

# Assessing the Effectiveness of an E-Coaching Intervention in Improving Family Support for Individuals with Mental Disorders: A Quasi-Experimental Approach

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**Background:** The increasing number of mental disorders (MDs) requires government, social, and family attention. The purpose of this study was to determine the effectiveness of an e-coaching empowerment application in improving families' abilities to care for individuals with mental disorders (MDs).

**Methods:** A quasi-experimental design was used for this study. Totalling 122 individuals selected through purposive sampling from families with (MDs) in six selected community health centers that divided into two groups, intervention and regular mental healthcare. The data collected were analyzed using multiple linear regression. The independent variable was the provision of intervention using the e-coaching application with GROW (Goal, Reality, Option, Will) model, while the dependent variables were the family's ability to recognize problems, make decisions, take care of people with MDs, modify the environment, and utilize health facilities. Further, multivariate tests were used to evaluate the effect of e-coaching empowerment on families' ability to care for MDs.

**Results:** The results demonstrated a significant impact of e-coaching on the family's ability to care for individuals with MDs ( $p < 0.01$ ). Education also partially affected the family's ability to care for individuals with MDs ( $p < 0.01$ ). Additionally, age, gender, occupation, relationship with the individual MDs, and duration of care simultaneously did not significantly affect the family's ability to care for individuals with MDs ( $p < 0.01$ ). However, educationally background was significantly affect family ability in taking care for MD patients. Overall, e-coaching significantly improved the family's ability to recognize problems, make decisions, care for patients with MDs, modify the environment, and utilize health facilities.

**Recommendations:** The e-coaching empowerment application for families can assist healthcare workers in enhancing the family's ability to provide assistance for individuals with MDs at home. This application can improve mental health services in the broader location accessible via the internet and can be developed for other health fields. The application can be expanded into a simple game so that families can view their scores for their proficiency in each session to make it more entertaining.

**Keywords:** mental disorders, e-coaching, empowerment, family caregivers

## Introduction

Our entirely health and well-being rest heavily on our mental health, which is also a basic human right. We may interact, function, cope, and thrive better when we are in good mental health. A complicated spectrum of mental health exists, with experiences ranging from a state of maximum well-being to crippling conditions of extreme suffering and emotional anguish. Although it is more common for those who have mental health issues to have lower levels of mental well-being, this is not always the case.<sup>1</sup> Additionally, the prevalence of individuals suffering from MDs in Indonesia has increased significantly, rising from 1.7% in 2013 to 7% in 2018. The estimated number

of people suffering from MDs in Indonesia is around 450 thousand.<sup>2</sup> The government has provided specific laws to support people with MDs. The law states that mental health efforts in Indonesia are activities to create an optimal degree of mental health for every individual, family, and community. The activities include promotive, preventive, curative, and rehabilitative approaches that are carried out in a comprehensive, integrated, and sustainable manner by the government, local government, or the community.

Individuals with MD require specialized treatment to achieve a level of recovery. The recovery of mental disorder patients is influenced by medication adherence and is directly related to the support or assistance provided by their families. Family support and assistance make patients feel loved and valued.<sup>3</sup> Also, it aids patients in preventing noncompliance and relapse in MD patients.<sup>4</sup> Forms of family support and assistance for mental disorder patients include accompanying patients to medical appointments, handling administrative matters, providing information, and showing care.<sup>5</sup> Furthermore, integrating a family approach to mental healthcare includes a multidisciplinary approach to treating the family as a whole since a family of mental illness patients who become caregivers for patients tends to have higher anxiety. A family-centered intervention program's practicability, efficiency, and applicability may help reduce caregivers' anxiety, depression, and stress. With a focus on caregiver empowerment, they could better handle their worries in the caregiving situation and develop more psychological power in the caring process. However, families with MD patients, especially those living in Indonesia, have some hindering factors in running their role to become a patient's caregiver. In addition, earlier research found that caregivers face challenges due to a lack of understanding and limited access to information.<sup>6</sup>

According to experts, an integrated family approach to mental health care improves families by considering the many responsibilities, positions, and connections, implementing an adjustable complementary therapy program, and empowering professionals through multidisciplinary consultations.<sup>7</sup> According to a study, persons who reported having more social support felt less of a desire for mental health services, implying that supportive connections can replace or even postpone seeking professional therapy. There may not be as much unmet need for psychiatric services as low service utilization rates among people with illnesses suggest.<sup>8</sup>

Evidence-based health and mental health promotion initiatives may be extended to include people in these non-clinical mental health settings by utilizing online and mobile technology. Data from Indonesia's National Survey of Social and Economics show that the percentage of people who own a mobile phone increased from 59.59% in 2017 to 65.87% in 2021. As mobile phone ownership rises, so does the population's use of mobile phones, rising from 68.59% in 2017 to 81.28% in 2021,<sup>9</sup> support peer support training as an efficient way to increase compliance and results of online self-help programs, particularly when provided over the phone.<sup>10</sup> Peers may be crucial in successfully assisting one another in using online resources for mental health and health information and gaining access to evidence-based technology interventions that support wellness and health goals.<sup>11</sup> Digital mental health interventions (DMHI) can increase effectiveness, scope, and uniformity while lowering the price of mental health services. According to preliminary research, these technologies will increase the accessibility and effectiveness of evidence-based approaches.<sup>12</sup>

Several programs are available in Indonesia. Prevention efforts are carried out using various strategies, including empowering people with MDs and psychosocial disabilities. A brand-new approach for delivering evidence-based preventative interventions is called "family coaching". Family coaching may be effective because of three recent developments in health promotion.<sup>13</sup> Personalized feedback about intervention content or users' mental health status is one engagement strategy made possible by e-coaching. Other engagement strategies include guidance about content and progress through e-coaching, social forums and peer interaction, content gamification, reminders, flexibility, and ease of use. Engagement with digital interventions for mental health promotion is encouraged by individualized intervention assistance, access to social support, and personalized feedback.<sup>14</sup> However, shifting mental health care from professionals to digital apps could increase social isolation for those requiring human interaction. This essay makes the case that people are our society's most magnificent resource and are just as pervasive as technology.<sup>15</sup> This study aims to evaluate the impact of e-coaching on families' ability to manage mental disorders patients at home.

## Methods

### Study Design

Researchers used a Quasi-Experimental Design to determine the extent of the influence of e-coaching on the ability of families to care for MDs. The study population consisted of families with members with MDs in a district with a total of 1647. The sample size calculation was performed using G-power, taking into account an effect size of 0.14, an alpha level of 0.05, a power of 0.90, two groups, and three repetitions. The calculation determined that a minimum of 110 respondents was needed. To account for potential dropouts, a reserve of 10% was added, resulting in a final rounded sample size of 122 respondents. The sample was taken from 6 health centers in Pekalongan District selected by the researchers. Documented review and approval from a formally constituted review board (Institutional Review Board or Ethics committee) is provided for this study, in accordance with the Declaration of Helsinki. We also provide informed consent for all participants. Furthermore, this study obtained ethical approval from the Ethics Committee of Padjadjaran University, Bandung, with the approval number 544/UN6.KEP/EC/2021.

### Participants

The sampling was conducted using purposive sampling, and the inclusion criteria for respondents in this quantitative research are: 1) Families with members who have MDs, 2) willing to participate as respondents, 3) willing to complete the research process, 4) owning a smartphone, and 5) aged over 18 years. Meanwhile, the exclusion criteria are 1) families who have cared for people with MDs for less than three months and 2) not present during the research period.

There were 122 participants, split into two groups consisting of 61 respondents in the intervention group and 61 in the control group. While the control group received regular mental health care, the intervention group underwent therapy using an e-coaching program. In addition, to prevent contamination between the intervention and control groups, participants were physically or temporally separated to reduce the likelihood of interactions or information sharing between participants from different health centers, as well as clear instructions and monitoring to ensure participants followed the prescribed procedures.

### E-Coaching Assessment

The independent variable is the provision of intervention using the e-coaching application with GROW (Goal, Reality, Option, Will) model. The specialty of this GROW Model does not require psychological training and psychotherapeutic background, the coaches can come from the functional field, and personal development can be done through cooperation with others; this GROW model corresponds to organizational cooperation, simple and used by many parties.<sup>16</sup> The dependent variables are the family's ability to recognize problems, make decisions, take care of people with MDs, modify the environment, and utilize health facilities. The E-coaching application, SIPANDAWA, can be accessed at <https://sipandawa.com> (Figure 1).

Evaluating the effectiveness of e-coaching by using a 20-question questionnaire which has been validated on the family's capacity for caring for MDs, which includes six questions on the family's capacity for problem-solving, two questions on the family's capacity for decision-making, six questions on the family's capacity for caring for patients with MDs, three questions on the family's capacity for environment modification, and three questions on the family's capacity for using medical facilities ([Supplementary 1](#)). Additionally, each question has been assessed and validated by three experts with PhD qualification ([Supplementary 2](#)). Age, gender, education, occupation, relationship with the person with MD, and the duration served to care for the person with MD are confounding factors in this study.

Furthermore, to validate the questionnaire, we followed a rigorous process. Firstly, we conducted a pilot study with a small group of participants to assess the clarity and comprehensibility of the questionnaire items. Based on their feedback, we made necessary revisions to improve the questionnaire's clarity. Subsequently, we approached three experts in the relevant field and shared the revised questionnaire with them. These experts have extensive experience and knowledge in our research area. We asked for their evaluation of the questionnaire's quality, focusing on its relevance,

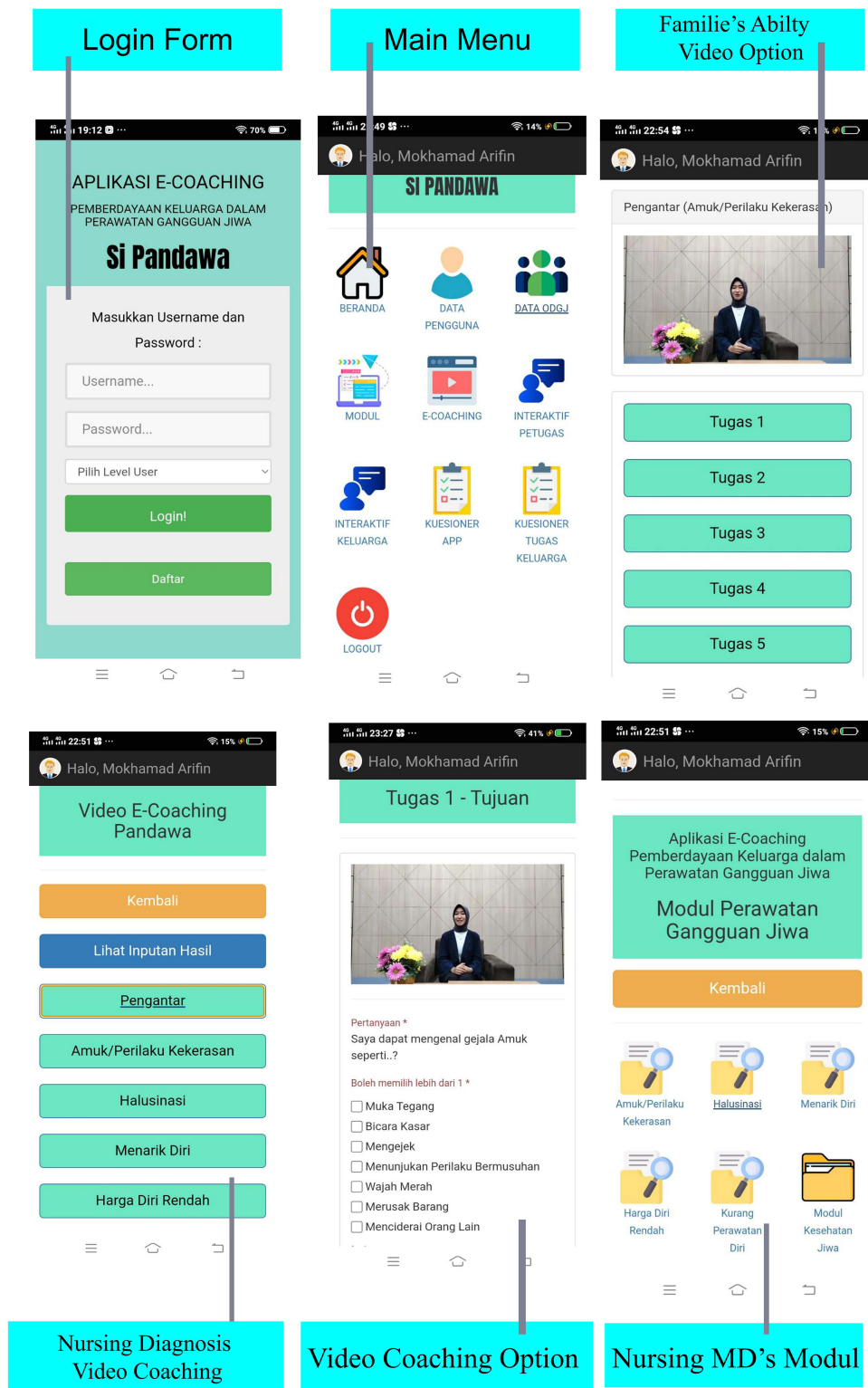


Figure 1 Application e-coaching SIPANDAWA preview.

appropriateness, and comprehensiveness. In addition, we conducted a final review of the questionnaire to ensure its consistency and coherence. We double-checked for any ambiguous or overlapping items, and made necessary adjustments for a more robust instrument.

## Statistical Analysis

The authors performed analysis of covariance (ANCOVA) by using SPSS 28 (Statistical Package for the Social Sciences) to investigate the impact of e-coaching on families' capacity to care for MDs.

## Results

In order to assess the effectiveness of e-coaching, we employed the GROW approach, which involved measuring various factors including the family's capacity to identify issues, make decisions, provide care for individuals with mental disorders (MDs), adapt the environment, and utilize healthcare resources.

### Characteristics of Respondents

Table 1 demonstrates the characteristics of respondents in the intervention and control groups.

Table 1. Illustrates that the intervention group predominantly comprises females at 70.5%, while in the control group, it is 63.9%. Regarding the educational level, most participants in the intervention group have completed junior high school, accounting for 47.6%, whereas, in the control group, it is 65.6%. Concerning occupation, most participants in the intervention group work in the domestic sector, accounting for 62.3%, while in the public sector, it is 37.5%. Regarding the relationship with the person affected by mental illness, the majority of participants in the intervention group are siblings at 62.2%, while in the control group, it is parents at 31.1%.

### An E-Coaching Application Intervention's Effects

Family abilities were evaluated three times in this study: once before the intervention (pre-tests), two weeks after the intervention (post-test 1), and again two weeks later (post-test 2). The results of measuring the average ability of families to care for MDs are shown in Table 2.

Table 2 demonstrates the average family ability during pre-tests of 50.26 in the intervention group and 50.44 in the control group. Analysis of the average difference in family ability between groups during pre-tests showed no difference with a value of  $p=0.698$ . At post-test 1, the average family ability was 54.90 in the control group and 55.98 in the intervention group. At a  $p$ -value of  $=0.070$ , analysis of the average gap in family capacities across groups at post-test 1 revealed no difference. In post-test 2, the average family ability in the intervention group was 63.85, while it was 60.84 in

**Table 1** Participant Characteristics

Variables	Intervention		Control	
	N	%	N	%
Gender				
Male	18	29.5	22	36.1
Female	43	70.5	39	63.9
Education				
Higher education	3	4.9	3	4.9
Senior high school	29	47.6	18	29.5
Junior high school	29	47.6	40	65.6
Occupation				
Public realm	22	34.1	31	50.8
Student	1	1.6	1	1.7
Domestic realm	38	62.3	29	37.5
Association with MDs				
Child	4	6.6	2	3.3
Parent	9	14.8	35	57.4
Sibling	38	62.2	19	31.1
Spouse	6	9.8	2	3.3
Other	4	6.6	3	4.9

**Table 2** Family Ability Evaluation

Family Ability	Intervention (n=61)		Control// (n=61)		T	$\rho$
	Mean	SD	Mean	SD		
Pre-test	50.26	2.75	50.44	2.35	0.389	0.698
Post-test 1	55.98	2.94	54.90	3.58	1.825	0.070
Post-test 2	63.85	3.07	60.84	3.29	5.237	0.000

the control group. Analysis of the average difference in family abilities between groups at post-test 2 showed a difference with the  $\rho < 0.05$ , indicating that e-coaching influences the family's ability to take care of MDs. The relationship of e-coaching and variables to family abilities. The effect of e-coaching on the family's ability to care for MDs also needs to consider the existence of a role variable.

## A Confounding Variable's Significance

The variables estimated as confounding in this study are age, gender, occupation, education, relationship with MDs, and length of care. The effects of confounding can be seen in Table 3.

The outcomes of the ANCOVA conducted on the data are displayed in Table 3. For each variable in the model, the table indicates the type III sum of squares, degrees of freedom, mean square, F-statistic, and significance level. The corrected model, which includes all the predictor variables, was found to be statistically significant ( $F(7, 114) = 37.025$ ,  $p < 0.001$ ), indicating that the model as a whole was a good fit for the data. The adjusted R-squared value of 0.676 suggests that the model explains a substantial amount of the variance in the outcome variable.

The intercept term was highly significant ( $F(1, 114) = 1.091E3$ ,  $p < 0.001$ ), indicating that the outcome variable had a significant baseline value. Only education, group, and the corrected model were substantial predictors of the outcome variable among the predictor variables. The variables of age, gender, occupation, relationship with MDs, and length of care were not significant predictors of the outcome variable. Overall, the multivariate test results suggest that the e-coaching empowerment application significantly affected families' ability to care for individuals with mental disorders, even after controlling for other variables.

## E-Coaching Results Overview

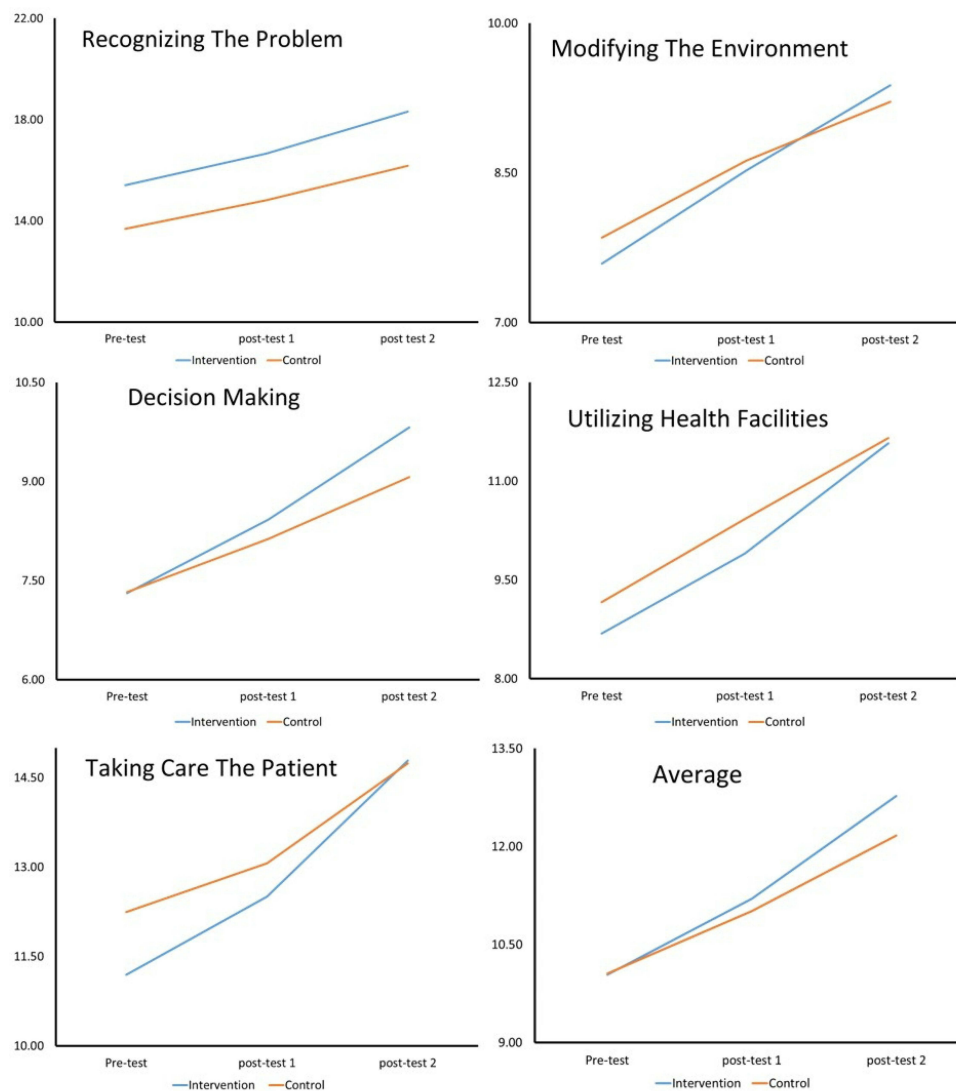
The family's ability in the care of MDs is assessed based on 5 family tasks in the treatment of MDs consisting of task 1: recognize the problem; task 2 make decisions; task 3 taking care of MDs patient; task 4: modify the environment and

**Table 3** Confounding Impact Analysis Using ANCOVA

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1035.892 <sup>a</sup>	7	147.985	37.025	0.000
Intercept	4361.367	1	4361.367	1.091E3	0.000
Age	0.870	1	0.870	0.218	0.642
Gender	4.533	1	4.533	1.134	0.289
Occupation	2.354	1	2.354	0.589	0.444
Education	504.512	1	504.512	126.225	0.000*
Relationship with MDs	0.799	1	0.799	0.200	0.656
Length of care	4.002	1	4.002	1.001	0.319
Group	44.026	1	44.026	11.015	0.001
Error	455.649	114	3.997		
Total	475,682.000	122			
Corrected Total	1491.541	121			

Notes: <sup>a</sup>R Squared = 0.695 (Adjusted R Squared = 0.676). \* $p < 0.001$ .





**Figure 2** Family ability in taking care of MDs.

tasks: 5 utilize health facilities. The [Figure 2](#) demonstrated an overview of changes in family abilities in the treatment of MDs in the intervention group that occurred before e-coaching and after e-coaching.

Overall, there was an improvement in the ability to care for individuals with MDs with regards to the variables of Recognizing the Problem, Making a Decision, Taking Care the Patient, Modifying the Environment, and Utilizing Health Facilities. It is clear that e-coaching significantly improved several of these variables.

## Discussion

Patients with pulmonary tuberculosis can increase their self-efficacy and preventative behaviors, such as knowledge, attitude, and behavior, by receiving health coaching based on the health promotion framework. Although the research is conducted in different areas, the critical essence is using the same method, which is coaching.<sup>17</sup> Studies show that personalized support during the intervention, access to social support, and personalized feedback seem to encourage engagement with digital interventions for mental health promotion, so there is still room for improvement in the development of coaching for mental health through digital media. These findings should be interpreted cautiously because the included studies are diverse, often have small sample sizes, and generally do not highlight engagement as the primary outcome. Although user participation is essential for the success of digital treatments, little attention has been

paid to this topic. The effectiveness of different user engagement facilitation tactics for digital interventions for mental health promotion requires further study.<sup>18</sup> The effects of coaching practices on well-being might last up to six months following involvement. Coaching must be institutionalized to enhance the well-being of digital technology users who experience health issues.<sup>19</sup>

This study used the Coaching GROW method in four stages on 5 cases of managing Aggression/Violent Behavior, Hallucinations, Withdrawal, Low Self-Esteem, and Deficit/Self-Care. When effectively used in the mentoring process, the coaching model positively impacts the organization and individuals within it, ultimately resulting in better patient care.<sup>20</sup> According to this study, combining coaching GROW with Zoom media can enhance school administrators' well-being. The study's findings also demonstrate the GROW technique as an effective treatment for subjective well-being in various mental health issues.<sup>21</sup>

Education level and involvement in employment and education are positively correlated. This study contends that these aspects of socioeconomic inequality grow as people age and emphasizes the significance of involving workers with less education in initiatives to promote lifelong learning.<sup>22</sup> Considering inter-individual variables, such as education level, when examining the impact of proactive personality and locus of control on job satisfaction is crucial because education can have beneficial and detrimental effects on reducing stress.<sup>23</sup> Students in senior high school have higher health literacy levels than those in junior high school, and those who have completed health-related courses have even higher health literacy levels. Preventing and treating infectious diseases is the most sought-after health information, and students are increasingly using new media to learn about health.<sup>24</sup> In all provinces, patient education materials are still written beyond the recommended Grade Reading Level (GRL), and provincial institutions vary greatly regarding patient education capacity, quality, and comprehension. It offers a chance to improve the materials' effectiveness, assuring a more thorough audience knowledge and raising patients' health literacy.<sup>25</sup> Anyone who wants to learn more can do so, even classroom teachers. By actively participating in initiatives to raise students' mental health literacy, they can significantly raise their awareness of and attitudes toward psychological issues, making up for the absence of full-time mental health teachers in schools. Future efforts should focus on improving students' mental health literacy and developing evidence-based intervention research. In addition, we can raise kids' mental health knowledge by addressing delays and preventing bad mental health.<sup>26</sup>

Social inequality in 2018 has been growing over time and is influenced by factors other than gender, including education level, age, job, salary, and place of birth.<sup>27</sup> The degree to which certain job pathways are believed to require verbal or numerical skills is correlated with the distribution of gender in education and employment. The large discrepancies in professional results between men and women can only be attributed to gender differences in academic achievement, even though gender is only moderately related to people choosing decisions that are in line with their academic abilities.<sup>28</sup>

Even in brain deterioration, older people can preserve cognitive function by working in jobs that stimulate cognitive performance and include, more important social engagement.<sup>29</sup> Contrarily, there is no correlation between medication compliance and the following factors: BMI, occupation, comorbidities, disease duration, age, gender, marital status, or degree of education.

Family interactions are essential in determining the psychological status of adolescents. However, the impact of father-child connections differs depending on the father's living situation. The results also emphasize the importance of considering context when analyzing how family interactions affect adolescents' well-being.<sup>30</sup> Qualitative methods are the most effective way to study family dynamics and relationships. There are four benefits: (1) learning what family members mean when they talk about family interactions and relationships; (2) learning what they think about how the family interacts and interacts with one another; (3) examining families within their contexts; and (4) giving voice to excluded family members and family members.<sup>31</sup>

In addition, economic concerns are crucial inside families. Higher socioeconomic level individuals have greater psychosocial coping mechanisms to handle psychosocial challenges. Besides those with the highest incomes, jobs may be a psychological burden and a source of stress for all workers, suggesting that a person's stress levels may be lowered by having a higher income.<sup>32</sup> Although it is negligible, there is a connection between emotional-focused family burden and ineffective family coping mechanisms. Therefore, social support and practical coping skills instruction for those who care for people with chronic schizophrenia and bipolar disorder can lessen their perception of the care's burden.<sup>33</sup> Programs for psychoeducation may lessen the strain of communication and enhance carers' mental health, according to an earlier



study. These initiatives can enhance the quality of life for aphasic people and their families who reside in rural locations and deal with severe social stigma and heavy caregiving responsibilities.<sup>34</sup>

Timely access to inpatient care is required to shorten the length of stay for individuals with mental health conditions. This can be accomplished, in part, by making inpatient psychiatric care insurance more widely available and removing pointless mental health requirements for placement authorization.<sup>35</sup> MDs who live in rural areas, take drugs, and have emotional issues are more likely to have prolonged hospital stays. The chance of a mental disorder linked to childhood trauma relapsing is increased by working and having experienced parental childhood trauma. Treatment emphasizing early trauma lowers the chance of relapse and reduces hospital stays.<sup>36</sup>

Based on multiple regression analysis, the R Square value is 0.692 or equivalent to 69.2%. This number indicates that the variables of the group, age, gender, occupation, education, relationship with people with MDs, and length of care together influence the family's ability to care for people with MDs by 69.2%. Meanwhile, the remaining (100–69.2% = 30.8%) is influenced by other variables outside this regression equation or that have not been studied.

Some other potential confounding variables that have not been studied include support systems, economic status, marital status, and insurance ownership.<sup>37</sup> Family support has more sway in nations with more power disparity or less individualism (where social norms and culture may be less advantageous). It implies that family support is a replacement mechanism in these nations that encourages entrepreneurial behavior.<sup>38</sup> In rural areas, low family income predicts poor long-term results for people with schizophrenia. When developing mental health policies and offering community-based mental health services, the financial situation of the person's family should be considered.<sup>39</sup> Low-income individuals have a disproportionately high likelihood of being male, single, unable to support themselves outside of the home, lacking family carers, having fewer family members, and being mentally ill. Poor workability, earlier onset age, never-treated status, and low-income family economic status are significant risk variables linked to patients' poor mental health. Early detection, care, and patient recovery should be enhanced through culturally appropriate community-based interventions and focused programs to reduce poverty.<sup>40</sup>

Female participants report more depressive symptoms and unmarried households are more likely to have careers for their parents. Both marital status and caregiving status are proportional predictors of depression; however, the effect of caregiving status on depression is not supported by marital status. Significant differences in depression symptoms, proportional to marital status and gender, are caused by caregiving status.<sup>41</sup> The working-age population's suicide rate is influenced both separately and together by marital status, educational level, and employment situation. Particularly among young adults, divorce, unemployment, and economic inactivity for adults, all increase the risk of suicide. Suicide prevention for young adults should consider monitoring and intervention.<sup>42</sup>

Aspects of finances and insurance are another confusing factor associated with family capacity. Even after correcting for these variables initially and other confounders, financial stability and financial competence are positively connected to self-reported physical and mental health indicators, while financial challenges are adversely related. Based on data from health insurance claims, financial status is also linked to a lower likelihood of depression. Anxiety is also linked to financial stability. To improve population health, policymakers may consider implementing more potent measures to guarantee favorable financial conditions.

Additionally, policies can promote wise financial management practices and comprehension of the long-term effects of financial decisions, as these factors may be extremely important to health outcomes. Although the most conservative limits for friction and double inference corrections render it statistically insignificant, insurance may have a "peace of mind" effect. Health insurance could ease anxiety.<sup>43</sup> The insurance coverage in Indonesia's eastern provinces is still significantly lower than in its western provinces. Health insurance ownership, education, household economic status, and regional characteristics exhibit favorable insurance utilization correlations. After the National Health Insurance program was implemented, there was still inequity in insurance usage across socioeconomic status and geography differences. This circumstance highlights the requirement for the government and associated parties to make efforts to equalize insurance utilization, particularly for National Health Insurance in all regions of Indonesia.<sup>44</sup>

Furthermore, despite e-coaching having shown significant differences in improving family ability to care for individuals with MDs, this study has several limitations. The quasi-experimental design of this study, which lacks randomization and may result in disparities in baseline characteristics between the intervention and control groups, is one

possible weakness that could restrict its ability to produce reliable results. Self-report measures used in the study have the risk of introducing subjectivity bias, erroneous answers, or memory distortion. The delivery of the intervention by an e-coach may have an impact on how the family members react and how much assistance they report giving. Controlling outside elements that can affect family support, such as climatic changes, family dynamics, or unmanaged stressors, is difficult.

## Conclusion

The study on integrating the GROW approach and e-coaching application demonstrates how the e-coaching application affects the family's capacity to care for MDs. This program can enhance mental health services in a larger area that is reachable online and can be created for other medical specialties. Furthermore, the educational background of the family significantly affected their capacity to care for MD patients.

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## Disclosure

The authors report no conflicts of interest in this work.

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