



Evaluating The Efficacy Of Artificial Intelligence In Hand Surgery

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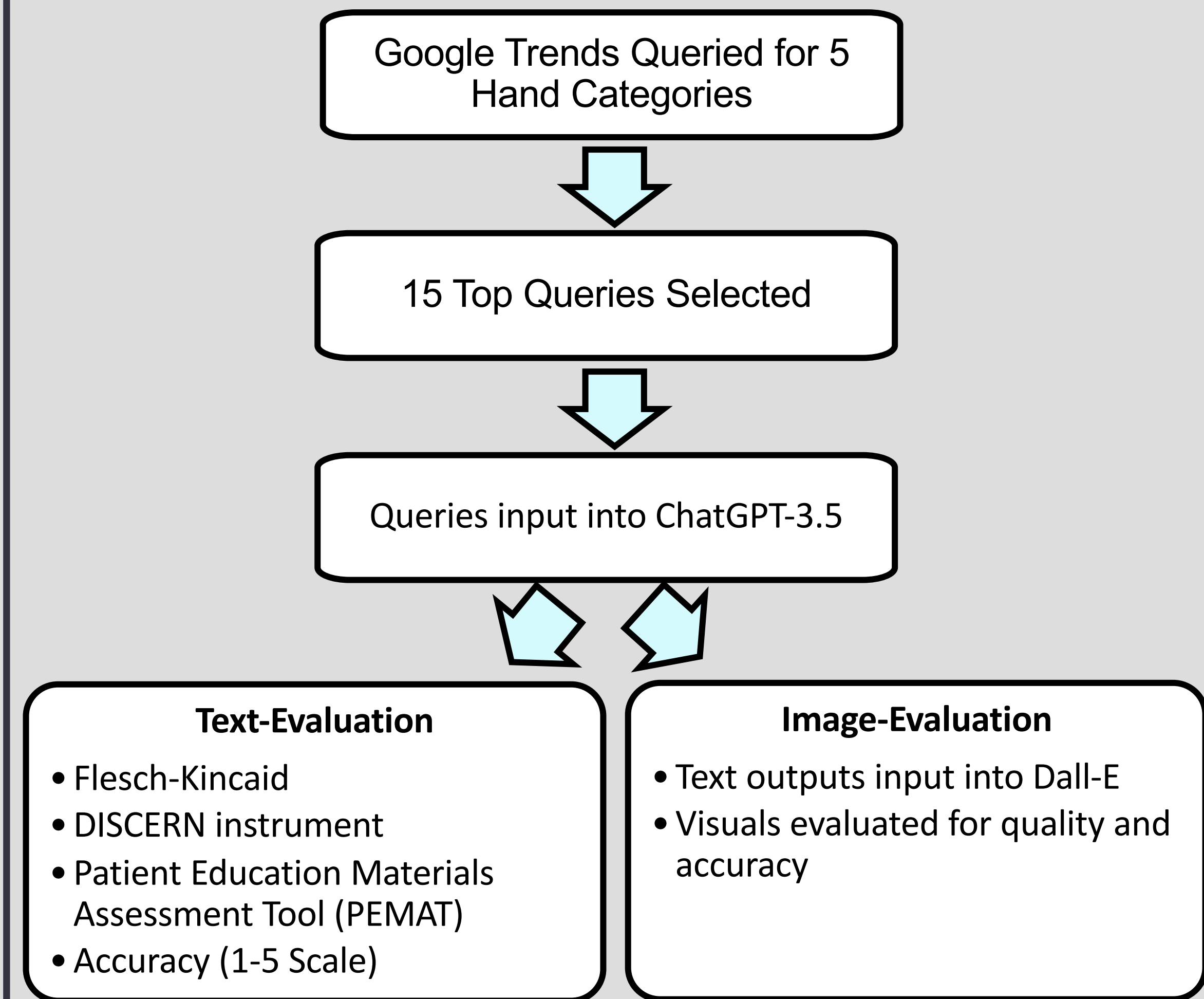
INTRODUCTION

- Artificial Intelligence (AI) technologies are used in diagnostics and treatment planning
- ChatGPT provides access to textual medical information, enhancing learning for patients and professionals.
- Dall-E innovatively translates text into visual representations
- These AI tools may make intricate concepts more accessible and understandable to both trainees and patients.

AIMS

- Identify the strengths and limitations of how ChatGPT-3.5's textual responses and Dall-E's image generation can enhance medical and patient education

METHODS



RESULTS

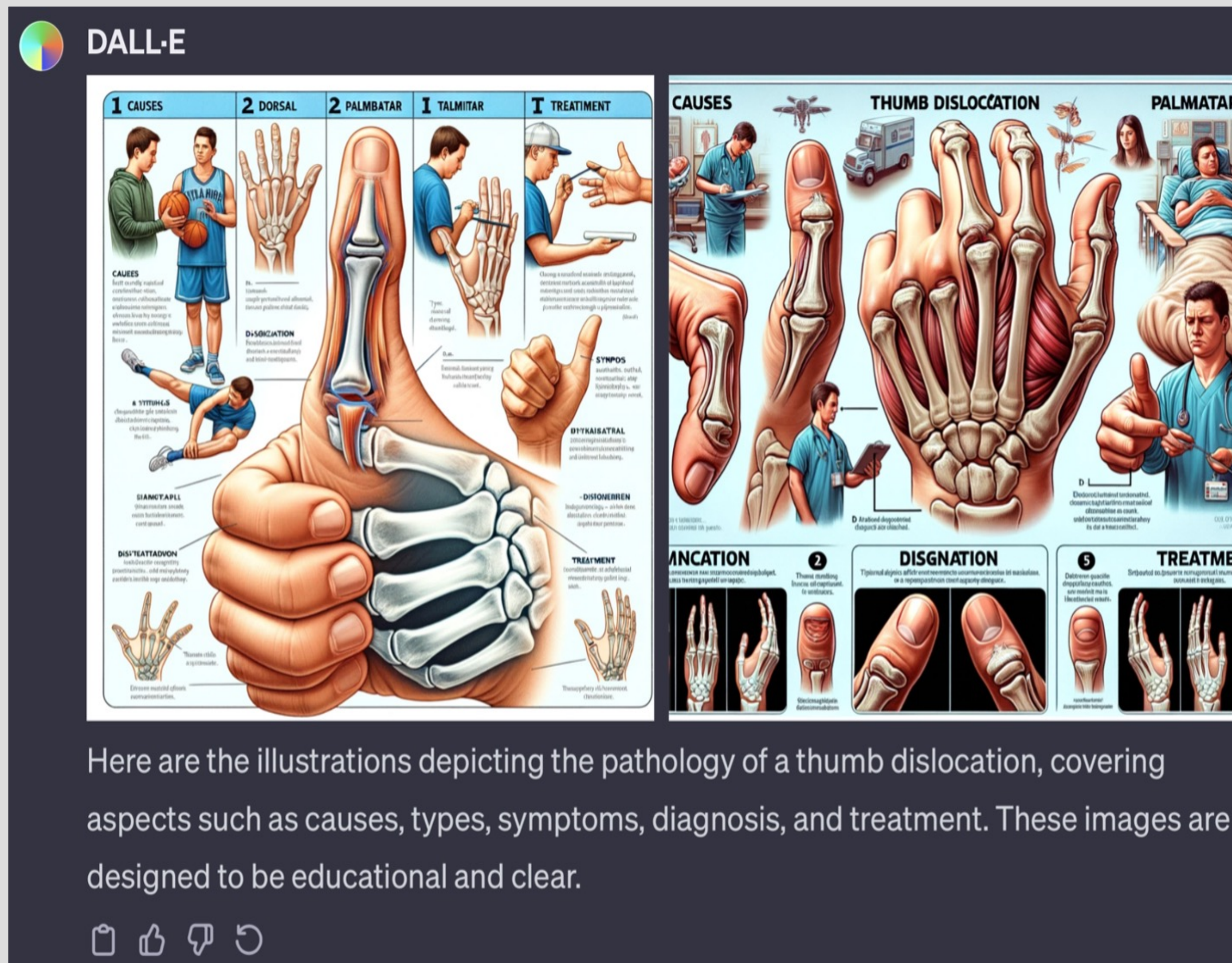
Table 1: AI Chatbot Inputs by Category

Category	Input 1	Input 2	Input 3
Hand Anatomy	Anatomy of Hand	Wrist Anatomy	Hand Muscles Anatomy
Hand Fracture	Hand Fracture	Metacarpal Fracture	Thumb Fracture
Hand Joint Injury	Metacarpophalangeal Joint Injury	Mallet Finger	Hand Joints
Hand Tumor	Hand Cancer	Finger Tumor	Wrist Tumor
Hand Dislocation	Finger dislocation	Wrist dislocation	Thumb Dislocation

Table 2: Evaluation of AI Chatbot Responses Across Hand Surgery Topics

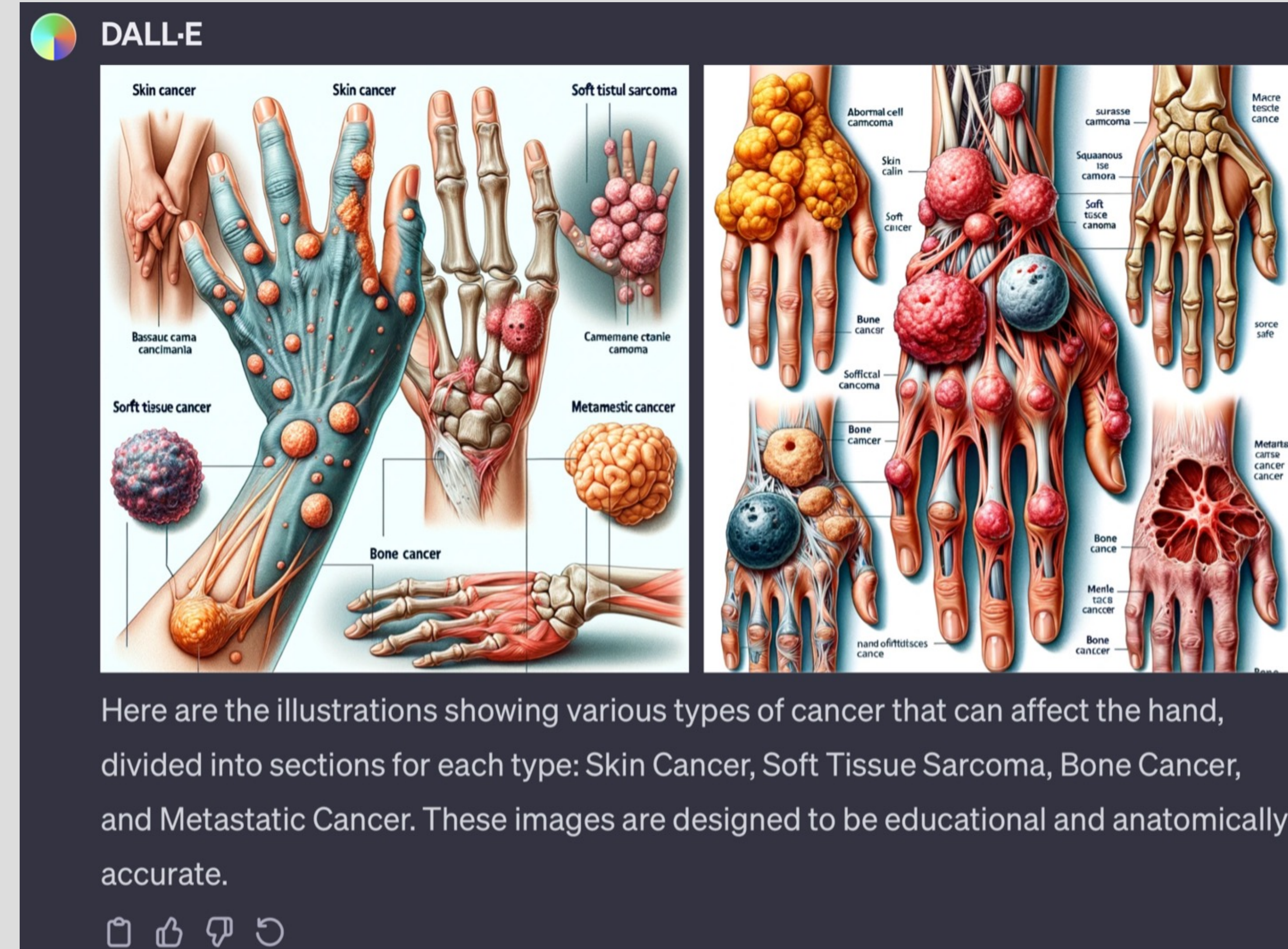
Measure	Anatomy	Fracture	Joint Injury	Tumor	Dislocation
DISCERN Reliability	2.3± 0.0	2.6±0.2	2.3±0.0	2.7±0.1	2.6±0.2
DISCERN Quality	1.1±0.1	2.9±0.1	2.1±1.0	1.1±0.2	2.9±0.2
DISCERN Overall	3.4 ±1.0	3.7±0.5	3.0±0.9	2.7 ±0.8	3.2±0.4
PEMAT Understandability	77.3±7.6	78.8±4.7	74.2±8.9	78.8±4.7	74.2±3.7
PEMAT Actionability	0.0±0.0	60.0±0.0	43.3±8.2	40.0±0.0	40.0±0.0
Accuracy	4.7 ±0.6	4.0±0.0	3.7±0.6	5.0±0.0	4.7±0.6
Flesch-Kincaid Grade Level	9.6± 0.9	10.9±1.6	11.6±1.2	10.7±0.4	12.4±1.3

Figure 1: Hand Dislocation: Thumb Dislocation Dall-E Output



Here are the illustrations depicting the pathology of a thumb dislocation, covering aspects such as causes, types, symptoms, diagnosis, and treatment. These images are designed to be educational and clear.

Figure 2: Hand Tumor: Hand Cancer Dall-E Output



Here are the illustrations showing various types of cancer that can affect the hand, divided into sections for each type: Skin Cancer, Soft Tissue Sarcoma, Bone Cancer, and Metastatic Cancer. These images are designed to be educational and anatomically accurate.

CONCLUSIONS

- ChatGPT can provide medical knowledge on hand surgery topics.
- ChatGPT demonstrated high accuracy and understandability scores
- There is a disparity in actionability, emphasizing the importance of integrating AI with expert clinical judgment.
- Dall-E's capability to generate impressive images is noteworthy
- Dall-E's images can be medically inaccurate
- Future research should focus on tailoring AI to meet users' distinct educational needs.

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