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Analysis of Genetic, Socio-economic, and Environmental Factors in Adolescent Mental Health: A Literature Review

Fitrio Deviantony[1*], Nurul Kaniya[1], Fatimatus Zahro[1], Aynuning Hadi Lestari[1]

1 Faculty of Nursing, University of Jember, Indonesia

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Abstract

Background: A person's mental health plays a significant role in their lives since it allows them to function as living creatures and carry out their daily activities. A person in good mental health is able to see their own potential, manage everyday stressors, perform efficiently, and positively impact their surroundings. **Aims:** This study aims to analyze the relationship between genetic, socio-economic, and environmental factors on mental health in adolescents. **Methods:** A review of the literature from 2019 to 2024 was conducted as part of this research technique using Pubmed and Science Direct with the keywords "mental health", "socio-economic factors", "genetic factors", "adolescents". **Results:** The literature review finds that mental disorders are caused by a combination of genetic, biological, psychological, and environmental factors. However, of the 15 factors that were examined, there was 1 factor that was not associated with adolescent mental health, namely physical activity. In a study conducted by Amir, et al. (2024) showed that there was no correlation between physical activity and anxiety (one of the mental health disorders). **Conclusion:** Based on the results of a literature review of 15 journals, it can be concluded that adolescent mental health is not only influenced by socio- economic factors but also by genetic, environmental, and interpersonal relationship factors.

Keywords: Adolescent, Factor influence, Mental health

Correspondence
Fitrio Deviantony
Faculty of Nursing, University of Jember
Jl. Kalimantan No.37. Sumbersari, Jember, East Java 68121 Indonesia
Email: fitrio.psik@unej.ac.id

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1. BACKGROUND

A time of major physical, psychological, and social change, adolescence is a developmental period in human existence. During this transition period, adolescents begin to develop their talents and abilities and display these things to others to show their uniqueness (Kusmiran, 2011 in Subekti, et al., 2020). During adolescence, individuals experience psychological development to find self-identity. Psychologically, adolescents enter a stage where they feel part of adult society, an age where they no longer feel under the control of their elders, but feel equal to them. The psychological development that

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occurs during adolescence focuses on increasing independence, identity formation, and orientation towards the future, which is closely related to the mental health conditions of adolescents.

A person's mental health plays a significant role in their lives since it allows them to function as living creatures and carry out their daily activities. A person in good mental health is able to see their own potential, manage everyday stressors, perform efficiently, and positively impact their surroundings. According to Law No. 18/2014 on Mental Health, mental health is a state in which a person can grow and develop physically, mentally, spiritually, and socially, enabling them to reach their full potential, overcome challenges, work efficiently, and positively impact their community. Individuals who have good mental health are often referred to as flourishing, which is a state in which a person feels positive emotions towards their life and is able to function optimally, both psychologically and socially (Laksmi & Jayanti, 2023).

On the other hand, the significant changes experienced by adolescents, especially in psychological aspects, make them vulnerable to mental health problems. The process of self-discovery, which is often accompanied by emotional and social pressures, as well as the need to be accepted and appreciated, can trigger internal conflicts and increase the potential for mental disorders. According to Maramis (2004) in Fitriani & Syaifullah (2024), mental health disorders can affect mood, thinking ability, and emotional control, which in turn can cause problems in behavior such as schizophrenia, depression, anxiety, personality disorders, organic mental disorders, psychosomatic disorders, suicidal tendencies, and mental retardation.

In Indonesia, the incidence of schizophrenia and psychosis mental disorders was 6.7%, while the prevalence of depression in those aged 15 and older was 6.1%, according to Basic Health Research (Kemenkes RI, 2019). Additionally, mental emotional-illnesses also affects 9.8% of the population aged 15 years and above, which mean nearly 18 million Indonesians are impacted by this problem. The data shows that mental disorders can be experienced by anyone. Although many people experience mental disorders, stigma such as stereotypes, prejudice, and discriminatory attitudes are still often experienced by those diagnosed with mental disorders, which ultimately hinders them in achieving their life goals (Corrigan, 2004 in Ririn & Ariana, 2021).

Mental health plays an important role in determining a person's physical condition and can have a significant impact on individual productivity, especially in adolescents. Good mental health not only supports emotional balance, but also contributes to the body's ability to function optimally. When mental health is compromised, productivity and the ability to go about daily activities are also affected. This suggests that stable mental health is essential for maintaining overall physical well-being and supporting healthy productivity. In the context of adolescents, untreated mental health issues can worsen physical conditions and hinder the achievement of their full potential in daily life.

Moreover, social interactions play a crucial role in maintaining mental health, which in turn affects adolescents' physical well-being. Numerous research have demonstrated a robust correlation between mental health and the caliber of social contacts. Positive social ties are associated with greater mental health in adolescents (Dour et al., 2014; Bekele et al., 2015). In contrast, social isolation and loneliness have been demonstrated to impair people's physical conditions and raise their risk of health issues, including mental health illnesses (Steptoe et al., 2012). Holt-Lunstad et al. (2012) conducted a systematic review which shown consistent effects across trials, further confirming the function of positive social ties in lowering mortality risk. However, there is also evidence of a reverse causal pathway, where physical impairment or poor mental health can lead to increased social isolation, creating a negative spiral that exacerbates both conditions. This interplay of social isolation and health problems can worsen overall well-being, creating greater challenges for adolescents in interacting socially and developing healthy relationships.

Furthermore, poor mental health in adolescents can also affect their economic status, especially in the context of their ability to access education and future employment opportunities. Impaired physical and mental health can lead to reduced productivity, both at school and in daily life, which can ultimately lead to lost economic opportunities and limit access to basic needs such as good education and employment opportunities. In the long run, this decline in economic status can worsen adolescents' physical and mental conditions, creating a cycle of economic hardship that is difficult to break. For example, stress from health problems or pressure at school can worsen their mental

and physical health conditions, ultimately affecting their ability to improve their quality of life and reach their full potential. Thus, health problems-both mental and physical-can worsen adolescents' economic situation, creating a mutually reinforcing impact between health and socio-economic status.

For this reason, it is important for health workers, especially nurses, to conduct appropriate interventions to support adolescents' mental health, given its far-reaching impact on their physical well-being, social interactions, and economic status. Campaigns to increase awareness of the value of mental health, psychological support programs in schools, and the provision of tools that promote positive social relationships are all examples of effective interventions. In order to improve adolescents' physical, mental, and social well-being, these initiatives are anticipated to lower the danger of social isolation and loneliness as well as assist them in managing stress and obstacles.

2. METHODS

Articles used in this study had to meet certain inclusion and exclusion criteria. Inclusion criteria included articles that explicitly discussed methods to accelerate the labor phase and their impact on birth outcomes. Articles that were not relevant to the research topic, did not use the SLR method, or did not contain data that could be analyzed qualitatively were excluded from the analysis process.

Articles used in this study were obtained through online databases such as Pubmed and Science Direct. The articles were searched using keywords relevant to the research topic, such as "mental health", "socio- economic factors", "genetic factors", and "adolescents". Based on the search results in Pubmed, 1578 articles were obtained and Science Direct obtained 13660 articles without making exceptions. Then to find the articles desired by the authors, filtering is carried out based on the category of the last 5 years, the category of article type, the category of article language, and the category of availability of free article access. In the filtering process, articles that did not meet the researcher's inclusion were excluded from the review list, leaving 15 selected journals that met the researcher's criteria.

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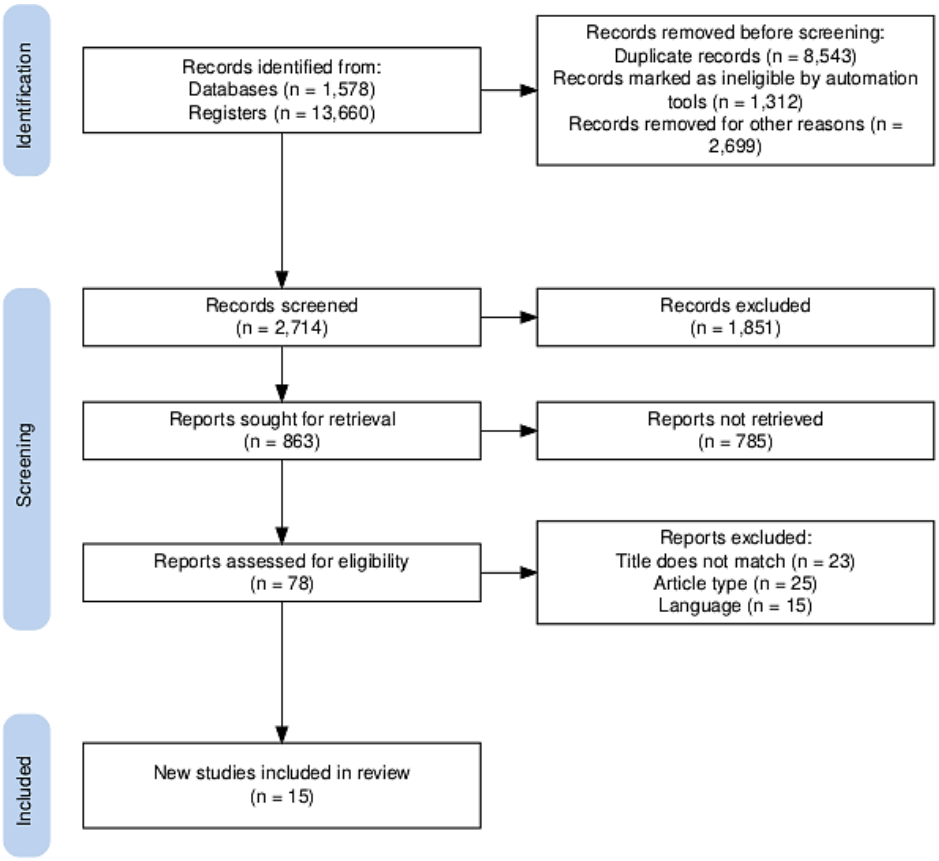

Figure 1. PRISMA Flowchart

3. RESULTS

Research into numerous studies and articles revealed that a combination of genetic, biological, psychological, and environmental factors causes mental disorders information, see Table 1 dan Table 2 for the results of the following literature analysis.

Table 1. Characteristic Findings

No	Author	Year	Nation	Design
1.	Laksmi et al.	2023	Indonesia	Quantitative
2.	Gintari et al.	2023	Indonesia	Quantitative
3.	Safitri, et al.	2022	Indonesia	Quantitative
4.	Fitriani et al.	2024	Indonesia	Quantitative
5.	Tatari et al.	2021	Iran	Quantitative
6.	Clarke et al.	2023	United State of America	Quantitative
7.	Gao et al.	2021	China	Quantitative
8.	Ibrahim et al.	2024	Saudi Arabia	Quantitative
9.	Maxwell et al.	2021	England	Quantitative
10.	Bagheri et al	2022	China	Quantitative
11.	Stepanous et al.	2023	Brazil	Qualitative
12.	Amir et al.	2024	Indonesia	Quantitative
13.	Anurogo et al.	2023	Indonesia	Mixed combined
14.	Khadijah et al.	2024	Indonesia	Quantitative
15.	Sari et al.	2024	Indonesia	Quantitative

Table 2. Result of Article Analysis *(Continue until page 299)*

No	Author	Title	Objective	Measurement	Subject	Result
1.	Laksmi et al.	The relationship between Physical Activity and Mental Health in Adolescents	The purpose of this study is to find out how physical activity affects adolescents' mental health.	The International Physical Activity Questionnaire (IPAQ) and the Mental Health Continuum-Short Form (MHC-SF) were used to measure the data. Respondents received the questionnaires through house calls. Frequency distribution was used to evaluate the data univariately, and the Spearman Rank test was used to examine the data bivariately.	Adolescents aged 10-19 years in Banjar Tengah, with a total sample size of 114 adolescents, selected using the total sampling technique	The majority of teenagers were physically active (52.6%) and in good mental health (64.9%). Bivariate analysis revealed a strong correlation between mental health and physical activity (p value = 0.001; p < 0.05).
2.	Gintari et al.	Mental Health in Adolescents	The purpose of this study is to describe the mental health of adolescents in Ubung Kaja Village.	The SRQ-29 and the Respondent Characteristics Questionnaire were the measurement instruments.	Researcher took sample of 265 adolescents in Ubung Kaja Village usiang a stratified random sampling technique	- A total of 46.8% of adolescents experienced mental emotional disorders (GME). - Psychotic symptoms were found in 4.9% of adolescents. - Indications of PTSD were identified in 7.5% of adolescents. - The majority of respondents experienced mild stress (74%) and had good relationships with peers (92.5%). - Female respondents and those aged 14-18 years had a higher prevalence of GME.
3.	Safitri, et al.	The Effect of Gadget on Mental Health Status and Social Interactions in Students at Public Junior High School 3 Pekunce, Banyumas Regency	The purpose of this study is to examine how students at SMP Negeri 3 Pekuncen use technology in relation to their social interactions and mental health.	In this study, researchers used an ordinal scale-based questionnaire method.	This research used 82 responde-nts from SMP Negeri 3 Pekuncen	There were p values of 0.003 and 0.007 in the results. The p value, which is less than 0.05, shows how devices affect junior high school 3 Pekuncen pupils' social interactions and mental health.

No	Author	Title	Objective	Measurement	Subject	Result
4.	Fitriani et al.	Raising Mental Health Awareness in Adolescents	The purpose of this article is to raise awareness and understanding of the significance of teenage mental health, including how to deal with stressors in daily life to get the best possible mental health.	In this study, researchers used Guttman scale-based pre and post tests.	Teenagers from different levels of education	The campaign's outcomes demonstrated that adolescents' comprehension of mental health had significantly improved. After participating in the campaign, 90.3% of participants (109 out of 120) reported that they understood the significance of mental health better, whilst 9.7% of participants (11 participants) said they still did not grasp it as well.
5.	Tatari et al.	Investigating the Role of Social Media on Mental Health	This study set out to investigate the impact of social media on mental health.	Using standardized tools such as CASP (Critical Appraisal Skills Program) or checklists based on inclusion and exclusion criteria.	Teenagers using social media	The results of this study show that social media can have negative impacts such as decreased life satisfaction in some individuals due to social media use as well as positive ones such as supporting the development and maintenance of social relationships that are beneficial to the mental health of its users.
6.	Clarke et al.	Language skills and interpersonal trust in adolescents with and without mental illness	This study's primary goal was to compare the vocabulary, social problem-solving skills, attachment, mentalization, and trust in parents of teenagers with and without mental illness.	Parent- Adolescent Communication Scale (PACS) to assess how open and effective communication is between adolescents and parents; Inventory of Parent and Peer Attachment (IPPA) to assess emotional relationships and attachment with parents; Likert scales to rate levels of agreement/disagreement based on questions	78 adolescents aged 16-18 years	Adolescents with mental illness showed significantly lower vocabulary proficiency, had lower levels of trust in mother and father, and experienced higher anxiety and avoidance, compared to adolescents without mental illness. In addition,

No	Author	Title	Objective	Measurement	Subject	Result
				asked in the questionnaire.		expressive vocabulary ability in adolescents with mental illness (but not in adolescents without mental illness) showed a significant negative correlation with trust in mother, although no such relationship was found with trust in father.
7.	Gao et al.	Prevalance and correlates of lifestyle behavior, anxiety and depression in Chinese college feshman: Across-sectional survey	The purpose of this study was to identify the lifestyle behaviors' modifiable components. Furthermore, this study examined the prevalence and associated factors of anxiety, depression, and other lifestyle habits in a sample of Chinese first-year college students.	The Generalized Anxiety Disorder 7-item scale (GAD-7) was used to measure anxiety, while the Patient Health Questionnaire-9 (PHQ-9) was used to measure depression.	Reshmen enrolled in universities located in the selected eastern region (Beijing, Zhejiang, Jiangsu), central region (Henan and Anhui) and western region (Gansu, Xinjiang and Guizhou), with a total sample size of 1,017 adolescents, were selected using a total sampling technique	Most adolescents experienced moderately severe anxiety 40.3% (410/1,017) and adolescents who experienced depression were 45.3% (360/1,017). The results of bivariate analysis showed a significant association between family income, chronic diseases, alcohol consumption, eating regular meals (including breakfast, lunch, and dinner), consumption of snacks between meals, consumption of desserts, and sugary sweet drinks with anxiety and depression, with a p value = 1.017
8.	Ibrahim et al.	Factors Influencing Aggressive Behavior as Perceived by University Students	The purpose of this study was to investigate the predictors of aggression, particularly among Yordanian university students.	- The Aggression Questionnaire (AQ) was used for assessment. - The Patient-Reported Outcomes Measurement Information System (PROMIS) short form scale was used for measurement. - The Functional Assessment for	Researchers distributed questionnaires to a sample of 932 adolescents at the University of Jordan.	A variety of interrelated factors, including social factors like frustration and provocation, as well as family dynamics like lack of attention and conflict, influence a

No	Author	Title	Objective	Measurement	Subject	Result
				Chronic Illness Therapy-Spiritual Well-being-Non-illness (FACIT-Sp) was used to evaluate the patient. - Assessed by Zimet et al. (1988) using the Multidimensional Scale of Perceived Social Support (MSPSS). - Assessed using the Satisfaction with Life Scale (SWLS).		person's level of aggression. Physical environments, such as high temperatures and noise, also contribute to aggressive tendencies. In addition, exposure to violence in mass media and video games can trigger aggressive behavior. Psychological factors, such as unmanaged emotions and negative thought patterns, also play an important role. Understanding these factors can help in treating and preventing aggressive behavior in society
9.	Maxwell et al.,	Association Between Genetic Risk for Psychiatric Disorders and the Probability of Living in Urban Setting	The purpose of this study was to find out if people who are genetically predisposed to different mental illnesses are more likely to reside in cities.	This article uses multiple measures to explore the association between genetic risk of psychiatric disorders and residence in urban areas. The study included 385,793 participants from the UK Biobank, with analyses of polygenic risk scores (PRS), genome wide association studies (GWAS), and mendelian randomization analyses. Key measures included population density based on participants' address history linked to census data from 1931 to 2011.	A group of adults aged 25-60 years old	207,963 (54%) of the 385,793 participants in this study were female, and 177,663 (46%) were male (167 persons' gender was not available). Participants were between the ages of 37 and 73. Increased population density in adulthood was significantly correlated with the polygenic risk score. These results imply that a person's choice of home may be influenced by a high genetic risk of developing a number of mental illnesses.

No	Author	Title	Objective	Measurement	Subject	Result
10.	Bagheri et al.	The Influence of Family Socioeconomic Status on Adolescents' Mental Health in China	The purpose of this article was to ascertain how family socioeconomic situation affected the mental health of adolescents.	The article uses the China Education Panel Survey (CEPS) as a questionnaire measurement. CEPS is a large, representative survey project in China, initiated in 2013, focusing on junior high school students and involving data collection from their families and schools.	Youth group of 20,000 junior high school students	According to the statistics, family socioeconomic position significantly affects teenage mental health at the 5% level (0.043). Adolescents' mental health improves with the family's socioeconomic standing.
11.	Stepanous et al.	Social environment and brain structure in adolescent mental health: A cross-sectional structural equation modelling study using IMAGEN data	The purpose of this paper was to investigate interdisciplinary viewpoints of how social variables and brain anatomy affect emotional symptoms in early adolescence.	Measurements included gray matter volume in the ventromedial prefrontal cortex, which showed a negative association with emotional symptoms in men, as well as overall brain volume affected by social stress in women.	Participants were recruited from high schools in eight locations in Europe (Dresden, Berlin, Mannheim, and Hamburg in Germany; London and Nottingham in the UK; Dublin in Ireland; and Paris in France), with a total of 2315 participants	The current study's findings demonstrated that, for both boys and girls, emotional symptoms were positively correlated with peer difficulties, whereas, at age 14, socioeconomic stress was adversely correlated with family support.
12.	Amir et al.	The Effect of Physical Activity on Adolescent Mental Health	This study aimed to describe the physical activity and mental health of teenagers during a period of acclimatization to a new environment.	The Global Physical Activity Questionnaire (GPAQ) was used in this study to measure the physical activity of teenagers, while the DASS 21 scale was used to examine mental health.	The sample consisted of 121 first-semester university students in Batam City, with ages ranging between 15 and 21 years	According to the study's findings, there was no correlation between anxiety and physical activity (P value › 0.05, 0.714).
13.	Anurogo et al.	Genetic Factors in Mental Health Disorders in adolescents in West Java: Experiencing it with Genomics	The purpose this study to investigate the prevalence, to identify genetic factors, to explore gene-environment interactions, and too understand socio-cultural factors related to mental health	The Generalized Anxiety Disorder 7-item scale (GAD-7) and the Patient Health Questionnaire (PHQ-9) are two established psychometric tools that will be utilized in this study to measure the presence and severity of symptoms linked to anxiety and depression..	Teenagers in West Java, Indonesia, between the ages of 13 and 19, made up the study population.	The prevalence of mental health illnesses is substantial, according to quantitative results. Genetic insights point to the possibility of tailored therapies, while qualitative research highlights the need of lowering

No	Author	Title	Objective	Measurement	Subject	Result
						stigma and enhancing community-based support.
14.	Khadijah, S et al.	The Effect of Family Economic on Student Mental Health	This study intends to examine the connection between university students' mental health and family economy, given that many families are currently dealing with financial difficulties.	The measuring instrument in the study used the Family Economic Strain Scale and Psychological Well-Being scale methods which were then modified by the researcher and presented with a number of statements followed by columns showing moving levels.	The population in this study was taken from students of UIN Raden Fatah Palembang with the characteristics of being active students, aged 17-25 years, and willing to be participants	The study result showed there is a significant relationship between the family economy and student mental health. An unstable family economy tends to disrupt student health, causing stress that can affect their academic performance on campus
15.	Sari, E. L et al.	Family Function And Self-Harm Behavior In Early Adolescents : A Cross-Sectional Study	The purpose of this study was to ascertain the connection between early adolescent self-harm behavior and family functioning in the Jember Agricultural Area.	The measurement of family function was carried out using the Family APGAR questionnaire developed by Smilkstein (1978) and has been translated by family psychology experts in Dewi & Puspitosari (2010) research, consisting of 5 statements with answers from 1 to 10.	A proportional stratified random procedure was used to obtain the research sample, which consisted of 376 respondents in total.	The study's findings indicated a very weak and negative link between early teenage self-harm behavior and family function in the agricultural area of Jember (p = 0,001 and r = -0,131). Negative emotions and internal tension brought on by poor family communication can make people more likely to kill themselves. Kendall's Tau C correlation test was used to assess the data.

4. DISCUSSION

Analysis of the literature suggest that a combination of genetic, psychological, biological and environmental factors lead to mental disorders. The results of Tatari et al. 2021 show that the use of social media has an effect on the psychological health of teenagers, which is supported by research by Safitri & Elsanti 2022 and Steppanous et al. 2023. Research conducted by Gao et al. (2021) demonstrates a relationship between socioeconomic factors and adolescents' mental health. Students from families with low socioeconomic status tend to experience higher stress levels

compared to peers from families with high socioeconomic status. This condition can lead to low self-esteem, which in turn triggers symptoms of depression. Moreover, low family income may limit access to protective resources and social connections that can help alleviate depression. Therefore, a person's socioeconomic background plays a crucial role in influencing mental health, especially among adolescents.

Yang et al.'s (2022) findings back up this conclusion by demonstrating that family socioeconomic status, family income, parental education levels, and parental vocations all influence adolescents' mental health. Adolescents from high- socioeconomic families are more likely to form healthy peer relationships, which can improve their mental health. Furthermore, parents with a higher socioeconomic position are more likely to devote time and energy to their children's education and cultural enrichment. This has a good impact on both the children's academic achievement and their mental health. Meanwhile, Maxwell et al. (2021) found that genetic variables and population density both influence mental health. For example, those with a genetic predisposition to schizophrenia, bipolar illness, or autism spectrum disease may demonstrate minor psychotic symptoms or autistic features. High population density has also been linked to greater rates of depression.

Furthermore, Khadijah et al. (2024) discovered a significant relationship between family economy and student mental health. An unpredictable household economy impairs students' mental health, causing stress and jeopardizing their academic progress in college. Another study, by Anurogo et al. (2023), discovered a relationship between genetic factors and mental health. Someone who carries a gene for mental disorders is more likely to be at risk than someone who does not carry the gene or has inherited mental health disorders from their parents. Sari et al. (2024) discovered a negative relationship between family functioning and self-care habits. Poor communication among family members can cause internal strain and negative feelings, increasing the risk of suicide. However, physical activity was not one of the 15 variables studied that were associated with adolescent mental health. Amir et al. (2024) found no link between physical exercise and anxiety (a mental health problem).

5. CONCLUSION

Based on the findings from the literature review of 15 journals, mental health in adolescents is not only influenced

by socioeconomic issues, but can also be influenced by genetic, environmental, and interpersonal factors. As many as 14 of the 15 articles analyzed found a link between socioeconomic, environmental, and genetic factors and good adolescent mental health, whereas poor mental health was associated with negative consequences, such as those from social media. This study reveals various elements that influence teenage mental health, including socio-economic, environmental, and genetic aspects. Other elements that influence this include family income and the use of gadgets/social media.

AUTHOR CONTRIBUTIONS

The author contribute all research activity. Nurul Kaniya: Responsible for research design, data collection, data analysis, methodology development, and final editing of the article. Fatimatus Zahro: Contributed to data collection, data analysis, methodology development, and article revision. Aynuning Hadi Lestari: Contributed significant input in data interpretation, data collection, data analysis, and article revision.

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CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest related to the research, writing, or publication of this article. All processes have been conducted independently and transparently.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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