

Commentary

Social media use in adolescent chronic pain

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Introduction

The treatment of pediatric chronic pain involves some widely agreed clinical targets, such as increasing physical activity, ensuring access to normative social contact, improving mood and dealing with comorbid difficulties such as sleep problems. However, these clinical issues have been strongly affected by societal shifts in the last decade, and specifically by the increasing use of social media (SM) and smartphones. With 45% of teens reporting being online on a near constant basis (Anderson & Jiang, 2018), it is essential that clinicians can assess the impact of SM use on young people with chronic pain, both positive and negative. The COVID-19 pandemic may serve as a multiplier of these positive and negative effects, as face-to-face interaction becomes harder for all, and particularly for young people with a socially stigmatised and disabling condition such as chronic pain (Wakefield et al., 2018; Karos et al., 2020). Although young people may be in more regular proximity with their families during the pandemic, as parents work from home, it cannot be assumed that this will meet their needs for peer contact, or that proximity to parents (who may be struggling with their own emotional and physical difficulties) will be inevitably positive (Birnie et al., 2020).

It is likely that clinicians' experience with, and use of SM differs from that of younger people. For example, research shows that adolescents are more likely than adults to use platforms such as Snapchat and Instagram (Anderson & Jiang, 2018). Clinicians may struggle to keep up with research literature that

explores the impact of SM use, and equally researchers may struggle to keep up with current SM trends, given the fast-paced evolving nature of SM use. This review aims to summarize the literature there is, with a view to informing assessment and intervention in a clinical context.

Ninety-five percent of US teens aged 13-17 have access to a smartphone (Anderson & Jiang, 2018) and use of SM is ubiquitous. The term SM can be defined as websites and applications that allow for the creation and sharing of content, and for the construction of an individual and partially public profile. Facebook is the most frequently used platform, followed by Twitter and Instagram (Oberst et al., 2017), though platform use varies markedly by age. The most age dependent platforms are Instagram and Snapchat, with Snapchat being used by 78% of 18-24 year olds in the US, but by less than 30% of people over 30 years old (Anderson & Jiang, 2018). Online gaming that allows for social networking, for example with the inclusion of instant messaging features and playing against other users, can also fall under the SM bracket. Such interactive gamers may use dedicated alternative platforms to connect with each other, such as Discord and Steam, and these types of gaming will be included in this review.

Clinical issues

Demographics. Both chronic pain and SM use are gendered issues. Girls experience more chronic pain than boys and most types of pain are more prevalent in girls (King et al., 2011). Gender differences are also present in SM use; for example,

males are at higher risk of being problematic internet users; this includes excessive and out of control use that is not limited to SM. Males also have a higher preference for online gaming (Anderson et al., 2017). Comparatively, girls on average spend more time on SM and are more active users, creating and sharing more content (Herring & Kapidzic, 2015).

Girls may be at a higher risk of experiencing negative outcomes as a result of SM use. Using longitudinal data from 9,859 UK adolescents, Booker et al. (2018), found that increased SM interaction at age 10 was associated with worsening socio-emotional difficulties with age for females but not for males. Furthermore, in a large sample of UK 14 year olds, (n = 10,904), the association between SM & depressive symptoms was stronger for girls than boys (Kelly et al., 2018). Thus, as the pediatric chronic pain population involves predominantly females, and there is an existing risk of low mood due to pain, it is possible that SM use could be particularly detrimental. However, the type and amount of SM use is critical, as reviewed below.

Sleep. Adolescents with chronic pain (CP) frequently report difficulties with sleep, and insomnia correlates with depression, disability and lower quality of life in patients with CP (Kanstrup et al., 2014). Greater SM use is consistently associated with poorer sleep (Espinoza & Juvonen, 2011). Cross-sectional data from 11,872 British adolescents found that higher SM use was associated with worse sleep outcomes, even when controlling for depressive symptoms, self-esteem, general health and psychosocial adjustment. Adolescents who used SM for more than five hours per day were significantly more likely to report late sleep onset, wake times, and issues with waking during the night than those who spent 1-3 hours on SM (Scott et al., 2019). Additionally, research examining how SM use is related to sleep quality shows that night-time specific SM use and emotional investment in SM is more strongly associated with poor sleep than overall SM use (Woods & Scott, 2016). There are reasons to hypothesize that emotional investment in SM, and night-time use, may be increased in the pediatric CP population. Where adolescents are struggling to sleep at night due to their pain, they may turn to

using their phones. This may perpetuate the cycle of struggling with sleep. Adolescents can reportedly experience a fear of missing out (FOMO; Oberst et al., 2017) in the context of SM, and a desire to connect with friends at all hours. FOMO may be heightened in adolescents who are missing out socially, and do not have normal diurnal routines due to school absence. Future research should assess SM behavior around sleep in this population, and interventions should educate adolescents and parents on the relationship between SM and sleep difficulties.

Social contact. Adolescents experiencing CP report difficulties with social development and judge themselves to be behind their peers (Forgeron et al., 2015). Social isolation and maintaining close peer relationships are challenging, but important, for this group (Eccleston et al., 2004). Arguably, this is an area where SM use may prove beneficial to this population.

SM may benefit adolescent well-being in some domains. Best et al.'s (2014) review identified benefits in the form of higher perceived social support, safe identity experimentation and increased opportunities for self-disclosure. This review found that SM interaction allowed for a sense of belongingness and connection to peers, and suggested that SM that promotes communicative activities may provide social benefits. This idea of interactive use of SM providing some benefit ties into research that has made a distinction between active and passive SM use, where active use refers to more interactive behavior including posting, liking and commenting on SM, and passive use is observational (i.e. scrolling and reading). Verduyn et al. (2017) found that active use was associated with positive outcomes, including social connectedness, whereas passive use was correlated with negative outcomes, including social comparisons and envy. Thus, active use of SM and using it to communicate with peers may be helpful for maintaining social relationships in adolescents with CP.

Paradoxically, social contact via SM may also create a disincentive for face-to-face interaction. Many adolescents with CP struggle to function physically, and experience social anxiety and depressive symptoms (Eccleston et al., 2004). In

this context, SM interaction could be an appealing alternative, as it is a sedentary activity that can be done in a solitary environment (Booker et al., 2018). Therefore, although there are benefits to staying in touch with peers via SM, it is important that this does not become a replacement for in-person efforts.

SM use may increase opportunities for self-disclosure. The anonymity of SM, and reduced non-verbal inhibitors, may decrease barriers to sharing difficulties. Receiving positive feedback following self-disclosure can also enhance perceptions of social support (Best et al., 2014). On the other hand, SM provides an ideal platform for concealment, where adolescents construct a positive online persona that does not reflect their daily struggles with pain and mood. Concealing could occur by being selective with what is posted on SM, or by being present on SM but a more passive user. This may have more negative outcomes due to upward social comparison leading to a reduction in well-being (Verduyn et al., 2017).

Concealment is also potentially an issue when considering social gaming. Whilst online gaming is an age-appropriate activity for adolescents and is increasingly carried out in a social context, excessive gaming can impair in daily functioning and emotional well-being (Lau et al., 2018). Gaming may also present a disincentive for increasing physical activity. Online gaming is an activity where adolescents with CP can function at the same level as their peers, when often they will be functioning at a lower level physically. Thus, gaming may serve to increase sedentary behavior and reduce motivation for other forms of social contact.

Health beliefs. SM can allow a space for individuals with chronic illnesses to build a community; a number of studies identify the perceived benefit of being part of these communities and sharing and gathering health information online (Sosnowy, 2014; Patel et al., 2015). Benefits of this include the opportunity for the broadening of social networks, shared understanding and validation. Forgeron et al. (2019) conducted a review of how adolescents with chronic pain use YouTube. Key themes emerged around providing and receiving support, sharing suffering, and discussions around impact on relationships and

daily life. Adolescents also used YouTube to gain health information and support with pain management, and they were most engaged by peer content that focused on affirmation, sharing of experiences and ways of coping.

In contrast, research has shown that adolescents will prioritize media that is easy to access and understand irrespective of the trustworthiness of the site (Kohut et al., 2018). Dialog on sites such as Twitter and YouTube can be polarized and can include inaccurate health information and anti-expert attitudes (Pershad et al., 2018). Clinicians and parents should endeavor to be aware of the kinds of communities that their adolescent is accessing, as some may have a discouraging and anti-professionals attitude. With no enforceable age limits on SM, young people may be exposed to adults with enduring conditions, those who assume an expert stance, and individuals sharing unqualified and potentially unhelpful medical advice.

Emotional functioning. Research has consistently found an association between SM use and depressive symptoms. This association may be bidirectional, and mediated by a variety of pathways. Kelly et al., (2018) conducted a cross-sectional analysis of data on more than 10,000 14 year olds and used multivariate methods to examine the associations between SM and depressive symptoms. They found that increased SM use was related to online harassment, poor sleep, low self-esteem and poor body image, and that these in turn related to increased depressive symptoms.

The way SM is being used may be particularly relevant to mood difficulties. In a sample of 467 adolescents, Woods & Scott (2016) found that emotional investment in SM was more strongly associated with anxiety and depression than overall, or night-time specific, SM use. The number of platforms being used may also be important; Primack et al. (2017) report that use of multiple platforms is independently associated with symptoms of depression and anxiety, even when controlling for overall time spent on SM.

Cyber-victimization, defined as acts of peer-based aggression via messaging and SM posting (Modecki et al., 2015) is a risk for all adolescent SM users.

This is commonly experienced by adolescents and can have long-lasting negative effects on mental health (McDougall & Vaillancourt, 2015).

Adolescents with CP may be at increased risk. In research comparing peer victimization (traditional and cyber) among youth in treatment for CP to a community control group, Fales et al. (2018) found that adolescents with CP are more emotionally bothered by online peer victimization experiences than their otherwise healthy peers. Victimization was associated with increased depressive symptoms and functional disability, indicating that these experiences are likely to work against pain rehabilitation unless assessed and addressed (Fales et al., 2018; see Table 1).

Clinical recommendations

The literature reviewed indicates that there are possible social benefits to SM use. However, there are also likely negative implications for sleep, mood and physical activity. This highlights the need to monitor amount and type of SM use. Clinicians should be aware of standardized pediatric tools such as the Internet Addiction Test (IAT; Young, 1998) and the Mobile Phone Dependence Questionnaire (MPDQ; Toda et al., 2004) and can also usefully assess the issues outlined in Table 1.

Intervention

We are aware of no treatment protocols for problematic SM use in the context of long-term pediatric conditions. As is clear from the evidence above, the type of social media use is critical. Targeting this (e.g. turning from passive to active

use), is more important than targeting a global issue like screen time. Where SM is having a clear negative impact, it can be constructive to focus on building up healthy behaviors which are viewed as incompatible with SM - such as offline hobbies, physical activity, and face-to-face socializing. In fact, SM can be used to facilitate these activities, and we would recommend encouraging adolescents to use apps that are supportive of well-being and increased physical activity (e.g. SM linked activity tracking apps such as Strava).

Summary

It is crucial to acknowledge the complexities of assessing the impact of SM use on adolescents, particularly in the context of those experiencing CP. Much of the reviewed literature is limited by its cross-sectional nature, a reliance on self-report measures, and a failure to consider the full range of SM contexts. Future research should endeavor to address these limitations, as well as consider important moderators such as type of SM use. There is a clear gap in the literature that must be addressed regarding the use of SM in adolescents with CP. For this population, whilst there is potential for SM to increase well-being through enhanced social connection, this is balanced against a risk of increased exposure to online harassment and potentially unhelpful health information. Further research examining these concepts, and assessing and monitoring SM in adolescents with CP, will be important in guiding intervention.

Table 1
Assessment of social media use

Platforms Used

- How many different platforms do you use?
- Do you have a preferred app/account?
- Do you game online?

Social Gaming (if applicable)

- What types of games do you play? (collaborative vs. competitive)
- How much time do you spend gaming?
- Do you exclusively play with people you know in person?

Type of Use (Passive vs. Active)

- How much time do you spend on social media?
- How often do you post, comment, 'like' and message on social media?
- How much time do you spend just scrolling and reading posts?

Emotional Investment

- How often do you check your phone?
- Do you feel worried or anxious if you can't check your phone for a period of time?
- Do you feel like you need to reply instantly to notifications?
- Do you ever switch off notifications for your apps?
- Do you feel nervous about posting on social media?

Self-disclosure

- Do you post about personal problems you are having on social media?
- Do you post about your pain condition on social media?
- Do you feel your social media accounts are an accurate representation of your life?

Sleep

- Do you sleep with your phone in your room?
- Do you go on your social media accounts directly before sleep?
- Are you woken up by social media notifications in the night?
- Do you respond to social media notifications in the night?

Cyber-victimization

- Have you ever received negative or threatening messages or comments on your social media posts?
 - Have you ever had content (e.g. photos, private messages) posted online without your permission?
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