

Clinical Case: Patient and Doctor Perspective using Generative Artificial Intelligence

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Abstract:

Introduction: With the arrival of Generative Artificial Intelligence in university classrooms, a future with continuous challenges is perceived.

Objective: To analyse the results obtained by students of the Clinical Surgical I course when solving a clinical case using different tools of Generative Artificial Intelligence from the point of view of the doctor and the patient.

Materials and methods: Descriptive research, with a sample of 50 Surgical Clinic I students from a private university in Mar del Plata.

Results: The experience was developed in three stages. In the first stage, a clinical case of a patient with abdominal pain of 24 hours of evolution is presented. The students, in groups, select Generative Artificial Intelligence answer search engines to solve the case, formulate prompts requesting diagnostic impression, treatment of the presumptive diagnosis and consultation on symptoms. In the second stage, they select the main concepts and with the information obtained, they elaborate two conceptual networks from both points of view per group. A multimedia presentation is shared with the results and this generates an exchange of opinions. In the third stage, an online form is sent to consult situations in which the use of IAG would be significant for a doctor, they indicate differential diagnoses 100%, Treatment 80%, Recommendations 60% Anamnesis 40%, as to what Artificial Intelligence recognises about the patient's viewpoint 20% confusion, 50% motivate the patient to attend a consultation, 60% eliminate diagnostic doubts, 80% obtain more information.

Conclusions: Medical education has been presented with the challenge of thinking about how to take advantage of the potential of Generative Artificial Intelligence so that professionals in training have the tools to perform in future scenarios, being reflective in their use in the face of ethical dilemmas that may arise.

Keywords: Clinical case, Generative Artificial Intelligence, Doctor's view, Patient's view.

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Introduction

The study on nursing students indicates that the use of resources associated with technological advances favours motivation for learning and, together with problem solving, strengthens reasoning (Pérez-Perdomo, Zabalegui, 2023). After the COVID-19 pandemic, Donkin, Yule, Fyfe, (2023) point out the need for universities to propose hybrid models, also considering medical schools. Although they identify limitations in 'online case-based' learning, Troncoso Pantoja, Burdiles Fernández, Sotomayor Castro, (2018), highlight some strengths and weaknesses in implementing clinical cases in students during the course of a career. As Williams,

Gómez, Soto-Suazo (2022) point out, the selection of clinical cases as a strategy has allowed students to actively participate in their approach, analysis and reflection in order to be able to decide what steps to take. Times of announced changes are approaching, both in teaching and learning, in the face of a branch of Artificial Intelligence known as Generative Artificial Intelligence, one of the questions that arises is whether its arrival will have a great impact on education (Zapata-Ros, 2023). In the Generative Artificial Intelligence Guide, the authors propose a series of challenges comparing the answers obtained by different Artificial Intelligence assistants in the face of the prompts presented (Oyarzo, Usero, Bueno, 2024,). It is essential to consider the elements that should

not be missing in order to obtain the expected results from the Generative Artificial Intelligence that has been selected (Torres Molina, Blanco Pérez, 2023). The objective is to: Analyse the results obtained by students of the Clinical Surgical I course when solving a clinical case using different tools of Generative Artificial Intelligence from the point of view of the doctor and the patient.

Development

The activity is developed in a descriptive, transversal way, with a sample of 50 students of the Surgical Clinic I course of a Faculty of Medical Sciences of a privately managed University of Mar del Plata, Argentina. The proposal was developed in three stages in a face-to-face setting. Each of them is detailed below

Table 1 Sequence of activities developed

Stage 1	Stage 2	Stage 3
In the first stage, a clinical case is presented. Students are asked to divide into work groups and select one of the answer search engines using Generative Artificial Intelligence and solve the proposed activity	In the second stage, based on the results obtained, they prepare a report, select the main concepts and create a graphic organizer.	In the third stage, all the networks created are presented, comparing the results obtained according to the IAG tool used, an exchange of opinions takes place and finally a form is completed individually.

Stage 1:

In the first stage, a clinical case is presented of a patient with a consultation reason of abdominal pain. of 24 hours of evolution, Students are divided into groups and select Generative Artificial Intelligence answer finders to solve the case. They formulate prompts requesting diagnostic impression, and treatment of the presumptive diagnosis and consultation on symptoms.

Stage 2

In the second stage, they select the main concepts and with the information obtained, they elaborate two conceptual networks from both points of view per group. One is the representation of data obtained from the doctor's perspective and the other one the representation of data obtained from the patient perspective.

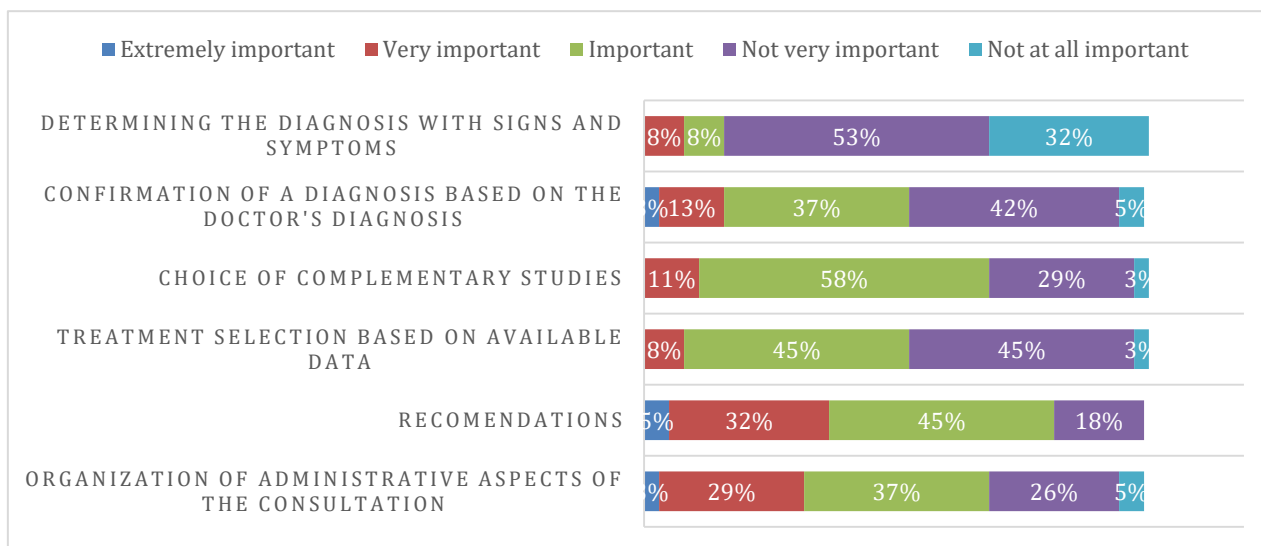
Stage 3

The concepts reflected in the networks are analyzed, obtaining the following results:

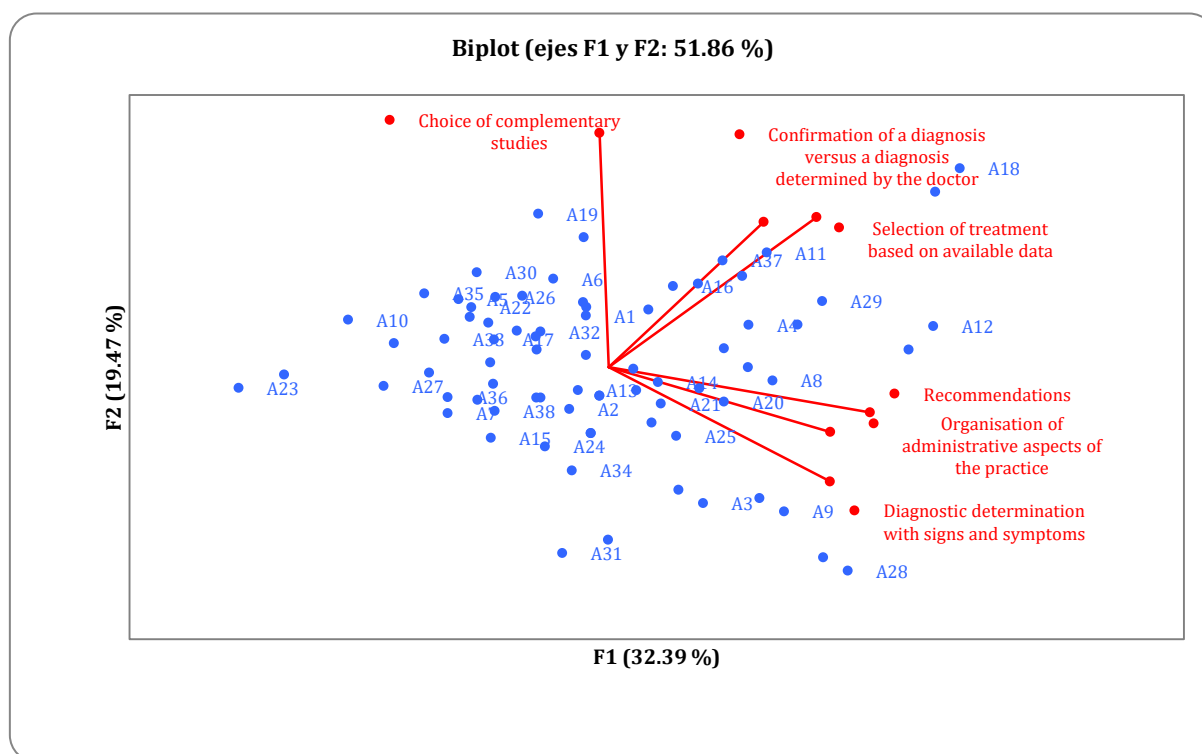
Table 2: Concepts reflected by the IAG from the perspective of the doctor and the patient

A Physician's View							
Anamnesis	Physical examination	Differential diagnoses	Complementary examinations	Treatment	Recommendations	Imaging Studies	Causes of pain
40%	60%	100%	40%	80%	60%	20%	20%
Patient's View							
Presence of pain	Symptom	Diagnosis	Medical evaluation	Treatment	Recommendations		
80%	80%	100%	40%	60%	60%		

The results are analyzed with a specialized statistical package

Figure 1 Degree of importance that a doctor gives to the use of Generative Artificial Intelligence according to aspects

A multimedia presentation with the results is shared and this generates an exchange of opinions.

Figure 2 Principal Component Analysis

Principal Component Analysis favours the reduction of information by looking for the first principal components to explain as much of the variability in the data as possible (Gurrea, 2000). In this figure an inertia of 51 is visualised, recalling that inertia indicates the 'total variance of the data is explained by a specific principal component'. This suggests that the first principal component is quite important for understanding the structure of the data and captures a significant amount of the variability present in the original data. In the third stage an online form is sent to consult situations in which the use of AGI would be meaningful for a doctor, they point out differential diagnoses 100%, Treatment 80%, Recommendations 60% Anamnesis 40%, as for what Artificial

Intelligence recognises about the patient's gaze 20% generates confusion, 50% motivates the patient to attend a consultation, 60% eliminates diagnostic doubts, 80% allows to obtain more information.

Conclusions

Medical Education has been presented with the challenge of thinking about how to take advantage of the potential of Generative Artificial Intelligence so that professionals in training have the tools to perform in future scenarios, being reflective in its use in the face of ethical dilemmas that may arise.

Bibliographical References

1. Donkin, R., Yule, H., & Fyfe, T. (2023). Online case-based learning in medical education: a scoping review. *BMC medical education*, 23(1), 564. <https://doi.org/10.1186/s12909-023-04520-w>
2. Gurrea, M. (2000). Principal component analysis. *e-Math project funded by the Secretary of State for Education and Universities (MECD)*.
3. Oyarzo, J., Usero, L., & Bueno, F. (2024, April). Guía Inteligencia Artificial Generativa (University of Alcalá, Spain, Ed.). Retrieved May 26, 2024, from <https://bit.ly/3xB5WsJ>
4. Pérez-Perdomo, A., & Zabalegui, A. (2023). Teaching Strategies for Developing Clinical Reasoning Skills in Nursing Students: A Systematic Review of Randomised Controlled Trials. *Healthcare (Basel, Switzerland)*, 12(1), 90. <https://doi.org/10.3390/healthcare12010090>
5. Torres Molina, K., and Blanco Pérez, I. (2023). Academic prompt architecture for the use of artificial intelligences (AI) in Areandina: challenges, experiences and obstacles. *Revista Investigaciones Andina*, 25(46). <https://doi.org/10.33132/01248146.2258>
6. Troncoso Pantoja, C., Burdiles Fernández, G., & Sotomayor Castro, M. (2018). El caso clínico como estrategia de formación académica y profesional en el área de salud. *Educ. med.(Ed. impr.)*, 221-222.
7. Williams, C., Gómez, G., & Soto-Suazo, M. (2022). Clinical Case-Based Learning (CCBL): an active methodology applicable to health science careers. *J. health med. sci.(Print)*, 207-214.
8. Zapata-Ros, M(2023)*Generative artificial intelligence and intelligent learning*. University of Murcia. Murcia. Spain