



# Enhancing “Health-Promoting Schools” through Implementing Mental Health Program

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## Abstract

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**BACKGROUND:** The implementation of social and emotional learning program Social Emotional Learning (SEL) program is considered to be a low cost, simple method, and efficient intervention that shows a promise in promoting students' mental health (MH).

**AIM:** We aimed to enhance “The Health-Promoting Schools” initiative through the implementation of a MH promotion program.

**METHODS:** The study is a school-based non-randomized controlled trial, in purposively selected schools. It included 460 students with a mean age of 11 ( $\pm$  0.7) years old, all are boys, and were divided into two groups; intervention group (n = 230) and control group (n = 230). The ten components of the health-promoting school were assessed in the intervention school using the CDC tool “The School Health Index,” which enables the school team to identify the strengths and weaknesses of their school's policies and programs. As a result, a tailored SEL program was developed fitting the Egyptian culture and students' needs, along with the recommendations and trends.

**RESULTS:** The baseline assessment results for the intervention school were in the medium range percentages (20–80%). The social and emotional part had not been a major concern given for our students. The students who participated in the SEL program evidenced significant improvements in grit, growth mindset, self-management, social awareness, and school safety compared to the control group. According to the teachers' perception scale, 70% of the teachers reported that the learning strategies of students have been improved.

**CONCLUSION:** The findings suggest that a relatively simple-to-administer SEL curriculum added to the regular school curriculum for a period of only 2–3 months can yield promising results as regard to positive behavioral and cognitive changes in students.

## Introduction

Schools are now recognized as an essential and strategic setting for the promotion of healthy environments, health and nutrition, literacy, and physical activity among school-age children and adolescents [1].

The goal of the WHO's Global School Health Initiative is to increase the number of schools that can truly be called “Health-Promoting Schools (HPS)” [2]. The Key feature of HPS is to (1) engage health, education, and community leaders, (2) provide a safe, healthy environment (physical and mental), (3) provide health education, (4) provide access to school health services, (5) implement health promoting policies and practice, and (6) improve the health of community.

Mental health (MH) constitutes one of the major health challenges faced by many countries as children and adolescents constitute almost a third of the global population, and it is estimated that nearly 20% of them experience some form of MH difficulty [3].

Early years in life are crucial period for laying the foundations for healthy development and mental well-being [4].

MH is not addressed in many programs, strategies, and policies, including those on adolescent health and development and MH. Even national standards and capacity-building tools for youth-friendly services sometimes do not include MH [5].

The WHO argued that MH policies should include MH promotion and not be limited to the health sector, but also involve education, labor, justice, transport, environment, housing, and welfare [6].

Applying MH promotive and preventive interventions in schools showed positive evidence of effectiveness and were associated with range of benefits on MH, social, emotional, and educational outcomes [7].

Many efforts are directed toward MH illnesses and their early detection [8], [9]. However, capacity building for our students on basic life skills improving their mental well-being offered in our schools is still defective [10]. No papers looked at MH promotion efforts

in schools in developing countries, which represent an area of great significance in terms of MH outcomes for young people [6].

Therefore, the current study aims at enhancing "The HPS" initiative through the implementation of a MH promotion program.

## Methods

### *Study design and setting*

A school-based non-randomized controlled trial, a purposively school was chosen (students  $n = 230$ ), with four matched control schools (students  $n = 230$ ). The study was implemented in one of the private language schools in Cairo governorate. This school was chosen as it has many branches all over Egypt, which fits the study design. The school was also selected as the administrative board showed willingness in adopting the concept of health promotion in their schools. The study was carried out in the period from October 2, 2019, to July 19, 2020.

### *Sampling*

This non-randomized controlled trial included 460 male students, representing all the students in primary 5 and 6 grades in the five branches of the selected school in Cairo governorate. Students from the 5<sup>th</sup> grade were 339 students (representing 73.7%) and students from the 6<sup>th</sup> grade were 121 students (representing 26.3%). One school branch ( $n = 230$ ) received the intervention, and the four other school branches ( $n = 230$ ) formed the control group.

### *Subjects*

This study included students from the fifth and sixth primary grades. These grades were selected as researchers suggested that during this period children develop personalities, behaviors, and competencies that will form what persist later in adolescence and adulthood [11]. Besides, this age group of students is assumed to be cooperative and to understand the student self-assessment scale used in this study more than the younger primary grades.

### *Inclusion and exclusion criteria*

All students in the recruited schools of the fifth and sixth primary grades were included in the study. No exclusion criteria were needed as the group was homogenous regarding their age, sex, and socioeconomic status.

### *Ethics statement*

The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008. All procedures involving human subjects/patients were approved by the research ethics committee, Faculty of Medicine, Cairo University, number D-11-2019, date: July 13, 2019. The Permission from the schools' head in which the study has been conducted was taken and consent from students and their parents and teachers participating in the study.

### *Study phases*

#### *Preparatory phase*

Official approvals were finalized. Preparatory meetings were performed with school administrative and health managers to discuss the plan of work. A fixed one school session per week was specified for each class to be dedicated for the Social Emotional Learning (SEL) program implementation. A school health team was formulated of ten persons and consisted of: The school principal, the principal assistant, the health education teacher, the school counselor, two representative teachers, the head of the school health-care unit, the school social worker, the school security personnel, and representative for the parents.

The team was trained on using the assessment tool through a 1-day workshop in the preparatory phase.

#### *Situation analysis and initial assessment*

The team met together daily for 6 working days to perform the assessment using the CDC tool assessing the following dimensions: Policies and environment, Health education, Physical education and activity, Nutrition services, School health services, Counseling, psychological and social services, Social and emotional climate, Physical environment, Employee wellness, Family engagement, and Community involvement.

Results of the school assessment illustrated the school strength points that were found and the opportunities for improvement.

Finally, the measure of the students' baseline SEL competencies using the students' perspective scale on 230 students in each group (intervention and control) was done.

#### *Implementation phase*

SEL program material was developed according to the universal guidelines to fit the Egyptian

culture, and student needs. It was designed targeting the following five competencies: Self-awareness, self-management, social-awareness, relationship, and responsible decision-making skills. This program is based on the framework proposed by Collaboration for Academic, Social, and Emotional Learning [12]. The program was delivered as a series of eight lessons each one was 45 min, and the sessions were scheduled to be one per week for each class for 2 months. It was delivered by the social workers under the researchers' supervision to allow for on job training and to ensure the sustainability of the program later on by the school social workers themselves.

The main program aim is to improve the social and emotional skills for the students to achieve better MH for them. Dimensions that the program focused on:

1. Grit: Ability of the students to persevere through setbacks to achieve important long-term goals.
2. Growth Mindset: Perception of the Students whether they have the potential to change those factors that are central to their performance in school.
3. Self-Management: Management of students to their emotions, thoughts, and behaviors in different situations.
4. Social Awareness: Consideration of students toward the perspectives of others and how to empathize with them.
5. Self-Efficacy: Believes of students about their successes in achieving academic outcomes.
6. School Climate: Perceptions of the overall social and learning climate of the school.
7. Teacher-Student Relationships: The strong social connection between teachers and students within and beyond the school.
8. Sense of Belonging: Students' feel that they are valued members of the school community.
9. School Safety: Perceptions of student's physical and psychological safety at school.

#### *Evaluation phase*

During this phase, the final assessment was done for both the intervention group and the control group at the same time. The social emotional competencies of the students were assessed by their teachers (Arabic, English, math, science, social, French, and German), they were 18 teachers, using the teacher perception scale.

#### **Study tools**

##### *The CDC assessment tool for the HPS [13]*

This tool enables the school team to identify the strengths and weaknesses of their school's policies and programs for promoting health and safety, to develop an action plan for improving students' health and safety,

and to involve teachers, parents, students, and the community in improving school policies, programs, and services.

#### *Students' assessment scale*

The scale aims at allowing each student to assess some of his social emotional competencies. The scale has nine dimensions which are: Grit (4 statements), Growth mindset (8 sentences), Self-Management (10 statements), Social Awareness (8 statements), Self-Efficacy (5 statements), School Climate (4 statements), Teacher-Student Relationship (4 statements), Sense of Belonging (4 statements), and School Safety (5 statements).

The 5 Likert scale has been used. For each statement (1) was the least score if the student does not agree with the statement and (5) is the highest score if the student agrees with the statement. For the total sum of the scale statements (40) is the least score, and (260) is the highest score.

#### *Teachers' perception scale*

The scale aims at allowing each student to assess some of his social emotional competencies and it has nine dimensions which were: Grit consisting of (2 statements), self-management, social awareness consisting, self-efficacy, learning strategies, classroom efforts, social perspective taking, emotion regulation, and engagement.

The 5 Likert scale has been used. For each statement (1) was the least score if the student does not agree with statement and (5) is the highest score if the student agrees with statement. For the total sum of the scale statements (5) is the least score, and (50) is the highest score.

#### **Statistical analysis**

The completed questionnaires were entered into the excel form then imported to SPSS (version 21) for data analysis. Numerical variables as age and calculated scores were presented as mean, standard deviation or median, 25<sup>th</sup>, and 75<sup>th</sup> percentiles according to the distribution of data while categorical variables were presented as count (n) and percentage (%). Bivariate analysis between the intervention and the control groups, Wilcoxon, and Mann-Whitney U tests of significance were used to detect statically significant difference between the two groups regarding the assessed dimensions. Statistical significance was expressed using the p-value and the confidence interval.  $p \leq 0.05$  was considered significant.

Th anking of different values was done after calculating the percentage of achievement of each dimension, as follows:

$$\frac{\text{The sum of all questions of the dimension for all of the students}}{\text{The no of students (230) * the maximum score of that dimension}} \times 100$$

For both the students' and the teachers' questionnaires, the scores 4 and 5 on Likert scale were coded as agreeing with the statement, the score 3 on Likert scale was coded as neutral to the statement, the scores of 1&2 on Likert scale were coded as disagreeing to the statement.

## Results

A-The baseline assessment by "The School Health Index a self-assessment guide."

The school baseline assessment results were mostly achieving scores in the medium range (20–80%) as shown in Table 1. The health education score was 29%, the psychological and social services scored 57%, and the social emotional climate achieved 67%.

**Table 1: Percentage scoring for the baseline assessment of the HPS components**

HPS items	Percent scoring (%)	Grade
Policies and environment	83	High
Health education	29	Medium
Physical education and activity	68	Medium
Nutrition services	7	Low
School health services	83	High
Counseling, psychological and social services	57	Medium
Social and emotional climate	67	Medium
Physical environment	21	Medium
Employee wellness	7	Low
Family engagement	30	Medium
Community involvement	11	Low

Low (0–20%), medium (21–80%), and high (81–100%).

B-Assessing the applied MH program by the students' questionnaire.

The study included 460 students aged 11 (± 0.7) years old, all were boys, and were divided into two groups; intervention group (n = 230) and control group (n = 230).

**Table 2: The median and IQR for the sum of questions of each dimension for the intervention group and the control group across the pre-test and post-test**

Dimension	Intervention group			Control group		
	Test	Median (IQR)	p-value	Test	Median (IQR)	p-value
Grit	Pre-test	17 (4)	0.04	Pre-test	17 (3)	0.65
	Post-test	18 (3)		Post-test	17 (5)	
Growth Mindset	Pre-test	23 (6)	<0.001	Pre-test	21 (5)	0.76
	Post-test	24 (5)		Post-test	22 (6)	
Self-Management	Pre-test	40 (9)	0.01	Pre-test	39 (10)	0.49
	Post-test	40 (10)		Post-test	39 (11)	
Social Awareness	Pre-test	33 (8)	< 0.001	Pre-test	30 (7)	0.08
	Post-test	31 (9)		Post-test	29 (9)	
Self-Efficacy	Pre-test	20 (5)	0.27	Pre-test	19 (7)	0.30
	Post-test	20 (6)		Post-test	19 (7)	
School Climate	Pre-test	14 (6)	0.004	Pre-test	13 (7)	0.07
	Post-test	13 (6)		Post-test	12 (6)	
Teacher-Student Relationships	Pre-test	17 (5)	<0.001	Pre-test	15 (6)	0.03
	Post-test	16 (6)		Post-test	16 (7)	
Sense of Belonging	Pre-test	15 (6)	<0.001	Pre-test	13 (6)	0.17
	Post-test	13 (6)		Post-test	14 (7)	
School Safety	Pre-test	40 (9)	<0.001	Pre-test	14 (6)	0.71
	Post-test	40 (10)		Post-test	15 (8)	

IQR: Interquartile range

Table 2 illustrates the median and IQR for the sum of questions in each of the nine dimensions that were assessed, and it was found that:

Regarding the intervention group the median and IQR for both grit and growth mindset were 17 (4) and 23 (6), respectively, in the base line assessment versus 18 (3), 24 (5) in the assessment after implementing the SEL program and with statistically significant differences (p > 0.05).

The dimensions self-management, social awareness, and school safety in the intervention group despite having median and IQR 40 (9), 20 (5), and 40 (9), respectively, in the baseline assessment which remains nearly the same in the post assessment which was 40 (10), 20 (6), and 40 (10), respectively, show high statistical significant difference (p < 0.001).

On the other hand, the median and Interquartile range (IQR) for the control group regarding growth mindset, teacher student relationship, sense of belonging, and school safety were 21 (5), 15 (6), 13 (6), and 14 (6), respectively, in the base line assessment and increased in the after assessment to show median and IQR 22 (6), 16 (7), 14 (7), and 15 (8) but with no statistically significant differences except for the teacher student relationship.

As depicted from Table 3 and Figure 1:

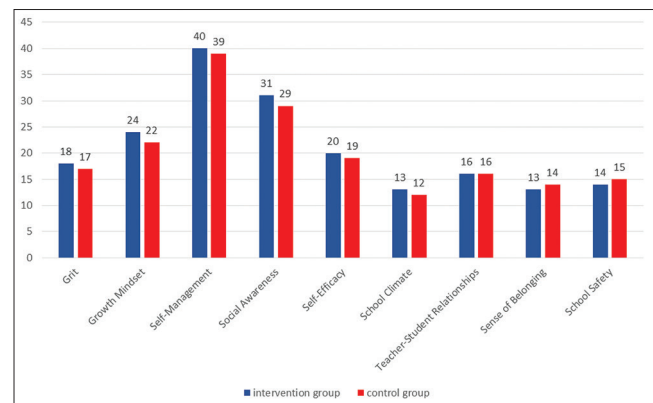


Figure 1: Comparison for the median of the post-test across the intervention and the control groups



**Table 3: The median and IQR for the sum of questions of each dimension in the pre-test and post-test across the intervention group and the control group**

Dimension	Pre-test		p-value	Post-test		p-value
	Intervention group Median (IQR)	Control group Median (IQR)		Intervention group Median (IQR)	Control group Median (IQR)	
Grit	17 (4)	17 (3)	0.087	18 (3)	17 (5)	0.001
Growth Mindset	23 (6)	21 (5)	0.016	24 (5)	22 (6)	0.000
Self-Management	40 (9)	39 (10)	0.061	40 (10)	39 (11)	0.463
Social Awareness	33 (8)	30 (7)	0.000	31 (9)	29 (9)	0.028
Self-Efficacy	20 (5)	19 (7)	0.007	20 (6)	19 (7)	0.001
School Climate	14 (6)	13 (7)	0.005	13 (6)	12 (6)	0.041
Teacher-Student Relationships	17 (5)	15 (6)	0.000	16 (6)	16 (7)	0.767
Sense of Belonging	15 (6)	13 (6)	0.014	13 (6)	14 (7)	0.356
School Safety	16 (6)	14 (6)	0.009	14 (8)	15 (8)	0.297

IQR: Interquartile range

The after assessment of both dimensions grit and growth mindset showed median and IQR for the intervention group 18 (3) and 24 (5), respectively, and for the control group 17 (5) and 22 (6), respectively, and the differences between both groups were highly statistically significant ( $p > 0.001$ ).

Concerning self-efficacy, the median and IQR for the after assessment in the intervention group and control group were 20 (6) and 19 (7), respectively, with high statistical significance.

As for school climate, the median and IQR for the after assessment in the intervention group and control group were 13 (6) and 12 (6), respectively, with statistical significance.

The self-management dimension showed median and IQR for the after assessment in the intervention group and control group 40 (10) and 39 (11), respectively, but with no significant difference.

The median and IQR were 16 (6) and 16 (7) in the intervention group and control group respectively for the teacher student relationship with no significant difference.

The baseline assessment for both the intervention group and control group showed statistically significant differences in the dimensions growth mindset, social awareness, self-efficacy, school climate, teacher student relationship, sense of belonging, and school safety.

C-Assessing the applied MH program by the teachers' questionnaire.

Figures 2 and 3 show that for the intervention group the dimension grit was having the first rank in both the base line assessment and the final assessment as it was 83% and 86%, respectively.

The dimensions growth mindset and self-efficacy rank goes upward in the final assessment to the 2<sup>nd</sup> and 3<sup>rd</sup> order, respectively, instead of being in the 5<sup>th</sup> and 6<sup>th</sup> order, respectively, in the baseline assessment.

The dimension self-management was having the fourth rank in both the base line and the final assessments as it was 79.5% and 77%, respectively.

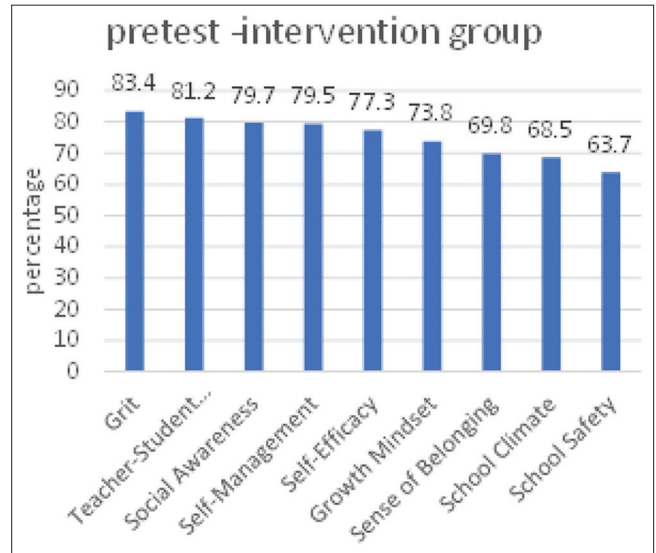


Figure 2: Ranking of the dimensions according to the total score achievements in baseline assessment in intervention group

According to teachers' perception as shown in Figure 4, 70% of teachers agreed that the students' learning strategies have been improved after the SEL program application, also 61% of teachers' agreed that the students' involvement and engagement in class have been improved, and 56% agreed that the students' efficiency improved.

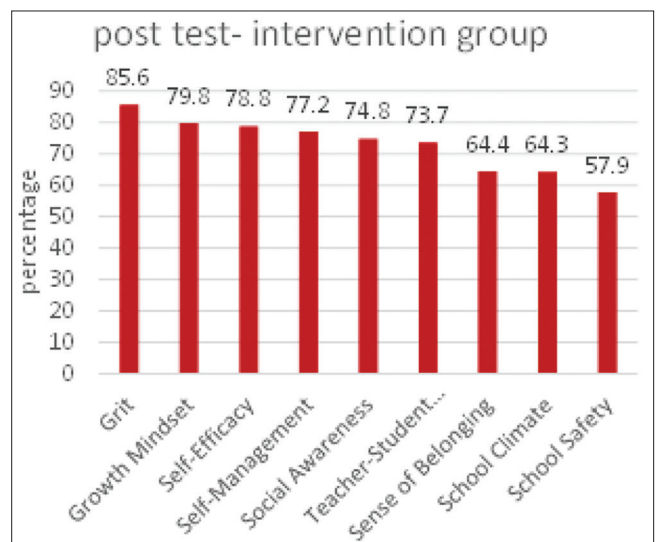


Figure 3: Ranking of the dimensions according to the total score achievements in final assessment in intervention group

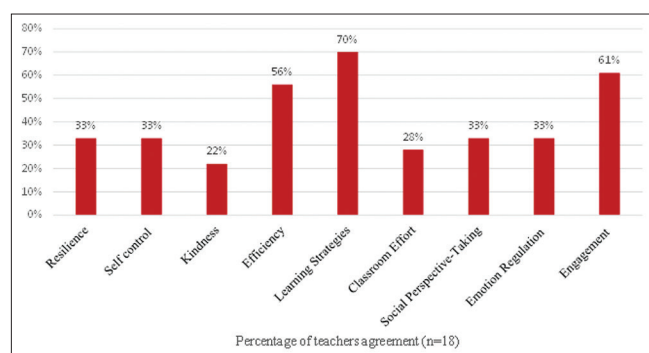


Figure 4: Teachers' perception for the effect of the SEL program on improving student's competencies

## Discussion

Schools greatly determine the future well-being and economic productivity of populations because they significantly influence both health and education. Recent research suggests that healthier children learn better and become more educated and healthier adults.

The initial assessment of the recruited school highlighted the situation in the Egyptian schools to some extent. It was evident that counseling, psychological, and social services, health education, and the school social climate were taking low or middle percentage scores. Furthermore, some of the assessed items in this study were having low scores such as the employee wellness and community involvement.

In addition, the social and emotional part had not been a major concern given for our students. Their scores were middle percentage scores. This resulted in a great gap between what the students really need and what the system offers.

These findings were aligned with the worldwide less frequently addressed issues which are MH, accident prevention, staff health, and developing links with the wider community, while the most commonly addressed issues were standard chronic disease risk behavior, the environment and health education [14].

After the initial assessment of the current study, many opportunities for improvements were found and were discussed with the school administration to be put on their agenda for further work on.

Durlak *et al.* and Sklad *et al.* found that there is a varied range of interventions that can be implemented in schools with positive effect. They focused specifically on SEL programs, as they found that the use of this school-based program was effective in promoting the MH and emotional well-being of young people [7], [15].

Initial assessment showed that there were statistically significant differences between the intervention group and the control group in some dimensions of the child self-assessment scale. It should be noted that finding baseline differences between intervention and control groups is a common

occurrence in studies like our study in which there is a small-to-moderate sample size [16]. Like the study by Schonert *et al.*, the lack of any significant demographic differences between intervention and control students gives us confidence that our results represent internal validity that can test the intervention effect on student outcomes [11].

Overall, the results of the implemented SEL program provide some encouraging evidence of a modest positive effect. As hypothesized, students exposed to the SEL program, in contrast to the controls, evidenced significant improvements in student's self-assessment scale and teachers' perception of students' social and emotional competence scale.

In addition, with regard to the ranking of the values, the students' growth mindset moved upward from the 5<sup>th</sup> rank in the initial assessment to the 2<sup>nd</sup> rank in the final assessment. These results were consistent with the results of the study by Schonert *et al.* [11].

Furthermore, concerning the ranking of the values, the students' self-efficacy moved upward from the 6<sup>th</sup> rank in the initial assessment to the 3<sup>rd</sup> rank in the final assessment. These results were accordant with the study by Schonert *et al.* who were applying a similar SEL program named the Mind up program in UK schools [11].

Regarding self-management and school safety, the intervention group showed statistically significant difference between their baseline and final assessment and more than third of the teachers reported the same regarding the dimension of the students' self-control as in the master mind program of the study by Parker *et al.* that showed a marginally significant increase in self-control abilities for boys only [17].

As documented by the teachers' perception scale, 70% of the teachers reported that the learning strategies of students have improved, and this represents a major outcome of the implemented SEL program.

After this SEL program application, the preliminary findings suggest that a relatively simple-to-administer SEL curriculum added onto the regular school curriculum for a period of only 2–3 months can yield promising results as regards to positive behavioral and cognitive changes in students, taking into consideration that the measures for the effect of the program shortly after its application and without a long-term follow-up may show underestimated results. However, effects may gradually decrease by time, it can still remain substantial [18].

The recorded effects were minimal in some dimensions, which could be for many reasons such as the following: The time between the program application and the final assessment was nearly 8 weeks and this appears to be too short for comprehensive changes in the students' behaviors and competences to take place [19].

Another reason may be that early childhood SEL programs may have a smaller role in changing their behaviors and emotions, and after learning skills children may need time to practice and integrate learned behaviors into their characters before others can notice any change, a phenomenon known as "the sleeper effect" [20].

Finally, it is very challenging to create a positive classroom that helps children in the generalization of new SEL skills throughout the school day and to have sustainability for the program to preserve the gains and to keep moving forward.

### Strengths of the study

The study has the following strengths: First, this is one of the first studies in Egypt to evaluate the HPS approach in terms of student outcomes, and specifically within the context of a natural experiment. The study is, therefore, unique as it offers important insight into how a HPS approach might contribute to student health and well-being. Second, the use of both observational method in the initial assessment and student self-report provided better understanding of the baseline situation and the outcomes of the applied SEL program. Third, this study was collaboration between both the health and education sectors represented in the faculty of medicine and one of the Cairo governorate private schools.

### Limitations

The study has some limitations. There was no opportunity for random allocation of students due to some administrative issues. Furthermore, the study does not include any long-term follow-up (after 3–6 months) to identify whether the intervention effects could become stronger or weaker in time and to determine whether or not the positive impacts are sustained. This was mainly because of COVID-19 pandemic and the instability of the learning process. The student assessment scale is a self-report measure; the objectivity in rating one's own behavior may be difficult as the student may provide ratings believed to be the desirable answers, or the student may be not completely honest in the answers. Finally, there were some dropouts in the students due to the COVID-19 pandemic.

### Implications for future research

It is recommended to have future studies to assess the positive results identified in this study in a longitudinal context, with a follow-up at least 6 months after the implementation. Investigate the potential effects of a cumulative application of the program over several grades, through implementing the SEL program over multiple academic years. Efforts should continue

to implement this SEL program on a wide scale in other schools to have clear evidence on the effect of the SEL programs on our students' competencies.

## Conclusion

The findings suggest that a relatively simple-to-administer SEL curriculum added to the regular school curriculum for a period of only 2–3 months can yield promising results as regard to positive behavioral and cognitive changes in students.

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