PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	Oncologic big data platform for promoting digital competencies and professionalism in Chinese medical students: a cross-section study
AUTHORS	Liu, Jiahao; Jiao, Xiaofei; Zeng, Shaoqing; Li, Huayi; Jin, Ping; Chi, Jianhua; Liu, Xingyu; Yu, Yang; Ma, Guanchen; Zhao, Yingjun; Li, Ming; Peng, Zikun; Huo, Yabing; Gao, Qing-Lei

VERSION 1 – REVIEW

REVIEWER	Herrmann-Werner, Anne University Hospital Tuebingen, Department for Psychsomatic Medicine and Psychotherapy
REVIEW RETURNED	16-Mar-2022

GENERAL COMMENTS	Thank you for the opportunity to review the manuscript on a very important issue namely the improvement of digital competencies in medical education. In general, the manuscript is interesting. In the following, I will give numbered statements on the “no” answers in the review checklist 1. It is not entirely clear, what the study objective and research question are. It would be helpful to have them explicitly stated. 2. Within the abstract, it does not become clear (enough) what the authors mean with “professionalism”. In comparison to the digital competencies, where people have a fairly overlapping understanding of what it means, “professionalism” is a very broad term. As it is one of the main results and half of the conclusions within the abstract, it should be further clarified. 3. Partially. Again, it is completely fine to measure knowledge prae/post with only a workshop in between (strictly speaking this makes it a longitudinal study not cross-sectional as mentioned in title, abstract and methods). With attitudes and professionalism, it is a bit trickier and probably a qualitative approach to this dimension would have been more insightful and appropriate. But for an overall idea it is fine the way it is. 6. As in the abstract, the outcomes do not become entirely clear - particularly in connection with the study content (how is a 2-hour workshop supposed to truly change professionalism?). 11. As with the abstracts, the authors seem to derive conclusions I can’t re-enact. They are talking about expertise in professionalism and an improvement in doctor-patient communication both of which

	haven't (and probably can't with this study design) been measured explicitly. 12. Although having mentioned a few limitations to their study, I still think the main issues are not in the paper yet. It should also be about methodology used and what it can capture, about the intervention being too short to fundamentally change attitudes (on the other hand long enough that one automatically expects participants to score higher afterwards), etc. 15. Finally, it may be because of me not being a native myself but sometimes the English seems a little clumsy and the manuscript may benefit from further language editing. As side notes: - Is the limitation mentioned in the "strengths and limitations of this study" section (i.e. limited sample size) really the most important one that should be highlighted given the other limitations? - In the workshop design, the authors are talking about "Dr. Zeng's speech" and "Prof. Gao's lecture" – it seems to be a little unusual to be that personal - In data collection, the authors introduce the P-MEX as one instrument. Here, it would be helpful to have the corresponding reference and get an idea on characteristic values (like reliability, validity, etc.) - Also, the attitude scale is not entirely described. How did these questions emerge? Was this based on an existing instrument or derived from literature? Then it needs a reference. Was it self-creation? Then it should be mentioned how the scale was tested (e.g. pilot or via thinking-aloud method or the like) - why do tables 2-4 only show percentages when the underlying scale was a 4-point Likert? - In the professionalism section, ¼ of the participants seem to consider data protection as not important. This is alarming and should be discussed more thoroughly in the discussion Thanks again for the opportunity to review this paper.

REVIEWER	Fakhradiyev , Ildar Asfendiyarov Kazakh National Medical University
REVIEW RETURNED	13-Jun-2022

GENERAL COMMENTS	The interesting, well written manusript. It would be nice to add relevance and similar studies to the background. **1 Title.** The title reflects the main subject of the manuscript **2 Abstract.** The abstract reflects the manuscript **3 Key words.** The key words reflects the focus of the manuscript **4 Background.** The manuscript adequately describes the backgrou nd, present status and significance of the study. **5 Methods.** The manuscript precisely describes all methods in adequate detail. **6 Results.** The research objectives were<="" span="" style="font-family: Verdana; color: rgb(60, 60, 60); background-color: rgb(255,

	255, 255);">achieved. **7 Discussion.** The discussion section is well written. **8 Illustrations and tables.** All tables is in good quality and appropri ately illustrative of the manuscript contents. **9 Biostatistics.** The manuscript statistics is well written. **10 Units/span>. All units of measurement are given in standart way.** **11 References. The manuscript contains the latest, relevant sources. No self-citations found, no inappropriate literature sources.** **12 Quality of manuscript organization and presentation. The ma nuscript well, concisely and coherently organized and presente d. Great style, language and presentation.** **13 Research methods and reporting. The authors prepared the manuscript according to the appropriate research methods and reporting.**

VERSION 1 – AUTHOR RESPONSE

Response to Reviewer #1:
Prof. Anne Herrmann-Werner, University Hospital Tuebingen
Comments to the Author:
Thank you for the opportunity to review the manuscript on a very important issue namely the improvement of digital competencies in medical education.
In general, the manuscript is interesting.

Response:
Dear Prof. Anne Herrmann-Werner,
Thank you for reviewing our article. We are lucky to have you as our reviewer. Your broad knowledge of the relevant research helps us make the manuscript meticulous. Your comments are insightful, and we are glad to revise our manuscript according to your advice. Meanwhile, as clinicians, your comments inspire us greatly in our exploration of improving Chinese medical education.
In this article, we try to depict two main objectives. The first is to measure the students' acceptance of medical Big-Data since electronic medical records largely reshape today's medical system. The second aim is to assess their "professionalism" (defined by self-measured P-MEX) in the era of digital medicine since digital medical data could be both a challenge and an opportunity for medical students. Meanwhile, based on the first national-wide multi-function gynecologic oncology medical big data platform in China, the National Union of Real-World Gynecologic Oncology Research & Patient Management Platform (NUWA platform), we try to explore methods to further students' understanding of medical Big-Data and improve their professionalism by conducting this workshop and collecting the information accordingly.
Although we try to give a better depiction of the Chinese medical students in the era of big data, as you have pointed out, this study has many unavoidable defects. For example, the measurement of "professionalism" is far from precise, the workshop was too short to make fundamental changes in the attitudes and expertise, and most importantly, the conclusion should be interpreted with caution because of the methodologic limitations. In the revised manuscript, we have emphasized these points in the discussion part. These suggestions are precious for us since they have made our essay more logical and reliable.
Thank you again for your kind suggestions!

In the following, I will give numbered statements on the “no” answers in the review checklist
1. It is not entirely clear, what the study objective and research question are. It would be helpful to have them explicitly stated.
Response: Thank you for your comments. In this article, we try to depict two main objectives. The first is to figure out students' understanding of medical Big-Data. The second aim is to assess their "professionalism" (defined by self-measured P-MEX). Meanwhile, based on the NUWA platform, we try to further students' knowledge of medical Big-Data and improve their professionalism by conducting this workshop.
By your reminder, we have realized our objectives are not well-demonstrated. We thus added "In this study, we aimed at depicting the cognition of medical big data and professionalism in the era of big data among Chinese medical students. What's more, we conducted a workshop for Chinese clinical and pre-clinical students to further their knowledge of medical big data and to improve their professionalism, based on the National Union of Real-World Gynecologic Oncology Research & Patient Management Platform (NUWA platform), which is the first national-wide multi-function gynecologic oncology medical big data platform in China." at the end of the Introduction on line 95-101, page 4-5.
Thank you again for your suggestions.

2. Within the abstract, it does not become clear (enough) what the authors mean with “professionalism”. In comparison to the digital competencies, where people have a fairly overlapping understanding of what it means, “professionalism” is a very broad term. As it is one of the main results and half of the conclusions within the abstract, it should be further clarified.
Response: Thank you for your suggestions. The definition of “professionalism” is indeed critical in this study. As you have mentioned, “professionalism” is a very broad term. According to our lecture review, “medical professionalism” should reflect in the attitudes and behaviors directly related to clinical practice but without unified definition. Epstein RM et al. proposed the definition of professional competence as knowing how to use communication, knowledge, technical skills, clinical reasoning, emotions, values, and reflection in daily practice.1 And Cain J et al. have summarized professionalism as attributes including altruism, respect, honesty, and so on.2 In this study, we mainly used a Professionalism Mini-Evaluation Exercise (P-MEX) instrument created by Cruess R et al. in 2006 to measure professionalism.3 The P-MEX was developed using the mini-Clinical Examination Exercise (mini-CEX) format which is primarily used to assess the clinical skills of residents of internal medicine.4 P-MEX is a feasible and widely used format for evaluating professionalism in clerkship training, which consists of 24 items representing four skill categories: doctor–patient relationship skills, reflective skills, time management, and interprofessional relationship skills.4,5 The reliability and validity of P-MEX have been confirmed in both Eastern and Western cultural backgrounds.6-8
We are really sorry for not clarifying the definition of “professionalism” in the Abstract. According to your suggestions, we have added: “We have measured the four skill categories: doctor–patient relationship skills, reflective skills, time management, and interprofessional relationship skills using the P-MEX as a reflection for professionalism.” in Abstract (line 39-42, page 2). And we also added “There is no precise definition of medical professionalism, which is reflected in the attitudes and behaviors directly related to clinical practice. Epstein RM et al. proposed the definition of professional competence as wisely using communication, knowledge, technical skills, clinical reasoning, emotions, values, and reflection in daily practice.1 And Cain J et al. have summarized professionalism as attributes including altruism, respect, honesty, and so on.2 ” in the Introduction on line 84-90, page 4.
In addition, we explained how to assess the professionalism as shown in the Data collection of Method on line 146-151, page 6, “The P-MEX is developed from the mini-Clinical Examination Exercise (mini-CEX) format by Cruess R et al. in 2006 to evaluate professionalism in clinical training.3 It consists of 24 items representing four skill categories: doctor–patient relationship skills, reflective skills, time management, and interprofessional relationship skills skills.4,5 And the reliability and validity of P-MEX have been confirmed in both Eastern and Western cultural backgrounds.6-8 ”

3. Partially. Again, it is completely fine to measure knowledge prae/post with only a workshop in between (strictly speaking this makes it a longitudinal study not cross-sectional as mentioned in title, abstract and methods). With attitudes and professionalism, it is a bit trickier and probably a qualitative approach to this dimension would have been more insightful and appropriate. But for an overall idea it is fine the way it is.
Response: Thank you for your suggestions. We have changed "a cross-sectional study" to "a

longitudinal study" in this article.
Meanwhile, we totally agree that a qualitative approach to assess attitudes and professionalism would have been more precise and appropriate. However, the survey is de-identified, so we are not able to contact the participants for more information. Regardless, we totally agree that this point is crucial, and we are more than glad to add it to the limitations as: "As for the measurement of attitudes and professionalism, a qualitative approach would have been more appropriate and should be considered in the future." at the end of Discussion on line 340-341, page 15.
Thank you again for your comments.

6. As in the abstract, the outcomes do not become entirely clear - particularly in connection with the study content (how is a 2-hour workshop supposed to truly change professionalism?).
Response: Thank you for your suggestions. By your reminder, we have realized that the conclusion may be exaggerated and cannotreflect our study well. After all, our workshop is only a short-term exploration aiming to find ways to improve students' knowledge about medical big data and professionalism. So, we have changed the conclusion to "Chinese medical students have primitive acquaintance and positive attitudes toward big data technologies. The NUWA platform-based workshop may potentially promote their understanding of big data and enhance professionalism, according to the self-measured P-MEX scale." in the Conclusion of the Abstract (line 52-55, page 2-3).

11. As with the abstracts, the authors seem to derive conclusions I can't re-enact. They are talking about expertise in professionalism and an improvement in doctor-patient communication both of which haven't (and probably can't with this study design) been measured explicitly.
Response: Thank you for your suggestions. We totally agree with you that professionalism should be measured in a more precise way. It is also what we are trying to do next. After the workshop, we started a long-term course about digital competence development based on our NUWA platform. The Chinese Medical Association and Huazhong University of Science and Technology funded the project. In that course, we will measure professionalism by face-to-face evaluation of senior doctors and standardized patients. Thank you again for your reminder.
In this study, only P-MEX was used to get a preliminary evaluation of students. As we have mentioned before, doctor–patient communication is one of the four skill categories evaluate by the P-MEX. However, we are fully aware that this evaluation is preliminary. Hence, we agree that it would be appropriate to change the conclusion to "Chinese medical students have primitive acquaintance and positive attitudes toward big data technologies. The NUWA platform-based workshop may potentially promote their understanding of big data and enhance professionalism, according to the self-measured P-MEX scale." in the Abstract (line 52-55, page 2-3). We also add this point to the limitations (line 340-341, page 15)"As for the measurement of attitudes and professionalism, a qualitative approach would have been more appropriate and should be considered in the future." to give the readers a clear vision of the result interpretation.

12. Although having mentioned a few limitations to their study, I still think the main issues are not in the paper yet. It should also be about methodology used and what it can capture, about the intervention being too short to fundamentally change attitudes (on the other hand long enough that one automatically expects participants to score higher afterwards), etc.
Response: Thank you for your comments. Your suggestions are really insightful. By your advice, we have now realized that the biggest problem in our study is the methodology and the conclusion we draw, so we have changed the limitation part to "As for the measurement of attitudes and professionalism, a qualitative approach would have been more appropriate and should be considered in the future. Meanwhile, this workshop is too short to produce fundamental improvements in students' attitudes and professionalism. In the future, more long-term studies are wanted to draw a clear conclusion." to avoid misinterpretation of our study (line 340-344, page 15).
Thank you again for the helpful advice!

15. Finally, it may be because of me not being a native myself but sometimes the English seems a little clumsy and the manuscript may benefit from further language editing.
Response: Thank you for your suggestions. We double-checked the grammar and sent this manuscript to Elsevier's academic language editing service. The proof for the language editing service can be found in the attachment. Thank you again for your kind reminder.

As side notes:
-Is the limitation mentioned in the “strengths and limitations of this study” section (i.e. limited sample size) really the most important one that should be highlighted given the other limitations?
Response: Thank you for your comments. We totally agree with your summary of the limitation of our study. By your advice, we have now realized that the biggest problem in our research is the methodology and the conclusion, which may lead to an over-interpretation of our study. So, we have rewritten the limitation part in Discussion (line 340-344, page 15) "As for the measurement of attitudes and professionalism, a qualitative approach would have been more appropriate and should be considered in the future. Meanwhile, this workshop is too short to produce fundamental improvements in students' attitudes and professionalism. In the future, more long-term studies were wanted to draw a clear conclusion."
Thank you again for the helpful advice!

-In the workshop design, the authors are talking about “Dr. Zeng’s speech” and “Prof. Gao’s lecture” – it seems to be a little unusual to be that personal
Response: Thank you for your comments. We have replaced “Dr. Zeng’s speech” and “Prof. Gao’s lecture” by “lectures given by the senior doctors” (line 121, page 5).

-In data collection, the authors introduce the P-MEX as one instrument. Here, it would be helpful to have the corresponding reference and get an idea on characteristic values (like reliability, validity, etc.)
Response: Thank you for your comments. We are sorry for not describing this instrument clearly. Professionalism Mini-Evaluation Exercise (P-MEX) is designed by Cruess R et al. in 2006.3 The P-MEX is developed based on the mini-Clinical Examination Exercise (mini-CEX), which is created by the American Board of Internal Medicine to assess the clinical skills of residents. The P-MEX is widely used to measure professionalism of medical students and its reliability and validity have been confirmed in different countries.6-8
We are really sorry for not clarifying its reference and characteristics. According to your suggestions, we have added: “We have measured the four skill categories: doctor–patient relationship skills, reflective skills, time management, and interprofessional relationship skills using the P-MEX as a reflection for professionalism.” in the Abstract (line 39-42, page 2) and “The P-MEX is developed from the mini-Clinical Examination Exercise (mini-CEX) format by Cruess R et al. in 2006 to evaluate professionalism in clinical training.3 It consists of 24 items representing four skill categories: doctor–patient relationship skills, reflective skills, time management, and interprofessional relationship skills skills.4,5 And the reliability and validity of P-MEX have been confirmed in both Eastern and Western cultural backgrounds.6-8” in the Data collection of Method on line 146-151, page 6.

-Also, the attitude scale is not entirely described. How did these questions emerge? Was this based on an existing instrument or derived from literature? Then it needs a reference. Was it self-creation? Then it should be mentioned how the scale was tested (e.g. pilot or via thinking-aloud method or the like)
Response: Thank you for your comments. This scale is self-creation based on the consideration of measuring participants' pedagogic evaluation, acceptance, and expectation of big data platforms. The design of this attitude scale is similar to that commonly used in the previous studies,9 and all questions were agreed by the senior members of this study. We have added a statement about this scale as "The attitude scale is a self-created scale focused on measuring participants' pedagogic evaluation, acceptance and expectation of the big data platform. It consisted of 8 questions: (i) Big data platform could assist future medical education, (ii) Big data platform could assist future medical research, (iii)Big data platform could assist future clinical practice, (iv) I am willing to learn how to use big data platform, (v) I am willing to use big data platform in the future, (vi) I am willing to recommend big data platform to my colleagues, (vii) Big data platform could benefit my career, and (viii) Big data platform could benefit all medical careers." on line 151-159, page 6-7 in the Data collection of Method.

-why do tables 2-4 only show percentages when the underlying scale was a 4-point Likert?
Response: Thank you for your comments. We have added the mean and SD of each question instead of percentages to all the Likert scale tables.
Table 3. Participants ‘answers to the workshop satisfaction survey
Not at all

(n, %) No
(n, %) Yes
(n, %) Yes, extremely
(n, %) Mean SD
Overall, are you satisfied with this course 7, 2.6% 5, 1.8% 57, 20.8% 205, 74.8% 3.68 0.640
Did you think the course are informative? 10, 3.6% 15, 5.5% 101, 36.9% 148, 54% 3.41 0.757
Did you think the duration of this courses is too long 121, 44.2% 118, 43.1% 28, 10.2% 7, 2.6% 2.07 0.954
Was the course understandable for you 11, 4% 8, 2.9% 121, 44.2% 134, 48.9% 3.38 0.733
Would you recommend these courses to other students? 6, 2.2% 11, 4% 144, 52.6% 113, 41.2% 3.33 0.659
Are you willing to take part in similar courses in the future? 6, 2.2% 14, 5.1% 35, 12.8% 219, 79.9% 3.70 0.666

Table S2, students' attitude towards big data platform before and after the workshop.
Before Workshop After Workshop P
Items Totally disagree, n Disagree, n Agree, n Totally agree, n Mean SD Totally disagree, n Disagree, n Agree, n Totally agree, n Mean SD
Big data platform could assist future medical education 21 16 53 184 3.50 0.910 4 7 10 253 3.87 0.504 0.0002
Big data platform could assist future scientific researches 11 7 75 181 3.55 0.735 5 3 16 250 3.86 0.499 0.0705
Big data platform could assist future clinical practice 13 14 72 175 3.49 0.799 2 6 23 243 3.85 0.464 0.0017
I am willing to learn how to use big data platform 13 11 93 157 3.43 0.783 0 0 0 274 4 0 <0.0001
I am willing to use big data platform in the future 23 33 84 134 3.20 0.953 0 0 0 274 4 0 <0.0001
I am willing to recommended big data platform to my colleagues 14 58 65 137 3.19 0.941 2 2 18 252 3.90 0.388 <0.0001
Big data platform could benefit my career 12 14 142 106 3.25 0.744 7 27 54 186 3.53 0.776 0.3382
Big data platform could benefit all medical careers 50 96 74 54 2.48 1.006 12 36 79 147 3.32 0.863 <0.0001

-In the professionalism section, ¼ of the participants seem to consider data protection as not important. This is alarming and should be discussed more thoroughly in the discussion
Response: Thank you for your insightful comments. We believe that the high rate of participants who seem to consider data protection unimportant may be caused by the lack of medical ethics education and the little knowledge about medical data usage rules among these Chinese students. A previous study found similar problems in Chinese university nursing students.10 Meantime, in an interview with Yi Zeng,11 Professor and Deputy Director at the Research Center for Brain-inspired Artificial Intelligence at the Institute of Automation, Chinese Academy of Sciences (CAS), Prof. Zeng also expressed concerns about researchers not taking data and patient privacy serious during the usage of medical big data. To cope with this situation, we managed to enhance patient-data privacy protection on the NUWA platform. Personal information of all included patients in NUWA platform is confidential and unreachable for all users. Moreover, the privacy information, such as ID number, was privatized and converted into an alternative ID number using a hashing algorithm. Therefore, all private data that participants were exposed to when they explored the NUWA platform in the third part of the workshop is de-identified. Meanwhile, in our ongoing course, we listed privacy protection and data safety as one of the essential teaching goals.
In this article, we have added more discussion on this point as "Nevertheless, it is worth noting that nearly 1/4 of the participants did not pay enough attention to maintaining patient confidentiality. Protecting patients' privacy is an essential embodiment of medical ethics and humanities.12 Participants mostly answered these questions from the perspective of big data users before our workshop, ignoring that those data represented thousands of actual patients. After we emphasized the importance of data privacy in the workshop, students realized that respect for patients is the foundation for improving their medical professionalism. Meanwhile, to enhance patient-data privacy protection, the privacy information, such as ID number, was privatized and converted into an alternative ID number using a hashing algorithm before being uploaded to the NUWA platform. Therefore, personal information of all included patients in NUWA platform is confidential and unreachable for all users. " in the Discussion part on line 302-313, page 14.

Thanks again for the opportunity to review this paper.
Response: Thank you again for all your insightful comments.

Response to Reviewer #2:
Prof. Ildar Fakhradiyev, Asfendiyarov Kazakh National Medical University

Response:
Dear Prof. Anne Herrmann-Werner,

Thank you so much for reviewing our article. We are really lucky to have you as our reviewer. Your comments are insightful, and we are glad to amend our manuscript according to your advice. Your suggestions are valuable for us since they have made our article more logical. And your encouragement inspires us a lot as clinicians on the way to improving Chinese medical education.

Comments to the Author:
The interesting, well written manusript. It would be nice to add relevance and similar studies to the background.
Response: Thank you for your helpful comments and encouragement. The relevant studies are essential, and we have added them in the Introduction as “Some studies have shown that digital medical education based on big data plays a positive effect in promoting professionalism.13-15 However, there is a lack of research on the attitude and professionalism of Chinese healthcare workers about medical big data. ”. on line 90-93, page 4.

Reference
1. Epstein RM, Hundert EM. Defining and assessing professional competence. Jama 2002; 287(2): 226-35.
2. Cain J, Romanelli F. E-professionalism: a new paradigm for a digital age. Currents in Pharmacy Teaching and Learning 2009; 1(2): 66-70.
3. Cruess R, McIlroy JH, Cruess S, Ginsburg S, Steinert Y. The Professionalism Mini-Evaluation Exercise: A Preliminary Investigation. 2006; 81(10): S74-S8.
4. Norcini JJ, Blank LL, Arnold GK, Kimball HR. The mini-CEX (clinical evaluation exercise): a preliminary investigation. Ann Intern Med 1995; 123(10): 795-9.
5. Cruess R, McIlroy JH, Cruess S, Ginsburg S, Steinert Y. The Professionalism Mini-Evaluation Exercise: A Preliminary Investigation. Academic Medicine 2006; 81(10).
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8. Bajwa NM, Nendaz MR, Posfay-Barbe KM, Yudkowsky R, Park YS. A Meaningful and Actionable Professionalism Assessment: Validity Evidence for the Professionalism Mini-Evaluation Exercise (P-MEX) Across 8 Years. Acad Med 2021; 96(11s): S151-s7.
9. Sanges S, Farhat MM, Assaraf M, et al. Raising rare disease awareness using red flags, role play simulation and patient educators: results of a novel educational workshop on Raynaud phenomenon and systemic sclerosis. Orphanet journal of rare diseases 2020; 15(1): 159.
10. Ns Chan D, Choi KC, Hy To M, Kn Ha S, Cc Ling G. Patient privacy protection among university nursing students: A cross-sectional study. Nursing ethics 2022: 9697330221085777.
11. Jia H. Yi Zeng: promoting good governance of artificial intelligence. National science review 2020; 7(12): 1954-6.
12. Doukas DJ, McCullough LB, Wear S. Perspective: Medical education in medical ethics and humanities as the foundation for developing medical professionalism. Acad Med 2012; 87(3): 334-41.
13. Hao X, Peng X, Ding X, et al. Application of digital education in undergraduate nursing and medical interns during the COVID-19 pandemic: A systematic review. Nurse Educ Today 2022; 108: 105183.
14. Kailey BS, Dev D, Sado DM, Luther V. CardioWebinar: the evolution of digital education during the COVID-19 pandemic. Heart 2021; 107(24): 2004-5.
15. O'Connor S, Zhang M, Honey M, Lee JJ. Digital professionalism on social media: A narrative review of the medical, nursing, and allied health education literature. Int J Med Inf 2021; 153: 104514.

VERSION 2 – REVIEW

REVIEWER	Herrmann-Werner, Anne University Hospital Tuebingen, Department for Psychsomatic Medicine and Psychotherapy
REVIEW RETURNED	10-Aug-2022

GENERAL COMMENTS	Dear authors, thank you for giving me the opportunity to review your revised version of the paper. It is clear that you have put a lot of effort into answering the reviewers' comments and in my opinion, the manuscript has substantially gained by this process. I only have two minor points that I trust to be changed easily 1) In the tables, there are now figures with a comma (which is in English a full stop anyway) but then nothing follows 2) you have changed the limitations according to the suggestions; however, these changes have not made it to the "strengths & limitations" section in the abstract. Please adapt these accordingly to make clear your understanding of the limitations right from the beginning. After having done this, the paper is in my opinion ready for publication. Thanks once more for the honour to contribute to the work.

VERSION 2 – AUTHOR RESPONSE

Response to Reviewer #1:
Prof. Anne Herrmann-Werner, University Hospital Tuebingen
Comments to the Author:
Dear authors, thank you for giving me the opportunity to review your revised version of the paper. It is clear that you have put a lot of effort into answering the reviewers' comments and in my opinion, the manuscript has substantially gained by this process. I only have two minor points that I trust to be changed easily.

Response:
Dear Prof. Anne Herrmann-Werner,
Thanks again for reviewing our article!
We appreciate all your comments and suggestions since they have fundamentally improved our manuscript's quality. Thank you so much for your patience and encouragement. During the revision, we have read some of your work, and they are absolutely extraordinary, and we have learned a lot from them, thank you again!
We entirely agree with your reminder on the format of tables and the context of the "strengthen & limitations" section in the abstract, which have made our manuscript more readable. The following are the revisions we have made according to these two questions.
Thanks for your comments and suggestions.

In the tables, there are now figures with a comma (which is in English a full stop anyway) but then nothing follows.
Response: Thank you for your comments. We re-examined every table and removed these commas. The data presented in these tables is indeed more straightforward without the commas (see Table 1 on line 203, page 8-9, Table 2 on line 254, page 11-12, and Table 3 on line 266, page 12-13).
Thank you again for your suggestions.

Table 1. Baseline characteristics for participants.
Characteristics Number of participants, n (%)
Age, years

22 27 (9.9%)
23 16 (5.8%)
24 67 (24.5%)
25 66 (24.1%)
26 50 (18.2%)
27 28 (10.2%)
28 20 (7.3%)
Gender
male 130 (47.4%)
female 144 (52.6%)
Study stage
pre-clinical 148 (54.0%)
clinical 126 (46.0%)
Acknowledgment of any kind of big data platform
yes 207 (75.5%)
no 67 (24.5%)
Know the applications of big data technology
yes 183 (66.8%)
no 91 (33.2%)
Involved in any big data-related projects
yes 47 (17.2%)
no 227 (82.8%)
Total 274 (100%)

Table 2. Browser records in the free-exploration section.
Content Number of participants, n (%)
History of Illness
yes 209 (76.3%)
no 65 (23.7%)
Hospitalization logs
yes 253 (92.3%)
no 21 (7.7%)
Medicine usage
yes 154 (56.2%)
no 120 (43.8%)
Surgery record
yes 145 (52.9%)
no 129 (47.1%)
Image diagnosis
yes 103 (37.6%)
no 171 (62.4%)
Follow-up records
yes 89 (32.5%)
no 185 (67.5%)
Rare pathologies
yes 160 (58.4%)
no 114 (41.6%)
Total 274 (100%)

Table 3. Participants ‘answers to the workshop satisfaction survey
Not at all,
n (%) No,

n (%) Yes,
n (%) Yes, extremely,
n (%) Mean SD
Overall, are you satisfied with this course 7 (2.6%) 5 (1.8%) 57 (20.8%) 205 (74.8%) 3.68 0.640
Did you think the course are informative? 10 (3.6%) 15 (5.5%) 101 (36.9%) 148 (54%) 3.41 0.757
Did you think the duration of this courses is too long 121 (44.2%) 118 (43.1%) 28 (10.2%) 7 (2.6%) 2.07 0.954
Was the course understandable for you 11 (4%) 8 (2.9%) 121 (44.2%) 134 (48.9%) 3.38 0.733
Would you recommend these courses to other students? 6 (2.2%) 11 (4%) 144 (52.6%) 113 (41.2%) 3.33 0.659
Are you willing to take part in similar courses in the future? 6 (2.2%) 14 (5.1%) 35 (12.8%) 219 (79.9%) 3.70 0.666
SD, Standard Deviation.

2. You have changed the limitations according to the suggestions; however, these changes have not made it to the "strengths & limitations" section in the abstract. Please adapt these accordingly to make clear your understanding of the limitations right from the beginning.
Response: Thank you very much for your reminder. In this modification, we corrected the "strengths & limitations" section in the abstract to make it consistent with the main text, "The generalization of the findings is limited by the sample representation. The method of measuring attitudes and professionalism may be improved in the future. We need longer time to observe the change of digital competencies and professionalism in Chinese medical students." as shown on line 62-65, page 3. Thank you again for your suggestions.

After having done this, the paper is in my opinion ready for publication.
Thanks once more for the honour to contribute to the work.
Response: Thanks for all your kind comments and suggestions on our manuscript. Your comments are insightful and meticulous. We are happy to amend our manuscript according to your advice. Thanks again for all your comments and suggestions!

Reference
1. Williams C, Familusi OO, Ziemba J, et al. Adapting to the Educational Challenges of a Pandemic: Development of a Novel Virtual Urology Subinternship During the Time of COVID-19. Urology 2021; 148: 70-6.