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# Factors Affecting Anxiety and Depression Among Pediatric Residents in Dr. Soetomo General Hospital in Surabaya, Indonesia

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## Abstract

**Background:** Residency program, including pediatric residency, has long been considered stressful and for some students, depressing. Many studies have shown that depression or emotional impairment in resident physicians is more common than that in the general population, about 29% and increased with each year of training. Nearly half of the depressed residents seemed unaware of their condition. Knowing the cause and risk of mental health problem during medical training is important for informing efforts to prevent, treat, and identify.

**Objective:** This study aim to analyze factors affecting anxiety and depression among pediatric residents in Dr. Soetomo Hospital, to minimize its effect towards residents' mental health.

**Material and Methods:** A cross-sectional study of the Beck Anxiety Inventory (BAI) and Beck Depression Inventory (BDI) was performed on pediatric residents in Dr. Soetomo General Hospital. We collected resident's demographic data (age, sex, marital status, parental status, number of children, and duration of work experience before residency), as well as Beck Anxiety, Beck Depression, and Likert Scale Questionnaire on how residents feel about their academic burden, non-academic burden, and patients-related duties, were all taken using an online questionnaire. The comparison and correlation of data were analyzed using Mann-Whitney and Spearman tests. The difference will be considered significant if the p-value<0.05, and a strong correlation will be considered if  $r>0.5$ .

**Results:** Higher BDI score was found in female residents (37.95;  $P=0.008$ ), and unmarried residents (41.39;  $P=0.025$ ). Age was negatively correlated with BAI ( $R = -0.281$ ;  $P = 0.021$ ;) and also BDI ( $R = -0.273$ ;  $P = 0.025$ ). Duration of work experience before residency period was also negatively correlated with BAI ( $R = -0.334$ ;  $P = 0.005$ ) and BDI ( $R = -0.308$ ;  $P = 0.011$ ). Meanwhile, Likert Scale on how residents feel about their academic burden was positively correlated with BAI ( $R = 0.26$ ;  $P=0.033$ ; and BDI ( $R = 0.257$ ;  $P = 0.036$ ).

**Conclusion:** Female and unmarried residents have significantly higher BDI. Age and duration of work experience were negatively correlated with both BAI and BDI. Academic burden was positively correlated with BAI and BDI

Keywords: Anxiety ; Depression ; Pediatric Residents ; Academic Burden ; Medical Education

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## 1. Introduction

Depression and anxiety is a common, often untreated illness that has a devastating impact on interpersonal and workplace functioning (1). The reason, however, is still uncertain, and research is inconclusive (2). According to the Indonesia Basic Health Survey, the 15-24-year-old population has a 6.2% prevalence of depression (3). Calculated estimation using the Indonesian Family Life Survey (IFLS) 5 in 2014 showed as high as 21,8% depression rate among adults (4). Anxiety has reached a prevalence rate of 13.6-28.8% and 15.2% in Indonesia alone which in 5 years, the number of anxiety cases rose by 20% and is predicted to continue to

increase (5–7). Two commonly used rapid assessment instruments for screening and assessing anxiety and depression are the Beck Anxiety and Depression Inventory (8–10). These low-cost and efficient methods (11) may be able to provide enough information on the severity to identify individuals with such disorders (10).

The medical education system aimed to provide knowledge and skills to provide safe, high-quality medical care (12). To achieve those goals, the importance of physical and psychological well-being has been recognized (13). Medical residency is a period of significant emotional and physical stress, making it one of the most challenging stages in medical education (14). Many studies have shown that depression or emotional impairment in resident physicians is more common than that in the general population, about 29% and increased with each year of training (15), and may result in patient care errors, absence, changes in career, or suicide (1,16–18). Depression can be prevalent during medical residency, with long hours and social deprivation as contributing factors. Concerningly, the farther residents are into their training, the more depression rates rise. Pediatric residents typically worked more than 100 hours/per week. This may have led to sleep deprivation and stress that could lead to depression, fatigue, and anxiety (17,19,20). Nearly half of the depressed residents seemed unaware of their condition, and only a handful received treatment (17). Knowing the cause and risk of mental health problem during medical training is important for informing efforts to prevent, treat, and identify (21). To date, no has explored the anxiety and depression prevalence and risk factors among pediatric residents in Surabaya, Indonesia. In this study, we aim to analyze factors affecting anxiety and depression among pediatric residents in Dr. Soetomo Hospital, to minimize its effect on residents' mental health.

## 2. Method

The authors conducted a cross-sectional study, assessing pediatric residents in Dr. Soetomo Hospital in Surabaya, Indonesia. This study was conducted in October 2022, using Beck Anxiety Inventory (BAI) and Beck Depression Inventory (BDI) to assess anxiety and depression rates. We collected the data (age, sex, marital status, parental status, number of children, duration of work experience before residency, and academic burden), as well as Beck Anxiety, Beck Depression, and Likert Scale Questionnaire on how residents feel about their academic burden, non-academic burden, and patients-related duties. Data was collected using an online questionnaire. Inclusion criteria were all pediatric resident in Dr. Soetomo General Hospital who were willing to fill out the questionnaire. Participants were aware of the data collection on their health, safety, and performance during the study. Precautions were taken to secure the confidentiality, including the assignment of coded identification numbers and secure storage of data. The comparison and correlation of data were analyzed using Mann-Whitney and Spearman tests. The difference will be considered significant if the  $p$ -value  $< 0.05$ , and a strong correlation will be considered if  $r > 0.5$ .

## 3. Result

We included 67 pediatric residents in Dr. Soetomo Hospital in Surabaya, of whom 48 (71,6%) were female and 19 (28,3%) were male. The total result from the Beck Anxiety Inventory was 51 residents (76,11%) suffer from low anxiety, 10 residents (14,9%) suffer moderate anxiety, and 6 suffer from severe anxiety (8,9%). The most amount was low anxiety, predominating by female pediatric residents (68,6%), married residents (70,5%), residents who are parents (52,9%), and senior residents (29,8%). But severe and moderate anxiety was more to find among non-parents than parents. From the Beck Depression Inventory, a normal result or their ups and downs considered normal are valued for as much as 38 (56,7%), predominating by female residents as much as 22 (57,8%), 29 married residents (76,3%), 23 parents (60,5%), and senior residents (44,7%). Mild mood disturbance took second place, followed by 10% on moderate depression ( $n=7$ ) and 4,4% borderline ( $n=3$ ). For as much as only 2 of them suffer from severe depression (2,9%) and the other 2 from extreme depression (2,9%).

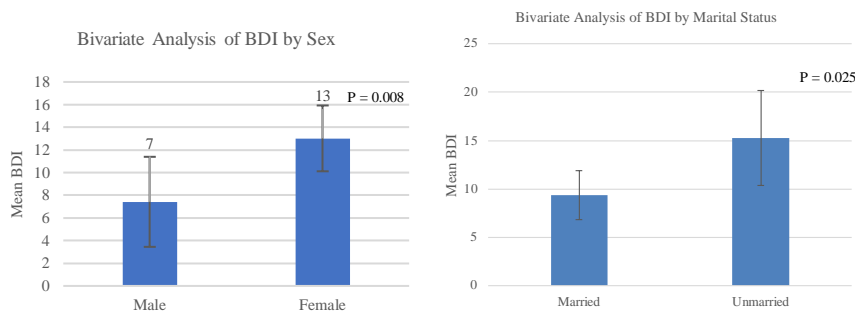
Tabel 1. Beck Anxiety Inventory Questionnaire Result

Parameters	Beck Anxiety Inventory			p
	Low n=51	Moderate n=10	Severe N=6	
Sex				
– Male	16	2	1	0.614
– Female	35	8	5	
Marital Status				
– Married	36	6	2	0.176
– Unmarried	15	4	4	
Parental Status				
– Parents	27	4	2	0.541
– Non-parents	24	6	4	
Levels of Residency				
– Junior	14	4	0	0.427
– Middle	17	4	3	
– Senior	20	2	3	

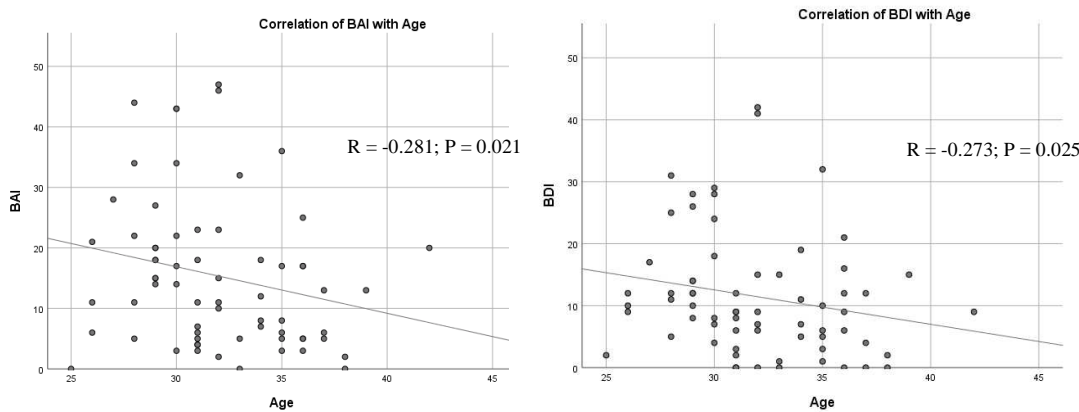
Tabel 2. Beck Depression Index Questionnaire Result

Parameters	Beck Depression Inventory						p
	Normal n=38	Mild mood disturbance n=15	Borderline (n=3)	Moderate depression (n=7)	Severe depression (n=2)	Extreme depression (n=2)	
Sex							
– Male	16	1	0	1	1	0	0.072
– Female	22	14	3	6	1	2	
Marital Status							
– Married	29	9	2	3	0	1	0.168
– Unmarried	9	6	1	4	2	1	
Parental Status							
– Parents	23	6	1	2	0	1	0.317
– Non-Parents	15	9	2	5	2	1	
Levels of Residency							
– Junior	11	4	2	0	0	0	0.098
– Middle	10	8	0	5	1	0	
– Senior	17	3	1	2	0	2	

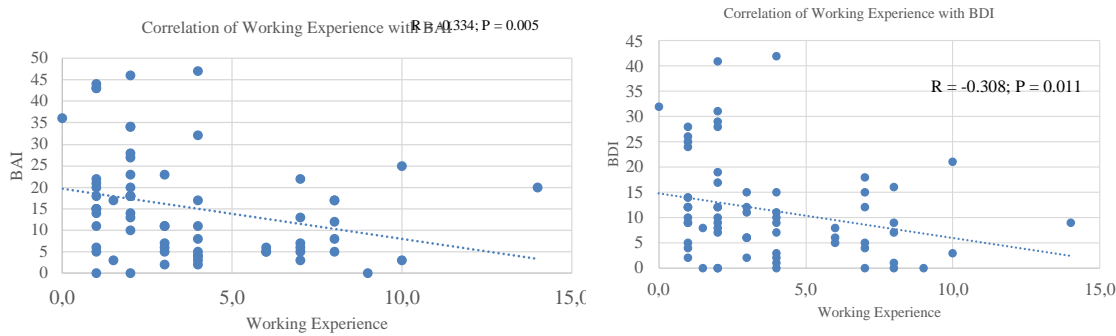
**Figure 1. Bivariate Analysis of Depression by Sex and Marital Status**



**Figure 2. Age correlation with Anxiety and Depression**



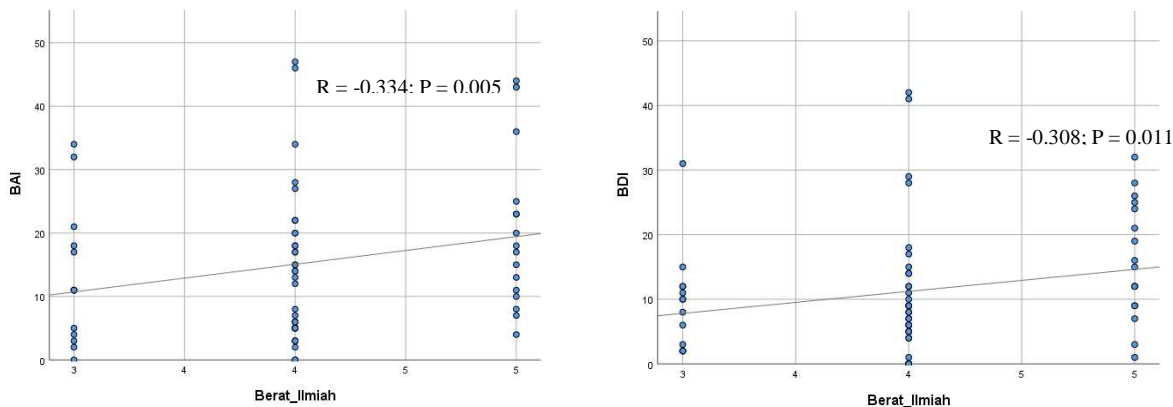
**Figure 3. Correlation of Working Experience with Anxiety and Depression**



In this study, the result of bivariate analysis on depression index by sex and marital status (figure 1) was significantly higher in female compared to male residents (37.95 vs 24.03;  $P=0.008$ ) and unmarried residents (41.39 vs 30.14;  $p=0.025$ ). From figure 2 and figure 3, we can conclude that age and duration of working experience were negatively correlated with anxiety and depression Index.

But the resident perception's of academic burden (figure 4) was positively correlated with anxiety and depression Index.

**Figure 4. Correlation of Academic Burden with Anxiety and Depression**



#### 4. Discussion

Stress, including anxiety and depression has been a topic of concern. Depression remains a significant issue for medical residents. WHO has estimated that around 264 million people potentially live with anxiety disorders. Evidence also shows that healthcare professionals have higher anxiety symptoms due to tough and demanding working conditions. Being on-calls frequently are associating with the increasing of work-life imbalance and signs of psychological strain (22). Our study result of the Beck Anxiety Inventory was predominating by female residents, married residents, those who are not parents, and senior residents. The number of women training to become physicians has more than doubled since 1980. The Association of American Medical Colleges' annual report on medical school enrollment showed that 2019 marked the first time that the majority of U.S. medical school students (50.5%) were women (23), and also exponentially rising in Oman (24). One of the medical specialties with the highest percentages of women is pediatrics (64,3%) (23). The prevalence and comorbidity of anxiety disorders are significantly different between women and men, with research showing a greater impact on women. Women experience higher rates of anxious-depressive symptoms compared to men, with these symptoms also being more severe (25–27). AlJahwari in Oman studied the anxiety symptoms among residents physicians resulting in 251, 68.2% (n = 173) of the study being female residents and 31% (n = 78) male residents (24). In Lebanon, Zarzour et al. have reported that anxiety symptoms were strongly associated with being female, ranging from younger age group in the sample cohort, and living with the elderly (28). These differences also seen in the general population. Women may be more vulnerable to pressures of family life and work or not being partnered, as well as succeeding in a traditionally male-dominated profession (29).

Doctors appear to suffer from depression more than the general population and other professional groups (30). In Cape Town, a study using Beck's Depression Inventory revealed clinically relevant moderate to severe depression in 30% of public primary healthcare doctors (31). This study reported a higher depression index in females than in males. Studies of residents have consistently shown higher rates among females (29,32). We found the same result from the research by Yaghmour et al (33), that about half (53%) of the participant were severely depressed. In our study result of the Beck Depression Inventory, a normal result or their ups and downs considered normal are valued for as much as 38 (56,7%). Alrehaili et al also found the

majority of their participants had a score of 1-10 (normal up and downs result in BDI) for as much as 84,8% (34). Factors contributing to a higher prevalence of burnout among female surgical residents, compared to male, can be due to discrimination, abuse and harassment (35).

Our study result of bivariate analysis on depression index by marital status shows a significantly higher value on unmarried residents. Research generally suggests that married individuals avail of better physical and mental health than those who are not married (36–38). Theories of social support suggest that relationships like marriage can help to reduce the risks of experiencing mental disorders in general, and depression specifically (39). Compared with married individuals, those who are unmarried might be a high-risk population for depressive symptoms (40), especially those who are having low social support (1,41). A study about marital status and its effect on depression in Indonesia concluded that married people tend to have lower depression prevalence (42). The same result we found on chi-squared analysis in research by Marchira et al (43). revealed that unmarried residents were more likely to have a more severe case of depression. Resident parents are also experiencing higher symptoms and value from the anxiety and depression inventory result. One thing that is most affecting work-home conflicts is balancing the demands of parenthood with the rigors of residency rotation schedules and calls (44). There is also data suggesting that physician parents of young children are at the greatest risk of burnout (45). But, it is still important to consider how married resident physicians juggling their professional careers and their traditional roles in the family can cause increased levels of stress and anxiety related to poor work-life balance (46) and marriage can be associated with problematic outcomes depending on the quality of the relationship (38).

A recent meta-analysis estimated that the prevalence of depression was 29% and increased with each year of training (15,47). Physician's quality of life is affected by long working hours. Residents who worked for more than 64 hours per week are three times more likely to experience psychological problems compared to residents working up to 40 hours per week (48). It is correlated with our study which shows a higher level of anxiety and depression among senior residents. But, some studies suggest that junior residents are more likely to be depressed, with the most depression occurring during the internship year at 28%, decreasing to 21% during the second year, and to 10% during the third year (41,49,50). The first year of residency is the most stressful period, with a high workload, new responsibilities and, inconsistent and insufficient sleep (15,51,52). Even that other also said there is no association between depression and level of training (17,49,53). In this study, age and duration of working experience were negatively correlated with Anxiety and Depression Inventory. Consistent with other studies, older residents were more likely to use more adaptive coping mechanisms, or better problem-solving, cognitive, and emotional strategies to cope with stressful life events. The explanation may be more engagement with previous experiences that help to improve soul competencies. But some studies clearly stated that resident age did not appear to be associated with depression (15,49).

As previously stated in the result section, only academic burden was positively correlated with anxiety and depression inventory results. Causes of depression are wide-ranging, including factors like work hours and workload, as well as difficulties with mindfulness, social support, and resilience (54). Residency stressors range from long work hours and sleep deprivation to a lack of knowledge and self-doubt. Men seem to be more affected by workloads and the depersonalization domain (47), while women are more likely to experience work-personal life conflicts and emotional exhaustion (55,56). Previous study shows that excessive paperwork was contributes to burnout factors, along with a lack of coping scale, complicated patients, and poor relationships

with colleagues (57). Residents reporting higher degrees of depression said that their symptoms were affected by the difficulty of their current rotations (29).

## 5. Conclusion

Female and unmarried residents have significantly higher BDI. Age and duration of work experience were negatively correlated with both BAI and BDI. Academic burden was positively correlated with BAI and BDI.

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