

The Effect of Preventive Intervention to Strengthen Self-Esteem Among Students in Cartagena City, Colombia

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Abstract— Objective: To evaluate the effectiveness of an intervention on strengthening self-esteem in students going to public schools in Cartagena, Colombia.

Method: A random field trial was conducted and controlled, in which students from sixth and seventh grade -between the ages of 10 and 15 years- were requested to participate. An intervention group (IG) was formed by 498 students, mean age of 12.3 years (SD = 1.1); as well as a control group (CG), 453 students, mean age of 12.2 (SD = 1.1). The IG participated in a school held prevention program, whereas the CG didn't, and the results were shown three months later, where an 'intention to treat' analysis was performed.

Results: A total of 901 students participated in the follow up measurement, where (5.3%) 50 individuals from the first measurement were unable to reach for 446 IG students (89.6%) reported high 'positive self-esteem', compared to 398 CG students (87.9%). The difference was not statistically significant (1.16, 95% CI 0.81 to 1.66).

Conclusion: This type of preventive intervention lacks of significant statistical effect, even after five months period. We need to trial a more intensive intervention with the students in Cartagena, Colombia.

Index Terms— Self-esteem, students, teens, schools, efficacy-effectiveness evaluations..

I. INTRODUCTION

The philosopher William James showed self-esteem as a simple equation, the division between real life achievements and ambitions [1]. Now a days, self-esteem is seen more as a combination of an individual's intimate, personal, positive or negative experiences, and the value perception of his or herself, thus as a result how he rates him or herself, that involves self-evaluation and self-perception that is seen when interacting with the outside world [2] - [4]. Self-esteem is derived from two perspectives, the positive feeling related to accomplishing goals daily life aspects; and the negative feeling, referring to the understanding, pity, or self-acceptance [5], [6].

In adolescence, self-esteem is majorly related to the general welfare, and behaviors that can compromise health [7]. For instance, teenage girls with high self-esteem tend to delay their sexual life when compared with peers that have low

self-esteem [8] and, consequently, fewer unintended pregnancies are observed [9],[10]. Meanwhile, adolescent boys with low self-esteem tend to consume more cigarettes, alcohol and other addictive substances [11], [12]. As well as, adolescents with low self-esteem in general show higher risk of self-injurious and peculiar behaviors [13].

Contradictory results are found when observing the effects of preventive programs on strengthening self-esteem in the school context. For example, in Chile, *Bonhauser et al.* (2005) found that a group of 198 students all around 15 years of age, when subjected to a physical activity program throughout an entire year, an increase of 2.3% in their self-esteem scores is shown versus a 0.1% in the control group (307.2 vs. 302.2; $p < 0.0001$; difference probably without clinical utility) [14]. Meanwhile, in Italy, *Ruini et al.* (2009) with a group of 227 students of an average age of 14 years old, where a general welfare program was put into action with no differences found in the follow-up scores between the intervention and the control group after a six months period [15].

A more recent research, in China, done by *Wong et al.* (2012) implemented a leadership training program in a group of 180 students, with a mean age of 15 years, where they observed a modest increase in self-esteem in women in the intervention group compared to those in the control group (2.38 vs. 2.14; $p < 0.001$, with high probability that this effect show usefulness in everyday life); but not in males [16]. And in Spain, *Luengo et al.* evaluated the effectiveness of a "Health Building program" with 4895 sixth- graders, all around 11 years old, and found that the self-esteem scores were statistically superior (Possibly with no realistic significance) in the intervention group than in the control one, after six months follow up measurement ($M = 12.8$, $SD = 3.2$ vs. 13.1 ; $SD = 2.6$; $p < 0.001$) [17].

Evidently, the above studies show that different self-enhancing school workshops have a positive impact on strengthening self-esteem among adolescents [14]-[17]. However, it is necessary to consider the high probability of making a type alpha (I) error with a comparison of means and standard deviations between two groups with a high number of people [18]. Thus, to address and hopefully avoid this limitation of parametric statistical tests in the following research, a more conservative non-parametric statistical test is preferred to that of the above-noted, where they showed significant differences between groups [19]. As well as, there are no previous studies in the Colombian Caribbean that show the effectiveness of these preventive actions.

In schools, nursing professionals play an important role in implementing promotion and prevention activities aimed at ensuring the welfare of students; in coordination with the

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administrative and teaching staff of the institution [20], [21]. These actions do not only reduce the negative effect on academic performance [22], but also the behaviors that can impair the students' health [23].

Our aim is to evaluate the effectiveness of these interventions "Building Health" in strengthening self-esteem in a probabilistic sample of students from the public school areas in the city of Cartagena, Colombia.

II. METHODS

An experimental analytical study was designed, a field research in which several outcomes were evaluated. This study was conducted according to the ethical principles of the Colombian standards for health research. It was approved by the Ethics Committee of the National University of Colombia (certificate of approval No 13, August 1st 2011). All parents and guardians signed an informed consent that was handed previously to their children. Participation was completely voluntary [24].

The Department of Education in the District of Cartagena, Colombia, recorded in 2012, approximately 130,000 students enrolled in educational institutions. A sample of 700 adolescents in each group, for a total of 1400, no cigarette experienced was estimated (main outcome evaluated). This sample size let us detect an absolute difference of 10% between the two groups, with a confidence level of 95% and statistical power of 80% [25], [26], even after the various data losses, due to bad filling of questionnaires or monitoring desertion. Sampling followed a probabilistic conglomerate model. Each cluster was represented by the group of students in a classroom.

We requested the participation of students between 10 and 15 years of the sixth and seventh grade, with no prior experience to tobacco abuse. Students with identifiable cognitive disabilities were excluded. Finally, the intervention group (IG) consisted of 498 students (M = 12.3 years, SD = 1.1); and (CG) control group of 453 students (M = 12.2, SD = 1.1), with a similar variance ($F = 0.015$, $p = 0.904$; $t = 1.732$, $df = 949$, $p = 0.084$). The proportion of females was similar in both groups (52% vs. 52.3%; $p = 0.924$); same as for the grade in which they are (51.0% vs. 56.5% of sixth grade; $p = 0.089$). In the IG 453 students (91.0%) reported high positive self-esteem compared to 400 (88.3%) in CG (OR = 1.39, 95% CI 0.92 to 2.11; $p = 0.177$).

Positive self-esteem was measured with the Rosenberg scale, with the five items that explore this construct. The full version of the scale consists of ten items with a pattern of dichotomous response [27]. The first five points that show the best performance among students in Cartagena were taken [28]. In this research the cutoff point for positive self-esteem was established from three or more answers. In both applications present in the study, the five subsections showed internal consistency in desirable values-greater than 0.70 [29].

The intervention consisted of implementing the "Building Health" program [17], where it was adapted to the social and cultural characteristics of the Colombian Caribbean [30]. This

workshop is a universal smoking prevention strategy. The program takes place in the classrooms, with nine sessions for students and a meeting with the parents or guardians. The program includes informative components on the use of cigarettes, alcohol, addictive substances, self-esteem, emotional control, decision making, social skills, and activities for leisure, as well as exercises for building tolerance and cooperation [17], [30]. The follow-up measurements were taken five months later.

Statistical analysis was performed using STATA 9.0 [31]. Demographic characteristics and self-esteem for IG and CG were compared. Relative risks (RR) were calculated with confidence intervals of 95% (95% CI). The analysis was intended to treat, both the IG students that were lost in monitoring and the CG students with the worst possible outcomes (in this low self-esteem analysis) [32].

III. RESULTS

Out of a total of 951 students who participated in the first evaluation, 50 students (5.3%) were unable to reach the follow-up and thus not completing the second evaluation, 25 students of each group. As a result, we had a group 901 students for the second measurement. In the (IG) a total of 446 students (89.6%) reported high 'positive self-esteem' compared to CG, 398 students (87.9%). The difference observed in the proportions was not statistically significant (RR = 1.16; 95% CI 0.81 to 1.66).

IV. DISCUSSION

The present investigation showed that "Building Health" program lacks positive statistical significant concerning its effects, using non-parametric statistics, in strengthening positive self-esteem in the sixth and seventh graders, aged between 10 and 15 years in public schools. To the date, the programs implemented for other purposes and reporting effect on the scores for self-esteem- with the use of parametric statistics- showed divergent results. Similarly to what was found in this investigation, *Ruini et al* found alike scores for self-acceptance in the intervention group, which was taken as a control pattern for our study [15]. However, *Bonhauer et al* and *Luengo et al.* observed an increase in self-esteem with statistical significance [14], [17]. Furthermore, *Wong et al* found a gender differential effect, in which the female group showed a significant statistical increase in scores, while in the male group no positive effect was observed [16].

The differences observed in the several studies that previously evaluated the impact of intervention programs on teenage self-esteem lay down various basis; The first is that self-esteem is a non-quantified variant, thus cannot be controlled properly and easily [2] - [4], [33]- [35]. Furthermore, the heterogeneity of student participants and instruments used in measurements in trials could account for this observation [36]. Finally, the available statistical parametric studies used in measuring the impact, are very sensitive to sample size and a high probability of finding a false positive effect [37]. The measurement of the outcome of the enhancing self-esteem workshop with relative risk is

more traditional[38] and not always statistical difference has a practical use in real life [39].As well as, none of the above studies reported the size effect of the intervention or the number needed to treat and or to intervene therefore achieving expected effect in the individuals [40], [41].

It is undisputable that the role of nursing is fundamental in health promotion during school hours. Nursing activities are not only limited to the promotion of the welfare of students -as universal preventive actions- but also the identification of teenage issues in situations that may damage the academic performance or the overall school and household harmony [20], [21], [23].

This study provides strong evidence of the little impact on self-esteem of a preventive program with a random sample of students. Nonetheless, the limitations to observe positive effect are considered due to the low frequency of “low self-esteem” aspect and a possible ground effect that may prevent us from seeing significant statistical differences [42].

As a conclusion, “*Building Health*” program has non-significant statistical effect on the teens after five months of follow-up. We need to test the effectiveness of an intervention with some greater emphasis on the component of self-esteem among students in Cartagena, Colombia.

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