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## KNOWLEDGE ABOUT HIV / AIDS: THE INFLUENCE OF LIFESTYLES AND SELF- REGULATION IN ADOLESCENTS



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### Abstract

**Background:** Adolescents' vulnerability to HIV/AIDS infection arises from their immaturity, sexual risk behaviours as well as factors of a social, economic, cultural and gender nature (Ministério da Saúde, 2012). Adolescence is a stage of the lifecycle in which managing constant and daily temptations and gaining and maintaining healthy lifestyles are difficult tasks and a test of the powers of self-regulation. **Purpose:** To analyze the relationship between socio-demographic variables, school context, lifestyles, self-regulation skills and knowledge about HIV/AIDS in adolescents in secondary education in Portugal. **Methods:** Quantitative, cross-sectional, analytical, descriptive and correlational study with a sample of 971 adolescents in secondary education. The evaluation protocol includes a socio-demographic questionnaire, the school context, lifestyles, the Reduced Questionnaire of Self-regulation (Carey, Neal & Collins, 2004 adapted by Castillo & Dias, 2009), Knowledge About AIDS Scale for Adolescents (Zimet et al., 1989). **Results:** sample of 50.80% boys, ages equal to or less than 16 years (43.40%), residing in rural areas (66.40%), cohabiting with parents (77.30%). The correlations indicate that among adolescents' knowledge about AIDS and the subscale setting goals there is a positive and significant correlation ( $r = 0.224$ ,  $p = 0.000$ ), as well as the overall value of the Self-regulation Scale. Significant and negative correlations are presented for the impulse control subscale ( $r = -0.257$ ,  $p = 0.000$ ) and not significant to the overall self-regulation value ( $r = -0.041$ ,  $p = 0.099$ ), ranging in reverse, meaning that more knowledge about AIDS, better self-regulation with regard to impulses subscale. **Conclusion:** Self-regulated behaviour requires control of immediate needs, mobilization of thoughts, feelings and behaviours for purposes of long-term health, especially with regard to the prevention of HIV/AIDS.

**Keywords:** Teens, Self-regulation, lifestyles, knowledge HIV / AIDS

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## **1. Introduction**

Adolescence cannot be defined in the singular as the experience of this period includes a multiplicity of individual adventures influenced by family contexts, social and cultural environments to which the young person belongs. There is not a single adolescence, but rather “adolescences” (Fonseca, 2005; Pereira, 2007; UNICEF, 2011).

However, we can say that despite individualities, adolescence is a period of profound transformations where growth and development at different levels is neither simultaneous nor similar. The development of sexuality at this stage of the lifecycle often lacks a cognitive and affective maturity which will enable the adolescent to making correct and conscious decisions. This reality, due to the specific characteristics of this stage of development, often reflected in negative attitudes and behaviours that define the high vulnerability of this age group.

Negative health behaviours, usually known as risk behaviours, which include behaviours of addiction, high action and unprotected sex, are defined by the participation of adolescents in activities that may compromise their physical, mental and social health (Fonseca, 2005; Sprinthall & Collins, 2005). Many of these behaviours may endanger the health and life of the individual, and are associated with morbidity and mortality in adolescence, often projected into adulthood.

From this framework of assumptions some concepts immediately emerge: evaluation, recognition, responsibility, education, behaviour change, empowerment, self-regulation. Crossing these images with the characteristics of adolescence we see that this is a difficult and complex symbiosis – just as behaviour modification for purposes of promoting health and quality of life is complex, since it is a task that involves recognizing certain types of behaviour as risk factors and the assumed will to alter the course of established ways of being.

Teenagers are subjects in their struggle for social autonomy, conquering their space. Their freedom is greater, building social networks where peer influence is great at the expense of family influence. On their way to sexual maturity new forms of affection and new emotions emerge. All of these factors affect self-regulation. One of the great challenges of educating children, and later teenagers, passes precisely from knowing how to transfer on to the children the ability to self-monitor and self-regulate, that was previously in the hands of parents. Saying no to the constant and daily temptations, acquiring and maintaining healthy lifestyles are difficult tasks and a test of skills for self-regulation.

Self-regulation originated in Bandura’s studies and socio-cognitive theory, developed from the mid-70s. Attention was directed to the intentionality of the individual’s behaviour and the fact that it is guided by certain goals (Karoly, 1993). The health of each individual is

strongly influenced by their lifestyles. If individuals regulate their lifestyles, they can change their state of health (Bandura, 2005, p. 245).

Self-regulation is a process in which individuals assume an active role in constructing their destiny (Reider & Wit, 2006) by activating, monitoring, inhibiting, preserving and adapting their behaviour, emotions and cognitive strategies to achieve the desired objectives (Barkeley, 1997; Demetriou, 2000; Fruhauf & Diaz, 1991; Lengua, 2003; Novak & Clayton, 2001 quoted on Castillo & Dias, 2009, p. 207). It is a concept whose application in the context of health is complex, given the discrepancy between health objectives and the behaviours individuals adapt (or not) in order to achieve them.

In health self-regulation perceives behaviour as an investment in long-term objectives involving the control of most immediate needs and the mobilization of thoughts, feelings and behaviours towards health objectives (Muraven, Tice, & Baumeister, 1998; Reider & Wit, 2006; as cited in Castillo & Dias, 2009, p. 207). In this context the self acquires an essential role in that it allows the individual to resist to more immediate temptations towards achieving long-term goals (Castillo & Dias, 2009, p. 207) naming the subject an active agent, a decision-maker, which is a vital aspect of human adaptation to life, without which the individual would be but a helpless spectator of events (Baumeister, 2005; as cited in Denise & Wit, 2006, p. 3).

The health behaviour of adolescents has posed some interesting questions for those studying the processes of self-regulation. Many teens do not seem very interested in striving towards these goals, although interest in their health may be sincere. As a result, many studies on adolescent health behaviour focus on determining whether or not adolescent involvement in behaviour which is a risk to health, such as early onset of sexual activity, non-use or inconsistent use of condoms during sexual intercourse, often conditioned by inefficient information due to lack of confidence in the sources, or just this will to live intensely that keeps them from saying “no” in moments of erotic and emotional intensity, length of relationships and the practice of unprotected sex with multiple partners.

Many authors, among them, Gibbons, Gerrard, Pomery, and Reimer (2006, pp. 45-70) argue that health behaviour, specifically behaviour involving risks to health in adolescents is not premeditated, but a reaction to social circumstances. Since for teenagers social goals seem more important than health goals, involvement in behaviour which is risky to health at this stage of the lifecycle is explained by the will that their behaviour adapts to the social situation.

Under the central theme of our study, adolescents' knowledge about HIV/AIDS, the issue of self-regulation is considered a priority since this is a predominantly behavioural disease.

Epidemiological findings portray a world in which one in 20 adolescents contracts a sexually transmitted infection every year. According to estimates, more than seven thousand young people are infected with HIV per year, a total of 2.6 million, i.e. more than half of the reported cases in the world. It is estimated that 10 million adolescents are living with HIV and are likely to develop acquired immunodeficiency syndrome in the next 3-15 years (Araújo et al., 2012). It is known that in the presence of a sexually transmitted infection the possibility of the individual being infected with HIV, increases from three to five times (Thiengo et al., 2005).

According to data from the Joint United Nations Programme on HIV/AIDS, one third of the 40 million HIV- infected people in the world are under 24 years old. Half of all new infections recorded each year occur among young people, one every 15 seconds, and two thirds of that total are concentrated in female adolescents aged 15 to 24. Most young people infected with HIV do not know they have the disease (UNICEF, 2011).

These data reflect the global concern and justify interventions to reduce the spread of HIV in the world. These interventions are as varied as the contexts. Sexual behaviour is widely diverse and deeply rooted in individual desires, social and cultural relations, environment and economic processes. It is still the primary target of prevention efforts for HIV/AIDS worldwide. This consistency makes prevention an enormously complicated task involving a multiplicity of dimensions (UNAIDS, 1999).

Lucas (1993) had at the time, the real sense of the importance of individual and social responsibility as a means to modify the course of this disease, which had the makings of a pandemic. It was considered by the WHO first world health crisis having exceeded the illness itself and touched all of humanity. In this respect the author said: "It is human and social behaviour that is and will be for many years to come the key to resolving this epidemic, even if a vaccine and therapeutic alternatives can be developed successfully" (Lucas, 1993, p.15).

Education, an excellent vehicle for transmitting knowledge, is essential in preparing young people for adult life and is an important protection against HIV. Providing well- planned education about HIV and sexuality increases knowledge, develops skills, raises positive attitudes and can reduce risk behaviours.

## **2. Material and Methods**

A quantitative, cross sectional, analytical, descriptive and correlational study with a sample of 971 adolescents attending secondary school and vocational technical education. The evaluation protocol includes: socio- demographic variables, variables of school context and psychological (self-regulation), the Reduced Questionnaire Self-regulation (Carey, Neal, &

Collins, 2004). The Reduced Questionnaire Self-regulation is an instrument consisting of 29 items designed to obtain an overall index of self-regulation. Initially developed by Carey et al. (2004) in the United States of America was translated into European Portuguese and validated by Castillo and Dias (2009). Each item is scored from 1 to 5, where 1 corresponds to “strongly disagree”, 2 - “disagree”, 3 - “not sure”, 4 - “agree”, and finally 5 corresponds to “strongly agree”. Items 2, 3, 4, 6, 7, 9, 10, 11, 16, 21, 22, 26 and 29 are listed inversely. There are two scoring possibilities, by total score or by two subscales, namely: setting targets (comprising items 1, 5, 8, 12, 13, 14, 15, 17, 18, 20, 23, 24, 25, 27 and 28) and controlling impulses (which includes items 2, 3, 4, 6, 7, 9, 10, 11, 16, 19, 21, 22, 26 and 29). Knowledge About AIDS Scale for Adolescents (Zimet et al., 1989) was also used. It is a scale with 22 items in the form of a question. The answer to each item is given by indicating whether the statement is correct: “Yes”, “No” and “Don’t know”. The correct answers are given a score of one (1) and incorrect answers zero (0). The total score of the scale is the sum of all the items and can range from zero (0) to twenty-two (22).

Objectives: To determine the relationship between socio-demographic variables, variables of school context and psychological variables (self-regulation) with knowledge about HIV/AIDS among adolescents in secondary education.

### 3. Results

In our study, the population is between 14 and 21 years old, with an average of 16.80 years, a standard deviation of 1.38 and a coefficient of variation (CV) of 21.8%, which suggests a low dispersion. The average age for males, 16.84 years, is higher than that of females (16.76 years) (table 1).

**Table 1.** Statistics regarding age and sex

Age	S	x	Min	Max	SD	CV%	Sk / error	K / error	K / S
Gender									
Male	493	16.84	14	21	1.41	8.37	5,500	0,682	0.000
Female	478	16.76	14	21	1.35	8.05	6,161	2,484	0.000
Total	971	16.80	14	21	1.38	8.21	8,282	2,096	0.000

The adolescents in the sample mostly live in rural areas (66.40%), with the remaining 33.60% living in urban areas. Application of the chi-square test allows us to conclude that there is no statistically significant relationship between the area of residence and gender variables ( $\chi^2 = 0.563$ ,  $p = 0.453$ ). 77.30% of the students live with their parents, 53.20% live with sibling(s), 16.20% say they live with only one parent, 7.60% live with their grandparents

and 2.90% with other relatives. 5.00% of the teenagers claim to live with people other than family. The educational attainment of most subjects' fathers is the 2nd and 3rd cycle (45.30%), followed by 23.80% with the 1st cycle of basic education and 19.90% with secondary education. Most mothers have attained the 2nd and 3rd cycle (44.50%), followed by 20.80% whose education is only the 1st cycle, 19.80% with secondary education and 12.80% of the mothers have higher education. We found that 56.70% of households have an average medium-high or high income; the remaining 43.30% have a medium-low or low income.

The results of self-regulation as a function of gender showed that overall, boys ( $x = 90.11$ ,  $SD = 9.96$ ) showed higher mean rates than girls ( $x = 89.54$ ,  $SD = 8.51$ ). The boys showed the best mean score in impulse control and girls scored on average higher than boys in setting goals. The differences were not statistically significant. Regarding the overall score of self-regulation, the results we found were in line with studies by Carey et al. (2004), Neal and Carey (2005), Hustad et al. (2009) and Castillo & Day (2007). Analysing the subscales, we found that in the study by Castillo & Dias (2007), the male subjects showed higher mean scores than females. The results of their study (2009) are similar to our findings for the subscale "goal setting", showing that girls showed better mean scores than boys. These differences were statistically significant.

The results of the relationship between age and self-regulation show that it was students aged under 16 who reported higher rates of self-regulation and those who scored better on the subscale "impulse control", despite the absence of statistical significance for differences found. As regards the setting goals, it was the students in the age group of 17 years who scored best in that subscale. They are the ones therefore who revealed the best skills for setting goals. The differences are also not statistically significant. Studies by Carey et al. (2004), Neal & Carey (2005), as well as studies by Castillo & Dias (2007, 2009) showed no statistically significant differences, although a decrease in scores (on a global scale and subscales) was found. The results of our study are corroborated by these authors.

When the relationship between self-regulation and area of residence was evaluated, we found that students who reside in rural areas showed were better able to control impulses compared to those living in urban areas, with statistically significant differences ( $p = 0.044$ ). On the other hand, the students living in urban areas were shown to be better at setting goals, although this result is not statistically significant. In the overall assessment, the students living in rural areas showed higher rates of self-regulation, although the differences found in our study did not have statistical significance ( $p > 0.050$ , ns). Regarding the influence of area of residence on self-regulation, we did not find studies to support or refute the data we obtained.

In our research, the average household income (associated with a possible social level of the household of students) was not shown to influence students' global self-regulation indices ( $t = 1.772$ ,  $p = 0,077$ -n.s.), although students whose household has an average low or medium/low income reveal better average rates of self-regulation. This data is supported by Neal and Carey (2005).

The school has also been shown to influence self-regulation levels. Indeed, students of vocational-technical education showed better overall average rates of self-regulation, and showed a better capacity to control impulses. Students attending secondary school showed better skills in setting goals. All these reported differences were statistically significant, allowing us to infer, with appropriate reservations, that the school is susceptible to influencing students' self-regulation skills.

Analysing the relationship between years of schooling and self-regulation shows a decrease in the rates of self-regulation with increasing school year, although the differences are not statistically significant ( $p = 0.263$ -ns). Impulse control ( $p = 0.000$ ) and setting goals ( $p = 0.015$ ) were influenced by school year, with students from the 10th year being the ones who best control their impulses and students in the 12th year the ones who best set goals. These results allow us to affirm that impulse control decreases and setting goals improves as you progress through the school year. Castro (2007) concluded in their study, involving 1310 students in the school district of Braga and Porto that school year discriminated the processes of self-regulation, finding a decrease in self-regulatory behaviour as we increased school year ( $F = 14.1$ ,  $p = 0.000$ ). Rosario et al. (2004) and Silva (2004) cit. Castro (2007) also obtained similar results.

Schoolwork is another variable that appears in the literature as susceptible to influencing young people's self-regulatory behaviour. In our investigation, based on the overall self-regulation score, students with no history having to repeat a year which showed the highest rates of self-regulation; however, the differences revealed no statistical significance ( $t = 0.927$ ,  $p = 0.354$ -ns). When we analyze impulse control and setting goals, they seem to be influenced by the existence of having had to repeat a year. Students who did not repeat any past years showed the best capacity to control impulses and establish objectives, with statistical significance. Castro (2007) reported that students with higher academic performance tend to be more self-regulated than students with low academic performance. Rosario et al. (2004) also reported better self-regulated behaviour by students associated with higher school performance.

Feelings students expressed regarding school were found to be susceptible to influencing impulse control ( $p = 0.021$ ) and setting goals ( $p = 0.047$ ). Students who reported

not liking school were the ones who showed the best capacity to control impulses. Those who reported liking school showed better ability to establish objectives. Overall, students who disliked school had higher mean scores of self-regulation, although the differences are not statistically significant ( $p = 0.644$ -ns).

When we crossed the physical exercise with self-regulation, we concluded that students who rarely exercised outside of school presented the best indices of self-regulation. However, the differences between physical exercise and self-regulation did not prove statistically significant ( $p = 0.845$ , ns). Only in relation to impulse control and setting goals were the differences between groups statistically significant. Indeed, the students who never did physical exercise outside of school best demonstrated the ability to control impulses. As for setting goals, the students who reported doing physical exercise outside the school context “always or nearly always” were those who scored better on this subscale, and therefore, those who reported better capacities to establish objectives. For the subscales, the differences were found to be statistically significant (impulse control -  $p = 0.011$ , setting objectives -  $p = 0.023$ ).

These results are in line with those postulated by Sniehotte et al. (2005), who said that self-regulation skills mediate maintaining physical activity. They also mention that interventions that target self-regulation skills enable a reduction in risk factors, facilitating desired lifestyle changes.

When we analyze and relate the variables physical appearance, self reported by the students, and self-regulation, we concluded that students perceiving themselves as thin revealed higher rates of self-regulation (overall), although the differences did not express statistical significance ( $p = 0.541$ , ns). At the subscale level, students who perceived themselves as overweight scored higher with regards to impulse control ( $p = 0.011$ ) and those who reported having the ideal weight showed better skills at setting goals ( $p = 0.023$ ). In view of these results, it was found that at the level of the subscales, lifestyles influence self-regulation skills.

With regards to self-esteem, studies by Usta and Häubl (2011), Crocker et al. (2006) and Castillo & Dias (2007) establish a relationship between it and self-regulation. These data are in line with the results we obtained, highlighting that self-esteem was found to be a negative predictor of self-regulation as a whole, with a negative correlation ( $r = -0.163$ ,  $p = 0.000$ ). Thus, lower levels of self-esteem are negatively associated with the best overall self-regulation indices.

Lower self-esteem scores, as well as negative self-esteem, correlated inversely with the setting goals ( $r = -0.356$ ,  $p = 0.000$  and  $r = -0.466$ ,  $p = 0.000$ , respectively). The correlations proved to be moderate. Also, these two variables have been shown predictive of impulse

control. Self-esteem (global) also correlated positively with setting goals ( $r = 0.400$ ,  $p = 0.000$ ), with higher levels of self-esteem better skills in setting goals emerge in association. These data are in line with studies by Crocker et al. (2006), Castillo & Dias (2007) and Usta and Häubl (2011).

With regards to the scale of adolescents' knowledge about AIDS, significant differences ( $t = 5625$ ,  $p = 0.000$ ) were found, with girls having more knowledge ( $X = 15.41$ ,  $SD = 3.92$ ) than boys. Teens aged 17 have more knowledge ( $X = 15:24$ ,  $SD = 4.73$ ) with significant differences ( $p = 0.003$ ). Students in the 12th school year have more knowledge ( $X = 15.62$ ,  $SD = 4:51$ ) and those in the 10th year have less ( $X = 13:53$ ,  $SD = 5.40$ ) with significant differences. Teenagers whose families have higher monthly incomes have more knowledge (mean=14.80, SD =4.77). The correlations indicate that among adolescents' knowledge about AIDS and the subscale setting goals, there is a positive and significant correlation ( $r = 0.224$ ,  $p = 0.000$ ), as well as with the overall value for self-regulation. Significant and negative correlations for were found for impulse control subscale ( $r = -0.257$ ,  $p = 0.000$ ) and not significant correlations for the overall value of self-regulation ( $r = -0.041$ ,  $p = 0.099$ ).

Performing a multiple regression showed that the subscales of impulse control and setting goals are predictors for adolescents' knowledge about AIDS, with 8.4% of the variability found in these two variables. Beta coefficients indicate that the subscale impulses have a significant negative correlation (Beta = - 0.200,  $p = 0.000$ ) and setting goals has a positive and significant correlation (Beta = 0.146,  $p = 0.000$ ) so we can affirm that the more the knowledge adolescents have about AIDS, the lower the impulses subscale and the higher the setting goals. The equation resulting from this multiple regression is obtained by the following formula: knowledge of adolescents about AIDS = 13.358 - 0.117 (subscales impulses) + 0.090 (setting goals).

#### **4. Conclusions**

The results suggest there are influence of gender and age on the acquisition of knowledge and information processing. The results of our study indicate that girls have more knowledge about AIDS when compared to boys. These results are corroborated by other authors (Brêtas, 2009; Giacomozzi & Camargo, 2011). Regarding the influence of age on the acquisition of knowledge, several studies have found that older adolescents have more knowledge (Durex, 2010; Matos et al., 2011) which is in line with our results.

We found that the subscales of self-regulation: impulse control and setting goals are predictors of adolescents' knowledge about AIDS.

Recognition that HIV/AIDS is a disease whose essence is not a simple biomedical phenomenon but the direct consequence of a set of psychosocial and cultural factors, where individual behaviour is responsible for the increased spread of the disease, implies individual accountability and prevention as the paths of excellence for its eradication.

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