

Chapter 4

Experiments

4.2 Literature Search and coding for Digital Transformation Solutions

Experiment 1

Prompt:

Create a Boolean search string for digital transformation solutions to challenges and issues in UK NHS and CHS, which are staff wellbeing, workforce shortages access barriers to care and regional health disparities

Figure (1) – The initial prompt used to create a Boolean search string for DTS solutions to challenges and issues in UK NHS and CHS

Output from LLM:

("digital transformation" AND "UK NHS" AND "challenges" AND "issues" AND "staff wellbeing" AND "workforce" AND "access" AND "regional")

Figure (2) – AI generated Boolean search string

Experiment 2

Prompt:

I am conducting a thorough exploration of academic literature on Web of Science to identify academic literature on digital transformation solutions that directly address the following challenges in the UK NHS and UK Community Health Services:

- *Staff wellbeing (especially burnout)*
- *Workforce shortages*
- *Access barriers to care*
- *Regional health disparities*

Figure (3) – The refined prompt used to generate a Boolean search string for DT Solutions

Output from LLM:

((("digital transformation" OR "digital health" OR "eHealth" OR "mHealth" OR "telehealth" OR "telemedicine" OR "health IT" OR "digital innovation" OR "digital tools" OR "health technology") AND ("NHS" OR "National Health Service" OR "UK healthcare" OR "United Kingdom" OR "community health services" OR "primary care")) AND (("staff wellbeing" OR "staff well-being" OR burnout OR "mental health" OR "workforce shortages" OR "healthcare staffing" OR "staffing crisis" OR "access to care" OR "care accessibility" OR "healthcare access" OR "regional disparities" OR "health inequalities" OR "geographic disparities")))

Figure (4) – The refined AI generated Boolean search string for DT Solutions

Experiment 3

((("digital transformation" OR "digital health" OR "eHealth" OR "mHealth" OR "telehealth" OR "telemedicine" OR "health IT" OR "digital innovation" OR "digital tools" OR "health technology") AND ("NHS" OR "National Health Service" OR "healthcare" OR "community health services" OR "primary care")) AND (("staff wellbeing" OR "staff well-being" OR staff burnout OR "mental health" OR "workforce shortages" OR "healthcare staffing" OR "staffing crisis" OR "access to care" OR "care accessibility" OR "healthcare access" OR "regional disparities" OR "health inequalities" OR "geographic disparities")))

Figure (5) – The manually refined AI generated Boolean search string for DT Solutions

4.2.2 Literature Analysis and Coding in ATLAS.ti

Experiment 1

Prompt:

Refine the following prompt which will be used in ATLAS.ti to analyse and code literature: Identify and code all digital solutions aimed at improving staff wellbeing. Biggest factors that affect wellbeing are: burnout, stress, excessive workloads, lack of support, anxiety

Figure (6) – Prompt instruction generation for ATLAS.ti analysis

Output from LLM:

Identify and code all mentions of digital transformation solutions or technologies aimed at improving staff wellbeing among healthcare professionals in the UK NHS or Community Health Services. Focus on interventions that target key factors affecting wellbeing, such as burnout, stress, excessive workloads, lack of support, and anxiety. Include specific tools like mental health apps, digital scheduling systems, AI-based support platforms, or any other relevant digital innovations.

Figure (7) – AI Refined prompt for ATLAS.ti analysis and coding

Experiment 2

Prompt

Now create a prompt that does not only apply to UK NHS or UK NHS CHS. The solutions should apply to improving staff wellbeing among healthcare professionals, IT professionals and healthcare patients.

Figure (8) – Second prompt refinement request instructing LLM to remove UK NHS and CHS from the output

Output from LLM:

Identify and code all mentions of digital transformation solutions or technologies aimed at improving wellbeing among healthcare professionals, IT professionals working in healthcare, and healthcare patients. Focus on interventions addressing issues such as burnout, stress, excessive workloads, lack of support, and anxiety. Include examples like mental health applications, digital support platforms, workload management systems, AI-based wellbeing tools, and other relevant digital innovations, regardless of the specific healthcare system or country.

Figure (9) – Final LLM refined prompt for ATLAS.ti analysis and coding