PP22 A Dashboard To Support The Value Assessment Of Digital Health Technologies For Health Technology Assessment Agencies

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Introduction: There needs to be more awareness and agreement on value criteria important to digital health stakeholders (DHSs), including health technology assessment agencies, especially in low- and middle-income countries (LMICs). To overcome these challenges, we focused on the feasibility of a dashboard to improve low confidence and assessment readiness of digital health technologies (DHTs) among DHSs in Malaysia.

Methods: "Artificial Intelligence Embedded X-ray for Lung Cancer Screening" from the Malaysian Health Technology Assessment Section (MaHTAS) was selected as a DHT use case. Representatives from MaHTAS, health informatics, research and innovation agencies, the digital health industry, patient advocates, and bioethicists attended an information briefing session and workshops. Participants completed a value assessment checklist questionnaire on the completeness of the information for the use case. Data and insights from these online workshops were incorporated into the development of Figma dashboard mock-up. Feedback from participants, other Malaysian DHSs, additional LMICs, and high-income countries was incorporated into the mock-up.

Results: For the use case, average ratings from participants on the completeness of information on the seven value domains (VDs) were 3.4 and 3.1 for "healthcare system challenges and current use of technology" and "effectiveness" out of a maximum rating of 4 for "sufficient." Both VDs were classified as "partially sufficient." Ratings for the remaining VDs were 2.9 on "technical product information and use," 2.8 on "safety," 2.5 on "cost and economic impact," 2.2 for "usability and accessibility," and "ethical aspects." These VDs were classified as "not sufficient." The dashboard and its use were evaluated positively by 17 of 22 DHSs, including participants.

Conclusions: It was feasible to develop a useful dashboard applying a value assessment framework for DHTs on a use case with clear visualizations and a systematic approach. Our results have potential for applications in early scientific advice. It is to be considered that workshop participants' profiles may create a bias regarding their subjectivity in rating completeness of information on a DHT.

PP23 Machine-Learning-Based Evaluation Of Community Resilience Through Social Media During The First Post-COVID-19 Reopening In China

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Introduction: The Chinese government lifted most COVID-19 pandemic restrictions in December 2022, triggering a spike in confirmed cases and higher demand for medications. Consequently, a significant number of residents resorted to social media to seek assistance. This study aimed to evaluate community resilience by leveraging Weibo user datasets, coupled with interpretable machine learning (ML)-based techniques, to identify important resilience characteristics.

Methods: Datasets geotagged from the Sina Weibo social media platform between 8 December 2022 and 7 January 2023 were crawled using search terms of "help-seeking" and the keywords of conventional drugs. This study utilized natural language processing (NLP) to label COVID-19-related posts to identify the type of posts, stakeholders' behaviors, and other information. We built a comprehensive evaluation model, and five ML-based algorithms were compared for analyzing community resilience. Local interpretable model-agnostic explanations (LIME) was employed to verify five models and the XGBoost algorithm showed optimal effects. Shapley Additive Explanations (SHAP) elucidated the best model's outputs and estimated contributions for key resilience characteristics.

Results: For this study, 199,709 posts were collected. Out of these, 48,425 posts were identified as help-seeking posts, with more than two-thirds receiving responses from community level. The area under curve (AUC) of the XGBoost model was 0.82 (95% confidence interval [CI]: 0.82, 0.83), and the values of accuracy and F1 score were 0.72 and 0.80, respectively. This result demonstrated that the model can successfully evaluate community resilience and subsequently identify the features driving this outcome. Collective efficacy in providing aid, support from official rescue guidelines, and residents' rapid response to rescue information were identified as the most important characteristics for evaluating community resilience.

Conclusions: This study is the first to harness social media data to quantify community resilience in China based on a framework we developed. Five updated ML-based algorithms were developed to evaluate community resilience, and XGBoost showed optimal effects. Three characteristics of community resilience were found as potential predictors that can enhance decision-making support to reshape health emergency rescue activities.