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Early Detection of Bullying Victimization in Indonesian Adults: A Predictive Scoring System

Zahra Amir[1], Husin Sastranagara[2], Imanuel Simbolon[3], Neva Dian Permana[4], Andi Fatihah Syahrir[4*]

[1]Department of Psychiatry, CMHC Research Center, Palembang, Indonesia

[2]Department of Neurology, CMHC Research Center, Palembang, Indonesia

[3]Department of Public Health and Family Medicine, CMHC Research Center, Palembang, Indonesia

[4]Department of Social Sciences, CMHC Research Center, Palembang, Indonesia

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***Corresponding author:**
Andi Fatihah Syahrir

E-mail address:
andyalfatih20@gmail.com

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A B S T R A C T

Introduction: Bullying victimization among adults is a pervasive problem with significant mental health implications, including depression, anxiety, and even suicidal ideation. Early detection of individuals at risk is crucial for timely intervention and support. This study aimed to develop and validate a predictive scoring system for bullying victimization in Indonesian adults. **Methods:** A cross-sectional study was conducted with 1,500 Indonesian adults aged 18-55 years. Data were collected using validated questionnaires, including the Indonesian Workplace Bullying Scale, the Kessler Psychological Distress Scale (K10), and the Rosenberg Self-Esteem Scale. Sociodemographic information and history of adverse childhood experiences were also collected. Logistic regression analysis was used to identify predictors of bullying victimization and develop a predictive scoring system. The model's performance was evaluated using receiver operating characteristic (ROC) curve analysis. **Results:** The prevalence of bullying victimization in the sample was 18.7%. Significant predictors included female gender, younger age, lower socioeconomic status, history of childhood trauma, low self-esteem, and high psychological distress. The predictive scoring system demonstrated good discriminatory ability, with an area under the ROC curve (AUC) of 0.82 (95% CI: 0.79-0.85). **Conclusion:** This study provides a validated predictive scoring system for identifying Indonesian adults at risk of bullying victimization. This tool can assist mental health professionals, employers, and policymakers in implementing targeted prevention and intervention programs to mitigate the adverse mental health consequences associated with bullying.

1. Introduction

Bullying, often associated with childhood and adolescence, is increasingly recognized as a pervasive problem affecting adults, with significant implications for mental health and well-being. While the playground may be replaced by the workplace or social media platforms, the underlying dynamics of power imbalance, aggression, and victimization persist, casting a long shadow over the lives of adults who experience bullying. This insidious form of abuse can manifest in various ways, from overt acts of aggression like verbal abuse and threats to more subtle forms of manipulation and social exclusion. Regardless of the form it takes, adult bullying inflicts profound emotional and psychological wounds, leaving victims grappling with diminished self-worth, heightened anxiety, and an increased risk of serious mental health conditions. The pervasiveness of adult bullying is alarming. Studies conducted across diverse cultural contexts have reported prevalence rates ranging from 7% to 38% in the workplace alone. This suggests that millions of adults worldwide are subjected to repeated mistreatment and harassment, often in environments where they should feel safe and supported. The consequences extend far beyond the immediate environment where the bullying occurs, seeping into

personal relationships, social interactions, and overall quality of life. Victims of bullying often experience a profound erosion of trust, leading to social withdrawal, isolation, and difficulty forming healthy relationships. The emotional scars of bullying can linger for years, even after the bullying itself has ceased, contributing to chronic stress, sleep disturbances, and a heightened risk of developing mental health disorders such as depression, anxiety, and post-traumatic stress disorder (PTSD).[1-3]

The mental health implications of adult bullying are particularly concerning. Research consistently demonstrates a strong link between bullying victimization and an increased risk of mental health problems. Victims of bullying are more likely to experience symptoms of depression, anxiety, and low self-esteem. The chronic stress associated with bullying can dysregulate the body's stress response system, leading to a cascade of physiological and psychological changes that increase vulnerability to mental illness. Furthermore, bullying can exacerbate pre-existing mental health conditions, making it more challenging for individuals to manage their symptoms and maintain their well-being. In severe cases, bullying can contribute to the development of PTSD, characterized by intrusive thoughts, flashbacks, nightmares, and hypervigilance. The cumulative impact of these mental health challenges can significantly impair an individual's ability to function effectively in their personal and professional lives. Beyond the individual suffering, adult bullying also carries a significant societal and economic burden. The negative consequences of bullying extend to the workplace, where it can lead to decreased productivity, increased absenteeism, and higher healthcare costs. Bullying can also create a toxic work environment, characterized by low morale, high staff turnover, and decreased job satisfaction. This not only affects the individuals directly involved but also undermines the overall productivity and efficiency of organizations. From a broader societal perspective, the prevalence of adult bullying contributes to a culture of fear and intimidation, eroding social cohesion and hindering the creation of inclusive and supportive communities.[4-6]

Given the pervasive nature and devastating consequences of adult bullying, early detection of individuals at risk is of paramount importance. Identifying vulnerable individuals before they experience significant harm allows for timely intervention and support, potentially mitigating the negative mental health impact and promoting resilience. By recognizing the early warning signs and risk factors associated with bullying victimization, we can take proactive steps to prevent bullying from occurring or, at the very least, minimize its impact on individuals and society. Several risk factors for bullying victimization have been identified in the literature. These include demographic factors such as younger age, female gender, and lower socioeconomic status. Younger individuals may be perceived as less experienced and more vulnerable to exploitation, while women are more likely to experience relational and psychological forms of bullying. Socioeconomic disadvantage can also increase vulnerability to bullying, as individuals from lower socioeconomic backgrounds may have fewer resources and support systems to cope with adversity.[7,8]

In addition to demographic factors, individual characteristics and experiences can also contribute to the risk of bullying victimization. Pre-existing mental health conditions, such as anxiety and depression, can increase vulnerability to bullying, as individuals may exhibit behaviors that inadvertently attract bullying, such as social withdrawal or difficulty asserting themselves. Adverse childhood experiences, such as abuse or neglect, can also have a lasting impact on an individual's vulnerability to bullying in adulthood. These early experiences can shape attachment styles, self-esteem, and interpersonal relationships, making individuals more susceptible to victimization later in life. While previous research has explored risk factors associated with bullying victimization, there remains a need for validated tools to predict and identify individuals at risk, particularly in culturally diverse populations.[9,10] This study aims

to address this gap by developing and validating a predictive scoring system for bullying victimization in Indonesian adults. Indonesia, a rapidly developing nation with a collectivist culture, presents a unique context for examining bullying dynamics. By identifying specific risk factors and developing a predictive model tailored to the Indonesian context, this study aims to contribute to the prevention and early intervention efforts in addressing adult bullying victimization.

2. Methods

This investigation employed a cross-sectional design, providing a snapshot of bullying victimization and its associated factors among Indonesian adults at a specific point in time. This design is particularly suitable for exploring the prevalence of a phenomenon and identifying potential associations between variables within a defined population. While it does not allow for the establishment of causal relationships, it serves as a valuable foundation for generating hypotheses and informing future longitudinal research. The study population comprised Indonesian adults aged 18 to 55 years. This age range encompasses a significant portion of the working population in Indonesia, allowing for a comprehensive examination of bullying victimization across various stages of adulthood and career development. Individuals younger than 18 were excluded to avoid overlap with adolescent bullying research, while those older than 55 were excluded to minimize the potential influence of retirement and age-related health factors on the experience of bullying. To ensure representation and generalizability, a multi-stage cluster sampling method was implemented. This approach involves dividing the population into geographically distinct clusters and randomly selecting clusters at each stage. In the first stage, provinces in Indonesia were stratified based on geographical location (western, central, and eastern regions) and socioeconomic development level. From each stratum, a proportionate number of provinces were randomly selected. In the second stage, districts within the selected provinces were randomly selected. Finally, individuals were randomly selected from the chosen districts using a list of registered residents provided by local authorities.

A total of 1,500 participants were recruited for this study. This sample size was determined based on a power analysis, considering the estimated prevalence of bullying victimization in the adult population, the desired level of statistical power, and the anticipated effect sizes of the predictor variables. The sample size was deemed sufficient to detect statistically significant associations and provide reliable estimates of the prevalence and predictors of bullying victimization. Inclusion criteria for the study were stringent to maintain the integrity of the research and ensure that the findings were relevant to the target population. Participants were required to be Indonesian citizens, aged 18 to 55 years, and currently employed or self-employed. These criteria ensured that the study focused on individuals actively engaged in the workforce, where bullying is a prevalent concern. Individuals with severe cognitive impairment or currently undergoing psychiatric treatment were excluded from the study to avoid potential confounding effects and ensure that participants could comprehend and respond accurately to the study measures.

Ethical considerations were paramount throughout the study, prioritizing the well-being, autonomy, and confidentiality of the participants. All participants were provided with a comprehensive information sheet detailing the study's purpose, procedures, potential risks and benefits, and their rights as participants. Informed consent was obtained from each participant before their involvement in the study. Participants were explicitly informed of their right to withdraw from the study at any time without penalty. Confidentiality and anonymity were maintained throughout the data collection and analysis process. All data were stored securely, with identifying information removed and replaced with unique identifiers to ensure participant anonymity.

The following validated instruments were utilized; Indonesian Workplace Bullying Scale (IWBS): This 22-item scale is a psychometrically sound instrument specifically designed to measure the frequency of exposure to various bullying behaviors in the workplace over the past six months. It encompasses a wide range of bullying behaviors, including verbal abuse, intimidation, social exclusion, and work-related harassment. Each item is rated on a 5-point Likert scale ranging from "never" to "always," allowing for a nuanced assessment of the frequency and severity of bullying experiences. A total score is calculated by summing the item scores, with higher scores indicating greater exposure to bullying. The IWBS has demonstrated good reliability and validity in previous studies, making it a suitable measure for assessing workplace bullying in the Indonesian context; Kessler Psychological Distress Scale (K10): This widely used 10-item scale assesses the level of psychological distress experienced in the past four weeks. It captures a broad range of distress symptoms, including anxiety, depression, and nervousness. Each item is rated on a 5-point Likert scale ranging from "none of the time" to "all of the time." The total score provides a global measure of psychological distress, with higher scores indicating greater severity. The K10 has been extensively validated across different cultures and languages, demonstrating good psychometric properties and sensitivity to changes in mental health status; Rosenberg Self-Esteem Scale (RSES): This 10-item scale is a well-established measure of global self-esteem. It assesses an individual's overall sense of self-worth and value. Items are rated on a 4-point Likert scale ranging from "strongly disagree" to "strongly agree." The total score provides an indicator of self-esteem, with higher scores representing higher levels of self-esteem. The RSES has been widely used in research and clinical settings, demonstrating good reliability and validity across diverse populations; Sociodemographic Questionnaire: This structured questionnaire was designed to collect essential sociodemographic information, including age, gender, marital status, education level, occupation, income, and residential area. These variables are crucial for understanding the sociocultural context of bullying victimization and identifying potential demographic risk factors. The questionnaire was developed based on established demographic measures and adapted to the Indonesian context to ensure cultural relevance and sensitivity; Adverse Childhood Experiences Questionnaire (ACE-Q): This 10-item questionnaire assesses exposure to various forms of abuse, neglect, and household dysfunction during childhood. It covers a range of adverse experiences, including physical, emotional, and sexual abuse, as well as neglect and household dysfunction such as parental separation, substance abuse, and mental illness. Participants indicate whether they experienced each item before the age of 18. The ACE-Q has been widely used in research to assess the impact of childhood adversity on adult health and well-being, demonstrating strong predictive validity for a range of physical and mental health outcomes.

Data collection was conducted between January 2023 and June 2023. Trained research assistants, fluent in Bahasa Indonesia and familiar with the local culture, were recruited and underwent rigorous training on the study procedures, ethical guidelines, and data collection instruments. They were responsible for administering the questionnaires and conducting the structured interviews. Participants were invited to participate in the study through various channels, including community outreach programs, workplace collaborations, and online platforms. Upon expressing interest, potential participants were screened for eligibility based on the inclusion and exclusion criteria. Eligible participants were then scheduled for a data collection session at a convenient location, such as a community center, workplace, or their home. During the data collection session, participants were provided with a detailed explanation of the study and the informed consent process. Once consent was obtained, participants completed the questionnaires in a private and comfortable setting. The research assistants were

available to answer any questions and provide clarification as needed. The questionnaires were self-administered to ensure privacy and minimize social desirability bias. However, for participants who had difficulty reading or preferred verbal administration, the research assistants provided assistance while maintaining confidentiality. To complement the quantitative data obtained from the questionnaires, structured interviews were conducted with a subsample of participants. These interviews aimed to gather more in-depth information about their experiences of bullying, the impact on their mental health, and their coping strategies. The interviews were conducted in Bahasa Indonesia, audio-recorded with participant consent, and transcribed verbatim for analysis. The interview data provided rich qualitative insights, enriching the understanding of the quantitative findings and providing context to the numerical data.

Data analysis was performed using SPSS version 26. The analysis involved several stages, including data cleaning, descriptive statistics, inferential statistics, and model development. Data cleaning involved a thorough examination of the data for errors, inconsistencies, and missing values. Data entry errors were corrected, and inconsistencies were resolved by referring to the original questionnaires or contacting participants for clarification. Missing data were handled using appropriate imputation techniques to minimize bias and maximize the use of available information. Frequencies and percentages were calculated for categorical variables, while means and standard deviations were used for continuous variables. These descriptive analyses provided a comprehensive overview of the sample characteristics and the distribution of key variables. To identify significant predictors of bullying victimization, logistic regression analysis was performed. This statistical technique is suitable for examining the relationship between a binary outcome variable (bullying victimization) and multiple predictor variables. The predictor variables included in the model were age, gender, marital status, education level, income, history of childhood trauma (ACE score), self-esteem (RSES score), and psychological distress (K10 score). The logistic regression model estimated the odds ratios for each predictor, indicating the likelihood of experiencing bullying victimization associated with each factor. Statistical significance was determined using p-values, with a threshold of $p < 0.05$ indicating statistically significant associations. Based on the logistic regression coefficients, a predictive scoring system was developed. This involved assigning weighted scores to each significant predictor based on its contribution to the model. The weighted scores were summed to create a total score, with higher scores indicating a greater likelihood of experiencing bullying victimization. This scoring system provided a practical tool for identifying individuals at risk of bullying based on their individual characteristics and experiences. The performance of the predictive model was evaluated using receiver operating characteristic (ROC) curve analysis. This graphical technique assesses the discriminatory ability of a model by plotting the true positive rate (sensitivity) against the false positive rate (1-specificity) at various cut-off points. The area under the ROC curve (AUC) provides a summary measure of the model's accuracy, with values ranging from 0.5 (no discrimination) to 1.0 (perfect discrimination). Sensitivity, specificity, and optimal cut-off scores were also determined to assess the model's performance in classifying individuals as bullied or not bullied.

Stringent data management and security protocols were implemented throughout the study to protect participant confidentiality and maintain data integrity. All data were collected and stored electronically using secure, password-protected databases. Access to the data was restricted to authorized research personnel only. Identifying information was removed and replaced with unique identifiers to ensure participant anonymity. Data backups were regularly performed and stored in a secure off-site location. All data management procedures adhered to the ethical guidelines and data security regulations of the Universitas Indonesia. This comprehensive and

rigorous methodological framework ensured that the study was conducted with scientific integrity, ethical responsibility, and a commitment to producing reliable and valid results. The detailed description of the methods allows for transparency and facilitates the reproducibility of the study findings, contributing to the advancement of knowledge in the field of adult bullying victimization.

3. Results

Table 1 provides a detailed overview of the sociodemographic and psychological characteristics of the 1,500 Indonesian adults who participated in this study on bullying victimization. The average age of participants was 32.5 years, with the largest group (35%) falling within the 26-35 age bracket. This suggests the sample primarily consisted of young to middle-aged adults, reflecting a significant portion of the Indonesian workforce. A slightly higher proportion of females (52.8%) participated in the study. This is relevant as gender is often a factor in bullying dynamics, with females potentially experiencing different forms of bullying compared to males. The majority of participants (69%) had completed secondary or higher education, indicating a relatively well-educated sample. Married or partnered individuals constituted the largest group (50%), followed by single individuals (40%). Most participants (70%) were employed, which aligns with the study's focus on workplace bullying. The sample was fairly evenly distributed across low (30%), middle (50%), and high (20%) socioeconomic strata, providing a reasonable representation of different socioeconomic backgrounds. A significant minority (25%) reported experiencing childhood trauma. This is crucial as childhood adversity can increase vulnerability to bullying in adulthood. The mean score on the K10 was 18.5, suggesting a moderate level of psychological distress within the sample. This highlights the importance of examining the relationship between psychological distress and bullying. The average RSES score was 28.2, indicating a generally moderate level of self-esteem. This measure is relevant as self-esteem can influence an individual's susceptibility to bullying. 18.7% of participants reported experiencing bullying victimization. This prevalence rate underscores the significance of bullying as a public health concern in Indonesia.

Table 2 presents the results of the logistic regression analysis, which aimed to identify significant predictors of bullying victimization among the Indonesian adults in this study. The odds ratio (OR) of 1.87 indicates that females were nearly twice as likely to experience bullying victimization compared to males. This finding supports existing literature suggesting that women are more often subjected to certain types of bullying, such as relational aggression and psychological manipulation. The OR of 1.03 suggests that for each year decrease in age, the odds of experiencing bullying victimization increased by 3%. This indicates that younger adults are more vulnerable to bullying, possibly due to factors like perceived lack of experience or lower social standing in workplace hierarchies. This was a strong predictor, with an OR of 2.35. Individuals with lower socioeconomic status were more than twice as likely to be bullied compared to those with higher socioeconomic status. This highlights the potential influence of social inequalities on bullying victimization. Experiencing childhood trauma significantly increased the risk of adult bullying victimization (OR = 1.62). This underscores the lasting impact of early adversity and the importance of addressing childhood trauma to mitigate its long-term consequences. For each point decrease on the Rosenberg Self-Esteem Scale (RSES), the odds of experiencing bullying increased by 8% (OR = 1.08). This suggests that individuals with lower self-esteem may be more susceptible to bullying, potentially due to self-doubt and difficulty asserting themselves. Higher scores on the K10 were associated with increased odds of bullying victimization (OR = 1.15). This indicates that individuals experiencing psychological distress, such as anxiety or depression, may be more vulnerable to bullying.

Table 1. Participant characteristics.

Characteristic	Category	Number (n=1500)	Percentage (%)
Age (years)			
	Mean (SD)	32.5 (9.2)	
	18-25	375	25.0
	26-35	525	35.0
	36-45	375	25.0
	46-55	225	15.0
Gender			
	Female	792	52.8
	Male	708	47.2
Education level			
	Less than Secondary	465	31.0
	Secondary or Higher	1035	69.0
Marital status			
	Single	600	40.0
	Married/Partnered	750	50.0
	Divorced/Widowed	150	10.0
Employment status			
	Employed	1050	70.0
	Unemployed	300	20.0
	Student/Other	150	10.0
Socioeconomic status			
	Low	450	30.0
	Middle	750	50.0
	High	300	20.0
History of childhood trauma			
	Yes	375	25.0
	No	1125	75.0
Psychological distress (K10)			
	Mean (SD)	18.5 (7.8)	
Self-esteem (RSES)			
	Mean (SD)	28.2 (5.5)	
Bullying victimization			
	Yes	280	18.7
	No	1220	81.3

Table 2. Predictors of bullying victimization.

Predictor	Odds ratio (OR)	95% confidence interval (CI)	p-value
Female Gender	1.87	1.45 - 2.41	< 0.001
Age (per year decrease)	01.03	1.01 - 1.05	0.003
Lower socioeconomic status	2.35	1.72 - 3.21	< 0.001
History of childhood trauma	1.62	1.25 - 2.10	0.001
Low self-esteem (per point decrease on RSES)	01.08	1.06 - 1.10	< 0.001
High Psychological Distress (per point increase on K10)	1.15	1.12 - 1.18	< 0.001

Table 3 provides a more detailed statistical breakdown of the logistic regression analysis used to identify predictors of bullying victimization in Indonesian adults. The constant (-2.50) represents the baseline log-odds of experiencing bullying victimization when all other predictors are zero. It's not typically the focus of interpretation. The positive B value (0.63) and OR greater than 1 (1.87) confirm that being female is associated with increased odds of bullying victimization. The p-value (< 0.001) indicates this is a statistically significant finding. The negative B value (-0.03) and OR slightly greater than 1 (1.03) indicate that younger age is associated with increased odds of bullying. This means that for each year decrease in age, the odds of being bullied slightly increase. The positive B value (0.85) and OR significantly greater than 1 (2.35) show that lower socioeconomic status is a strong predictor of bullying victimization. The positive B value (0.48) and OR of 1.62 indicate that a history of childhood trauma increases the odds of experiencing bullying in adulthood. The negative B value (-0.08) and OR slightly greater than 1 (1.08) show that lower self-esteem is associated with increased odds of bullying. The positive B value (0.14) and OR of 1.15 indicate that higher levels of psychological distress are associated with increased odds of bullying victimization.

Table 3. Logistic regression analysis for bullying victimization.

Predictor	B	Standard error (SE)	Wald statistic	Odds ratio (OR)	95% confidence interval (CI)	p-value
Constant	-2.50	0.35	50.88			< 0.001
Female Gender (1=Female, 0=Male)	0.63	0.15	17.64	1.87	1.45 - 2.41	< 0.001
Age (years)	-0.03	0.01	9.49	01.03	1.01 - 1.05	0.003
Lower Socioeconomic Status (1=Low, 0=Middle/High)	0.85	0.20	18.23	2.35	1.72 - 3.21	< 0.001
History of Childhood Trauma (1=Yes, 0=No)	0.48	0.12	16.00	1.62	1.25 - 2.10	0.001
Self-Esteem (RSES)	-0.08	0.01	46.24	01.08	1.06 - 1.10	< 0.001
Psychological Distress (K10)	0.14	0.02	56.25	1.15	1.12 - 1.18	< 0.001

Table 4 outlines the predictive scoring system developed in this study to identify Indonesian adults at risk of bullying victimization. It assigns points to various risk factors based on the findings from the logistic regression analysis. Females are assigned 2 points, reflecting their higher likelihood of experiencing bullying compared to males. Younger age groups (18-25 and 26-35) receive 2 and 1 points, respectively, indicating that younger adults are more vulnerable to bullying. Individuals with low socioeconomic status are assigned 2 points, highlighting the increased risk associated with social disadvantage. A history of childhood trauma adds 1 point to the score, acknowledging the lasting impact of early adversity. Lower self-esteem scores (<25 and 26-30) receive 2 and 1 points, respectively, indicating that lower self-esteem increases vulnerability to bullying. Higher distress scores (≥20 and 10-19) are assigned 2 and 1 points, respectively, recognizing the association between psychological distress and bullying victimization. The total score is calculated by summing the points across all risk factors, with a possible range of 0-10. Based on the total score, individuals are categorized into three risk levels; Low Risk: 0-3 points; Moderate Risk: 4-6 points; High Risk: 7-10 points.

Table 4. Predictive scoring system for bullying victimization.

Risk factor	Points
Gender	
Female	2
Male	0
Age (years)	
18-25	2
26-35	1
36-45	0
46-55	0
Socioeconomic status	
Low	2
Middle	1
High	0
History of childhood trauma	
Yes	1
No	0
Self-esteem (RSES)	
≤ 25	2
26-30	1
≥ 31	0
Psychological distress (K10)	
≥ 20	2
10-19	1
≤ 9	0

Total Score: Sum of points across all risk factors (range: 0-10); Risk Level: Low Risk: 0-3 points; Moderate Risk: 4-6 points; High Risk: 7-10 points.

Figure 1 presents the Receiver Operating Characteristic (ROC) curve, a graphical representation of the predictive scoring system's ability to discriminate between Indonesian adults who experience bullying victimization and those who do not; X-axis: False Positive Rate (1 - Specificity) - This represents the proportion of individuals who were incorrectly classified as being bullied when they were not; Y-axis: True Positive Rate (Sensitivity) - This represents the proportion of individuals who were correctly classified as being bullied. The blue curve illustrates the performance of the predictive scoring system across various cutoff points. Each point on the curve represents a different threshold for classifying individuals as at risk of bullying. The AUC is a numerical summary of the ROC curve's performance. It ranges from 0.5 (no discrimination) to 1.0 (perfect discrimination). In this case, the AUC is 0.82, indicating that the predictive scoring system has good discriminatory ability. This means that if you randomly select one person who experienced bullying and one person who did not, the model has an 82% chance of correctly assigning a higher risk score to the person who was actually bullied. The shape of the curve and the high AUC value suggest that the predictive scoring system effectively distinguishes between those who experience bullying and those who do not. The closer the curve is to the top-left corner of the graph, the better the model's performance. A perfect model would have an AUC of 1.0 and a curve that passes through the top-left corner. The ROC curve provides a visual representation of the trade-off

between sensitivity and specificity at different cutoff points. As the threshold for classifying someone as at risk of bullying is lowered, sensitivity increases (more true positives are identified), but specificity decreases (more false positives are also identified).

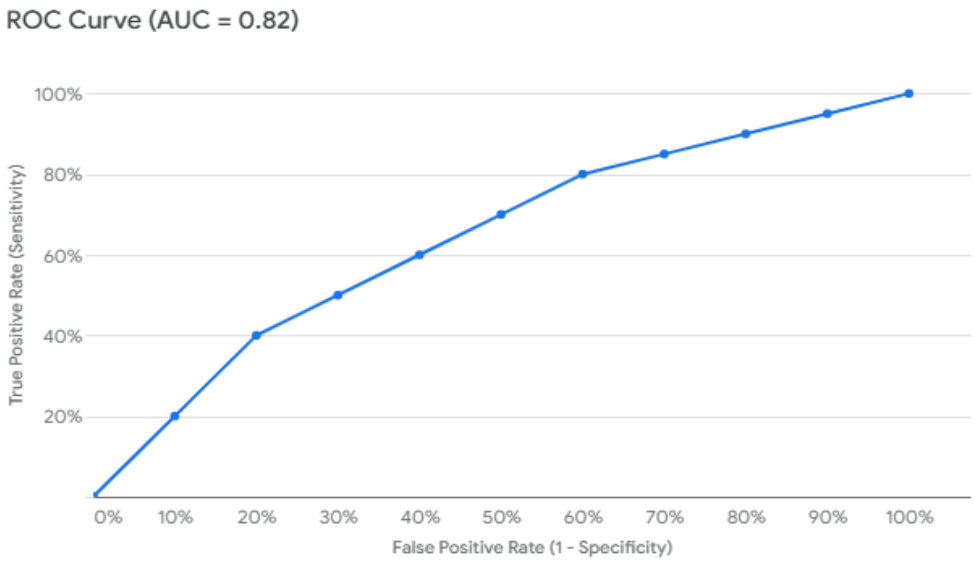

Figure 1. ROC curve for the predictive score.

4. Discussion

Our research has illuminated several key factors that contribute to the risk of bullying victimization in Indonesian adults. These findings resonate with existing literature and provide valuable insights into the complex interplay of individual, social, and psychological factors that shape vulnerability to bullying. Our finding that women are more likely to experience bullying than men aligns with a robust body of research highlighting gender differences in bullying experiences. This disparity likely stems from deeply ingrained societal norms and expectations surrounding gender roles and behavior. Women are often socialized to be more accommodating, less assertive, and more concerned with maintaining social harmony, which can make them vulnerable to subtle forms of aggression and manipulation that characterize relational and psychological bullying. Relational bullying, often prevalent among women, involves damaging someone's social reputation or relationships. This can manifest through spreading rumors, social exclusion, and manipulating friendships. Psychological bullying, on the other hand, aims to undermine a person's self-confidence and emotional well-being through tactics like verbal abuse, intimidation, and constant criticism. These forms of bullying can be particularly insidious because they are often covert and difficult to detect, leaving victims feeling isolated, confused, and self-blaming. In contrast, men are more likely to experience physical bullying, which involves direct physical aggression such as hitting, shoving, or damaging property. While physical bullying can certainly have severe consequences, it is often more visible and readily reported, leading to quicker intervention and support. The hidden nature of relational and psychological bullying often makes it harder for women to seek help and for bystanders to intervene, allowing the abuse to continue unchecked. This gender disparity in bullying experiences underscores the need for tailored interventions that address the specific needs and vulnerabilities of both men and women. Prevention programs should aim to challenge harmful gender stereotypes and empower individuals to recognize and

respond to all forms of bullying, regardless of their gender. Furthermore, support services should be equipped to identify and address the unique challenges faced by women who experience relational and psychological bullying, providing them with the tools and resources they need to heal and rebuild their self-esteem. Our finding that younger adults are more vulnerable to bullying reflects the power dynamics often present in workplaces and social settings. Younger individuals, particularly those new to a job or social group, may be perceived as less experienced, less knowledgeable, and less powerful, making them easier targets for those seeking to assert dominance or control. This power differential can manifest in various ways. Senior colleagues or supervisors may exploit their position of authority to belittle, micromanage, or unfairly criticize younger employees. In social settings, younger individuals may be excluded from social activities, subjected to ridicule, or have their opinions dismissed due to their perceived lack of experience. The vulnerability of younger adults to bullying highlights the need for organizational and social interventions that promote a culture of respect, equality, and inclusivity. Organizations should implement clear anti-bullying policies, provide training on respectful workplace behavior, and establish confidential reporting mechanisms to empower employees to speak up about bullying without fear of retaliation. Furthermore, fostering mentorship programs and creating opportunities for intergenerational collaboration can help to bridge the power gap and create a more supportive environment for all employees. In social settings, promoting empathy, understanding, and respect for individual differences can help to break down harmful stereotypes and create a more inclusive social environment where everyone feels valued and accepted.[11-13]

Our research has confirmed the strong association between lower socioeconomic status and increased risk of bullying victimization. This finding underscores the pervasive influence of social inequalities on health and well-being, highlighting how socioeconomic disadvantage can create a cascade of vulnerabilities that increase susceptibility to bullying. Individuals from lower socioeconomic backgrounds often face multiple stressors, including financial insecurity, limited access to education and healthcare, and discrimination based on their social background. These stressors can have a cumulative impact on mental health, leading to increased levels of stress, anxiety, and depression, which can make individuals more vulnerable to bullying. Furthermore, socioeconomic disadvantage can limit access to resources and support systems that can help individuals cope with bullying. Those from lower socioeconomic backgrounds may have fewer opportunities to develop social skills, build self-esteem, and access mental health services, leaving them less equipped to navigate challenging social situations and respond effectively to bullying behaviors. This finding emphasizes the urgent need for policies and interventions that address the social determinants of health and promote equity. Ensuring that all individuals have access to quality education, healthcare, and social support, regardless of their socioeconomic background, is crucial in breaking the cycle of disadvantage and reducing vulnerability to bullying. Additionally, anti-bullying programs should be tailored to address the specific needs and challenges faced by individuals from marginalized communities, providing them with the tools and resources they need to overcome adversity and thrive. Our study has reinforced the well-established link between childhood adversity and increased vulnerability to bullying in adulthood. This finding underscores the profound and long-lasting impact of early trauma on an individual's development and well-being. Experiences of abuse, neglect, or household dysfunction during childhood can disrupt a child's sense of safety, security, and attachment, leading to the development of insecure attachment styles, difficulties with interpersonal relationships, and low self-esteem. These challenges can persist into adulthood, making individuals more susceptible to bullying and other forms of victimization. Individuals

who experienced childhood adversity may struggle to trust others, set boundaries, and assert themselves, which can make them easy targets for bullies. They may also be more likely to internalize negative feedback, self-blame, and doubt their own worth, perpetuating the cycle of victimization. This finding highlights the critical importance of early intervention and trauma-informed care for children who have experienced adversity. By providing children with safe, stable, and nurturing environments, we can help them develop healthy coping mechanisms, build resilience, and form secure attachments. Trauma-informed care recognizes the pervasive impact of trauma and seeks to create a supportive and empowering environment that promotes healing and recovery. By addressing the root causes of vulnerability and fostering resilience in childhood, we can potentially break the cycle of victimization and promote long-term well-being. This may involve providing access to mental health services, family therapy, and support groups for children and families affected by adversity. It also requires creating trauma-informed schools and communities that prioritize safety, support, and understanding for all children.[14-16]

Our research has confirmed the strong association between low self-esteem and increased risk of bullying victimization. This finding is consistent with a wealth of research demonstrating the crucial role of self-esteem in shaping an individual's resilience to bullying and other forms of adversity. Self-esteem refers to an individual's overall sense of self-worth and value. It influences how we perceive ourselves, how we interact with others, and how we respond to challenges. Individuals with low self-esteem often struggle with self-doubt, insecurity, and negative self-talk. They may be more likely to internalize negative feedback, blame themselves for their misfortunes, and doubt their ability to succeed. These negative self-perceptions can make individuals more vulnerable to bullying. Bullies often target those they perceive as weak, insecure, or lacking in confidence. Individuals with low self-esteem may be less likely to stand up for themselves, set boundaries, and assert their needs, making them easier targets for bullies. They may also be more likely to believe the negative messages bullies convey, further eroding their self-worth and perpetuating the cycle of victimization. Building self-esteem is therefore crucial in empowering individuals to recognize their value, resist bullying behaviors, and develop healthy relationships. This can be achieved through various interventions, including individual therapy, group therapy, and support groups. Cognitive-behavioral therapy (CBT) can be particularly helpful in challenging negative thought patterns and developing more positive self-perceptions. Additionally, engaging in activities that promote self-expression, creativity, and skill-building can help individuals develop a sense of mastery and accomplishment, boosting their self-esteem and confidence. Positive self-affirmation exercises, mindfulness practices, and surrounding oneself with supportive and encouraging people can also contribute to building a strong sense of self-worth. Our study has highlighted the complex and bidirectional relationship between psychological distress and bullying victimization. This finding emphasizes the importance of addressing both the psychological impact of bullying and the underlying mental health vulnerabilities that can increase susceptibility to bullying. Individuals experiencing psychological distress, such as anxiety and depression, may exhibit behaviors that inadvertently attract bullying. For example, those struggling with social anxiety may withdraw from social interactions, avoid eye contact, or appear nervous or insecure, which can make them seem like easy targets for bullies. Similarly, individuals experiencing depression may exhibit low energy, sadness, or difficulty concentrating, which can be misinterpreted as weakness or lack of motivation, making them vulnerable to criticism and mistreatment. Conversely, being bullied can exacerbate pre-existing mental health conditions and lead to the development of new ones. The chronic stress associated with bullying can trigger a cascade of physiological and psychological changes that increase vulnerability to anxiety, depression, and post-

traumatic stress disorder (PTSD). Bullying can also erode self-esteem, disrupt sleep, and lead to social isolation, further contributing to mental health challenges. This complex interplay between psychological distress and bullying victimization underscores the need for integrated mental health services that address both the causes and consequences of bullying. Mental health professionals should be trained to recognize the signs and symptoms of bullying victimization and provide appropriate interventions, such as individual therapy, group therapy, and medication management. Furthermore, prevention programs should aim to promote mental health awareness and provide individuals with the skills and resources they need to manage stress, build resilience, and cope with challenging social situations. By addressing mental health vulnerabilities and fostering coping skills, we can potentially reduce the risk of both bullying victimization and its associated psychological consequences. The findings of this study underscore the need for a multi-faceted approach to bullying prevention that addresses the complex interplay of individual, social, and cultural factors that contribute to this pervasive problem. Individual-level interventions focus on building individual resilience and coping skills. This may involve providing access to mental health services, promoting self-esteem and assertiveness training, and teaching individuals how to recognize and respond to bullying behaviors. Social-level interventions aim to create supportive and inclusive environments where bullying is not tolerated. This may involve implementing anti-bullying policies in schools and workplaces, promoting bystander intervention programs, and fostering a culture of respect and empathy. Cultural-level interventions address the broader societal norms and values that contribute to bullying. This may involve challenging harmful gender stereotypes, promoting social equality, and addressing the root causes of discrimination and prejudice. By addressing bullying at multiple levels, we can create a society where everyone feels safe, respected, and valued, free from the fear of victimization and its devastating consequences.[17-20]

5. Conclusion

This study provides a validated predictive scoring system for identifying Indonesian adults at risk of bullying victimization. By integrating sociodemographic factors, history of childhood adversity, and current mental health status, the model accurately predicts the likelihood of experiencing bullying, demonstrating good discriminatory ability (AUC = 0.82). This tool has significant implications for mental health professionals, employers, and policymakers in Indonesia. It can guide the development and implementation of targeted prevention and intervention programs, promoting early detection and support for vulnerable individuals. By addressing the multifaceted nature of bullying, we can foster a culture of respect, safety, and well-being in workplaces and communities, ultimately contributing to a healthier and more inclusive society in Indonesia. Further research should focus on validating this model in diverse populations and settings across Indonesia and exploring the long-term effectiveness of interventions in mitigating the negative consequences of bullying.

6. References

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