

PAPYRUS-SLR: A VISUALIZATION SOFTWARE FOR SYSTEMATIC LITERATURE REVIEWS

From a proof-of-concept prototype to a minimum viable product

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ICASR workshop – Global Evidence Summit – 09/09/2024

LASCAR project, funded by FNR-JUMP program

PAPYRUS FOR SYSTEMATIC LITERATURE REVIEW

Problems

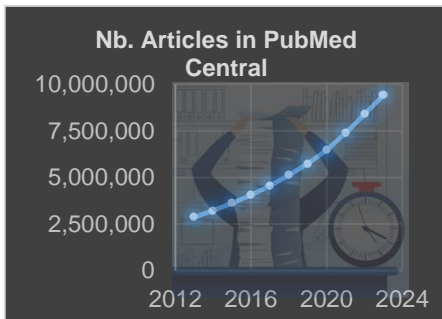


Chart built from

<https://www.ncbi.nlm.nih.gov/pmc/about/intro/>

Define the research question

Quick overview of

- population
- interventions
- outcomes of a disease

Find and screen relevant publications

Solution

Topic words : 1239 **Export**

- mask
- student
- food
- face
- practice
- resident
- education
- ibd
- attitude
- knowledge
- online
- protection
- questionnaire
- teaching
- quarantine
- survey
- learning
- airborne
- trainee

04-01-2024 Airborne Transmission Route of COVID-19: Why 2 Meters? Fear of Intero-personal Distance Could Not Be Enough

Abstract: Transmission route of COVID-19: Why 2 Meters? Fear of Intero-personal Distance Could Not Be Enough. The COVID-19 pandemic has led to the deaths of over 6 million people worldwide. In addition to mobility restrictions, the World Health Organization and other health agencies have implemented various measures to control the spread of the virus. However, the effectiveness of these measures has been questioned, and there is a need to better understand the transmission route of COVID-19. This study aims to investigate the airborne transmission route of COVID-19 and the role of intero-personal distance in preventing its spread. The study was conducted in a laboratory setting, where participants were exposed to a controlled environment containing aerosolized SARS-CoV-2. The results showed that the airborne transmission route of COVID-19 is highly efficient, and that the use of face masks and physical distancing can significantly reduce the risk of infection. The study also found that the fear of intero-personal distance is a major barrier to effective infection control measures. The findings of this study have important implications for the development of effective public health interventions to control the spread of COVID-19 and other respiratory viruses.

From a Proof-of-concept prototype to a minimum viable product

2014-2017: Ph. D. Nicolas Médoc

N. Médoc, "A visual analytics approach for multi-resolution and multi-model analysis of text corpora : application to investigative journalism," Ph. D Thesis, Université Sorbonne Paris Cité, 2017.

2019-2021: Proof-of-concept in scoping review

POC study with GSK (pharmaceutical company)
scoping review of gonorrhoea infection

↳ **+ 20% outcomes**

Published in BMC Medical Research Methodology Journal¹

¹ J. Whelan, M. Ghoniem, N. Médoc, M. Apicella, and E. Beck, "Applying a novel approach to scoping review incorporating artificial intelligence: mapping the natural history of gonorrhoea," BMC Medical Research Methodology, vol. 21, no. 1, p. 183, Sep. 2021, doi: 10.1186/s12874-021-01367-x.

2023-current: Minimum viable product optimized for systematic reviews

LASCAR project²

funded by FNR JUMP program³

Partner: Epi-C (business advisor)

² <https://www.list.lu/en/research/project/lascar/>

³ <https://www.fnr.lu/funding-instruments/jump/>



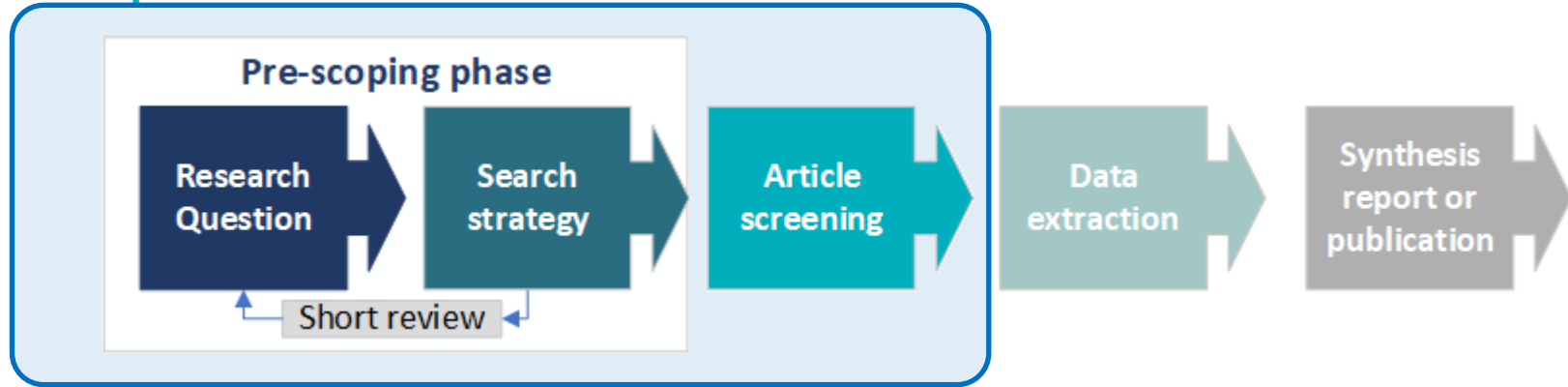
Interviews

Human centered design

- With business advisor
- 14 stakeholders (researchers, information specialists, CROs, national health agencies, pharma companies)

PAPYRUS-SLR

Which phase of the SLR?



User tasks

Explore a large scientific corpus quickly

- define efficiently key concepts under research;

Identify the most relevant topics

- quantify the related literature available;

Formulate optimal research questions

- leading to a focused but comprehensive literature search;

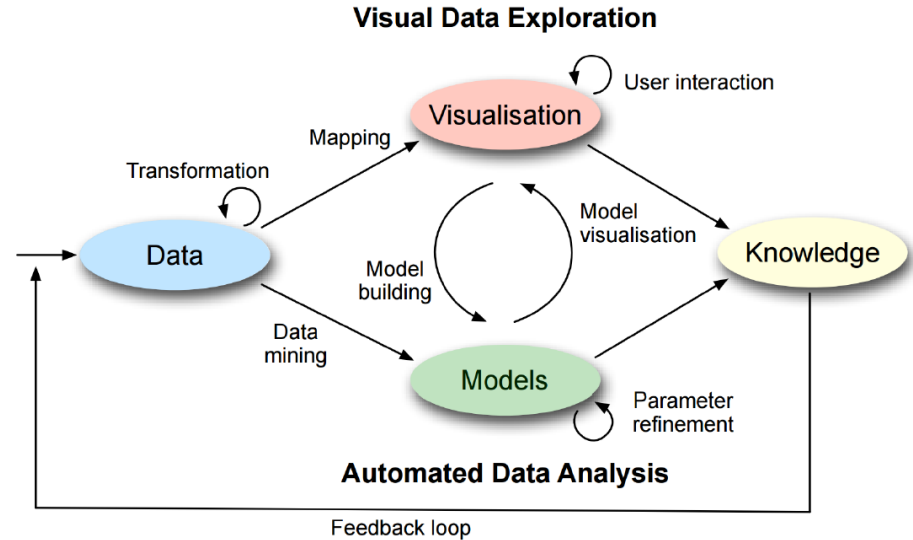
Screen titles/abstracts

- Efficiently and transparently.

A VISUAL ANALYTICS APPROACH

“analyze first, show the important, zoom/filter, analyze further, details on demand”

Keim, D., Mansmann, F., Schneidewind, J. and Ziegler, H. (2006)
Challenges in Visual Data Analysis, Tenth International Conference on Information Visualization. London, England, July 2006. pp. 9–16.



D. A. Keim, J. Kohlhammer, G. Ellis, F. Mansmann,
Mastering the Information Age: Solving Problems with Visual Analytics.
Goslar: Florian Mansmann and Eurographics Association, 2010.

INTERACTIVE VISUALIZATIONS

Topic map

Explore a large scientific corpus quickly

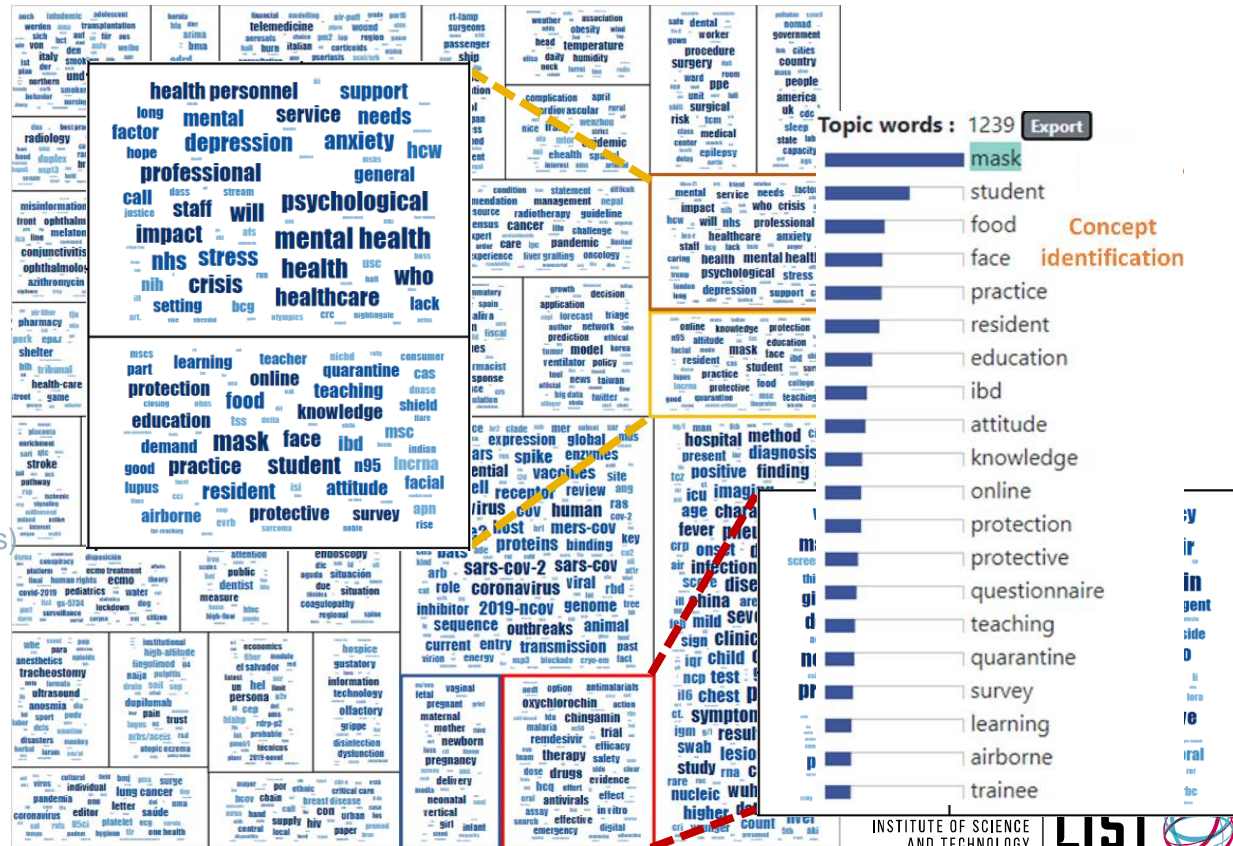
Identify the most relevant topics

Formulate optimal research questions leading to a focused search;

Screen titles/abstracts

Technology:

- Natural language processing
- Knowledge graphs (MESH, Geonames)
- Topic models



INTERACTIVE VISUALIZATIONS

Topic details

- Find inter-related concepts
- Refine the search strategy

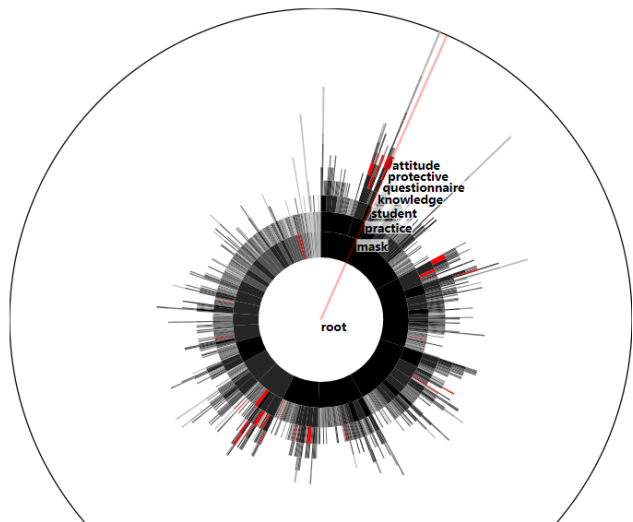
Topic overview | Topic details

Search:

Filtered tree

Documents coverage: 285/462 in lists (61.69%)
Terms coverage: 220/1239 in lists (17.76%)

Filtered lists: 1071/1071
Interest thr.: 0



- Define inclusion / exclusion criteria

Topic documents | Saved documents

Selected topic: 17
Nb documents: [1..2]/2

From the selected branch
 From the corpus

Text to search

Selected words: mask, practice, student, knowledge, questionnaire, protective, attitude

sort by : Date Source **Interest**

12315: Covid-19 - Knowledge, attitude and practice among medical and non-medical university students in Jordan

Covid-19 - Knowledge, attitude and practice among medical and non-medical university students in Jordan. The World Health Organization declared COVID-19 as a pandemic on the 11th of March 2020. Since then, many efforts are being carried out to contain the virus. Knowledge and attitude of people should be directed towards strict preventive practices in order to halt the spread of the virus. The aim of the current cross-sectional study is to assess the knowledge, practice and attitude of university students from medical and non-medical colleges in Jordan using a structured questionnaire involving a total number of 592 students. A positive response regarding the overall knowledge about the symptoms of COVID-19 was observed in more than 90% of the students. In response to the attitude and practice, a good number of students nearly 99.7% agreed that hand washing is necessary for prevention of infection whereas 68.4% believed that mask wearing would prevent the infection. Around 6-7% students considered the virus as a stigma hence would not visit hospital. Also, around 10% students believed that their religious beliefs and body immunity might protect them from infection. More dangerously, 20.6% and 19.2% students believed antibiotics and smoking to be a protective measure against the infection respectively. Also, 96.8% do avoid hand shaking, 98.8% wash their hands and 93.3% use alcoholic rub, 95.8% cough or sneeze in a tissue and dispose it in waste bin, 51% will drink ginger with honey and 42.7% eat garlic for infection prevention. The main sources of knowledge were social media, internet and television. No significant difference was noticed between medical and non medical colleges. Thus, there is a need for more detailed and directed measures and awareness campaigns to improve the knowledge, attitude and practice in some critical aspects to contain the virus.



CONCLUSION

The screenshot displays the Papyrus-SLR web interface. At the top, it shows 'PAPYRUS-SLR', 'My projects', 'COVID-19 Shedding', and 'Pre-logging'. A 'Log out' button is visible in the top right. The main area is divided into 'Query Documents' and 'Saved Documents'. The 'Query Documents' section shows a search query: '#1 and #3 combined' with a combined query: '(*1 AND *2) NOT(Animal[Mesh] NOT (Humans[Mesh] AND Animal[Mesh]))'. Below this, there are sections for 'Shedding duration' and 'COVID-19'. The 'Saved Documents' section shows a list of 1406 documents, with the first few titles visible: 'Constant Detection of 2019 Novel Coronavirus in Saliva', 'Does SARS-CoV-2 have a longer incubation period than SARS and MERS?', 'Virus Isolation from the First Patient with SARS-CoV-2 in Korea', 'Clinical progression of patients with COVID-19 in Shanghai, China', 'Review article: gastrointestinal features in COVID-19 and the possibility of faecal transmission', 'Clinical and virological data of the first cases of COVID-19 in Europe: a case series', 'Virological assessment of hospitalized patients with COVID-19', and 'A case report of COVID-19 with false negative RT-PCR test: necessity of chest CT'. A sidebar on the left shows 'Query words: 500' with a list of terms like 'sars', 'covid', 'study', 'pandemic', 'infection', 'day', 'virus', 'covid-19', 'patients', 'viral', 'high', 'replication', 'severe acute respiratory syndrome coronavirus', 'result', 'show', 'coronavirus disease', 'clinical', and 'include'.

Papyrus-SLR web site:
<https://papyrus.list.lu>



Understand the needs
and pain points

<https://survey.list.lu/index.php/686541>



Meet stakeholders

Demo, test/evaluation sessions - lascar@list.lu



Exploitation, deployment, maintenance
Research projects – long-term road map

Papyrus-SLR web site:
<https://papyrus.list.lu>



Thank you for your attention