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Letter to the Editor

An engaging consult with DeepSeek about acute abdomen

Sir,

DeepSeek is a large language model (LLM) developed by Hangzhou DeepSeek artificial intelligence basic technology research Co., Ltd., a Chinese artificial intelligence company based in Hangzhou, China. Ever since its launch in July 2023, DeepSeek has released several revised and updated versions, with the latest being DeepSeek-R1 which is free for use unlike other advanced LLM counterparts.[1]

With the capability of extracting valuable insights from vast database and providing users with reliable information and solutions, DeepSeek could play the dual role of physician assistant and an encyclopaedia for patients enriching them with healthcare knowledge. Recent trends indicate that LLMs could support healthcare by aiding clinical decision-making, especially in diagnosis and treatment planning.

As artificial intelligence continues to advance, there has been a notable rise in public engagement with chatbots, accompanied by increased dependence on the information they deliver. Consequently, these systems are being adapted and refined to better serve various needs within healthcare including patient education, symptom triage, and clinical decision support. In a study, about 59.3% study participants were comfortable with AI use in healthcare provided the output is verified by their doctor and about 31.5% of people were enthusiastic about its use without any condition.[2]

Acute abdomen represents a common yet diagnostically challenging clinical presentation encountered in routine medical practice. A retrospective study utilizing data from the healthcare cost and utilization project's (HCUP) national emergency department sample (NEDS) for the years 2010-2016 revealed that abdominal pain was the most common reason for emergency department visits in the United States.[3]

It comprises a broad differential diagnosis, ranging from benign, self-limiting conditions such as gastritis to life-threatening surgical and non-surgical emergencies including gastrointestinal perforation, acute pancreatitis, and myocardial infarction, aortic aneurysm rupture etc. and requiring quick diagnosis and prompt treatment.

A cross-sectional study conducted among the general population in Saudi Arabia revealed that 87.2% of the 2,703 participants had poor knowledge regarding acute abdominal pain.[4]

Patients frequently panic over abdominal pain and resort to self-medication, delaying appropriate medical evaluation.

This often results in missed early intervention, leading them to present to the emergency department later with more advanced or severe disease requiring urgent care.

Table 1 describes an engaging consult with the DeepSeek for Acute abdominal pain.

Table 1: Conversation with DeepSeek about acute abdominal pain.

Question	Response by DeepSeek
I have abdominal pain. What could be the cause?	Common causes by location: upper abdomen: Gastritis or acid reflux; peptic ulcer (burning pain linked to hunger/eating); gallstones or cholecystitis (sharp pain upper right, may radiate to back); pancreatitis (severe, persistent, often with nausea/vomiting); liver issues (hepatitis, fatty liver); heart problems such as a heart attack (pain may radiate to chest/arm). Lower abdomen: Appendicitis (starts near belly button, moves to lower right, worsens with movement); diverticulitis (left lower abdomen, common in older adults); irritable bowel syndrome (cramping, bloating, diarrhea/constipation); inflammatory bowel disease (Crohn's, ulcerative colitis); urinary tract infection or kidney stones (sharp pain, may radiate to back/groin); ovarian cysts or ectopic pregnancy (one-sided pain in women); menstrual cramps or endometriosis. Generalized pain: Food poisoning or gastroenteritis (nausea, vomiting, diarrhea); gas or bloating (mild cramping, relieved by-passing gas); constipation (relieved by bowel movement); stomach virus; intestinal obstruction (severe cramping, vomiting, no bowel movements).
Can I take aspirin or painkillers?	Avoid these painkillers: Aspirin and NSAIDs (ibuprofen, naproxen) can irritate the stomach, worsen ulcers or gastritis, and cause bleeding. They are dangerous if you have kidney or liver problems/suspected appendicitis, and should be avoided if vomiting or black/tarry stools occur. Strong opioids without medical supervision can hide symptoms of serious conditions like bowel obstruction or appendicitis. Safer short-term option: Acetaminophen (Tylenol) is generally safer if dosed correctly (max 3,000-4,000 mg/day), but avoid it if you have liver disease or drink heavily. Critical precautions: Do not self-medicate if pain is severe, worsening, or localized; if you have fever, vomiting, dizziness, or blood in stool/vomit; or if you suspect appendicitis, pancreatitis, or gallstones.

Continued.

Question	Response by DeepSeek
	Never delay seeking care by masking pain.
Should I use a heating pad or ice to relieve the pain?	Heating pad: Use for crampy, dull, or aching pain (menstrual cramps, gas, IBS, constipation) or muscle spasms. Apply low-to-medium heat for 15-20 minutes at a time with a cloth between pad and skin. Avoid if you suspect appendicitis, infection, or active inflammation (like diverticulitis). Ice: Use for sharp, localized, or inflammatory pain (after injury or suspected swelling). Wrap ice in a towel and apply 10-15 minutes per hour. Avoid if you have poor circulation or Raynaud's. Do not use either: If you have severe or persistent pain, fever, vomiting, a hard/tender abdomen, suspected appendicitis, or unexplained pain. Masking symptoms could delay diagnosis.
Can I eat or drink?	Avoid all food/drink immediately if: Pain is severe or worsening; you have vomiting (especially green/yellow or bloody); signs of obstruction (no gas/stool, bloating); suspected appendicitis, pancreatitis, or bowel obstruction; or high fever or a rigid/tender abdomen. Seek ER care. For mild pain (gas, indigestion, cramps): Drinks: Sip room-temperature water, clear broth, oral rehydration solutions, or peppermint/ginger tea. Avoid alcohol, coffee, soda, citrus juices, and dairy if intolerant. Foods: BRAT diet (bananas, rice, applesauce, toast), plain crackers, oatmeal, or boiled potatoes without butter/oil. Avoid fatty, fried, spicy, or acidic foods, raw veggies, beans, dairy, or heavy proteins. Eat small portions.
Should I go to ER?	Go to the ER immediately if you have sudden severe pain, pain with high fever, vomiting blood or coffee-ground material, black/tarry stools, inability to pass stool/gas with vomiting, or a hard, rigid abdomen. Seek care for signs of shock (pale skin, rapid heartbeat, dizziness) or if pregnant with pain. Also go if pain is in the lower right abdomen, you have liver disease/pancreatitis/gallbladder issues with pain flares, you are vomiting bile, can't keep fluids down, or pain worsens over 1-2 hours. Urgent care (or ER) is needed for moderate pain lasting 6-12 hours, pain plus mild fever/nausea/diarrhea, blood in stool/urine, known IBD/ulcers with a flare, or pain interrupting sleep. Mild crampy pain that improves and has no alarming signs can be monitored, but see a doctor if it lasts >24 hours.
Will I need surgery?	It depends entirely on the cause, which requires medical evaluation and tests. Often require emergency surgery: Appendicitis, bowel obstruction/perforation, symptomatic gallstones, ectopic pregnancy, perforated ulcer, severe diverticulitis, abdominal trauma. Sometimes require surgery: Hernias (if strangulated), elective gallbladder removal, chronic ulcers with bleeding/perforation, ovarian cysts/torsion, severe Crohn's complications. Rarely require surgery: Gas, mild food poisoning, viral gastroenteritis, IBS, mild gastritis or reflux, menstrual cramps, constipation (unless obstructed). Doctors decide based on physical exam, blood work, imaging, and observation. Do not wait to "see if you need surgery." Prompt evaluation is critical.
I also have vomiting. Can I take ondansetron?	Abdominal pain plus vomiting is a red flag. While ondansetron (Zofran) treats vomiting, it can be unsafe or mask serious conditions. Go to the ER immediately If: Vomiting blood, coffee-ground material, or bile; unable to keep down fluids; severe or localized pain; signs of dehydration; fever >101 °F; or a rigid abdomen. About ondansetron: May be safe short-term only if vomiting is mild and cause is known (e.g., stomach virus) and you've used it safely before. Usual dose: 4-8 mg every 8 hours. Unsafe if: Bowel obstruction, heart rhythm issues, electrolyte imbalances, or unexplained pain. Better approach: Get urgent evaluation, sip clear fluids, and avoid solid food until assessed. Do not self-treat unless a doctor has prescribed it after ruling out emergencies.
What blood investigations should I do?	Routine in ER/urgent care: Complete blood count (CBC) to detect infection or bleeding. electrolytes and renal function (BMP/CMP) for sodium, potassium, and kidney status. Liver and pancreatic enzymes (ALT/AST/bilirubin, amylase/lipase) for gallstones, hepatitis, pancreatitis. Inflammatory markers (CRP, ESR) for infection or IBD. Lactate to check for sepsis or bowel ischemia. Additional tests by suspected cause: Gallbladder (bilirubin, ALP, GGT); Appendicitis/Infection (CBC, CRP, procalcitonin); Kidney stones (urinalysis, calcium, uric acid); diabetic complications (glucose, ketones); Heart-related pain (troponin).
Do I need a CT scan?	A doctor decides, but abdominal pain with vomiting often needs one to rule out serious issues. Urgent CT indications: Severe/worsening or localized pain; vomiting bile/blood; inability to pass stool/gas; fever with high WBC; signs of perforation or ischemia; or history of abdominal surgery. CT can detect appendicitis, obstruction, perforation, diverticulitis, pancreatitis, kidney stones, or ischemic bowel. Doctors base the decision on physical exam, blood tests, and risk factors. Ultrasound may be tried first in pregnancy or for gallstones/kidney stones. Do not self-refer; seek ER care for assessment and possible imaging.
Could it be food poisoning, gas, appendicitis, or menstrual cycle related?	Serious causes needing ER: Appendicitis (pain starts near belly button then to lower right, worse with movement); bowel obstruction (crampy pain, no gas/stool, vomiting bile); ectopic pregnancy (sharp one-sided pelvic pain, missed period); pancreatitis (severe upper abdominal pain radiating to back). Common causes to monitor: Food poisoning (diarrhea, cramps, nausea), gas/bloating (relieved by-passing gas), menstrual cramps (dull lower abdominal pain with cycle). Key differentiators: Location (lower right=appendicitis; upper middle=pancreatitis/ulcer; pelvic=menstrual/ovarian; generalized= gas/food poisoning), pain movement (appendicitis migrates), vomiting type (green/yellow bile=obstruction), triggers (period vs. meals). Go to ER if pain localizes, vomiting bile or blood, fever >101 °F, inability to pass stool/gas, or pain wakes you from sleep. Mild cramps tied to a known cycle or simple gas that improves may be monitored, but worsening or >24 hours needs medical review.

According to a recent study, DeepSeek demonstrated passing performance on the gastroenterology board exams using American college of gastroenterology self-assessments, in contrast to the widely popular ChatGPT, which failed to do so.[5]

Based on our observations, DeepSeek provides exemplary responses with a high degree of medical accuracy, communicated in language that is easily understandable even to laypersons. It is particularly impressive that DeepSeek proactively engages users by asking relevant questions and guiding them to provide key elements of their medical history. Moreover, it offers realistic and practical advice, consistently emphasizing the importance of seeking emergency care when alarming symptoms arise and highlighting the risks associated with delaying treatment.

DeepSeek has the potential to assist individuals in gaining a preliminary understanding of the nature of their condition by interpreting symptoms and providing insights into relevant investigations and treatment recommendations. This, in turn, can enhance patient's comprehension of their clinical situation and facilitate more effective communication with healthcare providers in both emergency and outpatient settings.

Future research could explore the role of such LLMs in improving public health literacy. A potential integration of these models with authoritative medical databases like PubMed could be transformative-offering the public accurate, evidence-based information while simultaneously reducing the burden on healthcare professionals.

Declaration

The authors declare the use of AI as research tools in this study. The authors did not use any generative AI or AI-assisted technology for the writing or editing of this manuscript.

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