

Suicidal Behavior and Suicide among Children and Adolescents-Risk Factors and Epidemiological Characteristics

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ABSTRACT

In last decade suicide attempts and suicides among youngsters are increasing greatly and are one of the leading causes of mortality in this age group. Epidemiological data are pointing on more frequent trend of self-destructive behavior among youngsters in the world as well as in our country. Risk factors which influence on increasing number of suicide attempts and suicides in this age are different in etiology: interference of genetic influences, family dynamics and external environment (school, friends, social environment, peers, television, video, and internet). Croatia as a country in transition is also following trends in the world according to epidemiological data, what is for sure great challenge for all who participate in dealing with youngsters, especially psychiatric services. In the planning of treatment is very important to include family with intention to accomplish optimal therapeutic effect. Also, it is very important to warn parents on their part of responsibility in upbringing and developing of their adolescent.

Key words: suicides, youngsters, self-harm behaviors, risk factors

Introduction

According to World Health Organization (WHO), every year suicide is committed by at least one million people in the world. In Europe, suicide is committed by about 43000 people a year, more frequently by middle aged and elderly males and attempted by 700000 people. Suicide attempts are undertaken most frequently by young people, especially by teenage girls and young women. The prevalence of suicide in this age group increased significantly in the last few years. Suicide is the fourth leading cause of death in children between the ages of 10 and 15 years and the third leading cause of death among the adolescents 15–25 years¹.

Non-fatal forms of suicidal behavior are the most common reason for the psychiatric hospitalization of adolescents in many countries². Major risk factors include genetic vulnerability, previous suicide attempt, mood disorders, family history of suicide, parental psychiatric disorders, and history of sexual abuse.

Suicide mortality data for the years 1973–2002 showed that the overall suicide rate for Italian population increased slightly from 67.8 *per* million in 1973 to 76.7 in 2002. Suicide rates were higher in males than females (2.8:1) and in Northern then Southern Italy. The major increase over time was observed for 15–19 year old males³.

Study on Canadian youth showed that the inability to communicate feelings, negative attachment to parents/guardians, taunting/bullying or abuse, and the presence of deviant peers were significant predictors of suicidal ideation⁴. Nearly one out of five Latino high school students has had suicidal thoughts in the past year; and the past year suicide attempts ranged from 6% to 18.5% across grade and gender subgroups. Most concerning are the ninth-grade Latino girls, a group in which 30%–40% reported suicidal thoughts and 14%–19% reported attempting suicide in the past year⁵.

Risk Factors Associated with Suicide Attempts and Suicide in Children and Adolescents

Genetics

The evidence from twin studies of suicide strongly suggests genetic contributions to liability for suicidal behavior⁶. The risk for suicide may have heritable contributions. Evidence supporting this hypothesis includes strong and consistent findings from more than 20 controlled family studies indicating nearly 5-fold greater relative risk of suicidal acts among relatives of index cases with suicidal behavior, compared to relatives on non-suicidal controls. The relative risk was greater for completed suicide than for attempts⁷. Suicidal behavior is highly familial, and on the basis of twin and adoption studies, heritable as well. A family history of suicidal behaviour is associated with suicidal behavior in the proband (the proband is the first affected family member who seeks medical attention for a genetic disorder) even after adjusting for presence of psychiatric disorders in the proband and family, indicating transmission of psychiatric disorder. Impulsive aggression in probands and family members is associated with family loading for suicidal behavior, and may contribute to familial transmission of suicidal behavior. Shared environment effects such as abuse, imitation, or transmission of psychopathology are other possible explanations⁸.

Self-harm behavior

There has been an increasing pattern of young people seeking to cope with the stresses of modern life by acts of self-harm. In England the rate of self-destructive behavior was found to be at least 9.8%⁹. Deliberate-self-harm (DSH) may occur in response to negative life events and problems. High suicidal intention may be a risk for subsequent suicide. Females, but not males with high suicidal intention had more problems than those with low intention, and for females with no past history of DSH there was a weak positive correlation between the number of life problems and high score in suicidal intention scale. Patients with high intention experienced psychiatric and social isolation problems more frequently than those with low intention. Females with high intention more frequently reported bereavement or loss and eating problems. Most DSH patients have multiple life problems and the type of problems may be associated with varying degrees of suicidal intention¹⁰. A cross-sectional study from seven countries (Australia, Belgium, England, Hungary, Ireland, Netherlands and Norway), indicated that there were two underlying dimensions for the causes of DSH i.e., cry of pain motive and/or a cry for help motive. The majority of self-harmers reported at least one cry of pain motive (to die, to punish oneself, and to get relief from a terrible state of mind) and an additional cry for help motive (to show how one feels desperate, to frighten someone, to get my own back on someone, to find out whether someone really loved and to get attention). Females showed more reasons than males, only fe-

males showed an age difference, with girls aged 16–17 more frequently reporting a »cry for help motive«¹¹. Suicidal and deliberate self-harm behavior was more common in female than male adolescents. Age, disharmony within family and excessive parental demands were the major global determinants of suicidal behavior for both genders, but unrelated to self-injurious or socially disruptive behavior; the latter being more associated with parental under-involvement and feelings of hostile rejection. Intelligence and age were significant predictors of overt aggression among females; intellectual functioning, number of siblings and disability of family members emerged as major determinants of suicidal behavior among males¹². Acts of deliberate self-harm in adolescents are due to an accumulation of earlier family and parental distress and one's externalizing and internalizing problems. Information about deliberate self-harm at age 12 is an important warning sign of deliberate self-harm in mid-adolescence and suicidal behavior in later adolescence¹³. Self-injury behavior is increasingly popular in psychiatrically ill adolescents, especially in girls with posttraumatic stress and personality disorders¹⁴. Aggressive behavior against oneself and others is a frequent symptom of schizophrenia in the first two years of illness and play a major role in re-hospitalization but also in suicide attempts¹⁵. Non-fatal DSH behavior such as cutting oneself is often performed to cope with emotional distress without suicidal intention, although it is well-known to have a close association with future suicidal behavior¹⁶. Most DSH patients have multiple life problems and the type of problems¹⁷. The DSH at young age is an important indication of mental health problems in later lifetime, including a strongly increased risk of subsequent suicidal behavior. Recent findings on the risk factors of adolescent DSH have confirmed the importance of depressive disorders, deficient problem solving, exposure to suicidal behavior and familial characteristics¹⁸. Rumination/negative thinking and a relative absence of positive feelings towards parents were predictors of self-harm independently of general psychopathology and in girls, deliberate self-harm correlated with symptoms of eating disorders and negative body esteem¹⁹. Self-harm is common during the pre-treatment phase of first-episode psychosis²⁰. Multiple logistic regressions showed significant association for both genders between DSH and low self-esteem, DSH by friends, serious conflict with parents, or drug abuse. For girls, alcohol abuse, divorced parents, history of sexually abuse, anxiety and impulsivity were also significant²¹.

Psychiatric disorders-depression, anxiety, posttraumatic stress disorder, psychotic reaction

Anxiety disorder is the most common psychiatric disorder in children and adolescents. It is associated with significant distress and impairment. Most children and adolescents with anxiety disorders are not diagnosed and only a few receive adequate treatment. Children and adolescents with anxiety disorders often follow a chronic

course of disease with high risk of depressive disorders, substance abuse and even suicide²².

A study from the Institute of Forensic Medicine in Poland revealed that nearly half of the young suicide victims had been treated for mental disorder, mainly depression and addictive disorders²³. Depressive disorders are the most common diagnoses found in all suicide. One-fourth of teenagers seriously contemplate suicide, and 8% attempt it²⁴. Major depression affects 3% to 5% of children and adolescents. Depression has negative impact on growth and development, school performance and peer or family relationships and may also lead to suicide. Biomedical and psychosocial risk factors include positive family history for depression, female gender, childhood abuse or neglect, stressful life events, and chronic conditions²⁵. The lifetime prevalence of major depressive disorder in adolescents is estimated to be 15%–20%, similar to that of adult population.

Epidemiological studies of mood disorders in children and adolescents support the notion that pure depression is rare in youths. About 5% of adolescents in the community have major depressive disorder. In study that was conducted in the Medical High School in Osijek and in the Professional Handicraft High School in Osijek, Croatia, approximately 4% of adolescents fulfilled the criteria for severe depressive episode, and approximately 6% for moderate depressive episode²⁶.

Post-traumatic stress disorder (PTSD) is a common psychiatric disorder accompanying major depressive disorder (MDD). It was suggested that some or all individuals diagnosed with comorbid PTSD and MDD had a separate psychobiological condition that can be termed as »Post-traumatic mood disorder« (PTMD). Those individuals with co-morbid PTSD and MDD are characterized by greater severity of symptoms and the higher level of impairment on social and occupational functioning compared to individuals with PTSD alone or MDD alone. Child abuse causes an increase in the risk for PTSD, MDD and suicidal behavior in adolescents and adults. Many victims of childhood abuse develop co-morbid PTSD and depression, i.e., they develop PTMD. PTMD is associated with suicidal behavior²⁷. Both, PTSD and suicidal behavior are related to disturbances in the central serotonergic system. Reduced platelet serotonin concentration is related to suicidal behavior in PTSD and it was suggested that platelet serotonin concentration may be used as a peripheral marker to predict suicidal behavior²⁸.

Traumatic events/war

War, as a traumatic situation, affects individuals, families, and society and represents multiple traumatic events that might not significantly impact on families with stable dynamics²⁹. In traumatized families, very often, adolescents are the ones to overtake the role of adults. This may give an impression of good adaptation. On the other hand, they represent a »silent group« very often ignored, therefore their vulnerability is neglected³⁰.

Family disturbances

Parents are their child's most influential teachers, exerting tremendous influence on their child's risk-taking behaviors (smoking, drinking, poor eating or exercise habits). Adolescents of authoritarian parents who have positive parental relationships, healthy open communication and perceived parental support, are less likely to report symptoms of depression or engage in substance abuse, sexual risk and violent behaviors³¹. An adolescent parasuicide has often been associated with family disturbances, hopelessness and psychiatric disturbances, and prevention and treatment of adolescent parasuicide should focus on both individual and family dynamics³².

Substance and alcohol use and abuse

Strong associations were found between smoking and going out most evenings and having many friends who smoke, while cannabis and illegal drugs were strongly correlated with having friends or older siblings who used these substances³³.

Children who used substances were significantly more likely to have attempted suicide more frequently. Children who had attempted suicide were more likely to perceive that they had not received enough parental attention, to have more conflicts with parents, and to have more runaways from home^{34,38}.

Alcohol abuse with comorbid major depression represents a high-risk profile for suicidal behavior, repeated attempts and completed suicide. Depressed suicide attempters with comorbid alcohol abuse had higher aggression and impulsivity scale scores and were more likely to be tobacco smokers, compared to their counterparts without alcohol abuse³⁵. In recent years, smoking among adolescents has increased and the decline of adult smoking has slowed to nearly a halt; new insights into tobacco addiction are needed to correct this situation. Long term use of nicotine has been linked with self-medicating efforts to cope with negative emotional, neurobiological and social effects of adverse childhood experiences³⁶. In the general population, about 2000 adolescents in the United States die annually as a result of suicide. Suicide continually ranks as a second or third leading cause of death in 15–34 year old people. The suicide rate in young people has more than doubled during the period from 1956–1993. The increasing rate of adolescent alcohol abuse has been blamed for the increase in adolescent suicide. The availability of alcohol and guns may contribute to suicide risk in adolescents³⁷. In the United States, alcohol consumption is estimated to cause adolescent males up to 17 times and females up to three times to attempt suicide, more likely. Depressed Asian-American youth were four times more likely to display suicidal behavior when compared to other Asian youths with other diagnoses; and depressed African-American females were more likely to report suicidal ideation than male adolescents. Asian-Americans with high parental conflict are 30 times more likely to engage in suicidal behavior than the ones with low parental conflict. African-American adolescents are approximately seven times more likely to

attempt suicide as a result of parental conflict. Caucasian adolescents were twice as likely as the African-American victims to have used alcohol before committing suicide³⁸.

Adoption

Depression, impulsivity and aggression during adolescence have been associated with adoption and suicidal behavior. Studies of adopted adults suggested that impulsivity may be an inherited factor that mediates suicidal behavior. Attempted suicide is more common among adolescents who live with adoptive parents than the ones with biological parents³⁹.

Childhood abuse (sexual and physical abuse)

Many adults who engage in self-destructive behavior have history of childhood trauma and disrupted parental care. The history of childhood sexual abuse and physical abuse was highly significant predictors of suicide attempts^{40,41}. Rates of reported childhood abuse and severity of lifetime aggression were higher in probands with a family history of suicidal behavior. Earlier age for the onset of mood disorder in probands was associated with greater lifetime severity of aggression and higher rates of reported childhood abuse, mood disorders and suicidal behavior in first-degree relatives⁴².

Also, exposure to childhood sexual and physical abuse was associated with increased risk of future mental disorders including depression, anxiety disorder, conduct/anti social personality disorder, substance abuse, suicidal ideation and suicide attempts at ages 16–25^{43,44}. Reported sexual abuse in childhood is a risk factor for suicidal behavior in parent and offspring. Transmission of suicide risk across generations is related to the familial transmission of sexual abuse and impulsivity. Sexual abuse is not directly transmitted by the victim to the next generation and may be related to family dynamics related to sexual abuse⁴⁵. Childhood emotional abuse and neglect are broadly represented among personality disorders and associated with indices of clinical severity among patients with borderline personality disorder. Childhood sexual and physical abuse are highlighted as predictors of both paranoid and antisocial personality disorders, also history of suicide was associated with emotional abuse as a significant trauma predictor in women⁴⁶.

Although childhood abuse is an important correlate of suicidality, not all individuals who were abused as children attempt suicide. Characteristics of the abuser and abusive acts may be important additional indicators of risk for suicide attempts⁴⁷.

Bullying in schools

Bullying is a distressing experience that is often continuous over years and predicts both concurrent and future psychiatric symptoms and disorders⁴⁸. Being a victim or perpetrator of school bullying, the most common type of school violence, has been frequently associated with a broad spectrum of behavioral, emotional, and social problems. It is clear that any participation in bully-

ing increases the risk of suicidal ideations and/or behaviors in a broad spectrum in youth⁴⁹.

Those students who are frequently emotionally abused are more anxious, dissatisfied with school and display more manifest aggressiveness, also the bullied students can be differentiated from their non-abused schoolmates as they are manifestly more anxious and aggressive, regardless of whether they suffer physical or emotional abuse. Such traumatic experiences affect children's health and functioning in school, as well as in their private lives⁵⁰.

Impulsivity has been identified as a key factor in risk of suicidal behavior in adolescent and adult patient⁵¹.

Eating disorders: anorexia/bulimia

Disordered eating, body dissatisfaction and obesity have been associated cross-sectionally with suicidal behavior in adolescents⁵². Significantly higher lifetime rates of bipolar I or II disorder, depressive disorder, nearly all anxiety disorder, anorexia nervosa and binge-eating disorder were reported among the first degree relatives of women with binge-eating disorder, compared with the first-degree relatives of control women. Female relatives of women with binge-eating disorder were reported to have higher rates of substance use disorders and dysthymic disorder compared with female relatives of control women without binge-eating disorder⁵³. Clinicians should be aware of this risk, particularly in anorexic patients with substantial comorbidity⁵⁴. Suicide attempts occur in approximately 3–20% of patients with anorexia nervosa and in 25–30% patients with bulimia nervosa. Clinical correlations of suicidality in eating disorders include purging behavior, depression, substance abuse, and a history of childhood physical and/or sexual abuse⁵⁵. Some studies have investigated the relationship between self-damaging behavior and the presence of comorbid psychiatric diagnose in eating disorder. Significant independent predictors of self-injury behavior were the presence of childhood sexual abuse, high harm avoidance scores and high self-transcendence scores, whereas childhood sexual abuse, the presence of a cluster B personality disorder, and a low self-directedness were predictors of suicide attempts. Compulsive self-injury behavior was significantly associated with harm avoidance and cluster C personality disorders. Harm avoidance was also associated with skin picking. Temperament seems to play a more important role and personality disorders are a frequent correlate of the presence of self-injurious behavior in purging bulimia nervosa^{56,57}.

Psychosocial and psychiatric factors

Suicide victims had been exposed more frequently to suicidal behavior by friends and through media and experienced more relational problems in the past years. Suicidal communication was less frequently reported in suicide victims than in controls and when communication did occur, it was less often directed towards parents. Treatment of psychiatric disorders was significantly less found in suicide victims. Psychiatric control patients

were more likely to have some of comorbid psychiatric disorder such as conduct disorder, delinquency or academic difficulties. This study showed significant differences between young suicide victims and psychiatric controls for life events, exposure, treatment and communication. These results suggest that symptoms and behavior can be observed in psychiatric control patients which could indicate more warning signals of possible psychiatric problems for the environment, which could result in more help-seeking behavior and treatment⁵⁸. International evidence demonstrated that there are elevated rates of suicide and alcohol abuse among lesbian, gay, bisexual and transgender youth⁵⁹.

Antidepressive drugs/selective serotonin reuptake inhibitors (SSRIs)

In the past few years several papers have reported critically on the risk of suicidal thoughts and behavior associated with antidepressants, primarily SSRIs. The risk-benefit ratio of antidepressant treatment has been questioned especially in children and adolescents⁶⁰. In 2003 and 2004, U.S. and European regulators issued public health warnings about a possible association between antidepressants and suicidal thinking and behavior. After those warnings, in U.S. and in European countries SSRIs prescription for youths decreased approximately 22% in both areas, but in Netherland the youth suicide rate increased by 49% between 2003–2005 and showed significant inverse association with SSRIs prescriptions. In U.S. youth suicide rates increased by 14% between

2003–2004 which was the largest year-to-year change in suicide rates in this population, since the Center for Disease Control and Prevention began systematically collecting suicide data in 1979⁶¹. Adolescent suicide attempts which need hospitalization increase during the last year. Familial violence and depressive symptoms are important as risk factors for suicide. Also females adolescent have easy access to medicaments of all kind and it is remarkable that need for having attention and change unwanted personal situation are the motives for suicidal behavior⁶². Some behavioral side effects of selective serotonin reuptake inhibitor (SSRI) antidepressants have been known for a long time. Publications have reported behavioral side effects in children and adolescents including: excitation, motor restlessness, social disinhibition, self-injurious ideation and suicidal behavior. Major problems are that the clinical trials on children and adolescents are still limited⁶³. The suicide risk increases in the context of past history of suicide attempts, hopelessness, impulsivity, traits, substance abuse, familial dysfunction, life events, open access of arms⁶⁴. While untreated depression is associated with the risk of completed suicide and impacts on functioning, still is unclear whether SSRIs would modify the risk in a clinically meaningful way⁶⁵. U.S. Food and Drug Administration (FDA) counsels against using paroxetine in children and adolescents because of effectiveness and safety concerns. Fluoxetine is the only SSRI approved by the FDA for the treatment of depression in children to 17 years of age. All antidepressants should have a black box warning for in-

TABLE 1
RISK FACTORS ASSOCIATED WITH SUICIDE ATTEMPTS AND SUICIDE IN CHILDREN AND ADOLESCENTS

RISK FACTORS	CHARACTERISTICS
1. Self-harm behavior	– response to negative life events – dysfunctional family dynamics – poor relations with parents – negative self-esteem
2. Psychiatric disorders	– depression – anxiety – posttraumatic stress disorder – psychotic reaction
3. Traumatic events/war	– traumatized families (children have to overtake the role of parents)
4. Genetic influence/	– transgenerational transmission of aggressive and suicidal behavior
5. Family disturbances	– parents influence on child's habits
6. Substance and alcohol use/abuse	
7. Adoption	– impulsivity as a factor that mediates suicidal behavior
8. Childhood sexual and physical abuse	– parental neglect as a trigger for personality disorders in adulthood
9. Bullying in schools	– victim of school bullying has been associated with the risk of suicidal behavior or suicide
10. Eating disorders/anorexia or bulimia	– associated with many others psychiatric disorders (depression, bipolar disorder, substance abuse, dysthymia, anxiety spectrum disorders, self-injurious behaviour)
11. Psychosocial and psychiatric factors	– in some specific groups as are: lesbian, gay, bisexual and transgender youth
12. Use of antidepressive drugs	– selective serotonin reuptake inhibitors (fluoxetine is the only SSRI drug approved by FDA for the treatment of depression in children age to 17 years)

FDA – Food and Drug Administration

SSRI – selective serotonin reuptake inhibitors

creased risk of suicidal thoughts and behavior in those being treated for depression^{66,67}.

All risk factors for suicide and suicidal behavior are presented in Table 1.

Studies from Croatia in Recent Years

Reviewing literature data in last five years, it is observed that in Croatia are limited number of studies dealing with suicide attempts and suicides among children and adolescents. Considering child and adolescent as very sensitive and vulnerable populations, there are frequent dilemmas in planning exact investigation. In Croatia according to available indexes, number of self-inflicted forms of behavior, suicide attempts and suicides, are very often inconspicuously and media monitored. Considering actual socio-economic situation and also disturbed family dynamics, it is very real to expect that Croatia will follow trend as a rest of the transitional countries.

Epidemiological study among students in the Primorsko-goranska County in Croatia showed that every third student smoked cigarettes every day, and 73 consumed beer, wine and alcoholic beverages occasionally. The percentage of illicit drugs consumption ranged from 2.3 for opiates to 35.6 for marijuana. Girls consumed more cigarettes, alcoholic beverages and sedatives every day, whereas boys consumed beer, wine and marijuana⁶⁸. Among urban adolescents in Zagreb, almost 90% of all examinees experimented with alcohol at least once, 80% with tobacco, 39% with marijuana, and 9% with ecstasy, 36% consumed alcohol and 11% marijuana several times a month, whereas 28% smoked tobacco daily⁶⁹.

Croatian Homeland war led to the increase in weapon-related deaths of all intents. Compared with the period before the war, weapon-related homicide and suicide rates increased by more than 3 fold and unintentional weapon-related deaths increased by more than 6 fold

during the war. 81.9% of the weapon-related deaths were caused by firearms and 18.1% were caused by explosive devices⁷⁰. Recent findings indicate that psychiatric disorders have relatively less association with suicidal behavior among children and younger adolescents and that family conflict and peer difficulties may be more significant in the expression of suicidal behavior in this age group. Study that was conducted in the medical High School in Osijek, Croatia, and in the Professional Handicraft High School in Osijek, Croatia have showed that 8.4% adolescents answered »I wish I was gone«, and 0.7% answered »I would kill myself if I had a chance«. 9.1% of the adolescent sample has serious suicidal risk. Most young children with major depressive disorder have histories of abuse or neglect. Children with depressive disorders in the midst of the toxic environments may have remission of some or many depressive symptoms when the stressors diminish or when the children are removed from stressful environment²⁶.

Conclusions

Adolescent suicide behavior and suicide today are major public health problems and the leading cause of mortality among adolescents and young adults. It is difficult to establish linear correspondence between risk factors and suicidal behavior. The cause is usually combination of constitutional factors including genetics, earlier personal experiences, precipitating stressful events. Studies and data in Croatia are still not numerous and limited, but are pointing in increase of suicide behavior and suicide attempts among children and adolescent. Family as well as events in primary family frequently are risk but also protective factors in developing suicide behavior and suicide among youngsters. Because of this, in planning treatment is very important include family with intention to accomplish optimal therapeutic effect. Also, it is very important to warn parents on their part of responsibility in upbringing and developing of their adolescent.

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SUICIDALNO PONAŠANJE I SUICID MEĐU DJECOM I ADOLESCENTIMA-RIZIČNI ČIMBENICI I EPIDEMIOLOŠKA OBILJEŽJA

SAŽETAK

Pokušaji samoubojstava i samoubojstva među mladima su u velikom porastu u zadnjem desetljeću i jedan od vodećih uzroka smrtnosti u toj dobi. Epidemiološki podaci ukazuju na sve češći trend samodestruktivnog ponašanja među mladima, kako u svijetu tako i kod nas. Rizični čimbenici koji utječu na porast broja pokušaja suicida i suicida u ovoj dobi idu u prilog raznolike etiologije: prožimanja genetskih utjecaja, obiteljske dinamike i izvanjske okoline (škola, prijatelji, socijalna okolina, vršnjaci, TV, video, i internet). Hrvatska kao tranzicijska zemlja također prema dostupnim epidemiološkim podacima prati trendove u svijetu, što je zasigurno veliki izazov za sve koji sudjeluju u radu sa mladima, posebno psihijatrijskim službama. U planiranju liječenja važno je uključiti i obitelj s namjerom da se postigne optimalan terapijski učinak. Važno je upozoriti roditelje na njihovu odgovornost za odgoj i razvoj njihovih adolescenata.