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USING TWITTER ADVANCED SEARCH TO EXPLORE THE INTEREST IN ANTIBIOGRAM

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Abstract:

Introduction*: Antibiogram summarizes the antimicrobial susceptibilities of bacterial isolates that are submitted to the microbiology laboratory department periodically. Public health researchers have started to use social media platforms such as Twitter in their research. This study aims to explore the interest in Antibiogram using Twitter advanced search.* ***Methodology:*** *Twitter Advanced Search was used to find the number of tweets using the keyword "antibiogram" in 2017 and 2018. The second part include using word frequency counter to find the most frequent words in all tweets in 2017 and 2018.****Results and Discussion****: There were only 98 tweets in 2017, and only 97 tweets in 2018. The most frequent word was antibiogram, followed by antibiotic or antimicrobial, ASP or stewardship program and resistant or resistance.* ***Conclusion****: The interest of health care providers in Antibiogram is not sufficient as the results showed. These results demonstrate the need for more lectures, conferences and more activities to increase the knowledge and the awareness of health care providers about Antibiogram.*

Keywords*: Antibiogram, Twitter, Interest.*

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INTRODUCTION:

Antimicrobial susceptibility testing distributes pathogens to two clinical categories either resistant or susceptible based on clinical breakpoints resulting from inhibition zone diameters or the minimum inhibitory concentrations and shows the probability of the therapeutic success. (1)

Cumulative antimicrobial susceptibility testing reports could be used to compare the rates of antimicrobial resistance between institutions, to observe the trends of resistance within an organization, and to plan and assess the interventions of antibiotic stewardship. (2)

The hospital antibiogram summarized the antimicrobial susceptibilities of bacterial isolates from a culture of a sample taken from blood or other tissues that were submitted to the microbiology laboratory department periodically. The main use of Antibiograms is to assess the rates of local susceptibility, in order to help in the selection of empiric antibiotic, and to monitor the trends of resistance over time within an organization. (3-5)

Antibiogram is a valuable tool that help in guiding the antimicrobial therapy, but it is not the only factor that affect the selection of the appropriate antimicrobial, there are other factors, such as the infection history and the history of antibiotic use, also are needed to select the suitable antibiotic (6).In addition to guide optimal antibiotic selection, antibiograms also decrease unsuitable antibiotic treatment, and recognize the areas requiring appropriate intervention by the application of antimicrobial stewardship programs. Although Antibiogram is considered a time-consuming process and usually it is performed yearly, It can be cheap to develop and maintain and its results are easily reachable to health care providers .(7,8)

Creating cumulative antibiograms annually is a significant strategy for antimicrobial stewardship as it updates antimicrobial selections for formularies and antimicrobial prescribing strategies for health care services. (9)

Twitter is an collaborating social media platform, it was established in 2006. Public health researchers have started to use Twitter in their research (10) Twitter plays a significant role in the finding of scholarly information and in knowledge spreading between different disciplines. (11) This study aims to explore the interest in Antibiogram using Twitter advanced search.

Methodology

The first part includes Using Twitter Advanced Search (12) to find the number of tweets in 2017 and 2018 , to explore the interest of antibiogram and to find the number of tweets during the months of 2017 and 2018.

The second part include using word frequency counter (13) to find the most frequent words in all tweets in 2017 and 2018.

RESULTS AND DISCUSSION:

Twitter Advanced Search was used to explore the interest of antibiogram in 2017 and 2018.

in 2018 there were 97 tweets. there were 14 tweets in April, 12 tweets in June, 10 tweets in Feb , 10 in July for the other months there were less than 10 tweets. Table 1 shows the number of tweets in 2018.

Table 1. The # of tweets in 2018.

Month/2018	# of tweets
JAN	9
FEB	10
MAR	5
APR	14
MAY	8
JUN	12
JUL	10
AUG	9
SEP	5
OCT	7
NOV	5
DEC	3

IN 2017 , there were 98 tweets. there were 16 tweets in November, 15 tweets in March, 11 tweets in May, 10 tweets in October and less than 10 tweets in other months. Table 2 shows the number of tweets in 2017.

Table 2 .The # of tweets in 2017.

Month/2017	# of tweets
JAN	1
FEB	5
MAR	15
APR	8
MAY	11
JUN	7
JUL	6
AUG	9
SEP	5
OCT	10
NOV	16
DEC	5

Antibiogram and ASP are a medical terms so it is expected that the majority of tweets were written by one of the health care professionals especially physicians and pharmacists (DR repeated 35 times, Pharm repeated 62 times and MD repeated 37 times)

There were many organizations wrote tweets about antibiogram, specially Society for Healthcare Epidemiology of America (shea repeated 14 times) and The Agency for Healthcare Research and Quality (Ahrq repeated 13 times)

There were also many tweets regarding many bacteria specially MRSA (MRSA repeated 13 times). Table 3 shows the most frequent words that were repeated in 2017 and 2018.

After that word frequency counter was used to find the most frequent words in all tweets in 2017 and 2018. The most frequent word was antibiogram repeated 231 times, followed by antibiotic or antimicrobial 97 times , ASP or stewardship program 89 , resistant or resistance 66 , Hospital 45 ,Use or using 42, know 23, Susceptible or Susceptibility repeated 20 times.

These frequent word show that in addition to antibiogram, there were interest in the appropriate use of antibiotic to decrease bacterial resistance by using the antimicrobial stewardship programs (ASP) specially in hospital (the word hospital repeated 45 times). But also the community pharmacies and outpatient clinic should use antimicrobial stewardship programs (community repeated 12 times).

Table 3 .The most frequent words that were repeated in 2017 and 2018.

Antibiogram	231
Antibiotic or antimicrobial	97
Asp or stewardship program	89
Resistance or Resistant	66
Pharm	62
Hospital	45
Use or Using	42
Md	37
Dr	35
Patient	33
Know	23
Local	21
Infect	19
Shea	14
Ahrq	13
Specific	13
Mrsa	13
Community	12

CONCLUSION:

The interest of health care providers in Antibiogram was increased continuously, but till now the interest and knowledge about it is not sufficient as the results showed that there were only 98 tweets in 2017, and only 97 tweets in 2018 . These results demonstrate the need for more lectures, conferences and more activities to increase the knowledge and the awareness of health care providers about Antibiogram.

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