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Assessing the Role of Demographic Factors in the Elderly Using the SCL-90

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ABSTRACT

Background: Psychological symptoms in older adults are a significant public health concern. Understanding how demographic and social factors influence these symptoms is essential for effective interventions.
Methods: This study analyzed psychological symptoms in 313 elderly individuals 32 men and 281 women—aged between 60 and 90 years, with most aged 60–65 and having elementary education. We used the Symptom Checklist-90 (SCL-90) to assess symptoms like depression, anxiety, obsessive-compulsive tendencies, phobias, somatization, interpersonal sensitivity, hostility, paranoia, and psychosis. Data were analyzed using t-tests and ANOVA to compare psychological variables based on gender, education level, living area, involvement in Islamic organizations, and employment before age 60. A bias test showed that bias was not a significant issue.
Results: The results indicated that women had higher psychological symptoms than men. Education level significantly affected symptoms—those with less education had higher distress levels. Age and living area did not significantly impact symptoms. Participants involved in Islamic organizations had lower psychological symptoms. There were no significant differences for those involved in general organizations or those living with family members. Interestingly, those who worked before age 60 showed higher levels of hostility, paranoia, and psychotic symptoms
Conclusions: This study highlights the importance of demographic and social factors in affecting psychological symptoms among the elderly. These findings can guide more targeted mental health interventions for this age group

Keywords: Psychological Symptoms, Elderly, SCL-90, Demographic Factors, Mental Health.

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Introduction

Mental health is a critical aspect of the well-being of individuals and society as a whole. According to the World Health Organization, mental health is "a state of well-being in which an individual realizes their own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to contribute to their community" (World health organization, 2004). Good mental health is characterized by an individual's ability to manage stress, enjoy daily activities, and maintain positive relationships with others. Both the World health organization, (2004) and the Ministry of Health of the Republic of Indonesia (2018) emphasize that a peaceful and calm inner state is essential for achieving these aspects of well-being. Mental health disorders, on the other hand, can disrupt mood, cognitive abilities, and emotional regulation, adversely affecting behavior and the ability to function in daily life. Individuals with good mental health can utilize their potential to the fullest when facing life's challenges. Conversely, mental health disorders can result in mood disturbances, impaired thinking abilities, and loss of emotional control, which ultimately can lead to negative behaviors.

Mental health is a complex state of well-being where individuals are aware of their abilities, able to face normal life pressures, and can contribute to society (World health organization, 2004). This concept is expanded with the view that happiness, as part of mental health, is a state of sustained enjoyment involving brain structures in emotional processes (Leigh, 2010). From the perspective of social function, mental health is associated with conditions that are socially acceptable and personally satisfying (Krapf, 1961). The definition of mental health also includes negative aspects—namely, the absence of mental disorders—and positive aspects that reflect emotional, mental, and social well-being in interaction with the environment (Abdullah, 2020). Cultural differences exist in the definition of mental health, where Western cultures tend to focus on the individual, while Eastern cultures prioritize maintaining psychological states through self-deconstruction and the elimination of personal desires (Wang, 2022). According to the Ministry of Health of the Republic of Indonesia (2018), good mental health is achieved when individuals are in a state of inner peace and calm, allowing for the maximum use of their potential. This is reinforced by Galderisi et al., who define mental health as a dynamic internal balance that enables healthy social functioning and good emotional skills (Galderisi et al., 2015). Adaptation and self-management abilities in facing challenges are also integral parts of mental health (Huber et al., 2011). However, the definition of mental health remains a topic of debate, especially regarding functional aspects and conformity with universal values (Palumbo & Galderisi, 2020). In conclusion, mental health encompasses aspects of

subjective well-being, social functioning, inner peace, and emotional balance, all of which contribute to a higher quality of life.

It is important to understand how mental health can differ based on demographics, such as between individuals living in urban and rural environments. A literature review conducted by Gruebner et al. (2017) data from various countries illustrate the significant impact of urbanization on mental health. In Eastern nations such as China, India, and Vietnam, studies highlight an increased risk of mental disorders like schizophrenia and depression associated with urban living conditions. Conversely, in Western countries, including Germany, France, and the United States, research indicates that social stress and urban environmental factors contribute to higher rates of psychotic disorders and addictions. These findings underscore the importance of understanding the effects of urbanization on mental health across different geographical contexts. indicates that the risk of serious mental illness is generally higher in urban environments compared to rural ones. Epidemiological studies have linked living in cities with a much higher risk of experiencing serious mental health disorders such as schizophrenia. Meta-analyses and other quantitative studies also provide evidence that there are differences in the levels of mental health disorders between rural and urban (Gruebner et al., 2017).

Moreover, several major mental illnesses—such as anxiety, psychotic, mood, and addiction disorders—have higher risks in urban environments. Research on anxiety disorders found that the prevalence of these disorders tends to be higher in urban areas compared to rural ones in some Latin American and Asian countries (Gruebner et al., 2017). Factors such as unemployment, being widowed or divorced, and living in urban areas are also associated with a higher risk of experiencing mental health problems (Sharifi et al., 2015).

Higher levels of urbanization have also been linked to an increased risk of mental health disorders. Previous research by Pedersen & Mortensen (2001) showed that individuals living in environments with higher levels of urbanization compared to five years earlier had a 1.40-fold increased risk. Additionally, the risk of schizophrenia in most urban environments is estimated to be 2.37 times higher compared to rural environments (Vassos et al., 2012).

It is important to note that the prevalence of mental health disorders can also vary based on factors such as gender, age, socioeconomic status, and marital status. For example, the highest prevalence rates of mental health disorders are often found among women and younger age groups, as well as among those who are unmarried and not living with a partner. Furthermore, factors such as low socioeconomic status can also play a role in the risk of mental health disorders (Jacobi et al., 2014). Another study by Prina et al. (2011) showed that city centers tend to have higher rates of anxiety disorders compared to rural areas after adjusting for factors such as age, gender, and location. Age, gender, socioeconomic status, comorbid physical

illnesses, and disability are also associated with a diagnosis of anxiety disorders (Prina et al., 2011).

Previous studies have shown that the risk for mental health disorders—including anxiety, psychotic, mood, and addiction disorders—tends to be higher in urban environments compared to rural ones. These findings, however, need to be interpreted within specific geographical and socioeconomic contexts, as the majority of the cited research has been conducted in Western countries. There is a notable variation when similar studies are conducted in Eastern countries, which can offer valuable insights for cross-cultural comparisons. Demographic factors such as gender, age, and marital status have been linked to increased mental health risks, yet these links also demonstrate significant variability across different regions. Within the behavioral ecology framework proposed by Cook (2015), human behavior is recognized as contextual, emphasizing the importance of considering environmental variables when understanding mental health risks. Additionally, Fisher (2008) highlights the importance of context in assessing human behavior, supporting the argument that mental health research should pay close attention to environmental factors and broader social contexts to fully understand the dynamics at play.

With a deeper understanding of how various demographic factors influence mental health among the elderly such as gender, education level, age, domicile, organizational involvement, living arrangements, and prior work experience it becomes essential to explore these relationships within the Indonesian context. Therefore, the purpose of this study is to investigate mental health of elderly individuals in Indonesia by examining how these specific factors affect their mental health. By identifying which demographic groups are more susceptible to psychological symptoms, this research aims to inform the development of targeted mental health interventions and policies, ultimately enhancing the quality of life for the elderly population in Indonesia.

Method

Participants

Based on the participant data presented in Table 1. This study involved 313 individuals, comprising 32 males (10.22%) and 281 females (89.78%). This study has more female participants because women are often more willing to join health studies. We also struggled to recruit older men, who are less active in health research. We used community centers and religious groups for recruitment, which usually have more female visitors. This imbalance

means our findings might not fully represent men, whose experiences with mental health and social issues could be different. The majority of participants were aged between 60-65 years (49.52%), followed by those aged 66-70 years (26.52%), 70-75 years (15.34%), and smaller proportions in older age groups. In terms of educational background, most participants had completed elementary education (61.02%), while 13.10% had completed junior high school, 7.99% had completed high school, and 17.89% held a bachelor's degree.

With respect to domicile, the majority of participants resided in rural areas (71.88%), whereas 28.12% lived in urban areas. Furthermore, 51.12% of participants reported involvement in Islamic organizations, while 48.88% were not involved. Regarding involvement in general organizations, 23.00% of participants were actively engaged, while 77.00% were not. A total of 68.05% of participants lived with family members, while 31.95% lived independently. In terms of employment history, 78.91% of participants had work experience prior to the age of 60, while 21.09% did not.

Table 1. Participants

Variables	**Category**	**N**	**%**
Sex	Male	32	10.22
	Female	281	89.78
Age	60-65	155	49.52
	66-70	83	26.52
	70-75	48	15.34
	76-80	20	6.39
	81-85	6	1.92
	86-90	1	0.32
Education	Elementary	191	61.02
	Junior	41	13.10
	High School	25	7.99
	Bachelor	56	17.89
Domicili	rural	225	71.88
	urban	88	28.12
Involved in Islamic Organization	yes	160	51.12
	no	153	48.88
Involved in general organization	yes	72	23.00
	no	241	77.00
Living with Familly member	yes	213	68.05
	no	100	31.95
Work before 60	yes	247	78.91
	no	66	21.09

Procedure and Measures

Data collection was carried out by carefully selected undergraduate students who had previously demonstrated strong communication abilities, such as the capacity to clearly explain procedures, build rapport with diverse participants, and handle sensitive topics with empathy. These students received comprehensive training on the study's objectives and protocols to ensure accurate, respectful, and engaging interactions with respondents, ultimately facilitating effective and reliable survey administration. All participants provided informed consent before joining the study. Although recruitment efforts targeted a diverse population, a noticeable gender imbalance emerged, with more female participants. This skew, a common challenge in mental health research, could limit the study's generalizability. Participants received rewards as compensation for their time. For inclusion, participants had to be over 60 years old, good communication, and local residents. Those with psychotic disorders or cognitive impairments were excluded to ensure accurate self-reporting. Recruitment occurred through community centers.

The SCL-90 is a comprehensive instrument designed to assess mental health by evaluating 90 items that target a wide range of psychological and psychiatric symptoms. It measures several key dimensions of mental health, including somatization, obsessive-compulsive tendencies, interpersonal sensitivity, depression, anxiety, hostility, paranoid ideation, psychoticism, phobic anxiety, and general worry. This version of the SCL-90 was obtained from the Department of Psychiatry at the Faculty of Medicine, University of Indonesia/RSCM, and has been translated into Indonesian and validated through research conducted by Herianto and colleagues (Herianto, 1994). In this research, the Cronbach's alpha coefficient was determined to be 0.97.

Data analysis in this study involved several key statistical tests. First, independent t-tests were conducted to compare the means between two groups, such as gender, to identify significant differences in psychological variables. For comparisons involving more than two groups, such as age or education levels, ANOVA (Analysis of Variance) was employed. When significant differences were found through ANOVA, post-hoc tests were performed to determine specific group differences.

Regarding bias, we conducted Harman's single-factor test to assess common method bias, a concern when using one data collection method. The results showed no dominant factor, indicating minimal bias and supporting the reliability of our findings. The combination of t-tests, ANOVA, and the common method bias test helped ensure the robustness of the findings and the validity of the statistical conclusions drawn from the demographic and psychological variables analyzed in the study.

Results

Statistics and data analysis

The analysis of the Symptom Checklist-90 (SCL-90) subscales examined the impact of various demographic and socio-contextual factors on psychological symptoms. This study incorporated factors such as sex, age, education level, previous work experience, living situations, and organizational affiliations. The results, detailed in Table 2, reveal a wide range of influences across nine psychological symptoms, including Depression, Anxiety, and Obsessive-Compulsive tendencies. These relationships are further elucidated below.

Sex

An independent samples t-test was conducted to compare the psychological variable scores between males and females. There was a significant difference in Depression scores for males (M = 18.75, SD = 4.56) and females (M = 22.37, SD = 6.26); t (45.52) = -4.08, $p < .001$. Anxiety scores also showed a significant difference between males (M = 13.31, SD = 3.30) and females (M = 16.88, SD = 5.16); t(50.30) = -5.41, $p < .001$. Similarly, Obsessive-Compulsive scores were significantly different between males (M = 16.50, SD = 4.07) and females (M = 19.33, SD = 5.05); t(42.67) = -3.62, $p < .01$. Phobia scores showed a significant difference between males (M = 9.16, SD = 2.33) and females (M = 11.84, SD = 3.39); t(47.49) = -5.86, $p < .001$.

There was a significant difference in Somatization scores between males (M = 19.44, SD = 4.37) and females (M = 23.98, SD = 7.17); t(52.36) = -5.14, $p < .001$. Interpersonal Sensitivity scores also differed significantly between males (M = 13.31, SD = 3.79) and females (M = 15.71, SD = 4.57); t(42.02) = -3.32, $p < .01$. Hostility scores were significantly different for males (M = 7.97, SD = 2.04) and females (M = 8.93, SD = 2.84); t(46.00) = -2.42, $p < .05$, as were Paranoid scores between males (M = 8.81, SD = 2.73) and females (M = 10.01, SD = 2.92); t(39.53) = -2.34, $p < .05$.

However, there was no significant difference in Psychotic scores between males (M = 14.22, SD = 3.92) and females (M = 15.65, SD = 4.26); t(39.82) = -1.95, $p = .059$. Finally, the overall SCL-90 scores differed significantly between males (M = 133.63, SD = 29.14) and females (M = 159.49, SD = 38.51); t(44.36) = -4.59, $p < .001$. These results suggest that females generally scored higher than males on most psychological variables, indicating more severe symptoms across the measured dimensions.

Education

An ANOVA was conducted to examine the effect of education level (Bachelor,

Elementary, High School, Junior) on psychological variables. There was a significant effect of education level on Depression scores, F(3, 309) = 3.62, p = .014. Anxiety scores also showed a significant effect of education level, F(3, 309) = 8.78, p < .001. For Phobia, there was a significant difference based on education level, F(3, 309) = 3.85, p = .010. Similarly, Somatization scores differed significantly across education levels, F(3, 309) = 6.69, p < .001. Interpersonal Sensitivity also showed a significant effect of education, F(3, 309) = 4.16, p = .007, as did Paranoid scores, F(3, 309) = 3.60, p = .014. There was a significant effect of education level on Psychotic scores, F(3, 309) = 2.91, p = .035, and the overall SCL-90 score, F(3, 309) = 3.64, p = .013. However, no significant effect was found for Obsessive-Compulsive scores, F(3, 309) = 1.75, p = .157, or Hostility scores, F(3, 309) = 2.07, p = .104. In summary, individuals with different levels of education exhibited significant differences in several psychological variables, with higher levels of distress often seen in lower educational categories.

Age

An ANOVA was conducted to examine the effect of age group (60-65, 66-70, 71-75, 76-80, 81-85, 86-90) on psychological variables. The results showed no significant effect of age group on Depression scores, F(5, 307) = 0.44, p= .818; Anxiety scores, F(5, 307) = 0.63, p= .674; Obsessive-Compulsive scores, F(5, 307) = 0.86, p= .510; Phobia scores, F(5, 307) = 0.80, p= .552; Somatization scores, F(5, 307) = 0.51, p= .770; Interpersonal Sensitivity scores, F(5, 307) = 1.16, p= .330; Hostility scores, F(5, 307) = 0.81, p= .540; Paranoid scores, F(5, 307) = 0.73, p= .599; Psychotic scores, F(5, 307) = 0.91, p= .477; and the overall SCL-90 score, F(5, 307) = 0.62, p= .683. These results suggest that age group did not have a significant impact on any of the psychological variables measured.

Domicili

An independent samples t-test was conducted to compare psychological variables between rural and urban residents. There was no significant difference in Depression scores between rural (M = 21.94, SD = 6.44) and urban residents (M = 22.17, SD = 5.56); t(182.86) = -0.32, p= .751. Similarly, Anxiety scores did not differ significantly between rural (M = 16.78, SD = 4.97) and urban residents (M = 15.83, SD = 5.44); t(146.87) = 1.43, p= .156. Obsessive-Compulsive scores were not significantly different between rural (M = 18.76, SD = 5.01) and urban residents (M = 19.74, SD = 5.04); t(158.03) = -1.54, p= .125. Phobia scores also showed no significant difference, t(162.49) = 0.41, p= .680.

For Somatization, there was no significant difference between rural (M = 23.75, SD =

6.52) and urban residents (M = 22.91, SD = 8.30); t(131.09) = 0.85, *p*= .397. Interpersonal Sensitivity scores were not significantly different between rural (M = 15.25, SD = 4.57) and urban residents (M = 16.02, SD = 4.49); t(161.60) = -1.36, *p*= .174. Hostility scores showed no significant difference between rural (M = 8.92, SD = 2.85) and urban residents (M = 8.61, SD = 2.61); t(172.24) = 0.91, *p*= .365. Similarly, no significant difference was found in Paranoid scores, t(162.60) = -0.78, *p*= .438. Psychotic scores did not differ significantly between rural (M = 15.36, SD = 4.36) and urban residents (M = 15.89, SD = 3.90); t(176.52) = -1.04, *p*= .301. Finally, the overall SCL-90 score also showed no significant difference, t(158.42) = -0.34, *p*= .732. These results suggest that there are no significant differences between rural and urban residents in any of the psychological variables measured.

An independent samples t-test was conducted to compare psychological variables between individuals involved in an Islamic organization and those who were not. There was a significant difference in Depression scores between those involved (M = 21.29, SD = 5.87) and those not involved (M = 22.75, SD = 6.47); t(304.88) = -2.10, *p* = .037. Anxiety scores were also significantly different, with those involved scoring lower (M = 15.61, SD = 4.92) than those not involved (M = 17.46, SD = 5.16); t(308.41) = -3.26, *p* = .001. No significant difference was found in Obsessive-Compulsive scores between those involved (M = 19.03, SD = 5.08) and those not involved (M = 19.05, SD = 4.98); t(310.81) = -0.05, *p* = .962. Phobia scores approached significance, t(308.95) = -1.87, *p* = .062, and Somatization scores were close to significant as well; t(309.99) = -1.93, *p* = .054.

Hostility scores were significantly lower for those involved (M = 8.31, SD = 2.50) compared to those not involved (M = 9.39, SD = 2.97); t(297.09) = -3.47, *p* < .001. Paranoid scores were also significantly different, t(310.61) = -3.47, *p* < .001. Similarly, Psychotic scores were lower for those involved (M = 14.96, SD = 4.03) than those not involved (M = 16.08, SD = 4.39); t(305.77) = -2.34, *p* = .020. Finally, the overall SCL-90 score approached significance, with those involved scoring lower (M = 152.81, SD = 37.56) compared to those not involved (M = 161.07, SD = 39.00); t(308.90) = -1.91, *p* = .057. These results suggest that individuals involved in an Islamic organization tended to have lower levels of psychological symptoms in several areas.

Involved in General Organization

An independent samples t-test was conducted to compare psychological variables between individuals involved in a general organization and those not involved. There was no significant difference in Depression scores between those involved (M = 22.69, SD = 6.33) and those not involved (M = 21.80, SD = 6.16); t(114.21) = 1.06, *p* = .290. Similarly, Anxiety scores

did not differ significantly between those involved (M = 15.94, SD = 5.10) and those not involved (M = 16.68, SD = 5.12); t(117.00) = -1.08, *p* = .283. No significant differences were found in Obsessive-Compulsive scores, t(116.06) = 1.39, *p* = .166, or Phobia scores, t(122.07) = -0.24, *p* = .809. Somatization scores were not significantly different between those involved (M = 22.75, SD = 8.21) and those not involved (M = 23.74, SD = 6.69); t(100.73) = -0.93, *p* = .353. Interpersonal Sensitivity scores showed no significant difference either, t(126.43) = 1.60, *p* = .113. Hostility scores also showed no significant difference between those involved (M = 8.72, SD = 2.59) and those not involved (M = 8.87, SD = 2.85); t(126.87) = -0.41, *p* = .684.

Paranoid scores did not differ significantly between those involved (M = 10.10, SD = 2.57) and those not involved (M = 9.83, SD = 3.02); t(134.49) = 0.75, *p* = .452. Similarly, Psychotic scores were not significantly different between those involved (M = 16.01, SD = 3.50) and those not involved (M = 15.36, SD = 4.43); t(145.53) = 1.31, *p* = .192. Lastly, the overall SCL-90 score did not differ significantly, t(116.92) = 0.57, *p* = .573. These results suggest no significant differences in psychological symptom between individuals involved in a general organization and those not involved.

Living with family member

An independent samples t-test was conducted to compare psychological variables between individuals living with family members and those not living with family members. There was no significant difference in Depression scores between those living with family (M = 22.23, SD = 6.17) and those not living with family (M = 21.53, SD = 6.26); t(191.44) = 0.92, *p* = .359. Similarly, Anxiety scores did not differ significantly between those living with family (M = 16.75, SD = 5.15) and those not living with family (M = 16.01, SD = 5.03); t(198.24) = 1.21, *p* = .229. No significant differences were found in Obsessive-Compulsive scores, t(188.48) = 0.85, *p* = .394, or Phobia scores, t(202.07) = 1.93, *p* = .056 (approaching significance). Somatization scores were not significantly different between those living with family (M = 23.86, SD = 7.22) and those not living with family (M = 22.77, SD = 6.69); t(207.81) = 1.31, *p* = .192. Interpersonal Sensitivity scores showed no significant difference either, t(197.89) = 1.15, *p* = .254. Hostility scores also showed no significant difference between those living with family (M = 8.90, SD = 2.69) and those not living with family (M = 8.70, SD = 2.98); t(177.42) = 0.56, *p* = .575.

Paranoid scores approached significance, with those living with family scoring higher (M = 10.09, SD = 2.95) than those not living with family (M = 9.45, SD = 2.82); t(201.89) = 1.86, *p* = .065. Psychotic scores also approached significance, t(205.05) = 1.78, *p* = .076, but no significant difference was found in the overall SCL-90 score, t(195.56) = 1.22, *p* = .224.

These results suggest that there are no significant differences in psychological symptoms between individuals living with family members and those not living with family members, although some variables approach significance.

Work before 60

An independent samples t-test was conducted to compare psychological variables between individuals who worked before the age of 60 and those who did not. There was no significant difference in Depression scores between those who worked before 60 (M = 22.26, SD = 5.85) and those who did not (M = 21.06, SD = 7.35); t(88.20) = 1.22, p = .225. Anxiety scores also showed no significant difference between those who worked (M = 16.56, SD = 4.85) and those who did not (M = 16.33, SD = 6.05); t(88.55) = 0.28, p = .777. No significant differences were found in Obsessive-Compulsive scores, t(97.53) = 0.41, p = .682, or Phobia scores, t(96.94) = 0.18, p = .860. Somatization scores were also not significantly different between those who worked (M = 23.82, SD = 7.22) and those who did not (M = 22.36, SD = 6.38); t(113.55) = 1.60, p = .113. Interpersonal Sensitivity showed no significant difference either, t(95.23) = 0.28, p = .780.

Hostility scores were significantly higher for those who worked (M = 9.05, SD = 2.72) compared to those who did not (M = 8.02, SD = 2.90); t(97.67) = 2.61, p = .010. Paranoid scores were also significantly higher for those who worked (M = 10.10, SD = 2.90) than those who did not (M = 9.11, SD = 2.88); t(103.04) = 2.48, p = .015. Psychotic scores were significantly higher for those who worked (M = 15.79, SD = 4.12) than for those who did not (M = 14.47, SD = 4.53); t(95.66) = 2.13, p = .035. However, no significant difference was found in the overall SCL-90 score, t(94.94) = 1.06, p = .291. These results suggest that individuals who worked before the age of 60 had higher levels of Hostility, Paranoid, and Psychotic symptoms compared to those who did not.

Figure 2. Analysis results

Demography	Depression		Anxiety		Obsesive-Compulsive		Fobia		somatization		Interpersonal Sensitivity		Hostility		Paranoid		Psychotic		SCL-90	
	t/f	*p*	t/f	*p*	t/f	*p*	t/f	*p*	t/f	*p*	t/f	*p*	t/f	*p*	t/f	*p*	t/f	*p*	t/f	*p*
Domicile	-0.318	0.751	1.426	0.156	-1.540	0.125	0.413	0.680	0.849	0.397	-1.364	0.174	0.908	0.365	-0.777	0.438	-1.037	0.301	-0.343	0.732
General Organization	1.063	0.290	-1.079	0.283	1.393	0.166	-0.242	0.809	-0.933	0.353	1.598	0.113	-0.408	0.684	0.754	0.452	1.310	0.192	0.566	0.573
Islamic Organization	-2.095	0.037	-3.257	0.001	-0.048	0.962	-1.870	0.062	-1.930	0.054	-1.033	0.302	-3.474	0.001	-3.475	0.001	-2.340	0.020	-1.907	0.057
Living with Family Member	0.920	0.359	1.207	0.229	0.854	0.394	1.926	0.056	1.309	0.192	1.145	0.254	0.561	0.575	1.857	0.065	1.783	0.076	1.220	0.224
Sex	-4.080	0.000	-5.411	0.000	-3.623	0.001	-5.856	0.000	-5.140	0.000	-3.318	0.002	-2.418	0.020	-2.336	0.025	-1.947	0.059	-4.586	0.000
Work before 60	1.222	0.225	0.285	0.777	0.411	0.682	0.177	0.860	1.599	0.113	0.280	0.780	2.615	0.010	2.482	0.015	2.133	0.035	1.062	0.291
Age Group	0.444	0.818	0.634	0.674	0.857	0.510	0.797	0.552	0.508	0.770	1.158	0.330	0.815	0.540	0.733	0.599	0.907	0.477	0.622	0.683
Education	3.619	0.014	8.777	0.000	1.749	0.157	3.849	0.010	6.695	0.000	4.156	0.007	2.074	0.104	3.596	0.014	2.905	0.035	3.639	0.013

Discussion

The present study provides valuable insights into the psychological well-being of elderly individuals in Indonesia, highlighting significant differences across various demographic variables. The study reveals that women exhibit more severe symptoms of depression, anxiety, and obsessive-compulsive behaviors than men. This finding corroborates prior research indicating a higher prevalence of these symptoms among women, potentially due to a combination of social, biological, and hormonal factors that increase emotional vulnerability (Castle et al., 1995; Koroboki et al., 2010; Schuch et al., 2014). Specifically, the greater vulnerability in women may be attributed to an interplay of social factors, such as gender-based roles and expectations, and biological influences, including hormonal fluctuations that impact mood and stress responses (Kuehner, 2017). Furthermore, societal pressures and stigma related to mental health can exacerbate these conditions, making women more susceptible to these disorders (Seedat et al., 2009). These insights emphasize the need for mental health interventions that are sensitive to the unique factors influencing women's psychological well-being. The elevated levels of somatization and hostility among women suggest a greater impact of interpersonal and psychological stress, underscoring the need for gender-specific mental health interventions.

Education level emerged as a significant factor influencing psychological well-being. Participants with lower educational attainment reported higher levels of depression, anxiety, somatization, and interpersonal sensitivity. This supports earlier studies demonstrating that higher education serves as a protective factor against mental health issues, possibly due to better access to resources, healthier behaviors, and stronger socio-demographic support (Bjelland et al., 2008; Kondirolli & Sunder, 2022; McFarland & Wagner, 2015). The inverse relationship between education and psychological distress highlights the importance of educational opportunities in promoting mental health among the elderly.

Contrary to expectations, age did not significantly affect psychological variables such as depression, anxiety, and somatization. This finding is consistent with research suggesting that aging does not inherently increase susceptibility to mental health issues when factors like emotional control and psychological resilience are considered (Christensen et al., 1999; Jorm, 2000). It implies that mental health interventions should be tailored not just based on age but also on individual psychological and social factors.

The study did not find significant differences in psychological symptoms between rural and urban residents. This aligns with recent research indicating that geographical location may not be a determinant of mental health outcomes when access to care and other confounding factors are accounted for (Bonnell et al., 2022; Kirby et al., 2019). This could be due to the equalization

effects of improved access to mental health care and similar socio-economic conditions across different regions. Additionally, the increasing availability of digital health services may also contribute to diminishing geographical disparities in mental health support. Thus, while location remains an interesting factor in public health studies, its impact might be mitigated by these overarching factors. The lack of disparity suggests that mental health services and interventions can be uniformly designed and implemented across different regions in Indonesia, potentially simplifying policy and resource allocation.

Involvement in Islamic organizations was associated with lower levels of depression, anxiety, hostility, and psychotic symptoms. This supports literature highlighting the positive impact of religious engagement on mental health, likely due to the emotional and social support derived from religious communities (Huang et al., 2012; Moreira-Almeida et al., 2006). The findings suggest that fostering religious and community involvement could be an effective strategy in mental health promotion among the elderly.

Interestingly, participation in general organizations did not significantly impact psychological symptoms. This might indicate that the nature and level of engagement, rather than mere involvement, are critical factors influencing mental health outcomes (Gallagher et al., 2019; Treichler et al., 2015). It emphasizes the need for meaningful and supportive organizational activities that address the specific psychological needs of individuals.

Living arrangements did not show a significant effect on psychological well-being, which contrasts with studies suggesting that living with family members provides emotional support that enhances mental health (Tang et al., 2020; Xu et al., 2022). This discrepancy could be due to cultural factors unique to the Indonesian context or variations in family dynamics, indicating a need for further qualitative research to understand these relationships better.

Participants who worked before the age of 60 exhibited higher levels of hostility, paranoia, and psychotic symptoms. This could reflect the long-term psychological impact of work-related stress, supporting findings that link stressful experiences to increased risks of developing such symptoms later in life (Becerra-García et al., 2023; Östling & Skoog, 2002; Rössler et al., 2007). These results highlight the importance of addressing occupational stress and providing mental health support during working years to mitigate adverse effects in later life.

A major strength of this study is the comprehensive demographic diversity of the sample, which enhances the generalizability of the findings within the Indonesian elderly population. The use of the SCL-90, a validated and reliable instrument with a high Cronbach's alpha of 0.97, adds robustness to the psychological assessments. Furthermore, the detailed statistical analyses, including t-tests, ANOVA, and checks for common method bias, provide a thorough examination of the data. However, the study has limitations that must be acknowledged. The

study's cross-sectional design limits our ability to draw causal conclusions or observe long-term mental health trends. Moreover, the significant gender imbalance may affect the generalizability of the results. The lack of age-related differences might be due to the narrow age range of our elderly participants, suggesting that broader age samples are needed for more comprehensive insights. Future research should consider longitudinal and qualitative studies to better understand the underlying social and cultural dynamics.

The findings have important implications for mental health interventions and policy development. The higher levels of distress observed among women and individuals with lower educational attainment suggest the need for targeted mental health programs that address these specific groups' needs. Policymakers should consider integrating gender-sensitive approaches and educational components into mental health services. The lack of significant rural-urban differences in psychological symptoms indicates that a uniform approach to mental health service provision may be effective across different regions. This could streamline resource allocation and program implementation, ensuring that interventions reach all segments of the elderly population. The positive association between involvement in Islamic organizations and better mental health outcomes underscores the potential benefits of incorporating community and religious engagement into mental health strategies. Encouraging participation in such organizations may provide social support networks that enhance psychological well-being.

Future research should consider longitudinal studies to explore the causal relationships between demographic factors and mental health over time. Expanding the age range of participants could provide insights into when mental health issues become more prominent or how they differ across life stages. Additionally, incorporating qualitative methods would offer deeper understanding of the personal and social contexts influencing mental health outcomes. Such approaches could elucidate how individuals perceive and manage their psychological symptoms in relation to their environments and daily interactions, informing more effective and culturally sensitive interventions.

Conclusion

This study examined psychological symptoms among elderly individuals using the Symptom Checklist-90 (SCL-90) and explored the influence of demographic and social factors. The findings revealed that women reported higher levels of psychological symptoms than men across most variables, highlighting a gender disparity in mental health among the elderly, suggesting the need for gender-specific mental health interventions. Educational level significantly affected psychological symptoms, with lower educational attainment associated with higher levels of psychological distress, indicating that targeted support for individuals with

lower education levels could alleviate mental health challenges. Involvement in Islamic organizations was linked to lower levels of psychological symptomatology, suggesting that religious engagement may provide social support and coping mechanisms beneficial for mental health. No significant associations were found between age groups or domicile (rural vs. urban) and psychological symptoms, and there were no significant differences among participants involved in general organizations or those living with family members. Interestingly, participants who worked before the age of 60 exhibited higher levels of hostility, paranoia, and psychotic symptoms, possibly reflecting the long-term psychological impact of occupational stress or other work-related factors. These findings suggest a need for further research into how early employment experiences affect mental health in later life. Overall, the study underscores the significant influence of demographic factors and social involvement on psychological symptoms among the elderly. Tailored mental health interventions that consider gender, educational level, and religious involvement may be more effective in addressing the specific needs of this population. Promoting engagement in religious or community organizations may serve as a protective factor against psychological distress in older adults.

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Declaration of Interest statement

None

Authors' contribution

All authors contributed to and have approved the final manuscript.

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