

“Acne in the Age of ChatGPT”: an artificial intelligence-generated and evidence-based continuing medical education distance course for Italian physicians

Luigi Naldi,^{1,2} Maria Rosa Valetto,³ Simone Cazzaniga,^{1,4} Sergio Cima,³ Silvia Emendi,³ Nicoletta Scarpa,³ Eugenio Santoro,⁵ Pietro Dri,³ Vincenzo Bettoli^{1,6}

¹Center of the Italian Group for Epidemiological Research in Dermatology, Bergamo, Italy; ²Dermatology Unit, Ospedale San Bortolo, Vicenza, Italy; ³Zadig Ltd Benefit Company, CME National Provider, Milan, Italy; ⁴Department of Dermatology, Inselspital University Hospital of Bern, Switzerland; ⁵Unit of Research in Digital Health and Digital Therapeutics, Department of Clinical Oncology, Mario Negri Institute for Pharmacological Research, Milan, Italy; ⁶Section of Dermatology and Infectious Diseases, Department of Medical Sciences, University of Ferrara, Italy

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SUPPLEMENTARY MATERIAL

Supplementary Table 1. Extract from the handbook.

When and how to start acne treatment

Acne is a common dermatological condition that can have significant implications on patients' quality of life, involving physical, psychological, and social aspects. The decision on when and how to start acne treatment depends on the severity of the disease, potential scarring, patient expectations and concerns, and concomitant risk factors.

Assessment of acne severity

The severity of acne can be classified as mild, moderate, or severe. The presence of comedones, papules, pustules, nodules, and scars [*their number and localization*] can guide the choice of treatment.

Mild acne

Characteristics: predominance of closed and open comedones [*<10*], with few papules and pustules [*<10*].

Treatment: [see also dedicated paragraph]

- Topical agents adapted for mild acne:
 - topical retinoids (e.g., tretinoin, adapalene): promote epidermal exfoliation, reducing [*the number and size of*] comedones
 - benzoyl peroxide: acts as an antibacterial and anti-inflammatory agent
 - [topical antibiotic (clindamycin, erythromycin): *acts as an antibacterial and anti-inflammatory agent. To contain the risk of developing bacterial resistance to antibiotics, it must be used in combination with benzoyl peroxide and/or topical retinoid*]
 - azelaic acid: has antibacterial and anti-inflammatory properties.

Moderate acne

Characteristics: mix of comedones [*10-20*] and numerous papules and pustules [*10-50, usually with a prevalence of the latter*].

Treatment: [see also dedicated paragraph]

- Topical agents as described above. ~~A combination of agents may be necessary~~ [*A combination of agents is necessary.*]
- Oral antibiotics (e.g., tetracyclines, ~~erythromycin~~ [*erythromycin is not recommended!*]): indicated in the presence of numerous inflammatory lesions. Treatment duration should be limited [*to 3 months*] to reduce the risk of [*development of*] bacterial resistance [*to the antibiotic used*].

Severe acne

Characteristics: [*open and closed comedones (>20), papules, pustules (>50)*], ~~numerous deep~~ nodules, cysts, and increased ~~potential~~ risk of scarring.

Treatment:

Oral isotretinoin: it is the most effective therapeutic agent for severe acne. It acts by reducing the size of the sebaceous glands, sebum production, proliferation of *Propionibacterium acnes* (today renamed *Cutibacterium acnes*), and inflammation.

- Monitoring: due to potential side effects [*not dose dependent*] (teratogenicity) [*and dose dependent (skin-mucosal dryness, dyslipidemia, etc.)*], [*personalization of dosage and*] regular [*clinical*] monitoring are essential.

Additional considerations

- Acne in women: if a hormonal component is suspected (~~e.g., adult acne, mandibular distribution~~ [*more frequently in adult female acne*]), hormonal therapies such as combined oral contraceptives or spironolactone may be considered [see also dedicated paragraph].
- Acne and scars: if there is a high risk of scarring, it is necessary to start an [*earlier and*] more aggressive treatment.

Approach and management of the patient with acne

Patient education

Inform patients about the importance of therapeutic adherence, potential side effects, and the expected time to treatment response. Avoiding lesion manipulation can prevent scarring.

Conclusion

The decision regarding acne treatment must be personalized, considering severity, age, sex, presence of scars, and patient concerns. A stepwise approach, adapting treatment to individual needs and monitoring response, offers the best opportunity for optimal therapeutic results and improved patient quality of life.

~~strikethrough text~~ amendment to ChatGPT text

[*text in italics within square brackets*] text added by the reviewer

Supplementary Table 2. Example of the clinical vignette.

Marco is 24 years old and works as a freelance programmer. He has always had skin problems since adolescence, but in the last two years the situation has worsened. On his face, back, and chest, large and painful “pimples” have appeared, some of which leave dark marks on the skin. He has tried various treatments, including oral antibiotics prescribed by his general practitioner, but the improvement was only temporary. After a few months, the lesions reappeared more aggressively than before.

Despite trying not to think about it, acne affects his social life. He avoids video calls with clients and often uses his jacket collar to cover his face. After reading online about isotretinoin, he decides to consult a dermatologist.

“Good morning, doctor,” he says as he enters the office. “I don’t know what to do anymore. I’ve taken antibiotics for months, the skin improved a little, then everything went back as before. I read about isotretinoin... could it be the right solution for me?”

The doctor carefully observes Marco’s face and notices the presence of inflamed pustules, deep nodules, and signs of scarring in formation. Then he asks him to remove his shirt to also evaluate the chest and back, where he finds similar lesions.

“Mr. Marco, your acne is a severe form and resistant to oral antibiotics. Isotretinoin is the most appropriate option in these cases, but before starting we need to discuss the benefits and possible side effects.”

What is the first-line treatment for severe acne that does not respond to oral antibiotics?

- a) topical retinoids in monotherapy
- b) oral isotretinoin (correct)
- c) long-term systemic corticosteroids
- d) chemical peeling

Marco nods: “Ok, so this treatment should work, right? But will it take a long time?”

The doctor calmly replies: “Isotretinoin therapy takes time, because the goal is to achieve a stable remission of the disease. For this reason, the duration of treatment varies in more complex cases. It is a path that requires patience and consistency.”

What is the average duration of isotretinoin treatment to achieve stable remission of severe acne?

- a) 1-2 months
- b) 3-4 months
- c) 6-12 months (correct)
- d) over 24 months

Marco leans forward, interested: “And are there any particular side effects? I heard that the skin gets very dry.”

The doctor nods: “Yes, dryness of the skin and mucous membranes is the most common effect, especially on the lips. *[However, it depends on the drug dose: the higher it is, the more it can cause severe mucocutaneous dryness]*. For this reason, you will need to moisturize your skin well and use a lip balm daily. Another important aspect concerns sun exposure.”

Marco raises an eyebrow: “So in summer I have to stay indoors?”

How should a patient undergoing oral isotretinoin treatment behave regarding sun exposure?

- a) there are no particular precautions to follow
- b) must completely avoid the sun for the entire duration of therapy
- c) can be exposed to the sun in moderation, using a high sun protection (correct)
- d) must be regularly exposed to improve the skin

Marco nods: “Alright, I’ll be careful. And are there any tests I need to do before starting?”

The doctor takes a prescription pad. “Yes, we need to check some blood parameters, because isotretinoin can affect them. During treatment, we will carry out periodic checks to make sure everything is under control.”

Which checks are recommended before and during oral isotretinoin treatment?

- a) no specific check-up
- b) only a dermatological check after three months of treatment
- c) blood tests to monitor lipids and liver function, in addition to regular dermatological evaluation (correct)
- d) an abdominal ultrasound every month

The doctor finishes writing and hands the prescription to Marco: “Once we get the test results, we will start therapy. I will see you regularly to evaluate treatment progress and manage any side effects.”

Marco nods, but before standing up he asks: “And what if everything comes back as before at the end of the treatment?”

The doctor reflects for a moment before answering: “Isotretinoin is the most effective treatment we have for severe acne and leads to lasting remission in most cases. If there is a relapse, we will evaluate what to do.” *[Therefore, the doctor explains to the patient that at the end of the isotretinoin cycle it will be necessary to start the relapse prevention and stabilization phase of the result obtained with topical retinoids, with or without benzoyl peroxide, for*

a duration of 6, 12 months, or longer depending on the situation].

What is the most appropriate strategy in case of relapse after a cycle of oral isotretinoin?

- a) start a new cycle of isotretinoin with personalized dosage (correct)
- b) stop all treatment and wait for spontaneous improvement
- c) switch to exclusively topical therapy
- d) use long-term oral antibiotics

Marco leaves the office with the feeling that he has finally found a concrete solution. He knows that the path will be long, but at least now he has a clear direction and a doctor who will follow him step by step.

While waiting for the bus, he is surprised to think that perhaps, in a few months, he will finally be able to look at himself in the mirror without discomfort

~~striktethrough-text~~ amendment to ChatGPT text

[text in italics within square brackets] text added by the reviewer

Supplementary Table 3. List of the 23 questions prompted to ChatGPT 4.0.

Questions
Q1 Can the use of cosmetics influence the appearance of acne?
Q2 Can diet influence the appearance and severity of acne?
Q3 When and how to start an acne treatment?
Q4 Is it always necessary to start an acne treatment?
Q5 In mild-to-moderate acne which treatment regimen to adopt?
Q6 In moderate-severe acne which treatment regimen to adopt?
Q7 Are there gender aspects to consider in managing acne? If yes, which ones?
Q8 Are there physical acne therapies? If so, how should they be included in the therapeutic program?
Q9 Does photodynamic therapy have an indication? If so, how should it be used (times and ways)?
Q10 Is exposure to blue light helpful?
Q11 How to deal with sun exposure in case of acne?
Q12 Is professional extraction of comedones useful?
Q13 What about the role of hormonal therapies?
Q14 What about the use of systemic and intralesional steroids?
Q15 Can psychological support be useful in patients with acne? If yes, in which cases?
Q16 How to evaluate the response to acne treatment?
Q17 How long should acne treatment be continued?
Q18 Are there reasons to propose long-term maintenance treatment once a satisfactory therapeutic response has been obtained?
Q19 What are the main side effects of topical acne treatments?
Q20 What are the main side effects of systemic acne treatments?
Q21 Are there permanent sequelae of acne? If yes, which ones? If yes, how to prevent them?
Q22 Is there a role for lasers in the management of acne and its outcomes?
Q23 Is there a role for peels in the management of acne and its outcomes?

Supplementary Table 4. Prompts used to generate the contents (handbook, vignettes, and questionnaire) of the CME course “Acne at the age of ChatGPT”.

Prompts
Handbook questionnaire “We need to create an evidence-based distance learning course for continuing medical education on acne for general practitioner. You must provide us with information that is of a high scientific standard, in a professional language appropriate for medical doctors. Avoid generic phrases and sentences written for a lay audience. Describe in 4000 characters: [Text of the question]” Vignette The attached file is an evidence-based distance learning course for continuing medical education on the management of acne, intended for physicians. Using the information from this file, you must write two stories (clinical vignettes) that depict realistic clinical situations commonly encountered in the management of acne. One story should focus on mild acne and one on severe acne. I will ask you to write them one at a time. The story should involve interactions between the patient and the physician responsible for treating the acne. The story must be structured as a narrative in the present tense, placing the characters in their real personal and, for the physician, professional lives. You should also include direct speech dialogues. For example: “Maria is a 13-year-old girl suffering from acne. Accompanied by her mother, she visits a dermatologist. ‘Good morning, doctor,’ she says as she enters the office, hoping to find a solution for the skin eruptions on her face that she is very embarrassed about.” The story must include 5 narrative sections, each followed by a multiple-choice question, and end with a brief conclusion. Each question must have 4 answers, only one of which is correct. The questions should focus on solving clinical practice problems that arise from the patient’s case and should reflect the most relevant information from the course. They must not be implausible or trivial, as they are intended for physicians. The questions must not contain negations (for example, I do not want questions like “Which of these treatment options is NOT recommended for a case of acne like Maria’s?”). The 4 answer choices must be similar in length and structure. The incorrect answers must all be plausible and not obviously wrong. You must indicate which is the correct answer. Answers such as “None of the above,” “All of the above,” or combinations like “a + b” are not allowed.

CME questionnaire

The attached file is an evidence-based distance learning course for continuing medical education on the management of acne, intended for physicians. Using the information from this file, you must write 30 questions, each with 4 answers, only one of which is correct. The questions must cover the most relevant information and address all the topics covered in the course. They should not be trivial, as they are intended for physicians.

The questions must not contain negations (for example, I do not want questions like “Which of these drugs is NOT used for mild acne?”).

The 4 answers should be similar in length and structure. The incorrect answers must all be plausible and not obviously wrong. Answers such as “None of the above,” “All of the above,” or combinations like “a + b” are not allowed.

Supplementary Table 5. Survey on participants' attitudes towards AI.

Part 1, administered before the course

Section 1: Knowledge and personal experience with generative artificial intelligence

	Yes	No	I have heard about it, but I am not clear about it
1.1 Do you know what generative artificial intelligence is (e.g., ChatGPT)?	353 (55.9%)	45 (7.1%)	234 (37%)

	Never	Rarely	Every month	Every week	Every day
1.2 Do you use generative artificial intelligence tools (e.g., ChatGPT)?	196 (31%)	244 (38.6%)	59 (9.3%)	69 (10.8%)	65 (10.3%)

1.3 In which situations do you use generative artificial intelligence tools (multiple answers possible) [question not asked to those who answered "never" to the previous question]		Rarely 1.3a	Every month 1.3b	Every week 1.3c	Every day 1.3d
Work	-	87 (35.6%)	42 (71.2%)	49 (72%)	54 (83%)
Study/Training	-	131 (53.7%)	41 (69.5%)	51 (75%)	46 (70.7%)
Free time	-	99 (40.5%)	33 (56%)	48 (70.5%)	48 (73.8%)
Other [free field]	-	15 (6.1%)	2 (3.3%)	4 (5.8%)	7 (10.7%)
If you have answered "other", please specify	-	• Personal interests • Scientific or generalist questions • Diagnostic issues • Helping other people • Bibliographic search • Translation	• Personal reasons • Scientific or generalist questions	• Information search • Images creation • Every day-life aspects	• Counseling • Diagnosis • General culture • Text revision

1.4 For what purposes have you used generative artificial intelligence in the medical field? (maximum 3 possible answers)	
Analysis and synthesis of documents	118 (18.7%)
Communication with the patient	28 (4.4%)
Information about diseases	263 (41.7%)
Information about medications	219 (34.7%)
Innovations in medicine	66 (10.5%)
Preparation of presentations	78 (12.4%)
Production of charts, images and tables	50 (7.9%)

Review of treatments	50 (7.9%)
Bibliographic search	124 (19.7%)
Search for specialized centers	30 (4.8%)
Writing scientific articles and literature reviews	34 (5.4%)
Writing protocols and guidelines	26 (4.1%)
Drafting reports	35 (5.5%)
Drafting clinical reports, discharge letters	24 (3.8%)
Diagnostic support	116 (18.4%)
Text translation	123 (19.5%)
Other (specify) [free field]	132 (20.9%)
If you have answered "other", please specify	• Treatment • Never used AI • Scientific or generalist questions • Compilation of surveys, tests, etc • Helping other people • Personal/difficult search • Bibliographic search • Clinical records • Guidelines • Educational purposes • Drug interaction

Section 2: Opinions on the use of generative artificial intelligence in medicine

	Strongly agree	Agree	I don't know	Disagree	Strongly disagree
2.1 Generative artificial intelligence is useful in the medical field	131 (20.7%)	339 (53.6%)	149 (23.6%)	8 (1.3%)	5 (0.8%)

2.2 What benefits do you think generative artificial intelligence can bring to medicine? (indicate a maximum of 2 answers, those you consider most important)	
Greater access to scientific information	379 (60%)
Improvement in the speed and accuracy of diagnoses	229 (36.2%)
Optimization of administrative processes	150 (23.7%)
Optimization of care processes	119 (18.8%)
Personalization of treatments for patients	84 (13.3%)
Reduction of medical errors	156 (24.7%)
No significant benefit	28 (4.4%)
Other (specify) [free field]	21 (3.3%)
If you have answered "other", please specify	• As I don't know the subject, I can't value the benefits • Studies • Understand that's useful, but not how can't take benefit • Information synthesis • Use and control of information • Guidelines developing

	Strongly agree	Agree	I don't know	Disagree	Strongly disagree
2.3 The use of generative artificial intelligence can be risky or problematic in	82 (13%)	272 (43%)	194 (30.7%)	79 (12.3%)	6 (1%)

the medical field.					
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2.4 What risks do you think generative artificial intelligence may pose in medicine? (indicate a maximum of 2 answers, those you consider most important)	
Difficulty in the doctor-patient relationship	202 (32%)
Diagnostic errors	225 (35.6%)
Treatment errors	166 (26.3%)
Biased, conflicting, and/or unverifiable information	183 (29%)
Loss of the physician's professional standing	136 (21.5%)
Privacy violation	55 (8,7%)
Replacement of the physician in the diagnostic-therapeutic process	248 (39.2%)
Other	18 (2.8%)
If you have answered "other", please specify	• Risk of using only AI, giving up professionals updating • Training biases • Excessive rely on AI, forgetting human and professional expertise • Less immediacy on the diagnosis

Section 3: Generative artificial intelligence in training

	Yes	No	I don't know
3.1 Have you ever attended training courses generated or supported by artificial intelligence?	79 (12.5%)	498 (78.8%)	55 (8.7%)

	Strongly agree	Agree	I don't know	Disagree	Strongly disagree
3.2 Artificial intelligence can be used to generate high-quality CME courses.	61 (9.7%)	282 (44.6%)	265 (41.9%)	17 (2.7%)	7 (1.1%)
3.3 It can be risky to delegate the autonomous production of CME courses to generative artificial intelligence.	92 (14.6%)	236 (37.3%)	239 (37.8%)	52 (8.2%)	13 (2.1%)

Part 2, administered at the end of the course

Section 1: General questions

	Strongly agree	Agree	I don't know	Disagree	Strongly disagree
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1.1 Now that you have completed this course, I believe that generative artificial intelligence can contribute to the production of high-quality training materials.	102 (19.1%)	325 (60.7%)	75 (14%)	29 (5.4%)	4 (0.7%)
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	The handbook	The vignettes	The CME knowledge questionnaire	No part of the course
1.2 Among the training materials of this course, you particularly appreciated the generative capabilities of artificial intelligence with regard to: (multiple answers possible).	239 (44.7%)	328 (61.3%)	155 (29%)	27 (5%)
1.3 Among the training materials of this course, you identified limitations or flaws in the generative capabilities of artificial intelligence with regard to: (multiple answers possible).	170 (31.8%)	80 (15%)	61 (11.4%)	248 (46.3%)

	Lower quality	Similar quality	Higher quality	I have never participated in courses on the SAEPE platform
1.4 Compared to other courses you have attended on the SAEPE platform, this course generated by artificial intelligence seems to be of	94 (17.6%)	311 (58.1%)	57 (10.7%)	73 (13.6%)

	Yes	No	I don't know
1.5 Do you consider it essential that the provider of a CME course declares whether artificial intelligence was used at any stage of production?	400 (74.8%)	63 (11.8%)	72 (13.4%)

Section 2: Questions about the course materials

On a scale from 1 to 5, how do you rate the handbook of this distance learning course in terms of	Poor	Sufficient	Fair	Good	Excellent
2.1 Clarity of presentation	11 (2.1%)	87 (16.2%)	86 (16.1%)	232 (43.4%)	119 (22.2%)
2.2 Completeness of	11 (2.1%)	75 (14%)	89 (16.6%)	247 (46.2%)	113 (21.1%)

content					
2.3 Organization and structure of content	15 (2.8%)	76 (14.2%)	79 (14.8%)	243 (45.4%)	122 (22.8%)
2.4 Reliability of content	7 (1.3%)	85 (15.9%)	76 (14.2%)	248 (46.4%)	119 (22.2%)
2.5 Up-to-dateness of content	4 (0.7%)	80 (15%)	65 (12.1%)	258 (48.2%)	128 (24%)

Section 3: Questions about the vignettes

On a scale from 1 to 5, how do you rate the vignettes of this distance learning course in terms of	Poor	Sufficient	Fair	Good	Excellent
3.1 Clarity	9 (1.7%)	67 (12.5%)	69 (12.9%)	241 (45%)	149 (27.9%)
3.2 Narrative quality and interest of the story	7 (1.3%)	64 (12%)	69 (12.9%)	244 (45.6%)	151 (28.2%)
3.3 Plausibility of the clinical situation	4 (0.7%)	58 (10.8%)	62 (11.6%)	243 (45.5%)	168 (31.4%)
3.4 Ability of the questions to explore crucial aspects in the management of acne	4 (0.7%)	70 (13.1%)	80 (15%)	242 (45.2%)	139 (26%)
3.5 Wording of the questions and answers	4 (0.7%)	72 (13.5%)	82 (15.3%)	235 (44%)	142 (26.5%)

Section 4: Questions about the CME knowledge questionnaire

On a scale from 1 to 5, how do you rate the questionnaire of this distance learning course in terms of	Poor	Sufficient	Fair	Good	Excellent
4.1 Clarity in the wording of the questions	5 (0.9%)	55 (10.3%)	75 (14%)	254 (47.5%)	146 (27.3%)
4.2 Clarity in the wording of the answers	6 (1.1%)	58 (10.8%)	77 (14.4%)	250 (46.7%)	144 (27%)
4.3 Ability of the questions to explore crucial aspects in the management of acne	4 (0.8%)	60 (11.2%)	79 (14.8%)	258 (48.2%)	134 (25%)
4.4 Plausibility of the answers	4 (0.8%)	66 (12.3%)	68 (12.7%)	257 (48%)	140 (26.2%)

Supplementary Table 6. Open-ended comments provided by the course participants.

Positive judgements	Comments and suggestions	Negative judgements
• An interesting novelty, which we inevitably have to get used to • Excellent • Valid • Good • Clear, interesting and updated • Clear • Good • Ok • Well done • Good • Interesting • Very good • Thank you for your work • Interesting • Interesting, quick and educational • Interesting to explore the potential of AI • Good, practical and brief • Quick and easy • No anomalies • Useful • Interesting to understand how the AI thinks: in my opinion some parts are too list-based • Great educational opportunity • Very useful and interesting process • Ok • Ok • Useful for knowledge • Must do course • Ok • Ok • Comprehensive and well done • Useful course in clinical practice • Good and easy • Very valid, excellent control and correction path from experienced doctors of the contents generated by the AI, which make it more reliable and truthful • Ok Ok • Ok • Sufficient • Ok • Great expectations • So interesting even considering the use of AI • Very interesting • Useful • Yes • Great course • Very interesting • Excellent approach to the problem of AI with respect to average IT literacy and the lack of truthfulness of info reported on the web • Excellent. I didn't know this system and I was positively impressed • Good, simple but effective. To be managed with AI, everything is acceptable • Very educational and useful • Very clear writing, clinically useful questions	• I think that, at least for now, AI needs to be carefully checked by a "true" doctor as it can sometimes be inaccurate • It seemed to me that the text produced by the IA was a draft that needed too many corrections, as it actually did. The most positive element consisted in schematizing the problem and therefore the dossier • Great initiative, it is correct to specify that the contents were created with GPT chat • Good, although a bit too focused on the pharmacological aspect • I started out of curiosity and was surprised. However, I think AI always needs supervision. • AI is not capable of teaching. Maybe also add the definition of comedo at the beginning? • The dossier provided for the course appears to be a draft with evident corrections.	• Improve the basic framework and define the pathogenetic aspects more precisely. Some points are a bit superficial; the synthesis is good, but sometimes excessive and paradoxically redundant. • Content not always clear and a little bit limited • The text of the dossier contains data repeated several times, and not always in agreement with each other.

Supplementary Table 8. Questions post-course, in total and by comparison groups.

		Strongly disagree N (%)	Disagree N (%)	I don't know N (%)	Agree N (%)	Strongly disagree N (%)	P*
1.1 Now that you have completed this course, I believe that generative artificial intelligence can contribute to the production of high-quality training materials	Total	4 (0.7%)	29 (5.4%)	75 (14.0%)	325 (60.7%)	102 (19.1%)	-
GenAI user	Naive	4 (1.1%)	24 (6.5%)	57 (15.5%)	236 (64.1%)	47 (12.8%)	<0.001
	Experienced	0 (0.0%)	5 (3.0%)	18 (10.8%)	89 (53.3%)	55 (32.9%)	
Perceived usefulness of GenAI	Sceptic/Neutral	2 (1.5%)	13 (9.7%)	41 (30.6%)	68 (50.7%)	10 (7.5%)	<0.001
	Enthusiast	2 (0.5%)	16 (4.0%)	34 (8.5%)	257 (64.1%)	92 (22.9%)	

GenAI: generative artificial intelligence

* Mann-Whitney U test

Supplementary Table 9. Questions about the course materials, in total and by group.

How do you rate the handbook of this distance learning course in terms of		Poor N (%)	Sufficient N (%)	Fair N (%)	Good N (%)	Excellent N (%)	P*
2.1 Clarity of presentation	Total	11 (2.1%)	87 (16.3%)	86 (16.1%)	232 (43.4%)	119 (22.2%)	-
GenAI user	Naive	10 (2.7%)	56 (15.2%)	62 (16.8%)	166 (45.1%)	74 (20.1%)	0.31
	Experienced	1 (0.6%)	31 (18.6%)	24 (14.4%)	66 (39.5%)	45 (26.9%)	
Perceived usefulness of GenAI	Sceptic/Neutral	7 (5.2%)	22 (16.4%)	31 (23.1%)	54 (40.3%)	20 (14.9%)	0.002
	Enthusiast	4 (1.0%)	65 (16.2%)	55 (13.7%)	178 (44.4%)	99 (24.7%)	
2.2 Completeness of content	Total	11 (2.1%)	75 (14.0%)	89 (16.6%)	247 (46.2%)	113 (21.1%)	-
GenAI user	Naive	8 (2.2%)	50 (13.6%)	64 (17.4%)	172 (46.7%)	74 (20.1%)	0.58
	Experienced	3 (1.8%)	25 (15.0%)	25 (15.0%)	75 (44.9%)	39 (23.4%)	
Perceived usefulness of GenAI	Sceptic/Neutral	3 (2.2%)	23 (17.2%)	33 (24.6%)	54 (40.3%)	21 (15.7%)	0.004
	Enthusiast	8 (2.0%)	52 (13.0%)	56 (14.0%)	193 (48.1%)	92 (22.9%)	
2.3 Organization and structure of content	Total	15 (2.8%)	76 (14.2%)	79 (14.8%)	243 (45.4%)	122 (22.8%)	-
GenAI user	Naive	12 (3.3%)	50 (13.6%)	60 (16.3%)	170 (46.2%)	76 (20.7%)	0.14
	Experienced	3 (1.8%)	26 (15.6%)	19 (11.4%)	73 (43.7%)	46 (27.5%)	
Perceived usefulness of GenAI	Sceptic/Neutral	6 (4.5%)	24 (17.9%)	25 (18.7%)	57 (42.5%)	22 (16.4%)	0.004
	Enthusiast	9 (2.2%)	52 (13.0%)	54 (13.5%)	186 (46.4%)	100 (24.9%)	
2.4 Reliability of content	Total	7 (1.3%)	85 (15.9%)	76 (14.2%)	248 (46.4%)	119 (22.2%)	-
GenAI user	Naive	6 (1.6%)	58 (15.8%)	49 (13.3%)	180 (48.9%)	75 (20.4%)	0.54
	Experienced	1 (0.6%)	27 (16.2%)	27 (16.2%)	68 (40.7%)	44 (26.3%)	
Perceived usefulness of GenAI	Sceptic/Neutral	2 (1.5%)	27 (20.1%)	23 (17.2%)	62 (46.3%)	20 (14.9%)	0.007
	Enthusiast	5 (1.2%)	58 (14.5%)	53 (13.2%)	186 (46.4%)	99 (24.7%)	
2.5 Up-to-datedness of content	Total	4 (0.7%)	80 (15.0%)	65 (12.1%)	258 (48.2%)	128 (23.9%)	-
GenAI user	Naive	3 (0.8%)	53 (14.4%)	44 (12.0%)	187 (50.8%)	81 (22.0%)	0.59
	Experienced	1 (0.6%)	27 (16.2%)	21 (12.6%)	71 (42.5%)	47 (28.1%)	
Perceived usefulness of GenAI	Sceptic/Neutral	2 (1.5%)	23 (17.2%)	19 (14.2%)	68 (50.7%)	22 (16.4%)	0.02
	Enthusiast	2 (0.5%)	57 (14.2%)	46 (11.5%)	190 (47.4%)	106 (26.4%)	

How do you rate the vignettes of this distance learning course in terms of		Poor N (%)	Sufficient N (%)	Fair N (%)	Good N (%)	Excellent N (%)	P*
3.1 Clarity	Total	9 (1.7%)	67 (12.5%)	69 (12.9%)	241 (45.0%)	149 (27.9%)	-
GenAI user	Naive	7 (1.9%)	45 (12.2%)	54 (14.7%)	175 (47.6%)	87 (23.6%)	0.01
	Experienced	2 (1.2%)	22 (13.2%)	15 (9.0%)	66 (39.5%)	62 (37.1%)	
Perceived usefulness of GenAI	Sceptic/Neutral	6 (4.5%)	20 (14.9%)	22 (16.4%)	62 (46.3%)	24 (17.9%)	<0.001
	Enthusiast	3 (0.7%)	47 (11.7%)	47 (11.7%)	179 (44.6%)	125 (31.2%)	
3.2 Narrative quality and interest of the story	Total	7 (1.3%)	64 (12.0%)	69 (12.9%)	244 (45.6%)	151 (28.2%)	-
GenAI user	Naive	6 (1.6%)	42 (11.4%)	53 (14.4%)	180 (48.9%)	87 (23.6%)	0.009
	Experienced	1 (0.6%)	22 (13.2%)	16 (9.6%)	64 (38.3%)	64 (38.3%)	
Perceived usefulness of GenAI	Sceptic/Neutral	5 (3.7%)	17 (12.7%)	23 (17.2%)	63 (47.0%)	26 (19.4%)	0.003
	Enthusiast	2 (0.5%)	47 (11.7%)	46 (11.5%)	181 (45.1%)	125 (31.2%)	
3.3 Plausibility of the clinical situation	Total	4 (0.7%)	58 (10.8%)	62 (11.6%)	243 (45.4%)	168 (31.4%)	-
GenAI user	Naive	2 (0.5%)	40 (10.9%)	47 (12.8%)	180 (48.9%)	99 (26.9%)	0.01
	Experienced	2 (1.2%)	18 (10.8%)	15 (9.0%)	63 (37.7%)	69 (41.3%)	
Perceived usefulness of GenAI	Sceptic/Neutral	2 (1.5%)	19 (14.2%)	18 (13.4%)	64 (47.8%)	31 (23.1%)	0.008
	Enthusiast	2 (0.5%)	39 (9.7%)	44 (11.0%)	179 (44.6%)	137 (34.2%)	
3.4 Ability of the questions to explore crucial aspects in the management of acne	Total	4 (0.7%)	70 (13.1%)	80 (15.0%)	242 (45.2%)	139 (26.0%)	-
GenAI user	Naive	2 (0.5%)	49 (13.3%)	63 (17.1%)	172 (46.7%)	82 (22.3%)	0.01
	Experienced	2 (1.2%)	21 (12.6%)	17 (10.2%)	70 (41.9%)	57 (34.1%)	
Perceived usefulness of GenAI	Sceptic/Neutral	2 (1.5%)	20 (14.9%)	30 (22.4%)	57 (42.5%)	25 (18.7%)	0.003
	Enthusiast	2 (0.5%)	50 (12.5%)	50 (12.5%)	185 (46.1%)	114 (28.4%)	
3.5 Wording of the questions and answers	Total	4 (0.7%)	72 (13.5%)	82 (15.3%)	235 (43.9%)	142 (26.5%)	-
GenAI user	Naive	3 (0.8%)	47 (12.8%)	70 (19.0%)	165 (44.8%)	83 (22.6%)	0.005
	Experienced	1 (0.6%)	25 (15.0%)	12 (7.2%)	70 (41.9%)	59 (35.3%)	
Perceived usefulness of GenAI	Sceptic/Neutral	3 (2.2%)	17 (12.7%)	29 (21.6%)	60 (44.8%)	25 (18.7%)	0.01
	Enthusiast	1 (0.2%)	55 (13.7%)	53 (13.2%)	175 (43.6%)	117 (29.2%)	

How do you rate the questionnaire of this distance learning course in terms of		Poor N (%)	Sufficient N (%)	Fair N (%)	Good N (%)	Excellent N (%)	P*
4.1 Clarity in the wording of the questions	Total	5 (0.9%)	55 (10.3%)	75 (14.0%)	254 (47.5%)	146 (27.3%)	-
GenAI user	Naive	5 (1.4%)	37 (10.1%)	53 (14.4%)	181 (49.2%)	92 (25.0%)	0.17
	Experienced	0 (0.0%)	18 (10.8%)	22 (13.2%)	73 (43.7%)	54 (32.3%)	
Perceived usefulness of GenAI	Sceptic/Neutral	4 (3.0%)	15 (11.2%)	25 (18.7%)	62 (46.3%)	28 (20.9%)	0.01
	Enthusiast	1 (0.2%)	40 (10.0%)	50 (12.5%)	192 (47.9%)	118 (29.4%)	
4.2 Clarity in the wording of the answers	Total	6 (1.1%)	58 (10.8%)	77 (14.4%)	250 (46.7%)	144 (26.9%)	-
GenAI user	Naive	6 (1.6%)	43 (11.7%)	54 (14.7%)	179 (48.6%)	86 (23.4%)	0.01
	Experienced	0 (0.0%)	15 (9.0%)	23 (13.8%)	71 (42.5%)	58 (34.7%)	
Perceived usefulness of GenAI	Sceptic/Neutral	4 (3.0%)	17 (12.7%)	23 (17.2%)	65 (48.5%)	25 (18.7%)	0.006
	Enthusiast	2 (0.5%)	41 (10.2%)	54 (13.5%)	185 (46.1%)	119 (29.7%)	
4.3 Ability of the questions to explore crucial aspects in the management of acne	Total	4 (0.7%)	60 (11.2%)	79 (14.8%)	258 (48.2%)	134 (25.0%)	-
GenAI user	Naive	4 (1.1%)	42 (11.4%)	59 (16.0%)	182 (49.5%)	81 (22.0%)	0.02
	Experienced	0 (0.0%)	18 (10.8%)	20 (12.0%)	76 (45.5%)	53 (31.7%)	
Perceived usefulness of GenAI	Sceptic/Neutral	3 (2.2%)	17 (12.7%)	30 (22.4%)	60 (44.8%)	24 (17.9%)	0.001
	Enthusiast	1 (0.2%)	43 (10.7%)	49 (12.2%)	198 (49.4%)	110 (27.4%)	
4.4 Plausibility of the answers	Total	4 (0.7%)	66 (12.3%)	68 (12.7%)	257 (48.0%)	140 (26.2%)	-
GenAI user	Naive	3 (0.8%)	47 (12.8%)	50 (13.6%)	183 (49.7%)	85 (23.1%)	0.04
	Experienced	1 (0.6%)	19 (11.4%)	18 (10.8%)	74 (44.3%)	55 (32.9%)	
Perceived usefulness of GenAI	Sceptic/Neutral	3 (2.2%)	20 (14.9%)	21 (15.7%)	63 (47.0%)	27 (20.1%)	0.01
	Enthusiast	1 (0.2%)	46 (11.5%)	47 (11.7%)	194 (48.4%)	113 (28.2%)	

GenAI: generative artificial intelligence

* Mann-Whitney U test

Supplementary Figure 1. Questions about the course materials, in total and by group. Statistically significant differences are shown as * for $p < 0.05$, ** for $p < 0.01$ and *** for $p < 0.001$.

Panel A. How do you rate the handbook of this distance learning course in terms of Clarity of presentation (Q2.1), Completeness of content (Q2.2), Organization and structure of content (Q2.3), Reliability of content (Q2.4), Up-to-datedness of content (Q2.5).

Panel B. How do you rate the vignettes of this distance learning course in terms of Clarity (Q3.1), Narrative quality and interest of the story (Q3.2), Plausibility of the clinical situation (Q3.3), Ability of the questions to explore crucial aspects in the management of acne (Q3.4), Wording of the questions and answers (Q3.5)

Panel C. How do you rate the questionnaire of this distance learning course in terms of Clarity in the wording of the questions (Q4.1), Clarity in the wording of the answers (Q4.2),

Ability of the questions to explore crucial aspects in the management of acne (Q4.3), Plausibility of the answers (Q4.4).

