Utility of social media and crowd-intelligence data for pharmacovigilance: A scoping review

Summary

We aimed to characterize the literature on the use of social media data sources for drug safety surveillance. Current evidence suggests that social media data sources have the potential to supplement data from regulatory agency databases, are able to capture less frequently reported adverse events (AEs), and can identify AEs earlier than official alerts. However, our findings suggest that the development of such a platform is in its infancy.

Implications

We conducted this scoping review to inform members of Health Canada in planning an evaluation study on the utility of social media for detecting health product adverse events. This review may inform their decision on whether a social media listening platform is feasible for drug safety surveillance in Canada.

Reference: Tricco AC, Zarin W, Lillie E, et al. Utility of social media and crowd-intelligence data for pharmacovigilance: a scoping review. BMC medical informatics and decision making. 2018 Dec;18(1):38.

PMID: 29898743

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What is the current situation?

- Each year, thousands of people die from an adverse drug reaction from a prescribed medication. Adverse drug reaction surveillance in most countries is suboptimal and consists largely of spontaneous reporting, capturing only an estimated 1-10% of all adverse drug reactions.

What is the objective?

- A scoping review to characterize the literature on the use of social media conversations as a potential data source for detecting adverse events (AEs) related to health products.

How was the review conducted?

- A scoping review was conducted following the methods outlined in the Joanna Briggs Institute manual.

- Pairs of reviewers independently screened citations and full-texts for relevance; one reviewer performed data abstraction, which was verified by a second reviewer.

- Descriptive synthesis (e.g. frequencies, measures of central tendency) was conducted.

What did the review find?

- 3,631 citations and 321 full-texts were screened, of which, 70 unique documents with 7 companion reports were included.

- The most common social media data source was Twitter (33%), followed by MedHelp (13%), DailyStrength (11%), and AskaPatient (9%).

- Forty-six documents (66%) described an automated or semi-automated information extraction system to detect health product AEs from social media conversations.

- Nineteen documents compared AEs reported on social media with validated data sources and found consistent AE discovery in all, but two documents.

- None of the documents reported the validity and reliability of the overall system, but some reported on the performance of individual steps in processing the data.

- The validity and reliability results were found for the following steps in the social media data processing pipeline: data de-identification (n=1), concept identification (n=3), concept normalization (n= 2), and relation extraction (n=8). increases following the intervention.