Suicide communication on digital platforms: A research review

English summary
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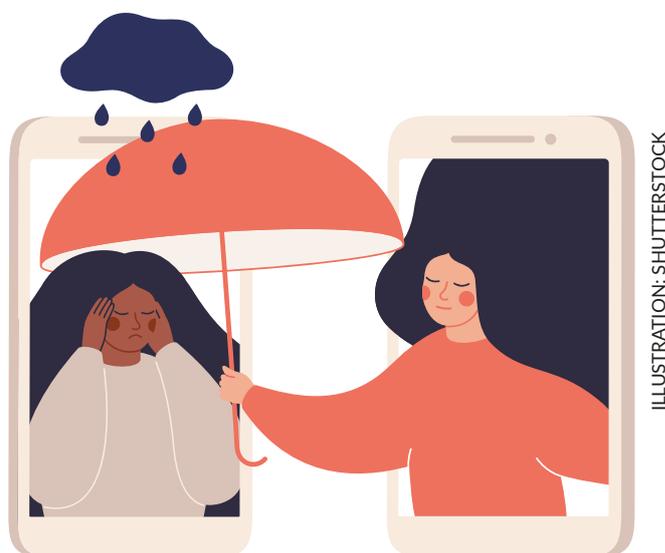**"** This research review focuses on suicide, suicide communication on digital platforms, and how suicidal individuals can be identified online.

Suicide communication on digital platforms: A research review

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ILLUSTRATION: SHUTTERSTOCK

Foreword

In the autumn of 2020, the Swedish government assigned the Swedish Media Council, together with 24 other authorities, to provide a basis for an upcoming national strategy for mental health and suicide prevention. The present research overview has been produced by the Swedish Media Council as a contribution to the ongoing work. The government assignment is led by the Public Health Agency of Sweden and the National Board of Health and Welfare, and the final report to the Ministry of Social Affairs will take place on 1 September 2023.

The Swedish Media Council is a government agency whose primary task is to promote the empowering of minors as conscious media users and to protect them from harmful media influences. There are no specific assignments on mental health or suicide prevention in the agency's instruction, but there are nevertheless links between the agency's task and mental health.

According to the Public Health Agency of Sweden, mental problems such as depression, stress and sleeping difficulties have risen among Swedish adolescents during the last decades, making it an increasing societal concern. The expanding media landscape, the digitalisation and the ubiquity of social media and smartphones in everyday life have been suggested as possible main causes (e.g. Twenge, 2017) and lately, an abundance of studies on the relationship between media use and psychological ill-being have been published. For the Swedish Media Council, this means that the concept of "harmful media influence" must be reconsidered and developed in accordance with the research, and with the continually changing media landscape that young people are navigating through in their daily life. This report will add to the process by bringing an overview of international research on suicide communication on digital platforms, its eventual benefits and disadvantages. The report has been produced in collaboration with the National Centre for Suicide Research and Prevention (NASP) at Karolinska Institutet, and it's authored by Michael Westerlund at the Department of Media Studies, Stockholm University, and Hanna Nilsson at NASP. An extended version of this research overview is published in Swedish on www.statensmedierad.se

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> **According to the Public Health Agency of Sweden, mental problems such as depression, stress and sleeping difficulties have risen among Swedish adolescents during the last decades, making it an increasing societal concern.**

Introduction

Suicide largely remains a topic of taboo and stigmatization in most societies and cultures (Anderson & Jenkins 2009; Westerlund 2012). Suicide is also a complex behavior relating to a wide range of risk factors, and since the mid-1990s fears have been raised about the possible links between suicide and Internet-based communication, especially among youth and young adults (Mehlum, 2000, Krysinska, Westerlund & Niederkrotenthaler et al. 2017; Westerlund & Krysinska 2021). The Internet has been identified as the main arena for all kinds of suicide communication (Mishara & Côté 2013), and questions about whether the Internet primarily entails new opportunities for suicide prevention or poses a potential threat to those engaging in this type of communication have been discussed (Barak 2007; Biddle et al. 2008; McCarthy 2010; Hagihara et al. 2012; Till and Niederkrotenthaler 2014; Mok et al. 2016a; Vidal et al. 2020).

The aim of this research review is to describe and exemplify research to date on suicide communication on digital platforms and to discuss the fears and hopes, advantages and disadvantages, as well as the risks and opportunities that researchers in the field have pointed to over the past three decades. The review presents a number of illustrative research articles demonstrating and reflecting the extensive developments that have taken place in the area of digital communication about suicide on the Internet. The main focus of the review is on young people's communication on suicide-related issues online.

The specific questions this research review addresses are:
- What risks and opportunities are associated with suicide-related communication on the Internet?
- How can warning signs be identified on the Internet?
- Are there ongoing or implemented initiatives in the area and if so, how can they be developed?
- Are there areas or people (target groups that are particularly vulnerable) that should be prioritized in a future national strategy in the field of mental health and suicide prevention, and if so, how should these people be addressed?

Material and Method

The research review is mainly based on two previously published reviews in which the author had a leading role (Krysinska, Westerlund, Niederkrotenthaler et al. 2017; Westerlund & Krysinska 2021). Furthermore, additional articles were collected in connection with the work on the present review. In total, about 500 peer-reviewed articles in the research area have been identified and reviewed.

Studies based on the results from search engines

Articles from the second half of the 1990s expressed great concern about the number of hits the search term "suicide" generated on search engines at the time (e.g. Baume et al. 1997; Thompson 1999). Suicide-related communication on the Internet was seen as a new and potent threat, especially as far as young, vulnerable Internet users were concerned. What attracted the most attention were the websites described as "pro-suicide", which were believed to convey and spread potent suicide methods and messages about suicide as an acceptable, and even desirable, way to solve problems in life. A relatively large number of studies have later, in the 2000s and 2010s, used the dominant search engines (mainly Google but also Yahoo !, MSN, Ask, Lycos, Dogpile, Bing) to examine the search results generated by the search term "suicide" (and other synonymous terms) in more detail, with the main purpose of seeing if users are primarily confronted with preventive or pro-suicide search hits when searching for suicide-related content on the Internet (e.g. Biddle et al. 2008; Recupero et al 2008; Westerlund et al. 2012; Till & Niederkrotenthaler 2014; Biddle et al. 2016; Mok et al. 2016a).

In summary, the studies based on aggregate search engine results show that the suicide-related websites and communication platforms that contain preventive and protective material, or messages that clearly speak against suicide, are significantly more prevalent than those that advocate suicide or include other harmful content (Westerlund & Krysinska 2021). However, pro-suicide content and actual descriptions of suicide methods are often ranked high in the search lists. This very visible and easily accessible harmful material can pose a serious threat to suicidal and vulnerable individuals. Consequently, many studies emphasize the importance of improving the ranking and accessibility of preventive websites, and informing and educating clinicians and other healthcare professionals about the potential effects of harmful Internet content and communication as far as individuals at risk of suicide are concerned (e.g. Recupero et al. al. 2008; Westerlund et al. 2012; Till & Niederkrotenthaler 2014; Mok et al. 2016a).

Google Trends and prediction of suicide

Instead of analyzing search results on Google or other search engines directly, McCarthy (2010) used the Google application Google Trends to examine patterns and changes regarding suicide-related search activity. The study compared search volumes for the terms "suicide", "teenage suicide", "depression", "divorce" and "unemployment" with statistics on suicide and intentional self-harm from the Centers for Disease Control (CDC). The results showed that the search volumes on Google correlated with the data on both suicide and intentional self-harm, but that there were differences depending on the age group. For the population as a whole, fewer suicides and self-harm cases were found during periods with higher search volumes resulting from the above-mentioned terms, while suicide and self-harm increased for young people in the age group 15–25 years during periods with high search volumes. In other words, young people use the Internet for self-destructive purposes to a greater extent than the population as a whole. The study thus provides some support for a link between online search activity and suicide, and McCarthy suggests that Internet searches on suicide-related terms can predict actual suicides and intentional self-harm.

> **Internet searches on suicide-related terms can predict actual suicides and intentional self-harm**

In line with McCarthy (2010), a number of studies from different countries and regions have been carried out and published in recent years, where data in the form of search volumes generated by Google Trends have been linked to global, national or regional suicide rates. That is, scholars have examined whether the search volumes for different terms have correlated with suicide rates over time. Overall, many of these studies point to the possibility of predicting suicidal behavior using this method (e.g. Jimenez et al. 2020; Lee 2020; Bojanic 2021). However, it appears crucial to carefully analyze which terms and word combinations most clearly predict variations in suicide rates, and that such analyses account for linguistic, cultural and social factors. The results of such studies could, for example, contribute to more effective suicide prevention initiatives and programs, as it would be possible to specify the time intervals where searches for information about suicide are most frequent (Chandler 2018).

Young suicidal people's use of the Internet

In a number of studies, interviews and questionnaires have been used to investigate how different types of harmful online content can affect young suicidal individuals (e.g. Harris et al. 2009; Sueiki 2013; Mars et al. 2015; Arendt et al. 2019 Weinstein et al. 2021). Minkkinen et al. (2016) examined protective factors in adolescents when exposed to pro-suicide and harmful content. The research was conducted in the US, Great Britain, Germany and Finland, and 3,567 young people (15–30 years) participated in the study. The results showed that exposure to pro-suicide and harmful content on the Internet had a clear negative impact on the participants' mental health – in the form of perceived happiness – regardless of country or gender, but that close relationships with their primary group (e.g. family, friends) protected against such adverse effects.

In parallel studies, Mok et al. (2016a) and Bell et al. (2017) conducted an anonymous online survey to examine the differences between those who use the Internet for suicide-related reasons and those who do not. The participants were young Australian and British suicidal individuals (18–24 years of age). Both studies showed that suicide risk and social phobia were more prominent among individuals who used the Internet for suicide-related reasons, but that there were no differences regarding depressive symptoms. A positive result of suicide-related Internet use was that the suicidal participants found help, support and acceptance in communicating with others on suicide forums and chats. However, the authors conclude that the same suicide-related online content and communication can have both negative and positive effects, depending on the individual. For example, searching for, taking part in and communicating about suicide methods can pose a potential risk for some individuals, while others may experience relief when confronted with the reality of suicide. Hence, the task of determining which content or type of communication is clearly harmful and which type of content and communication provides support and help can be difficult at times, as it largely depends on the individual's own experience and interpretation of the shared information (Mok et al. 2016a; Bell et al. 2017).

> **Searching for, taking part in and communicating about suicide methods can pose a potential risk for some individuals, while others may experience relief when confronted with the reality of suicide**

Overall, studies on young suicidal individuals' use of the Internet indicate that there are both risks and opportunities with this type of communication. The positive opportunities highlighted in the studies include the relief that can come with being able to communicate about this problematic topic in an online context that is perceived by many users as safe, non-judgmental and protected, compared to the corresponding opportunities in real life (Mok et al 2016a; Bell et al. 2017). This sense of relief seems to reduce the degree of suicidality in some users, at least temporarily (Harris et al. 2009). The experience of anonymity also appears to be important in this context (Carey et al. 2018). However, studies also show that users who are at a higher risk of suicide and have previously attempted suicide use the Internet for destructive purposes to a greater extent and are more affected by negative exposure to harmful content (Sueiki 2013; Biddle et al. 2018).

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Suicidality linked to Internet addiction (IA) and problematic Internet use (PIU)

A number of studies have examined how an "excessive" use of the Internet can be linked to suicidality and suicide risk, or sometimes vice versa, how suicidality can be linked to excessive Internet use. The terms most commonly used to describe this phenomenon are "Internet addiction" (IA) and "problematic Internet use" (PIU). While the results of these studies point in slightly different directions, a majority indicate that there is a relation between the use of digital media and suicidality (e.g. Pan and Yeh 2018; Guo et al. 2018; Poorolajal et al. 2019; Gansner et al. 2019; Huang et al. 2020; Kim et al. 2020a). A literature review that included 42 studies investigating the possible relation between social media and suicidality and depression among young people indicated that, among other things, more than two hours of daily use of social media is linked to suicidal ideation and suicide attempts, and that the reading of online forums was generally associated with increased suicidal ideation over time (Vidal et al. 2020). A literature review by Swain et al. (2019) also indicates that suicidal behavior can be related to excessive use of social media. However, an extensive study dealing with time trends in high-income countries regarding suicide per 100,000 young people during the period 2000–2017 did not show any correlation between suicide rates and the use of social media (Padmanathan et al. 2020). Nor did the study find any correlation between the increase in the use of social media during the period studied and increases in suicidal behavior.

In summary, most studies on IA and PIU indicate that there is a relation between these issues and suicidality. However, there are questions about the direction in these relationships, that is, whether an "excessive" or "problematic" use of digital media ("automatically") leads to an increased risk of suicide, or whether suicidal individuals use digital media to a greater extent than others for suicide-related communication. The answer to these questions is of crucial importance in the design and implementation of preventive measures. Furthermore, there is no clear definition of the meaning of "excessive" or "problematic" use in these studies. It is sometimes stated that it is a matter of exceeding a certain number of hours per day (e.g. Vidal et al. 2020). There is also a lack of more detailed determinations of what types of digital media and applications the "abuse" refers to. Most studies use the very general terms "Internet" (e.g. Kuang et al. 2020) or "smartphones" (e.g. Kim et al. 2020b), sometimes slightly narrowed down to "social media" (e.g. Swain et al 2019), which makes it difficult to determine what specific type of activity and use that is actually measured. as it largely depends on the individual's own experience and interpretation of the shared information (Mok et al. 2016a; Bell et al. 2017).

Suicide communication on social media, discussion forums and chats

Social media can be important platforms for suicide preventive communication as they can reach many people who may otherwise be difficult to reach (Robinson et al. 2014; Niederkrotenthaler et al. 2016). Good accessibility and anonymity encourage users to share personal information, including suicidal thoughts and feelings (Westerlund 2013; Yeo 2020). Other users can respond to these messages and inform about suicide preventive resources, or provide direct help and support and intervene in the event of an immediate suicide risk or an ongoing suicide attempt (Wiggins et al. 2016). Having the opportunity to communicate about suicide-related issues with other users with similar experiences appears to be very important and can prevent suicide, at least temporarily (Ozawa-de Silva, 2008, 2010; Ikunaga et al. 2013; Westerlund 2013).

However, social media can also have a negative impact in terms of suicide preventive interventions (Luxton et al. 2012; Robinson et al. 2014; Marchant et al. 2018; Guidry et al. 2020). Various digital forums where information and discussions about suicide occur have contributed to young individuals being increasingly exposed to suicidal behavior, which has been associated with an increase in suicidal ideation among participants (Dunlop et al. 2011). Some social media users tend to normalize, glorify, encourage, or downplay suicidal behavior (Zdanow & Wright 2012; Westerlund et al. 2015; Trnka et al. 2018), which can contribute to social marginalization of individuals at risk, imitation of suicidal behavior, and creation of destructive forums and communities for suicide communication (Bell 2007; Phillips & Mann 2019). Despite the sometime negative consequences, most studies indicate that the preventive potential of suicide-related communication on social forums and networks outweighs the risks (Franco-Martín et al. 2018).

> **Most studies indicate that the preventive potential of suicide-related communication on social forums and networks outweighs the risks**

Imitation effects of suicide-related communication on social media

A number of studies have examined imitation effects (or "contagion effects") regarding suicide-related communication on social media. In June 2018, two famous Americans took their lives, and a study compared the Twitter activity during the period before and after these events with the two months during which the Twitter activity about these people was at its highest (Sinyor et al. 2020 a). The Twitter activity was juxtaposed with national suicide data from the US and the results showed that more people than expected died of suicide during the two months that the Twitter activity was at its highest (a 4.8 % increase compared to the expected number), and that hanging as suicide method increased significantly (the same method used by the two celebrities). However, in another study on the relationship between suicide-related events that received a lot of attention on Twitter and actual deaths by suicide, no such increase was discovered when compared to the control period (Sinyor et al. 2021).

Swedo et al. (2020) examined the relationship between social media and suicidal behavior during a period when communication was taking place among young people in a so-called suicide cluster in the US state of Ohio. Survey data from young people showed that 4.9 % had attempted suicide during the period when the cluster was running, and among the students who posted cluster-related posts on social media, 22.9 % had suicidal thoughts and 15 % had attempted suicide during the cluster. In a research review, Hawton et al. (2020) argue that suicide clusters are more common among young people and that social media is an important mechanism behind the spread of "suicide contagion", but that social media also can be a way to reach out with information to young people at risk of suicide.

Suicide-related crisis support and online helplines

The prevalence and scope of digital suicide prevention initiatives and resources has increased sharply over the past two decades. This includes suicide prevention and crisis intervention services (e.g. Mokkenstorm et al. 2016; Woodward & Wyllie 2016), support and self-help groups (e.g. Gilat & Shahar 2007), screening for suicide risk (e.g. Haas et al. 2018), e-learning (e.g. Ghoncheh et al. 2014) and mobile phone applications (Witt et al. 2017). Most digital resources and services can be accessed quickly and are not limited by physical or geographical barriers, and many are available around the clock (Lai et al. 2014). Organizations working on different types of suicide prevention activities have also used the digital social media space to share support and educational resources, to create suicide prevention networks and to aid individuals at risk of suicide (Luxton et al. 2012).

> **Online suicide prevention resources are associated with certain challenges**

The digital sites and tools for suicide prevention often give users the opportunity for anonymity and confidentiality (Carli et al. 2012), which can counteract barriers to seeking help (e.g. shame and stigma). The possibility of anonymity can also lower inhibition (the "online disinhibition-effect": Suler 2004) and facilitate communication and confidentiality. Writing posts can have a therapeutic effect and text-based communication can provide flexibility and a sense of control over how much a person wants to share about his or her suicide behavior (Lai et al. 2014).

However, online suicide prevention resources are associated with certain challenges (Lai et al. 2014). The increased and easy access to services and the possibilities for anonymity tend to create an informal environment that can also promote many "drop-outs" and that people "overuse" the resources, which can lead to a low efficiency of the efforts (Westerlund & Krysinska 2021). There are also difficulties in creating and maintaining a therapeutic alliance with an online "helper", as well as ethical issues related to the quality of online services, resources and interventions. The disinhibiting effect that anonymity has on online users can also lead to insults and hateful and threatening posts and comments ("flaming effect"), which can incite suicidal behavior in vulnerable individuals (Westerlund et al. 2015). Text-based communication also raises questions about safety and security, such as a delayed response to an acute crisis, limited opportunities to refer users further and technical problems that can make communication difficult or completely interrupt it. There are also significant privacy issues related to the access, collection and sharing of personal online information (Pourmand et al. 2019).

Suicide-related machine learning, screening, detection, monitoring and prediction

In recent years, numerous studies have been conducted where large amounts of posts and comments on social media have been screened and analyzed to detect and predict suicide risk, often using machine learning and algorithms (e.g. Aladağ et al. 2018; Vioules et al. 2018; Liu et al. 2020b; Ophir et al. 2020; Rabani et al. 2020). In three different studies, the aim was to extract and analyze data from social media containing suicide-related communication, using linguistic methods and machine learning and algorithms and then compare these data with suicide risk factors identified in previous research and by experts in the field (Grant et al. 2018; Liu et al. 2020b; Rabani et al. 2020). These studies show strong correlation between previously identified suicide risks and what the algorithms identified. The algorithms are therefore well suited for large-scale extraction of suicide communication on social media. Coppersmith et al. (2018) conducted a study where "natural language processing" and "deep learning" were used to identify suicide risk in texts collected on social media. The results showed that the tested algorithm had sufficient precision to also be used in clinical contexts.

> **Today it is technically and methodologically possible to detect and predict harmful suicide-related communication on digital platforms**

Many studies thus indicate that today it is technically and methodologically possible to detect and predict harmful suicide-related communication on digital platforms, although further and in-depth studies are needed to adjust and calibrate the algorithms and "warning systems" that can be used to prevent suicide. A current systematic research review and meta-analysis of 87 studies evaluating the use of machine learning and AI to detect suicide risk also demonstrated a more than 90 percent accuracy for suicide risk detection (Bernert et al. 2020). However, the development of this type of mass detection and prediction raises many ethical and legal issues – such as the processing of personal data, privacy, security and safety – and the question is whether suicide-related monitoring of communication on social media can win acceptance from users. There is also a risk in screening social media for "high-risk individuals", as it can cause suicidal individuals to perceive it as risky to share their suicidal thoughts on social media, out of concern that it could result in unwanted and forced help (Oexle et al. 2019).

Summary and discussion

The purpose of this research review has been to describe and exemplify different types of suicide-related content and communication on digital platforms, with an emphasis on young people's Internet use. Four more specific questions were posed in the introduction, which the summary below departs from.

Regarding the question of what risks and opportunities are associated with suicide-related Internet use, Marchant et al. (2018) examined the relationship between young people's Internet use and suicidal behavior and self-harming behavior. The analysis consisted of a systematic review of 51 research articles. In 19 of the articles the results were negative, in 15 they were positive, and in 17 of the articles both positive and negative results were reported. Taken together, these studies clarify the dual nature of online suicide-related communication: On the one hand, readily accessible suicidal and harmful online content can have both a normalizing and suicide-triggering effect on young vulnerable individuals. On the other hand, the opportunities for suicide prevention measures and crisis intervention have increased significantly through digital development.

The research review also refers to studies that indicate that social media today is a central hub in terms of opportunities for suicide prevention measures, as it enables communication with large groups of people who may otherwise be difficult to reach (Robinson et al. 2014; Niederkrotenthaler et al. 2016). Social media is easily accessible and can provide a sense of anonymity, which encourages users to share sensitive and private information such as suicidal thoughts and feelings (Westerlund 2013; Yeo 2020). This allows other users to comment on these posts and suggest suicide preventive resources, or provide immediate help and support and intervene in the event of an immediate suicide risk or an ongoing suicide attempt (Wiggins et al. 2016). Being able to easily communicate about suicidality with other users with similar experiences appears to be very important and can in some cases prevent suicidal behavior (Ozawa-de Silva, 2008, 2010; Ikunaga et al. 2013; Westerlund 2013). However, the use of social media has also led to young individuals being increasingly exposed to suicidal behavior, which has been linked to an increase in suicidal thoughts among participants (Dunlop et al. 2011; Luxton et al. 2012; Robinson et al. 2014; Marchant et al. 2018; Guidry et al. 2020). When communicating, users also tend to normalize, glorify, encourage or downplay suicidal behavior (Zdanow & Wright 2012; Westerlund et al. 2015; Trnka et al. 2018), which may contribute to increased social marginalization of individuals at risk, imitation of suicidal

> **Social media today is a central hub in terms of opportunities for suicide prevention measures**

behavior and creation of destructive forums and communities for suicide communication (Bell 2007; Phillips & Mann 2019). However, most studies show that suicide prevention opportunities on social media platforms still outweigh the risks (Franco-Martín et al. 2018).

A number of studies have also examined the relationship between "Internet addiction" (IA), "problematic Internet use" (PIU) and the issue of suicide, often with a focus on young Internet users (e.g. Pan & Yeh 2018; Guo et al. 2018; Kim et al. 2020a). Many of these studies indicate that such a relation exists (e.g. Swain et al. 2019; Vidal et al. 2020; Kuang et al. 2020). However, the very definition of "excessive" or "problematic" use of the Internet is questionable, as well as clear limitations for what types of digital media and applications "abuse" refers to.

The research review has also addressed the question of how to identify suicide-related warning signals on the Internet. As early detection and treatment is considered the most effective way of preventing suicide ideation and behavior, there are of course high hopes that new technologies such as machine learning, algorithms and AI can be powerful tools for suicide prevention. Studies have used the Google Trends application to examine patterns and changes in suicide-related activity on the Internet, and to compare these search volumes with suicide data to determine possible correlations (e.g. McCarthy 2010; Arendt 2018; Chandler 2018; Lee 2020). Many of these studies show positive correlations and thereby also opportunities to be able to predict suicidal behavior among Internet users. One challenge, however, is to be able to accurately determine which words and word combinations in the search volumes most clearly can predict variations in suicide rates. This probably requires in-depth knowledge of the linguistic, cultural and social factors that influence people's search behaviors.

> **New opportunities have been developed for detecting and predicting harmful suicide-related communication on digital platforms using machine learning and algorithms**

Also, new opportunities have been developed for detecting and predicting harmful suicide-related communication on digital platforms using machine learning and algorithms (e.g. Grant et al. 2018; Liu et al. 2020b; Rabani et al. 2020; Ramírez-Cifuentes et al. 2020; Ophir et al. 2020). Overall, most studies presented in the research review indicate that this is technically and methodologically possible. A systematic research review and meta-analysis of studies that evaluated the application of machine learning and algorithms demonstrated a more than 90 percent accuracy for suicide risk detection (Bernert et al. 2020). If the detection of suicidality is followed up with proactive support and help, it also has the potential to increase the availability of preventive information for suicidal people with low motivation to seek other types of help (Liu et al. 2019). However, detection and prediction of suicide communication occurring on social media platforms is also problematic and raises many questions that are both ethical and legal in nature,

for example regarding the processing of personal data, integrity, security and safety. The question is whether this type of monitoring and collection of suicide-related communication on social media is defensible from a user perspective (Oexle et al. 2019).

The research review has also addressed existing examples of preventive measures online and how these could be developed. The question of how to best minimize potential negative effects and maximize preventive measures has been discussed since the 1990s (Mishara & Weisstub, 2007; Pirkis et al. 2017), but clear proposals and guidelines on how to deal with suicide communication through digital media are still lacking. One suggestion is to educate website providers and webmasters, but also website users themselves, on how to communicate safely about suicide on the Internet, (Maloney et al. 2014; Pirkis et al. 2016). Improving the ranking of preventive websites using search engines can also help suicide prevention organizations and actors to increase their visibility and availability online, which can capture individuals who are at risk for suicide (Recupero et al. 2008; Pirkis et al. 2016). It has also been pointed out that it is important to inform and educate clinicians and healthcare professionals about the effects that suicidal and harmful online content and communication can have on individuals at risk of suicide (Westerlund et al. 2012; Till och Niederkrotenthaler 2014; Mok et al. 2016a).

The review also discussed that suicide prevention forums and applications online often offer users anonymity and confidentiality, which can counteract barriers to seeking help, and facilitate communication and trust (Suler 2004; Carli et al. 2012). Writing posts can have a therapeutic effect and text-based communication can provide flexibility and a sense of control over how much one wants to reveal about one's problems (Lai et al. 2014). Suicide prevention help-lines and chats can provide temporary support to people who are in an acute suicide crisis, especially with regard to young vulnerable individuals who do not seek help in any other way (Westerlund & Krysinska 2021). However, as suicide processes are often complex and develop over time (Sveticic & De Leo 2012), one should not expect that the limited support and advice given via chat or a text message can completely stop or reverse a suicide process (Mokkenstorm et al. 2016; Sindahl et al. 2018). Instead, the aim should be to reduce the imminent risk of suicide and to encourage people to seek help and more long-term counseling or psychotherapy (Sindahl et al. 2018). Furthermore, studies have pointed to the importance of a clearer adaptation to the different needs and preferences of help seekers and a relevant training of volunteers and staff, and that end users participate in the development of these efforts (Jacobs et al. 2014; Reifels et al. 2018; Westerlund & Krysinska 2021).

The research review has a special focus on young Internet users' suicide-related communication. Studies have shown that young users with serious suicide risk and experiences of previous suicide attempts show greater use of the Internet for destructive purposes and are more affected by negative exposure to harmful content (Sueiki 2013; Padmanathan et al. 2018).

They also search more frequently for potent suicide methods and information on the subject, and avoid websites that contain preventive information and communication. The degree of suicidality thus seems to affect how young individuals use the Internet, which can be important knowledge for clinics in their risk assessment, as well as in planning suicide preventive interventions (Biddle et al. 2018). A literature review also showed that suicide clusters are more common among young people and that communication on social media can drive the spread of "suicide contagion" (Hawton et al. 2020). On the other hand, positive aspects are also emphasized in a number of studies, for example the relief of being able to communicate about the taboo and stigmatized topic of suicide in an online context that by many users is perceived as safe, non-judgmental and protected (Mok et al. 2016a, 2016b; Bell et al. 2017). This relief appears to temporarily reduce the degree of suicidality in young users (Harris et al. 2009).

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About the Swedish Media Council

The Swedish Media Council is a government agency whose primary task is to promote the empowering of minors as conscious media users and to protect them from harmful media influences. The agency also coordinates the national effort for a strengthened media and information literacy in the general population.

Statens medieråd