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Examining the Impact of Maternal Experiences of Domestic Violence on Adolescent Mental Health Disorders in India

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Abstract

Examining the Impact of Maternal Experiences of Domestic Violence on Adolescent Mental Health Disorders in India

By Amritha Gourisankar

Background: The high prevalence of domestic violence (DV) in India and resulting effects on maternal mental health outcomes suggest a need to understand potential impacts of exposure to DV on adolescents in the household in India. Previous studies demonstrate the impact of exposure to DV on adolescent mental health in Western countries, however the culturally specific manifestations of DV and mental health disorders and socio-cultural differences in the parent-child relationship and home environment necessitate understanding the presence and extent of impact in the Indian context.

Methods: This thesis presents a secondary analysis of data collected from a seven-center study in urban and rural India examining a spectrum of mental health disorders (i.e. anxiety and depressive disorders grouped as common mental disorders (CMD), externalizing disorders including oppositional defiant disorder (ODD), conduct disorder, and attention deficit/hyperactivity disorder (ADHD), post-traumatic stress disorder (PTSD), and suicidality) among adolescents aged 12-17 years and DV (psychological, physical, and sexual abuse and control) in their mothers. The Indian Family Violence and Control Scale (IFVCS) was used to examine DV among mothers, the Mini International Neuropsychiatric Interview – Kid (MINI-Kid) to examine mental health among adolescents, and bivariate analyses to examine the association between maternal DV and adolescent mental disorders.

Results: Data from 2,784 adolescent-mother pairs were analyzed, with 31.5% from rural settings, 11.1% from slum settlements, 19.1% in joint family settings, and average adolescent age=14x years (SD = 1.5 years) and 5.3% dropped out of school or completing less than secondary education. Significant associations were found between maternal experiences of physical, psychological, and sexual abuse, and adolescent common mental disorders including anxiety and depressive disorders, suicidality, and externalizing disorders, including attention deficit/hyperactivity disorder (ADHD) ($p<0.05$). Control behaviors were not significantly associated with any of the studied mental disorders.

Conclusions: These results suggest that exposure to maternal DV significantly impacts adolescent mental health in India. Future studies should examine confounding and effect modification of the association between exposure to DV and mental disorders in Indian adolescents. If the associations remain significant in the multivariable analyses, they underscore the need to develop trauma-informed school programs and enhance DV prevention in India.

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Lastly, I would like to extend my sincere thanks to all the women and children who shared their time and personal experiences for this study.

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Chapter One: Introduction

Domestic Violence and Maternal Health in India

Domestic violence (DV), including physical, sexual, or emotional violence, is experienced by approximately 1 in 3 women in India (International Institute for Population Sciences (IIPS), 2017). Women in India who experience DV are more likely to be diagnosed with anxiety, depression, PTSD, suicidality, and the broad category of common mental disorders (CMD) (Chandra et al., 2009; Vizcarra et al., 2004). CMD among women experiencing DV are associated with greater reporting of gynecological symptoms such as dyspareunia and menstrual cramps (V. Patel et al., 2006), and lifetime experiences of DV are associated with adverse reproductive outcomes such as miscarriage, stillbirth, preterm births, and complications during labor, from studies in India (Dhar et al., 2018; D. Rao et al., 2016).

Maternal experience of DV is also associated with adverse health outcomes in their children including malnutrition, stunted growth, and asthma (Bair-Merritt et al., 2015; Neamah et al., 2018; Ziaei, Naved, & Ekström, 2014). It has also been linked to children experiencing emotional, behavioral, and academic difficulties in India (Deb et al., 2016; Satyanarayana, Hebbani, Hegde, Krishnan, & Srinivasan, 2015). However, there is a gap in knowledge on the impact of maternal experiences of DV on child mental health outcomes in India, including common mental disorders such as depressive and anxiety disorders, externalizing disorders including attention deficit/hyperactivity disorder, and suicidality.

Domestic Violence Exposure and Adolescent Mental Health Outside India

Evidence from countries outside of India suggests that maternal DV experience is associated with poor mental health among children. For example, a US-based study

demonstrated maternal experience of DV to be associated with poorer maternal mental health, which in turn predicted symptoms of depression and aggression in the child (Fredland et al., 2015). Additionally, children exposed to maternal experiences of DV are more likely to demonstrate clinical levels of externalizing behaviors (aggression, delinquency), internalizing behaviors (depression, anxiety), and conduct disorders (Ehrensaft & Cohen, 2012; Kernic et al., 2003; Meltzer, 2009; Turner et al., 2006), as studied in children aged 2-17 in western countries. Western literature further demonstrates that exposure to maternal experiences of DV during childhood is also associated with the development of post-traumatic stress disorder (PTSD), oppositional defiant disorder (ODD), anxiety disorders, and major depressive disorder (MDD), in adolescence and young adulthood (Forsstrom-Cohen, 1985; Pelcovitz et al., 2000; Russell et al., 2010; Zinzow et al., 2009). These findings are replicated in a variety of low- and middle-income countries, where exposure to DV is associated with a higher prevalence of suicidal behavior, substance use, and mental disorders including PTSD and MDD in children (Ribeiro et al., 2009).

Study Significance

The impact of maternal DV experience on the development of mental disorders in children in India needs to be further understood, where family structure, parenting, community DV and mental health support services, and experience of DV and mental disorders differ from countries who have examined this question to date. For example, across India, the joint family structure (wherein post-marriage, women often live with their husband's parents and other family members) remain common. Such family structure enables in-laws to serve as key support systems for the women, but also enables their perpetration of DV directly or indirectly via influence on the male spouse. Additionally, manifestations of DV differ in India, including perpetration of emotional violence by forcibly sending women to their parental homes, physical

violence through readily available tools (i.e. stones, chemical burns), and control behaviors by withholding contraception until male children are born (Ameeta S. Kalokhe et al., 2015; Natarajan, 2014; V. Rao, 1997; Spiwak et al., 2015). Mental health disorders also present in culturally-specific ways, such as somatic symptoms of CMD in Indian women (V. Patel et al., 2006). Parenting is also culturally specific, and parenting styles and interparental conflict are associated with the psychological well-being of adolescents (Bradford et al., 2003; Francis, Pai, & Badagabettu, 2020). Additionally, support services such as school-based interventions for children exposed to domestic violence may be effective to reduce mental health disorders, however these services may be limited in certain regions, such as rural areas, in India (Parikh et al., 2019; Thompson & Trice-Black, 2012).

Adolescence, a critical developmental period for cognition, social learning, personality attributes, and psychopathology (DelGiudice, 2018; Jaworska & MacQueen, 2015), may be a period particularly vulnerable to the impact of exposure to maternal DV. Externalizing disorders such as conduct disorders and attention deficit/hyperactivity disorder (ADHD) peak, and anxiety and depressive disorders begin during adolescence (Paus et al., 2008; Sagar et al., 2020). In India, studies of adolescent mental health have identified family environment including parental conflict, parenting styles, experiences of violence, and gender discrimination in the household, as significant risk factors (Aboobaker et al., 2019; Grover et al., 2019; Nair et al., 2013; Vikram Patel et al., 2008).

Research Question and Hypothesis

Therefore, we herein propose to examine the association between maternal DV experience and childhood mental disorders among adolescents in rural and urban India, and hypothesize that greater maternal DV reporting will be associated with greater mental health

symptom reporting by the linked adolescent child. This knowledge will be particularly critical given the high burden of DV among women and mental disorders among children in India. Identifying risk factors such as types of DV exposure, and the impact on specific mental health disorders, in adolescents in India, can be utilized to design culturally tailored screening and preventive mental health interventions for adolescents exposed to violence.

Chapter Two: Literature Review

Introduction

Domestic violence (DV) is highly prevalent in India-- as it is worldwide--with about one in three Indian women reporting experiences of physical, sexual, or emotional violence (NFHS-4). Globally, studies show the generational impact of this violence on the mental health of children in the household (McFarlane et al., 2017), increasing the child's risk of emotional and behavioral problems (Holt, Buckley, & Whelan, 2008) and of experiencing and/or perpetrating DV themselves into adolescence and adulthood (Koenig, Stephenson, Ahmed, Jejeebhoy, & Campbell, 2006; Roberts, McLaughlin, Conron, & Koenen, 2011). Most of the literature examining the effects of exposure to parental DV on a child's development and mental health comes from high-income Western settings. There is a gap examining this association in low and lower middle-income countries. This thesis will focus on a lower middle income country, India, where forms of DV, manifestations of mental health diseases, parent-child relationship dynamics, and DV support services may be different. Specifically, this thesis aims to assess, among children 12-17 in India, whether a child's exposure to maternal DV is associated with the child having poorer mental health outcomes.

DV Globally and in India

The definition of DV is used interchangeably with 'intimate partner violence' by the World Health Organization (WHO) and constitutes "behavior within an intimate relationship that causes physical, sexual, or psychological harm, including acts of physical aggression, sexual coercion, psychological abuse, and controlling behaviors" (Mikton, 2010) (Etienne G. Krug,

2002). In India, the operational definition of DV is expanded to include other household members with whom a woman lives, such as the mother-in-law (Ameeta S. Kalokhe et al., 2015). The legal definition of domestic violence in India includes physical abuse, sexual abuse, verbal and emotional and economic abuse, perpetrated by the husband and his relatives (Parliament of India, 2005).

While DV is experienced by women globally across settings, the forms in which it manifests vary by culture and family context, with many women living with their husband's family post-marriage. For example, forms of emotional violence in India include forcibly sending a woman to her parent's home or preventing women from having contact with their parents and friends (Ameeta S. Kalokhe et al., 2015). Other culturally specific considerations regarding violence include abuse due to infertility or lack of male children (Rao, 1997). Physical violence also takes specific forms in India, such as partner-perpetrated burns. Particularly, India has the highest rate across the globe of intentional burns perpetrated against women, including partner-perpetrated and, family or society-induced self-immolation, or burning due to dissatisfaction with dowry by husbands or in-laws (Natarajan, 2014; Spiwak, Logsetty, Afifi, & Sareen, 2015). Additionally, women often experience multiple forms of DV simultaneously, with 73 percent of women experiencing 5-6 control behaviors also experiencing physical, sexual, or emotional violence, compared to 19 percent of women who did not experience marital control behaviors (International Institute for Population Sciences (IIPS), 2017)

DV in India

The lifetime prevalence of physical, sexual, and/or emotional DV in India is 33% among ever-married women (International Institute for Population Sciences (IIPS), 2017). The

prevalence of DV is higher among women in rural areas (36%) than women in urban areas (28%) and among lower versus higher SES populations. The states with the highest prevalence of DV are Manipur (53.1%), Andhra Pradesh and Telangana (44%), and Bihar (43.2%) (International Institute for Population Sciences (IIPS), 2017, 2018). Across India, DV is less prevalent among women with more education, and more prevalent among women whose mothers experienced DV (International Institute for Population Sciences (IIPS), 2017). A common risk factor for experiences of DV by women in India, is spousal alcohol consumption, with the prevalence of DV among women whose husbands consume alcohol often (71%) more than double the prevalence of DV among women whose husbands do not drink (22%).

Adolescent Mental Health

This study focuses on the impact of DV on adolescents (12-17 years) because adolescence is the peak time of onset of many psychiatric disorders, including anxiety and depression. The peak is in part attributed to biological mechanisms of puberty such as hormonal changes and shifts in motivation or reward systems (Paus, Keshavan, & Giedd, 2008). Adolescents are also more susceptible to social inputs, from family and friends; these relationships in turn impact their cognitive development, such as risk and reward responses, that are associated with psychopathology, and developing during adolescence (Morgan, Shaw, & Forbes, 2014). The confluence of factors including changing biology, such as the development of the prefrontal cortex, increased sensitivity to interpersonal dynamics, and heightened risk/reward-taking, during adolescence, contribute to the development of anxiety and depressive disorders during this time (Davey, Yücel M Fau - Allen, & Allen, 2008; Paus et al., 2008; Silk, Davis, McMakin, Dahl, & Forbes, 2012). Across the world, the most common mental health

disorders in children and adolescents are anxiety disorder (6.5%), depressive disorder (2.6%), attention-deficit hyperactivity disorder (3.4%), and other disruptive disorders (5.7%) such as oppositional defiant disorder and conduct disorder (Polanczyk, Salum, Sugaya, Caye, & Rohde, 2015).

Adolescent Mental Health in India

The prevalence of adolescent mental health disorders in India has been variably reported; the National Mental Health Survey of India estimates the prevalence of mental health disorders among adolescents aged 13 – 17 years to be 7.4%, including anxiety and depressive disorders, psychotic disorders, and suicidal ideation (Gururaj, 2016). The most prevalent mental health disorders among adolescents in India are conduct disorders with a prevalence of approximately 6%, followed by anxiety disorders (about 4%), and depressive disorders (about 2.5%) (Sagar et al., 2020). The most common mental health disorders to arise during childhood and adolescence were conduct disorders and attention-deficit hyperactivity disorder (which peak during this age period), as well as anxiety disorders and eating disorders (which begin in this age period and continue to rise through adulthood) (Sagar et al., 2020). Depressive disorders arise during adolescence and continue to increase through adulthood (Sagar et al., 2020).

Exposure to Parental DV is associated with Poor Mental Health in the Child

The potential causal pathways linking maternal experiences of DV and child mental health are demonstrated in Figure 1. Witnessing domestic abuse during childhood, whether at low or high frequency, has been associated with depressive symptoms in young adulthood, independent of other risk factors for depression (such as directly experiencing physical or sexual

abuse, and other adverse childhood experiences) (Russell, Springer, & Greenfield, 2010). Adolescents (12-17 years) exposed to violence between parents are at an increased risk of developing post-traumatic stress disorder (PTSD), oppositional defiant disorder, anxiety disorders (other than PTSD), and major depressive episodes (MDE) (Pelcovitz, Kaplan, DeRosa, Mandel, & Salzinger, 2000; Zinzow et al., 2009).

Evidence from the United States show higher levels of anxiety among college-aged men and women, and increased depression among college-age women, who witnessed marital violence in their parents, compared with college-aged men and women who had not witnessed marital violence (Forsstrom-Cohen, 1985). Studies also demonstrate that violence exposure (including witnessing family violence) contributes to levels of depression and aggression, in children aged 2-17, in the United States (Turner, Finkelhor, & Ormrod, 2006).

While the majority of these studies are from high-income countries, a systematic review from low- and middle-income countries (LMIC) finds associations between exposure to domestic violence and mental health problems ranging from suicidal behavior, alcohol use, psychiatric symptoms, post-traumatic stress disorders, depression, and other mental disorders, for children and adolescents, from 6 – 17 years of age, with some studies showing up to twice as high a risk for mental health disorders in children and adolescents who witness domestic violence (controlling for personally experiencing domestic abuse and other risk factors) (Ribeiro, Andreoli, Ferri, Prince, & Mari, 2009). Additionally, one cross-sectional study of adolescents aged 15 – 18 years in Kolkata, India, shows associations between witnessing violence at home and high anxiety, poor emotional adjustment, and low self-concept (Deb, Ray, Bhattacharyya, & Sun, 2016). To date, there are no studies examining the impact of exposure to maternal DV on a

child's development of major depressive disorder, anxiety disorders inclusive of post-traumatic stress disorder, or externalizing disorders in India.

Predictors of Child and Adolescent Mental Health Disorders in India

Similar risk factors exist for child and adolescent mental health as they do for maternal DV. For example, lower SES is associated with higher risk of DV as well as childhood depression (Kuruvilla & Jacob, 2007). Similarly, alcoholism among household members is a shared risk factor for DV and childhood mental health disorders (Kuruvilla & Jacob, 2007). Additionally, experience of child physical abuse and having a parent with a mental disorder are risk factors common to most childhood/adolescent mental health disorders (Kuruvilla & Jacob, 2007).

Various environmental factors have been identified as increasing risk of specific mental health disorders among children and adolescents in India. For example, academic challenges, familial conflict (both verbal and physical conflict), substance use by parents, and economic challenges are associated with depressive symptoms in children and adolescents (Grover, Raju, Sharma, & Shah, 2019). A common risk factor for depression and suicidal ideation in adolescents found in a review of Indian studies is academic pressure by teachers and parents, and competitive school environments (Aggarwal & Berk, 2015). Predictors of anxiety disorders in India include lower education and household income levels, family structure and parenting style, and adverse life events such as the death of a loved one (Nair et al., 2013). Specific predictors for social and behavioral disorders in Indian adolescents include parental mental disorder and parenting practices such as negative discipline approaches (Aboobaker, Jangam, Sagar, Amaresha, & Jose, 2019). Risk factors for poor mental health in general include gender

inequalities or gender discrimination, as well as trauma through exposure to violence – both experienced and witnessed physical, emotional, and psychological – for children and adolescents in India (Vikram Patel, Flisher, Nikapota, & Malhotra, 2008). These studies suggest that familial environment, parental relationships, and gender discrimination, are risk factors for adolescent mental health in India, suggesting that domestic violence, as a type of parental conflict and manifestation of gender discrimination, may impact adolescent mental health.

DV and Maternal Mental Health

The impact of maternal DV on a child's mental health may in part be mediated by the direct impact of DV on maternal mental health. Maternal mental health may impact child health through poor caretaking, insecure child-parent attachment, and modeling of behaviors such as low self-esteem (Holmes, 2013). These potential pathways are depicted in *Figure* 1. Substantial evidence demonstrates that DV experience is associated with poor mental health in women, an established risk factor for common mental disorders (CMDs – including anxiety and depressive disorders) and suicide in children and adolescents (Hammen, 2016). Women reporting DV have been shown to have higher levels of PTSD and depression, with severity of violence being correlated with the severity of PTSD (Chandra, Satyanarayana, & Carey, 2009). Additionally, women in India who experience physical and psychological violence have been found to have greater symptoms of anxiety and depression and more than two times the odds of mental distress and suicidality (Vizcarra et al., 2004).

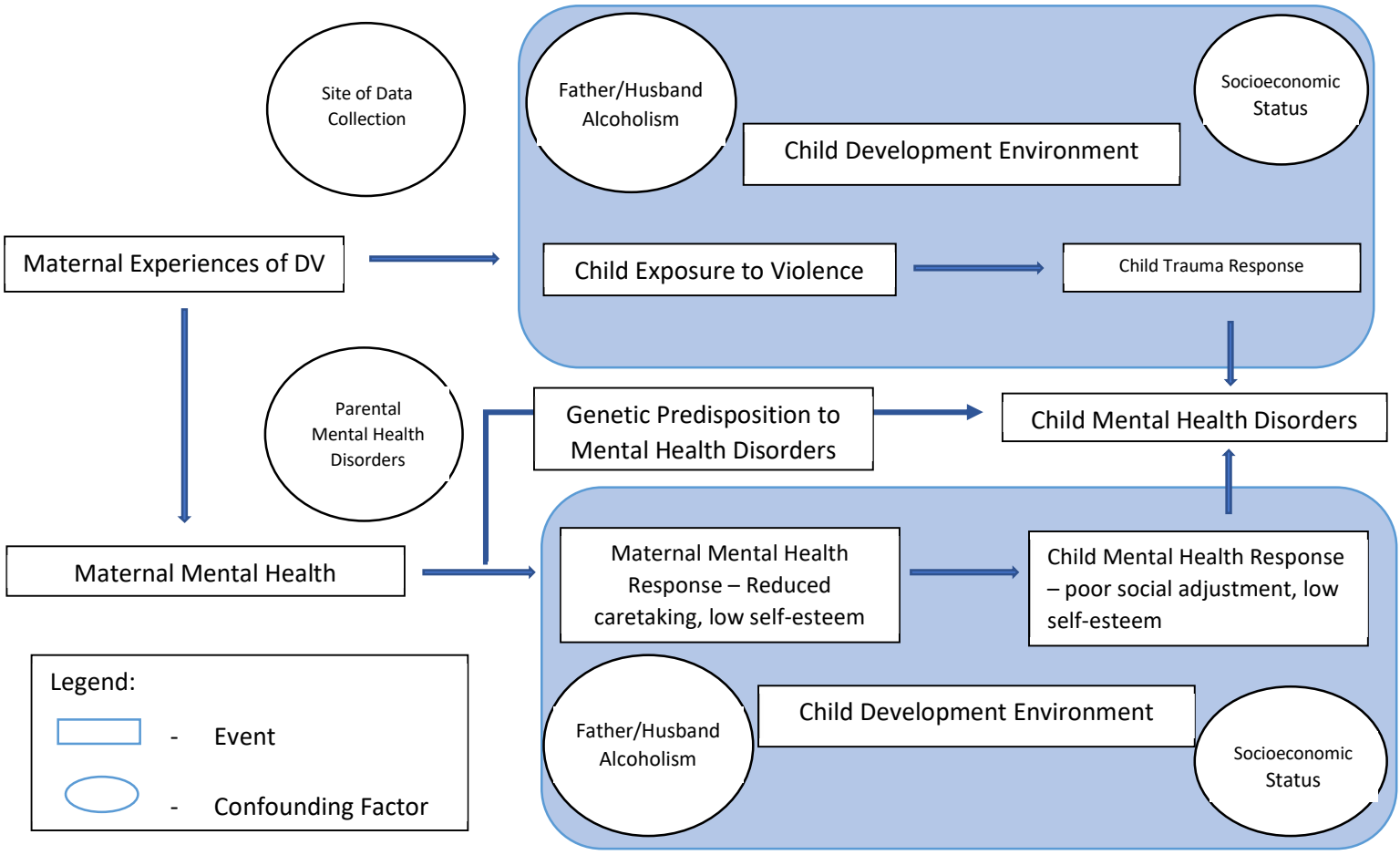

Figure 1. Potential Pathways of Association between Maternal Experiences of DV and Child/Adolescent Mental Health Disorders

Conclusion

Maternal experiences of DV are associated with a higher prevalence of adverse mental health outcomes in children across the world, although studies examining the impact have been largely limited to high-income Western countries. The few studies from India demonstrate an association between maternal experiences of DV and symptoms of anxiety in children, as well as poor emotional adjustment. There is a need to examine in India the association between maternal experience of DV and the many mental health disorders experienced by adolescents, as specific cultural norms, familial and social structures, education experiences, and resource availability in

India may impact the nature of DV, the experience and treatment of mental health conditions among children, and the pathways linking the two. This study aims to examine whether maternal experiences of DV is associated with adverse mental health outcomes among adolescents age 12-17 in India.

Chapter Three: Manuscript

Examining the Impact of Maternal Experiences of Domestic Violence on Adolescent Mental Health Disorders in India

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Contribution of Student

I am the primary investigator of this study and the primary author of this paper. I was one of several team members involved in data collection across seven centers of the parent study utilized in this thesis. I conducted the secondary data analysis presented in this thesis. I wrote this thesis with the guidance of my thesis chair, Dr. Ameeta Kalokhe, and thesis committee member, Dr. Rachel Waford. This manuscript is intended for submission to PLOS One.

Abstract

Background: The high prevalence of domestic violence (DV) in India and resulting effects on maternal mental health outcomes suggest a need to understand potential impacts of exposure to DV on adolescents in the household in India. Previous studies demonstrate the impact of exposure to DV on adolescent mental health in Western countries, however the culturally specific manifestations of DV and mental health disorders and socio-cultural differences in the parent-child relationship and home environment necessitate understanding the presence and extent of impact in the Indian context.

Methods: This thesis presents a secondary analysis of data collected from a seven-center study in urban and rural India examining a spectrum of mental health disorders (i.e. anxiety and depressive disorders grouped as common mental disorders (CMD), externalizing disorders including oppositional defiant disorder (ODD), conduct disorder, and attention deficit/hyperactivity disorder (ADHD), post-traumatic stress disorder (PTSD), and suicidality) among adolescents aged 12-17 years and DV (psychological, physical, and sexual abuse and control) in their mothers. The Indian Family Violence and Control Scale (IFVCS) was used to examine DV among mothers, the Mini International Neuropsychiatric Interview – Kid (MINI-Kid) to examine mental health among adolescents, and bivariate analyses to examine the association between maternal DV and adolescent mental disorders.

Results: Data from 2,784 adolescent-mother pairs were analyzed, with 31.5% from rural settings, 11.1% from slum settlements, 19.1% in joint family settings, and average adolescent age=14x years (SD = 1.5 years) and 5.3% dropped out of school or completing less than secondary education. Significant associations were found between maternal experiences of physical, psychological, and sexual abuse, and adolescent common mental disorders including anxiety and depressive disorders, suicidality, and externalizing disorders, including attention deficit/hyperactivity disorder (ADHD) ($p<0.05$). Control behaviors were not significantly associated with any of the studied mental disorders.

Conclusions: These results suggest that exposure to maternal DV significantly impacts adolescent mental health in India. Future studies should examine confounding and effect modification of the association between exposure to DV and mental disorders in Indian adolescents. If the associations remain significant in the multivariable analyses, they underscore the need to develop trauma-informed school programs and enhance DV prevention in India.

Introduction

Domestic violence (DV), including physical, sexual, or emotional violence, is experienced by approximately 1 in 3 women in India (International Institute for Population Sciences (IIPS), 2017). Women in India who experience DV are more likely to be diagnosed with anxiety, depression, PTSD, suicidality, and the broad category of common mental disorders (CMD) (Chandra et al., 2009; Vizcarra et al., 2004). CMD among women experiencing DV are associated with greater reporting of gynecological symptoms such as dyspareunia and menstrual cramps (V. Patel et al., 2006), and lifetime experiences of DV are associated with adverse reproductive outcomes such as miscarriage, stillbirth, preterm births, and complications during labor, from studies in India (Dhar et al., 2018; D. Rao et al., 2016).

Maternal experience of DV is also associated with adverse health outcomes in their children including malnutrition, stunted growth, and asthma (Bair-Merritt et al., 2015; Neamah et al., 2018; Ziaei, Naved, & Ekström, 2014). It has also been linked to children experiencing emotional, behavioral, and academic difficulties in India (Deb et al., 2016; Satyanarayana, Hebbani, Hegde, Krishnan, & Srinivasan, 2015). However, there is a gap in knowledge on the impact of maternal experiences of DV on child mental health outcomes in India, including common mental disorders such as depressive and anxiety disorders, externalizing disorders including attention deficit/hyperactivity disorder, and suicidality.

Evidence from countries outside of India suggests that maternal DV experience is associated with poor mental health among children. For example, a US-based study demonstrated maternal experience of DV to be associated with poorer maternal mental health, which in turn predicted symptoms of depression and aggression in the child (Fredland et al., 2015). Additionally, children exposed to maternal experiences of DV are more likely to

demonstrate clinical levels of externalizing behaviors (aggression, delinquency), internalizing behaviors (depression, anxiety), and conduct disorders (Ehrensaft & Cohen, 2012; Kernic et al., 2003; Meltzer, 2009; Turner et al., 2006), as studied in children aged 2-17 in western countries. Western literature further demonstrates that exposure to maternal experiences of DV during childhood is also associated with the development of post-traumatic stress disorder (PTSD), oppositional defiant disorder (ODD), anxiety disorders, and major depressive disorder (MDD), in adolescence and young adulthood (Forsstrom-Cohen, 1985; Pelcovitz et al., 2000; Russell et al., 2010; Zinzow et al., 2009). These findings are replicated in a variety of low- and middle-income countries, where exposure to DV is associated with a higher prevalence of suicidal behavior, substance use, and mental disorders including PTSD and MDD in children (Ribeiro et al., 2009).

The impact of maternal DV experience on the development of mental disorders in children in India needs to be further understood, where family structure, parenting, community DV and mental health support services, and experience of DV and mental disorders differ from countries who have examined this question to date. For example, across India, the joint family structure (wherein post-marriage, women often live with their husband's parents and other family members) remain common. Such family structure enables in-laws to serve as key support systems for the women, but also enables their perpetration of DV directly or indirectly via influence on the male spouse. Additionally, manifestations of DV differ in India, including perpetration of emotional violence by forcibly sending women to their parental homes, physical violence through readily available tools (i.e. stones, chemical burns), and control behaviors by withholding contraception until male children are born (Ameeta S. Kalokhe et al., 2015; Natarajan, 2014; V. Rao, 1997; Spiwak et al., 2015). Mental health disorders also present in culturally-specific ways, such as somatic symptoms of CMD in Indian women (V. Patel et al.,

2006). Parenting is also culturally specific, and parenting styles and interparental conflict are associated with the psychological well-being of adolescents (Bradford et al., 2003; Francis, Pai, & Badagabettu, 2020). Additionally, support services such as school-based interventions for children exposed to domestic violence may be effective to reduce mental health disorders, however these services may be limited in certain regions, such as rural areas, in India (Parikh et al., 2019; Thompson & Trice-Black, 2012).

Adolescence, a critical developmental period for cognition, social learning, personality attributes, and psychopathology (DelGiudice, 2018; Jaworska & MacQueen, 2015), may be a period particularly vulnerable to the impact of exposure to maternal DV. Externalizing disorders such as conduct disorders and attention deficit/hyperactivity disorder (ADHD) peak, and anxiety and depressive disorders begin during adolescence (Paus et al., 2008; Sagar et al., 2020). In India, studies of adolescent mental health have identified family environment including parental conflict, parenting styles, experiences of violence, and gender discrimination in the household, as significant risk factors (Aboobaker et al., 2019; Grover et al., 2019; Nair et al., 2013; Vikram Patel et al., 2008).

Therefore, we herein propose to examine the association between maternal DV experience and childhood mental disorders among adolescents in rural and urban India, and hypothesize that greater maternal DV reporting will be associated with greater mental health symptom reporting by the linked adolescent child. This knowledge will be particularly critical given the high burden of DV among women and mental disorders among children in India. Identifying risk factors such as types of DV exposure, and the impact on specific mental health disorders, in adolescents in India, can be utilized to design culturally tailored screening and preventive mental health interventions for adolescents exposed to violence.

Methods

Introduction

This manuscript uses a secondary data analysis of data collected from the multi-center study, *Consortium on Vulnerability to Externalizing Disorders and Addiction (cVEDA), India* (https://cveda.org). The cVEDA study was a longitudinal cohort study of mothers and children across seven health facilities in India that aimed to identify risk and resilience factors affecting the development of mental health disorders in children, adolescents, and young adults. The study utilized an observational cohort design with baseline data collection, 1- and 2-year follow-up data collection, on specified measures.

The secondary data analysis uses a subset of the cVEDA cohort focusing on children age 12-17 years, from data collected at the baseline visit of the longitudinal study, to examine the association between maternal experiences of DV on adolescent mental health.

Population and Sample

The study was conducted at seven culturally-, socio-economically- and geographically-diverse sites across six states in India and utilized convenience sampling to identify mother-child pairs: 1) Post-Graduate Institute of Medical Education and Research (PGIMER), Chandigarh, Union Territory, with 1,276 mother-child pairs recruited from schools, slums, and hospital de-addiction services, 2) Rishi Valley Rural Health Center, Madanapalle, Andhra Pradesh, with 776 mother-child pairs largely from the rural, impoverished, agricultural communities, 3) National Institute for Mental Health and Neurosciences (NIMHANS), Bengaluru, Karnataka, with 1883 mother-child pairs recruited from local schools, slums, and a

de-addiction outpatient clinic, 4). St. John's Research Institute, Bengaluru, Karnataka, with 1018 mother-child pairs recruited from schools in urban, rural, and slum areas, 5) Regional Institute of Medical Sciences (RIMS), Imphal, Manipur with 1120 mother-child pairs recruited from hospitals and schools from primarily rural areas, during a period of high political conflict and ethnic violence, 6) Church of South India (CSI) Holdsworth Memorial Hospital, Mysuru, Karnataka, recruited 1411 predominantly urban-dwelling mother-child pairs from a prior birth cohort study, as well as local universities, and 7) Occupational Health Centre – Eastern (ICMR-NIOH), Kolkata, West Bengal, with 1524 mother-child pairs recruited predominantly from a rural, coal mining community with a high prevalence of migrant workers and substance use disorders (Zhang et al., 2020).

Recruitment utilized local schools and hospitals as gatekeepers, and snowballing techniques with recruited patients. The study included a battery of questionnaires on socio-demographics, environmental exposures, psychosocial and personality characteristics, school climate, technology use, food habits, temperament, and adverse experiences of the child, medical history of the child and family, and pregnancy history and experiences of DV of the mother. The study also included a blood or saliva sample, and urine sample, for each participant, MRI scans for a selected subset of participants, and neuropsychiatric tasks such as the Digit Span to test attention and cognitive skills. Additional details of the study sampling techniques and study populations at each site can be found in the published study protocol (Sharma et al., 2020).

Although the analysis presented here is limited to children age 12-17, the inclusion criteria for the parent study included: parents with children within the age ranges of 6 – 23 years, who provided informed consent and were able to complete the verbal assessments and

neuropsychiatric battery. Exclusion criteria included refusal of consent or inability to complete assessments, and/or legal blindness/deafness, active seizure disorder, and severe physical or active mental illness. Only one child per family was allowed to enroll in the study.

Instruments

Maternal experience of DV was measured using the Indian Family Violence and Control Scale, a 63-item culturally-tailored instrument to examine control and physical, psychological, and sexual abuse experiences of married Indian women (A. S. Kalokhe et al., 2016) by their husbands and his family members. Mental health in the child participant was assessed using the Mini-International Neuropsychiatric Interview for Kids, or MINI-Kid. This instrument screens for psychiatric disorders as defined by the DSM-IV, in children and adolescents, aged 6 – 17 years (Sheehan et al., 2010). The MINI-Kid screens for the following psychiatric disorders that were analyzed in this study: depressive disorders, i.e. major depressive disorder (MDD) and dysthymia, anxiety disorders of social phobia, specific phobias, panic disorder, generalized anxiety disorder (GAD), and post-traumatic stress disorder (PTSD), suicidal ideation, and externalizing disorders of attention deficit-hyperactivity disorder (ADHD), conduct disorder, and oppositional defiant disorder (ODD). The MINI-Kid additionally screened for disorders including but not limited to substance use disorder, obsessive-compulsive disorder (OCD), and psychotic disorders such as schizophrenia. The Socio-Demographic Information and Migration Questionnaire (SDI-M) was developed for the purposes of this study, adapted from the National Family Health Survey (International Institute for Population Sciences (IIPS), 2017) section on household information, and asked about the participant's religion, caste, gender, and educational level, household size and characteristics, that were utilized for this study analysis. The SDI-M

additionally asked about members of the household that migrated outside the household, the nature of their work, and the reasons and timeline of migration.

Data collection

Surveys were conducted by trained research staff through private face-to-face interviews with the mother and child pair at the study site. The sociodemographic questionnaire and mental health screening were administered directly to the child, with the mother present, while the DV questionnaire was administered directly to the mother alone. The staff members administering the questionnaires were primarily psychologists, along with some staff members with nursing or other health professions certifications. The surveys were translated into the necessary regional languages and administered in the primary language of the participant. All survey data was collected on computers using the Delosis Psytools software (https://www.delosis.com/psytools/overview.html), which directly uploaded survey data to a protected server. The interview took approximately four hours per participant, including questionnaires, neuropsychiatric tasks, and blood sampling for the overall study. The surveys utilized in this analysis (i.e. mental health screening, DV screening, and socio-demographic information) accounted for approximately 45 minutes of the interview. Participants were compensated at rates decided based on the region, either through direct cash payment or provision of resources, at the discretion of the ethics committees of individual sites.

Research Ethics

The original cVEDA study received ethics clearance by the Health Ministry's Screening Committee, Ministry of Health and Family Welfare, Government of India (Sharma et al., 2020).

This analysis was determined to be IRB-exempt because it is a secondary data analysis and all data were de-identified prior to analysis. Prior to data analysis, all portions of the study were reviewed by Emory University's Institution Review Board (IRB 00117674) and determined to meet the criteria for exemption.

The staff members, primarily psychologists with a few nurses or other health professionals, were trained by the larger cVEDA study team on conducting psychosocial interviews, consent taking, confidentiality, and ethics. Consent was taken from participants and their parents/legal guardians if less than 18 years of age, and from the participant directly for those 18 years and older. Study participants who required medical or psychiatric consultations were provided referrals and resources, after discussions with the site physicians and the parents/legal guardians.

Data Management and Analysis

The data was collected using Delosis Psytools (https://www.delosis.com/) software, transferred to Microsoft Excel for de-identified and cleaning, and then SPSS Statistics software for data analysis. Three exposure variables were created from each of the subdomains of the IFVCS to measure physical abuse, psychological abuse, and sexual abuse. Each variable had five response options, "Never," "About Once or Twice in the Past Year," "About Once a Month," "About Once a Week," and "Not in the Past Year but Previously in My Married Life."

To calculate past-year DV, each variable was analyzed categorically and defined as present if mothers responded affirmatively to *any* of the items for the subscale as "About Once or Twice in the Past Year," "About Once a Month," "About Once a Week," and absent if mothers either denied experiencing all items in the subscale, or only responded, "Not in the Past Year but

Previously in My Married Life." Lifetime DV was defined as present if mothers responded affirmatively to *any* of the items for the subscale as "About Once or Twice in the Past Year," "About Once a Month," "About Once a Week," and "Not in the Past Year but Previously in My Married Life." Lifetime DV was considered absent if mothers denied experiencing all items in the subscale. A fourth exposure variable was created from the control behaviors subdomain of the IFVCS; control behavior questions only referred to the mothers' entire married life, therefore this variable was only included in the analysis of lifetime DV.

Five outcome variables were created from the MINI-Kid: 1) depressive disorders, defined as the presence of either major depressive disorder or dysthymia (World Health Organization, 2017), 2. anxiety disorders, defined by the DSM-5 and supporting literature to include social phobia, specific phobias, panic disorder, generalized anxiety disorder (GAD), and post-traumatic stress disorder (PTSD) (Kupfer, 2015; Zoellner, Rothbaum, & Feeny, 2011), 3) externalizing disorders, defined by the study designers to include conduct disorder, oppositional defiant disorder, and attention deficit hyperactivity disorder (Sharma et al., 2020), 4) suicidality, defined as meeting the criteria for low, medium, or high suicide risk based on ideation, planning, self-harming behaviors and/or previous attempts, and indicated as a symptom of anxiety and depressive disorders (Sheehan et al., 2010; World Health Organization, 2017), and 5) common mental disorders, defined as the combined category of anxiety and depressive disorders (World Health Organization, 2017). Each of these five outcome variables were analyzed categorically, and coded as '0' for not meeting the screening criteria for *any* of the included disorders in that category, and '1' for meeting the screening criteria for *at least one* of the included disorders.

Descriptive statistics were first used to examine the demographic characteristics and the distribution of the exposure (maternal experience of DV) and outcome variables (presence of

mental health disorder in child). Subsequently, bivariate analyses utilizing the Chi-Square test for independence were conducted to describe the association between the categorical exposure and outcome variables. A two-tailed alpha of 0.05 was deemed significant for the chi-square test.

Results

Description of Results

A total of 2784 maternal-child pairs contributed data to the analysis, with 11.3% recruited from PGIMER, Union Territory, 8.0% from RVRHC, Andhra Pradesh, 33.8% from NIMHANS, Karnataka, 20.2% from SJRI, Karnataka, 14.4% from RIMS, Manipur, 0.7% from CSIHMS, Karnataka, and 11.5% from ICMR-NIOH, West Bengal (see Table 1). The average age of the child was 14 years (σ = 1.5 years), and 47% of child participants were female. The average household size was 5 persons (σ = 2.6 persons), with 19.1% residing in joint families. Approximately one-third (31.5%) resided in rural areas and 11.1% in slum settlements. Forty four percent (43.8%) of the participants were from reserved castes. Five percent (5%) had dropped out or temporarily discontinued their education, and 1.1% were below a primary school level.

N = 2784		
	Mean (SD)	**Mode (Range)**
Age	14 (1.5)	13 (12-17)
Household Size	5.1 (2.6)	4 (0-31)
	No.	**%**
Gender		
Female	1290	47.0
Location		
Rural	863	31.5
Residents in Slum Settlements		
Yes	304	11.1
Caste		

Reserved Castes	1174	43.8
Family Structure		
Joint	523	19.1
Other	15	0.5
Education Status		
Dropped Out	138	5.0
Educational Level		
Not Literate	2	0.1
Literate without Any Schooling	5	0.2
Literate without Any Formal Schooling	1	0.0
Below Primary	22	0.8
Primary	204	7.4
Upper Primary/Middle	1225	44.7
Secondary	955	34.8
Higher Secondary	309	11.3
Diploma/Certificate Course	13	0.5
Graduate	6	0.2
Site		
PGIMER, Union Territory	314	11.3
RVRHC, Andhra Pradesh	222	8.0
NIMHANS, Karnataka	942	33.8
SJRI, Karnataka	563	20.2
RIMS, Manipur	402	14.4
CSIHMS, Karnataka	20	0.7
ICMR-NIOH, West Bengal	321	11.5

Table 1: Descriptive Statistics about Participants

Among the adolescents, the prevalence of anxiety disorders was 5.3%, depressive disorders was 3.2%, CMD was 7.4%, suicidality was 9.5%, post-traumatic stress disorder (PTSD) was 0.3%, externalizing disorders was 5.3%, oppositional defiant disorder 1.3%, conduct disorder 1.4%, and attention deficit/hyperactivity disorder 4.7%. Among the mothers, the prevalence of any type of DV, not inclusive of control behaviors, in the past year was 36.8% (or 947/2570). The prevalence of past-year physical abuse was 14.5%, past-year psychological abuse was 36.0%, and past-year sexual abuse was 3.9%. The prevalence of any type of lifetime DV, not inclusive of control behaviors, was 54.7% (or 1406/2570). The prevalence of lifetime

physical abuse was 27.4%, lifetime psychological abuse was 53.0%, lifetime sexual abuse was 7.5%, and lifetime control behaviors was 58.9%.

Past-year physical and sexual abuse, but not physical nor any DV, was significantly associated with anxiety disorders in the child (see Table 2). Significant associations were found between adolescent depressive disorders and past-year physical, psychological, sexual abuse, and total maternal DV experience, and between adolescent common mental disorders and past-year maternal physical and sexual abuse and any DV, not inclusive of control. Adolescent suicidality was significantly correlated with maternal experience of past-year physical, psychological, and sexual abuse, and any DV, not inclusive of control (see Table 3). PTSD was only significantly associated with past-year psychological abuse (see Table 4). Externalizing disorders were significantly associated with maternal experiences of past-year physical abuse and any DV, not inclusive of control (see Table 5). Oppositional defiant disorder and conduct disorder were not significantly correlated with any past-year subtype or any DV, not inclusive of control, but attention deficit/hyperactivity disorder was significantly correlated with past-year physical and psychological abuse, and any DV, not inclusive of control (see Table 6).

	Anxiety Disorders			Depressive Disorders			Common Mental Disorders		
	No **N = 2393**	Yes **N = 132**	P-Value	No **N = 2433**	Yes **N = 92**	P-Value	No **N = 2336**	Yes **N = 189**	P-Value
Any DV	864 (36.1%)	56 (42.4%)	.142	871 (35.8%)	49 (53.3%)	**.001**	835 (35.7%)	85 (45.0%)	**.011**
Physical Abuse	352 (14.2%)	33 (23.9%)	**.002**	356 (14.1%)	29 (31.2%)	**.000**	332 (13.7%)	53 (27.0%)	**.000**
Psychological Abuse	882 (35.4%)	52 (38.2%)	.504	892 (35.2%)	42 (45.7%)	**.040**	856 (35.2%)	78 (40.4%)	.144
Sexual Abuse	88 (3.7%)	11 (8.2%)	**.008**	90 (3.7%)	9 (9.7%)	**.003**	84 (3.6%)	15 (7.8%)	**.004**

Table 2: Bivariate Analyses of Anxiety, Depressive, and Common Mental Disorders with Past-Year DV

	Suicidality		
	No N = 2281	Yes N = 244	P-Value
Any DV	803 (35.2%)	117 (48.0%)	**.000**
Physical Abuse	317 (13.3%)	68 (27.4%)	**.000**
Psychological Abuse	832 (34.9%)	102 (41.6%)	**.037**
Sexual Abuse	81 (3.5%)	18 (7.3%)	**.004**

Table 3: Bivariate Analyses of Suicidality with Past-Year DV

	Post-Traumatic Stress Disorder (PTSD)		
	No N = 2617	Yes N = 9	P-Value
Any DV	919 (36.5%)	1 (11.1%)	.114
Physical Abuse	384 (14.7%)	1 (11.1%)	.762
Psychological Abuse	934 (35.7%)	0 (0.0%)	**.026**
Sexual Abuse	99 (3.9%)	0 (0.0%)	.545

Table 4: Bivariate Analyses of Post-Traumatic Stress Disorder (PTSD) with Past-Year DV

	Externalizing Disorders		
	No N = 2390	Yes N = 135	P-Value
Any DV	860 (36.0%)	60 (44.4%)	**.047**
Physical Abuse	351 (14.1%)	34 (24.5%)	**.001**
Psychological Abuse	875 (35.1%)	59 (43.4%)	.051
Sexual Abuse	90 (3.8%)	9 (6.5%)	.102

Table 5: Bivariate Analyses of Externalizing Disorders with Past-Year DV

	Oppositional Defiant Disorder			Conduct Disorder			Attention Deficit/Hyperactivity Disorder		
	No **N = 2492**	Yes **N = 33**	P-Value	No **N = 2489**	Yes **N = 36**	P-Value	No **N = 2405**	Yes **N = 120**	P-Value
Any DV	907 (36.4%)	13 (39.4%)	.722	908 (36.5%)	12 (33.3%)	.697	866 (36.0%)	54 (45.0%	**.046**
Physical Abuse	376 (14.5%)	9 (25.7%)	.063	376 (14.5%)	9 (23.7%)	.114	356 (14.2%)	29 (23.4%	**.005**
Psychological Abuse	923 (35.6%)	11 (33.3%)	.787	923 (35.6%)	11 (30.6%)	.527	879 (35.1%)	55 (45.5%	**.020**
Sexual Abuse	98 (3.9%)	1 (2.9%)	.748	96 (3.8%)	3 (7.9%)	.200	91 (3.8%)	8 (6.5%(	.127

Table 6: Bivariate Analyses of Oppositional Defiant, Conduct, Attention Deficit/Hyperactivity Disorders with Past-Year DV

Lifetime physical and sexual abuse, but not psychological abuse or any DV, not inclusive of control, were significantly associated with anxiety disorders, in the child (see Table 7). All lifetime subtypes of DV and any DV, not inclusive of control, were significantly associated with depressive disorders, and physical and sexual abuse, and any DV, not inclusive of control, were significantly associated with common mental disorders. Adolescent suicidality was significantly correlated with lifetime maternal experiences of any DV, physical, psychological, and sexual abuse, but not control behaviors (see Table 8). PTSD was not correlated with any of the four subscales or any DV over the lifetime (see Table 9). Externalizing disorders were significantly correlated with lifetime physical, psychological, and sexual abuse, and any DV, not inclusive of control (see Table 10). Oppositional defiant disorder was not significantly correlated with any of the subscales or any DV, conduct disorder was only significantly correlated with lifetime physical abuse, and attention deficit/hyperactivity disorder was significantly correlated with lifetime physical, psychological, and sexual abuse, and any DV, not inclusive of control (see Table 11). No mental health disorders were significantly associated with control behaviors.

	Anxiety Disorders			Depressive Disorders			Common Mental Disorders		
	No **N = 2489**	Yes **N = 138**	P-Value	No **N = 2537**	Yes **N = 90**	P-Value	No **N = 2432**	Yes **N = 195**	P-Value
Any DV	1298 (54.2%)	75 (56.8%)	.563	1304 (53.6%)	69 (75.0%)	**.000**	1255 (53.7%)	118 (62.4%)	**.021**
Physical Abuse	665 (26.8%)	55 (39.9%)	**.001**	668 (26.4%)	52 (55.9%)	**.000**	632 26.0%	88 (44.9%)	**.000**
Psychological Abuse	1308 (52.5%)	75 (55.1%)	.552	1318 (52.0%)	65 (70.7%)	**.000**	1267 52.1%	116 (60.1%)	**.032**
Sexual Abuse	175 (7.2%)	16 (11.9%)	**.047**	172 (7.0%)	19 (20.4%)	**.000**	163 7.0%	28 (14.6%)	**.000**
Control Behaviors	1446 (58.1%)	86 (62.3%)	.327	1476 (58.2%)	56 (62.2%)	.445	1411 58.0%	121 (62.1%)	.272

Table 7: Bivariate Analyses of Anxiety, Depressive, and Common Mental Disorders with Lifetime DV

	Suicidality		
	No **N = 2375**	Yes **N = 248**	P-Value
Any DV	1186 (52.0%)	187 (76.6%)	**.000**
Physical Abuse	584 (24.6%)	136 (54.8%)	**.000**
Psychological Abuse	1212 (50.9%)	171 (69.8%)	**.000**
Sexual Abuse	149 (6.5%)	42 (16.9%)	**.000**
Control Behaviors	1380 (58.0%)	152 (61.85%)	.246

Table 8: Bivariate Analyses of Suicidality with Lifetime DV

	Post-Traumatic Stress Disorder (PTSD)		
	No **N = 2619**	Yes **N = 8**	P-Value
Any DV	1370 (54.5%)	3 (33.3%)	.204
Physical Abuse	718 (27.5%)	2 (22.2%)	.725
Psychological Abuse	1381 (52.8%)	2 (22.2%)	.067
Sexual Abuse	191 (7.6%)	0 (0.0%)	.391
Control Behaviors	1526 (58.3%)	6 (75.0%)	.338

Table 9: Bivariate Analyses of Post-Traumatic Stress Disorder (PTSD) with Lifetime DV

	Externalizing Disorders		
	No **N = 2489**	Yes **N = 138**	P-Value
Any DV	1286 (53.8%)	87 (64.4%)	**.016**
Physical Abuse	662 (26.7%)	58 (41.7%)	**.000**
Psychological Abuse	1295 (52.0%)	88 (64.7%)	**.004**
Sexual Abuse	171 (7.1%)	20 (14.5%)	**.001**
Control Behaviors	1454 (58.4%)	78 (56.5%)	.660

Table 10: Bivariate Analyses of Externalizing Disorders with Lifetime DV

	Oppositional Defiant Disorder			Conduct Disorder			Attention Deficit/Hyperactivity Disorder		
	No **N = 2592**	Yes **N = 35**	P-Value	No **N = 2589**	Yes **N = 38**	P-Value	No **N = 2504**	Yes **N = 123**	P-Value
Any DV	1353 (54.3%)	20 (60.6%)	.470	1354 (54.4%)	19 (52.8%)	.846	1293 (53.8%)	80 (66.7%)	**.006**
Physical Abuse	707 (27.3%)	13 (37.1%)	.196	704 (27.2%)	16 (42.1%)	**.041**	669 (26.8%)	51 (41.1%)	**.000**
Psychological Abuse	1363 (52.6%)	20 (60.6%)	.358	1364 (52.7%)	19 (52.8%)	.989	1302 (52.0%)	121 (66.9%)	**.001**
Sexual Abuse	187	4	.379	185	6	.052	175	16	**.018**

	(7.5%)	(11.4%)		(7.4%)	(15.8%)		(7.2%)	(13.0%)	
Control Behaviors	1515 (58.4%)	17 (48.6%)	.239	1513 (58.4%)	19 (50.0%)	.295	1463 (58.4%)	69 (56.1%)	.609

Table 11: Bivariate Analyses of Oppositional Defiant, Conduct, Attention Deficit/Hyperactivity Disorders with Lifetime DV

Discussion

The high burden of DV among women and mental disorders among adolescents in India, the known negative impact of DV on maternal mental health disorders (Chandra et al., 2009; Vizcarra et al., 2004) and physical health of the child in India, and global literature demonstrating maternal DV experience to be linked to adolescent development of mental disorders (Zinzow et al., 2009), necessitate further examination of the impact of maternal experiences of DV on adolescent mental health in India. This analysis stems from the first large-scale, interstate, data collection on mental health disorders and their correlates in India, from diverse sites including rural and urban, hospitals, schools, and community health centers (Zhang et al., 2020), and suggests that maternal experiences of past-year physical, psychological, and sexual abuse are associated with higher rates of externalizing disorders, common mental disorders, and suicidality, but not PTSD, in Indian adolescents. Our results also suggest that maternal experience of control is not associated with increased mental health disorders in linked adolescent children.

These findings parallel studies in western countries that show maternal experience of DV correlates with adolescent development of anxiety, depressive disorders and common mental disorders (Bomysoad & Francis, 2020) (Kennedy, Bybee, Sullivan, & Greeson, 2009). Additionally, our findings corroborate the association between exposure to DV and suicidal behavior, and depression, in adolescents in low- and middle-income countries (Adewuya &

Oladipo; Ribeiro et al., 2009; Yi et al., 2013). Our results support previous studies showing an association between exposure to DV and ADHD as shown in western studies (Bomysoad & Francis, 2020), but contradict previous studies showing an association between exposure to DV and ODD or conduct disorder (Ehrensaft & Cohen, 2012; Pelcovitz et al., 2000). This discrepancy could be due to cultural suppression of externalizing behaviors, which may reduce the prevalence of oppositional defiant or conduct disorders in India as assessed through western screening tools (Canino, Polanczyk, Bauermeister, Rohde, & Frick, 2010) or protective factors such as family support thought to reduce the prevalence of these two disorders in Indian adolescents, compared to those in western countries (Pillai et al., 2008). Additionally, our results did not replicate those of previous studies that demonstrated an association between exposure to DV and PTSD (Pelcovitz et al., 2000; Zinzow et al., 2009), which may be due to the low prevalence of PTSD in our study population (0.3%). Lastly, our studies did not show any association between maternal experiences of control behaviors and adolescent mental health disorders. This may be because control behaviors are not visibly apparent outside of the parental relationship, and the adolescent may have limited knowledge of these control behaviors.

The study has several key strengths and limitations. The primary strengths of the study are 1) recruitment of a large diverse sample from seven sites (with varied contexts including political instability, agricultural and coal mining communities, out-patient addiction facilities, schools in rural, urban and slum settlements, and community health centers), 2) comprehensive assessment of maternal DV experience using a culturally-tailored scale, and 3) comprehensive assessment of adolescent experience of mental disorders. One limitation of the study is the convenience sampling strategy which decreases the generalizability of the findings. Additionally, a potential limitation is the four-hour battery of surveys utilized, which may have contributed to

participant fatigue and decreased reliability of responses. Lastly, examination of the association between maternal DV and adolescent mental disorders was limited to bivariate analyses, not accounting for potential confounders. Such potential confounders include familial history of mental health disorders (as parental mental health disorders could increase the risk for DV, and increase the hereditary risk for child mental health disorders (Aboobaker et al., 2019)), substance use by either or both parents (as alcoholism in the father has been linked to both perpetration of DV, poorer caretaking, and mental health outcomes in the child (International Institute for Population Sciences (IIPS), 2017; Satyanarayana et al., 2015)), and sociodemographic characteristics such as parental education levels and income levels (known risk factors for DV and childhood mental disorders (International Institute for Population Sciences (IIPS), 2017; Koenig et al., 2006)). The environment created by income constraints, such as a crowded home and lack of resources, could increase household stress and increase the risk for DV (Roberts et al., 2011); these limited resources could also lead to poor mental health in children.

Thus, our findings suggest that maternal DV experience is associated with mental health disorders including anxiety, depression, and ADHD, in adolescents in India. Future studies should validate these findings, and independently examine the impact of maternal DV on the individual mental disorders through multivariable regression analyses that account for covariates such as parental mental health history, parental history of substance use, parental education levels, socioeconomic status, and site characteristics. Additionally, future studies can utilize qualitative interviews for a deeper exploration and understanding of the association. If future multivariate analyses confirm the association exists between DV exposure and mental health disorders in adolescents in India, public health interventions in Indian schools and hospitals that

screen and address adolescent exposure to DV could be designed as early interventions for the detection and treatment of mental health disorders.

Chapter Four: Public Health Implications

Introduction

The findings of this study demonstrate an association between maternal experiences of DV including physical, psychological, and sexual abuse, and mental health disorders in their adolescent children including anxiety and depressive disorders, externalizing disorders, and suicidality, in India. These results suggest the following next steps.

Research Implications

To expand on the results of this study, multivariable regression analyses should be conducted on the associations deemed significant in the bivariate analyses to account for confounding and explore effect modification. Gender should be examined as a potential moderator to understand how witnessing DV may differentially impact the mental health of young men and women. Potential confounders include: parental mental health history (which could impact the hereditary risk for child mental health disorders and be a risk factor for perpetration of DV), the site of data collection (as each center had varying populations), household characteristics such as joint vs. nuclear families, household size, socioeconomic and/or caste status, and parental education levels, and parental substance use. The role of child experiences of abuse (physical, psychological, and sexual) should also be examined as they may be more prevalent in households with DV and are a direct risk factor for child mental health disorders.

In addition to further quantitative analyses, qualitative research should be conducted with the population of this study with two aims. First, in-depth interviews with adolescents could

examine their understanding of and reactions to the witnessed DV, which may provide insight on the cognitive pathway between exposure to DV and mental health disorders. Second, in-depth interviews with mothers could ask about their perceptions of the impact and mechanism of impact of DV on their children and to understand how DV may shape their caretaking and parental attachment to their child. In order to ethically interview adolescents about their witnessing of their mother experiencing DV without disclosing maternal responses, only adolescent participants who independently answered 'Yes' to witnessing DV during the Adverse Childhood Experiences – International Questionnaire (ACE-IQ) administered in the parent study should be selected for in-depth interviews.

Programmatic Implications

Understanding the high prevalence of exposure to DV and the resulting impact on mental health, our results suggest a need for early screening for exposure to violence and symptoms of mental health disorders in adolescents in India. These screenings can take place in schools, and students who are identified as "at-risk" for developing mental health disorders should be connected with trained mental health counselors. In order to better support adolescent students, teachers in Indian schools should receive training on the prevalence and characteristics of DV, the potential mental health impact on children, and tools for trauma-informed teaching. Lastly, these results can be utilized to develop programs for couples, to reduce the prevalence of DV, based on the demonstrated impact to the mental health of their children. These programs can be provided to newly married couples to prevent DV, and during family planning counseling sessions, as soon-to-be parents prepare a home environment for their children.

Policy Implications

Our study results suggest a need for policy that mandates screening for adverse childhood experiences (ACES) such as witnessing DV, for all children in schools. In order to avoid re-traumatizing students, community stigma or threats from disclosure, and other concerns, the screening must be conducted by teachers, community health workers, or counselors, trained in the screening tool, informed consent, confidentiality, and mandatory reporting procedures. Additionally, there is a need for counselors to support students once screenings are conducted. The policy should be inclusive of a mandate for training and provision of a certain number of counselors based on the student population, in schools in India.

Conclusion

Our study results demonstrate a high prevalence of DV across seven sites in India, and a resulting impact on the mental health of adolescents in the household. The results indicate a need for future research studies to examine potential covariates and gain contextual understanding, programs to prevent DV, and screen and treat those exposed to DV, and policies to train and hire teachers and counselors to support students exposed to violence.

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