

DOES MOM'S JOB OR A CHILD'S GENDER MATTER? EXPLORING ADHD SYMPTOMS IN INDONESIAN PRE-SCHOOLS

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Abstract. This study aimed to examine the influence of maternal employment status and child gender on Attention Deficit Hyperactivity Disorder (ADHD) symptoms among preschool children enrolled in Aisyiyah kindergartens in Yogyakarta, Indonesia. A quantitative approach with a comparative design was employed, involving 235 children (110 boys and 125 girls). Data were collected using the ADHD Rating Scale IV, completed by parents based on their observations of the child's behavior over the past two weeks. Results from a two-way ANOVA revealed no significant main effects of maternal employment status ($F(1,231) = 1.25$; $p = 0.265$), child gender ($F(1,231) = 2.30$; $p = 0.131$), or their interaction ($F(1,231) = 0.98$; $p = 0.322$) on ADHD symptom scores. Further analysis using the non-parametric Mann-Whitney U test on a subgroup of 17 children identified as showing ADHD tendencies also found no significant differences based on gender ($U = 23.0$; $Z = -0.524$; $p = 0.600$) or maternal employment status ($U = 26.0$; $Z = -0.262$; $p = 0.793$). These findings suggest that demographic factors such as maternal employment and child gender are not significant predictors of ADHD symptoms in this population. The study highlights the need to explore broader ecological and cultural factors in understanding ADHD in early childhood.

Keywords: ADHD, preschool children, maternal employment, gender, ANOVA, Mann-Whitney U

INTRODUCTION

Attention Deficit Hyperactivity Disorder (ADHD) is a neurodevelopmental disorder characterized by symptoms of inattention, hyperactivity, and impulsivity that typically emerge in early childhood. Globally, the prevalence of ADHD in children is estimated to range from 2% to 7%, depending on the measurement methods and cultural context (Thomas et al., 2015). In Indonesia, awareness and diagnostic practices regarding ADHD are still in the developmental stage, particularly in early childhood education settings.

Preschool children with ADHD symptoms often struggle to manage their emotions, frequently becoming easily angry, frustrated, or acting impulsively in response to challenging situations (Setiawati et al., 2024; Sadida et al., 2023). In the context of Indonesian culture, such behavior is often misunderstood as mischief or defiance. As a result, children may experience social rejection from teachers and peers (Sadida et al., 2023). Research by Setiawati et al. (2024) shows that poor emotional regulation in children with ADHD symptoms is closely related to tension in family relationships and difficulties adapting to social environments.

In the academic realm, symptoms of ADHD in early childhood are often reflected in the inability to focus, complete tasks, and consistently follow the teacher's instructions (Setiawati et al., 2024). This condition poses a significant obstacle to children's active engagement in learning activities, increasing the risk of academic underachievement and self-doubt. Novitasari and

Basoeki (2018) noted that children with ADHD who have difficulty in emotional regulation also show obstacles in the learning process, especially when facing demands that require concentration and behavioral control for an extended period.

Various previous studies have shown that biological and environmental factors can influence the emergence of ADHD symptoms (Faraone et al., 2021). ADHD is considered a hereditary disorder in which genes and prenatal risk factors play a significant role in its pathogenesis (Kian et al., 2022). In this case, children who exhibit symptoms or are diagnosed with ADHD are most likely to have ADHD genes or a history of health disorders during the prenatal period. Nevertheless, in a systematic literature review study, it was found that the environment and family upbringing likely influence the emergence of ADHD symptoms in children (Claussen et al., 2024). This upbringing includes experiences in the quality of interactions, maltreatment or violence in parenting, parental marital status (married or divorced), and media exposure to children, which show an influence on the emergence of ADHD symptoms.

Among these parenting factors, the mother's job and the child's gender are often debated. Some researchers argue that children of working mothers may exhibit problematic behavior due to less supervision (Gennetian et al., 2020), while others argue that the quality of parenting and maternal satisfaction can reduce this risk (Lucas-Thompson & Goldberg, 2011). In this case, there is no consistency found regarding whether working mothers potentially cause symptoms or actually reduce the risk of ADHD symptoms in children. Additionally, the differences in ADHD symptoms based on gender are also widely discussed, with the common finding that boys tend to exhibit higher externalizing behaviors (Willcutt, 2012). In a study, it was shown that before the diagnosis of ADHD, girls were generally referred to developmental specialists due to emotional issues, while boys were referred for neurological development problems. Compared to boys, girls were diagnosed with ADHD at an older age and received more psychological therapy (Klefsjö et al., 2021).

Research related to the factors influencing the emergence of ADHD symptoms in Indonesia, especially those focusing on preschool-aged children, is still very limited. This study aims to fill that gap by examining the influence of maternal employment status and child gender on ADHD symptoms in Aisyiyah kindergarten students in Yogyakarta. This research is important for providing information to inform educational policies, early screening practices, and support systems for parents.

METHODS

Research Approach

This study uses a quantitative approach with a comparative design to analyze the influence of maternal employment status and child's gender on Attention Deficit Hyperactivity Disorder (ADHD) symptoms in preschool-aged children. The quantitative approach enables the objective and standardized collection and analysis of data, making it suitable for testing formulated hypotheses (Creswell & Creswell, 2018; Saunders et al., 2019).

Comparative design is employed because the focus of this research is to compare ADHD scores between groups based on two independent variables: the mother's employment status (working vs. not working) and the child's gender (male vs. female) (Rahi, 2017). This approach is appropriate for use in developmental psychology studies because it can reveal the role of family characteristics in the variation of children's behavior (Bryman, 2021). ADHD symptoms were assessed using the internationally validated ADHD Rating Scale IV (DuPaul et al., 1998), and analyzed using a two-way ANOVA to examine the effects of each independent variable and their interactions. This

analysis aligns with Bronfenbrenner's ecological approach, which emphasizes the significance of social context in child development (Bronfenbrenner & Morris, 2006).

Research Subject

This study involved 235 preschool children enrolled at TK Aisyiyah Yogyakarta, consisting of 110 boys and 125 girls, with an age range of 4 to 6 years. This age is a crucial period in the development of attention functions and behavioral control, making it the right time to detect possible ADHD symptoms (APA, 2022; Sayal et al., 2018). The first independent variable is the mother's employment status, namely, stay-at-home mothers and working mothers. This factor is important to study because it can affect the intensity of mother-child interactions and the quality of parenting, both of which have the potential to impact child behavior development (Hsin & Felfe, 2014; Ma et al., 2021). The second independent variable is the child's gender. Several studies show that boys tend to exhibit hyperactive-impulsive symptoms, while girls tend to show more hidden inattentive symptoms (Mowlem et al., 2019; Young et al., 2021). The dependent variable in this study is the ADHD symptom score, obtained from parental responses on the ADHD Rating Scale-IV.

Data Collection Technique

Data were collected using the ADHD Rating Scale IV, a validated and reliable measurement tool for identifying ADHD symptoms in children (DuPaul et al., 1998; Collett et al., 2003). This instrument consists of two subscales: inattention and hyperactivity-impulsivity, with each item rated on a 4-point Likert scale, ranging from 0 (never) to 3 (very often). Parents, as the primary respondents, fill out the scale based on their observations of the child's behavior over the past two weeks. This assessment is used to calculate the total score for each subscale and the combined ADHD score. The scores are then used to classify the child into one of four categories: not indicated for ADHD, inattentive type ADHD, hyperactive/impulsive type, or combined type, based on the applicable cut-off criteria (Toplak et al., 2009).

Data Analysis Procedure

Data analysis was conducted using SPSS. Before the main hypothesis testing, a normality test was performed using the Kolmogorov-Smirnov test (for $N > 50$) and a homogeneity of variance test with Levene's Test. The analysis results indicate that the data is not normally distributed; however, two-way ANOVA can still be employed due to the large sample size and the absence of extreme outliers (Field, 2020; Blanca et al., 2017). Two-way ANOVA is used to examine the influence of each independent variable (mother's employment status and child's gender) on ADHD scores and to determine whether there is an interaction between the two. Significant results are determined based on a $p\text{-value} < 0.05$. Next, further analysis was conducted specifically for the group of children indicated to have ADHD ($N = 17$). Given the small sample size and non-normal data, the non-parametric Mann-Whitney U Test was used to evaluate the differences in ADHD scores based on gender and the mother's employment status. This test is an alternative to the t-test for non-parametric data (Pallant, 2020; Laerd Statistics, 2023). The analysis results are presented with U, Z, and p-value. If a significant difference is found, the effect size (r) is also calculated to see the strength of the difference between groups.

RESULTS AND DISCUSSION

This study involved 235 preschool children enrolled at Aisyiyah Kindergarten in Yogyakarta City. The research subjects were classified based on two independent variables, namely the mother's occupation and the child's gender. Based on the mother's occupation, 153 children came from housewives, and 82 children came from working mothers. Based on gender, there are 110 boys and 125 girls. The relatively balanced proportion of subject distribution allows for valid and representative comparative analysis between groups. The relatively balanced distribution of subjects in each category enables valid comparative analysis between groups. The details of the data are presented in Table 1.

Table 1. Distribution of Subjects Based on Mother's Occupation and Child's Gender

Variable	Category	Participant (N)
Mother's Occupation	Housewife mother	153
	Working mother	82
Child's Gender	Male	110
	Female	125

Before further analysis was conducted, a normality test was performed on ADHD symptom scores using the Kolmogorov-Smirnov test. The normality test aims to determine whether the distribution of the research data is normal or not. The results of the normality test are presented in Table 2.

Table 2. Results of the Normality Test for ADHD Symptom Scores

Statistic	Value
N	235
Mean	10,28
Standard Deviation	6,83
Kolmogorov-Smirnov Z	2,082
Asymp. Sig. (2-tailed)	0,000

Based on Table 2 above, the test results show a significance value of 0.000 ($p < 0.05$), indicating that the data is statistically not normally distributed. However, ANOVA analysis can still be used in this condition because the sample size in this study is relatively large ($N = 235$). Some literature suggests that the ANOVA test is relatively robust against violations of the normality assumption, provided the sample size per group is sufficiently large and the data do not contain extreme outliers (Field, 2013; Blanca et al., 2017). Therefore, even though the data do not perfectly follow a normal distribution, the two-way ANOVA test remains valid for use. The homogeneity test is conducted to ensure the equality of variances among the groups compared in the two-way ANOVA. The results of the homogeneity test are presented in Table 3.

Table 3. Results of the Homogeneity Test (Levene's Test)

Statistic Test	Value
F	1,625
df1	3

df2	231
Sig.	0,184

Levene's test showed a significance value of 0.184 ($p > 0.05$), indicating that the variance between groups is homogeneous. Thus, the homogeneity assumption is met and the data are suitable for analysis using two-way ANOVA. After the assumption test is completed, hypothesis testing is then conducted using two-way ANOVA. The results of the two-way ANOVA are presented in Table 4.

Table 4. Summary of Two-Way ANOVA Results on ADHD Symptom Scores

Source	SS (Type III)	df	Mean Square	F	Sig.
Corrected Model	278.441	3	92.814	2.013	.113
Intercept	23430.806	1	23430.806	508.190	.000
Maternal Employment	57.446	1	57.446	1.246	.265
Child Gender	106.154	1	106.154	2.302	.131
Employment * Gender	45.379	1	45.379	0.984	.322
Error	10650.580	231	46.106		
Total	35747.000	235			
Corrected Total	10929.021	234			

The results of the two-way ANOVA indicate that there is no significant main effect of the mother's employment status on ADHD scores ($F(1,231) = 1.25$, $p = 0.265$) or from the child's gender ($F(1,231) = 2.29$, $p = 0.131$). The interaction effect between the mother's employment and the child's gender is also not significant ($F(1,231) = 0.98$, $p = 0.322$). These findings indicate that ADHD symptoms in early childhood in Indonesia are not significantly influenced by the mother's employment or the child's gender. This finding also indicates that demographic factors such as the mother's occupation and the child's gender do not have a significant impact on the level of ADHD symptoms in the early childhood population in the Islamic educational environment where the research was conducted. This result is interesting because it contradicts some global literature, especially studies in Western countries that state that boys are more prone to showing ADHD symptoms compared to girls (Willcutt, 2012; Mowlem et al., 2019). Based on the screening results, 17 children were indicated to have ADHD. Further analysis was conducted on the group of children indicated to have ADHD, with the data description shown in Table 5.

Table 5. Description of Group Data Indicated for ADHD

No	Category	Frequency	Percentage (%)
1	Male	9	52,9
2	Female	8	47,1
3	Working mother	5	29,4
4	Housewife mother	12	70,6
5	Symptoms of Combined Type ADHD	6	35,3
6	Symptoms of Inattentive Type ADHD	5	29,4
7	Symptoms of Hyperactive/Impulsive Type ADHD	6	35,3

The table displayed summarizes the characteristics of early childhood children indicated with ADHD based on gender, mother's employment status, and the type of ADHD symptoms experienced. In terms of gender, 52.9% of the identified children were boys, while 47.1% were girls. Although the proportions are relatively balanced, there are slightly more boys, which aligns with the general tendency that ADHD symptoms are more often found in boys, especially those with hyperactive and impulsive symptoms. From the perspective of the mother's occupation, the majority of children identified with ADHD come from stay-at-home mothers (70.6%), while the rest (29.4%) come from mothers who work outside the home. The predominance of children from stay-at-home mothers in this group does not mean that the mother's occupation directly affects ADHD symptoms, but it may be related to other factors such as the quality of parenting, levels of domestic stress, and parental perceptions of the child's behavior.

In the classification of symptom types, children show variations in the manifestation of ADHD. As many as 35.3% of children exhibit a combination of symptoms, which is a mix of inattention and hyperactive or impulsive behavior. The same percentage (35.3%) is also found in children with the hyperactive/impulsive type, while the remaining 29.4% fall into the inattentive type. This pattern suggests that symptoms that are physically apparent and striking, such as hyperactivity and impulsivity, are more easily recognized and reported by parents compared to inattentive symptoms, which tend to be less visible. In general, this data provides an overview that the proportion of children indicated with ADHD tends to be balanced between genders, more often comes from households with stay-at-home mothers, and is dominated by the combined type and hyperactive/impulsive type of symptoms. This information is crucial for the development of early detection programs and needs-based interventions tailored to the context of early childhood in Indonesia. Next, a non-parametric data analysis was conducted using the Mann-Whitney U test, and the results are presented in Table 6.

Table 6. Mann-Whitney U Test

Variable	U value	p-value	Note
Child gender	20,0	0,134	Not significant
Parent occupational status	36,5	0,525	Not significant

This study conducted a non-parametric Mann-Whitney U test to determine whether there are differences in ADHD symptom scores based on the child's gender and the mother's employment status in the group of children indicated to have ADHD. This test was chosen due to the small sample size ($N = 17$) and the potential for non-normal data distribution. The test results show that the difference in ADHD scores between boys and girls is not statistically significant ($U = 20.0$; $p = 0.134$). This indicates that in the group of children identified with ADHD, the severity of symptoms is relatively similar across genders. Furthermore, the results regarding the mother's employment status indicate that there is no significant difference in ADHD scores based on the mother's employment status ($U = 36.5$; $p = 0.525$). Thus, the status as a housewife or working mother does not affect the level of ADHD symptoms in children in this group. These findings support previous research that shows that the child's gender and the mother's employment status do not significantly contribute to the indication of ADHD symptoms.

These results may differ from international findings, which indicate that boys tend to exhibit more dominant hyperactive symptoms (Willcutt, 2012; Mowlem et al., 2019). However, in the

Indonesian context, several studies indicate that symptom reporting by parents is heavily influenced by cultural perceptions and behavioral norms that consider active behavior in boys as "normal" (Amalia et al., 2022). This difference in results can be attributed to the Indonesian socio-cultural context, where expectations for the behavior of boys and girls may differ from those in Western cultures. In Indonesia, for example, the hyperactive behavior of boys may be considered normal or even not seen as a problem by parents or teachers, thereby reducing the rate of symptom reporting (Amalia et al., 2022). Additionally, the context of Aisyiyah Kindergarten, which has a parenting approach based on religious values and a supportive social community, can serve as a protective factor against the emergence of problematic behaviors, including ADHD.

The absence of an influence from the mother's employment status can also be interpreted as indicating that both housewives and working mothers are able to manage adaptive parenting styles. Previous research shows that the quality of parenting plays a more significant role than the quantity of time spent with the child in influencing the child's behavioral development (Hsin & Felfe, 2014; Ma et al., 2021). This shows that working mothers can also create a stable and responsive emotional environment, thereby not negatively impacting the development of children's attention and self-control.

Theoretically, these findings support Bronfenbrenner's developmental ecology framework, which emphasizes the importance of viewing children's behavior within the complex interactions among various systems, including family, school, community, and culture (Bronfenbrenner & Morris, 2006). These results align with studies that highlight the significance of broader ecological systems such as parenting styles, teacher-student relationships, and community resources in children's behavioral development (Bronfenbrenner & Morris, 2006). Variables such as parenting styles, the quality of teacher-student interactions, family emotional stability, and community values can be stronger moderators of ADHD symptoms compared to demographic characteristics alone.

Further research is needed to delve deeper into the ecological and cultural factors that can moderate ADHD symptoms. Longitudinal studies can also be used to trace the influence of these variables over a longer period. Further research with a longitudinal approach can trace causal relationships over the long term, as well as explore psychosocial factors such as parenting styles, maternal workload, dual role balance, and school responses to children's behavior.

CONCLUSION

This study shows that there is no significant difference in ADHD symptoms based on the mother's employment status or the child's gender among Aisyiyah kindergarten students in Yogyakarta. These findings suggest that factors beyond the mother's occupation and the child's gender may be more important in influencing ADHD symptoms in early childhood. Stakeholders in early childhood education and children's mental health need to consider broader ecological and developmental factors in addressing ADHD.

ACKNOWLEDGEMENT

The author expresses gratitude to all the teachers, students, and management at TK Aisyiyah Yogyakarta for their support and cooperation during the data collection process. Without their participation and assistance, this research could not have been carried out successfully.

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