, 2007; Scocco et al., 2006). Although limited, there is evidence to suggest that online

platforms, especially social media ones, can be used to identify individuals or geographical areas at risk of suicide (Christensen, Batterham & O'Dea, 2014).

#### *Advantages and disadvantages of Internet use in suicide prevention*

Before the development of the computer and the Internet, various instruments were used to more easily reach people in need of help, in crisis or experiencing severe emotional distress. The first help-lines (e.g. Samaritans, Befrienders) started to operate as far back as the '50s. There are several reasons behind their success: they operate on a 24/7 basis, are not limited by distance, guarantee anonymity, allow high confidentiality, and can reach people in crisis and provide them with information and support in a relatively short time. However, the Internet has become a first choice instrument for several reasons: it allows both synchronous (chat rooms) and asynchronous (forums and e-mail) support services, as well as group interventions, where the data and content of communications can be saved. Additionally, the Internet contributes to minimizing and bypassing stigma. In this regard, Feigelman et al. (2008) found higher levels of perceived stigmatization from friends and relatives among subjects who decided to participate in an on-line group compared to a traditional group. The high levels of suicide-related stigmatization and the associated belief that no support can be found in real life, do probably induce people to prefer online as opposed to face-to-face interventions. In contemporary society, any discussion about suicide is highly stigmatized as taboo; on the contrary, Internet websites and forums are among the main sources of information on this issue. Whether this is an opportunity rather than a problem remains to be clarified (Alao et al., 2006; D'Hulster & Van Heeringen, 2006).

As mentioned above, the Internet is not free of downsides, even in relation to suicidal risk. For instance, while anonymity is considered one of the main strengths of the Internet, it can become a major flaw when users post untruthful or fictitious messages with the sole intent of drawing attention, but potentially causing distress to vulnerable participants (the so-called "Munchausen by Internet") (Feldman, 2000). As indicated by Barak (2007), this inappropriate use of the service, though relatively uncommon, may also cause severe distress and burnout in helpers. Additionally, it is worth noting that the target population of the Internet is mostly young individuals, while the elderly and those who

cannot use a computer are in general difficult to reach (Suler, 2001). In addition, it has been widely shown that the majority of telephone or online service users are women (Lester, 2008). Although suicide rates are notoriously higher in men than in women, men rarely seek help. The reasons for this gender difference in help seeking are not clear (Smith, Braunack-Mayer & Wittert, 2006); however, it has been suggested that higher levels of stigma towards mental illness in men may prevent them from constructive help-seeking (Ellis et al., 2012). Moreover, the traditional masculine role, where men cannot express their emotions and are expected to self-manage their own problems (Möller-Leimkühler, 2002), may contribute to the lower proportion of male clients in online prevention and support services.

Other limitations of the Internet include technical issues, such as the possible, mostly unexpected, breakdown of the Internet, which can occur at any time, including during a highly emotional conversation. The lack of any visual, verbal and physical contact may sometimes lead to potential misunderstandings during a conversation.

#### *Who is working with online suicide prevention?*

Several online intervention and support strategies do currently exist, including e-mail, chat rooms and forums. Asynchronous help groups (forums) seem to be preferred to chat rooms for several reasons. A message posted in a forum can receive an answer at any time of the day, and this probably partly relieves the feelings of loneliness. Asynchronous communication also allows messages to be pondered before being posted, and users can feel completely safe. Additionally, people generally prefer to share emotions related to critical mental pain in an asynchronous group rather than in a synchronous chat session, where immediate answers are given (Barak, 2007; Finn, 1999; Miller & Gergen, 1998). Participants in a group can experiment a considerable sense of cohesion and receive emotional support from other members. Hence, asynchronous groups seem to be a more appropriate opportunity for suicidal individuals experiencing acute loneliness and unbearable mental pain/psychache (Shneidman, 1996).

Thus, the active participation of suicide survivors, mental health professionals and others who are suffering from severe distress to online interventions seems to be an important strategy to limit the risk of Internet-induced suicidal behavior, as well as to better operate in the field of suicide prevention and postvention.

Suicide survivors. The term “suicide survivor” indicates those people who had a close relationship with the suicide victim (Shneidman, 1996). Family members and others, particularly adolescents (Bridge et al., 2003), who have lost a significant other by suicide have a high risk of impaired mental health, in the form of specific depressive symptoms or disorders (Andriessen, 2009). Moreover, it is well known that being a suicide survivor, alongside previous attempted suicides, suicide threats and substance abuse, is one of the main predictors of suicidal risk (Diekstra, 1974). Being a vulnerable group, suicide survivors also need specific support, as “postvention is prevention for future generations” (Shneidman, 1969). The role of peer support for suicide survivors, i.e. support groups or help-lines moderated by survivors, has been emphasized by Feigelman (Feigelman et al., 2008): “only those who have experienced it, can fully understand it”. Peer support groups bear a double advantage: on the one hand, survivors may again feel helpful, and provide help and support to those going through the same experience, but at the same time they have the opportunity to move ahead with their own grief process. On the other hand, “new” members feel fully understood and helped by those who can actually understand their pain (Feigelman et al., 2008). Many sites and online projects are currently available for suicide survivors (e.g., “Survivors of bereavement by suicide”, [www.uk-sobs.org.uk/](http://www.uk-sobs.org.uk/); and “Soproxi Project”, [www.soproxi.it](http://www.soproxi.it)).

Health professionals. In addition to recognizing and treating illnesses, one of the main intents of any health professional is to detect, whenever possible, any warning signs of and actively prevent the illness itself. Unfortunately, it is relatively common for health professionals not to recognize the severity of an emotional crisis in their suicidal patients. An accurate assessment of suicidal risk, including a careful understanding of the suicidal communication, is a preliminary step in suicide prevention. The recognition of any possible suicidal content in communications with others may in fact drive the development of effective preventive communication strategies, which in turn are of help to clinicians, relatives and friends (Shemanski Aldrich & Cerel, 2009). A number of websites provide information and education for mental health and suicide prevention professionals, such as physicians, nurses and social workers. Moreover, specific websites and online projects have been created to overcome the obstacle of long distances, particularly for those who live and work in rural or otherwise isolated communities (e.g., the Australian projects ACROSSnet -

Australian Creating Rural Online Support Systems-, active during the period 2002 - 2005; and: e-SPST - electronic Suicide Prevention Skills Training-, operating between 2004 and 2009) (Krysinska & De Leo, 2007).

In addition to sites and projects designed to provide adequate online education for health professionals, several websites have been specifically created for people who live with internal distress, most notably those at risk of suicide, with the aim of providing information, support and a variety of interventions via telephone help-lines, e-mails, chat rooms, forums or social networks (e.g.: TAL, Telefono Amico Italia; Reach-out, Australia; Sahar, Israel; 113online, The Netherlands; BeFriender; Samaritans; Soproxi Project). Some of these platforms are described below:

- Reach-out (<http://au.reachout.com>): an Australian project started in 1998 with the specific aim of reducing stigmatization and encouraging young adults (aged 16 to 25 years) to seek help. The website includes sections with scientific articles on the incidence of mental health problems in the young population; an online community with forums moderated by trained volunteers; links to social networks such as Facebook, Twitter and MySpace. The project has significantly contributed to reducing the stigma related to mental illness and to increasing the level of help-seeking among young adults (Burns et al., 2007).
- Soproxi: a project started in 2006 in a north-eastern region of Italy (Scocco et al., 2006) to provide specialized support to relatives, friends and anyone else who has lost a significant other by suicide. Given the rapidly growing number of contacts from all over Italy, a website ([www.soproxi.it](http://www.soproxi.it)) was created in 2011 to provide professional updated education for health professionals, and help and support for survivors via phone calls, skype contacts, e-mails, forums and online chat groups.
- 113online ([www.113online.nl](http://www.113online.nl)): a Dutch platform which offers crisis management interventions via the website and telephone services at primary and tertiary suicide prevention levels (Mokkenstorm, Huisman & Kerkhof, 2012).
- Sahar (Support and Listening on the Net) ([www.sahar.org.il](http://www.sahar.org.il)): a platform in Hebrew, which provides emotional support to the Israeli population on a national level, including links to scientific articles, chat rooms and help-lines. In addition, Sahar has four separate forums for different target populations: youngsters, adults, enlisted soldiers and those preferring to express their emotions through art (poems, stories,

paintings that can be uploaded and shared). Trained volunteers operate the platform (Barak, 2007).

The main limitation of all these programs is that they only offer services in one language, and therefore can operate on a national basis only.

In addition to these multifaceted, multimedia programs, more traditional projects offer telephone hotlines and email support, as in the case of TAI (Telefono Amico Italia), Samaritans and Befrienders.

#### *What remains to be done?*

As regards the current policy in Italy, additional strategies are needed to partially control inappropriate and potentially dangerous content on the Internet. At the moment, parents have the possibility to partially control and limit the information retrieved by their children via the Internet using specific filter software programs; however, these filters can be easily bypassed. In general, Internet Service Providers (ISP) play an important role in this respect, and some countries have already adopted specific regulations. In Australia, legislation is rather strict, and since 2006 it is illegal to provide practical information or encourage suicide on the Internet (Biddle et al., 2008). Japanese ISPs have to inform the police of any suicidal content in their platforms (Hitosugi et al., 2007). Similarly, German forum and website owners are held responsible for their content (Becker et al., 2004), and in China, ISPs have since 2010 been judged responsible for failing to inform the authorities of any suicidal posts or pro-suicide information on their sites (Cheng, 2011). Some Korean and Japanese ISPs have also blocked a number of pro-suicide websites (Hitosugi et al., 2007).

However, many other countries still lack specific regulations. For example, the websites controlled by the Internet Watch Foundation, the main Internet monitoring agency in Great Britain, do not include any suicide-related websites, unless they are illegal. USA legislation does not hold website owners responsible for the content of their sites, unless it violates copyright law (Coble, 1998). Italian regulations on this issue are even vaguer, with no specific monitoring policy for pro-suicide websites. Websites can only be blocked by the postal police, where the court so orders, in the case of an alleged crime (De Rosa et al., 2011).

Since it is not possible to block pro-suicide websites, it would be helpful if suicide prevention and support websites were more visible in the search engines and freely provided, especially by institutional rather than private agencies. Accordingly, the Internet could be used as an

additional tool for acute, 24/7 support, rather than as an alternative to traditional, face-to-face professional interventions.

#### **Discussion and conclusion**

The aim of this review was to describe the possible risks resulting from uncritical use of the Internet, and to provide constructive suggestions. Our intent was not to promote total restriction of suicide-related websites, as *“general prohibition of suicide sites is neither practicable nor reasonable”* (Becker et al., 2004); rather, to foster a responsible policy of responsibility. General rules and guidelines should be followed for Internet use, as in the case of other media (e.g. guidelines for journalists).

Some countries have already taken steps in the direction of Internet-related suicide prevention; however not enough has been done, particularly where the more vulnerable groups are concerned. We would like to emphasize the role of specific online preventive and support projects (e.g. Reach-out, Sahar, 113online, Soproxi Project), which are easily accessible and have proven effectiveness in reducing stigma and reaching a wide target population, including adolescents and young adults, partly through the collaboration with social networks. The main objectives of these online services are to reduce stigma, provide easy access to as wide a population as possible, encourage people to make first contact with (psychiatric) services and even alleviate the acute emotional or suicidal crisis. However, these services do not aim to substitute professional treatment, rather to encourage further contact with health professionals in a face-to-face setting. A close network between helpers operating in online suicide prevention services and professionals operating in local services is therefore needed, in order to avoid the risk of Internet-associated social isolation (Kraut et al., 1998). Since subjects at risk of suicide often have low social support, online-only intervention would contribute to increasing their social isolation.

It is of note here that technology does not itself mean risky behavior, as *“technology is neither content nor behavior”* (Collings & Niederkrotenthaler, 2012). In other words, it is important to notice that it is not the Internet itself that causes harm, but those who create harmful websites. Condemning the technology per se is of no use, rather those who use the technology with harmful intent should be controlled by the authorities and institutions.

We would encourage mental health professionals to be aware of the risks connected with the use of the Internet, and investigate the Internet use habits of their clients, particularly those suffering

from depression or having suicidal ideation. Using the Internet could be of help when users, especially the most vulnerable ones, are able to recognize potential risks and to retrieve and use potential support resources. Accordingly, the primary aim of any campaign should be to reduce pro-suicide sites, and promote and build a “young”, easily accessible, readily available network of services that can overcome shame and stigma, partly with the help of more traditional media, as national and local newspapers. Specific training is also needed for (mental) health professionals, social workers, teachers, priests and others involved in the field of online suicide prevention.

Based on the above-described results, it can be claimed that anonymity is one of the main reasons why the Internet is widely used nowadays, this indirectly suggesting that much work is still needed in order to reduce stigma, shame and prejudice especially around mental illness. This would be the first step to promote appropriate help-seeking behaviors in all risk groups, in particular in the younger and more vulnerable individuals.

To conclude, given the broad use of the Internet worldwide, research concerning the implications of the Internet use on mental health and suicidal behaviors needs to be constantly updated. Further research is needed to implement the numerous preventive opportunities offered by the Internet, especially but not only to the younger populations, such as the recently developed “serious games” (Luxton, June & Kinn, 2011) or self-help apps specifically connected to support lines (Shand et al., 2013).

The Internet is an unquestionable key resource and a powerful communication tool which, if correctly used, could potentially contribute to the mitigation of several psychological conditions, including to the prevention of suicidal behavior. The Internet is likely to become one of the most important preventive strategies in the immediate future. Only if the web is mindfully used.

## References

- Adalier, A., & Balkan, E., (2012). The relationship between internet addiction and psychological symptoms. *International Journal of Global Education*; 1(2), 42–49.
- Alao, A. O., Soderberg, M., Pohl, E. L., & Alao, A. L. (2006). Cybersuicide: Review of the role of the Internet on Suicide. *Cyberpsychology & Behavior*; 9 (4), 489-493.
- Andriessen, K. (2009). Can Postvention Be Prevention? *Crisis*; 30(1), 43–47.
- Barak, A. (2007). Emotional support and suicide prevention through the Internet: A field project report. *Computers in Human Behavior*; 23, 971–984.
- Bauman, S., Toomey, R. B., & Walker, J. L. (2013). Associations among bullying, cyberbullying, and suicide in high school students. *Journal of Adolescence*, 36, 341–350.
- Becker, K., Mayer, M., Nagenborg, M., El-Faddagh, M., & Schmidt, M. H. (2004). Parasuicide online: Can suicide websites trigger suicidal behaviour in predisposed adolescents? *Nordic Journal of Psychiatry*; 58, 111-114.
- Becker, K., & Schmidt, M. H. (2004). Internet chat rooms and suicide. *Journal of the American Academy of Child and Adolescent Psychiatry*, 43, 246–7.
- Biddle, L., Donovan, J., Hawton, K., Kapur, N., & Gunnell, D. (2008). Suicide and the internet. *British Medical Journal*; 336 (7648), 800-802.
- Borzekowski, D. L., & Rickert, V. I. (2001). Adolescent cybersurfing for health information: a new resource that crosses barriers. *Archives of Pediatric & Adolescent Medicine*; 155, 813-817.
- Bridge, J. A., Day, N., Day, R., Richardson, G. A., Birmaher, B., & Brent, D. A. (2003). Major depressive disorder in adolescents exposed to a friend’s suicide. *Journal of the American Academy of Child and Adolescent Psychiatry*; 42, 1294–1300.
- Brunstein Klomek, A., Marrocco, F., Kleinman, M., Schonfeld, I.S., & Gould, M.S. (2007). Bullying, depression, and suicidality in adolescents. *Journal of the American Academy of Child and Adolescent Psychiatry*, 46, 40-49.
- Burns, J., Morey, C., Lagelée, A., Mackenzie, A., & Nicholas, J. (2007). Reach Out! Innovation in service delivery. *Medical Journal of Australia*; 187, 31–4.
- Caplan, S. E. (2003). Preference for online social interaction: A theory of problematic Internet use and psychosocial well-being. *Communication Research*; 30, 625–648.
- Cecilia, M.R., Mazza, M., Cenciarelli, S., Grassi, M., & Cofini, V. (2013). The relationship between compulsive behaviour and internet addiction. *Styles of Communication*; 5(1), 24–31.
- Cheng, Q. (2011). Are Internet service providers responsible for online suicide pacts? *British Medical Journal*; 344:d2113.

- Chiv, A. (2010). Cyberbullying and the 'Net Generation'. *7 pm Journal of digital research and publishing*; 44-53.
- Chou, C., & Hsiao, M. C. (2000). Internet addiction, usage, gratifications, and pleasure experience: The Taiwan college students' case. *Computers & Education*; 35 (1), 65–80.
- Christensen, H., Batterham, P.J., & O'Dea, P. (2014). E-Health Interventions for Suicide Prevention. *International Journal of Environmental Research and Public Health*; 11, 8193-8212.
- Coble, H. (1998). *Digital Millennium Copyright Act*. Retrieved online (21.09.2012) on: <http://www.copyright.gov/legislation/dmca.pdf>
- Collings, S., & Niederkrotenthaler, T. (2012). Suicide Prevention and Emergent Media: Surfing the Opportunity. *Crisis*; 33(1), 1–4.
- D'Hulster, N., & Van Heeringen, C. (2006). Cyber-suicide: The role of the Internet in suicidal behaviour. A case study. *Tijdschrift voor Psychiatrie*; 48(10), 803–807.
- De Rosa, C., Del Vecchio, V., Del Gaudio, L., et al. (2011). Il suicidio e Internet: una ricerca sui siti web italiani. *Giornale Italiano di Psicopatologia*; 17, 376-382.
- Diekstra, R. F. W. (1974). A social learning approach to the prediction of suicidal behaviour. In: Speyer N, et al, editors. *Proceedings 7th International Conference for Suicide Prevention*. Amsterdam: Swets & Zeitlinger, p. 55-66.
- Dobson, R. (1999). Internet sites may encourage suicide. *British Medical Journal*; 319,337.
- Dubow, E. F., Lovko, K. R., & Kausch, D. F. (1990). Demographic differences in adolescents' health concerns and perceptions of helping agents. *Journal of Clinical Child & Adolescent Psychology*; 19, 44–54.
- Durkee, T., Hadlaczky, G., Westerlund, M., & Carli, V., (2011). Internet Pathways in Suicidality: A Review of the Evidence. *Internet Journal of Environmental Research and Public Health*; 8, 3938-3952.
- Ellis, L. A., Collin, P., Davenport, T. A., Hurley, P.J., Burns, J. M., & Hickie, I. B. (2012). Young Men, Mental Health, and Technology: Implications for Service Design and Delivery in the Digital Age. *Journal of Medical Internet Research*; 14(6), 160.
- Engelberg, E., & Sjöberg, L. (2004). Internet Use, Social Skills, and Adjustment. *Cyberpsychology & Behavior*; 7(1), 41-47.
- Eurostat Statistics (2010). *Computers and the Internet in households and Enterprises*. Retrieved online (01.12.2013) on [http://epp.eurostat.ec.europa.eu/portal/page/portal/information\\_society/data/main\\_tables](http://epp.eurostat.ec.europa.eu/portal/page/portal/information_society/data/main_tables).
- Feigelman, W., Gorman, B. S., Beal, K. C., & Jordan, J. R. (2008) Internet support groups for suicide survivors: a new mode for gaining bereavement assistance. *OMEGA*; 57(3), 217-243.
- Feldman, M. D. (2000). Munchausen by Internet: detecting factitious illness and crisis on the Internet. *Southern Medical Journal*; 93 (7), 669–672.
- File, T., & Ryan, C. (2013). Computer use in the US 2013". *American Community Survey Reports*.
- Finn, J. (1999). An exploration of helping processes in an online self-help group focusing on issues of disability. *Health and Social Work*; 24, 220–231.
- Gilat, I., & Shahar, G. (2007). Emotional First Aid for a Suicide Crisis: Comparison between Telephonic Hotline and Internet. *Psychiatry*; 70 (1), 12-18.
- Gould, M. S., Munfakh, J. L., Lubell, K., Kleinman, M., & Parker, S. (2002). Seeking help from the Internet during adolescence. *Journal of the American Academy of Child and Adolescent Psychiatry*; 41, 1182–1189.
- Gulliver, A., Griffiths, K. M., Christensen, H. (2010). Perceived barriers and facilitators to mental health help-seeking in young people: a systematic review. *BMC Psychiatry*; 10, 113.
- Gundogar, A., Bakim, B., Ozer, O.A., & Karamustafalioglu, O. (2012). The association between internet addiction, depression and ADHD among high school students. *European Psychiatry*; 27, 1
- Hawker, D. S., & Boulton, M. J. (2000). Twenty years' research on peer victimization and psychosocial maladjustment: A meta-analytic review of cross-sectional studies. *Journal of Child Psychology and Psychiatry*; 41(4), 441-455.
- Hinduja, S., & Patchin, J. W. (2010). Bullying, Cyberbullying, and Suicide. *Archives of Suicide Research*; 14(3), 206-221.
- Hitosugi, M., Nagai, T., & Tokudome, S. (2007). A voluntary effort to save the youth suicide via

- the Internet in Japan. *International Journal of Nursing Studies*; 44, 157.
- Kaess, M., Durkee, T., Brunner, R., et al. (2014). Pathological Internet use among European adolescents: psychopathology and self-destructive behaviours. *European Child and Adolescent Psychiatry*; 23, 1093–1102.
- Kraut, R., Patterson, M., Lundmark, V., Kiesler, S., Mukopadhyay, T., & Scherlis, W. (1998). Internet paradox: A social technology that reduces social involvement and psychological well-being? *American Psychologist*; 53(9), 1017–1031.
- Krysinska, K. E., & De Leo, D. (2007). Telecommunication and suicide prevention: hopes and challenges for the new century. *OMEGA*; 55(3), 237–253.
- Langhinrichsen-Rohling, J., & Lamis, D. A. (2008). Current suicide proneness and past suicidal behavior in adjudicated adolescents. *Suicide and Life-Threatening Behavior*; 38(4), 415–426.
- Lee, B.W., & Stapinski, L.A. (2012). Seeking safety on the internet: relationship between social anxiety and problematic internet use. *Journal of Anxiety Disorder* 26(1), 197–205.
- Leenaars, A. A. (1996). Suicide: A multidimensional malaise. *Suicide and Life Threatening Behavior*; 26, 221–236.
- Lenhart, A., Madden, M., Macgill, A.R., & Smith, A. (2007). Teens and social media: The use of social media gains a greater foothold in teen life as they embrace the conversational nature of interactive online media. Washington, DC. Pew Internet and American Life Project.
- Lester, D. (2008). The use of the internet for counseling the suicidal individual: possibilities and drawbacks. *OMEGA*; 58(3), 233–250.
- Livingstone, S., & Bober, M. (2005). *UK Children Go Online: final report of key project findings* [online]. London: LSE research online, 2005. Retrieved online (20.10.2012) on <http://eprints.lse.ac.uk/archive/00000399>.
- Luxton, D. D., June, J. D., & Kinn, J. T. (2011). Technology-based suicide prevention: current applications and future directions. *Telemedicine & e-Health*, 17(1), 50–54.
- Miller, J. K., & Gergen, K. J. (1998). Life on the line: The therapeutic potentials of computer-mediated conversation. *Journal of Marital and Family Therapy*; 24, 189–202.
- Moher D., Liberati A., Tetzlaff J., Altman D. G. (2009). PRISMA Group Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *PLoS Med*, 21, 6(7).
- Mokkenstorm, J. K., Huisman, A., & Kerkhof, A. J. (2012). Suicide prevention via the internet and the telephone: 113Online. *Tijdschrift voor Psychiatrie*; 54(4) 341–348.
- Möller-Leimkühler, A. M. (2002). Barriers to help-seeking by men: a review of sociocultural and clinical literature with particular reference to depression. *Journal of Affective Disorders*; 71(1–3) 1–9.
- Moody, E. J. (2001). Internet Use and Its Relationship to Loneliness. *Cyberpsychology & Behavior*; 4 393–401.
- Morahan-Martin, J. M. (2004). How internet users find, evaluate, and use online health information: a cross-cultural review. *Cyberpsychology & Behavior*; 7(5), 497–510.
- Mora-Merchán, J. A., & Jäger, T. (2010). *Cyberbullying. A cross-national comparison*. Landau: Verlag Empirische Padagogik.
- Morrison, C. M., & Gore, H. (2010). The relationship between excessive internet use and depression: a questionnaire-based study of 1,319 young people and adults. *Psychopathology*; 43, 121–126.
- Nicholas, J., Oliver, K., Lee, K., & O'Brien, M. (2004). Help-seeking behavior and the Internet: An investigation among Australian adolescents. *The Australian e-Journal for the Advancement in Mental Health*; 3, 1–8.
- Ozawa-De Silva, C. (2008). Too lonely to die alone: Internet suicide pacts and existential suffering in Japan. *Culture, Medicine and Psychiatry*; 32(4), 516–551.
- Palmeri, J. M. (2012). *“Cyberbullicide”: When Cyber Bully Victims Can’t Escape*. NYU Steinhardt: Department of Psychology. New York University.
- Patchin, J. W., & Hinduja, S. (2010). Changes in adolescent online social networking behaviors from 2006 to 2009. *Computers in Human Behavior*; 26, 1818–1821.
- Rajagopal, S. (2004). Suicide pacts and the internet. *British Medical Journal*; 329, 1298.

- Recupero, P., Harms, S. E., & Noble, J. M. (2008). Googling suicide: surfing for suicide information on the internet. *Journal of Clinical Psychiatry*; 69, 878-888.
- Rickwood, D. J., Deane, F. P. & Wilson, C. J. (2007). When and how do young people seek professional help for mental health problems? *Medical Journal of Australia*; 187 (7 Suppl), S35-S39.
- Rideout, V. (2002). Generation Rx.com. What are young people really doing online? *Market Health Service*; 22, 26–30.
- Sakarya, D., Güneş, C., & Sakarya, A. (2013). Googling suicide: evaluation of websites according to the content associated with suicide. *Turkish Journal of Psychiatry*, 24(1), 44-48.
- Salih, M. A. (1981). Suicide pact in a setting of Folie à Deux. *British Journal of Psychiatry*; 139, 62-7.
- Scocco, P., Frasson, A., Costacurta, A., & Pavan, L. (2006). SOPRoxi: a research-intervention project for suicide survivors. *Crisis*; 27(1), 39-41.
- Shaffer, D., Garland, A., Gould, M., Fisher, P., & Trautman, P. (1988). Preventing teenage suicide: A critical review. *Journal of American Academy and Child Adolescent Psychiatry*; 27, 675-687.
- Shand, F. L., Ridani, R., Tighe, J., & Christensen, H. (2013). The effectiveness of a suicide prevention app for indigenous Australian youths: study protocol for a randomized controlled trial. *Trials*, 14, 396.
- Shemanski Aldrich, R., & Cerel, J. (2009). The development of effective message content for suicide intervention. *Crisis*; 30(4), 174-179.
- Shneidman, E. (1969). *Prologue*. In E.S. Shneidman (ed) *On the Nature of Suicide*. San Francisco: Jossey-Bass.
- Shneidman, E. S. (1996). *The Suicidal Mind*. New York: Oxford University Press.
- Smith, J. A., Braunack-Mayer, A., & Wittert, G. (2006). What do we know about men's help-seeking and health service use? *Medical Journal of Australia*; 184(2), 81–83.
- Suler, J. (2001). Assessing a person's suitability for online therapy. The ISMHO Clinical Case Study Group. *Cyberpsychology & Behavior*; 4, 675–679.
- Tam, J., Tang, W. S., & Fernando, D. J. (2007). The internet and suicide: A double-edged tool. *European Journal of Internal Medicine*; 18, 453–455.
- Thompson, S. (1999). The internet and its potential influence on suicide. *Psychiatric Bulletin*; 23 (8), 449-451.
- Van den Eijnden, R. J., Meerkerk, G. J., Vermulst, A. A., Spijkerman, R., & Engels, R. C. (2008). Online communication, compulsive internet use, and psychosocial well-being among adolescents: A longitudinal study. *Developmental Psychology*; 44(3), 655-665.
- van Spijker, B.A.J., van Straten, A., & Kerkhof, A.J.F.M. (2014). Effectiveness of Online Self-Help for Suicidal Thoughts: Results of a Randomised Controlled Trial. *Plos One*; 9(2), e90118.
- Ward, D. L. (2001). The relationship between psychosocial adjustment, identity formation, and problematic Internet use. Dissertation Abstracts International: Section B. *The Sciences and Engineering*; 61, 3906.
- Westerlund, M., Hadlaczy, G. & Wasserman, D. (2012). The representation of suicide on the internet: implications for clinicians. *Journal of medical internet research*; 14(5), e122.
- www.socialbakers.com/facebook-statistics/?interval=last-3-months#chart-intervals, retrieved online (21.12.2013).
- Ybarra, M. L., Alexander, C., & Mitchell, K. J. (2005). Depressive symptomatology, youth Internet use, and online interactions: a national survey. *Journal of Adolescent Health*; 36, 9–18.
- Zickuhr, K. (2010). Generations 2010. The Pew Internet and American Life Project. [last accessed 8 January 2015]. Available from: [http://pewinternet.org/~media/Files/Reports/2010/PIP\\_Generations\\_and\\_Tech10.pdf](http://pewinternet.org/~media/Files/Reports/2010/PIP_Generations_and_Tech10.pdf)
- Internet World Stats World Internet Users and Population Statistics*, 2012. Retrieved online (04.04.2014) on <http://www.Internetworldstats.com/stats.htm>.