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Assessment of the Association Between Common Health Symptoms and Experiences of Bullying in School-Aged Children

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ABSTRACT

Background: This comparative study examined the frequency, types, and associated health symptoms of bullying among 500 school children aged 8-12 years from three distinct schools- Krishna English Medium School (Boys & Girls/ English), Premlatai Chavan Kanya Shala (Only Girls /Marathi), and Jeevan Shikshan Mandir (Boys & Girls /Marathi) during the academic year.

Methods: Using a semi-structured interview method with both students and their parents/caretakers, data were collected on bullying experiences, their frequency, and a range of physical and emotional symptoms. Statistical analysis, including Odds ratio and $\chi 2$ tests, was employed to determine the significance of associations, with p-values less than 0.05 considered significant.

Results: The study revealed varying incidences of bullying across schools, with Jeevan Shikshan Mandir showing the highest overall rate (38%) and Premlatai Chavan Kanya Shala the lowest (18%). Bullying patterns differed by medium of instruction and school type, with co-educational schools exhibiting a higher incidence (35.94%) compared to girls' schools (18%). Teasing and keeping names were identified as predominant forms of bullying. Moreover, a significant association was found between bullying and various symptoms such as headache, tummyache, bodyache, disturbance in sleep, nightmares, feeling sad, preferring to stay isolated, and fear of going to school, with some symptoms being almost exclusively attributed to bullying in affected students.

Conclusion: This study underscores the multifaceted nature of bullying and its profound impact on children's well-being. Timely recognition and targeted interventions are crucial to address both its psychological and physical consequences.

Key-words: Bullying, School children, Incidence, Types of bullying, Health symptoms, Comparative study

INTRODUCTION

Bullying is a pervasive public health apprehension with profound implications for both psychological and physical well-being in childhood and adolescence. Defined as repeated, intentional aggressive behaviour characterised by a power imbalance, it manifests in various forms, direct, relational, and increasingly online [1,2]. While psychological outcomes, such as depression, anxiety, PTSD, and suicidal ideation, have garnered considerable research attention, there is a growing recognition that physical symptoms also signal the lived distress of bullied children [3].

Epidemiological studies have documented that bullying impacts a significant proportion of the student population. For example, a survey across five schools in India reported that 60.4% of children aged 8–14 experienced bullying, with a majority enduring verbal or appearance-based harassment. Similar international research, such as a 28-country analysis including over 123,000 adolescents, revealed weekly bullying prevalence ranging from 6% to over 40%, with frequency positively correlated with an increase in both physical and psychological symptoms. The advent of cyberbullying further compounds concern: studies now attribute trauma-related symptoms, including post-

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traumatic stress, to online victimisation, underscoring that no form of bullying should be considered trivial [4].

Mounting evidence suggests that bullied children frequently experience a diverse array of physical complaints. In a large sample (n=2,766) aged 9–12, victims had significantly increased odds of headache (OR=3.0), abdominal pain (OR=3.2), sleeping problems (OR=2.4), and fatigue (OR=3.4) compared with non-victims. Another school-based Indian study of 213 children found that victimisation was strongly associated with somatic symptoms such as headache (60.7%), chest pain (35.7%), stomach-ache (33.9%), and musculoskeletal pain [5]. Meanwhile, a nationwide Icelandic survey involving 10,626 adolescents reported that 79% of bullied students experienced weekly pain, including headaches, stomach-aches, backache, and neck/shoulder soreness, compared to 57% among non-bullied peers. These results echo those from cross-sectional studies in Australia and Norway, which similarly document elevated rates of psychosomatic complaints among both victims and bullies [6].

Alongside somatic symptoms, bullying is firmly linked to psychological distress. Meta-analytic evidence reveals that bullied children are approximately 2.8 times more likely to develop depressive symptoms compared to non-bullied peers, with bully–victims at even greater risk (OR=3.19). Bullying exposure also correlates with sleep disturbances, anxiety, loneliness, and low self-rated health. Further, the connection between bullying and self-harm or suicidal tendency has been consistently observed, with direct associations to higher risk for self-injurious thoughts and behaviours [7].

Stress-induced physiological processes offer plausible pathways linking bullying to physical complaints. Chronic exposure to peer victimisation can dysregulate stress response systems, manifesting as headaches, gastrointestinal disturbances, sleep disruption, and musculoskeletal pain. Indeed, evidence suggests disturbances in inflammatory markers like IL-6 and C-reactive protein among socially victimised youth. Biopsychosocial frameworks posit that persistent exposure to interpersonal stress activates allostatic load, contributing to a spectrum of somatic symptoms [8].

Recognising the link between bullying and somatic symptoms has vital implications for paediatric healthcare and school health services. Paediatricians and clinicians should view recurrent physical complaints, such as headaches, stomach pain, fatigue, and sleep problems, as potential harbingers of fundamental bullying rather than purely biomedical concerns. School-based screenings should systematically integrate inquiries about peer victimisation when children present with such symptoms [9].

MATERIALS AND METHODS

Resign Design- This comparative study involved the interview of 500 school children aged 8-12 years during the academic year. The interviews with children were conducted individually or in the presence of a parent or caretaker, who was also interviewed. Three specific schools were selected for this study: Krishna English Medium School, Premlatai Chavan Kanya Shala, and Jeevan Shikshan Mandir. The study utilised a survey-based method with semi-structured interviews. A semi-structured health interview proforma, adapted from a design by Olweus, was developed. This questionnaire was administered to students in both English and Marathi. A separate questionnaire, also prepared in English and Marathi, was used for parents. Before the student interviews, the idea of bullying was explained in detail to ensure comprehension. Following this explanation, students were asked to confirm their understanding of bullying before proceeding with questions about their own experiences. The questions were presented in a reliable sequence, but the interview approach maintained flexibility. If a child's response indicated a potential health problem, additional evaluation was conducted during the interview.

Inclusion Criteria

- School children aged 8-12 years.
- Students attending Krishna English Medium School (Standards III to VII), Premlatai Chavan Kanya Shala (Standards V to VII), and Jeevan Shikshan Mandir (Standards III and IV).
- Parents or caretakers of the interviewed children.

Exclusion Criteria

- Students or parents/caretakers who did not understand the concept of bullying after the explanation.
- Symptoms of headache, tummyache, and body ache were considered relevant only if experienced once a week or more frequently.

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Statistical Analysis- The collected data was compiled and analysed. Calculations included the prevalence of bullying, frequency of bullying, and the types of bullying reported. Common health symptoms were analysed for the frequency of bullying using the Odds ratio with a 95% confidence interval and $\chi 2$ analysis. For all statistical tests, $p<0.05$ was considered to indicate statistical significance. The proformas used for data collection are detailed in the appendix.

RESULTS

In examining specific schools, Krishna English Medium School reported that 34% of its 200 interviewed students had experienced bullying, while 66% had not. Premlatai Chavan Kanya Shala showed a lower incidence, with 18% of 130 students bullied. Jeevan Shikshan Mandir had the highest bullying rate among the individual schools, with 38% of 170 students reporting bullying. English medium schools, with 200 students interviewed, had a bullying incidence of 34%. In contrast, Marathi medium schools, with a larger sample size of 300 students, showed a slightly lower bullying rate of 30%. This suggests that while English medium schools had a higher percentage of bullied students, the absolute number of bullied students was higher in Marathi medium schools (89 vs. 68). This differentiates between co-educational and girls' schools. Co-educational schools, interviewing 370 students, reported a bullying incidence of approximately 35.94%, with 64.06% not bullied. Girls' schools, with 130 students interviewed, had a significantly lower bullying rate of 18%, indicating a safer environment in terms of bullying compared to co-educational institutions (Table 1).

Table 1: Incidence of Bullying Across Different School Categories

Name of school	Number of students interviewed	Number of students bullied (%)	Number of students not bullied (%)
Krishna English Medium School	200	68 (34)	132 (66)
Premlatai Chavan Kanya Shala	130	24 (18)	106 (82)
Jeevan Shikshan Mandir	170	65 (38)	105 (62)
Medium of school	Number of students interviewed	Number of students bullied (%)	Number of students not bullied (%)
English	200	68 (34)	132 (66)
Marathi	300	89 (30)	211 (70)
School	Number of students interviewed	Number of students bullied (%)	Number of students not bullied (%)
Co-educational	370	133 (35.94)	237 (64.06)
Girls	130	24 (18)	106 (82)

The Krishna English Medium School shows varying bullying rates across standards. Standards III and IV have relatively low bullying percentages at 25.5% and 23.5% respectively. However, there is a notable increase in bullying incidence in Standard V (40.5%) and a peak in Standard VI (46%). Standard VII shows a small decrease to 34%. Overall, for this school, 34% of the 200 interviewed students reported being bullied. The Premlatai Chavan Kanya Shala exposes a very low bullying rate in Standard V (5%), but a significant jump to 46% in Standard VI. Standard VII then shows a sharp drop in bullying to 8%. The total bullying incidence for this school across the interviewed standards is 18% of 130 students. The data suggests that bullying in this school might be particularly concentrated in Standard VI. The report for Jeevan Shikshan Mandir highlights a stark contrast between standards. Standard III reports an unusually low bullying rate of just 2% among 50 students. However, Standard IV shows a dramatic increase, with 53% of 120 students reporting bullying. This school has an overall bullying incidence of 38% among 170 interviewed students, heavily influenced by the high rate in Standard IV (Table 2).

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Table 2: Standard-Wise Incidence of Bullying Across Three Schools

Standard	Number of students interviewed	Number of students bullied (%)	Number of students not bullied (%)
III	47	12 (25.5)	35 (74.5)
IV	51	12 (23.5)	39 (76.5)
V	42	17 (40.5)	25 (59.5)
VI	35	16 (46)	19 (54)
VII	25	11 (34)	14 (56)
Total	200	68 (34)	132 (66)
Standard	Number of students interviewed	Number of students bullied (%)	Number of students not bullied (%)
V	39	2 (5)	37 (95)
VI	39	18 (46)	21 (54)
VII	52	4 (8)	48 (92)
Total	130	24 (18)	106 (82)
Standard	Number of students interviewed	Number of students bullied (%)	Number of students not bullied (%)
III	50	1 (2)	49 (98)
IV	120	64 (53)	56 (47)
Total	170	65 (38)	105 (62)

The total number of bullied students is 68, with 41 (33.1%) being boys and 27 (35.52%) being girls, indicating a somewhat higher percentage of bullied girls overall. Looking at individual standards, in Standard III, girls show a significantly higher percentage of bullying (42.9%) compared to boys (12%). This tendency reverses sharply in Standard VI, where boys experience a much higher rate of bullying (53.8%) than girls (22.2%). Standard V and VII also show higher percentages of bullied boys than girls. The distribution of not-bullied students generally mirrors the inverse of these tendencies. A total of 65 students were bullied, comprising 30 boys (41.7%) and 35 girls (35.7%). While the complete percentage of bullied boys is higher, the absolute number of bullied girls is greater. A striking observation is in Standard III, where only one girl (2.6%) was bullied, and no boys reported bullying. However, in Standard IV, there's an affected increase in bullying for both genders, with 50% of boys and 56.7% of girls reporting being bullied. This indicates a significant issue with bullying at the Standard IV level in this particular school (Table 3).

Table 3: Gender and Standard-Wise Incidence of Bullying in Two Schools

Standard	Number of bullied students Boys (%)	Girls (%)	Total	Number of not-bullied students Boys (%)	Girls (%)	Total
III	3 (12)	9 (42.9)	12	22 (88)	13 (57.1)	35
IV	7 (20)	5 (29.4)	12	27 (80)	12 (70.6)	39
V	11 (42.3)	6 (37.5)	17	15 (57.7)	10 (62.5)	25
VI	14 (53.8)	2 (22.2)	16	12 (46.2)	7 (77.8)	19
VII	6 (46.2)	5 (41.7)	11	7 (53.8)	7 (58.3)	14
Total	41 (33.1)	27 (35.52)	68	83 (66.9)	49 (64.48)	132
Standard	Number of bullied students Boys (%)	Girls (%)	Total	Number of not-bullied students Boys (%)	Girls (%)	Total
III	0 (0)	1 (2.6)	1	12 (100)	37 (97.4)	49
IV	30 (50)	34 (56.7)	64	30 (50)	26 (43.3)	56
Total	30 (41.7)	35 (35.7)	65	42 (58.3)	63 (64.3)	105

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The types of bullying prevalent in English and Marathi medium schools. "Teasing" appears to be the most common form of bullying in both mediums, affecting 76.5% of students in English medium and 85.4% in Marathi medium. "Keeping names" is also highly prevalent, particularly in Marathi medium (80%) compared to English medium (44%). "Bad words" are more frequently reported in the Marathi medium (43.8%) than in the English medium (20.5%). Physical harm ("Being physically hurt") is reported by 16% in English medium and 15.7% in Marathi medium. Less frequent types include "Threatened," "Spreading rumours about you," and "Frozen out / isolated," with the latter showing no incidence in English medium. The statistical analysis of symptoms using Chi-square (χ2) and P-values, indicating the significance of the association between certain symptoms and possibly bullying. Most symptoms. Symptoms such as headache, tummyache, bodyache, vomiting, disturbance in sleep, nightmares, feeling sad, preferring to stay lonely, falling sick frequently, frequently absent in school, fear of going to school, frequent physical trauma, and frequent tearing of clothes show a highly significant association (P-value < 0.001 or < 0.025). This suggests that these symptoms are strongly correlated with the condition being studied. However, "Has failed" and "Bites nails" show a weaker or no significant association (P-value > 0.05). The incidence of various symptoms in bullied versus non-bullied students, specifically within Marathi medium schools. This table quantifies how many bullied and non-bullied students experience each symptom, and also attempts to show symptoms that are due to bullying. For example, while 70 students (23.3%) reported headaches in total, only 4 (13.3%) of these were attributed to bullying. Particularly, "Feels sad," "Prefers to stay lonely," and "Fear of going to School" are shown to be exclusively or almost exclusively due to bullying, with 100% of the affected students in these categories being those who were bullied. "Tummyache" and "Frequent physical trauma" also show a relatively high percentage of incidence directly attributable to bullying (33.3% and 66.7% respectively) (Table 4).

Table 4: Analysis of Bullying Types and Associated Symptoms in Schools

Number	**Type of bullying**	**English medium Frequency (%)**	**Marathi medium Frequency (%)**		
1	Bad words	14 (20.5)	39 (43.8)		
2	Being physically hurt	11 (16)	14 (15.7)		
3	Threatened	4 (6)	4 (4.5)		
4	Frozen out / isolated	0	2 (2.25)		
5	Teasing	52 (76.5)	76 (85.4)		
6	Keeping names	30 (44)	71 (80)		
7	Spreading rumours about you	2 (3)	7 (7.9)		
8	Any other way of bullying	1 (1.5)	0		
Serial Number	Symptoms	χ2 value	p-value		
1	Headache	20.42	< 0.001		
2	Tummyache	11.85	< 0.025		
3	Bodyache	18.79	< 0.001		
4	Vomiting	24.92	< 0.001		
5	Disturbance in sleep	17.25	< 0.001		

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6	Nightmares	26.46	< 0.001		
7	Feels sad	45.61	< 0.001		
8	Prefers to stay lonely	66.77	< 0.001		
9	Falls sick frequently	78.41	< 0.001		
10	Frequently absent from School	21.24	< 0.001		
11	Has failed	6.26	> 0.05		
12	Fear of Going to School	139.85	< 0.001		
13	Bites nails	3.2	> 0.05		
14	Frequent physical trauma	166.12	< 0.001		
15	Frequent tearing of clothes	73.37	< 0.001		
Serial Number	Symptoms	Symptoms in Bullied Students	Nonbullied students	Total (%) $	Symptoms actually due to bullying (%)
1	Headache	30	40	70 (23.3)	4 (13.3)
2	Tummyache	18	36	54 (18)	6 (33.3)
3	Bodyache	20	25	45 (15)	4 (20)
4	Vomiting	5	3	8 (2.7)	1 (20)
5	Disturbance in sleep	7	4	11 (3.7)	3 (42.9)
6	Bed wetting	0	4	4 (1.3)	0
7	Nightmares	22	25	47 (15.7)	3 (13.6)
8	Feels sad	2	0	2 (0.67)	2 (100)
9	Prefers to stay lonely	2	0	2 (0.67)	2 (100)
10	Cannot concentrate on studies	0	4	4 (1.3)	0
11	Falls sick frequently	29	36	65 (21.7)	3 (10.3)
12	Frequently absent from School	2	4	6 (2)	0
13	Has failed	20	27	47 (15.7)	0
14	Fear of Going to School	5	1	6 (2)	5 (100)
15	Bites nails	16	30	46 (15.3)	0
16	Frequent physical trauma	3	1	4 (1.3)	2 (66.7)
17	Frequent tearing of clothes	1	0	1 (0.3)	0

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DISCUSSION

The present study highlights the significant association between bullying and the development of common health symptoms in school-aged children. These findings are consistent with a growing body of international literature suggesting that the adverse effects of bullying extend beyond psychological trauma and often manifest as somatic complaints such as headache, abdominal pain, sleep disturbances, fatigue, and musculoskeletal discomfort.

Bullying acts as a chronic psychosocial stressor, triggering physiological responses that can manifest in physical symptoms. The biopsychosocial model of health explains how social experiences, such as peer victimization, may activate the hypothalamic–pituitary–adrenal axis, leading to the dysregulation of cortisol secretion, alterations in immune function, and increased inflammation [10,11]. These physiological changes can result in headaches, gastrointestinal disturbances, and sleep disorders, as observed in bullied children.

A prospective cohort study by Fekkes et al. revealed that bullying is significantly associated with the onset of somatic complaints such as headaches and stomachaches [12]. The study reported that victimised children were 2 to 3 times more likely to report physical symptoms compared to their non-bullied counterparts. Similarly, a meta-analysis conducted by Gini and Pozzoli emphasised the bidirectional relationship between bullying and health complaints, showing that bullied children have an increased risk of both psychological and physical morbidity [13].

In India, a study by Malhi et al. in a rural setting found a high prevalence of somatic symptoms among bullied students. The most commonly reported symptoms included headaches (60.7%), chest pain (35.7%), and stomachache (33.9%) [14]. These results are concerning, as many of these symptoms are often dismissed as minor or unrelated to psychosocial stress by healthcare providers. Failure to identify bullying as an underlying cause may lead to repeated medical consultations, unnecessary investigations, and increased healthcare utilisation without addressing the root problem.

The association between bullying and sleep disturbances is another critical finding supported by current literature. In a study by van Geel *et al*., bullying was linked to poor sleep quality, insomnia, and nightmares, which in turn increased the risk for emotional distress and somatic symptoms [15]. Sleep disturbances may further exacerbate existing physical complaints, creating a vicious cycle of deteriorating health and increasing vulnerability to further victimisation.

Longitudinal data from the Avon Longitudinal Study of Parents and Children also confirm that bullying in early life can have lasting health impacts into adulthood. Wolke et al. demonstrated that children exposed to frequent bullying had higher rates of chronic inflammation, suggesting long-term physiological consequences [16]. This underscores the importance of early identification and intervention to prevent the progression of stress-related health problems.

Psychological distress remains an essential mediator in the association between bullying and somatic symptoms. Studies have shown that bullying increases the risk of anxiety, depression, and post-traumatic stress symptoms, all of which are known contributors to the development of functional somatic syndromes [17]. In this situation, talking about the psychological sequelae of bullying may also alleviate somatic symptoms.

Gender differences in the health consequences of bullying have been noted in several studies. Girls are more likely to report more internalising symptoms such as headaches and stomachaches, while boys may display externalising behaviours such as aggression or substance use [18]. However, both genders are equally susceptible to the negative health impacts of bullying, and gender-sensitive approaches are needed for intervention.

Assuming the complex interplay between bullying and health, school-based screening programs should incorporate routine questions about peer victimisation, when assessing children presenting with recurrent somatic complaints. Paediatricians, school nurses, and mental health professionals should collaborate to provide integrated care that addresses both the physical and psychosocial needs of bullied children [19].

Preventive strategies, such as anti-bullying programs and resilience training, have shown promise in reducing both bullying behaviour and its associated health outcomes. Interventions like the KiVa program in Finland and the Olweus Bullying Prevention Program have been associated with reductions in bullying prevalence and improved student well-being [20].

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CONCLUSIONS

The findings of this study reinforce the evidence that bullying is not merely a social or psychological issue but a significant contributor to physical health complaints in children. Recognising bullying as an important social determinant of health is essential for early intervention and prevention of long-term morbidity. Future research should focus on longitudinal outcomes and evaluate the effectiveness of integrated school and healthcare interventions to mitigate the health impacts of bullying. Bullying is a complex phenomenon with varied manifestations and critical detrimental effects on children's physical and mental health. The results advocate for personalised anti-bullying strategies that consider school-specific situations, gender dynamics, and age-appropriate involvement, focusing not only on preventing overt acts of bullying but also on addressing the subtle and frequently ignored forms of verbal and social aggression. Future research could examine the effectiveness of specific intervention programs in mitigating these adverse outcomes and could further explore longitudinal impacts.

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