

Suicidal ideation in bully victimized school children and adolescents: a meta analysis

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Summary

In the recent years there has been increased attention to the association of bullying involvement and suicidal ideation in school going children and adolescents. This meta analytic study was conducted by online searching of articles using Pub Med data bases and Google scholar. Total 21 both USA based and non USA based studies were included and sample size were 219,929. We used the research term 'bullying', 'suicide', 'children', 'adolescence', 'school bullying', 'suicidal ideation' and by using the term 'cross sectional studies', from 2010 to 2013 for studies identification. One predictor bully victimization and one outcome suicidal ideation were analyzed. Inverse weighted average was measured to see the effect size and forest plot was applied for data presentation. All the steps of meta analysis were followed. Our pooled data showed increase risk of suicidal ideation in bully victim. The results showed that odd ratio of suicidal ideation was 2.18 in bully victims in USA based studies and 95% CI 2.12 to 2.24 and odds ratio of non USA based studies was 2.31 and 95% CI 1.73 to 3.09 whereas combined USA and non USA studies odd ratio was 2.6 and 95% CI 2.20 to 3.22. Findings concluded that bully victims had the increased risk of suicidal ideation.

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Introduction

Bullying can be defined as an aggressive act that is carried out by a group or an individual repeatedly and over time against a victim who cannot easily defend himself or herself.¹ Scientific report indicates that bullying can lead to serious mental and physical sequelae. This is in sharp contrast to the common belief that school bullying is a benign and "normal" part of the child and/ or adolescent experience. Victimized children are reported to have a myriad of clinical problems including bed wetting, sleep difficulties, anxiety, depression, school phobia, feelings of insecurity and unhappiness at school; they may also have low self- esteem, loneliness, isolation and somatic symptoms.²⁻⁹ In contrast, perpetrators of bullying reported to have more depression and are more likely to be involved with antisocial behaviors and legal problems later in adulthood.² Four main types bullying are distinguished: physical (e.g., assault), verbal (e.g., threats), relational (e.g., social exclusion) and indirect (e.g., spreading rumors).¹⁰ With the increased use of internet and mobile phones, a new form of bullying has emerged, often labeled 'cyber bullying'.¹⁰⁻¹⁴ In cyber bullying, aggression occurs via electronic forms of contact.¹³ Increased exposure

to the online environment has contributed to a heightened appreciation of the potential negative impact of cyber bullying.¹⁴ Recent cross-sectional studies have shown an association between cyber bullying victimization and mental health problems, and even between cyber bullying victimization and suicide.^{11,13,15,16} The few available longitudinal studies examining the relationship between traditional bullying and mental health problems or suicide (ideation) show that being a victim of traditional bullying increases the risk of developing mental health problems and committing suicide later in life.^{13,17-23} This review process focused on studies published between 2010 and 2015. However, some international data are included from certain notable studies, especially those that address narrower subtopics or notably contribute to theoretical or conceptual conversations. This meta analysis sought to first establish common reference points among different bodies of research, using primary studies along with meta-analyses that aggregate and analyze other research findings to address large-scale or generalizable trends. At times, especially when comparing research definitions or changes in the field over time, the review draws on reviews or book chapters to provide summaries of

themes and definitions. The document's is built by five researcher and make a consensus that present important research findings. Finally we aimed to see the association of bullying with suicidal ideation in School children and adolescence.

Materials and methods

This is a meta analytic study. Total 21 studies included purposively with total sample size 219,929. We included those cross sectional studies that were conducted in the years 2010 to 2015 and the studies that had measured the suicidal ideation following bully victimization were included. Multiple searched method was used to identify the studies. Endnote soft ware were used as a data bases. We also used Pubmed and Google scholar to identify our included studies. Terms used to include studies are 'bullying 'cyber bullying' 'traditional bullying' suicide and bullying 'suicidal ideation. Initially 398 studies were included and finally 21 studies met our inclusion criteria. Bullying was assessed based on CDCs uniform definition of bullying, several key components¹ and behavior should be considered when assessing bullying behavior. We coded those studies with bullying measurement and suicidality. Bullying measurement strategies are: 1. how behaviors were described by the authors was it called bullying 2. participants were given definition of bullying 3. how bullying assess through the definition provided to the students –have you bullied and 4. realibility of the bullying. Those studies assessed the suicidality on the basis of following, such as- i.

how was suicidality assessed in the study e.g two or more questions measuring factors associated with suicide such as internalization depression etc that were then summed into suicidality measure. yes/no question directly assessing suicidal thought or behaviors ii. was previously published suicidality scale/instrument used iii. what is the stated reliability for the suicidality instrument? iv. which component of suicidality are asses the study and v. who was the reporter or whatever assessment of suicidality was used e.g self report parent reporter. In this study we assessed one effect size, suicidal ideation by using the predictor bullying victimization between the USA based studies and non USA based studies. Inverse weighted effect size was measured and we used random effect model. Review manager (Revman 5.3) and software for comprehensive meta-analysis, CMA (free trial for 30 days) were used for measuring (log) odd ratio and sampling error and thus constructing the forest plot, which measured the odd ratio of individual study and 95% CI and it also measure pooled odd ratio and pooled 95% CI.

Results

In this meta analysis of 21 studies, USA and non USA based studies from the primarily selected studies were analyzed (Table 1). An inverse weighted average effect size was measured for each study (Figure 1, 2, 3). Most weighted study depends on more sample size (Figure 1, 2, 3 and Table 1). Study characteristics

Table 1: characteristic of the included USA and non USA studies

Authors, Year	Sample size	Mean Age (MA) Range/Grade (G)	Country
Bauman 2013 ²⁴	1491	G-9-12	USA
Bonanno 2010 ²⁵	399	MA 14.2	CANADA
Cheng 2010 ²⁶	9015	13-15 years	CHINA
Cui 2010 ²⁷	8778	11-17 years	CHINA
Espilage 2013 ²⁸	661	10-13years	USA
Gower 2013 ²⁹	128681	11-17 years	USA
Holt 2013 ³⁰	3096	NA	SINGAPORE
Hay 2010 ³¹	426	10-21years	USA
Heinbron 2010 ³²	493	11-14years	USA
Henry2013 ³³	2936	G-6	USA
Hepburn2012 ³⁴	1838	G -9	USA
Kessel 2012 ³⁵	20406	G-9	USA
Kowalski2013 ³⁶	931	11-19 years	USA
Mark 2013 ³⁷	4954	14-17 years	ESTONIA
Patric 2013 ³⁸	26523	G-8	USA
Rivers s 2013 ³⁹	1592	12-16	UK
Pranjic 2010 ⁴⁰	290	MA 17	BOSNIA
Romero 2013 ⁴¹	650	14-18	USA
Skapinaskis 2011 ⁴²	2431	16-18	GREECE
Turner 2013 ⁴³	1874	11-18	USA
Undheim 2013 ⁴⁴	2464	12-15	NORWAY

and country of the conducted study was described in Table 1. Our main result is described by the forest plot. Pooling of data of the 21 cross sectional studies showed odd ratio was 2.18 for USA based studies (Figure 2) and 2.31 of non USA based studies (Figure 3) and 95% CI 2.12 to 2.24 and 1.73 to 3.09 respectively

and combined USA and non USA studies odd 2.66 and 95% CI 2.2 to 3.22 (Fig 1). Though both group of studies have substantially heterogeneity I² 95% and 86% respectively (Figure 2, 3) but overall test effect were significant p<0.00001 (Z=54.89 df =11 for USA based studies and Z=5.66 and df=8 in non USA studies).

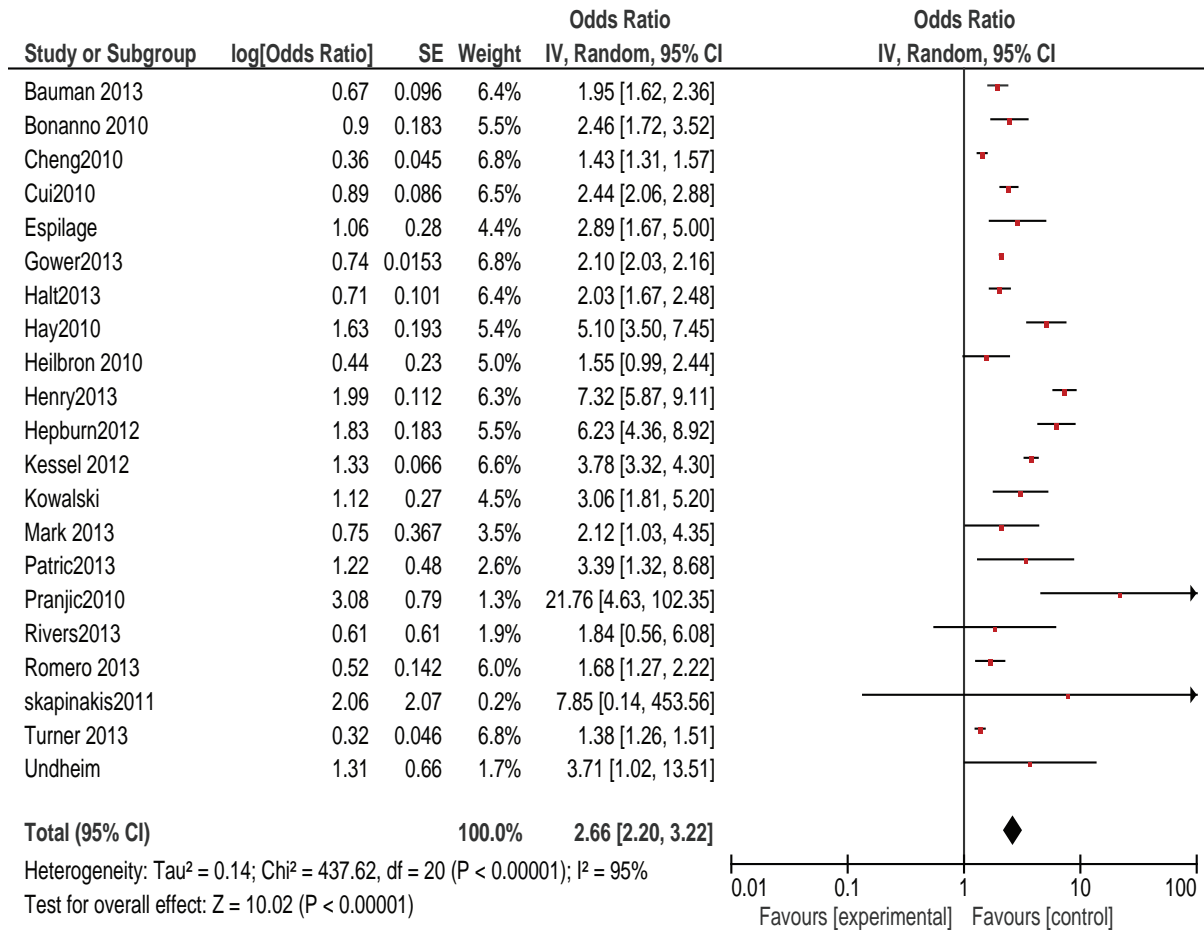


Figure 1: Forest plot for Bully victimization and suicidal ideation combined USA studies and non USA studies.

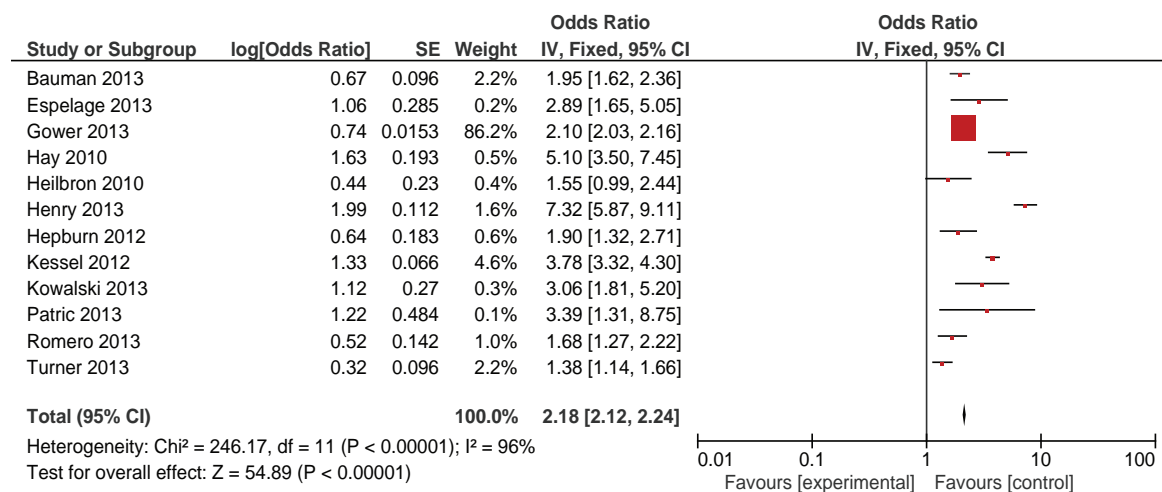


Figure 2: Forest plot of suicidal ideation and bully victimization in USA studies

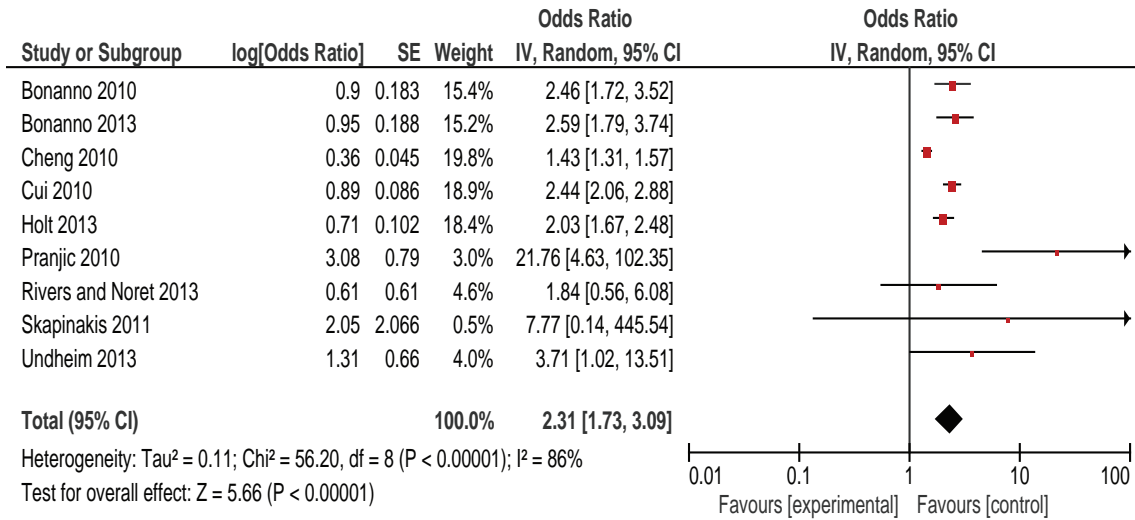


Figure 3: Forest plot of suicidal ideation and bully victimization in non USA studies

Discussion

As we know from extant literature that prevalence estimates of bullying⁴⁵ and suicidality vary by countries.⁴⁶ Although it is not understood why country moderates these associations, we do know that general perceptions of and responses to bullying are country-specific. Thus, country differences may be in part attributable to differences in countries' approaches to preventing bullying. There is no such type of study in our country even in the subcontinent, so exact picture can not be predicted in our country.

The aim of this meta analysis to see the association between bully victimization and suicidal ideation. Though majority of the studies were USA based but a few studies were conducted outside the USA. We combined both USA studies and non USA studies. We find significant association between bully victimization and suicidal ideation pooled odds ratio is 2.66 and 95% CI 2.20 to 3.26 which signifies that there is increase risk of suicidal ideation in bully victims 120% to 226% this is alarming for western countries . Similar studies was done by Holt et al find the similar result though this study included all those studies from 2007 to 2013 and they also included several factors like gender and urban and rural area and geographical factors . But we only included bully victimization and assessed the only outcome suicidal ideation and we did not consider the association of gender and geographical area . As we don't find any published data from our country and from the subcontinent, we are not able to include study from our country in this meta analysis. Our study has some limitation including heterogeneity in the included studies and regression meta analysis was not done and our study has some strength that we included recent studies and and we have done sub group analysis by USA and non USA studies.

Conclusion

This meta analysis concluded that bully victims have increased risk of suicidal ideation both USA based studies and non USA based studies and combined studies. As there is no such type of study conducted in our country, we don't know the exact scenario of our country. Our study finding recommended that large sample study should be conducted in our country.

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