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Assessing the impact of Instagram use and deliberate self-harm in adolescents: a scoping review.

ABSTRACT

The use of Instagram by adolescents to access deliberate self-harm content is a growing concern among scholars, mental health professionals and families, with many adolescents (10–19-year-olds) imitating offline what they have seen online. This scoping review aims to investigate the extent to which Instagram use impacts the mental health of its adolescent users, identifying if there is a relationship between time spent on Instagram and engagement in deliberate self-harm. The databases, Pubmed, Web of Science, Google scholar, APA PsycInfo, CINAHL and Child Development and Adolescent Studies were explored and after applying the inclusion/exclusion criteria 15 papers were included in this review. Thematic analysis indicated that there was a relationship between time spent on Instagram and deliberate self-harm; de-sensitisation of deliberate self-harm resulting in normalisation; social contagion and that Instagram provided a sense of belonging to its users who engaged in deliberate self-harm. Implications of this research is that it is quickly outdated as new social media platforms are developed and that the reliance on self-reports does not have high validity or reliability.

KEYWORDS

Adolescents, Instagram, Deliberate Self-Harm, Social Media.

INTRODUCTION

Over the past two decades, social media platforms have rapidly evolved, with young people often being the earliest adopters and most frequent users (Yonker et al., 2015). Alongside the rise in social media, there has also been an increased awareness that these platforms are contributing to the deterioration in mental health of some users, including: anxiety and depression (Manske and Schmidt, 2019 and Giordano et al., 2021); development and maintenance of eating disorders (Tanner, 2015); cyberbullying (O'Dea and Campbell, 2011; Richards et al., 2015 and Lamblin et al., 2017) and increased engagement in deliberate self-harm and suicide attempts (Jarvi et al., 2013; Edwards et al., 2016; Marchant et al., 2019 and Picardo et al., 2020).

In 2005, O'Loughlin and Sherwood identified that one of the main reasons for adolescents being admitted into hospital was related to deliberate self-harm (DSH). In 2013, Stallard et al. (2013) found that of 3,955 young people asked, 1 in 10 had engaged in DSH and 1 in 5 reported having frequent thoughts to engage in self-harm. Contemporary research has highlighted that over time this problem has grown; with their being a notable increase in hospital attendances and admissions following DSH, in individuals aged 15-19 (Marchant et al., 2019), with suicide now being the third highest cause of death in individuals aged 15-19 (World Health Organisation, 2021). Such finding are reiterated by Hetrick et al. (2020) who established that 25% of adolescents are affected by DSH, either directly or through personal contact with a self-harming individual. However, although official data on DSH is published, rates are thought to be significantly higher than those being reported (Clements et al., 2015), and further research needs to be conducted to gain an idea of the true scope of DSH within young individuals (Marchant et al., 2019). Marchant et al. (2019) stated that the prevalence of DSH is widely unknown due to hospital attendance only being a small proportion of cases, with many acts of DSH going unreported due to individuals not seeking medical attention.

Technology – specifically social media – has been identified as an explanation for the rise in DSH in adolescents. With DSH, suicide, and self-harming methods regularly being documented, shared, and made readily available for everybody to see, creating influence and social contagion (Scherr et al., 2019; Marchant et al., 2019 and Picardo et al., 2020). Instagram has 1 billion monthly active users (Barnhart, 2021) and is extremely popular with younger generations (Arendt, 2019) who spend an average of 145 minutes per day scrolling through the content shared online (Tankovska, 2021). Observed behaviour is often later imitated if positive reinforcement is experienced (Bandura, 1977; Herres and Ohannessian, 2015 and Leipold, Munz and Michele-Malkowsky, 2018). Research conducted by Carlyle et al. (2018) and later Brown et al. (2020), found that self-harm posts on Instagram received higher levels of engagement compared to posts which do not relate to self-harm. For children and adolescents, this engagement acts as a reward which can shape reinforcement learning (Sherman et al., 2018). Sherman et al. (2016) and Sherman et al. (2018), commented this

virtual endorsement has potential to act as peer influence, encouraging mimicking behaviours and for other individuals to post their own experience of DSH online. In recent years, Instagram has also faced several high-profile cases where young people have engaged with and shared self-harm content, leading to those individuals completing suicide (Picardo et al., 2020). Such events have resulted in demands for stricter regulations to be implemented on the type of content which can be posted onto the platform. For example, closer monitoring of content shared, with faster responses to remove inappropriate content; alongside new laws to protect young people when using social media (Online Safety Bill, 2021). However, when Smith and Cipolli (2021) discussed the stricter regulations with participants in their study, they were met resistance with the argument that teen suicides due to self-harm images on Instagram should not '…serve as a catalyst for policy change' (Smith and Cipolli, 2021:8). Picardo et al. (2020) have also highlighted how understudied the relationship between DSH on Instagram and risk-taking behaviours offline is, with a necessity for more research.

METHODOLOGY

This current scoping review focuses directly on investigating the relationship between Instagram use and risk-taking behaviours in the form of deliberate self-harm. It was guided by the research question:

'What are the key findings from existing literature on the relationship between social media use – specifically focusing on Instagram – and deliberate self-harm, thoughts, and behaviours in the adolescent population.'

The aim of this research was to:

- Explore to what extent Instagram use in adolescents, impacts on the deterioration of their mental health, and increases their engagement in DSH activities.

From this aim, there are several objectives explored, including:

- To investigate the frequency of Instagram use within deliberate self-harming adolescents
- To investigate if there is a higher risk of engagement in DSH activities following observation of DSH on Instagram
- To identify if there is a need for: further restrictions on Instagram; easier ways to report and get permanent removal of people who repeatedly post self-harm related content on Instagram.

From the results found from conducting this review, suggestions will be made on what interventions may be useful in the future for protecting young individuals' mental health when using social networking sites. A further potential outcome of the scoping review may include determining the need for a systematic review (Arksey and O'Malley, 2005) or with a more precise research question in the future (Munn et al., 2018).

The definition of adolescents used for this review is defined by the World Health Organisation (2021) as the age group 10-19-year-olds, the stage of physiological development between childhood and adulthood. In this developmental stage, patterns of behaviour are established and developed which will remain as the foundations for the individual's adult life (Sawyer at al., 2012).

A scoping review was deemed the most appropriate literature review for this research due to there currently being little research available on the impact of Instagram on adolescent mental health and DSH behaviours (Pham et al., 2014; Khalil et al., 2016 and Munn et al., 2018). When there is limited research, scoping reviews utilise the extent of the literature available, offering wide coverage and an overview of all identified explanations, as opposed to going into detail on only a few (Arksey and O'Malley, 2005 and Maggio et al, 2020). To analyse the articles included in this scoping review, thematic analysis was used, as previously adopted by Boydell et al. (2014) Wei et al. (2015) and McLuckie et al. (2019) when conducting their scoping reviews. This included the use of two coders to agree upon the themes distinguished – one creating the themes and the other agreeing or disputing after reading the literature (Braun and Clarke, 2006, 2020). Where there was disagreement both reviewers discussed the paper to reach a consensus.

Guidelines from the PRISMA-ScR extension (Tricco et al., 2018) were utilised when completing this scoping review, alongside the five stages suggested by Arksey and O'Malley (2005): Identifying the research question; finding the relevant studies; selecting the studies; charting the data; summarising and reporting the results found.

Data sources and search strategy

To retrieve the relevant studies, a full systematic search was undertaken on the following electronic literature databases in December 2021, Searches applied to 'all fields' and included Pubmed, Web of Science, Google scholar, APA PsycInfo, CINAHL and Child Development and Adolescent Studies. The search string terms were;

- 'Instagram' AND 'Adolescents' AND 'self-harm'
- 'Instagram' AND 'young people' AND 'self-harm'
- 'Instagram' AND 'teens' AND 'self-harm'
- 'Instagram' AND 'teen*' AND 'self-harm'

There was no restrictions implemented on the type of study design which were included (Grant and Booth, 2009), however, there were two key terms which needed to be present in both the searches and the results: “self-harm” and “Instagram”.

Inclusion and exclusion criteria:

Inclusion and exclusion criteria were established for this review, these can be found in Table 1.

(Insert Table 1 here)

Stages of selecting studies:

The articles produced from the systematic searches can be found in Table 2, From reading the eligible articles in full, as well as reference tracking additional articles were obtained by going back to the ‘cited by’ feature found on the online journal, this was done to establish if any recent research had been produced using that article. This yielded an additional five articles of with four met the inclusion criteria. Following appropriate screening methods, 15 articles were eligible for this review. Please see Figure 1

(Insert Figure 1 here)

Charting the data:

After reading the 15 articles in full, information was documented in an excel spreadsheet – to organise analysis – including: authors; year published; title; country of publication and key findings.

Collating and summarising the results:

Following a review of all 15 articles and continuing to follow the six steps of Braun and Clarke’s (2006, 2020) guidelines of thematic analysis, the research was re-read several times, with codes being identified during the re-reads (CM). Once codes were established, they were gathered into potential themes and were then discussed and agreed by CW. After being reviewed for a final time, the themes were named and a report produced (Braun and Clarke, 2006). For each of the themes determined and agreed upon, a narrative descriptive overview was written and can be found in the results section of this research.

RESULTS

Table 2 lists the 15 articles considered appropriate for this scoping review. Continuing to use the framework of Arksey and O'Malley (2005), this section included a descriptive narrative of the key findings from those articles. The studies were from a variety of countries: USA (n=9); Germany (n=2); UK (n=2); Poland (n=1) and Austria (n=1) and vary in research methods and methodology.

(Insert Table 2 here)

Thematic analysis:

The following themes emerged:

(i) relationship between time spent on Instagram and Deliberate Self Harm (DSH) (n=9)
(ii) Instagram providing a sense of community/belonging (n=6)
(iii) Social contagion (n=8)
(iv) De-sensitisation and normalisation of DSH on Instagram (n=6)

Relationship between time spent on Instagram and Deliberate Self Harm (DSH)

One of the overriding themes when researching Instagram use and DSH, was the potential adverse effect that prolonged periods and extensive use has on the user's mental health. This poor mental health was manifested itself in terms of suicidality; deliberate self-harm and depression (Memon et al., 2018; The Lancet., 2019; Shafi et al., 2020; Urbanek-Matusiak et al., 2020; Vente et al., 2020, Cataldo et al., 2021 and Giordano et al., 2021). Memon et al., (2018) concluded that persistent use of Instagram for long periods at a time, is associated with higher risk of psychological distress including suicidality and engaging in DSH. However, Brown et al. (2019) found no correlation between the frequency of social media use and acute suicidality. Additionally, Suarez et al. (2019) found that in some cases, the individual's mental health declined to a degree of needing psychiatric hospitalisation, with Instagram repeatedly named as the social media platform most frequently used when discussing the individual's presenting histories. Shafi et al. (2020) developed this further by detailing that on admission, the individuals that had experienced more incidents of DSH, also admitted to having higher use of Instagram compared to those who had infrequent or no incidents of DSH. Vente et al. (2020) reiterated these findings in their study, reporting increased levels of non-suicidal self-injury in adolescents who had excessive use of multiple social media platforms, including Instagram. This conflicting evidence, with some suggesting that Instagram is the most influential platform in regard to DSH, and others suggesting it is multiple platforms was an important finding from the literature and highlights the need for further research into these claims.

When investigating the relationship between Instagram use and DSH, Weinstein (2017) and Suarez et al., (2019) both utilised schools as their sampling frame, comparing the difference in findings on social media use between the younger adolescents and older adolescents. Both found that despite both age groups endorsing Instagram use, older students had significantly higher levels of DSH and

psychiatric morbidity than their younger counterparts (Weinstein, 2017 and Suarez et al., 2019). Weinstein (2017) attributed this to older adolescents having more unsupervised access when using technology and being on more social media platforms than younger adolescents. Older adolescents also had more awareness of the potential impact that social media can have on their mental health compared to younger adolescents, being able to acknowledge that a negative change in their mood was associated with the time that they spent on social media (Weinstein, 2017).

Instagram providing a sense of belonging to its DSH users

A second theme related to "belonging" emerged in nearly half the studies used for this review and identified that the principal reason for adolescents engaging with, and uploading DSH content onto Instagram, was the sense of belonging that they experienced by doing so (Brown et al., 2018; Brown et al., 2019; Vente et al., 2020; Shafi et al., 2020; Brown et al., 2020; Nesi et al., 2021). It has been reported that adolescents who engage in DSH felt unable to speak to family members or friends due to stigmatisation; fear to do so or previous lack of understanding. Many disclosed that they utilised Instagram as a way of finding like-minded individuals (Fischer et al., 2017 and Brown et al., 2020). Fischer et al. (2017) found that many adolescents who self-harm, find others to engage with by using DSH hashtags on Instagram, with Memon et al. (2018) finding that Instagram is often used as a medium for seeking validation and social support. The addition of the anonymity offered by Instagram is viewed as a positive by adolescents, as it reduces the stigma of DSH and being made to feel ashamed (Memon et al., 2018). Vente et al. (2020) reiterated this, finding that for the participants in their study, many used Instagram as a tool to self-report and communicate with others regarding their DSH. However, concerns were raised by Nesi et al. (2021) that adolescents engaging with people – known only online – about their DSH, has association with notably higher suicide attempts compared to those that communicate with people on Instagram which they also known to them off line. Vente et al. (2020) identified that a reason for primarily communicating with others about their DSH via Instagram, as opposed to people off line, was related to the barrier which the online world offered, with the individual not being able to see the other person's reaction to their disclosure. However, Brown et al. (2020) discovered that although gaining a sense of belonging by utilising Instagram to discuss DSH, nearly 50% of the participants in their study reported following DSH accounts for several months before self-harming themselves or posting about DSH on Instagram.

DSH on Instagram having the potential to normalise thus desensitise its users

Hashtags provide a myriad of content specific to the search (Fischer et al., 2018), if adolescents are searching for DSH hashtags, then immeasurable DSH content will become available. Although posting DSH on Instagram can result in stigmatisation (Fischer et al., 2018), the third theme which materialised from the literature, was that Instagram allowing DSH content to be uploaded onto its platform, has the potential to normalise self-harm thus desensitising its users (Fischer et al., 2018;

Memon et al., 2018; Brown et al., 2018; Record, Straub and Stump, 2020). Memon et al. (2018) argued that DSH content being uploaded not only desensitises users to such content but also leads DSH to being sensationalised, arguing that Instagram's failure to remove this content promotes DSH among the most vulnerable age group on their platform. In 2019, The Lancet also published concerns that frameworks of protection against DSH being uploaded to Instagram needed to be implemented imminently, to avoid further desensitisation of any new users that sign up to the social media platform (The Lancet, 2019). In 2020, it was found that young people who had access to social media – including Instagram – had higher suicidal ideation than those who do not have access, with suggestions that this could be in response to frequent viewing online, resulting in normalisation of DSH (Record, Straub and Stump, 2020). Although Brown et al. (2020) argued that although DSH on Instagram – including live videos demonstrating how to self-harm – is alarming, Instagram often provides DSH users with an online community that offers understanding and belonging – when the offline world can seem isolative and lonely.

Social Contagion

The final theme which emerged from the literature was that Instagram has the capacity to create social contagion among its most vulnerable users (Memon et al., 2018; Shafi et al., 2020; Record, Straub and Stump., 2020; Brown et al., 2020; Urbanek-Matusiak et al., 2020; Cataldo et al., 2021 and Smith and Cipolli., 2021). Social contagion is considered the involuntary influence of an individual's behaviours, attitudes, or personality on another person (Burgess et al., 2018). With adolescents being particularly perceptive to the content posted on Instagram (Urbanek-Matusiak et al., 2020), Memon et al. (2018) claimed that increased exposure to DSH content can result in viewers emulating and permanently adopting this behaviour, with Record, Straub and Stump (2020) identifying that Instagram – of all social media platforms – raises the most concern. This is due to the lack of interventions imposed to stop DSH being posted onto their platform, with most Instagram users being impressionable adolescents who will see increased engagement and 'likes' on DSH posts as positive reinforcement. This may then lead them to imitate this behaviour to gain followers and 'likes' themselves (Record, Straub and Stump., 2020). Brown et al. (2020) also raised this concern, that many adolescents uploading DSH onto Instagram, disclosed that they had initially done so as imitation of posts that they had seen, which later became a more reoccurring theme due to increased engagement. Cataldo et al. (2021) also suggested that exposure to DSH posts on Instagram could lead to comparison of self-harm, with users competing to exhibit the most severe injuries.

DISCUSSION

Instagram is a social media platform largely used by the adolescent population. It allows them to construct their viral identity, self-express their personality, seek affiliation and create online friendships, whilst also maintaining contact with friends they have in physical life (Oberst et al., 2017;

Cataldo et al., 2021). Nevertheless, there are drawbacks for some adolescents using Instagram – especially for prolonged periods at a time – as it has been associated with normalising DSH (Moreno et al., 2016), which Marchant et al. (2019) suggested can lead to users being influenced, fostering the behaviour themselves or even competing for the worst DSH injuries. Shafi et al. (2018) argued this contagion effect can increase the user's risk of suicidal ideation and developing further psychiatric disorders. The extent to which Instagram is used by adolescents to share experiences or graphic images and videos of DSH is still widely unknown. Recent literature has suggested that use of Instagram in this way is substantially impairing some user's mental health (Fischer et al., 2017; Memon et al., 2018; Shafi et al., 2020; Record, Straub and Stump., 2020; Brown et al., 2020; Urbanek-Matusiak et al., 2020; Picardo et al., 2020; Cataldo et al., 2021 and Giordano et al., 2021). Longstanding concerns are that users are more likely to have depression; anxiety; addiction; engage in risk taking behaviours; have poor academic performance and deliberately self-harm (Cash et al. 2013; Sueki 2015; Moreno et al., 2016**;** McDougall et al., 2016; Banyai et al., 2017; Sampasa-Kanyinga et al. 2018**;** Hussain et al. 2018; Shafi et al., 2020; Vente et al., 2020 and Giordano et al., 2021). Research contesting this comes from Weinstein (2017), who found when speaking to students that they were able to recognise that Instagram posts may not be a true reflection of the user's thoughts, feelings, or lifestyle, thus they knew not to compare to themselves or imitate behaviours shown. Students also acknowledged that if they were regularly being negatively impacted by certain accounts, that they had the option to 'unfollow' the authors of the accounts to avoid contagion or further deterioration in mood (Weinstein, 2017). However, Yurdagul et al. (2019) found this to be the minority, with many male adolescent Instagram users in their research having anxiety linked to the content on their Instagram feed; whilst female adolescent users were more likely to associate Instagram with body image dissatisfaction. Shafi et al. (2018) acknowledged that an increasing number of adolescents and family members cited social media as a key stressor during psychiatric assessments, leading to both family and clinicians seeking ways to protect adolescents from the vulnerabilities of using Instagram (The Lancet, 2019).

Abi-Jaoude, Naylor and Pignatiello (2020) suggest nurses can support adolescents in using social media in a more therapeutic way by having open, honest and non-judgemental conversations about their social media use, throughout their admission to the ward. It is for clinicians on the ward to identify problematic social media use during these conversations, using age-appropriate interventions to educate and encourage alternative behaviours, with the aim of reducing the negative behaviours associated with social media use (O'Reilly et al., 2019, Abi-Jaoude, Naylor and Pignatiello, 2020). These interactions could be on a 1:1 basis whilst creating care plans for the patient or could be conducted in a group session where it is open to the patient to attend based on whether they feel it would be beneficial to them. An alternative approach could be for clinicians on the ward to offer emotional regulation techniques, which can be utilised when adolescents are experiencing negative

thoughts or wanting to harm themselves following observation of distressing images on social media. Nurses offering this support, providing coping techniques and strategies to the younger generations within society, promotes and builds their resilience when having to navigate through the challenges faced in today's social media focused world (Abi-Jaoude, Naylor and Pignatiello, 2020). Kellie et al (2018) observed from their data generated through randomly selected Instagram posts on suicide that none were published by any public or mental health professional. There were also no comments on any posts originating from mental health services or professionals. Accepting the ethical challenges of professional engagement on Instagram it seems a significant gap with limited presence of mental care professionals on this platform. This may require mental health professionals to examine how they can generate a presence and proactively support adolescents in relation to DSH.

One explanation found in this scoping review as to why adolescents engage with and upload DSH to Instagram, is to feel understood and gain a sense of belonging (Fischer et al., 2017; Brown et al., 2018; Memon et al., 2018; Brown et al., 2019; Vente et al., 2020; Shafi et al., 2020; Brown et al., 2020; Nesi et al., 2021), as disclosure of DSH to individuals, known offline, who do not engage in the activity, is often met with shame and stigma (Rosenrot, 2015 and Brown et al., 2020). Thus Instagram potentially both provides a sense of belonging and also allows users to offer support to each other (Brown et al., 2019). When participants were asked about reactions to their DSH posts or announcement of planned suicide on Instagram, they replied that 'people offered help' and 'people tried to talk me out of it' (Brown et al., 2019). When asked about how they responded to other people's posts of DSH or announcements of planned suicide, the responses were 'they were worried' 'they showed empathy' and 'people identified with the user' (Brown et al., 2019). However, some responses were not as positive, with participants reporting that some users suggested 'a joint suicide', with others reporting that they had 'comments of encouragement' after posting DSH or planned suicides (Brown et al., 2019). These latter responses support the theory that Instagram is normalising DSH (Mars et al., 2015; Moreno et al., 2016; Memon et al., 2018 and Vente et al., 2020), with Mars et al. (2015) finding that more than 50% of adolescents who self-harm, sought online self-injury material prior to doing so. Similar concerns were raised by Vente et al. (2020) who found that with users having unlimited access to explicit content, the concept of DSH is often discovered online. Suggesting that continuing through increased exposure, adolescents were being desensitised to the seriousness and potentially fatal actions of DSH, with Instagram assisting the change in attitudes and perceptions of DSH in adolescents (Vente et al., 2020).

Fischer et al. (2017) argued that the ease of access to DSH content on Instagram comes from the use of hashtags. Around 10% of DSH posts on Instagram depict wounds, videos on how to injure yourself and the items used to cause injury. All use non-suicidal self-injury hashtags to circulate their content (Fischer et al., 2017). In 2012, Instagram acknowledged and implemented preventative measures, including changing their policies to zero tolerance on DSH, and disallowing posts to be uploaded if

DSH hashtags are used – in attempt to combat the DSH culture on their platform (Record, Straub and Stump, 2020, Brown et al., 2020 and Smith and Cipolli, 2021). Initially considered as a move forward towards preventing the glorification of DSH, hashtags are a compelling tool (Cataldo et al., 2021) and users easily got around these guidelines by disguising DSH posts with the use of variated and ambiguous hashtags (Moreno et al., 2016; Tiggeman and Zaccardo, 2018 and Giordano et al., 2021). With previous interventions failing, Instagram attempted to remove DSH from their platform again in 2016, implementing further restrictions by adding a new feature which allowed users to anonymously report any posts which violated Instagram's policies (Record, Straub and Stump, 2020 and Cataldo et al., 2021).

Despite Instagram having the intention of stopping DSH with this feature, it remains unknown whether it has been effective, as it is not publicly reported how often the tool is utilised (Record, Straub and Stump, 2020 and Urbanek-Matusiak et al., 2020). However, research by Giordano et al., (2021) found that DSH hashtags continue to increase on Instagram, with '#hatemyself' becoming an increasingly popular one over the 12 months of doing their research. Smith and Cipolli (2021) also found that although graphic images of self-harm have plateaued, non-graphic self-harm images continue to be uploaded, with no consequences as the restrictions are not applicable to non-graphic self-harm. Furthermore, research by Record, Straub and Stump (2020) identified that among the participants in their study who had daily use of Instagram, 80% had no knowledge of the report feature, raising the question as to how successful Instagram is at blocking DSH on their platform. However once made aware, participants communicated that they would not only use the feature themselves but would encourage and advocate that others also report DSH posts shared on Instagram (Record, Straub and Stump, 2020) reporting that the feature provided by Instagram, facilitated users with a positive and meaningful way of providing support to the self-harming community on its platform (Record, Straub and Stump, 2020). Further suggestions on how Instagram can provide meaningful ways to reduce not only the self-harm uploaded to their platform, but also potentially the self-harm that occurs offline, is by offering anonymous online therapies to those that attempt to or are successful in uploading DSH posts (Brown et al., 2020). However, The Lancet (2019) have previously argued that the time it takes for frameworks to be imposed, they are often left obsolete as the speed at which young users adopt social media, they have also left that platform for another.

This has led to attention being focused elsewhere to understand and prevent the mental health concerns which arise from social media use, with suggestions being that social media use should be incorporated into psychiatric assessments (Bailin et al., 2014; Carson et al., 2018; Shafi et al., 2018; The Lancet, 2019; Suarez et al., 2019; Urbanek-Matusiak et al., 2020 and Shafi et al., 2020). Social media use has fast become a psychiatric concern, with employees in the mental health field having a crucial role to provide education and support to both adolescents and family members on the negative impact that social media can have (Urbanek-Matusiak et al., 2020). Shafi et al. (2020) compared the

discussion of social media use in psychiatric evaluations, as no different than speaking about substance use or examining any other social history. If Instagram is unable to effectively control the DSH content on their platform, health professionals should take responsibility for exploring such use, as failure to gain a better understanding of why DSH exists online is to neglect the mental health of future generation (The Lancet, 2019). Such help should be offered online, since Brown et al. (2020) indicated that many adolescents who engage in DSH would rather turn to the internet to seek support and help. However, there are concerns that professionals are ill-equipped or unaware of the online environment, including social media and the associated risks (Shafi et al., 2020 and Urbanek-Matusiak et al., 2020), with only student nurses recognising the Instagram URL inscriptions on the wall in the study by Urbanek-Matusiak et al. (2020). Additional concerns raised by Urbanek-Matusiak et al. (2020) include therapists reporting that clients do not wish to discuss social media use with them, disclosing that they feel it is irrelevant, too private, or embarrassing to be discussed with adults. Brown et al. (2020) offered a way to overcome this, suggesting that therapy could be offered online – where there was guaranteed anonymity – reducing the implied embarrassment suggested by Urbanek-Matusiak et al. (2020).

One suggestion offered by Abi-Jaoude, Naylor and Pignatiello (2020) for clinicians who do not wish to have a direct conversation with adolescents about their social media use, is to suggest and encourage behaviours which indirectly address the overuse of social media. For example, implementing boundaries such as no screen time use 1-2 hours prior to sleep or no screen time in bedrooms past 23:00, promoting and instilling good sleep hygiene, with the aim of it being continued when discharged from the ward (Zeeni et al., 2018). An implication of this is that it could not be enforced by clinicians and would only be a suggestion (Tatum et al., 2018), but working with the person incrementally to reduce phone usage may be a way to affect some change. There may also be fruitful avenues working inter-disciplinary with computer software developers, for example Scherr et al (2019) developed an automatic image-recognition algorithm that uncovered non-suicidal self-injury (NSSI) in digital pictures on Instagram. They suggest that the algorithm could be used to improve the existing policy for content warnings but it could also potentially be developed to offer signposting for users to online mental health support. This would require collaboration with Instagram to support mental health and well-being but offers another way to engage with this platform. Wester et al (2020) has developed social media guidelines in relation to media coverage of NSSI, however, there still appears limited engagement to different platforms like Instagram to systematically implement them.

Is there need for further restrictions?

As previously mentioned, restrictions implemented by Instagram have either not been successful, or data is not reported to establish whether the preventative measures are stopping DSH being uploaded onto their platform. Other concerns have been raised that engagement with content on Instagram produces a vacuum of similar content, allowing inappropriate material to perpetuate and increase contagion of self-harming behaviours (O'Keeffe et al., 2011; Jarvi et al., 2013; Cotter, 2018 and Hunt and McKelvey, 2019). If such engagement is adopted as a coping strategy in adolescence, it has potential to transition into adult life, with a subsequent possibility of future generations observing and emulating this behaviour themselves, thus further restrictions being implemented by Instagram should be endorsed (Herres and Ohannessian, 2015 and Leipold, Munz and Michele-Malkowsky, 2018). Consulting specialists – when making changes to their policies or restrictions – is something which Instagram is yet to do but is encouraged by Urbanek-Matusiak et al. (2020) if Instagram wants to be effective in reducing the DSH content on their platform.

Research gaps:

When gathering literature to be included in this research, it became apparent how little research there is available on the impact of Instagram on adolescents' engaging in DSH activities, despite there being several concerns raised by different academics. Both Weinstein (2017) and Vente et al. (2020) cited the use of multiple social media platforms as a possible explanation for DSH within the older adolescent population. This is something which should be investigated further, distinguishing both if there is a difference between older and younger adolescents when using social media, and whether there is cause for concern across multiple social media platforms or Instagram alone.

Limitations of research:

This scoping review has focused on adolescents and many of the studies included are based on self-reports from teenagers, raising the question of the reliability and content validity of the findings, as social desirability had the potential to obscure the responses given (An and Zhang, 2018). This study also only included literature originally published in English, to avoid translation errors or misinterpretation, thus, findings concluded from this research may not be applicable to countries excluded from the review by this criteria. A final and crucial limitation of this research and any research hereafter on social media, is that social media is constantly evolving, with platforms being discussed in current research quickly becoming obsolete as new social media platforms become available. As such, not only do new concerns rise but there is also a continual need for research to be undertaken as technology advances.

CONCLUSION

Despite the above limitations, the literature included in this research highlights the overwhelming evidence suggesting that Instagram is negatively impacting the lives of its most vulnerable users, with this research contributing to the accumulating evidence for concerns around Instagram use and DSH. Research suggests that there is a correlation between time spent on Instagram and engagement in DSH activities, with a strong emphasis on the need for further restrictions to be implemented to reduce the number of adolescents viewing and consequently engaging in DSH activities. There are suggestions that Instagram may need to work collaboratively work alongside health and social care professionals to ensure that the restrictions implemented are efficient and effective, providing its users with a safe space to enjoy the platform for its intended use. The collated evidence provided by this review suggests that it is imperative that Instagram develops a solution to stop DSH being uploaded onto their platform. Failure to do so may lead to a population of self-harming adults, who may raise and influence generations after, creating a mental health crisis and society with poor coping strategies.

Table 1: Inclusion and Exclusion criteria

	Inclusion	**Exclusion**
Population/age group	Persons aged between 10-19 years old	Persons aged under 10 years old and over 19 years old
Deliberate Self-harm	• "Intentional act of causing physical injury to oneself without wanting to die." Lauw, How and Loh, 2015) • "The deliberate destruction of one's body tissue" (Nock and Favazza, 2009) • Examples include: "cutting, burning, scratching, hitting, intentional overdose" (Whitlock, Powers and Eckenrode, 2006) • Thoughts to self-harm	• Eating disorders • Deliberate self-harm in response to cyberbullying
Social Media	Instagram	All other forms of social media e.g., Facebook; TikTok; Snapchat; Twitter etc.
Study Design		
Language originally published in	English	All other languages

Table 2: list of articles used in this review

Author/s and year	Title	Country	Key findings
Smith and Cipolli (2021)	The Instagram/Facebook ban on graphic self-harm imagery; A sentiment analysis and topic modelling approach	USA	• The ban of graphic self-harm imagery on Instagram evoked emotions of disgust, anger and sadness. • Despite the ban being in place, non-suicidal self-harm remains on Instagram with artificial intelligence not being as successful as desired. • Adolescents' report seeking health information from social media platforms. Often the information they find is not accurate, misleading and potentially dangerous.
Giordano, Lundeen, Wester, Lee, Vickers, Schmit and Kim (2021)	Nonsuicidal Self-Injury on Instagram: Examining Hashtag Trends	USA	• To investigate the choice of hashtags that Instagram users used when uploading non-suicidal self-harm hashtags. • To investigate the frequency of the top 5 non-suicidal self-harm hashtags used on Instagram and the content which they were used with, over 12 months. • Over the 12 months, #hatemyself became increasingly popular, highlighting the poor self-perception of those using the hashtag. • Instagram users have developed variants of self-harm hashtags to avoid being detected and reported.
Shafi, Nakonezny, Romanowicz, Nandakumar, Suarez and Croarkin (2020)	Suicidality and self-injurious behaviour among adolescent social media users at	USA	• 112 participants from an inpatient unit, aged 12–17-year-olds. • Participants who reported social media use had higher incidents of self-harming

	psychiatric hospitalisation.		behaviours than those who denied social media use. • The participants that use social media have higher suicide risk and ideation, compared to those that do not.
Nesi, Burke, Lawrence, MacPherson, Spirito and Wolff (2021)	Online self-injury activities among psychiatrically hospitalised adolescents: prevalence, functions and perceived consequences	USA	• Spoke to participants about why they engage with and share their own self-harm posts on Instagram. • Found that there are several reasons why people engage with self-harm posts: to feel a sense of belonging; to speak to other people who feel the same way as themselves; to offer help and support to other people. • Speaking to people – known only online – about self-harm had higher association with more suicide attempts.
Brown, Bendig, Fischer, Goldwich, Baumeister and Plener (2019)	Can acute suicidality be predicted by Instagram data? Results from qualitative and quantitative language analysis	Germany	• Found that there is no link between frequency in activity on social media and acute suicidality. • Looked into why participants post self-harm related posts onto Instagram and the response that they got from other users. • Also looked at the participants response to viewing other people's self-harm posts and how it made them feel.
Urbanek-Matusiak, Katerla, Szczecina and Pilecki (2020)	Analysis of Instagram profiles found through inscriptions on the walls of the in-patient adolescent psychiatry unit at the university hospital in Krakow, Poland	Poland	• 21 participants aged between 14-18. • Found that females were more likely than males to be posting about their own or engaging with self-harm accounts on Instagram. • Analysis of the participants Instagram account showed that content mainly related to their expression of their depression. • Found a correlating link between depression diagnosis and self-harm.

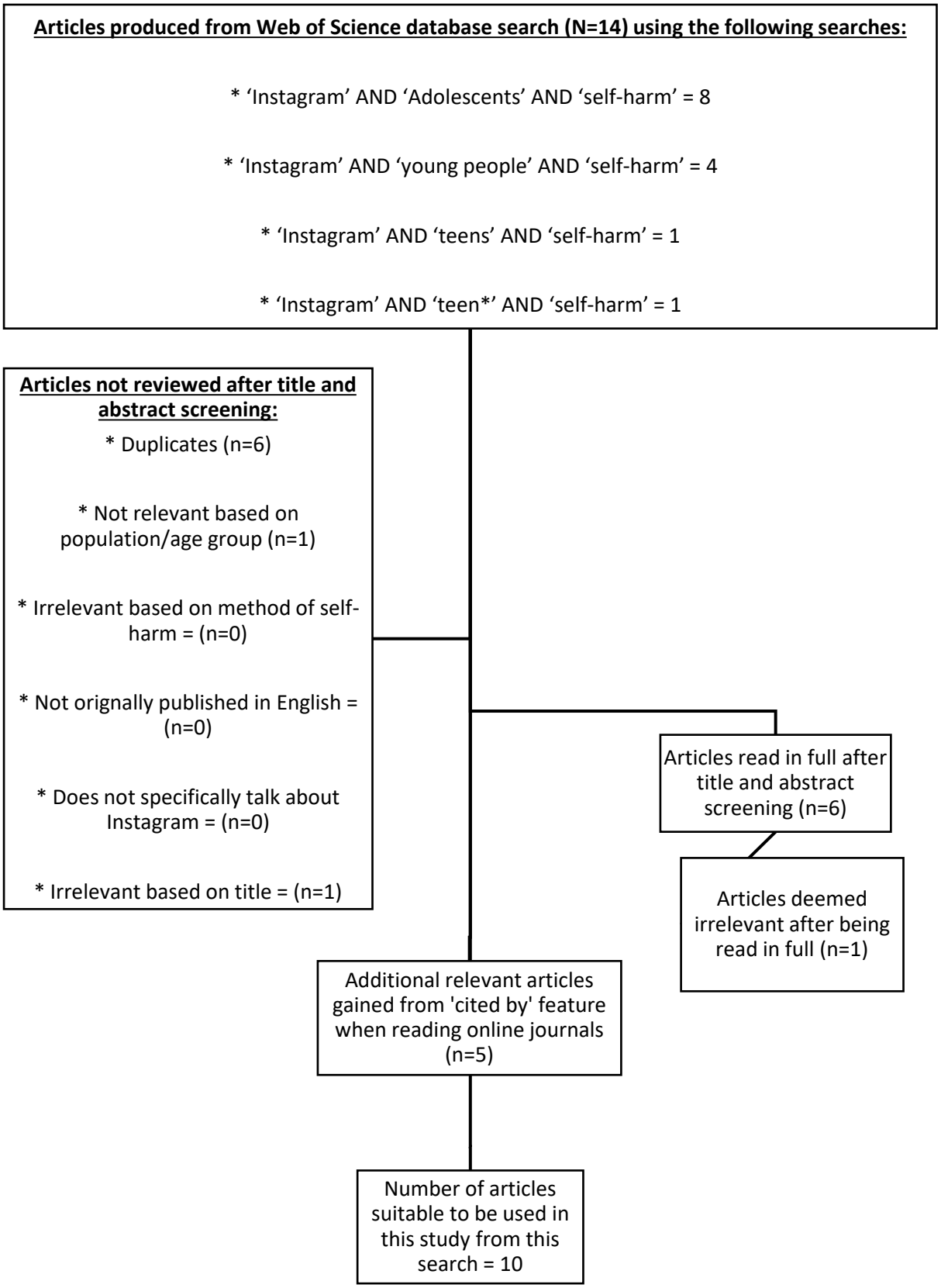
			• Negative consequences of using Instagram on the user's mental health. • Senior staff members did not recognise that the inscriptions were Instagram accounts and only knew when told by students, raising queries about appropriate training for nurses on the impact social media has on user's mental health.
Brown, Fischer, Goldwich, Plener (2020)	"I just finally wanted to belong somewhere" - Qualitative Analysis of Experiences with posting pictures of self-injury on Instagram	Austria	• 59 participants, all of which had engaged in self-harm related activities within the previous month and had posted about it on Instagram. • Identified reasons for the participants posting self-harm on Instagram as: wanting to belong/feel understood, imitation, wanting to help others/raise awareness. • Identified participants reactions to viewing other self-harm posts on Instagram as: being able to identify with the person who posted it, triggering, motivation to stop self-harming themselves, de-sensitised.
Memon, Sharma, Mohite, Jain (2018)	The role of online social networking on deliberate self-harm and suicidality in adolescents: a systematised review of literature	USA	• Literature review – 8 results. • Social media is a dangerous for younger users as it promotes self-harm which normalises and de-sensitises users. • High social media use is independently associated with suicide ideation and poor mental health. • When young people were asked about social media in relation to their mental health, they do not cite it as a reason for their suicide ideation. • Self-harming thoughts and behaviours are twice as high in young females that use Instagram compared to young males who use Instagram.

			• Identified reasons for participants engaging in self-harm related posts on Instagram as: wanting to support and help the user. Others found encountering self-harm on Instagram as disengaging and repulsive. • Higher exposure to social media platforms such as Instagram correlates with frequency of self-harming behaviours.
Cataldo, Lepri, Jee Yee Neoh and Esposito (2021)	Social media usage and development of psychiatric disorders in childhood and adolescence: a review	USA	• Social media use such as Instagram is having adverse outcomes for younger users. • More evidence is needed to establish the extent of social media's impact on the increased depression found within the younger generations. • Passive Instagram use can lead to loneliness, depression, and self-harming behaviours. • Found that Instagram use increased General Anxiety Disorder in young males compared to young females. • Found that Instagram use increases body dissatisfaction more within young girls than young boys. • Social media creates contagion in relation to self-harming behaviours, with users comparing their own self-harming injuries and competing.
Vente, Daley, Killmeyer and Grubb (2020)	Association of social media use and high-risk behaviours in adolescents: cross-sectional study	USA	• 179 participants. • Social media acts as a way for young people to seek validation. • 35/179 participants reported a history of self-harm, with the frequency of self-harm ranging from a 'few times a week' to a 'few times per year'. • Found a positive correlation between social media use and self-harming behaviours in adolescents.

			• There is evidence to suggest a need for social media use to be established by incorporating a question into the mental health assessment.
Suarez, Shafi, Nakonezny, Romanowicz, Nandakumar, and Croarkin (2019)	The differential impact of social media use on middle and high school students: a retrospective study	USA	• 56 participants aged 12-17 years old. • 46/56 have a history of self-harm. • Social media use by all participants. • Social media use is associated with greater psychiatric morbidity. • There is a need to obtain information on social media use when conducting psychiatric evaluations.
The Lancet (2019)	Social media, screen time, and young people's mental health	UK	• Social media is having a negative impact on young people's mental health. • Frameworks of protection need to be incorporated and applied to social media to prevent the normalisation and de-sensitisation of self-harming behaviours.
Record, Straub and Stump (2020)	#Selfharm on #Instagram: Examining User Awareness and Use of Instagram's Self-harm Reporting Tool	USA	• Instagram has been identified as the social media platform most related to self-injurious behaviours being posted. • Instagram is normalising and de-sensitising its users to self-harming behaviours. • Instagram has implemented policies and procedures which allows users to report any posts which it finds distressing, but there are concerns that users do not know about this feature.
Brown, Fischer, Goldwich, Keller, Young and Plener (2018)	#cutting: Non-suicidal self-injury (NSSI) on Instagram	Germany	• Found potential positives of using Instagram as a platform for posting non-suicidal self-injury: sense of community, reducing their own NSSI urges, encouragement for recovery. • Found potential risks were: normalisation, stigmatisation, triggering, positive reinforcement if self-harm posts receive multiple 'likes'.

			• Nearly all NSSI posts on Instagram showed mild to moderate wounds. • There is a need for social media use to be discussed when doing mental health assessments.
Weinstein (2017)	Adolescents' differential responses to social media browsing: Exploring causes and consequences for intervention	UK	• 588 students, median age 15.26 years old. • Older students had access to more social media platforms than younger students and spent more time on them. • Older students acknowledged a negative change in their mood was associated with the time spent on social media. • Females spent more time on social media platforms negatively comparing themselves to other users. • Instagram was described by the students as the worst social media platform for producing a negative affect post-browsing. • Students were able to identify that Instagram users tend to only post what they want other people to see, and this is often not a true reflection of how they are feeling or the life that they live. • Students who regularly found accounts to be negatively impacting their mental health, would 'unfollow' them to avoid negative affect or engaging in self-harm.

Figure 1: PRISMA diagram illustrating the review process used for all databases searched



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