BIS HEALTH AND ENVIRONMENTAL SCIENCE

Volume 3 2026 | DOI: 10.31603/bishes.599
7th Borobudur International Symposium on Science and Technology (BIS-STE) 2025

UNIMMA PRESS
Universitas Muhammadiyah Magelang

Comparative analysis of conventional methods and e-coaching in enhancing the role of families in mental disorder care

Mokhamad Arifin[1*] and Paminto Agung Christianto[2]

[1] Muhammadiyah University of Pekajangan Pekalongan, Pekalongan, Indonesia
[2] Widya Pratama Institute, Pekalongan, Indonesia
[*]Corresponding author email: arifinpkj69@gmail.com

Abstract

Families serve as the primary caregivers, playing a critical role in home-based care. This study compares the effectiveness of conventional methods and e-Coaching in empowering families to care for relatives with mental disorders. This study employed a quasi-experimental design with a pretest and posttest in two groups: an intervention group using the e-Coaching method and a control group using conventional methods. The participants consisted of 122 family caregivers of individuals with mental disorders. The sample size was determined using GPower, and data collection employed mixed methods surveys, interviews, and observations to ensure triangulation. Quantitative analysis involved regression adjustment and weighting to minimise sampling bias. The study was conducted in three stages. In Stage 1, in-depth interviews with families revealed five key themes: caregiving challenges. Stage 2 involved developing the e-Coaching application based on these findings. Stage 3, tested the app's effectiveness. Posttest scores indicated that family empowerment improved significantly in both groups, but the e-Coaching group showed higher gains (posttest 2: 63.85 vs. 60.84). Future research should explore long-term impacts and adaptations for populations with limited digital access or low literacy.

Keywords

Conventional methods, E-Coaching intervention, Role of families, Mental disorder

Published:
May 04, 2026

Selection and Peer-review under the responsibility of the 7th BIS-STE 2025 Committee

Introduction

Individuals experiencing mental disorders require continuous treatment to avert relapses and enhance their quality of life. Families, as the primary support network, play an essential role in providing care within the home environment [1–6]. Nevertheless, numerous studies indicate that the empowerment of families in the treatment process remains suboptimal, leading to increased rates of recurrence [7–10]. Traditionally, family empowerment has been approached through direct education from healthcare professionals, training sessions, and manual interventions. Although these methods

have shown beneficial outcomes, they present several challenges, including limited time, accessibility issues, and their effectiveness in enhancing the caregiving skills of family members for those with mental disorders [11], [12]. E-coaching is an intervention approach that utilizes smartphone-based applications to explore and strengthen family potential in caring for patients with mental disorders, offering a more time- and cost-efficient alternative by delivering coaching support without the need for direct face-to-face interactions. E- Coaching With technological advancements, innovations for family empowerment are emerging, one of which is e-Coaching [13], [14]. Various studies have demonstrated that incorporating technology into health interventions significantly enhances individuals' abilities and motivation to perform their health-related tasks [15–17].

This study looks at how well traditional methods work compared to e-coaching in helping families take care of relatives who have mental health issues. Even though the research was done in Indonesia, the findings can still be useful in other places, but they need to be adjusted to fit the local culture. Being able to adapt to different cultures is very important for making online education more effective and engaging. To help learners do better and feel more involved, schools should learn more about the cultural backgrounds and needs of their students. They should also offer things like teaching that respects different cultures, support services that work with cultural needs, and learning groups that include people from different backgrounds.

Methods

The research design used was a Quasi-Experimental design with a pretest and posttest in Two Groups. The two groups were compared: the intervention group that used the e-Coaching method and the control group that used the conventional method. The population in this study is families who take care of family members who have mental disorders in the research area, with 122 respondents divided into two groups. The inclusion criteria are: families with members with cognitive disorders; physically and spiritually healthy families; at least 18 years old; willing to participate and follow the research process until completion; and having a smartphone. Meanwhile, the exclusion criteria are families who take care of family members with mental disorders for less than 3 months. The researchers realized they had only involved 122 respondents. To strengthen generalizability: The researchers conducted stratified sampling based on age and gender, determined the sample size using GPower, combined surveys with interviews and observations (method and data triangulation).

In the quantitative phase, we used a quasi-experimental design with a control group. The analysis used regression adjustment and weighting to correct for sampling bias. Validation and user satisfaction tests were carried out with 30 respondents from families who have family members with mental disorders and with health workers. The validity test results for all items in the EUCS questionnaire were valid and reliable, with Cronbach's Alpha> 0.600 and a high user satisfaction level, as all respondents reported

an average score> 4 for content, accuracy, ease of use, and application format. The research consists of three stages, as shown in Table 1.

Table 1. Research stage

Stage	Activity
1	Conduct in-depth interviews with families who have family members with mental disorders and health workers.
2	Creating e-Coaching applications through a Research and Development (R&D) methodology that includes input from various specialists(32, 33). The content of the e-Coaching is evaluated by professionals holding Doctorates in Nursing, Telehealth, and Psychiatric Nursing. Finally, to confirm that all user requirements are satisfied, the End User Computing Satisfaction (EUCS) assessment is conducted(34, 35).
3	There are 3 tests, namely Pre-Test, which is carried out before the intervention, Post-Test 1, which is carried out after 2 weeks of intervention, and Post-Test 2, which is carried out after 4 weeks of intervention.

Results

This stage 1 research aims to understand the family's experience in caring for family members who have mental disorders and the challenges they face. Based on the interviews, five main themes related to family experiences in caring for family members who have mental disorders were obtained, namely: a. obstacles in caring for family members with mental disorders (patients have difficulty taking medication, lack of family education, limited access to health services); b. support from Puskesmas and the Government (mental health assistance programs from Puskesmas, local governments have begun to encourage community-based interventions); c. the unavailability of digital applications, d. obstacles in the use of applications (older families find it challenging to use technology-based applications, need direct guidance in accessing the features of the e-Coaching application); e. materials needed in the e-Coaching application (information on how to treat family members with mental disorders at home, training in managing stress and communication with patients, and online consultation features with health professionals).

Stage 2 of the research was to develop an e-Coaching application, which was carried out based on the results of a preliminary study that identified family needs in caring for family members with mental disorders. The e-coaching application is equipped with video and text-based interactive learning modules, namely: a. five main cases that are often experienced by families who have family members with mental disorders (violent behaviour/rage, hallucinations, withdrawal, low self-esteem, and self-care deficit); b. online assistance through virtual consultation rooms; c. self-evaluation questionnaires to monitor the family's progress in caring for family members with mental disorders. E-coaching will not disrupt communication between families and patients; instead, it can improve caregivers' ability to provide better patient care.

Stage 3 is to test the effectiveness of conventional methods and e-coaching methods through several stages. The e-Coaching method is more effective compared to the conventional method as evidenced by the average score of the posttest two e-Coaching

is higher (63.85) than the manual method (60.84) and the results of the independent t-test test shows a significant difference between the two methods with a ρ value of 0.000 (<0.05), the following research stages and comparison of the two methods as seen in Table 2.

Table 2. Effectiveness Assessment Comparison of Conventional Methods with e-Coaching Methods

Assessment Attributes	Conventional Methods	Method e-Coaching
Average family empowerment before and after the intervention	• Pre-Test: 50,44 • Post-Test 1: 54,90 • Post-Test 2: 60,84 • There was a significant increase with ρ value 0.000 (<0.05), indicating that the manual method remained impactful.	• Pre-Test: 50,26 • Post-Test 1: 55,98 • Post-Test 2: 63,85 • A significant increase with ρ value 0.000 (<0.05), indicating that e-Coaching is effective.
Changes in family abilities based on 5 family tasks	• Recognize the problem from a score of 13.69 to a value of 16.18 • Deciding from a score of 7.33 to a score of 9.07 • Caring for family members with mental disorders, from a score of 12.25 to a score of 14.74 • Modifying the environment from a value of 7.85 to a value of 9.21 • Utilizing health facilities from a score of 9.16 to a value of 11.66 • All aspects improve	• Recognize the problem from a value of 15.41 to a value of 18.31 • Taking decisions from a score of 7.31 to a score of 9.82 • Caring for family members with mental disorders, from a score of 11.20 to a score of 14.79 • Modifying the environment from a value of 7.59 to a value of 9.38 • Utilizing health facilities from a score of 8.69 to a value of 11.57 • All aspects have improved significantly.
Challenges or Obstacles	• The family does not routinely monitor the patient's medication. • It is difficult to recognize mental disorders from an early age. • Difficulty in making decisions related to treatment. • Lack of support from the surrounding environment.	• Difficulty accessing the internet in some areas. • Families must adapt to new technology. • The role of coaches needs to be more active in accompanying families.

Discussion

The e-coaching approach is more effective than the traditional method for enhancing family empowerment in treating mental health issues. From the cost usage side, several studies have focused on cost analysis comparing digital and conventional methods. Digital methods are more cost-effective than conventional methods [18], [19]. In the base case, for a cohort of 100,000 persons, we found that mobile CBT is cost-saving, with cost reductions of $2.23 billion and $4.54 billion compared to traditional CBT and no CBT, respectively. Results were insensitive to most model inputs, and mobile CBT remained cost-saving in almost all scenarios [20].

Although the degree of improvement is modest, it is statistically significant, suggesting that the e-coaching approach enables families to adjust more quickly to new information. It is also more advisable as it addresses the challenges of geographical and temporal limitations more efficiently.

Conclusion

This study shows that the e-coaching method is effective and innovative in increasing families' role in caring for family members with mental disorders, with the main benefits being flexibility, effectiveness, and efficiency in delivering information and mentoring. E-coaching can be integrated into community nursing services to improve the quality of care at home. For sustainable use, it is recommended that cognitive, psychomotor, and affective aspects of family empowerment be improved. Although the current version of the e-coaching program excludes individuals without smartphone access limiting applicability to low-literacy populations it holds potential for adaptation. With audio-visual interfaces, simplified navigation, and voice-based interaction, e-coaching can be redesigned to be inclusive and effective for populations with limited literacy. The study also provides recommendations that a hybrid approach can be used to maximize the benefits of both methods, because: The blended method is superior at fostering key engineering skills [21]. The results of this cost analysis indicate significant savings from using a blended eLearning approach compared to a traditional didactic method for CHW training, by as much as 67% [22]. Blended Message Coaching, which provides coaching sessions via live messaging, can be beneficial for adults [23].

Further research opportunities are: Although post-intervention results showed initial improvements related to e-coaching, the lack of long-term follow-up data precludes conclusions about its effect on relapse rates. Further research is needed to determine the sustainability of behavioural and psychological changes. While e-coaching shows promise, current researcher-funded implementations do not provide a reliable basis for assessing cost-effectiveness in low-resource settings. To determine feasibility, future research must assess delivery costs, scalability, and economic impact under local, real-world conditions.

Acknowledgements

Thank you to the professionals in Nursing, Telehealth, and Psychiatric Nursing who have supported the completion of this research.

Ethical Approval

1. The Medical Research Ethics Committee of Padjadjaran University, Bandung, has granted research ethics approval under number 544/UN6.KEP/EC/2021.
2. The Pekalongan District Health Office granted permission to collect research data with letter number 890/079/2021.

Data Availability Statement

We are willing to share this research data upon reasonable request.

References

1. Muryani NMS, Putra IGY, Artawan IK. Family Experience Dealing with Relapse in People with Mental Disorders. Babali Nursing Research 3: 135–142, 2022. doi: 10.37363/bnr.2022.32106.
2. Magura S, Laudet AB, Mahmood D, Rosenblum A, Knight E. Adherence to medication regimens and participation in dual-focus self-help groups. Psychiatric Services Vol. 53 No. 3: 311–316, 2002. Doi: https://doi.org/10.1176/appi.ps.53.3.310.
3. Ahmed AO, Doane NJ, Mabe PA, Buckley PF, Birgenheir D, Goodrum NM. Peers and peer-led interventions for people with schizophrenia. Psychiatric Clinics 35: 699–715, 2012. doi: 10.1016/j.psc.2012.06.009.
4. Farkhah L, Hernawati T. Faktor caregiver dan kekambuhan klien skizofrenia. Jurnal Keperawatan Padjajaran 5: 37–46, 2017. Doi: https://doi.org/10.24198/jkp.v5i1.348.
5. Fadli SM, Mitra M. Pengetahuan dan ekspresi emosi keluarga serta frekuensi kekambuhan penderita skizofrenia. Kesmas: National Public Health Journal 7: 466–470, 2013. doi: 10.21109/kesmas.v7i10.6.
6. Mubin MF, Livana PH. Reduction of family stress level through psychoeducational therapy of psychoeducation of schizophrenia paranoid families. Enferm Clin 30: 155–159, 2020. Doi: https://doi.org/10.1016/j.enfcli.2019.12.048.
7. Schennach R, Obermeier M, Naber D, Ruther E. Predictors of relapse in the year after hospital discharge among patients with schizophrenia. Psychiatric Services Vol. 63 No. 1: 87–90, 2012. Doi: https://doi.org/10.1176/appi.ps.201100084.
8. Abdullah Koolmees H, Gardarsdottir H, Egberts TCG, Minnema LA, Elmi K, Stoker LJ, Vuyk J, Goedhard LE, Heerdink ER. Predicting rehospitalization in patients treated with antipsychotics: a prospective observational study. Ther Adv Psychopharmacol 8: 213–229, 2018. doi: 10.1177/2045125318762373.
9. Emsley R, Chiliza B, Asmal L, Harvey BH. The nature of relapse in schizophrenia. BMC Psychiatry 13: 1–8, 2013.
10. Gellad WF, Grenard JL, Marcum ZA. A systematic review of barriers to medication adherence in the elderly: Looking beyond cost and regimen complexity. American Journal Geriatric Pharmacotherapy 9: 11–23, 2011. doi: 10.1016/j.amjopharm.2011.02.004.
11. Gkintoni E, Vantaraki F, Skoulidi C, Anastassopoulos P, Vantarakis A. Promoting Physical and Mental Health among Children and Adolescents via Gamification—A Conceptual Systematic Review. Behavioral Sciences 14, 2024. doi: 10.3390/bs14020102.
12. Purcell N, Zamora K, Bertenthal D, Abadjian L, Tighe J, Seal KH. How VA Whole Health Coaching Can Impact Veterans' Health and Quality of Life: A Mixed-Methods Pilot Program Evaluation. Glob Adv Health Med 10: 2164956121998283, 2021. doi: 10.1177/2164956121998283.
13. Garcia Carpintero Blas E, Velez Velez E, Martinez Miguel E, Tovar Reinoso A, Del Pozo Herce P, Gonzalez Navajas C, Gomez Moreno C. Understanding family experiences: a study on mental health literacy in adolescent eating disorder diagnoses. Nurs Rep 14: 4145–4161, 2024. doi: 10.3390/nursrep14040302.
14. Cardona M, Kretschmer T, Strobel T. ICT and productivity: conclusions from the empirical literature. Information Economics and Policy 25: 109–125, 2013. doi: https://doi.org/10.1016/j.infoecopol.2012.12.002.
15. Chen X, Hartt M. Planning for an Older and Digital Future: Opportunities and Challenges of Age-Friendly E-Participation in China. Planning Theory and Practice 22: 191–210, 2021. doi: 10.1080/14649357.2021.1903536.
16. Sediyono E, Christianto PA, Sembiring I. A Note on the combination of the new similarity formula with feedback to better handle complaints of in-vitro fertilization (IVF) Patients. Karbala International Journal of Modern Science (KIJOMS) 9: 398–403, 2023. doi: https://doi.org/10.33640/2405-609X.3308.
17. Sembiring I, Christianto PA, Sediyono E. Hybrid of smart system model to support the service of fertility doctors in handling in-vitro fertilization patient complaints. Mendel Journal 29 No. 2: 84–89, 2023. Doi: https://doi.org/10.13164/mendel.2023.2.084.
18. Paminto Agung Christianto, Eko Sediyono, Irwan Sembiring. Modification of the case-based reasoning similarity formula to enhance the performance of a smart system in handling the complaints of in-vitro fertilization program patients. Healthc Inform Res 28: 267–275, 2022. doi: https://doi.org/10.4258%2Fhir.2022.28.3.267.
19. Boeker M, Andel P, Vach W, Frankenschmidt A. Game-based e-learning is more effective than a conventional instructional method: A randomized controlled trial with third-year medical students. PLoS One 8, 2013. doi: 10.1371/journal.pone.0082328.
20 Kumar S, Bell MJ, Juusola JL. Mobile and traditional cognitive behavioral therapy programs for generalized anxiety disorder: A cost-effectiveness analysis. PLoS One 13, 2018. doi:

10.1371/journal.pone.0190554.
21. de la Puente Pacheco Mario Alberto, Rios Mahecha Juan Diego, Maury Campo Mauro, Torres Jose. Effectiveness of online and blended teaching methods in developing professional engineering cross-curricular skills: A study in the context of Latin America. Res Comp Int Educ 19: 197–223, 2024. doi: 10.1177/17454999241231089.
22. Sissine M, Segan R, Taylor M, Jefferson B, Borrelli A, Koehler M, Chelvayohan M. Cost Comparison Model: Blended eLearning versus traditional training of community health workers. Online J Public Health Inform 6, 2014. doi: 10.5210/ojphi.v6i3.5533.
23. Owusu JT, Wang P, Wickham RE, Smith SF, Lee JL, Chen C, Lungu A. Outcomes of a Live Messaging, Blended Care Coaching Program Among Adults With Symptoms of Anxiety: Pragmatic Retrospective Cohort Study. JMIR Form Res 7, 2023. Doi: 10.2196/44138.