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Research Article

USING GOOGLE TRENDS TO EXPLORE THE INTEREST IN ANTIMICROBIAL STEWARDSHIP IN MALAYSIA

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Abstract:

Introduction: Antibiotic stewardship refers to a set of organized plans to improve the usage of antimicrobial drugs. Only few hospitals in Malaysia had implemented a comprehensive antimicrobial stewardship.

Objective: This study aims to explore the interest in antimicrobial stewardship in Malaysia.

Methodology: An observational study was conducted by the exploration of searching results for the term "antimicrobial stewardship" using google trends from 2004 till April 2019

Results and Discussion Google trends demonstrated that there was an exponentially increasing in searching for the term. Malaysia is the 7th most searching country for the keyword "antimicrobial stewardship" after Australia, Canada, Philippines and Saudi Arabia. Malaysia is the 4th most searching country for antimicrobial stewardship term videos using YouTube.

Conclusion

There was an increasing in the interest in appropriate use of antibiotic by the implementation of antimicrobial stewardship programs. Malaysia is one of the most countries interested in antimicrobial stewardship as the searching results showed during the last several years.

Keywords: google trends, interest, antimicrobial stewardship, Malaysia.

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INTRODUCTION:

Antimicrobial stewardship is an organized program that encourages the suitable use of antimicrobials, decreases bacterial resistance, decreases the spread of infections caused by multidrug resistant organisms and improves patient outcomes. (1)

Antibiotic stewardship refers to a group of coordinated strategies to improve the usage of antimicrobial drugs which results in improving the health of the patients' outcomes, reducing excessive costs and decreasing resistance to antibiotics. (2)

Antibiotic Stewardship Programs are hospital-based programs committed to improving antibiotic usage, and can enhance the management of infections and decrease adverse events associated with antibiotic usage. (3-5)

Only a few hospitals in Malaysia had implemented a comprehensive antimicrobial stewardship and since 2014, ministry of health Malaysia issued the protocol on antimicrobial stewardship program in healthcare facilities. (6, 7)

The health searchers frequently start their web searches using the Google Search engine, which account for more than 70% of market share of this industry. (8) The Big Data formed from structured inquiries typed on Google can be thoroughly analyzed by Google Trends (9), which is an online tool developed to assess market and opinion trends on the internet in near real-time. This tool allows users to interact with internet search data; it is a free, publically accessible tool. Google Trends analyzes a portion of the three billion daily Google Search searches and delivers data on geospatial and chronological patterns in search volumes for user-specified terms.(10)

Recently, there has been an increasing usage of the analysis of internet activity to measure the people's interest on medical conditions. (11-15)

Nowadays there is an increasing interest in antimicrobial stewardship programs in several countries. This study aims to explore the interest in antimicrobial stewardship in Malaysia.

METHODOLOGY:

An observational study was conducted by the analysis of searching results for the term antimicrobial stewardship using google trends from 2004 till April 2019. The first part includes searching for antimicrobial stewardship term in Malaysia. The second part includes searching google trends for the images related to antimicrobial stewardship from 2008 till now and the third part includes searching results for antimicrobial stewardship videos in YouTube from 2008 till present.

RESULTS AND DISCUSSION:

By searching google for 'antimicrobial stewardship' there were about 3,130,000 results. From these results there were about 15,200 videos

The first part of using google trends includes worldwide searching for antimicrobial stewardship terms.

The searching results in Malaysia were few before 2014, after that Google Trends demonstrated an exponentially increased in searching for the term.

Searching results for antimicrobial stewardship worldwide since 2004 are shown in table 1 and Searching results for antimicrobial stewardship worldwide in the last 5 years are shown in table 2.

Table 1. Searching results for antimicrobial stewardship worldwide since 2004

Country	Interest by region*
Australia	100
Canada	74
Philippines	69
Saudi Arabia	59
United State	48
United Kingdom	44
Malaysia	43

Table 2. Searching results for antimicrobial stewardship worldwide in the last 5 years

Country	Interest by region*
Australia	100
Canada	91
Philippines	87
Saudi Arabia	67
Malaysia	52
United kingdom	52
United State	49

- The peak popularity of the term is given a value of 100; if the term is half as popular, it is given a value of 50. If a sufficient amount of data was not available for the selected term, it is given a scores of 0.

Healthcare professionals in Malaysia are now interested in using antibiotic appropriately by applying antimicrobial stewardship programs. The results of searching google trends for the keyword antimicrobial stewardship worldwide in 2004 till now showed that Malaysia is the 7th most searching the keyword worldwide after Australia, Canada, Philippines and Saudi Arabia.

The second part includes searching google trends for the images related to antimicrobial stewardship since 2008 till now, Malaysia is the 6th most searching for antimicrobial stewardship images. The third part includes searching YouTube for antimicrobial stewardship videos from 2008 till present; Malaysia is the 4th most searching country using YouTube. Table 3 shows the interest of Malaysia in antimicrobial stewardship.

Table 3. The interest of Malaysia in antimicrobial stewardship compared to other countries

Variable	Malaysia Ranking in the interest in antimicrobial stewardship in comparison other countries throughout the world.
Searching google trends for the keyword antimicrobial stewardship worldwide	7 th
Searching google trends for the Images related to antimicrobial stewardship worldwide	6 th
Searching YouTube antimicrobial stewardship videos	4 th

CONCLUSION:

Google trends data is a useful tool to analyze online health information. It will become increasingly popular in the future in health assessment.

Malaysia is one of the most countries interested in antimicrobial stewardship as the searching results show during the last several years. In Malaysia there was an increasing in the interest in appropriate use of antibiotic by the implementation of antimicrobial stewardship programs but still there is a need to more awareness activities to encourage the knowledge and the implementation of antimicrobial stewardship programs.

REFERENCES:

1. <https://apic.org/Professional-Practice/Practice-Resources/Antimicrobial-Stewardship>
2. <https://www.shea-online.org/index.php/practice-resources/priority-topics/antimicrobial-stewardship>
3. Davey, P., Marwick, C., Scott, C., Charani, E., McNeil, K., Brown, E., Gould, I., Ramsay, C. and Michie, S. (2017). Interventions to improve antibiotic prescribing practices for hospital inpatients. *Cochrane Database of Systematic Reviews*.
4. Malani, A., Richards, P., Kapila, S., Otto, M., Czerwinski, J. and Singal, B. (2013). Clinical and economic outcomes from a community hospital's antimicrobial stewardship program. *American Journal of Infection Control*, 41(2), pp.145-148.
5. <https://www.cdc.gov/antibiotic-use/healthcare/implementation/core-elements.html>
6. Sing DY, Boo YL, Mukhlis R, Chin PW, Hoo FK. Antimicrobial stewardship program in a Malaysian district hospital: First year experience. *Pak J Med Sci*. 2016;32(4):999–1004. doi:10.12669/pjms.324.9855
7. <https://www.pharmacy.gov.my/v2/sites/default/files/document-upload/protocol-antimicrobial-stewardship.pdf>
8. NetMarketShare. Desktop Search Engine Market

- Share [Internet]. 2017 [cited 2017 September 22]. <http://www.webcitation.org/6tgBD3t7Y>
9. Google Trends. (2019). *Google Trends*. [online] Available at: <https://trends.google.com/trends/?geo=US> [Accessed 21 Apr. 2019].
 10. Nuti, S., Wayda, B., Ranasinghe, I., Wang, S., Dreyer, R., Chen, S. and Murugiah, K. (2014). The Use of Google Trends in Health Care Research: A Systematic Review. *PLoS ONE*, 9(10), p.e109583.
 11. Bragazzi, N., Bacigaluppi, S., Robba, C., Nardone, R., Trinka, E. and Brigo, F. (2016). Infodemiology of status epilepticus: A systematic validation of the Google Trends-based search queries. *Epilepsy & Behavior*, 55, pp.120-123.
 12. Cho, S., Sohn, C., Jo, M., Shin, S., Lee, J., Ryoo, S., Kim, W. and Seo, D. (2013). Correlation between National Influenza Surveillance Data and Google Trends in South Korea. *PLoS ONE*, 8(12), p.e81422.
 13. Gluskin, R., Johansson, M., Santillana, M. and Brownstein, J. (2014). Evaluation of Internet-Based Dengue Query Data: Google Dengue Trends. *PLoS Neglected Tropical Diseases*, 8(2), p.e2713.
 14. Phelan, N., Kelly, J. and Kenny, P. (2014). The effect of the metal-on-metal hip controversy on Internet search activity. *European Journal of Orthopaedic Surgery & Traumatology*, 24(7), pp.1203-1210.
 15. Althouse, B., Allem, J., Childers, M., Dredze, M. and Ayers, J. (2014). Population Health Concerns During the United States' Great Recession. *American Journal of Preventive Medicine*, 46(2), pp.166-170.