A Network Analysis Approach to Religious Commitment, Mental Health, and Well-Being of Indonesian Muslims

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ABSTRACT: Previous research has investigated how religious commitment relates to mental health and well-being through correlational studies and latent variable models. However, few studies have employed a network analysis approach to examine the reciprocal interactions among these variables. Consequently, this study utilizes network analysis to assess the connections between religious commitment, mental health, and well-being among Muslims in Indonesia, refers to data from the fifth Indonesia Family Life Survey (IFLS 5) carried out in 2014-2015. For our analysis, we focused on the Muslim population and included only those who identified as Muslim. With this criteria, we obtained a total sample of 28,392 individuals. EBICglasso network model display node religiosity (religious commitment) had a direct negative association with restless (mental health problem), effort (mental health problem), and trouble (mental health problem) and had a direct positive association with life satisfaction (well-being), happiness (well-being), and lonely (mental health problem). on the other hand, node prayer (religious commitment) had a direct negative association with lonely (mental health problem) and had a direct positive association with economic status (well-being), health status (well-being), and fearful (mental health problem). Nodes *pengajian* (religious commitment) had a direct negative association with trouble (mental health problem) and had a direct positive association with effort (mental health problem), and could not (mental health problem). In conclusion, a bidirectional influence between religious commitment, mental health and well-being should be considered.

INTRODUCTION

The Sustainable Development Goals (SDGs) seek to reduce early mortality from non-communicable diseases by one-third through preventive measures and treatment, while also promoting mental health and overall well-being (Nunes et al., 2016). Many interventions have been developed to improve mental health and well-being. Unfortunately, meta-analysis studies show that the interventions produced show relatively small effect sizes. A meta-analysis of interventions designed to enhance psychological well-being (PWB) and subjective well-being (SWB) found an effect size of 0.23 overall, with 0.08 for PWB and 0.22 for SWB precisely (Koydemir et al., 2021).

These findings suggest the importance of clearly defining well-being and making theoretical distinctions, such as between subjective well-being (SWB) and psychological well-being (PWB), as intervention studies targeting different aspects of well-being will yield varying results.

The concept of well-being that was then developed was Islamic well-being (IWB). IWB refers to a calm and serene mental state granted by Allah (God) to a Muslim, serving as a reward for their unwavering faith and adherence to Sharia. (Joshanloo, 2017). Qualitative research with elderly participants showed that religious commitment, namely prayer and dhikr, contributed to their quality of life (Taufik et al., 2023). In the psychology literature, religious matters, such as prayer and dhikr, are called religious involvement, religious commitment, religiosity, religious orientation, and religiousness (Khenfer & Roux, 2012). This study refers to religious commitment when discussing this topic.

Systematic reviews indicate a favorable connection between religious commitment and happiness, yet some research reveals only a slight positive correlation (Shahama et al., 2022). To date, it remains uncertainty regarding whether the connection between religious commitment, mental health, and well-being is direct, or if other factors partially or fully mediate it. Existing explanations can be divided into reductionist and non-reductionist categories (Abu-Raiya, 2017). The reductionist view suggests that the relationship between religion, health, and overall well-being is indirect, influenced by non-religious or spiritual factors. Therefore, participation in religious activities may yield *'secular*" advantages, like fostering a sense of meaning and connection, which can ultimately influence outcomes. In contrast, the non-reductionist perspective asserts that religious engagement is fundamentally linked to health and well-being, as it involves a belief system and practices that shape values, commitments, and worldviews.

Research on well-being within Islam should be carried out independently from studies on well-being in other cultures (Abu-Raiya & Pargament, 2011). Several studies have examined the concept of Islamic well-being (IWB). First, the study was conducted by Eryilmaz and Kula (2020). This study developed an Islamic well-being scale based on exploring the concept of well-being in the Qur'an, which then looked at its relationship with mental health and well-being in students. The results of this study demonstrate that the Islamic Well-Being Scale is weakly correlated with the belief dimension ($r = 0.157$) and moderately correlated with the worship dimension ($r = 0.445$) of religious commitment. The findings of this study also show a relatively low relationship between Islamic well-being and mental health. Another study was conducted by Aziz et al. using data from the Indonesia Family Life Survey (IFLS) (Aziz et al., 2022). The findings of this study indicate a relationship between religious commitment and positive affect, negative affect, happiness, and life satisfaction. However, the relationship found has a relatively weak strength.

The connection between well-being, mental health, and religious commitment has been explored using correlation analysis and latent variable models. However, much less is known when it comes to a network analysis in exploring the relationships between these variables in a novel context way. This study used network analysis to explain better the connection between well-being, mental health, and religious commitment. Visualizing the connections between these variables can help elucidate their theoretical relationships. This is the focus of the current study.

The approach used in this study is network psychometrics (Borsboom et al., 2021). Network psychometrics is exploratory, which is traditionally closer to exploratory statistical methods (Tukey, 1977), rather than inferential statistical methods (Neyman & Pearson, 1967). This method primarily aims to find a network representation of psychological constructs that visually depicts statistical associations. This helps researchers generate a network model/structure of a concept that can be useful in further research (Epskamp et al., 2012). Network psychometrics is a relatively new approach in the discipline of psychometrics. Thus, some criticism has been of its application and use in psychology (Neal et al., 2022). However, the application of network analysis has shown positive

results, especially in understanding the complexity of the concepts of depression (Cramer et al., 2016), personality (Costantini et al., 2019), and PWB (Blasco-Belled & Alsinet, 2022).

Study Aim and Hypothesis

This study aims to use network analysis to examine the relationship between well-being, mental health, and religious commitment in Indonesian Muslims. Network analysis is a powerful tool that allows researchers to explore the intricate connections and interactions between multiple variables simultaneously. By applying this method, the study seeks to uncover how different aspects of well-being, such as life satisfaction, socioeconomic status, living status, food consumption, physical health, and happiness, are interconnected with mental health indicators like loneliness, sleep problems, and depression. Furthermore, the study will investigate how religious commitment, including factors such as frequency of religious identification, religious practices, and community involvement, influences these relationships.

METHODS

Design

This research employed a correlational design through a cross-sectional survey to examine the relationship between well-being, mental health, and religious commitment in Indonesian Muslims. A correlational design is used to determine whether or not a relationship exists between two or more variables, as well as the strength and direction of that relationship. In this study, participants from various regions in Indonesia were surveyed to collect data on their levels of well-being, mental health status, and degree of religious commitment.

Participants

The fifth Indonesia Family Life Survey (IFLS) data from the RAND Corporation was publicly available for analysis (Strauss et al., 2016). The latest IFLS survey, Wave 5, was conducted by RAND and Universitas Gadjah Mada in Yogyakarta from 2014 to 2015. In IFLS 5, 50,148 people from 16,204 households completed a self-reported questionnaire and were interviewed. The IFLS 5 and its protocols have been approved by the Institutional Review Boards at RAND and Universitas Gadjah Mada. We focused on the Muslim population for our analysis and included only those who identified as Muslim in response to item TR 12 (What is your religion?). To meet these criteria, we gathered 28,392 individuals for the sample.

Instruments

***Religious commitment measurements*.** Book 3A IFLS 5 questions TR 11, TR 13, and TR 14a were used to measure religious commitment. TR 11 asked, "How religious are you?" Responses range from 1 to 4 (4 = "Not religious," 3 = "Rather religious," 2 = "Somewhat religious," 1 = "Very religious"). The score for this item has been reversed to create a variable named "Religiosity". TR 13 asked, "How many times do you pray each day?" the response was categorical: 1 = […] given times; 2 = Not every day; 3 = Do not practice. The score for this item is called "Prayer". TR 14a asked, "Did you attend/participate in *pengajian/taklim/ceramah* (prayer/religious meetings) in the past 12 months?" Responses range from 1 to 5 (5 = "No," 4= "Yes, less than once a month," 3 = "Yes, at least once a month," 2 = "Yes, at least once a week," 1 = "Yes, more than once a week"). The score for this item was reversed to generate a variable called "*Pengajian*" or Al-Qur'an recitation and Islamic lectures.

Mental health measurements. A brief version of the Center for Epidemiologic Studies Depression Scale (Andresen et al., 1994; Radloff, 1977) from book 3B IFLS included 5 questions to assess mental health. Symptoms of depression from the past week were gauged using 10 Likert scale items. Participants rated their experiences on a scale of 1 to 4: 1 indicates rarely, none, or ≤1 day a week; 2 signifies some days, or 1–2 days a week; 3 represents occasionally, or 3–4 days a week; and 4 indicates most of the time, or 5–7 days a week. One of the questions asked was, "I felt bothered by things that usually do not bother

me." A total of eight metrics were applied to measure depressive symptoms. However, two items—"How often did I feel hopeful about the future" and "How often was I happy"—were excluded due to their insufficient effectiveness in evaluating depressive symptoms (Priyadi, 2023).

***Well-being Measurements*.** Book 3A of IFLS utilized questions SW 00, SW 01, SW 04, SW 05, SW 06, and SW 12 to assess well-being. SW 00 inquired, "Reflecting on your life, how satisfied are you?" Responses are rated from 1 to 5 (5 = "Not at all satisfied," 4 = "Not very satisfied," 3 = "Somewhat satisfied," 2 = "Very satisfied," 5 = "Completely satisfied"). The scoring for this item is reversed, creating a variable termed "Satisfaction." SW 01 asked, "What economic step do you see yourself at today?" with answers ranging from 1 (poorest) to 6 (richest), labelling this score as "Economic." SW 04 queried, "Regarding your current standard of living, which statement applies to you?" Responses range from 1 to 3 (1 = "Less than adequate," 2 = "Just adequate," 3 = "More than adequate"). This score is referred to as "Living." SW 05 focused on food consumption, Asking, "In terms of your food consumption, which statement is true?" with answers from 1 to 3 (1 = "Less than adequate," 2 = "Just adequate," 3 = "More than adequate"), referred to as "Food." SW 06 addressed healthcare: "Regarding your healthcare, which statement applies?" Answers range from 1 to 3 (1 = "Less than adequate," 2 = "Just adequate," 3 = "More than adequate"), and this score is called "Health." Finally, SW 12 asked, "Overall, how would you describe your current feelings: very unhappy, unhappy, happy, or very happy?" Responses are rated from 1 to 4 (4 = "Very happy," 3 = "Unhappy," 2 = "Happy," 1 = "Very happy"). The score for this question is also reversed, generating a variable called "Happiness."

Data Analysis

We estimated the network structure using an EBICglasso model. The EBICglasso model is a graphical least absolute shrinkage and selection operator (LASSO; Friedman et al., 2008) regularization based on the Extended Bayesian Information Criterion (EBIC; Chen & Chen, 2008) derived using JASP version 0.18.3.0 (JASP Team, 2023). We adjusted the tuning parameter to 0.5 to create a more compact and explainable network. This means there are fewer edges and higher specificity and sensitivity. The centrality of codes in the network reflects research factors and is computed using betweenness (degree of connection), closeness (distance centrality), and strength (degree centrality) (Epskamp et al., 2012). The CS-coefficient, a measure of node centrality stability, should be over 0.5 for interpretability and stability (Epskamp et al., 2018). Edges represented code connections. Thicker edges indicated a stronger association, while thinner edges indicated a weaker correlation. Edge stability was assessed using bootstrapped 95% confidence intervals (1000 bootstrap samples), with fewer overlaps indicating greater stability.

RESULTS AND DISCUSSION

Results

Figure 1 displays the EBICglasso network, including religious commitment (religiosity, prayer, and *pengajian*), mental health ("I was bothered by things that usually don't bother me," "I felt everything I did was an effort," "I felt lonely," "I had trouble concentrating in what I was doing," "I felt depressed," "My sleep was restless," "I felt fearful," and "I could not get going"), and well-being (life satisfaction, economic, living, food, health, and happiness) for the 28,392 Indonesian Muslims. In the network, there were a total of 17 nodes and 98 non-zero edges. Node religiosity (religious commitment) had a direct negative association with restlessness (mental health problem, r = -0.054), effort (mental health problem, r = -0.049), and trouble (mental health problem, r = -0.025) and had a direct positive association with life satisfaction (well-being, r = 0.091), happiness (well-being, r = 0.050), and lonely (mental health problem, r = 0.062).

On the other hand, node prayer (religious commitment) had a direct negative association with lonely (mental health problem, r = -0.035) and had a direct positive association with economic (well-being, r = 0.091), health (well-being, r = 0.026), and fearful (mental health problem, r = 0.026). Nodes

pengajian (religious commitment) had a direct negative association with trouble (mental health problem, *r* = -0.026). They had a direct positive association with effort (mental health problem, *r* = 0.018) and could not (mental health problem, *r* = 0.016). In conclusion, the network analysis showed a positive link between religious commitment and well-being, while indicating a negative relationship with mental health problems.

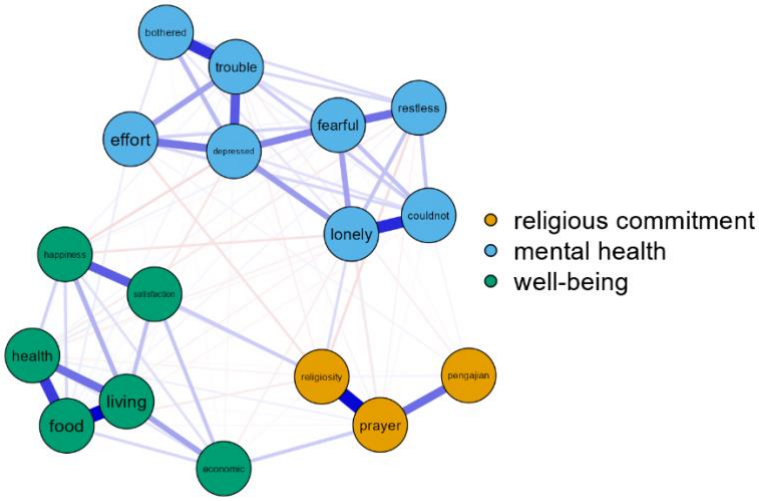

Figure 1. EBICglasso Model of Religious Commitment, Mental Health, and Well-Being

Table 1. Centrality Measures per Variable

Variable	Network		
	Betweenness	**Closeness**	**Strength**
Religiosity	0.804	0.870	-0.109
Prayer	0.734	0.453	0.263
Pengajian	-0.878	-1.254	-2.261
Bothered	-0.878	-1.080	-0.781
Trouble	0.173	0.124	1.168
Depressed	2.065	1.732	1.658
Effort	-0.878	0.169	-0.686
Fearful	-0.387	0.229	0.549
Restless	-0.878	-0.302	-0.386
Lonely	0.804	1.190	0.840
Couldnot	-0.878	-0.096	-0.019
Satisfaction	-0.668	0.676	-0.888
Happiness	1.505	1.434	-0.196
Economic	-0.247	-1.204	-1.251
Living	1.294	-0.293	1.117
Food	-0.878	-1.072	0.901
Health	-0.808	-1.577	0.081

Table 1 and figures 1 and 2 illustrate the betweenness, closeness, and strength (degree) of the research variables for 28,392 Indonesian participants Muslims. The item "prayer" (measured as "times prayed each day") showed a higher level of strength centrality (0.263) in religious commitment. On the other hand, the items "depressed" (measuring the extent of feeling depressed) and "trouble" (measuring the extent of trouble concentrating) demonstrated a higher level of strength centrality (1.658 and 1.168, respectively) in mental health problems. Additionally, "living" (concerning the current standard of living) and "food" (concerning food consumption)

exhibited the highest level of strength centrality (1.17 and 0.901, respectively) in well-being.

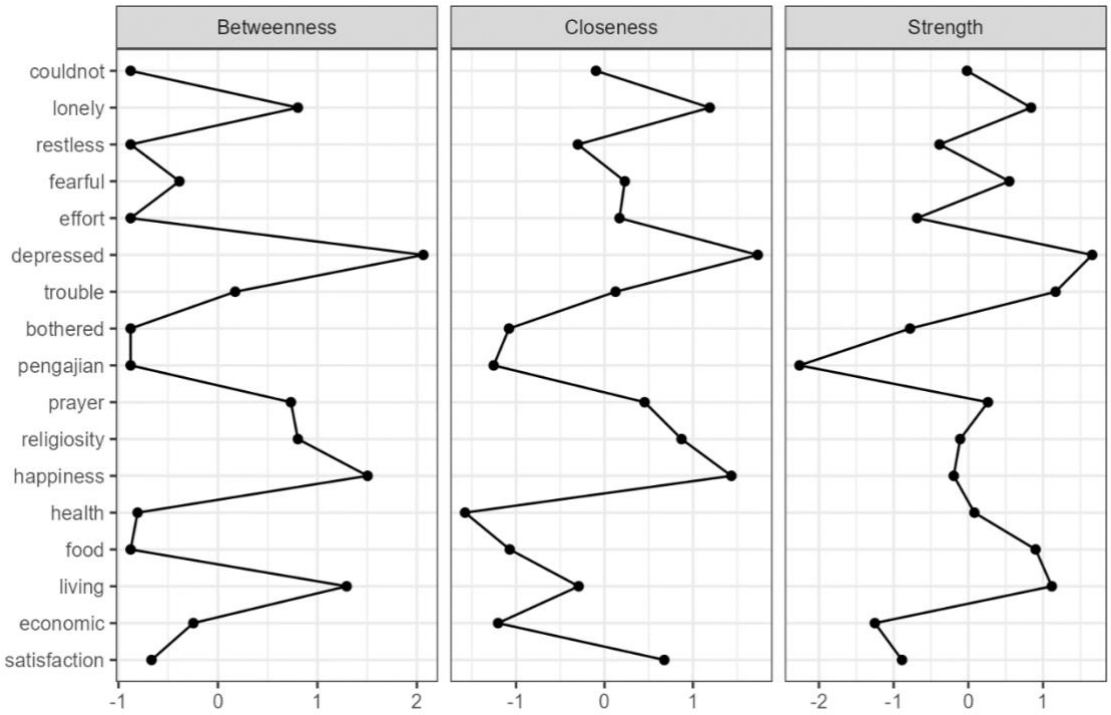

Figure 2. EBICglasso Network Analysis Centrality Plots

Discussion

The present study investigated the connection between religious commitment, mental health, and well-being. Visual representations of the variables' relationships might clarify the theoretical links between religious commitment, mental health, and variables. In multiple studies, the findings aligned with meta-analyses, indicating a weak positive correlation between religiosity and happiness (Shahama et al., 2022).

Previous research indicates that regularly attending religious gatherings is positively correlated with mental health among the elderly (Aziz et al., 2022). The study explained that this is related to the topics discussed in the *pengajian*. The topics addressed in religious studies frequently touch on dogmatic elements of faith, including sin, repentance, and the contemplation of mortality. These subjects can evoke a sense of despair instead of hope among older Muslims, potentially resulting in depression. The study also offers a more detailed explanation of the results. The findings of this study indicate that the node *pengajian* has a positive relationship with the effort node ("I felt everything I did was an effort") and the get-going node ("I could not get going"). This shows that attending *pengajian* requires more effort, such as travelling to the *pengajian* place, understanding the *pengajian* material, and choosing the right time to be able to follow the *pengajian* well.

Although various psychological well-being instruments have been developed in a religious context (e.g. Bagis et al., 2024; Daliman, 2021; Prasetyaningrum et al., 2021), however, this study did not identify any scale that directly measures Islamic well-being (Priyadi et al., 2024). For example, Bagis et al.'s (2024) development of a measuring tool for Islamic spiritual well-being is still based on Western concepts, namely, the concepts of positive emotion, engagement, relationship, meaning, and accomplishment (PERMA; Seligman, 2018). Meanwhile, Prasetyaningrum et al. (2021) developed an instrument for the Psychological Well-being of Indonesian Santri based on psychological well-being (PWB; Ryff, 2014).

The study provides valuable insights into developing measurement tools for Islamic well-being. Especially, this study observes which indicators should be considered when examining the relationship between religious commitment, mental health, and well-being. Previous research

aimed to construct the Islamic well-being scale (Eryilmaz & Kula, 2020), focused on general indicators of religious commitment, such as obligatory worship. Furthermore, the existing Islamic well-being scale only included happiness as one of its indicators. The study's results highlight that the frequency of daily prayers strongly indicates religious commitment. On the other hand, feelings of depression and difficulty concentrating were strong indicators of mental health issues. Finally, concerns about the current standard of living and food consumption were strong indicators of overall well-being.

Implications

These findings suggest a new perspective on the connection between religious commitment, mental health, and well-being. More specifically, practitioners developing interventions to overcome well-being and mental health issues should consider different aspects of religious commitment. For example, worship-based interventions, such as obligatory prayers, may have more direct effects on physical and mental health than sermon-based interventions because they require more significant effort from Muslims. On the other hand, researchers developing instruments for measuring Islamic well-being should consider strength indicators of religious commitment, mental health, and well-being.

Limitations and Further Research

The current study has a few limitations that need to be considered. One of the primary limitations is it employed a cross-sectional approach to data, which may not be able to establish a cause-and-effect relationship between the variables. Therefore, conducting a longitudinal network analysis to examine the connection between religious commitment, mental health, and well-being would be beneficial. Additionally, all the data collected in the survey relied on self-reporting, which could lead to participant biases. Future studies should utilize more objective methods and measurement tools, like clinical mental health diagnoses research. Furthermore, exploring potential bidirectional influences between well-being, mental health, and religious commitment would be valuable through cross-lagged or longitudinal network analysis.

CONCLUSION

This research employed network analysis to investigate the connections between religious commitment, mental health, and well-being. Findings indicated that different types of religious commitment might yield varying effects on mental health and well-being. Nevertheless, it is important to note that the study employed cross-sectional data, which cannot establish causality among the variables. Therefore, conducting network analysis in longitudinal data is advised to extract deeper into the connection between well-being, mental health, and religious commitment.

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