JADS JOURNAL OF APPLIED DATA SCIENCES
ISSN (ONLINE): 2723-6471

#881 SUMMARY

SUMMARY REVIEW EDITING

SUBMISSION

Authors	Pratya Nuankaew, Jidapa Sorat, Jindaporn Intajak, Jirapron Inta, Wongpanya S. Nuankaew
Title	AI-Driven Mobile Application for Self-Monitoring Personalized Premenstrual Symptoms and Risk Assessment of Depressive Crises in Female University Students
Original file	881-2961-3-SM.DOCX 2025-05-28
Supp. files	881-2962-1-SP.PDF 2025-05-28 ADD A SUPPLEMENTARY FILE
Submitter	Pratya NUANKAEW
Date submitted	May 28, 2025 - 11:33 AM
Section	Articles
Editor	None assigned

STATUS

Status	Awaiting assignment
Initiated	2025-05-28
Last modified	2025-05-28

SUBMISSION METADATA

EDIT METADATA

AUTHORS

Name	Pratya Nuankaew
ORCID iD	https://orcid.org/0000-0002-3297-4198
Affiliation	School of Information and Communication Technology, University of Phayao
Country	Thailand
Bio Statement	—

Principal contact for editorial correspondence.

Name	Jidapa Sorat
Affiliation	School of Information and Communication Technology, University of Phayao
Country	Thailand
Bio Statement	—
Name	Jindaporn Intajak
Affiliation	School of Information and Communication Technology, University of Phayao
Country	Thailand
Bio Statement	—
Name	Jirapron Inta
Affiliation	School of Information and Communication Technology, University of Phayao
Country	Thailand
Bio Statement	—
Name	Wongpanya S. Nuankaew
Affiliation	School of Information and Communication Technology, University of Phayao
Country	Thailand
Bio Statement	—

TITLE AND ABSTRACT

Title: AI-Driven Mobile Application for Self-Monitoring Personalized Premenstrual Symptoms and Risk Assessment of Depressive Crises in Female University Students

Abstract

Premenstrual Syndrome (PMS) and depressive symptoms are common concerns for female university students, often triggered by hormonal fluctuations before menstruation. These conditions can severely impact academic performance, interpersonal relationships, and overall well-being, particularly when symptoms escalate into severe depressive episodes. Even though the prevalence, awareness, and self-management strategies among students are on the rise, they remain limited, particularly in cultural contexts where women's health and emotional well-being receive little attention. This study presents the development of an AI-driven mobile application designed to facilitate personalized tracking of premenstrual symptoms and assess the risk of depressive episodes. The application integrates machine learning models trained on self-reported psychological and physiological data, using validated instruments such as DASS-21 and PSST-A. The research adopted a mixed-methods approach, involving survey-based symptom identification, model training and validation, system design, and user satisfaction evaluation. Findings demonstrate that the proposed application is practical in predicting depressive risk and promoting mental health self-awareness. The system's adaptability, user-centered design, and clinical relevance underscore its potential as a scalable mental health support tool for female university students. This study contributes to advancing AI-assisted self-care technologies in personalized health monitoring and preventive psychological intervention.

INDEXING

Keywords: AI for Healthcare; Depressive Crisis Risk Monitoring; Medical Data Analytics; Medical Informatics; Personalized Premenstrual Symptom

Language: en

SUPPORTING AGENCIES

Agencies: —

REFERENCES

References

[1] F. Liguori, E. Saraiello, and P. Calella, "Premenstrual Syndrome and Premenstrual Dysphoric Disorder's Impact on Quality of Life, and the Role of Physical Activity," Medicina (Mex.), vol. 59, no. 11, Art. no. 11, Nov. 2023, doi: 10.3390/medicina59112044.

[2] K. A. Yonkers, P. S. O'Brien, and E. Eriksson, "Premenstrual syndrome," The Lancet, vol. 371, no. 9619, pp. 1200–1210, Apr. 2008, doi: 10.1016/S0140-6736(08)60527-9.

[3] N. Eshetu et al., "Premenstrual syndrome, coping mechanisms and associated factors among Wolkite university female regular students, Ethiopia, 2021," BMC Womens Health, vol. 22, no. 1, p. 88, Mar. 2022, doi: 10.1186/s12905-022-01658-5.

[4] J. Hoyer et al., "Menstrual Cycle Phase Modulates Emotional Conflict Processing in Women with and without Premenstrual Syndrome (PMS) – A Pilot Study," PLOS ONE, vol. 8, no. 4, p. e59780, Apr. 2013, doi: 10.1371/journal.pone.0059780.

[5] A. J. Rapkin and S. A. and Winer, "Premenstrual syndrome and premenstrual dysphoric disorder: quality of life and burden of illness," Expert Rev. Pharmacoecon. Outcomes Res., vol. 9, no. 2, pp. 157–170, Apr. 2009, doi: 10.1586/erp.09.14.

[6] H. Farrokh-Eslamlou, S. Oshnouei, B. Heshmatian, and E. Akbari, "Premenstrual syndrome and quality of life in Iranian medical students," Sex. Reprod. Healthc., vol. 6, no. 1, pp. 23–27, Mar. 2015, doi: 10.1016/j.srhc.2014.06.009.

[7] K. Schmelzer, Ditzen ,Beate, Weise ,Cornelia, Andersson ,Gerhard, Hiller ,Wolfgang, and M. and Kleinstäuber, "Clinical Profiles of Premenstrual Experiences Among Women Having Premenstrual Syndrome (PMS): Affective Changes Predominate and Relate to Social and Occupational Functioning," Health Care Women Int., vol. 36, no. 10, pp. 1104–1123, Oct. 2015, doi: 10.1080/07399332.2014.954701.

[8] L. Barry, "Social workers' knowledge of premenstrual syndrome (PMS) and premenstrual dysphoric disorder (PMDD): implications for assessment practices with mothers," doctoral, Memorial University of Newfoundland, 2016. Accessed: May 26, 2025. [Online]. Available: https://research.library.mun.ca/12402/

[9] Y. Park, A. Murphy, and D. Cezar da Cruz, "Occupational participation and engagement of woman experiencing premenstrual syndrome: A qualitative study," Br. J. Occup. Ther., vol. 86, no. 9, pp. 639–647, Sep. 2023, doi: 10.1177/03080226231174792.

[10] N. Buddhabunyakan, Kaewrudee ,Srinaree, Chongsomchai ,Chompilas, Soontrapa ,Sukree, Somboonporn ,Woraluk, and J. and Sothornwit, "Premenstrual syndrome (PMS) among high school students," Int. J. Womens Health, vol. 9, pp. 501–505, Jul. 2017, doi: 10.2147/IJWH.S140679.

[11] B. Butsripoom, S. Hanucharurnkul, M. Arpanantikul, W. Choktanasiri, T. Vorapongsathorn, and N. Sinsuksai, "Premenstrual Syndrome among Thai Nurses: Prevalence, Impact and Self-management Strategies," Pac. Rim Int. J. Nurs. Res., vol. 13, no. 4, Art. no. 4, 2009.

[12] J. January, M. Madhombiro, S. Chipamaunga, S. Ray, A. Chingono, and M. Abas, "Prevalence of depression and anxiety among undergraduate university students in low- and middle-income countries: a systematic review protocol.," Syst. Rev., vol. 7, no. 1, p. 57, Apr. 2018, doi: 10.1186/s13643-018-0723-8.

[13] W. S. Nuankaew, P. Nasa-Ngium, P. Enkvetchakul, and P. Nuankaew, "A Predictive Model for Depression Risk in Thai Youth during COVID-19," J. Adv. Inf. Technol., vol. 13, no. 5, pp. 450–455, Oct. 2022, doi: 10.12720/jait.13.5.450-455.

[14] G. M. Slavich and J. Sacher, "Stress, sex hormones, inflammation, and major depressive disorder: Extending Social Signal Transduction Theory of Depression to account for sex differences in mood disorders," Psychopharmacology (Berl.), vol. 236, no. 10, pp. 3063–3079, Oct. 2019, doi: 10.1007/s00213-019-05326-9.

[15] W. C. FRSPH, "The global crisis of depression: the low of the 21st century?," Perspect. Public Health, vol. 135, no. 2, p. 62, 2015.

[16] M. S. Reddy, "Depression – The Global Crisis," Indian J. Psychol. Med., vol. 34, no. 3, pp. 201–203, Jul. 2012, doi: 10.4103/0253-7176.106011.

[17] J. Bantjes, X. Hunt, and D. J. Stein, "Anxious, Depressed, and Suicidal: Crisis Narratives in University Student Mental Health and the Need for a Balanced Approach to Student Wellness," Int. J. Environ. Res. Public. Health, vol. 20, no. 6, Art. no. 6, Jan. 2023, doi: 10.3390/ijerph20064859.

[18] P. Boonmongkon, M. Nichter, and J. Pylypa, "Mot Luuk problems in northeast Thailand: why women's own health concerns matter as much as disease rates," Soc. Sci. Med., vol. 53, no. 8, pp. 1095–1112, Oct. 2001, doi: 10.1016/S0277-9536(00)00404-4.

[19] P. Nuankaew, J. Sorat, J. Intajak, J. Inta, and W. S. Nuankaew, "AI for Healthcare: A Classification Model for Personalized Premenstrual Symptoms and Depressive Crisis Risk Tracking Using Data Analytics and Machine Learning," in 2025 Joint International Conference on Digital Arts, Media and Technology with ECTI Northern Section Conference on Electrical, Electronics, Computer and Telecommunications Engineering (ECTI DAMT & NCON), Jan. 2025, pp. 299–304. doi: 10.1109/ECTIDAMTNCON64748.2025.10962042.

[20] R. P. Auerbach et al., "WHO World Mental Health Surveys International College Student Project: Prevalence and distribution of mental disorders," J. Abnorm. Psychol., vol. 127, no. 7, pp. 623–638, 2018, doi: 10.1037/abn0000362.

[21] "World mental health report: Transforming mental health for all." Accessed: May 26, 2025. [Online]. Available: https://www.who.int/publications/i/item/9789240049338

[22] D. Edge, E. Watkins, A. Newbold, T. Ehring, M. Frost, and T. Rosenkranz, "Evaluating the Effects of a Self-Help Mobile Phone App on Worry and Rumination Experienced by Young Adults: Randomized Controlled Trial," JMIR MHealth UHealth, vol. 12, no. 1, p. e51932, Aug. 2024, doi: 10.2196/51932.

[23] C. N. Epperson et al., "Premenstrual dysphoric disorder: evidence for a new category for DSM-5," Am. J. Psychiatry, vol. 169, no. 5, pp. 465–475, May 2012, doi: 10.1176/appi.ajp.2012.11081302.

[24] C. Rauschenberg et al., "Living lab AI4U - Artificial Intelligence for personalized digital mental health promotion in youth," Sep. 2024, doi: 10.17605/OSF.IO/YE287.

JOURNAL METRICS

Acceptance Rate:
43%

Review Speed:
64 days

Issue Per Year:
4

Number of Volumes:
5

Number of Issues:
18

Number of Articles:
253

Number of Reviewers:
87

Number of Contributors:
344

Contributing Countries:
28

No. of WoS Citations:
59

No. of Scopus Citations:
233

No. of Google Citations:
301

Abstract Views:
103,817

PDF Download:
53,117

Last updated: Dec 19, 2024

TEMPLATE

VISITOR STATS

[25] M. Milne-Ives, C. Lam, C. De Cock, M. H. Van Velthoven, and E. Meinert, "Mobile Apps for Health Behavior Change in Physical Activity, Diet, Drug and Alcohol Use, and Mental Health: Systematic Review," JMIR MHealth UHealth, vol. 8, no. 3, p. e17046, Mar. 2020, doi: 10.2196/17046.

[26] C. Montag, C. Sindermann, and H. Baumeister, "Digital phenotyping in psychological and medical sciences: a reflection about necessary prerequisites to reduce harm and increase benefits," Curr. Opin. Psychol., vol. 36, pp. 19–24, Dec. 2020, doi: 10.1016/j.copsyc.2020.03.013.

[27] A. B. R. Shatte, D. M. Hutchinson, and S. J. Teague, "Machine learning in mental health: a scoping review of methods and applications," Psychol. Med., vol. 49, no. 9, pp. 1426–1448, Jul. 2019, doi: 10.1017/S0033291719000151.

[28] E. E. Lee et al., "Artificial Intelligence for Mental Healthcare: Clinical Applications, Barriers, Facilitators, and Artificial Wisdom," Biol. Psychiatry Cogn. Neurosci. Neuroimaging, vol. 6, no. 9, pp. 856–864, Sep. 2021, doi: 10.1016/j.bpsc.2021.02.001.

[29] G. Gutierrez, C. Stephenson, J. Eadie, K. Asadpour, and N. Alavi, "Examining the role of AI technology in online mental healthcare: opportunities, challenges, and implications, a mixed-methods review," Front. Psychiatry, vol. 15, May 2024, doi: 10.3389/fpsyt.2024.1356773.

[30] O. P. Singh, "Artificial intelligence in the era of ChatGPT - Opportunities and challenges in mental health care," Indian J. Psychiatry, vol. 65, no. 3, p. 297, Mar. 2023, doi: 10.4103/indianjpsychiatry.indianjpsychiatry_112_23.

Journal of Applied Data Sciences

ISSN : 2723-6471 (Online)
Organized by : Computer Science and Systems Information Technology, King Abdulaziz University, Kingdom of Saudi Arabia.
Website : http://bright-journal.org/JADS
Email : taqwa@amikompurwokerto.ac.id (principal contact)
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