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Public Engagement Materials For Pharmacology

1. Introduction

- Pharmacology is the study of drugs and their interactions with the body, exploring how medicines act on the body, how the body processes them, and their therapeutic and adverse effects. [1]
- Pharmacology is fundamental in modern healthcare, underpinning the discovery, development and safety of drugs.
- Despite its importance, pharmacology is poorly understood by the general public, and is not taught as a distinct subject in formal education. Many people therefore have limited opportunities to develop a fundamental understanding of the subject.
- In an increasingly digital environment, this knowledge gap is particularly important. Misleading, inflated or inaccurate claims about medicines are widespread online and are difficult to distinguish from credible information. [2]
- Limited understanding of pharmacology may leave individuals less equipped to critically evaluate these claims, highlighting a necessity for accessible pharmacology education to support health and media literacy.

2. Aim

To explore public understanding of pharmacology and develop an educational resource to improve pharmacology and health literacy informed by evidence.

3. Objectives

1. Understand the audience

Assess public understanding and perceptions of pharmacology

2. Identify effective approaches

Investigate evidence-based methods and models for effective public engagement and online learning.

3. Translate research into practice

Apply findings to develop accessible public engagement materials covering pharmacology, health misinformation and media literacy.

4. Methods and Findings

Survey

An initial survey was conducted to explore public understanding and perceptions of pharmacology, including participants' existing knowledge and attitudes towards specific health topics.

Key Findings:

- 112 responses- not representative.
- 74% had no or basic pharmacology knowledge.
- Pharmacology was the least understood biomedical topic.
- Low levels of pharmacology knowledge persisted even among those engaged in science.
- 54% of respondents use social media as their primary source of current affairs.
- High levels of uncertainty around several health topics.

Literature

Existing literature was explored to further understand public understanding of pharmacology and medicines as well as medical misinformation and science literacy

Key Findings:

- College students understanding of pharmacology is limited and confused, and 92.2% of students wanted pharmacology included in secondary/further education. [3]
- Health-related misinformation on social media ranges from 0.2% to 28.8%, with Twitter, Facebook, Youtube and Instagram playing a significant role in the fast and widespread dissemination of information. [4]

A-level student workshop

A workshop with A-level students provided an opportunity to trial game-based public engagment materials for pharmacology. Students interacted with the resources and provided feedback.

Key Findings:

- Students were able to sustain engagement with the resources.
- Students responded positively to the immediate feedback and ability to address knowledge gaps in a quiz-style game.
- Varying accessibility to some concepts and terminology depending on science background.

5. Final output: Massive Open Online Course (MOOC)

The findings from the methods above were used to inform and guide the development of the MOOC

The MOOC is an accessible and interactive educational resource, designed for learners without prior subject knowledge. It is structured around three core sections:

Introduction to Pharmacology, exploring fundamental concepts surrounding medicines.

Misinformation, examining how false and misleading health information develops and spreads.

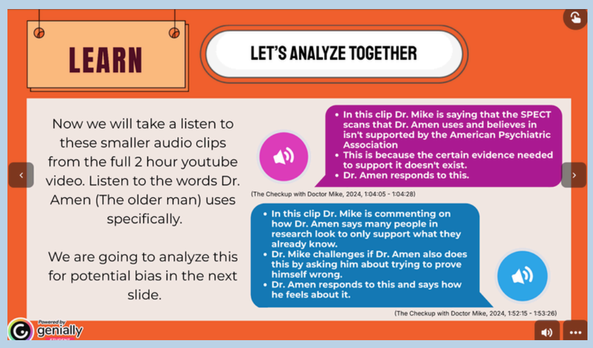
Science Literacy, providing learners with tools to critically evaluate scientific and medicine-related information.

Learn

- Learning content through accessible presentations and engaging visuals
- Visual explanations support STEM learning. [5]

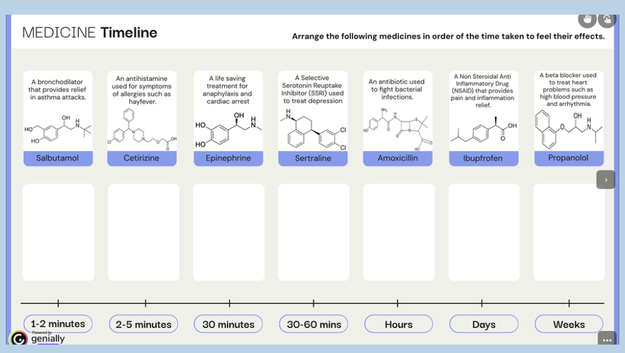
Games

- Gamification supports engagement and motivation.[6]



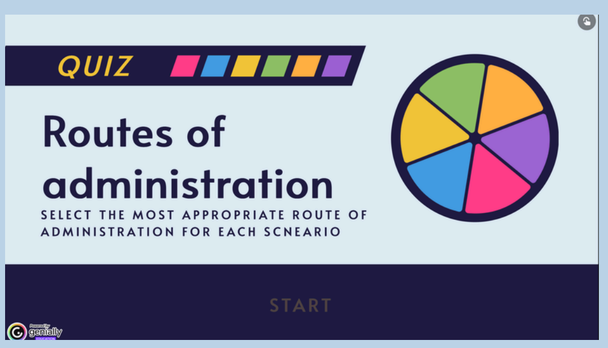
Critical thinking

- Dissecting scientific information and health claims.
- Media literacy can improve misinformation discernment. [7]



Application

- Knowledge is applied through interactive activities.
- Active engagement methods improves learning. [8]



Knowledge checks

- Checking understanding of content.
- Retrieval of knowledge improves retention and transfer of complex topics. [9]

6. Conclusion and Future Directions

This project identified an opportunity for accessible, engaging pharmacology education. Findings from the survey, literature and A-level workshop informed the development of a MOOC combining core pharmacology education, health misinformation and media literacy, with interactive activities to support engagement.

Future Directions

The MOOC is still in development, and the six-week timeframe of the project limited opportunities for testing and evaluation. Future work will focus on:

- Completing and refining the MOOC and interactive resources.
- Testing with target audiences to assess engagement, learning and health/media literacy, using feedback to guide improvements.
- Publishing on online learning platforms to increase accessibility and reach.

References

7. Acknowledgements

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