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Research Article

Instagram: A platform for caudal epidural injection?

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ABSTRACT

Aim: Caudal epidural injection (CEI) is a widely used procedure in pediatric anesthesia for perioperative pain and in adults for chronic radicular pain. Social media platforms, including Instagram, are being increasingly utilized for the dissemination of information in various fields, including medicine. The aim of this study was to evaluate the information content and sources of CEI on Instagram.

Method: This study presents an analysis of Instagram contents containing the keywords #caudalepiduralinjection, #caudalepidural, #caudalepiduralblock, #caudalinjection, and #caudalblock on May 1, 2023. The results were classified into four groups based on the source: posts generated by physicians, organizations, patients, or unspecified sources. The posts were further classified into two categories: educational or experience. User influence was also assessed based on the number of followers and posts.

Results: A total of 204 posts were assessed. 72 different accounts were identified and the distribution of these accounts is as follows: physicians accounted for 29.16% (n=21), patients accounted for 51.38% (n=37), medical organizations accounted for 11.11% (n=8), and the remaining 8.33% (n=6) were not otherwise specified. Among the posts, 92 (45.09%) were posted by the patients, 71 (34.80%) were posted by physicians, 25 (12.25%) by medical organizations, and 16 (7.84%) were not specified. There was a significant difference in the number of posts created by patients versus physicians (p=0.036). Furthermore, there was a significant difference in the number of followers between physicians and all other groups analyzed. There were no posts regarding the use of CEI in pediatric anesthesia when searching for posts on CEIs.

Conclusions: When searching for posts related to CEIs, it is more likely to encounter posts authored by patients, thus resulting in the educational content created by physicians being overshadowed and buried among numerous other posts. We suggest posting educational medical content with the hashtag #MedEd in an attempt to make educational content more easily accessible. These findings highlight the importance of raising awareness about CEIs on Instagram. Pain medicine societies and specialists should actively contribute by sharing credible posts on CEIs.

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1. Introduction

The caudal epidural injection (CEI) procedure involves inserting a needle through the sacral hiatus in order to administer local anesthetics and/or steroids into the epidural space [1]. This method of accessing the epidural space is commonly utilized for perioperative analgesia in the pediatric population, as well as being a favored technique for managing various chronic pain conditions in adults. Patients experiencing chronic low back pain accompanied by radicular pain resulting from disc herniation or radiculitis, and who have not shown im-

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provement with conservative treatment, can be candidates for CEI. This procedure becomes particularly beneficial when challenging anatomical factors exist in the lumbar spine, such as prior lumbar surgery or degenerative changes, which restrict access to the epidural space via transforaminal or interlaminar approaches [2,3].

Emergence of the Internet has brought about a transformative revolution, leading to remarkable advancements in education and the wide distribution of medical information. Among the various social media platforms, Instagram stands out as a highly popular image-based site boasting a user base of over 1 billion [4]. Considering the distinct significance of visuals in effective communication and message framing, platforms like Instagram and other visually-oriented mediums hold immense potential in the realm of health communication and medical information. Prior studies have established that messages containing visual elements are retained more effectively, have better long-term memory recall, and are more accurately remembered compared to messages composed solely of textual content [5,6]. Patients often turn to social media to gather information about medical procedures, seeking insights from real patients. Online sharing of medical experiences by patients has facilitated the creation of support networks. Through the utilization of hashtags, patients are able to conveniently access posts related to their specific disease from other patients and medical professionals. However, it is important to note that multimedia platforms may present inaccurate information, that can impede patients' and their relatives' ability to make well-informed decisions regarding the management of their disorders [7,8].

CEI is one of the most common procedures performed in acute and chronic pain treatment. Instagram is a popular media-sharing platform and considered as an important platform for online health information. This present study aims to provide an evaluation of the information on CEIs on Instagram from different perspectives including number of posts, number of followers, content of post being educational or exchanging experience.

2. Materials and Methods

This study was conducted as a descriptive analysis of Instagram searches related to CEIs. There was no human or animal involvement in the conduction of this study. As a result, the data used in this study was publicly available; hence there was no need for ethics committee approval.

The study was conducted on May 1, 2023, by searching for the hashtags #caudalepiduralinjection, #caudalepidural, #caudalepiduralblock, #caudalinjection and #caudalblock on Instagram. Only posts in English were included in the analysis, and duplicate posts were excluded. The posts were categorized as physicians, patients, medical organizations or unspecified categories. The information in the posts was further categorized based on its type, either educational content for healthcare professionals or experiences, and the influence of the users, measured by the number of posts and followers. The distribution of followers and the number of posts among users were also analyzed.

2.1. Statistics

For the statistical analysis, SPSS 20 was used. The quantitative variables were tested for normality using the Shapiro-Wilk test. Descriptive statistics such as numbers (n), frequencies (%), mean, and standard deviation (SD) were used to present the data. The Kruskal-Wallis test was employed to determine if there were any significant differences in the distribution of follower numbers and the number of posts among the four groups. If the overall test yielded a significant result, pairwise comparisons were conducted using the Wilcoxon signed-rank test. A significance level of $P < 0.05$ was considered statistically significant.

3. Results

A total of 204 Instagram posts were assessed, and the process for selecting these posts was illustrated in Fig. 1. Out of the evaluated posts, 72 different accounts were identified and categorized into four groups: physicians, medical organizations, patients, and not otherwise specified.

The distribution of these accounts is as follows: accounts by physicians 29.16% (n=21), accounts by patients 51.38% (n=37), accounts by medical organizations 11.11% (n=8), and the remaining 8.33% (n=6) were not otherwise specified, as shown in Table 1.

Regarding the origin of the 204 posts, 92 (45.09%) were posted by patient accounts, 71 (34.80%) by physician accounts, 25 (12.25%) by medical organizations, and 16 (7.84%) were not specified, as presented in Table 2.

The 50.7% of the posts shared by physicians consisted of educational content, while the 49.3% of them were posts on personal experiences. Analyzing the content of hospital-related posts thoroughly, it was found that 96% of them were educational content while only 4% were on personal experiences, as displayed on Table 2. All posts regarding CEI procedures were related to chronic pain conditions, and there were no posts about pediatric patients.

Table 1. Attributes of Instagram post.

User	Number of accounts	Number of followers (mean±SD)
Physicians	21 (29.16%)	407,964 (19426.85±11791.57)
Surgeon	16 (76.19%)	288,250 (18015.62±11286.59)
Non-surgeon	5 (23.80%)	110,751 (22150.2±9774.96)
Patients	37 (51.38%)	23,082 (623.86±7132.50)
Medical organization	8 (11.11%)	4,418 (552.34±1216.22)
Not otherwise specified	6 (8.33%)	1,520 (253.42±142.18)

Values are presented as numbers (%), SD: standard deviation.

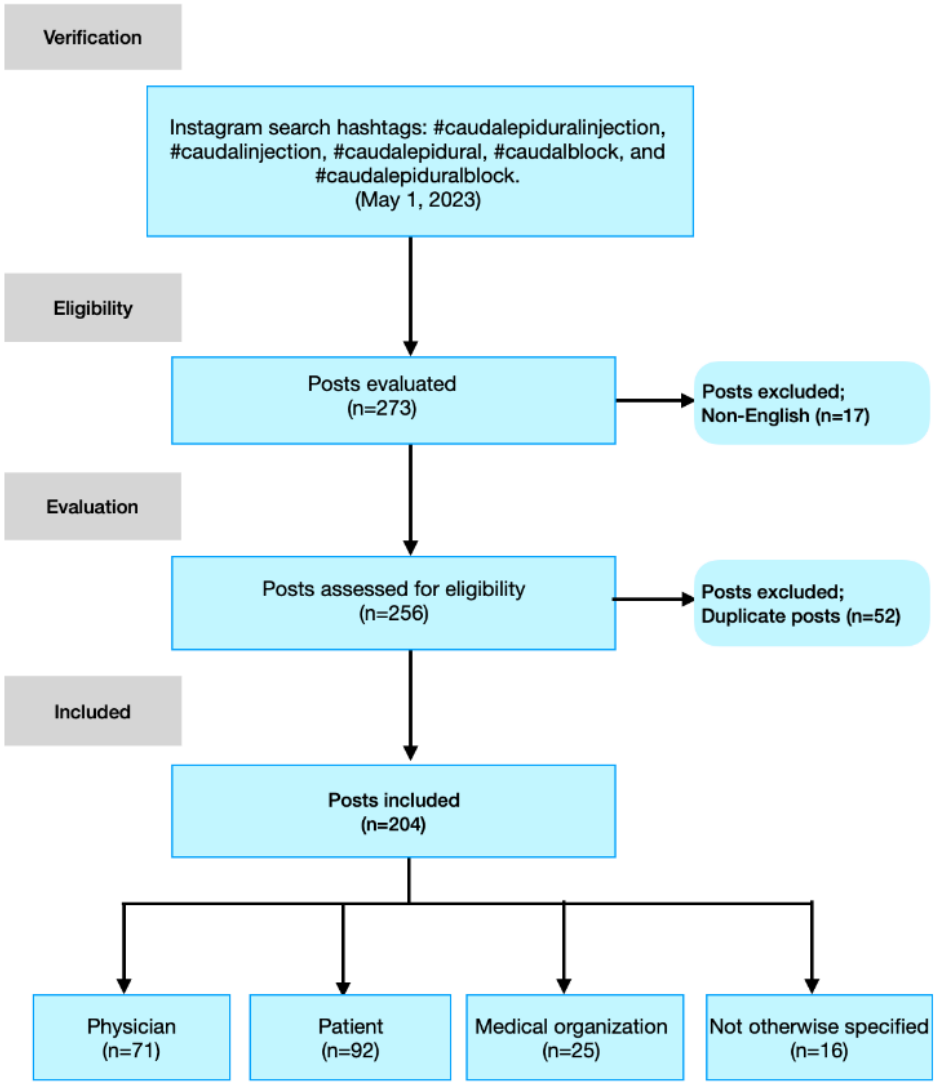

Fig. 1. Selection of the posts.

Table 2. Analyzing the content of posts.

User	Total number of posts (mean±SD)	Educational	Experiences
Physician	71 (3.38±2.05)	50.7%	49.3%
Surgeon	49 (3.06±1.57)	34.68%	65.30%
Non-surgeon	22 (4.4±2.43)	86.36%	13.63%
Patient	92 (2.48±1.16)	-	-
Medical organization	25 (3.12±0.25)	96%	4%
Not otherwise specified	16 (2.66±0.74)	-	-

SD: standard deviation

Table 3. Difference in numbers of posts and numbers of followers.

	Number of posts (p-value)[a]	Number of followers (p-value)[a]
Physician vs patients	0.036*	<0.001*
Physician vs medical organization	0.574	<0.001*
Physician vs not otherwise specified	0.411	<0.001*
Patients vs medical organization	0.131	0.954
Patients vs not otherwise specified	0.625	0.754
Medical organization vs not otherwise specified	0.194	0.513

*p<0.05 is considered statistically significant.

[a] Wilcoxon sign rank test was performed for pairwise comparison.

The study also examined the distribution of follower counts among four distinct groups. Pairwise comparisons revealed significant differences in number of posts created by patients versus physicians (p=0.036). Furthermore, there was a significant distinction in number of followers, as presented in Table 3.

4. Conclusions

This study aimed to investigate the presence of CEIs on the rapidly expanding social media platform, Instagram. The findings revealed that accounts by physicians were the most popular ones which were also the most focused

accounts on sharing educational content. Although physicians were actively engaged on social media, it was observed that posts related to CEIs were more commonly created by patients rather than medical professionals.

Over the past few decades, there has been a growing popularity of regional anesthesia in pediatric patients, with approximately one-quarter of anesthetic procedures conducted on children involving regional anesthesia [8]. A variety of peripheral and central nerve blocks have made it possible to reduce the dose of opioids, thus providing decreased complications related to opioids and improved haemodynamic stability [9]. Among them are single-injection CEIs, accounting for 34-40% of patients in pediatric regional anesthesia [8,10]. It serves as an adjunct to general anesthesia and also offers postoperative pain relief for pediatric patients who have undergone procedures below the umbilicus. The two largest multicentre trials investigating the incidence of regional anesthesia in pediatric patients reported that CEIs are most commonly administered to children aged between 12 months and 3 years [8,10]. Moreover, the caudal block is considered the primary choice for pain control due to its simplicity, high success rate and ability to provide consistent analgesia.

This current study has shown that there were no posts regarding the use of CEI in pediatric anesthesia when searching for posts on CEIs. Several studies have shown that families may have difficulty in accessing trustworthy and comprehensible information over the internet [11–13]. Given that CEI is frequently performed in pediatric patients, recognizing and determining the term 'caudal epidural injection' for children's families is an important issue. Accurate and reliable information is particularly crucial, especially considering that families hold the responsibility of making decisions for pediatric patients. To enhance the quality of online information regarding CEIs, it is essential for professional pain medicine societies and specialists to share credible posts. These posts should contain accurate information, accompanied by clear, high-quality images and videos, along with appropriate scientific commentary.

The popularity of social media platforms like Instagram is continuously increasing. This has led to the dissemination of medical information through Instagram, which has become a significant information source for patients who are deciding whether or not to undergo recommended treatments by healthcare professionals. However, our research reveals that the public is more likely to come across posts created by patients. Similarly, previous studies examining the impact of social media on health information found that the posts were mostly generated by patients and involved the sharing of personal experiences [14–16]. Overall, patient experience can serve as a valuable resource for individuals seeking feedback on interventional procedures. Exploring the documented experiences of patients who have undergone CEIs on platforms like Instagram can offer insightful information to prospective patients seeking real-life perspectives on these interventions. However, it is important to note that patient's viewpoints may be influenced by personal biases, potentially leading to the spread of unfiltered and often inaccurate information. Moreover, the lack of posts authored by physicians or medical organizations suggests a missed opportunity to provide reliable and trustworthy information regarding CEIs. Physicians and professional societies have a crucial responsibility to serve balanced and unbiased information regarding CEIs. Providing accurate and reliable medical information through social media platforms is essential in ensuring that patients have the necessary knowledge to make appropriate decisions about their healthcare.

Recently, E-Learning approaches such as video and image have become one of the most important parts of education [17–21]. Previous research has provided compelling evidence that utilizing visual sources for learning offers numerous advantages compared to traditional didactic training methods, particularly in various areas of medical education, including regional anesthesia [22]. Due to its image-based nature, Instagram serves as an ideal platform for the widespread dissemination of interventional medical education. Our findings indicate that more than half of the physicians' posts were educational; however, the use of hashtags in social media posts led to the educational content being overshadowed and buried among numerous other posts. We suggest posting educational medical content with the hashtags such as #MedEd or #MedEdu to make educational information more easily accessible. The fact that anyone can post and users may protect their identity raises questions of validity. It remains the responsibility of social media users to scrutinize any content before incorporating it into their practice. The General Medical Council (GMC) in the UK has provided guidance on the use of social media by healthcare professionals, emphasizing confidentiality and professionalism [23]. Apart from confidentiality and professionalism concerns, the information shared in posts may be accessed by patients who might use it for self-diagnosis and self-treatment.

There are several limitations in this article. Firstly, the evaluation was conducted within a single day, which may have overlooked ongoing discussions and conversations that occur on Instagram, given its dynamic nature. Furthermore, alternative keywords related to CEI could have been explored during the search process. The absence of demographic information is another notable limitation, as Instagram does not provide these variables for analysis. Additionally, this study solely focused on English posts, although English is widely used as a global language and can gather information from around the world. Lastly, since patients may seek information on platforms other than Instagram, it is essential to conduct further research that evaluates and compares various platforms. The findings cannot be generalized to other social media platforms as Instagram was the only platform analyzed.

The increasing use of the Internet for information and medical education brings about challenges due to the variability of information online. Our results show that posts created by patients are more likely to be encountered when searching for information on CEIs. Given the accessibility of Instagram, it can serve as a valuable platform for medical information on interventional procedures. Moreover, CEI is frequently performed in pediat-

ric anesthesia, recognizing and determining CEI for children's' families is an important issue. Therefore, it is important to encourage reliable Instagram accounts established by reputable pain medicine organizations to create more online information that explicitly states learning objectives related to CEIs. Further studies are warranted to explore the complete range of possibilities offered by Instagram as a tool for health communication and medical education in the field of interventional procedures.

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