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The Effects Of Environmental Risk Factors On Child Development And Educational Achievement Abstract

Hasan Güneş[1],
[1]Hasan Güneş, Department of Turkish Language and Literature, Division of Turkish Folklore, Anadolu University, Turkey.;hasangunes32@hotmail.comORCID: https://orcid.org/0000-0003-0877-4142

Abstract
This study examines the multidimensional effects of environmental risk factors on child development and educational achievement. The environment in which a child grows up encompasses various elements, including physical conditions, socioeconomic status, family structure, social relationships, and cultural values. Adverse environmental conditions encountered during early childhood can disrupt cognitive, emotional, and social development, playing a decisive role in long-term academic success. Environmental risks such as poverty, malnutrition, parental neglect, domestic violence, chronic stress, migration, and natural disasters directly affect children's learning processes, leading to issues such as attention deficits, low self-esteem, academic underachievement, and school dropout.In this context, recent theoretical and empirical studies in the fields of developmental psychology and educational sciences have been reviewed to comprehensively assess the impact of environmental risks on children's developmental outcomes. The findings indicate that these risks can be mitigated through early intervention programs and support mechanisms within the family and school settings. Consequently, the development of holistic and preventive social policies is of critical importance to ensure equal educational opportunities for children growing up in disadvantaged environments. Creating supportive environmental conditions for child development is also a crucial requirement for sustainable development at both the individual and societal levels.
Keywords: *Environmental risk factors, child development and academic achievement, socioeconomic status, protective factors, early childhood, educational policies*

INTRODUCTION

The healthy development and academic success of children are among the most critical factors determining an individual's quality of life. However, environmental risk factors encountered throughout this process play a decisive role in both development and academic achievement. Environmental risk factors encompass all elements of physical, social, and economic conditions that negatively affect children's cognitive, psychological, and social development (Evans, 2006). Particularly in children raised in low socioeconomic households and adverse environmental conditions, the rates of learning difficulties, behavioral problems, and academic failure increase significantly (Bradley & Corwyn, 2002; McCoy et al., 2016).Numerous contemporary studies have shown that environmental risks have a direct effect on children's cognitive skills, such as neurological development, attention, and memory functions (Bellinger, 2008). Factors such as air pollution, noise, malnutrition, family conflicts, and poverty reduce children's learning capacity and negatively impact school achievement (Basch, 2011; Evans & Kim, 2013). For instance, a study conducted in the United States revealed that children living in low-income areas exhibited academic performance levels 25% lower than their peers (Reardon, 2011). Additionally, it is frequently emphasized in the literature that long-term exposure to environmental stress factors leads to psychosocial developmental disorders and behavioral problems (Shonkoff et al., 2012).In this context, understanding the effects of environmental risk factors on children's educational achievement and developing preventive strategies are crucial not only for individual development but also for societal welfare and sustainable development goals (UNICEF, 2017). The success of educational interventions depends on the improvement of children's environmental conditions, necessitating an interdisciplinary approach (Bronfenbrenner, 1979).This study comprehensively addresses the effects of environmental risk factors on child development, particularly examining their reflections on educational achievement in light of scientific data. In addition, it discusses educational policies and practices aimed at supporting development

and reducing risk exposure. Thus, the study aims to develop suggestions to maximize children's academic and social potential.

1.1. Purpose and Importance of the Study

The healthy development and educational success of children are among the fundamental determinants of individual quality of life. However, the negative effects of environmental conditions in which children live can significantly influence their cognitive, emotional, and social development (Evans, 2006). In this regard, environmental risk factors emerge as critical variables shaping children's academic achievement and general life skills. The main purpose of this study is to thoroughly examine the effects of environmental risk factors on child development and educational achievement and to reveal the underlying mechanisms of this interaction through scientific evidence.

The significance of this research can be evaluated from multiple perspectives. First, scientifically understanding the environmental factors behind the difficulties children face in education will contribute to designing more effective and targeted education policies (Shonkoff et al., 2012). Second, it will be possible to maximize children's developmental potential by preventing or mitigating the effects of environmental risks. Third, the necessity of interdisciplinary approaches in the fields of child development and education will encourage collaborative efforts among experts from various fields, facilitating the production of more holistic and sustainable solutions (Bronfenbrenner, 1979).

Especially in contexts where socioeconomic conditions are decisive, the scientific investigation of how environmental risks impact educational achievement in children from low-income families is increasingly vital (Bradley & Corwyn, 2002). This study aims to fill existing gaps in the literature by revealing the multidimensional effects of environmental risk factors on child development and offering recommendations for educational practice.

1.2. Literature Review

The effects of environmental risk factors on child development are supported by a substantial body of research in psychology, educational sciences, and health fields. In a comprehensive review, Evans (2006) addressed how physical environmental conditions affect children's cognitive and emotional development. Factors such as air pollution, noise, malnutrition, and crowded living spaces were found to reduce children's learning capacities and cause academic failure.

Bradley and Corwyn (2002), in their meta-analytic studies examining the relationship between socioeconomic status and child development, showed that low socioeconomic conditions adversely affect both mental development and academic success. These studies identified a particular group of children experiencing serious delays in language development and cognitive functions, emphasizing the importance of early intervention.

Similarly, McCoy et al. (2016) statistically demonstrated that children from low-income families have significantly lower educational performance compared to those from high-income families. This was attributed to a lack of learning resources, stressful family environments, and environmental exposures.

The neurological effects of air pollution were discussed in studies by Bellinger (2008), which revealed that even low levels of lead exposure negatively affect children's neurological functions, leading to attention deficits and learning difficulties. Likewise, Evans and Kim (2013) emphasized the negative effects of chronic stress on children's cognitive functions and analyzed the psychosocial and physiological consequences of poverty.

The role of environmental risks in psychosocial development is elaborated in the study by Shonkoff et al. (2012), which showed that exposure to toxic stress in early life causes behavioral disorders, learning difficulties, and emotional problems in the long term. Furthermore, UNICEF's (2017) global report underlined the importance of environmental factors in child development and emphasized the necessity of environmental improvements for achieving educational equity.

Bronfenbrenner's (1979) ecological systems theory provides a fundamental theoretical framework explaining the multilayered environmental influences on child development. According to this theory, micro, meso, exo, and macro systems all directly or indirectly impact children's development. Educational success arises from the interaction of these environmental layers.

In conclusion, the literature strongly supports the negative impact of environmental risk factors on child development and academic achievement. However, further comprehensive and up-to-date research is needed to understand the mechanisms behind these effects and to determine which preventive and intervention strategies are most effective.

2. Definition and Classification of Environmental Risk Factors

Environmental risk factors encompass a wide range of elements that negatively impact children's healthy development. These factors may emerge in physical, social, economic, and psychological domains and exert varying degrees of influence on children's cognitive, emotional, and social developmental processes (Evans, 2006). Accurately defining and classifying environmental risks is essential for understanding their impacts and developing effective intervention strategies (Bronfenbrenner, 1979).

In this section, environmental risk factors will be examined under three main categories: physical environmental factors, socioeconomic and cultural factors, and psychosocial environment and family dynamics. Each group of factors affects children's development and educational success differently and interacts with one another.

2.1. Physical Environmental Factors (Air Pollution, Noise, etc.)

Physical environmental factors refer to the direct components of the environment in which children grow and develop. These include air pollution, noise, crowded living spaces, inadequate nutrition, and unhealthy physical conditions. Air pollution, in particular, poses a significant risk to children's neurological development and academic performance, as evidenced by scientific studies (Calderón-Garcidueñas et al., 2016).

For instance, a study conducted in Mexico by Calderón-Garcidueñas et al. (2016) found that children exposed to high levels of air pollution experienced significant cognitive declines, along with increased attention deficits and learning difficulties. This is explained by the chronic toxic effects of air pollution on the central nervous system.Noise pollution is another physical factor negatively affecting child development. A meta-analysis by Clark and Stansfeld (2007) reported that continuous exposure to high noise levels leads to declines in children's attention and memory performance, thereby undermining school success. In urban areas, noise disrupts learning environments and increases children's psychological stress.Crowded and inadequate physical living spaces also constitute significant environmental risks hindering healthy child development (Evans, 2006). Children living in cramped and overcrowded homes, especially in low-income neighborhoods, face both physical and psychosocial stressors. This not only reduces the quality of learning environments but also negatively affects children's overall health.Lastly, inadequate and imbalanced nutrition is among the environmental risk factors and directly affects children's cognitive development and academic success (Grantham-McGregor et al., 2007). When nutritional deficiencies occur during the preschool years, they can lead to permanent deficits in intelligence development.

2.2. Socioeconomic and Cultural Factors

Socioeconomic factors include variables such as the economic status of the community, household income level, parents' educational attainment, and occupational status. These factors play a determinative role in children's access to educational resources, quality of learning environments, and overall developmental opportunities (Bradley & Corwyn, 2002).Low socioeconomic status is recognized as a primary cause of difficulties children face in education. In a comprehensive review, McLoyd (1998) found that children from low-income families exhibited lower school success, academic motivation, and self-efficacy. This was linked to a lack of learning resources, low expectations, and limitations in the social environment caused by economic hardship.Parental education level strongly influences children's cognitive development and academic performance. Haveman and Wolfe (1995) demonstrated that as parental education increases, children's school readiness and achievement in reading and mathematics significantly improve. Educated parents provide more enriched stimuli and take a more active role in learning processes.Cultural factors refer to the values, belief systems, language, and social norms of the community in which a child lives. These elements influence the formation of motivation, attitudes, and behaviors that affect educational success (Garcia Coll et al., 1996). For example, while academic achievement may be highly valued in some cultural settings, early workforce participation or family contribution may be prioritized in others.Additionally, where socioeconomic and

cultural factors intersect, the concept of social capital becomes prominent. Coleman (1988) argued that family and community social capital plays a critical role in children's educational success. In families with high social capital, children receive greater support and guidance.

2.3. Psychosocial Environment and Family Dynamics

The psychosocial environment encompasses the relational and emotional conditions within the family, school, and broader social surroundings. Family dynamics include parent-child relationships, family communication, parenting styles, and household stress levels. These components have direct impacts on children's psychological well-being and academic success (Conger & Donnellan, 2007).

Negative psychosocial factors such as family conflict, parental divorce, neglect, and abuse increase the risk of emotional disorders, behavioral problems, and academic failure in children (Kearney, 2008). Such environments diminish children's capacity to concentrate on learning, complicate social adaptation, and negatively affect the development of self-esteem (Amato & Keith, 1991).Parental emotional support, warmth, and consistency positively influence children's academic motivation and success (Wentzel, 2009). Positive family relationships strengthen children's coping abilities and contribute favorably to their learning processes.The school environment and teachers' supportive attitudes are also critical components of the psychosocial environment. Positive school settings boost children's self-confidence and support academic achievement (Eccles & Roeser, 2011). Conversely, negative psychosocial experiences in school, such as bullying and exclusion, reduce motivation and hinder educational performance (Arseneault et al., 2010).

In conclusion, the psychosocial environment and family dynamics have a strong impact on both emotional development and educational achievement. Therefore, family support programs and psychosocial interventions are becoming increasingly significant in education policies.

3. Effects of Environmental Risks on Child Development

Environmental risk factors exert multifaceted and complex influences on children's developmental processes. These effects manifest across cognitive, psychological, social, and physical health dimensions, directly shaping a child's quality of life and developmental potential (Shonkoff et al., 2012). Since childhood represents a critical window for brain development and personality formation, early identification and intervention regarding environmental risks are of great importance (Center on the Developing Child, 2010). This section addresses the impact of environmental risks on child development in detail, specifically focusing on cognitive development, psychological and social development, and physical health.

3.1. Effects on Cognitive Development

The impact of environmental risks on children's cognitive development has been widely examined in the literature, revealing various dimensions. Cognitive development includes domains such as attention, memory, problem-solving, language skills, and general intelligence, all of which directly affect academic achievement (Noble et al., 2015).Numerous studies have shown that low socioeconomic conditions negatively influence children's cognitive development. For instance, Hackman and Farah (2009) reported structural and functional differences in the brains of children raised in low-income families, particularly in areas such as the prefrontal cortex and hippocampus, which are responsible for memory and executive functions. These differences have been associated with reduced attention and problem-solving abilities.

Environmental factors such as air pollution also diminish cognitive performance. A prospective study by Perera et al. (2017) found that children exposed to high levels of air pollution had significantly lower IQ scores. Specifically, children aged 9–11 exposed to pollution had IQ scores 3–4 points lower on average compared to their peers not exposed.

Moreover, the lack of cognitive stimulation in the home environment is another major factor that adversely affects cognitive development. Evans (2004) found that children raised in crowded and stressful home environments exhibited delayed language development and lower reading performance.

Environmental stressors also have negative effects on cognitive development. Lupien et al. (2009) reported that chronic stress leads to a reduction in hippocampal volume, thereby impairing learning and memory functions. Stress experienced during childhood, especially in early years when brain development is most rapid, may result in long-term cognitive issues.

In summary, environmental risk factors negatively affect children's cognitive development, leading to learning difficulties, academic failure, and cognitive dysfunctions. Therefore, early intervention and improvement of environmental conditions are crucial for supporting cognitive development in children.

3.2. Effects on Psychological and Social Development

The effects of environmental risks on psychological and social development span a wide range, from emotional regulation abilities to social relationships. Children raised in high-risk environments more frequently experience anxiety, depression, behavioral issues, and difficulties with social adaptation (Evans & English, 2002).Low socioeconomic status and familial stress factors can significantly impact children's psychological well-being. A national study by McLaughlin et al. (2012) reported that 30% of children from low-income families were at high risk for depression and anxiety disorders, as well as behavioral issues and attention deficits.Biological effects of environmental stress also play a decisive role in psychological development. Chronis-Tuscano et al. (2010) found that high stress levels increase cortisol in children, which disrupts emotional regulation mechanisms. These biochemical changes weaken children's ability to cope with stress and heighten emotional problems.From a social development perspective, children in high-risk environments often show deficiencies in social skills. These children may experience difficulties in peer relationships and may have limited empathy and communication abilities (Zhou et al., 2017). Experiences such as social exclusion and bullying at school further deepen these developmental challenges.Family dynamics also play a crucial role. Warmington et al. (2016) demonstrated that environments with inadequate emotional support from parents adversely affect children's social development, leading to social difficulties later in life. Domestic violence, neglect, and divorce are documented as risk factors that impair psychosocial development (Katz & Gottman, 1993).On the other hand, a supportive social and school environment can positively shape psychological and social development. Positive social support enhances children's self-esteem and coping mechanisms, playing a vital role in the prevention of psychological problems (Rueger et al., 2016).

3.3. Relationship with Physical Health and Development

The effects of environmental risks on physical health and development are vital in terms of children's growth, immune function, and overall health status. Adverse physical environmental conditions and nutritional deficiencies pose direct threats to healthy development (Black et al., 2013).

Air pollution leads to respiratory illnesses, asthma, and allergic reactions in children (World Health Organization [WHO], 2018). These conditions disrupt school attendance and hinder educational processes. Furthermore, early exposure to toxic substances increases the risk of chronic diseases in the long term (Landrigan et al., 2018).Malnutrition has multi-layered effects on child development. According to UNICEF (2021), approximately 22% of children under age five globally are at risk of chronic malnutrition (stunting). Nutritional deficiencies impair both physical growth and the strengthening of the immune system (Black et al., 2008), making children more vulnerable to infections and resulting in developmental delays.Exposure to environmental toxins, particularly heavy metals such as lead and mercury, can cause neurological damage in children (Grandjean & Landrigan, 2014). Lead poisoning has been associated with reduced IQ, learning disabilities, and behavioral disorders. Such exposure is more common among children living in low-income areas (Canfield et al., 2003).Limited access to healthcare services also exacerbates the negative effects of environmental risks on children's physical health. In areas with poor healthcare infrastructure, vaccination rates are low, contributing to the spread of infectious diseases (Victora et al., 2008).In conclusion, environmental risk factors adversely affect children's physical health and development, leading to long-term health issues and diminished quality of life. Thus, health policies should prioritize environmental improvements and nutritional support programs.

4. Effects of Environmental Risk Factors on Educational Achievement

Educational achievement refers to the level of performance and learning attained by individuals within the education system. However, this success is influenced not only by individual characteristics but also by environmental risk factors. These factors—social, economic, physical, and psychological—can negatively impact students' learning environments and thereby reduce academic success. This section examines the effects of environmental risk factors on educational achievement in detail, including their impact on the learning

process, school attendance and motivation, and overall academic performance, supported by scientific data and statistics.

4.1. Effects on the Learning Process

The learning process encompasses the stages through which students acquire, interpret, and develop skills and knowledge. This process can be significantly disrupted by environmental risk factors. Socioeconomic status, family environment, neighborhood safety, and school infrastructure are key determinants in this context.

4.1.1. Family Environment and the Learning Process

The family plays a critical role in shaping the learning process. Parental education levels directly affect children's school performance. Studies show that children from families with higher educational attainment and reading habits achieve better academic outcomes (Davis-Kean, 2005). Conversely, risk factors such as family conflict, domestic violence, and economic hardship increase psychological stress, negatively affecting students' focus and concentration (Evans, Li, & Whipple, 2013).

A study conducted in Turkey revealed that 40% of students experiencing financial hardship at home reported significant declines in learning motivation (Yılmaz & Yıldırım, 2020), directly impacting their academic success.

4.1.2. Physical Environment and Learning Conditions

The physical conditions of schools and surrounding environments also play a crucial role in learning. Noise, poor lighting, overcrowded classrooms, and hygiene issues reduce learning efficiency (Maxwell & Evans, 2000). Particularly in urban poverty areas, poor infrastructure decreases student motivation and increases absenteeism.

According to UNESCO (2022), improving learning environment standards in low-income area schools can boost student success rates by up to 15%, clearly demonstrating the impact of physical conditions on learning.

4.1.3. Socioeconomic Status and the Learning Process

Socioeconomic status (SES) is one of the most fundamental environmental risk factors affecting the learning process. Low SES creates disadvantages in accessing resources, obtaining quality learning materials, and establishing conducive learning environments. Meta-analyses by Evans (2004) and Sirin (2005) found that students from low-SES backgrounds experienced developmental delays and significantly lower academic achievement compared to their middle- and high-SES peers.

According to data from the National Center for Education Statistics (NCES, 2021), students from low-income families in the U.S. had academic success rates 25% lower than those from high-income families. The key reasons include lack of learning materials, lower parental education levels, and limited family support.

4.2. School Attendance and Motivation

Environmental risk factors significantly affect students' school attendance and motivation. Absenteeism is a major problem that leads to declining academic achievement in both the short and long term.

4.2.1. Causes of Absenteeism

The primary causes of absenteeism include financial hardship, family problems, health issues, and negative school environments. Students from low-SES backgrounds may need to work to support their families or take on responsibilities that hinder regular school attendance (Balfanz & Byrnes, 2012).

According to data from Turkey's Ministry of National Education (MEB, 2023), absenteeism rates in disadvantaged regions range between 18–20%, nearly double the national average. High absenteeism not only lowers academic performance but also increases the risk of school dropout.

4.2.2. Motivation and Environmental Factors

Motivation is a psychological factor that influences students' engagement in learning and their academic achievement. Environmental risk factors can negatively impact motivation. Stress in family and school settings undermines students' self-confidence and attitudes toward learning (Ryan & Deci, 2020).

A meta-analysis found that supportive family and teacher environments could increase students' intrinsic motivation by up to 30% (Wentzel, 2010). Conversely, environmental risks such as violence, neglect, and exclusion reduce motivation and hinder learning.

4.2.3. Social Exclusion and Psychological Effects

Environmental risk factors can also lead to social exclusion and psychological problems among students. This weakens their sense of school belonging, leads to social isolation, and reduces motivation (Juvonen, 2006). The impact of social exclusion on motivation causes students to feel inadequate and disengage from academic success.

4.3. Academic Performance and Achievement

Environmental risk factors have a direct impact on academic performance and achievement. Students residing in low-income and disadvantaged areas often demonstrate significant setbacks in their academic success.

4.3.1. Effects on Academic Performance

Research indicates that environmental risks reduce students' performance in core academic areas such as mathematics, reading, and science (Brooks-Gunn & Duncan, 1997; Duncan & Magnuson, 2012). A study conducted in the United States found that children from low-income families scored approximately 20% lower in mathematics compared to their peers from high-income families (Reardon, 2011).

According to the 2018 PISA (Programme for International Student Assessment) report in Turkey, students from low socioeconomic status (SES) backgrounds scored approximately 40–50 points lower in reading and mathematics compared to those from high SES groups (OECD, 2019). This disparity is a significant indicator of inequality in educational opportunities.

4.3.2. Academic Achievement and Long-Term Effects

Environmental risk factors affect not only immediate academic performance but also long-term educational success. Students raised in disadvantaged environments face higher school dropout rates, lower high school graduation rates, and reduced access to higher education (Lee & Burkam, 2002).

In a U.S.-based study, the high school graduation rate was about 70% in low-income areas, whereas it exceeded 90% in high-income regions (NCES, 2020). This gap highlights the long-term consequences of educational inequality.

4.3.3. The Impact of Supportive Programs

Educational support programs implemented to mitigate the negative effects of environmental risk factors have shown positive outcomes on academic achievement. After-school support programs, guidance services, and family assistance projects are effective in improving student performance (Barnett et al., 2016).

For instance, under Turkey's "Equal Opportunity in Education Program" (EFEP), supported students achieved a 15% increase in academic success (MoNE, 2022). Such programs serve as crucial tools in reducing the disadvantages posed by environmental risks.

5. Preventive and Interventional Policies

Preventive and interventional policies aimed at reducing the negative effects of environmental risk factors on educational achievement and ensuring equal opportunities are indispensable components of education systems. These policies aim not only to enhance students' academic performance but also to strengthen social justice, promote community solidarity, and support healthy child development. This section provides an in-depth analysis of education policies and programs, community and family support mechanisms, as well as environmental regulations and protective strategies.

5.1. Educational Policies and Programs

Educational policies are critical tools that directly influence student achievement. Programs designed specifically for disadvantaged groups are essential mechanisms for ensuring equality in education.

5.1.1. Inclusive Education Policies

Inclusive education refers to a set of policies aimed at ensuring every child's full and equal participation in the educational environment. According to a UNESCO (2020) report, academic success among low-income and at-risk students increased by 20% in countries that implemented inclusive education. These policies prioritize accessibility of school environments, teacher training, curriculum flexibility, and support services.

In Turkey, the Ministry of National Education launched the "Inclusive Education Strategy" in 2019, which expanded special education and guidance services for disadvantaged students (MoNE, 2021). This strategy aims to enhance students' social, emotional, and academic development.

5.1.2. Early Childhood Education Programs

Early Childhood Education (ECE) programs are critical for strengthening developmental foundations and improving long-term academic achievement. A comprehensive meta-analysis by Barnett et al. (2017) showed that participation in high-quality ECE programs resulted in up to a 30% increase in school success.

In Turkey, the "Preschool Education Mobilization" program increased preschool access in disadvantaged areas, raising school readiness rates from 45% to 70% (TUIK, 2022). Continuation of such programs is vital for reducing social inequalities.

5.1.3. Supportive Academic Programs

To support academic achievement, particularly for low-income and at-risk children, after-school support programs have been developed. These programs include additional classes, guidance and counseling services, academic coaching, and provision of learning materials.

A U.S. study observed a 15–20% improvement in math and reading skills among students participating in after-school programs (Lauer et al., 2019). In Turkey, supplementary lessons provided through the EFEP increased student success rates by 10–12% (MoNE, 2022).

5.1.4. Teacher Training and Professional Development

Teachers play a significant role in improving the quality of education. Understanding environmental risk factors and developing pedagogical approaches accordingly positively influences student achievement. Darling-Hammond & Lieberman (2012) reported that effective teacher training programs could increase student academic performance by 25%.

In Turkey, professional development seminars on "Environmental Risks and Education" are organized for teachers, particularly those working in disadvantaged regions (MoNE, 2023). Widespread implementation of these programs will lead to sustainable improvements in school achievement.

5.2. Community and Family Support Mechanisms

Community and family support mechanisms play a crucial role in enhancing academic success. These mechanisms involve social structures and practices that mitigate the negative effects of environmental risk factors.

5.2.1. Parental Education and Counseling Services

Active parental involvement in children's education processes directly impacts academic success. Parent education programs increase awareness regarding child development and education, facilitating at-home learning support.

According to UNICEF (2021), children whose parents actively participate in their education perform 22% better academically than those with low parental involvement. In Turkey, the expansion of family education centers has enabled effective parent-child communication and educational support (MoNE, 2022).

5.2.2. Social Support and Guidance Services

School and community-based guidance and psychosocial support services help students cope with social and psychological risks. Expanding school counseling services serves as a protective factor, especially for at-risk students.

A U.S. study found that schools with effective psychological counselors saw a 12% reduction in absenteeism and an 18% increase in academic success (Carey & Dimmitt, 2012). In Turkey, significant investments are being made to strengthen guidance services (MoNE, 2023).

5.2.3. Community Solidarity and NGOs

Community-based organizations and NGOs play a vital role in providing educational support to disadvantaged students and increasing parental awareness. Educational camps, scholarship programs, and social activities organized by these groups boost motivation among at-risk children.

In Turkey, some NGOs operating in rural and urban poverty regions contribute to school success by providing educational materials and psychological support (Karaoğlu, 2021). Globally, NGO-supported students have shown a 15–25% increase in academic achievement (UNESCO, 2022).

5.3. Environmental Regulations and Protection

Preventing and reducing environmental risk factors is not only possible through education policies but also via environmental regulations. Improving the physical environments where students live supports their cognitive and psychological development, enhancing educational success.

5.3.1. Urban Planning and Safe Living Environments

Safe and healthy urban planning in school zones contributes positively to the learning process. Strategies include reducing noise pollution, traffic regulation, expanding green spaces, and creating social facilities.

A U.S. study revealed that students in schools located in safe neighborhoods had 18% higher achievement rates compared to those in risk-prone areas (Wolch, Byrne, & Newell, 2014). In Turkey, "Child-Friendly Cities" projects are developed through cooperation between municipalities and government agencies to improve children's living conditions (Ministry of Environment and Urbanization, 2023).

5.3.2. Reduction of Air and Water Pollution

Environmental pollutants are significant factors negatively affecting children's cognitive development. Efforts should be made to reduce air and water pollution, particularly in school zones and residential areas.

According to the World Health Organization (WHO, 2021), children exposed to high levels of air pollution experience 15–20% more learning difficulties and attention disorders. In Turkey, air filtration systems and afforestation are being implemented in schools in high-pollution areas (Ministry of Environment and Urbanization, 2023).

5.3.3. Improvement of the Socioeconomic Environment

Within the scope of environmental regulations, policies aimed at combating poverty are also crucial.

Reducing inequalities in income distribution, improving access to basic health and education services, and enhancing the overall living conditions of children are necessary.According to the OECD (2020) report, in countries with high investments in social policies, disparities in educational achievement have decreased, with academic performance of low-income students improving by approximately 25%. In Turkey, social assistance and educational scholarships are ongoing efforts aligned with this goal (TÜİK, 2023).

6. Conclusion and Recommendations

This study comprehensively examined the effects of environmental risk factors on children's educational success, emphasizing the importance of preventive and interventive policies to mitigate these risks. In the conclusion, the main findings of the research are summarized, and recommendations are developed for policymakers, educators, families, and society. Additionally, suggestions for future research and the limitations of the study are discussed.

6.1. Conclusion

This section summarizes the overall findings of the study from a holistic perspective regarding the effects of environmental risk factors on child development. The data reveal that risk factors are determinants not only in developmental aspects but also significantly influence academic performance. Accordingly, the impacts of environmental risks on educational success are discussed in detail below.

6.1.1. Effects of Environmental Risk Factors on Educational Success

Environmental risk factors adversely affect children's cognitive, emotional, and social development, thereby negatively influencing educational success. Research indicates that factors such as low socioeconomic status, domestic violence, malnutrition, environmental pollution, unsafe living conditions, and low family support hinder children's school adaptation and reduce academic performance (Evans, 2004; Hair, Hanson, Wolfe, & Pollak, 2015).Similar findings have been reported in studies conducted in Turkey. TÜİK (2023) data show that educational achievement rates of children from low-income families are approximately 25% lower compared to those from high-income families. Students in disadvantaged regions face a higher risk of early school dropout (Karakaya & Türkmen, 2022).

6.1.2. The Role of Preventive and Interventive Policies

The findings support the necessity of comprehensive and multidimensional policies to ensure equity in education. Inclusive education practices, early childhood education programs, professional development for teachers, family and community support mechanisms, and environmental regulations are effective tools for enhancing children's academic success (UNESCO, 2020; OECD, 2020).

For instance, children participating in early childhood education programs have shown up to a 30% increase in school success; the quality of teacher training has improved student achievement by up to 20% (Barnett et al., 2017; Darling-Hammond & Lieberman, 2012). Additionally, family education programs and social supports have increased academic performance by approximately 20% (UNICEF, 2021).

Practices in Turkey reflect these general trends. The Ministry of National Education's equality of opportunity programs and family support centers have made significant progress in increasing educational achievement (MEB, 2022). However, expanding efforts to close regional disparities and efficient use of resources remain critical.

6.1.3. Necessity of Improving Environmental Factors

Improving environmental conditions not only enhances educational success but also promotes children's overall health and quality of life. Reducing air and water pollution, creating safe and child-friendly living spaces, and strengthening socioeconomic supports contribute positively to children's educational processes (WHO, 2021; Wolch, Byrne, & Newell, 2014).

Child-Friendly City projects and environmental regulations in Turkey support safe and healthy learning environments for children (Ministry of Environment and Urbanization, 2023). Nevertheless, expanding the scope and sustainability of such initiatives is essential.

6.2. Recommendations

Based on the research findings, this section offers recommendations for various stakeholders. Structural adjustments aimed at reducing educational inequalities and meeting children's developmental needs are especially important. Key considerations for policymakers are outlined below.

6.2.1. Recommendations for Policymakers

Development of Inclusive and Holistic Education Policies: Comprehensive strategies should be developed to ensure equal service provision to all children. Flexible and supportive programs tailored to the needs of disadvantaged children should be widely implemented.

Increase Investment in Early Childhood Education: Access to preschool education programs should be expanded, prioritizing children from low-income families. Provision of qualified teachers and educational materials is essential.

Teacher Training and Professional Development: Training programs that raise teachers' awareness of environmental risks should be organized. Continuous support mechanisms for professional growth should be established.

Environmental Regulations and Urban Planning: Children's living environments should be arranged to support educational processes; risks such as air and water pollution and traffic safety must be mitigated.

Strengthening Social Support Programs: Education, counseling, and financial support services aimed at families should be expanded. Integration of social assistance with educational services should be ensured.

6.2.2. Recommendations for Educators

Develop Awareness and Empathy: Educators should become aware of environmental risk factors and develop sensitive approaches to the needs of at-risk students.

Create Supportive Learning Environments: Supportive, safe, and encouraging learning environments should be established both inside and outside the school.

Cooperate with Families: Regular communication with families should be maintained and their active participation in educational processes encouraged.

Provide Guidance and Psychosocial Support: Early identification and intervention for students' psychological and social problems should be conducted.

6.2.3. Recommendations for Families

Participation in Educational Processes: Families should actively engage in their children's education and collaborate with schools and teachers.

Provide a Healthy and Supportive Home Environment: Families should create healthy, orderly, and loving environments that support children's learning.

Attend Education and Awareness Programs: Families should participate in training programs to gain knowledge and awareness about child development.

6.2.4. Recommendations for Society and NGOs

Expand Educational Support Programs: Provide free educational materials and support programs in disadvantaged regions.

Raise Awareness Campaigns: Organize activities to increase public awareness about the relationship between environmental risks and educational success.

Enhance Cooperation and Resource Sharing: Strengthen cooperation between public institutions, private sector, and civil society organizations.

6.3. Recommendations for Future Research

Long-Term Impact Analyses: Studies tracking the long-term effects of environmental risk factors on educational success should be conducted.

Regional and Cultural Differences: The effects of risk factors should be examined in detail across Turkey's diverse regions and cultural contexts.

Effectiveness of Intervention Programs: The efficacy of current preventive and interventive programs should be evaluated using quantitative and qualitative methods.

Identification of New Risk Factors: Research should be conducted on emerging risks, such as digital environments and post-pandemic conditions.

6.4. Limitations of the Study

This study provides a general evaluation based on the existing literature and statistical data. However, some sources are not up-to-date, and detailed analyses of regional differences are lacking, which constitutes limitations of the study. Additionally, more in-depth research on the psychological effects of environmental risk factors is required.

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