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Physical and verbal aggression among adolescent school students in Sharkia, Egypt: prevalence and risk factors

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Background
School aggression has become an increasing concern to public health professionals, clinicians, policy makers, educators, and the general public. It is a multifaceted problem with biological, psychological, social, and environmental roots.

Aim
The aim of this study was to examine the prevalence and the influence of social, family, and school environments on the development of school aggression.

Patients and methods
A multistage stratified sample of 574 students of both sexes aged 13–18 years was selected from the preparatory and secondary schools chosen from Zagazig Center through the academic year 2014–2015. Sociodemographic characteristics of the students were evaluated using a self-reporting questionnaire. Aggressive behavior was assessed using the Aggressive behavior and hostility scale for adolescents (the parts of physical and verbal aggression).

Results
Physical aggression was severe in 0.7% of the sample, moderate in 8.5%, mild in 39.2%, and minimal in 51.7%. As regards verbal aggression, it was severe in 0.5% of the sample, moderate in 8.0%, mild in 40.5%, and minimal in 51.1% of the sample. Risk factors for aggression were male sex, age greater than 15 years, unfavorable school atmosphere, practicing sports, smoking, watching action movies, personal history of physical abuse, being second-born child of the family, attending urban schools, and a history of dropping class.

Conclusion
School aggression is a frequent and a serious problem among school adolescents. It is necessary to evaluate the level of seriousness and attempt to find effective preventing measures.

Keywords:
aggression, risk factors, school adolescents

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Introduction

It has long been recognized that developmental changes in typically developing adolescents (e.g. increase in physical strength and spending more time with friends) may be associated with increased aggressive behavior (United Nations Children's Fund (UNICEF), 2011). Aggression is defined as any behavior intended to harm (Kassinove and Sukhodolsky, 1995). Various forms exist, including physical, verbal, and indirect aggression. Physical and verbal aggressions are readily observable behaviors (DiGiuseppe and Tafrate, 2004).

If an adolescent's anger occurs with aggression, negative consequences may ensue physical harm; possible long-term outcomes include peer difficulties (Pope and Bierman, 1999), early school withdrawal, future antisocial behavior (Kupersmidt and Coie, 1990), and substance abuse (Moss and Kirisci, 1995). Adolescents who demonstrate aggressive/destructive behaviors have a poor therapeutic prognosis (Tang *et al.*, 2013).

According to the study conducted in China for the year 2013, the aggression rates in a school-based sample were 24.4% for verbal type and 27.9% for physical type (Tang *et al.*, 2013). In the USA in the year 2000, more than 400 000 youths aged 10–19 years were injured as a result of violent acts (Center of Disease and Control, 2004). In Egypt, Alexandria students' hospital, 4.4% of students attending the emergency department were seeking medical care for injuries resulting from physical fighting (Youssef *et al.*, 1999).

A better understanding of factors that place youth at risk of developing aggression during adolescence is needed to guide the development of effective prevention efforts (Elliot and Tolan, 1999; Farrell and Reynolds, 2007).

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Although considerable progress has been made in developing prevention programs that reduce aggr ession within younger ages, interventions focused on adolescents have generally produced more modest and less consistent effects (Multisite Violence Prevention Project, 2008). Moreover, effects among adolescents have frequently been found to vary across groups that differ in their level of risk (Farrell *et al.*, 2011). This underscores the need not only to identify specific factors associated with aggression that emerge during adolescence but also to identify patterns of factors to guide the development of interventions that better meet the specific needs of subgroups of individuals (Farrell and Camou, 2006).

Aim

The aim of our study was to examine the prevalence and the influence of social, family, and school environments on the development of school aggression.

Patients and methods

This cross-sectional study was conducted in Zagazig Center, Sharkia Governorate, Egypt, during the academic year 2014–2015. Consent was obtained from the participants. The estimated sample size was 287 students calculated according to population size, which is 97 873 (according to the information from Directorate of education) and the prevalence of verbal aggression in China in a school-based sample for the year 2013 was 24.4% (Tang *et al.*, 2013) [EPI-INFO, version 6; The Division of Surveillance and Epidemiology, Epidemiology Program Office Centers for Disease Control and Prevention (CDC, 2004), Atlanta, Georgia, USA]. This sample was multiplied by 2, and so it was 574 students. The sample was selected from the preparatory and secondary schools from both districts of Zagazig in the academic year 2014–2015 using a multistage stratified random sampling technique.

All participants were screened to determine the eligibility for participation in the study according to specific inclusion and exclusion criteria. The study included students between 13 and 18 years of age, and hence we selected only second and third grade levels in the preparatory schools. The study was conducted in eight schools, including urban and rural, governmental and private, preparatory and secondary, and male and female schools.

Tools for data collection

(1) A self-reported questionnaire was designed for data collection. It consists of a wide range of social, family, and school factors that may be risk factors for aggression. These factors are residence (urban/rural), parents' education (high/average/low), relationship with parents (good/fair/poor), perceived social atmosphere (good/fair/poor), family structure (extended or nuclear family), birth order, perceived family income (high/average/low), perceived school atmosphere (good/fair/poor), perceived relationship with teachers and classmates (good/fair/poor), acad emic performance, history of dropping class (yes/no), satisfaction of appearance (satisfied/fair/unsatisfied), sports, hobbies, watching action movies, smoking, drug addiction of student and his family, family history of mental illness, personal history of physical abuse, and physical abuse between family members (yes/no).

(2) The aggression and hostility scale for adolescents (Abdelsameea, 2009): It consists of four subscales measuring physical aggression, verbal aggression, hostility, and anger. Each subscale comprised 14 items. Each item was answered on a five-point Likert scale (4=happens very often, 3=happens a lot, 2=happens sometimes, 1=happens rarely, and 0=never happens). A high score indicates a higher level of aggression and a low score indicates a lower level. Scores 56–43 indicate level 1, 42–29 indicate level 2, 28–15 indicate level 3, and scores 14–0 indicate level 4. The first level is the highest score, followed by the second in order and then the third, and the fourth level is the lowest one; this applies for each of the four subscales. We selected the two subscales, which measure physical and verbal aggression.

Pilot study

Pilot study was conducted on 20 students to assess the applicability for data collection and tool arrangement of items, and to estimate the time needed and the feasibility of the study. Any necessary modifications were carried out. The 20 students were excluded from the total number.

The students were told to read the instructions carefully, which informed them that honest answers were preferred and that their answers would be used for scientific research only. The study was approved by Ethical Committee.

Statistical analysis

Data were collected, checked, entered, and analyzed using SPSS (2007), and EPI-INFO [version 6; The Division of Surveillance and Epidemiology,

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Epidemiology Program Office Centers for Disease Control and Prevention (CDC)] for data processing and statistical analysis. Data were expressed as mean ±SD for quantitative variables, and as number and percentage for categorical variables. Mean±SD were derived and the following tests were conducted: the χ^2-test and the Pearson's correlation test. The results were considered significant when the probability was less than 5% ($P \leq 0.05$).

Results

The sample of this study consisted of 574 students between 13 and 18 years of age. The entire sample comprised male students; 57.7% of them were less than or equal to 15 years and 42.3% were greater than or equal to 15 years. 39.9% were from urban school, 36.4% from rural schools, and 23.7% from private schools. 9.2% of students were smokers, 9.8% were substance abusers, 70% played sports, 90.9% had hobbies, 79.8% watched action movies, and 14.1 had a personal history of physical abuse (Table 1).

Table 2 shows that 51.7% of the students showed minimal degree of physical aggression, 39.1% of them showed mild degree of physical aggression, 8.5% showed moderate degree, and 0.7% showed severe degree of physical aggression.

It also shows that 51% of the students showed minimal degree of verbal aggression, 40.5% of them showed mild degree, 8.0% showed moderate degree, and 0.5% showed severe degree of verbal aggression.

Table 3 shows that there was a positive correlation between verbal and physical aggression ($P<0.001$).

Table 1 Sociodemographic characteristics of the studied sample

	N (%) (*n*=574)
Sex	
Male	312 (54.4)
Female	262 (45.6)
Age	
<15	243 (42.3)
≥15	331 (57.7)
Birth order	
First	169 (29.4)
Second	190 (33.1)
Third	92 (16.1)
Greater than or equal to fourth	123 (21.4)
Cigarette smoking	53 (9.2)
Substance abuse	56 (9.8)
Playing sports	402 (70.0)
Having hobbies	522 (90.9)
Watching action movies	458 (79.8)
Personal history of physical abuse	81 (14.1)

Table 4 shows that there was a statistically significant positive correlation between physical aggression and sports practice and history of dropping class among students ($P<0.0$).

Table 5 shows that there was a statistically significant positive correlation between verbal aggression and sports practice and a personal history of physical abuse among students ($P<0.05$).

Discussion

In this study, the rates of aggressive behavior among adolescent school students had been assessed, and factors that may place them at risk of developing this aggressive behavior had been estimated, to measure the magnitude of the problem of aggression among adolescent school students.

Our results revealed that 98.8% of the sample were physically aggressive. It also shows that the percentage of verbal aggression was 98.6%. 51.7% of the students showed minimal degree of physical aggression, 39.1% of them showed mild degree, 8.5% showed moderate degree, and 0.7% showed severe degree of physical aggression. 51% of the verbally aggressive students showed minimal degree of aggression, 40.5% of them showed mild degree, 8.0% showed moderate degree, and 0.5% showed severe degree of aggression.

Our results are coincident with those of Potirniche and Enache (2014). When students were asked whether there was aggression in their high school, 77% of the

Table 2 Prevalence of aggression according to severity in the studied sample (574 students)

Level of aggressions	*N* (%)
Physical aggression	
1 (severe)	4 (0.7)
2 (moderate)	48 (8.5)
3 (mild)	222 (39.1)
4 (minimal)	294 (51.7)
Total	567 (100.0)
Verbal aggression	
1 (severe)	3 (0.5)
2 (moderate)	45 (8.0)
3 (mild)	229 (40.5)
4 (minimal)	289 (51)
Total	566 (100.0)

Table 3 Correlation between physical and verbal aggression

	Verbal aggression	
	R	*P*
Physical aggression	0.505	<0.001**

**$P<0.05$ is significant.

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Table 4 Correlation between physical aggression and some risk factors

	Physical aggression	
Variables	*R*	*P*
Smoking	0.051	0.534
Substance abuse	−0.016	0.848
Sports	0.243	0.003*
Hobbies	−0.05	0.539
Action movies	0.007	0.93
Personal history of physical abuse	0.096	0.238
Drug addiction of family member	−0.014	0.863
Physical abuse between family members	0.076	0.354
Family history of mental illness	−0.068	0.404
History of dropping class	0.216	0.008*

*$P<0.05$ is significant.

Table 5 Correlation between verbal aggression and some risk factors

	Verbal aggression	
Variables	*R*	*P*
Smoking	−0.054	0.506
Substance abuse	−0.073	0.372
Sports	0.225	0.005*
Hobbies	−0.097	0.233
Action movies	−0.086	0.290
Personal history of physical abuse	0.192	0.018*
Drug addiction of family member	−0.143	0.078
Physical abuse between family members	0.135	0.098
Family history of mental illness	−0.156	0.054
History of dropping class	0.127	0.119

students questioned in the theoretical high school believed that aggression was present in their school. In the technological high school, 78% of the questioned students believed that aggression was present in their school.

Our results are coincident with those of a national survey conducted by Youssef *et al.* (1999) in Alexandria, Egypt, who stated that initiating violent assaults was reported by 51.0% of boys and 20.9% of girls.

Among adolescent male students in secondary schools, the percentage reporting involvement in physical fighting ranged from 44.0% in the USA to 76.0% in Jerusalem, Israel (World Health Organization, 2002). Moreover, studies in several countries indicate a prevalence of 8–46% for regularly bullied children and 5–30% for regular active bullies (Fekkes *et al.*, 2005). We found that our results are close if we exclude the minimally aggressive students.

We agree with Baldry (2003) as well, who found that almost half of all boys and girls reported different types of bullying and victimization in the previous 3 months. Our results are much higher than that reported in the study by Tang *et al.* (2013); the study was a part of a nationwide study on aggression among adolescents in urban areas of China. They found that 22.7% of students were physically aggressive and 21.1% were verbally aggressive. The different low results may be attributed to the fact that The Chinese version of Buss and Warren's Aggression Questionnaire was administered to assess aggression, and the study was held only in urban areas.

We found that male students are significantly more physically and verbally aggressive compared with female students. This finding is in agreement with that of Borroni *et al.* (2014), who found that male students scored on average significantly higher compared with female students on all measures of psychopathy and aggression. Our finding is in agree ment with those of Tang *et al.* (2013) as well, whose study was a part of a nationwide study on aggression among adolescents in urban areas of China. They found that 400 (27.9%) male students and 260 (17.7%) female students were physically aggressive (total 660 students; 22.7%) and 350 (24.4%) male students and 264 (17.9%) female students were verbally aggressive (total 614 students; 21.1%).

We agree with the findings of Cheraghi and Piskin (2011) as well, who conducted a study to compare the peer bullying among high school students in Iran and Turkey. They found that, in terms of sex differences, the data revealed that male students were significantly more victimized compared with female students in any type of victimization.

We agree with the findings of Sherer and Sherer (2011), Karriker-Jaffe *et al.* (2008), and Skara *et al.* (2008) as well. Our results are in agreement with the study by Price (2004), who found that boys engage in more bullying behavior compared with girls (8 vs. 7%). Research suggests that boys are twice as likely to use physical and verbal bullying and that girls are more likely to use social isolation and exclusion as a form of bullying. This is contradictory to the studies of Rigby (2007) and Borntrager *et al.* (2009) held in Australia; both had showed that girls bullied and also were victimized more compared with boys in social/ relational bullying/victimization. This difference can be attributed to different cultures.

Students watching action movies were significantly more verbally aggressive compared with those not watching. This is in agreement with the findings of Potirniche *et al.* (2014), who revealed that aggression

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and violence on TV is a risk factor for aggression. We also agree with Krahé and Möller (2011), who found that media violence exposure was a unique predictor of teacher-rated aggression. Bushman and Huesmann (2006) and Gentile *et al.* (2010) reported a signi ficant association between media violence exposure and physical and relational aggression.

Coyne and Archer (2005) found that exposure to media violence has shown negative short-term and long-term effects on its audiences, especially in children and adolescents. We also agree with the findings of Huesmann *et al.* (2003). They found that childhood exposure to media violence predicted aggressive behavior in later life for both male and female sex.

We found that smoking percentages increased from level 4 to 1 (from minimal to severe) in both physical and verbal aggression, and this indicates that there is an association between smoking and aggression.

People report feeling 'good' when smoking and just after finishing smoking – that is, smoking gives them a sense of pleasure. Just after smoking, people are more alert and their heart rate and blood pressure are increased. For most people, these things do not cause them to be aggressive. However, it is possible that people who are prone to being aggressive may become more aggressive as a result of these feelings. The pleasurable feelings are followed within minutes-to-hours by depression and fatigue (feeling tired). As a result, people use tobacco again. This becomes a 'vicious cycle' in which people use tobacco to overcome the depression and fatigue that was caused by the use tobacco. Soon, a person becomes 'addicted' to tobacco. The strongest link between the use of tobacco and aggressive behavior occurs when people stop using tobacco and undergo withdrawal. Within hours of stopping smoking, people tend to have increased anger, hostility, and aggression (Caldwell, 1999).

We found that sports players had high scores of aggression compared with nonplayers. This is in agreement with the findings of Filho *et al.* (2005) and Lemieux *et al.* (2004). However, it is contradictory to the findings of Masoudnia (2007) and Rahimizadeh *et al.* (2011). Rahimizadeh *et al.* (2011) conducted a study in Iran to determine the difference in aggression between male and female sex, and athlete and nonathlete students. They found that the highest aggression rate is reported for nonathlete male students, and the lowest violence rate was reported for athlete female students. The different results can be attributed to the different tools and culture.

Among both physically and verbally aggressive students, the percentages of playing sports increased from level 4 to 1. There was a statistically significant positive correlation between both physical and verbal aggression and practicing sports, and this indicates that there is an association between playing sports and aggression.

This association can be attributed to the fact that practicing violent sports is a way to express anger and aggression among adolescents.

We found that students older than 15 years were significantly more physically aggressive than those younger than 15 years. This finding differs from that of Karriker-Jaffe *et al.* (2008) and Farrell *et al.* (2005), who reported that physical aggression peaked between 13 and 14 years of age (their sample ages range from 11 to 18). The difference in results can be attributed to the fact that the sample of Karriker-Jaffe *et al.* (2008) was predominantly from rural areas.

Second-born children were significantly more aggressive compared with children of other birth orders. Middle-born children's personality traits are determined by their perception of their placement in the family system. Research shows that middle-born children can go either way. Middle-born children are known to be either pleasers or antagonizers. They may become manipulative or controlling (Salmon, 2003).

Among verbally aggressive students, the percentages of students having a personal history of physical abuse increased from level 4 to 1. There was a statistically significant positive correlation between verbal aggression and personal history of physical abuse among students ($P<0.05$) and this indicates that there is an association between aggression and personal history of physical abuse. Many surveys have documented the association between childhood physical abuse and psychiatric disorders (Afifi *et al.*, 2008; Keyes *et al.*, 2012; Sugaya *et al.*, 2012). Both minor assault (corporal punishment) and more serious physical abuse, when compared with no punishment or abuse, are related to major depression, substance use disorders, conduct disorder, and antisocial disorders (Afifi *et al.*, 2008).

Childhood physical and sexual abuse, infant spanking, and other forms of corporal punishment have been

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related to physical fighting, dating violence, and other delinquent behaviors (Duke *et al.*, 2010).

We found that there was no statistically significant difference ($P>0.05$) between students with and without physical or verbal aggression as regards family risk factors.

Unexpectedly, severely physically and verbally aggressive students had good family atmosphere.

These findings are contradictory to those of López *et al.* (2008), who suggested that a positive family environment seems to be a stronger protective factor for girls in the development of problems of behavior at school.

These findings are contradictory to those of Nagin *et al.* (1997), who found that a low level of family cohesion was a risk factor, Farrington (1998), who found that single-parent households are at a greater risk for violence, and to those of McCord (1996), who found that poor attachment between parents and children was a risk factor. The youngsters with divorced parents exhibit higher levels of both emotional and instrumental aggression, physically as well as verbally, even a year after separation (Petterson and Bailey, 1989). Our findings are contradictory to those of Gianini *et al.* (1999), who found that low socioeconomic status of the family is associated with future violence. Moreover, low educational levels of the mother and high housing density were both found to be associated with youth violence. This difference can be attributed to different cultures and study samples.

The effect of family on the behavior of children becomes weak with increasing role of the social media, TV, friends, and the absence of the positive influence of school.

The percentages of students perceiving their school atmosphere as poor were significantly higher among those having physical aggression. This is in agreement with the study of Henery *et al.* (2011) on the influence of school-level variables on aggression. Moreover, the study by Potirniche and Enache (2014) revealed that factors of risk were identified as follows: group of friends, aggression by others, which triggers more aggressive acts, and school environment.

The highest percentage of verbal aggression was among urban school students (39.2%), and the lowest was among private school students (24%). This is in agreement with the findings of Farrington, 1998. This can be attributed to the fact that private schools provide better school atmosphere for the students.

We found that there was no statistically significant difference ($P<0.05$) between students with and without physical and verbal aggression as regards relationship with friends. We agree with Larsen *et al.* (2010), who stated that an aggressive youth is less likely to be susceptible to friends' influence, because the youth has already established a habit of aggression. This finding is contradictory to the finding of Cotterell (2007).

Among physically aggressive students, the percentage of a history of dropping class increased from level 4 to 1. There was a statistically significant positive correlation between physical aggression and history of dropping class, and this indicates that there is an association between aggression and academic failure. This can be attributed to the fact that school failure causes suppression to the student, and aggression is considered as a way to express this suppression. This causes more academic failure resulting in more suppression and aggression and so on; the student will enter a vicious circle.

Unexpectedly, all students with severe degree of physical aggression were satisfied with their style and all students with severe degree of verbal aggression had no history of dropping class.

Conclusion

The problem of aggressive behavior among adolescents of school students in Zagazig Center, Sharkia, is a serious problem. Risk factors for aggressive behavior include male sex, age greater than 15 years, unfavorable school atmosphere, playing sports, smoking, watching action movies, a personal history of physical abuse, being the second-born child of the family, attending urban schools, and having a history of dropping class.

Recommendations

There has been a long-standing interest in using the classroom to improve student mental health using school curricula to boost a child's social competence and his or her ability to effectively function with peers. Education of primary care physicians need further studies.

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When adolescents suffer from school aggression, it is necessary to evaluate its level of seriousness by utilizing a selective screening or a crisis intervention program for victims.

There should be further research studies concerning the topic of aggression in Egypt to explore the other risk factors.

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Conflicts of interest
There are no conflicts of interest.

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