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ORIGINAL ARTICLE

Adolescent Mental Health and Teachers' Health Literacy: A Mixed-Methods Exploration and Assessment of Coping and Support Mechanisms in Puducherry Schools

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Abstract

Background: Globally, adolescents face a significant mental health burden, with unique challenges in India. Teachers are pivotal in early identification and support but often lack adequate mental health literacy (MHL). This mixed-methods study assessed the prevalence of mental health problems among adolescents, their coping strategies, and teachers' MHL in Puducherry, India. **Methods**: A convergent parallel design was employed. Cross-sectional surveys using the Strengths and Difficulties Questionnaire (SDQ) were conducted with 420 adolescents (10-19 years) from 4 schools (2 urban, 2 rural). Focus group discussions (FGDs; n=32 students) and in-depth interviews (IDIs; n=16 teachers) explored coping mechanisms, support systems, and MHL. Quantitative data were analysed using SPSS (v21); qualitative data underwent thematic analysis via NVivo 12. **Results**: 35.2% (n=148) of adolescents screened positive for significant mental health difficulties. Peer problems (43.8%), emotional difficulties (25.7%), conduct problems (24%), and hyperactivity (15.7%) were prevalent. Rural adolescents reported significantly higher domestic violence exposure (28.8% vs. 17.1%; p=0.004) and lower psychosocial support (13.6% vs. 39.2%; p<0.001). Key qualitative themes included: 1) Academic/family stress as primary triggers; 2) Predominant use of maladaptive coping (avoidance, emotional suppression); 3) Critical barriers (teacher training gaps, stigma, absent counselling); 4) Variable teacher MHL reliant on experience, not formal training. **Conclusion**: High adolescent mental health needs coexist with insufficient teacher capacity and school support systems. Integrating standardized MHL training into teacher education, deploying school counsellors under national programs (e.g., Ayushman Bharat), and implementing student resilience programs are urgent priorities.

Keywords: Adolescent wellbeing, school health, mental health literacy, teachers

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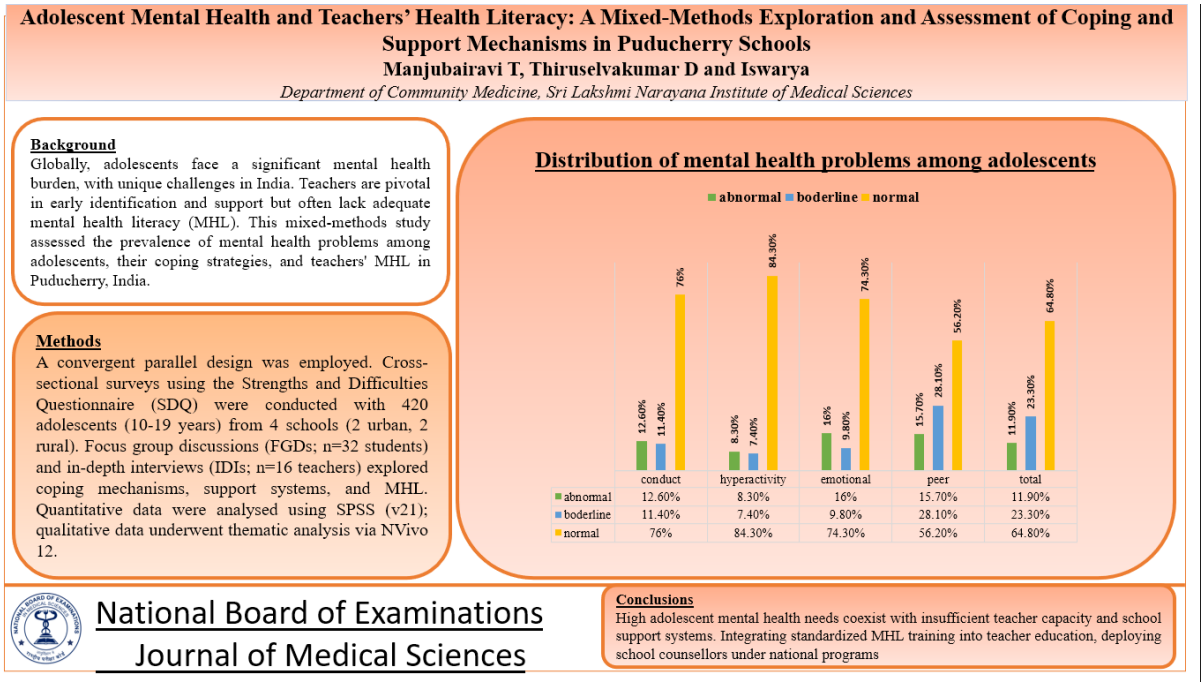
Graphical Abstract



Introduction

Adolescence, a complex and dynamic phase between childhood and adulthood, collectively constitute approximately 23% of the global population, with projections indicating 1.3 billion adolescents (ages 10 to 19) and 0.6 billion young adults (ages 20 to 24) by 2025, notably with India housing the largest adolescent demographic of 397 million [1]. Adolescence represents a formative stage for social, emotional, and cognitive development, a critical window shapes behaviours, relationships, and coping skills that often persist into adulthood. The development of social and emotional behaviours essential for mental health occurs during adolescence. These include learning to control emotions, establishing healthy sleep habits, exercising regularly, and improving interpersonal, coping, and problem-solving abilities [1], have historically received little attention in terms of global health policy and financing [1].

Adolescence is the period of emergence of most mental health disorders. Recent evidence reveals that adolescent mental health problems affect 10-20% of youth worldwide with substantial gaps in prevention, intervention, and support systems. The prevalence of mental diseases in India was 7.3% and was almost equal in both sexes, in the age group of 13 to 17 years. Active interventions are needed for around 9.8 million adolescent Indians aged 13 to 17. In metropolitan areas, the prevalence of mental diseases was almost double (13.5%), compared to rural (6.9%) areas [2]. Despite recognition of this burden, crucial barriers remain: persistent stigma, myths about causation (including supernatural beliefs), and insufficient access to professional mental health services—all of which delay early identification and intervention efforts. These obstacles not only inhibit effective care but also exacerbate psychological distress and negative outcomes [3]. Early identification and intervention help to

achieve favourable outcomes for most students.

Globally, coping mechanisms among adolescents range from adaptive strategies (problem-solving, seeking social support, mindfulness) to maladaptive behaviours (avoidance, substance abuse, self-isolation) [4]. Inappropriate coping strategies, including drug use, liberation from society, and self-harm, are not uncommon [5]. Among adolescents who experience ongoing stress, designing successful interventions to support resilience and mental health requires an understanding of adolescents' coping mechanisms.

Given their significant presence in educational settings, educators play a critical role in recognizing early signs of distress among adolescents and fostering supportive environments, with evidence indicating that enhanced teacher support correlates positively with improved mental health outcomes in teenagers [6]. Teachers have a valuable opportunity to provide mental health education to students in a range of contexts, ultimately benefiting their campus experience; thus, they are able to recognize students at risk for psychological issues and work with colleagues to carry out necessary interventions aimed at promoting both mental health and academic success, while also experiencing difficulties due to limited training and a lack of mental health awareness that constrains their ability to effectively confront these pressing challenges.

Teachers' mental health literacy, grounded in interpersonal interaction theory, is crucial for their professional development and the mental well-being of adolescents, significantly influencing student mental health through teacher-student relationships, as teachers promote positive interactions and problem-solving strategies, enhancing the well-being of both teachers and students and serving as a key outcome of effective classroom instruction [8]. Another study found that even among educated populations, myths such as mental illnesses being caused by supernatural forces persist [9]. Enhancing mental health literacy among teachers is crucial for their own wellness and for cultivating a nurturing atmosphere for students.

The critical importance of adolescent mental health and the indispensable participation of educators are recognized; however, there is a significant absence of localized, detailed research throughout different regions of India. National assessments indicate an overall deficiency in comprehensive school mental health initiatives and qualified personnel throughout India [6].

To date, limited research has holistically explored the full spectrum and prevalence of mental health issues, their interaction between students' coping strategies, available support systems, and the literacy and preparedness of teachers to address emerging mental health concerns and additionally the systemic barriers (cultural, institutional, and personal) inhibiting rapid, effective mental health support in school contexts, considering urban versus rural dynamics. This study aims to address these gaps using a mixed-methods approach, combining quantitative prevalence data with qualitative insights from students and teachers, to inform the design of culturally relevant interventions.

The choice of a mixed-methods design is a deliberate methodological strength, allowing for both precise prevalence estimation and a nuanced, in-depth understanding of underlying

psychosocial determinants, coping strategies, and systemic barriers from the perspectives of both adolescents and teachers. Quantitative data (e.g., SDQ scores, prevalence) identifies the extent and nature of problems, while qualitative data (FGDs, IDIs) explains the underlying reasons and lived experiences, including barriers like stigma and lack of training [1]. This synergy is crucial for developing interventions that are not only statistically supported but also culturally sensitive, contextually relevant, and practically feasible. By elucidating the complexities of mental health in this specific Indian context, the study offers valuable insights transferable to similar low- and middle-income settings grappling with the "hidden burden" of adolescent mental health issues.

Methodology

Study design and setting

The study employed a convergent parallel mixed-methods design, which is a robust approach for comprehensively understanding complex public health phenomena. This design involved an initial quantitative cross-sectional survey among school-going adolescents, followed by a qualitative component comprising focused group discussions (FGDs) with students and in-depth interviews (IDIs) with school teachers. The rationale for this sequence is to first establish the prevalence and statistical associations of mental health issues and mental health literacy quantitatively, and then to use qualitative methods to delve deeper into the underlying reasons, lived experiences, perceptions, and contextual factors that explain these quantitative patterns. For instance, quantitative findings on specific mental health challenges or coping strategies could inform the lines of inquiry in the subsequent qualitative phase, allowing for a richer, more nuanced exploration of the “why” and “how” behind the observed numerical data.

Study Population and Sampling

The study was conducted from July 2023 to October 2023 in four schools (two rural and two urban) selected from the service areas of a tertiary care hospital in Puducherry. The study included two target groups: school-going adolescents aged 10-19 years and school teachers. For the quantitative component, a sample size of 420 students was estimated using the formula

$n=Z2p(1-P)/d2$, with a proportion (P) of 53.6% derived from a prior study in Ghana. While this formula provides a statistical basis, it is important to acknowledge that using a prevalence rate from Ghana as a proxy for Puducherry, India, assumes a degree of epidemiological similarity that may not fully hold. The multistage sampling technique, involving stratification by grades and systematic sampling within each school, for achieving a representative student sample was done.

Concerning the qualitative phase, purposive sampling included a cohort of 48 participants (32 students and 16 teachers). Data collection persisted until saturation was achieved. To enhance qualitative rigor, it is essential to specify the criteria for purposive sampling. For students, criteria encompassed diversity in age, gender, academic performance, and urban/rural background. For teachers, the criteria involved years of experience, subjects taught, and school type (urban/rural). This generally entails detailing the process by which new themes ceased to arise from interviews or focus groups, signifying adequate data collection for understanding the phenomenon under investigation.

Data collection tool and procedure

The data were collected after obtaining permission from the institute's ethics committee. Students were approached during their free period on different dates, and the lead researcher was present to clarify any doubts. Data were collected from 420 students using a strengths and difficulties questionnaire (SDQ) distributed by hand to students after getting informed consent and assent. It is a 25-item behavioural screening questionnaire with 5 scales, with a total score of 0-40. FGDs were conducted among 7- 8 students and IDIs from 3-5 teachers from each school using a semi-structured interview guide till the point of saturation, and it was moderated by 2 researchers. All the interviews were conducted in Tamil, and they were audio recorded.

Data analysis

Quantitative data were processed in MS Excel and subsequently analysed through SPSS version 21. The outcomes were articulated through a combination of descriptive and inferential statistical frameworks. Continuous variables were represented as means alongside standard deviations, while categorical variables were expressed in terms of percentages and proportions. Comparative analyses between groups were conducted utilizing the chi-square test. A p-value threshold of <0.05 was deemed statistically significant. The qualitative data underwent analysis through both deductive and inductive approaches utilizing NVivo 12.

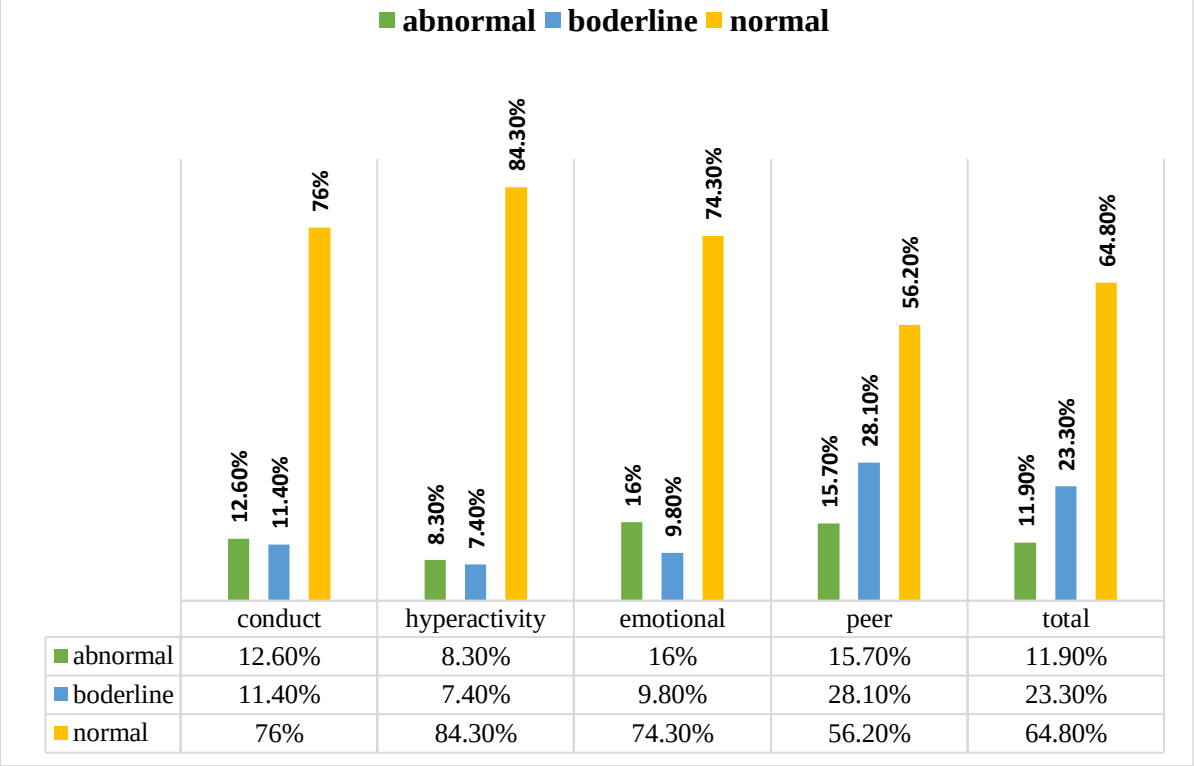
Results

The study sample included 420 school-going adolescents distributed between an urban area with 222 participants and a rural area with 198 participants. Table 1 shows the demographic characteristics of the study participants. The study participants consisted mainly of adolescents from 10 to 19 years with an almost equal gender distribution between male (57.1%) and female groups (42.9%). The results indicated that rural students differed significantly from urban students in their residential status distribution and parent educational level and number of siblings, as well as domestic violence exposure and school bullying and psychosocial support levels ($p < 0.05$).

Table 1. Socio-demographic characteristics of study participants based on the geographical distribution of schools

Variable	Total (n=420)	Urban (222)	Rural (198)	P-Value
Age in years				0.978
10-13	136 (32.4)	72 (32.4)	64 (32.3)	
14-17	146 (34.8)	78 (35.1)	68 (34.3)	
18-19	138 (32.8)	72 (32.5)	66 (33.4)	
Gender				0.866
Male	240 (57.1)	126 (56.8)	114 (57.6)	
Female	180 (42.9)	96 (43.2)	84 (42.4)	
Religion				0.591
Hindu	389 (92.6)	205 (92.3)	184 (93)	
Muslim	24 (5.7)	12 (5.4)	12 (6)	
Christian	7 (1.7)	5 (2.3)	2 (1)	

Grade				0.993
9th	103 (24.5)	55 (24.8)	48 (24.2)	
10th	116 (27.6)	61 (27.5)	55 (27.8)	
11th	108 (25.7)	56 (25.2)	52 (26.3)	
12th	93 (22.2)	50 (22.5)	43 (21.7)	
Residential status				**<0.0001**
Home	304 (72.4)	132 (59.5)	172 (86.9)	
Hostel/relative's house	116 (27.6)	90 (40.5)	26 (13.1)	
Parents marital status				0.610
Living together	394 (93.8)	207 (93.2)	187 (94.4)	
Separated/widowed	26 (6.2)	15 (6.8)	11 (5.6)	
Parents education				**0.001**
Literate	202 (48.1)	135 (60.8)	83 (41.9)	
illiterate	218 (51.9)	87 (39.2)	115 (58.1)	
Academic performance				0.995
Poor	126 (30)	67 (30.2)	59 (29.8)	
Average	138 (32.9)	73 (32.9)	65 (32.8)	
Good	156 (37.1)	82 (36.9)	74 (37.4)	
Number of siblings				**0.005**
No siblings	46 (11)	34 (15.3)	12 (6.0)	
<2	156 (37.1)	84 (37.8)	72 (36.4)	
≥2	218 (51.9)	104 (46.9)	114 (57.6)	
Substance Abuse				0.983
Yes	19 (4.5)	10 (4.5)	9 (4.5)	
No	401 (95.5)	212 (95.5)	189 (95.5)	
Smartphone usage per day				0.087
<2 hours	166 (39.5)	80 (36)	86 (43.4)	
2-4 hours	238 (56.7)	130 (58.6)	108 (54.6)	
>4 hours	16 (3.8)	12 (5.4)	4 (2)	
Domestic violence				**0.004**
Yes	95 (22.6)	38 (17.1)	57 (28.8)	
No	325 (77.4)	184 (82.9)	141 (71.2)	
Bullied in school				**0.005**
Yes	74 (17.6)	50 (22.5)	24 (12.1)	
No	346 (82.4)	172 (77.5)	174 (87.9)	
Suicidal thoughts				0.970
Yes	57 (13.6)	30 (13.5)	27 (13.6)	
No	363 (86.4)	192 (86.5)	171 (86.4)	
Psychosocial support				**0.000**
Yes	114 (27.2)	87 (39.2)	27 (13.6)	
No	306 (72.8)	135 (60.8)	171 (86.4)	



	conduct	hyperactivity	emotional	peer	total
abnormal	12.60%	8.30%	16%	15.70%	11.90%
boderline	11.40%	7.40%	9.80%	28.10%	23.30%
normal	76%	84.30%	74.30%	56.20%	64.80%

Figure 1. Distribution of mental health problems among adolescents

Figure 1 illustrates that a notable proportion of students reported emotional difficulties, conduct problems, hyperactivity, and peer-related issues. In total, 148 students (35.2%) were identified with significant mental health issues on screening. Emotional difficulties were reported by 108 students (25.7%), conduct problems by 101 (24%), hyperactivity by 66 (15.7%), and peer problems by 184 (43.8%).

Table 2 shows the chi-square association between socio-demographic factors and mental health domains. Students with separated/widowed parents showed higher rates of emotional and peer problems. Hyperactivity was significantly higher in only children compared to those with siblings and those with lower grades of education. Substance use and domestic violence exposure were significantly associated with total difficulties, conduct issues, hyperactivity, and emotional problems. School bullying and suicidal thoughts were strongly correlated with emotional and peer problems. Excessive smartphone use (>4 hours/day) showed a significant association with conduct and peer problems. Students with no psychosocial support had more peer problems.

Table 2. Association of mental health problems and sociodemographic determinants using the chi-square test

Variable	Total difficulties (yes) n=148	P value	Emotional (yes) n=108	P value	Conduct (yes) n=101	P value	Hyperactivity (yes) n=66	P value	Peer (yes) n=184	P value
Age										
10-13	54 (39.7)	0.105	33 (24.3)	0.819	32 (23.5)	0.609	22 (16.2)	0.354	56 (41.2)	0.389
14-17	55 (37.7)		37 (25.3)		39 (26.7)		27 (18.5)		61 (41.8)	
18-19	39 (28.3)		38 (27.5)		30 (21.7)		17 (12.3)		67 (48.6)	
Gender										
Male	78 (32.5)	0.175	67 (27.9)	0.233	51 (21.3)	0.121	41 (17.1)	0.373	116 (48.3)	**0.031**
Female	70 (38.9)		41 (22.8)		50 (27.8)		25 (13.9)		68 (37.8)	
Religion										
Hindu	142 (36.5)	0.133	91 (23.4)	**0.001**	98 (25.2)	0.143	60 (15.4)	0.775	172 (44.2)	0.449
Muslim	4 (16.7)		13 (54.2)		2 (8.3)		5 (20.8)		8 (33.3)	
Christian	2 (28.6)		4 (57.1)		1 (14.3)		1 (14.3)		4 (57.1)	
Grade										
9th	42 (40.8)	0.384	24 (23.3)	0.088	23 (22.3)	0.081	16 (15.5)	**0.003**	37 (35.9)	**0.014**
10th	42 (36.2)		23 (19.8)		27 (23.3)		8 (6.9)		43 (37.1)	
11th	37 934.3)		37 (34.3)		35 (32.4)		2 (25)		53 (49.1)	
12th	27 (29)		24 (25.8)		16 (17.2)		15 (16.1)		51 (54.8)	
Residential status										
Home	111 (36.5)	0.376	82 (27)	0.339	76 (25)	0.460	51 (16.8)	0.333	147 (48.4)	**0.002**
Hostel	37 (31.9)		26 (22.4)		25 (21.6)		15 (12.9)		37 (31.9)	
Parents marital status										
Living together	136 (34.5)	0.229	96 (24.4)	**0.014**	91 (23.1)	0.076	60 (15.2)	0.287	167 (42.4)	**0.022**
Separated/ widowed	12 (46.2)		12 (46.2)		10 (38.5)		6 (23.1)		17 (65.4)	
Parents education										
Illiterate	72 (35.6)	0.867	66 (32.7)	**0.002**	51 (25.2)	0.580	34 (16.8)	0.545	91 (45)	0.622
Literate	76 (34.9)		42 (19.3)		50 (22.9)		32 (14.7)		93 (42.7)	
Academic performance										
Poor	51 (40.5)	0.337	36 (28.6)	0.515	37 (29.4)	**0.012**	17 (13.5)	**0.011**	61 (48.4)	0.400
Average	46 (33.3)		31 (22.5)		39 (28.3)		32 (23.2)		60 (43.5)	
Good	51 (32.7)		41 (26.3)		25 (16)		17 (10.9)		63 (40.4)	
Number of siblings										
No siblings	22 (47.8)	0.165	14 (30.4)	0.196	10 (21.7)	0.902	13 (28.3)	**0.017**	19 (41.3)	0.936
<2	52 (33.3)		46 (29.5)		37 (23.7)		27 (17.3)		69 (44.2)	
≥2	74 (33.9)		48 (22)		54 (24.8)		26 (11.9)		96 (44)	
Substance Abuse										
Yes	12 (63.2)	**0.009**	5 (26.3)	0.951	18 (94.7)	**0.000**	5 (26.3)	0.194	9 (47.4)	0.749
No	136 (33.9)		103 (25.7)		83 (20.7)		61 (15.2)		175 (43.6)	
Smartphone usage per day										

<2 hours	53 (31.9)	0.137	37 (22.3)	0.141	38 (22.9)	**0.047**	22 (13.3)	**0.039**	60 (36.1)	**0.020**
2-4 hours	86 (36.1)		64 (26.9)		55 (23.1)		38 (16)		114 (47.9)	
>4 hours	9 (56.3)		7 (43.8)		8 (50)		6 (37.5)		10 (62.5)	
Domestic violence										
Yes	47 (49.5)	**0.001**	38 (40)	**0.000**	27 (28.4)	0.257	38 (40)	**0.000**	43 (45.3)	0.745
No	101 (31.1)		70 (21.5)		74 (22.8)		28 (8.6)		141 (43.4)	
Bullied in school										
Yes	35 (47.3)	**0.017**	37 (50)	**0.000**	18 (24.3)	0.951	20 (27)	**0.003**	53 (71.6)	**0.000**
No	113 (32.7)		71 (20.5)		83 (24)		46 (13.3)		131 (37.9)	
Suicidal thoughts										
Yes	30 (52.6)	**0.003**	27 (47.4)	**0.000**	27 (47.4)	**0.000**	15 (26.3)	**0.018**	31 (54.4)	0.083
No	118 (32.5)		81 (22.3)		74 (20.4)		51 (14)		153 (42.1)	
Psychosocial support										
Yes	38 (33.3)	0.618	24 (21.1)	0.182	22 (19.3)	0.164	17 (14.9)	0.783	44 (38.6)	0.189
No	110 (35.9)		84 (27.5)		79 (25.8)		49 (16)		140 (45.8)	

Table 3: Thematic analysis of teachers' mental health literacy and students' coping mechanisms

Theme	**Sub-Themes**	**Sample Quotes**	**Frequency**
1. Triggering factors for mental health issues	- Behavioural changes - Emotional withdrawal - academic stress - family issues	"Many students seem withdrawn lately." (T1) "Exams give me chest pain… its embarrassing." (S4) "I cry alone… I don't tell my parents." (S2)	Teachers: 2/5 Students: 3/6
2. Coping Mechanisms Used by Students	- Avoidance (e.g., gaming, social media) - Emotional suppression - Seeking support from friends or teachers	"I just scroll through Instagram." (S1) "Sometimes I cry alone." (S2) "My class teacher notices." (S3)	Students: 6/6
3. Barriers to Support	- Lack of training for teachers - Social stigma - Lack of counselling services	"I've not attended any training in mental health." (T1) "It's embarrassing to talk about it to school students." (S4) "We need school counsellors." (T4)	Teachers: 4/5 Students: 4/6
4. Teachers' mental health literacy	- awareness through experience - lack of formal training - willingness to learn	"I usually just listen to them. I feel helpless sometimes" (T1)	Teachers: 3/5

		"I have no training in mental health." (T3)	
5. Desired Improvements	- Inclusion in teacher training - Accessible school-based mental health services - Safe space for students	"Mental health should be in our training modules." (T5) "I wish we had someone to talk to without judgment." (S5)	Teachers: 3/5 Students: 4/6

Students, along with teachers, identified academic strain and family difficulties, together with social detachment, as the main causes of their emotional struggles. Teachers provided evidence of behavioural alterations, which included withdrawal habits along with irritability and absenteeism patterns that occurred specifically during examination times. **T3 (Teacher, 4 years' experience)** said, "One girl started skipping school regularly after her parents divorced. She never said anything, but you could see it."

Students highlighted three main sources of stress that including performance anxiety as well as fear of failure, and insensitivity from adults. **S2 (Student):** "Sometimes, I cry alone. I don't want to tell my parents—they won't get it. They'll just say I'm overreacting."

Teachers demonstrated different comprehension levels regarding mental health, which stem from their varied knowledge backgrounds, their personal experiences, and formal training. Most teachers expressed a lack of preparedness when it came to identifying or assisting with mental health problems. "Some children burst out crying or stop engaging. I feel helpless sometimes. I don't know what to do." Said by **Teacher 2.**

The study participants used various coping strategies, which mainly consisted of solitary avoidance techniques, including social media distraction, video game involvement, and emotional suppression. The students rarely mentioned contacting adults for assistance.

"When I get anxious, I just scroll through Instagram or play games. It takes my mind off things." **Student 1**

"If I am sad, I will remain silent and won't talk to anyone in my class." **Student 5**

Teaching staff, along with students, pointed out important obstacles that prevented an effective response to mental health problems.

"It's hard to talk to teachers or parents. They might say I'm overreacting or just scold me." – **Student 2**

"I've had no training in how to help a student with emotional issues. I usually just listen, but sometimes I worry it's not enough." – **Teacher 1**

The combination of inadequate mental health services in schools, together with a stigma attitude and limited awareness about mental health, became dominant barriers. Students experienced fear of judgment alongside teachers displaying their inability to deal with student mental health issues.

Discussion

This study aligns with national and international literature documenting a high prevalence of emotional, behavioural, and

peer-related problems in adolescent school populations. The findings underscore the significant mental health challenges faced by school children in Puducherry, revealing prevalent coping mechanisms and the current levels of mental health literacy among teachers. Research shows an extensive occurrence of mental health issues that intensifies among groups with specific demographics, along with environmental stress that exists without sufficient institutional support.

35.2% of students reported to have mental health symptoms in the screening, and the most frequently found problems were connected to peers (15.7%), followed by emotional challenges (16%), behaviour concerns (12.6%), and hyperactivity (8.3%). The observed results follow prior Indian studies, which documented an equivalent amount of prevalence. The evaluation of Kerala school children by the SDQ determined peer and behavioural problem prevalence at 13% and 8.3% [11]. The studies by Devika et al. revealed considerable depression and anxiety symptoms among school-going children in Tamil Nadu, which demands immediate identification and intervention strategies [12].

While previous studies have identified family conflict, socio-economic disadvantage, and school environment as risk factors, this work substantively adds to the field by examining urban–rural differences in risk and support, showing higher vulnerabilities among rural students attributable to less-educated parents, reduced psychosocial support, and increased exposure to domestic violence. Residents in rural areas who were young adults experienced elevated risks of domestic abuse with no accessible psychosocial support systems around them. Children developed mental health issues because of parental illiteracy and homes run by single parents who were widowed or separated, alongside substance use and bullying in school, which combined with academic difficulties. The collected data validated results previously obtained from various Indian research studies. Singh et al. analysed how emotional distress interferes with teens who come from families with unstable backgrounds that maintain a low socioeconomic status [13,14]. Chaudary et al reported that adolescent depression develops from family conflicts plus communication breakdown, while also exposing children to violent environments [15].

Students who experienced bullying at school faced increased rates of suicidal thoughts and difficulties with both peers and behaviour, although this connection was recognized as significant for all emotional and social questions. The research findings from Shinde et al. in Bihar confirm that bad school environments and student victimization lead to mental health problems [16]. Young people who spent longer than 4 hours daily using their smartphones experienced an increase in both conduct and peer problems. Research results published in both Tamil Nadu and Maharashtra establish that teenage students who spend more time on screens face sleep disruptions, together with irritability and decreased attention capabilities [17,18].

A small share of respondents (4.5%) admitted to substance use, yet this behaviour is strongly related to conduct problems and total psychological distress, which confirms the findings of Sekar et al. from their study about behavioural issues within Tamil Nadu youth [19]. The students mainly employed avoidance methods such as social media and emotional suppression,

including solitary crying, that combine with peer or teacher informal help for their mental health needs.

According to Parikh et al.'s research, Indian adolescents regularly choose avoidance and distraction, together with denial, as their primary coping methods because they lack appropriate resources or awareness [20]. A small number of interviewed students found benefits in yoga and teacher checking in, but insufficiently organized mental health programs hindered their abilities to properly deal with stressors. The situation emphasizes the necessity to establish formal resilience and life skills training programs for students in the current school curricula.

The teachers in our research discovered emotional and behavioural alterations in students, yet they lacked adequate training and lacked necessary support tools for assistance. Staff members desired to learn about mental health literacy through professional development and stressed the requirement of having school counsellors.

The research by Pratiksha et al. establishes that teachers in West Bengal have limited mental health literacy, although they exhibit strong support intentions toward their students [21]. Brief teacher training courses, according to Siraj et al., proved effective by helping educators spot and assist psychological issues among students [22].

The recognition-to-intervention delay underscores the requirement for systemic mental health education to be integrated into teacher education programs and unveiling the systemic barriers such as stigma, lack of training/resources, absent counselling infrastructure—that impede both early identification and timely response, reinforces the importance of school-based mental health frameworks advocated by leading bodies such as the WHO School Mental Health framework and Indian Psychiatric Society.

Conclusion

This comprehensive mixed-methods study underscores the high burden of mental health challenges among school-going adolescents in Puducherry, marked by suboptimal coping mechanisms and limited psychosocial support. This further underscore the critical importance of integrating mandatory policy-driven, multi-tiered mental health interventions within educational institutions by equipping educators with mental health knowledge and establishing protective environments conducive to students' psychological health. Educators, in collaboration with their students, are often the first to identify mental health challenges in the school setting; however, their capacity to address these issues is hindered by a lack of training, pervasive negative stereotypes, and inadequate formal support systems. School development initiatives ought to entail the integration of mental health curricula for instructors, the creation of counselling services through the appointment of counsellors in educational settings as part of the Ayushman Bharat-school health initiative, and the establishment of life skills programs aimed at promoting supportive learning climates. Such investments yield dual advantages, as they not only enhance the emotional well-being of students but also contribute to improved academic and social outcomes. Subsequent efforts should focus on formulating policies that incorporate research-informed training programs to strengthen these initiatives, ultimately

leading to enhanced resilience in future generations. Addressing these needs will help create safer, more supportive schools and position future research to evaluate the impact of structured interventions at scale.

Statements and Declarations

Conflicts of interest

The authors declare that they do not have conflict of interest.

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