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Commentary

Petite douceur pour bébé: a descriptive quantitative study using YouTube to disseminate effective pain management strategies

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Newborn infants require blood sampling by heel lance or venipuncture for their newborn screening in the first few days of life (Harrison et al., 2015) and sick and preterm infants require repeated blood sampling and other painful procedures during their hospitalization (Cruz et al., 2016). These repeated painful procedures have been shown to increase the risk of long-term negative effects on neurodevelopment such as adverse effects on cognitive and developmental outcomes and alterations to pain processing in preterm infants (Valeri et al., 2015). For example, a systematic review of 13 studies which examined the association between painful procedures during a NICU hospitalization and long-term outcomes (Valeri et al., 2015), showed that higher numbers of skin breaking procedures were associated with delayed postnatal body and head growth, altered brain structure, reduced attention, increased lethargy and poorer cognitive and psychosocial outcomes. Evidence demonstrates that breastfeeding (Shah et al., 2012; Benoit et al., 2017) or holding babies skin-to-skin (Johnston et al., 2017) before and during blood sampling, or giving babies a small amount of sweet solution (sucrose, glucose) with or without a pacifier, effectively reduces pain (Stevens et al., 2016; Harrison et al., 2017a). Despite the extensive knowledge on pain management strategies, there remains a gap between knowledge and their use in practice (Lagunas & Hall, 2016). For example, a survey involving 16 NICUs throughout France, which included 562 babies, showed that each neonate had on average 16 heel sticks, of which 75% were performed with no pain management (Courtois et al., 2016). It is therefore essential to develop and use new tools to translate this knowledge to increase uptake of research evidence into clinical practice. Partnering with, and targeting parents of infants is especially important to support and empower parents to advocate for the use of these interventions for their infant. The internet is an increasingly popular medium used by millions worldwide to disseminate information (Moorhead et al., 2013). In particular, YouTube, with 8 out of 10 Internet users searching health related topics online, is a potential platform to share resources (Madathil et al., 2015). The Be Sweet to Babies team's brief parent-targeted and parent-mediated (Stacey & Hill, 2013) educational BSweet2Babies video series have been widely shared on YouTube and their reach, dissemination and implementation effectiveness has been evaluated (Harrison et al., 2016; Harrison et al., 2017b). However, as French is an official language in Canada, and spoken in 29 countries worldwide (Wood, 2019), it is important to conduct similar evaluations of the French video (titled *Petite douceur: Comment réduire la douleur de votre*

nouveau-né durant les prélèvements sanguins). The aim of this study was therefore to evaluate: (1) the reach and acceptability of the French language BSweet2Babies video as posted on YouTube, (2) viewers' intention to recommend the video to others, and (3) viewers' intention to use or advocate for using the demonstrated pain management strategies.

The French Video (https://youtu.be/JloWcieHbJs), is 5 minutes and 41 seconds long, and shows the use of the three-key procedural pain treatment strategies for newborns undergoing blood sampling; breastfeeding, being held skin-to-skin, and sucrose. The video was initially posted on the Children's Hospital of Eastern Ontario's (CHEO) YouTube page on August 12, 2014, however after request by Baby Friendly Initiative (BFI), it was taken down, and modified (one slide added explaining the use of a pacifier if breastfeeding), and re-posted in January 2016. Three years after posting the original video on YouTube, the research team used YouTube analytics and the same brief survey as used for the English video (Harrison et al., 2017b). The survey was administered through REDCap (Research Electronic Data Capture; Wright, 2016). The French translated survey was accessible via a hyperlink, which appeared as an annotation banner throughout the video. The survey contained seven brief questions pertaining to: who the viewers were, if they had previously viewed the video, if they had previous knowledge on the pain reducing methods, their future intention to use or advocate for the interventions, their perception on the usefulness and the length of the video, and if they would recommend the video to others.

During the three-year period of study (2014-2017), the BSweet2Babies French video generated a total of 3,888 views in 25 countries, with the top viewing countries being France (1,457 views, 37%), Canada (718 views, 18%) and Algeria (285 views, 7%). On average, viewers watched a total of 32% of the video, which translates to 1 minute and 49 seconds out of 5 minutes and 41 seconds. In addition, the video received 7 likes, 14 shares and no comments. Despite the large number of views, only 34 viewers participated in the survey, five of which were partial responses, for a survey response rate of 0.9%. Results are presented for the number of respondents who answered each question. No participants identified themselves as a parent or guardian of infants. Respondents identified themselves as healthcare providers (n = 25; 74%); researchers (n = 1; 3%) or others (n = 8; 24%). Eight respondents (24%) had previously seen the BSweet2Babies video - seven on YouTube and one on another platform.

Thirty-one of the 33 respondents who answered this question (94%) were already aware of at least one of the three interventions used to reduce pain during painful procedures on infants and nearly all answered that they intended to use or advocate for one or more of the pain reducing strategies.

All participants agreed that the video was easy to understand and 23 of the 30 respondents who answered this question, agreed that the video was helpful or beneficial, 25 agreed the video was just the right length, although 5 thought that the video was too long. Most participants (26/30; 87%) stated they would recommend the video to other parents, with the remaining four participants being unsure. Finally, 90% of participants (27/30) agreed that the content in the video was easy to apply to everyday life.

The evaluation of this brief parent-targeted video in the French language on YouTube showed mixed results. While the video did reach a wide number of viewers, 52% of viewers stopped watching by the end of the introduction segment. Therefore, viewers' attention was often not sustained long enough to watch until the end of the skin-to-skin segment, or the beginning of the sucrose segment of the video. Thus, viewers may remain unaware of their benefits. Literature on consumer viewing patterns suggests that the optimal video length is 90 seconds to retain viewers' attention (Perry, 2011). The French language video, is over 5 minutes' duration and thus long in comparison to these recommendations and may explain the decrease in viewer retention and in the incomplete responses obtained through the survey. Similar to the YouTube study of the English version of this video, the value of surveys for evaluating the usefulness of YouTube videos must be questioned (Harrison et al., 2017b). While there were only 34 respondents who accessed and completed the survey, the video generated 3,888 views (a response rate of 0.9%). In the team's previous study on the reach,

acceptability, and effect of the English language BSweet2Babies video, the video received 10,879 views in a 12-month period; yet, the viewer survey only had 187 respondents (a response rate of 1.7%). The large number of views but low response rates indicate that YouTube is an excellent source for passive knowledge dissemination, but challenges remain with regards to evaluating the effects this knowledge may have on viewers and on transforming practices (Harrison et al., 2016; Campbell-Yeo et al., 2017). Furthermore, based on the respondent demographics, the video may not have reached its targeted audience of parents. Hence, the team continues to remain unaware of French parent-guardians' existing knowledge on pain management interventions, their perception of the video, whether they intend to use or advocate for either strategies during routine blood sampling and whether the video can potentially lead to actual change in clinical practices.

Further research is warranted to focus on: (1) learning about parents' perspectives on the French BSweet2Babies video, (2) evaluating the reach and dissemination of the videos in other languages, (3) determining the effectiveness of the video in increasing the use of the three strategies in clinical practice and (4) identifying effective methods for studying knowledge translation tools via social media. Further work is currently being undertaken by the research team (ClinicalTrials.gov; NCT03099252), including targeting both families of infants and healthcare providers, and using targeted implementation strategies. This work includes ascertaining barriers and facilitators to disseminating the videos as well as using the pain management strategies; work that is informed by the Theoretical Domains Framework (TDF), version 2 (Cane et al., 2012). The TDF informs implementation by understanding barriers and enablers to using evidence.

In conclusion, effective neonatal pain management evidence was disseminated using social media to share the French language parent-targeted BSweet2Babies video. Although there were large numbers of views of the video posted on YouTube, the response rate to the embedded survey was poor. Further knowledge translation research is required to improve use of evidence-based pain treatment strategies for newborns.

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