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Effect of life skills education on socio-emotional functioning of adolescents in urban Puducherry, India: A mixed-methods study

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Abstract:

BACKGROUND: We wanted to assess the effect of life skills education (LSE) and regular curriculum on the self-esteem, self-efficacy, adjustment, and psychosocial functioning of students from co-educational government schools, compared to those receiving only the regular curriculum. The secondary objectives were to study the feasibility of such sessions and identify the factors affecting the effectiveness of the sessions.

MATERIALS AND METHODS: We conducted a mixed-methods study in government schools of urban Puducherry, India in 2018–2019. The quantitative component was a cluster-randomized trial with activity-based learning methods delivered over 10 sessions in the intervention arm (IA). Differences in outcome variables (self-esteem, self-efficacy, adjustment, psychosocial behavior) between baseline and after intervention in each of the groups were calculated, and the difference-in-differences (DID) technique was applied to account for any natural change in scores over time. Qualitative data were collected through focused group discussions (FGDs) among students and teachers. Analysis was founded on a positivist paradigm with inducto-deductive methodology.

RESULTS: The mean (SD) age of 258 participants was 13 (1) years in both arms. The mean (SD) difference between baseline and end-line for IA and control arm (CA) was 0.3 (4.4) and – 0.1 (4.0), for self-esteem ($P = 0.38$), 0.03 (6.0) and – 1.1 (6.1) for self-efficacy ($P = 0.12$), and – 0.04 (3.5) and – 0.05 (4.3) for adjustment ($P = 0.73$), respectively. Similarly, the median (interquartile range [IQR]) difference in the conduct problems scale of the Strengths and Difficulties Questionnaire was – 1 (–2, 1) and 0 (–1, 1) ($P < 0.01$). Five FGDs revealed multiple positive effects on anger management, conduct, self-awareness, and responsible behavior. All 10 teachers viewed life skills education (LSE) positively.

CONCLUSIONS: LSE positively affects adolescents' socio-emotional functioning, but more extended periods of exposure are needed to demonstrate discernible change. The feasibility of implementation depends on the syllabus and based on health policies.

Keywords:

Adolescent, curriculum, education, mental health, problem-based learning, randomized controlled trial, social interaction

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Introduction

India has the largest adolescent population in the world, at 243 million.[1] Nearly 20% of the Indian population belongs to the age group of 10–19 years, meaning every fifth person in India is an adolescent.[2] Risky behaviors and self-harm are high among adolescents.[3,4] Psycho-social stressors compounded by a lack of coping skills and resilience are present as antecedents in

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almost all suicide attempts among adolescents.[5] Because most adolescents spend their formative years in school; therefore, teachers should adequately train them to handle life crises. The stress accentuates this need that school students suffer from peer pressure, bullying, academic competition, and performance anxiety. Heavy syllabi and parental expectations lead to symptoms of depression, anxiety, and suicidal tendencies.[6,7] Studies show that stress among adolescents is notably higher among those studying in government schools.[7,8]

Life skills are defined by United Nations Children's Fund (UNICEF) as "psychosocial abilities for adaptive and positive behavior that enable individuals to deal effectively with the demands and challenges of everyday life."[9] The World Health Organization (WHO) identifies five life skills that are relevant across cultures: decision-making and problem-solving; creative thinking and critical thinking; communication and interpersonal skills; self-awareness and empathy; coping with emotions and coping with stress.[10] In India, however, life skills education (LSE) remains largely ignored. It has been incorporated to a degree in the Central Board of Secondary Education (CBSE) curriculum and the National Education Program through select schools. However, the government school curriculum in most states is still lacking. Very few studies have looked into the impact of LSE in the Indian setting. According to the results of a qualitative study in CBSE schools, challenges in implementation seem to be prevalent.[11]

Puducherry is a Union Territory (UT) of India that reports one of the highest suicide rates in the country; hence, LSE gains extreme significance here. The study's primary objective was to assess the effect of LSE and the regular curriculum on self-esteem, self-efficacy, adjustment, and psycho-social functioning of students from co-educational government schools in Puducherry, compared to those receiving only the regular curriculum. The secondary objectives were to study the feasibility of such sessions in government schools and identify the factors affecting the effectiveness of the sessions.

Materials and Methods

Study design and setting

It was exploratory research using a mixed-method study (convergent parallel) design conducted in 2018–2019. The quantitative component was a two-arm parallel-group open-label cluster-randomized trial with a 1:1 allocation ratio.

Puducherry is the largest district of UT in terms of area (61%) and population size (76%). The overall adolescent population stands at 2 lakhs.[12] The male-to-female ratio and the gross secondary school enrolment ratio are favorable.[13] There are 899 schools in Puducherry, of which 90 are government high and higher secondary schools.[14] Different media of instruction available are Tamil, English, and French. The students of government schools primarily hail from families where parents are of low educational status and employed in elementary occupations.[8,15] The government curriculum does not have a dedicated section for LSE.

Study participants and sampling

The study was done among students who were in class (or standard) eight and attending English or Tamil medium co-educational government high schools in urban areas of Puducherry. Schools with a minimum of 30 students in each of two or more sections of a class were included to study the feasibility of the intervention in a medium-sized class. They were excluded from the public examinations due to the more significant academic load in the 9th and 10th classes. Only Tamil and English media co-educational schools were chosen to improve external validity. Government schools were selected for uniform curriculum and to avoid contamination from the private school in which LSE was implemented to a certain extent.

School-based cluster sampling was done. Of the five schools that were found to have more than 60 students in standard eight, distance-wise (around 100 m), two schools were very close to each other. Thus, 4 out of 19 co-educational English and Tamil medium schools catering to class eight students in urban areas of Puducherry were chosen to be included in the study [Figure 1]. Due to the lack of available data about the study setting, we used the results of a previous cross-sectional study done in Karnataka, India, within ongoing cohorts of students with and without LSE in their curriculum.[16] To assess the effect of the intervention on the major outcome of self-efficacy, the sample size was calculated to be 262 using OpenEpi v3.03 with a power of 80%, alpha error of 0.05, 1:1 allocation ratio, design effect of 2, attrition 10%, and mean (SD) of 31.84 (5.08) and 29.19 (5.11) for interventional arm (IA) and control arm (CA), respectively. Baseline data were analyzed for matched pair randomization. The baseline self-efficacy score was chosen for pairing. The schools were arranged in ascending order based on the mean score and divided into higher and lower score categories (i.e., two pairs crudely matched with self-efficacy scores). One school from each pair was assigned randomly (through lots) to IA and the other to CA [Figure 2].

Data collection tool and technique

Quantitative data collection was done using a structured questionnaire with five parts–sociodemographic variables, Rosenberg's Self-Esteem Scale, Generalized Self-Efficacy Scale, Pre-Adolescent Adjustment Scale, and Strengths and Difficulties Questionnaire (SDQ).[17-20]

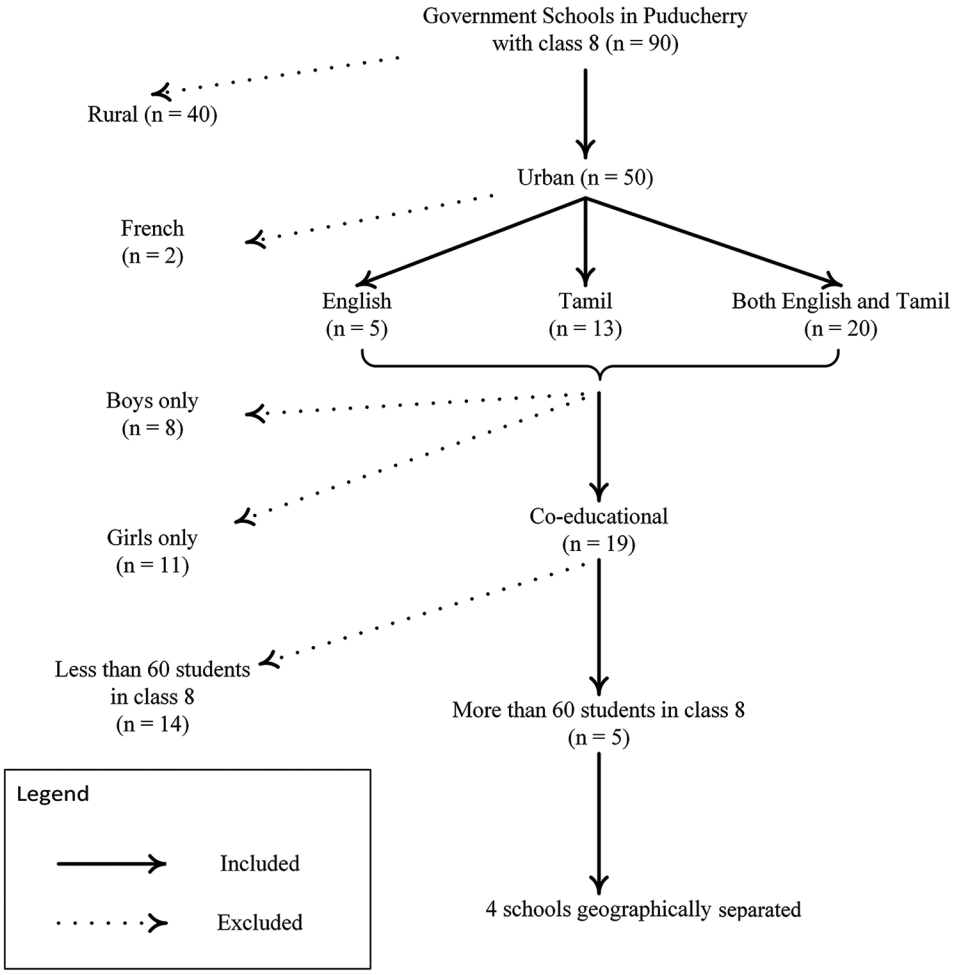

Figure 1: Flow chart showing a selection of eligible schools to study the effect of life skills education on students attending co-educational government high schools in urban Puducherry, India, 2019

A set of 10 sessions, each of 45 min weekly, was done for 6 months. The tool used was the Activity Manual for Teachers on Health Promotion using Life Skills Approach–eighth standard, developed by the Department of Psychiatry, National Institute of Mental Health and Neurosciences, Karnataka. Baseline data were collected at a pre-appointed time. Students were given detailed instructions on how to answer the questions, reassured that the answers would remain confidential, and encouraged to ask doubts. Forms were checked for completion and discarded if incomplete. The venue was decided after discussing it with the headmistresses. After randomizing the participants based on baseline data analysis (as explained above), an intervention was given to IA. No intervention was delivered to CA. An evaluation was done after 1 month, similar to how baseline data were collected.

Qualitative component

The qualitative part was descriptive and done through focused group discussions (FGDs) with students and group interviews (GI) with teachers. Data were collected from the IA schools only and concurrently with the end-line evaluation of the quantitative part. FGDs were conducted separately for boys and girls. Participants were chosen purposively based on the number of sessions attended and the level of interaction and peer group activities observed in the class. For the objective related to feasibility, GIs were conducted among teachers who taught classes in the eighth standard and were vocal and willing to participate. Sampling for FGDs and GIs continued until data saturation occurred. The interview team consisted of two female researchers trained in qualitative study methods, acting as a moderator and note-taker. No one other than participants and researchers was present during data collection. An interview guide was used to stimulate discussion, and probes were used wherever more relevant information was extracted. Before the interview, the interview guide was pilot tested among a few students and teachers (excluded from the main FGD and GI) to assess its appropriateness, and changes were made wherever necessary. All sessions were audio-recorded. There were no repeat interviews.

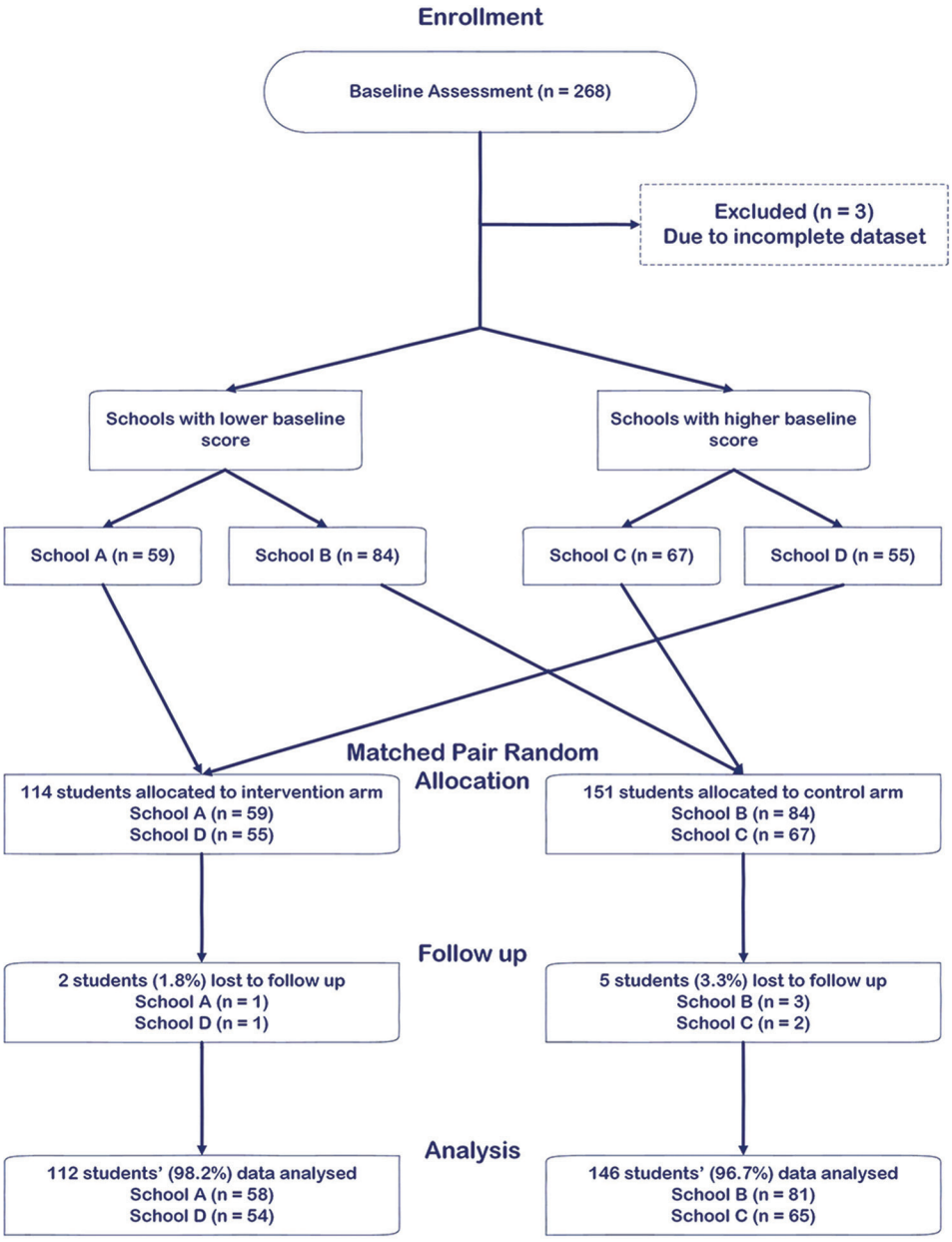

Figure 2: Consolidated Standards of Reporting Trials (CONSORT) diagram of participant flow

Statistical analysis

Data were entered using the EpiData software version 3.1. and analysis was done using Stata12 (StataCorp LP College Station, TX).[21,22] Differences in outcome variables (self-esteem, self-efficacy, adjustment, and psychosocial behavior) between baseline and after intervention in each of the groups were calculated, and the difference-in-differences (DID) technique was applied to account for any natural change in scores over time. Intention-to-treat analysis was followed. A P value < 0.05 was considered to denote significance.

The audio-recorded data were transcribed and translated on the same day. Transcripts were not shared with participants. The unit of analysis was the participants' statements. Atlas.ti software was used for the generation of codes and themes.[23] Analysis was founded on a positivist paradigm with inducto-deductive methodology. Recurrent themes that emerged were utilized in preparing an aschematic diagram.

Ethical consideration

The Institute Ethics Committee approved the study protocol and registered it with the Clinical Trial Registry of India (Reg. no. CTRI/2018/03/012795). Assent was obtained from all adolescent participants and written informed consent from the teachers and parents of adolescents before enrolment into the study and before

each session of FGD and GI. There was low risk involved as this study was not invasive. However, there was a minor increase over minimal risk as the probability of harm or discomfort anticipated was greater than ordinarily encountered in the routine daily activities of an adolescent student due to the introduction of a new curriculum.

Results

A total of 265 participants were randomly allocated to either IA (n = 114) or CA (n = 151). At follow-up, 112 responded in the IA arm (response rate 98.2%), and 146 responded in CA (response rate 96.7%) [Figure 2]. The sociodemographic characteristics of the 258 participants are described in Table 1. Participants' mean age (SD) was 13 (1) years in both groups. The representation of males was higher in IA (n = 72, 64.3%) compared to CA (n = 83, 56.9%); 21 (14.4%) and 10 (8.9%) participants in the CA and IA, respectively, had lost a parent. None of the fathers in the CA held the position of manager or professional, and more than half (n = 68, 52.3%) were involved in elementary occupations such as selling goods

Table 1: Baseline characteristics of class eighth students attending co-educational government high schools in urban areas of Puducherry, India, 2019 (n=258)

Characteristics	IA, *n* (%)*	CA, *n* (%)*	*P*†
Total	112 (43.4)	146 (56.6)	
Gender			0.23
Male	72 (64.3)	83 (56.9)	
Female	40 (35.7)	63 (43.1)	
Loss of parent			0.40
Father	8 (7.1)	16 (11.0)	
Mother	2 (1.8)	5 (3.4)	
Neither	102 (91.1)	125 (85.6)	
Educational status of father‡			0.31
No formal education	4 (3.7)	9 (6.8)	
Lower primary (1-5)	8 (7.4)	12 (9.1)	
Upper primary (5-8)	21 (19.4)	31 (23.5)	
Secondary (9-10)	49 (45.4)	62 (47.7)	
Higher secondary (11-12)	16 (14.8)	11 (8.3)	
Graduate and above	10 (9.3)	6 (4.6)	
Education status of mother§			0.30
No formal education	5 (4.9)	14 (10.8)	
Lower primary (1-5)	4 (3.9)	11 (8.5)	
Upper primary (5-8)	21 (20.6)	30 (23.1)	
Secondary (9-10)	56 (54.9)	56 (43.1)	
Higher secondary (11-12)	12 (11.8)	14 (10.8)	
Graduate and above	4 (3.9)	5 (3.9)	
Occupational status of father‖			0.03**
Unemployed	7 (6.7)	14 (10.8)	
Elementary occupations	45 (43.7)	68 (52.3)	
Machine operators and assemblers	19 (18.4)	13 (10.0)	
Craft and trades workers	17 (16.5)	28 (21.5)	
Agricultural workers	5 (4.8)	1 (0.8)	
Services and sales workers	5 (4.8)	5 (3.8)	
Professionals	3 (2.9)	0 (0)	
Managers	2 (1.9)	0 (0)	
Occupational status of mother¶			0.27
Homemaker	39 (38.2)	69 (48.9)	
Elementary occupations	38 (37.3)	51 (36.2)	
Machine operators and assemblers	10 (9.8)	8 (5.7)	
Craft and trades workers	6 (5.9)	7 (4.9)	
Agricultural workers	1 (0.9)	0 (0)	
Services and Sales	4 (3.9)	6 (4.2)	
Clerical support workers	2 (1.9)	0 (0)	
Associate professionals	1 (0.9)	0 (0)	
Professionals	1 (0.9)	0 (0)	

IA intervention arm, CA control arm. *Column percentage, †Chi-squared test, ‡data missing for 19 participants, §data missing for 26 participants, ‖data missing for 2 participants; father expired for 24 participants, ¶data missing for 8 participants; mother expired for 7 participants, **P<0.05

on streets and public places and taking care of offices. Both arms were comparable ($P > 0.05$) in their baseline characteristics except for the occupational status of the father ($P = 0.03$).

The effect of the intervention on quantitative variables can be seen in Table 2. The mean (SD) difference between baseline and end-line for IA and CA was 0.3 (4.4) and – 0.1 (4.0) for self-esteem ($P = 0.38$), 0.03 (6.0) and – 1.1 (6.1) for self-efficacy ($P = 0.12$), and -0.04 (3.5) and – 0.05 (4.3) for adjustment ($P = 0.73$), respectively. Similarly, the median (interquartile range [IQR]) difference in the SDQ-Conduct parameter was – 1 (–2,1) and 0 (–1,1) ($P < 0.01$). A value of 0–3 in the SDQ-Conduct sub-scale is considered normal, whereas a value of 4 reflects clinically significant problems; hence this change can be regarded as relevant. There was no statistically significant difference in the other SDQ scales.

Table 2: Effect of life skills education on psycho-social parameters among class eight students attending co-educational government high schools in urban areas of Puducherry, India, 2019 (*n*=258)

Variable	Mean (SD)/median (IQR)		*P**
	IA	CA	
Total	112	146	
Self-esteem			
Baseline	27.1 (2.7)	27.1 (3.7)	
End-line	27.4 (3.8)	27.0 (3.5)	
Difference	0.3 (4.4)	-0.1 (4.0)	0.38
Self-efficacy			
Baseline	31.2 (5.0)	30.8 (5.6)	
End-line	31.2 (5.5)	29.6 (5.3)	
Difference	0.03 (6.0)	-1.1 (6.1)	0.12
Adjustment			
Baseline	21.7 (3.2)	22.0 (3.6)	
End line	21.7 (2.8)	21.9 (3.8)	
Difference	-0.04 (3.5)	-0.05 (4.3)	0.73
Total difficulties score			
Baseline	14 (11 to 19)	16 (11 to 20)	
End line	14 (9 to 19)	16 (12 to 20)	
Difference	-1 (-4 to 3)	-0.5 (-4 to 2)	0.81
Emotional symptoms score			
Baseline	4 (2 to 5)	4 (3 to 5)	
End line	4 (2 to 5)	4 (3 to 6)	
Difference	0 (-1 to 1.5)	0 (-2 to 1)	0.06
Conduct score			
Baseline	4 (3 to 5)	4 (2 to 5)	
End line	3 (2 to 4.5)	4 (2 to 5)	
Difference	-1 (-2 to 1)	0 (-1 to 1)	<0.01†
Hyperactivity score			
Baseline	4 (2 to 5)	4 (2 to 5)	
End line	3 (2 to 5)	4 (3 to 5)	
Difference	0 (-1 to 1)	0 (-1 to 1)	0.32
Peer problem score			
Baseline	3 (2 to 5)	4 (2 to 5)	
End line	3 (2 to 5)	3 (2 to 5)	
Difference	0 (-1 to 1)	0 (-1 to 1)	0.71
Pro-social behavior score			
Baseline	8 (6 to 10)	9 (7 to 10)	
End line	8 (6 to 10)	8 (6 to 10)	
Difference	0 (-1 to 1)	0 (-2 to 1)	0.10

IA intervention arm, CA control arm, SD standard deviation, IQR interquartile range. *Independent *t*-test for variables self-esteem, self-efficacy and adjustment; Mann-Whitney *U* test for other variables, †$P<0.05$

A total of 42 students participated in the qualitative data collection in the form of five FGDs, each lasting for 30 to 45 min. Four were males, and six were females in the two GIs conducted. Three teachers each handled Science and Tamil, two handled English and the rest handled Social Science and Mathematics. Their ages ranged from 35 to 60 years. The conceptual framework of LSE is shown in Figure 3.

A. Effect of LSE on socio-emotional functioning

Self-confidence, **self-awareness,** and **social responsibility** were significant categories related to self-esteem, whereas conflict management and decision-making pointed toward enhanced self-efficacy.

"In the football camp, we thought we would lose. but later we felt confident, like the boy in the video. felt that we could win, and we won!" (Student, male)

"I had the habit of throwing food wrappers out of the window while traveling in bus. but now I have stopped doing that." (Student, male)

"You blindfolded me. and then the boys were shouting, some saying left and some saying right… When something like that happens, we must think and decide for ourselves. People will keep changing what they say. But we should be careful, and listen to those who care about us, like our parents" (Student, female)

The study participants, boys and girls, identified the session related to sex education as one of the most important ones as it was perceived as a lacuna. In addition to gaining knowledge, they exhibited openness in discussing the issue with family and peers and talking to elders about any sexual harassment they faced. Although schools have posters on these topics, students reported an inclination to avoid them.

"The last class was taken by that (brother) was very useful. that's when I learned many things. No one talks to us about all this" (Student, male)

"I told my mother about the things you said. And she said she wanted to talk to me about the same. now I feel I can talk to her (openly) about such things." (Student, female)

Anger management was identified as a valuable skill by both girls and boys. Conduct betterment was identified by boys alone as they tended to make more problems in their classrooms.

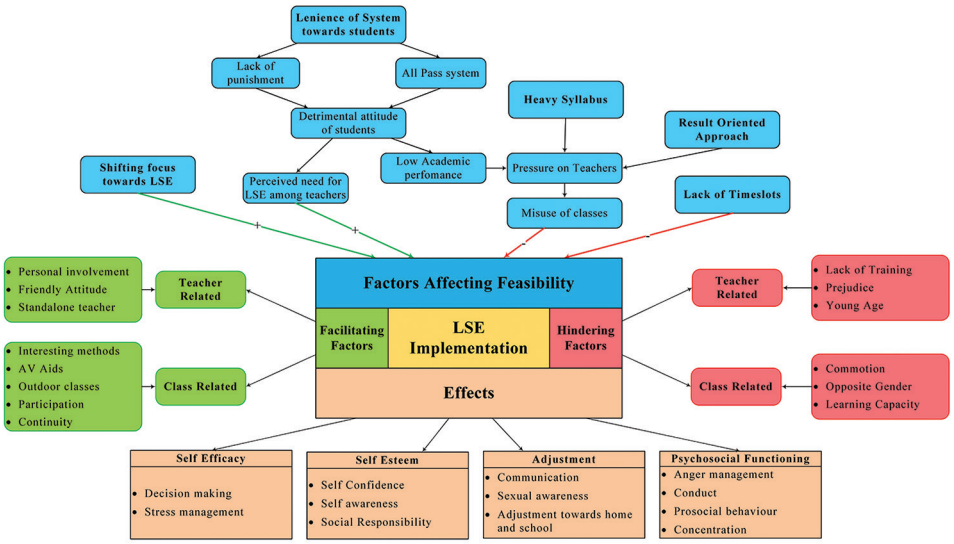

Figure 3: Conceptual framework of life skills education (LSE) implementation among students attending co-educational government high schools in urban areas of Puducherry, India, 2019. AV, audio-visual

"A boy hit me in school. Normally I would hit back, but instead I decided not to and reported the incident to my teacher" (Student, male)

"I used to talk back to my mother and father, and they would hit me. if they ask me not to go somewhere, I would say that I would go there. I do not do that nowadays" (Student, male)

B. Factors affecting the effectiveness of LSE

Facilitating factors

The factors facilitating the classes identified by students were linked to both class-related topics and teacher characteristics. The use of methods that invited active participation from the student was considered to have a positive effect. Setting the classes outdoors and creating healthy competition with opportunities to win prizes were identified as facilitating factors for improved student participation.

"Some boys sit at the back thinking, you are speaking something unrelated to us. And they will start playing. But if you ask more questions and give assignments to them, they will listen, because they do not want to look foolish by not knowing the answers"(Student, female)

For the most part, students seemed aware of most of the content, but interaction with the students on a personal basis was perceived as the deciding factor in inculcating learning.

"You were friendly, so we liked the classes. If teachers are strict, it will not be good" (Student, male)

"The ability to form a connection is not the same for all students, and so the skill of the teacher matters" (Social Science teacher, male, 35)

Hindering Factors

The students identified the class-related factors that inhibited learning to be commotion, larger groups, and disparity in the cognitive ability of various students. A hindering factor that both boys and girls affirmed was the presence of the opposite gender. Although it was a co-educational school, the students were raised in conservative backgrounds, thus interaction between girls and boys was minimal. This made the girls not forthcoming during sessions with discussion. In such situations, a stratified approach by inviting answers specifically from both groups was made by the researcher found to be effective.

"When ask us to read a story or write an answer, some kids do not understand, and they become scared of making spelling mistakes. Please tell the story. Otherwise, those who are weak (in reading) will get bored and lose interest." (Student, male)

A teacher-related hindering factor had a known teacher handling the sessions. The students felt threatened by prejudice and lack of confidentiality.

"Some teachers are okay. But they would discuss everything in the staff rooms and tell the others what we said. That would make us shy about opening up" (Student, male)

The concept of appointing a separate person to handle LSE exclusively was met with a mixed response from teachers. Some teachers felt that a known teacher might hamper implementation by failing to capture the students' interest. Some opined that it might be better, but not practical. Others strongly opposed the idea, citing that an existing teacher can handle the class better because they would know students' backgrounds.

"There will be challenges on the side of the government, definitely. It is tedious, creating a new post, recruiting new teachers, definitely they would have second thoughts about it." (Tamil teacher, female, 40)

"The teachers at the school alone should do it. outsourcing can be done, but then the kids will not take it seriously; like an occasional function or a free period" (Tamil teacher, male, 45)

C. Feasibility of LSE implementation

The positive and accepting attitude of the teachers was found to be a factor favoring LSE implementation. Most teachers identified LSE as essential for various reasons ranging from detrimental academic performance and adverse socio-economic backgrounds to curbing sexual curiosity. The withdrawal of moral and vocational education from the syllabus, coupled with an all-pass system and teachers' incapacitation, was considered to have hurt students' behavior.

"When we grew up, things were different. we were taught about morals and values. we respected our teachers" (Tamil teacher, female, 40)

All factors postulated to have a negative role in the feasibility of implementation were directly related to the current trends in the educational system. The recent introduction of the National Eligibility cum Entrance Test (NEET) caused a change in the syllabus to include more content in line with national guidelines, which was perceived to be an unnecessary burden for the average student. There was a slight divide in teachers' perspectives here. The teachers dealing with non-language subjects were apprehensive about the amount of work expected of students. Those dealing with English and Tamil acknowledged that the syllabus was heavy but maintained that it need not deter LSE implementation.

"Because of NEET, all students are expected to learn everything. Only a small fraction goes into the medical field, but we are still expected to teach all the students the entire thing. They suddenly change the books, but the children do not adapt easily. And in a hurry to finish the syllabus on time, we keep repeating, 'is this record done, 'is that work done?" (Science teacher, male, 52)

The result-oriented approach adopted by the authorities was another hindering factor. Teachers are expected to spend as much time as possible making sure that marks improve and pass rates in the 10th exam are high. Hence, even if LSE were implemented, the class might end up being utilized for other purposes, and the intention would not be served.

"It is not possible in the current educational system because of the new syllabus. It is fully oriented toward scoring marks…. Even if we manage to have LSE classes, teachers will use those hours for their classes…. What can we do when you keep such a class and also place pressure on us for results? When I get an extra hour, would I think about life skills or making them some extra sums and score some more marks?" (Mathematics teacher, Female, 44)

One factor that all teachers agreed on was the lack of an available time slot.

"Sure, weekly one hour is good, but which subject will you sacrifice? Right now, each subject gets an equal number of hours, so if you cancel one, those teachers will protest." (Science teacher, male, 50)

Discussion

Results from the current study showed convergence in quantitative and qualitative results. Quantitative data showed a slightly positive trend in the psychological domains in the IA but not a statistically significant change. However, many essential sub-themes and categories emerged concerning the outcome variables in the qualitative component. Three reasons may explain this.

Firstly, during the FGD with students, a few admitted that some cognitively weaker students found the questions challenging to navigate and proceeded to copy answers or tick randomly. These factors suggest that the quantitative assessment may have failed to pick essential changes. Secondly, research shows that questionnaire-based group data collection among adolescents in school settings has a chance of under-reporting concerning sensitive behaviors, as students feel threatened about their teachers gaining access to answers. Additionally, questionnaires may not accurately capture questions requiring reflection or abstract reasoning.[24] Thirdly, the sample size for the present study was based on a cross-sectional study.[16] Consequently, the current study was underpowered to pick up a statistical significance.

Similar to the current study, most studies done in other countries and India point toward a positive shift in psycho-social functioning, often with statistical significance.[16,25-34] The perceived increase in the ability to deal with stress and conflicts is significant, as interpersonal separation and disputes are vital precipitants of adolescent suicide.[35] Parental divorce and emotional lability are found to be shared among households attached to blue-collar jobs.[36]Although socioeconomic class could not be ascertained, the occupational status pointed toward a large proportion of the students hailing from the lower economic strata of society, denoting the ability to cope with stressors as essential.

The degree to which adolescents talk openly with their parents is found to be a determinant of high-risk behaviors such as substance abuse and sexual encounters.[37,38] However, communication was perceived to be better only by girls, similar to some previous studies that found that females showcase better emotional disclosure than males toward parents and peers.[39] The openness shown by participants toward sexuality is in line with the evidence from Africa that shows that LSE helps in making a person vocal regarding the violence faced.[40]

The evaluation of implementation in a CBSE school also revealed similar perceived and actual barriers in implementation, identical to our study. Periods allotted to LSE were used at times for other subjects in case of time constraints. In addition, the time required for preparing for classes was an additional burden perceived by teachers. Academic commitments and extra-curricular activities were also found to hurt implementation.[11]

Similar to our results, the WHO identifies participatory teaching methods as important in delivering sessions effectively. The methods by which it can be done are incorporated in WHO documents.[41,42] These are also reflected in the CBSE manual on LSE for teachers.[43] Class-related factors that inhibited learning identified by students are similar to the findings of UNICEF, which suggested that overcrowded classrooms and insufficient teachers lead to ineffective sessions.[44] Another study also reports that teachers who handle classes with a prejudiced mindset are found to be a threat to the effective implementation of the program.[45] Teachers identified lack of training as an important determinant of LSE effectiveness, similar to the earlier research as well as UNICEF and WHO guidelines.[42,43,46]

There was a striking disparity between what students and teachers perceived of a stand-alone LSE instructor. In terms of effectiveness, students' perspectives should gain more weight. However, regarding practicality and ease of implementation, the same teachers may be allowed to take the sessions after training.

The study has several strengths. It is the first randomized controlled trial on this topic in India. Qualitative methodology was incorporated to get a comprehensive understanding of the impact. The study explores the implementation's feasibility, which has not been done in many studies. Because teachers' views, who act as significant stakeholders in implementation, are incorporated, the results may guide policymaking.

Limitations

Limitations include lack of missing and attrition data imputation. The sample size was inadequate to capture statistical significance. A cluster sampling method was employed so that peer influences may have impacted results. The LSE sessions were conducted in larger groups of 30 students, which may have limited the impact. The quantitative results may be positively skewed due to desirability bias in the school setting. The self-administered questionnaire may have impaired the validity of academically weaker students. The schools with less than 60 students were excluded from the study. Thus, the impact of implementation on smaller groups could not be ascertained.

Recommendations

This study shows that school-based LSE does have an impact on the socio-emotional functioning of students. In particular, conduct and coping behaviors are found to have become better. Therefore, LSE implementation may be advocated in schools. Students in government schools have a higher need for LSE due to their backgrounds and contemporary negative exposures as identified by teachers as well as students themselves. Hence, implementation in those schools needs to be given priority. To implement LSE effectively, adequate steps need to be taken to make the syllabus optimal and shift the focus from results to comprehensive learning. A dedicated time slot is essential. If not possible to incorporate into the current system by displacing another subject, after-school hours may be used for the same. The teachers who impact LSE need to be adequately trained and should have a good rapport with students for the successful implementation of the program. All teachers should be sensitized regarding the importance of sessions. If possible, a stand-alone teacher should be present for LSE. If the same is not possible, adequate measures need to be taken to make sure that teachers provide a non-threatening environment for learning. Activity-based learning with a focus on participation by all students and with the inclusion of many games and audio-visual aids should be given importance. Care must be taken so that classes are not misused for other subjects and that the content does not get diluted over time. Anger management and sexual education are two topics that students are most in need of. Hence, these topics have to be definitely incorporated into the LSE curriculum. Further research needs to be done in the field of LSE for optimization of implementation.

Conclusion

This exploratory study among 258 students and 10 teachers revealed different aspects of implementing LSE. LSE sessions were found to be helpful for students in terms of improvement in multiple facets of socio-emotional issues. Various class-related and teacher-related factors were found to affect the effectiveness of sessions, both positively and negatively. A change in the current educational system based on

health policies with a reduction of the syllabus and a shift in approach is necessary to incorporate LSE successfully as part of the curriculum.

Ethical code

This research work underwent complying with the ethical code/principles, namely, (a) principle of confidentiality, (b) principle of consent, (c) principle of non-maleficence, (d) principle of justice, (e) principle of autonomy, and (f) principle of beneficence.

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Conflicts of interest

There are no conflicts of interest.

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