

Impact of environmental factors on mental health of children and adolescents: A systematic review

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ABSTRACT

According to the World Health Organization, more than 10% of adolescents and children are affected by mental health problems worldwide. Despite this statistic, the public is often ignorant of the various environmental factors in everyday lives, adversely affecting children's and adolescents' mental health. The current systematic review aims to identify these environmental factors to ensure minimal exposure to sustain healthy mental states. Thematic analysis of relevant literature categorizes these environmental factors into various themes, like Physical, Home, Social, Socioeconomic, and Digital Environments. These themes have adverse effects, like externalizing symptoms, higher anxiety, and depressive episodes, on the mental health states. Abuse came out as a significant sub-theme affecting children's and adolescent's mental health throughout the twenty-years literature, either in the form of sexual harassment, physical aggression, or cyberbullying. This study's findings have important implications in devising focused interventions and formulating policies regarding mental health, especially for children and adolescents.

1. Introduction

Mental health is a condition of wellbeing, wherein individuals ascertain their potential, survive regular stressors of life, work productively, and can contribute to their community (World Health Organization [WHO], 2004). Approximately 10–20% of children and adolescents are affected by mental health problems worldwide (WHO, 2017, p. 1). For instance, issues like anxiety and depression result in behavioral problems, sub-standard performance in school, and increased risk-taking behaviors like consumption of drugs, tobacco, and alcohol. Moreover, six percent of all deaths in the age group of 15–29 are due to suicide, only second to the worldwide leading cause of deaths due to road accidents (WHO, 2014). Research suggests that suicides are mostly related to mental health issues like psychiatric illness, depression, substance use, and psychosis (Brådvik, 2018). However, such issues are rarely addressed at homes and schools, resulting in the isolation of those affected.

1.1. Purpose of the present study

The present paper depicts findings from a systematic review of the main factors adversely affecting children's and adolescents' mental health. We performed a thematic analysis of selected studies to

categorize such factors and briefly discuss the patterns that emerged while reviewing them. The next section will explore the process of selecting research studies for this review paper.

2. Method

2.1. Selection of papers

We followed the PRISMA¹ checklist (2009) for our review paper. We identified the relevant studies using the following keywords: “children,” “adolescents,” “mental health,” “India,” “stress,” “abuse,” “technology,” “socioeconomic condition,” and “parental expectations.” We searched for related studies and the keywords in the following search engines: (i) PubMed-NCBI; (ii) PMC-NCBI; (iii) Research Gate, and (iv) Google Scholar.

The PubMed search syntax listed below served as the basis for all search strategies.

- (children's [All Fields] AND (“mental health”[MeSH Terms] OR (“mental” [All Fields] AND “health” [All Fields]) OR “mental health”[All Fields]) AND (“India” [MeSH Terms] OR “India”[All Fields])

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¹ Preferred Reporting Items for Systematic Reviews and Meta-Analyses.

Flow chart depicting the process of selection of research studies for this review paper

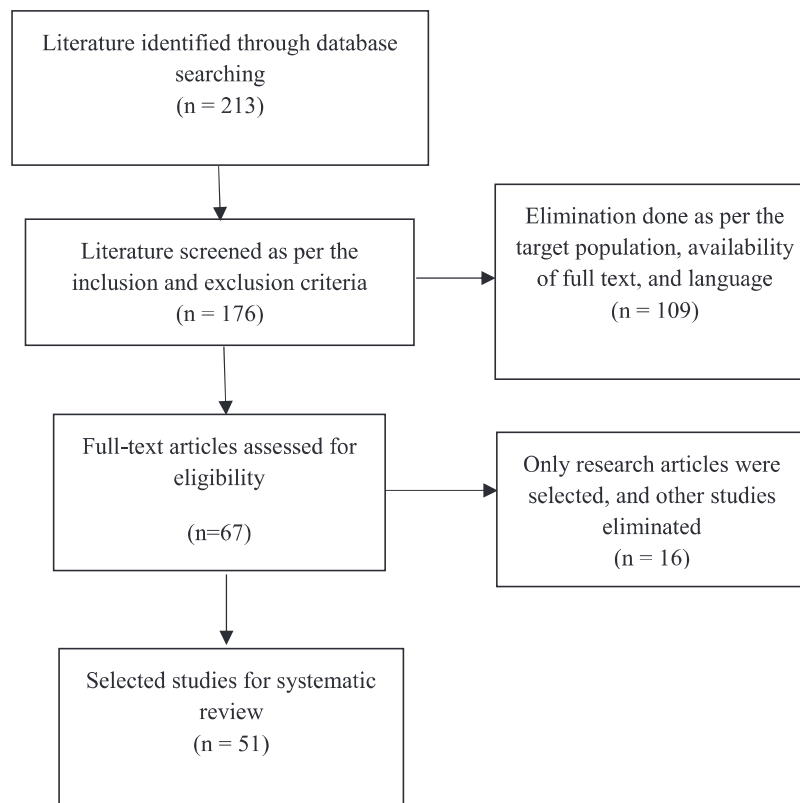


Fig. 1. Flow chart depicting the process of selection of research studies for this review paper.

The search for relevant literature began on May 10, 2019 and ended on February 22, 2020. The search covered literature dated between 2000 and 2020, and consisted of studies conducted worldwide. After a preliminary screening process of titles and abstracts, we obtained an initial total of 176 papers. We screened the final papers by keeping two aspects in mind: the date of publishing and the complete reading of the text to validate their inclusion in the current review. The studies were identified only through database searching. Fig. 1 represents the selection process of the studies used in our review paper.

2.1.1. Inclusion and exclusion criteria

The study included papers that fulfilled the following criteria: (a) full-length papers; (b) published in English; (c) papers published in peer-reviewed and indexed journals to ensure the quality of research; (d) papers from the past 20 years (2000–2020) to provide an integrated overview of the current trends and research; (e) papers exclusively on children's and adolescent's mental health, and (f) papers with both clinical and non-clinical sample.

The exclusion criteria included the following: (a) only abstracts of studies; (b) research papers published before 2000; (c) papers on the mental health of adults and the geriatric population; and (d) papers published in a language other than English.

According to WHO, an adolescent "is a person aged 10–19 years inclusive." And a child "is a person 19 years or younger unless national law defines a person to be an adult at an earlier age" (WHO, 2013, "Age groups and populations" section). These definitions were the most relevant to our review, as it includes studies from different countries. Hence, no particular national law could determine the given age group's population.

2.1.2. Demographic characteristics of the selected studies

Of the 176 papers obtained from various search engines, 51 articles

met the inclusion criteria. These contained 18 studies conducted in the United States of America (USA), followed by 10 studies from India. Three studies each were conducted in the United Kingdom (UK), Australia, and the Netherlands, and two in Sweden. Countries like Hong Kong, China, Belgium, Switzerland, Scotland, Serbia, Spain, Norway, Palestine, Nepal, Brazil, and the Nordic countries had one study each. The participants' age ranged from two to 32 years (longitudinal studies) (Colman & Widom, 2004; Haydon, Hussey, & Halpern, 2011). Most of the studies consisted of female participants, and some studies used samples procured from earlier records (Almroth, László, Kosidou, & Galanti, 2019; Bøe et al., 2014; Hasumi, Ahsan, Couper, Aguayo, & Jacobsen, 2012). The samples from most studies belonged to diverse socioeconomic backgrounds. Moreover, many studies selected children from the non-clinical population as their sample. Table 1 contains a summary of the demographic variables.

2.2. Approach for thematic analysis

We used the thematic analysis suggested by Braun and Clarke (2006) to acquire an in-depth and systematic understanding of various environmental factors impacting the mental health of children and adolescents. We employed this approach to identify some initial themes in our literature. We came across repeated mentions of factors like technology, school, family, friends, etc. The analysis provided us the flexibility to interrogate these repeated patterns and categorize them into codes and, consequently, themes. It also assisted us to derive meaningful conclusions from our literature and implicate them in the findings (Clarke, Braun, & Hayfield, 2015). We first generated initial codes relevant to our research questions, and then examined them to form a coherent theme. Table 2 consists of a summary of the findings derived from the thematic analysis. The next section explores the findings from the thematic analysis of the selected research studies.

Table 1
Demographic Characteristics of the Selected Papers.

Country	Number of participants	Age Range	Sex	Literacy	Population Type
USA	2133	6–18 years	Mostly female	Diverse	Non-clinical
UK and USA	16,101	9–16 years	Mostly female	Literate	Non-clinical
India	320	14–19 years	An equal number of boys (n = 160) and girls (n = 160)	Literate	Non-clinical
USA	156 mother–child dyads	8–12 years	41% females. 59% males	Diverse	Non-clinical
USA	154	Children ≤ 12 years of age	majority males	Not mentioned	Clinical
India	693	13–17 years	Male: Female comparable	Literate	Non-clinical
India	6721	13–15 years	2997 female; 3724 males	Literate	Non-clinical
India	47	Three- to six-years old	62% boys	Not mentioned	Clinical
Norway	5718	11–13 years old	52% females	Diverse	Non-clinical
Netherlands	50	8–13 years	21 females and 29 males	Diverse	Clinical
Sweden	3424 dyads of parents and children	Seventh-grade students (aged 13 years)	Mostly females	Literate	Non-clinical
Hong Kong	872	12–18 years.	437 females, 435 males	Literate	Non-clinical
India	200	12 and 16 years	Mostly males	Literate	Non-clinical
India	190	aged between 16 and 18 years	49 males and 141 females	Literate	Non-clinical
China	2986	13–18 years	91.5% male; 94.2% female	Literate	Non-clinical
UK	4101	10–13 years	Majority female	Literate	Non-clinical
Norway	1266	12–15 years	Majority female	Literate	Non-clinical
USA	5131	8–17 years	Not mentioned	Literate	Non-clinical
India	209	13–16 years	Majority males	Literate	Non-clinical
India	376	Mean age = 15.69 years	majority males	Literate	Non-clinical
India	500	8–14 years	336 males, 164 females	Literate	Non-clinical
Belgium	402	Mean age = 16.41 years old	43% boys	Literate	Non-clinical
Switzerland	362	12–17-year olds	44.8% female	Literate	Non-clinical
South American countries	1091	16–18 years	females	Literate	Non-clinical
Canada	753	Mean age = 14.1 years	55% female	Literate	Non-clinical
Scotland	467	11–17 years	Not mentioned	Literate	Non-clinical
Norway	10,220	Mean age = 17 years	Females (53.5%)	Literate	Non-clinical
Serbia	160	Mean age = 18.02 years	Mostly female	Literate	Non-clinical
Canada	4,034	4 and 7	Equal males and females	Literate	Non-clinical
USA	177	3–6-year-olds	Not mentioned	Not mentioned	Non-clinical
USA	223	Mean age = 9.2 year (Wave 1) and Mean age = 13.1 years (Wave 2)	Mostly boys	Literate	Non-clinical
USA	2148	5–11 years	Mostly males	Literate	Non-clinical
Netherlands, Spain and UK	3207	9–10 years	53% females	Literate	Non-clinical
USA	4053	2–17	Males and females comparable in number	Not mentioned	Non-clinical
Nordic countries	12,955	4–16 years	Males and females comparable in number	Not mentioned	Non-clinical
Canada	14,959	14–18	57.8% of participants were girls	Literate	Non-clinical
USA	1179	28.7 years	Majorly females	Not mentioned	Non-clinical
Australia	3537	14–15 years	Male 51.4%	Literate	Non-clinical
USA	13,034	11–32 years	Mostly females	Not mentioned	clinical
Australia	111	11–17 years	Equal males and females	Literate	Non-clinical
USA	2030	2–17 years	Equal males and females	Literate	Non-clinical
India	2402	11–17 years	Not mentioned	Literate	Non-clinical
Norway	19,567	Mean age 16.2 years	51% were males	Literate	Non-clinical
USA	61	3.74–5.76 years	26 females and 35 males	Literate	Non-clinical
Palestine	971	14–18 years	57% female	Literate	Non-clinical
Netherlands	2230	Mean age = 11.09 years	51.0% females	Literate	Non-clinical
Australia	10,596	4–5 years	Equal males and females	Literate	Non-clinical
Nepal	282	15.75 years	Majority females	Diverse	Non-clinical
Sweden	5451	15–18 years	Majority males	Literate	Non-clinical
Brazil	805	7–9 years	Majority males	Non-literate	Non-clinical
USA	1363	3–12 years	Majority males	Non-literate	Non-clinical

3. Findings

We identified five themes from our thematic analysis: Physical Environment, Home Environment, Social Environment, Socioeconomic Environment, and Digital Environment. Each of these affects children's and adolescents' mental health by altering the behavior patterns of those affected (Lereya, Copeland, Costello et al., 2015; Lereya, Copeland, Zammit et al., 2015).

3.1. Physical Environment

This theme reflects on the effects of living conditions like

neighborhood characteristics (Kemp, Langer, & Tompson, 2016; Stansfeld et al., 2005; Xue, Leventhal, Brooks-Gunn, & Earls, 2005), and climate change and natural disasters (Fritze, Blashki, Burke, & Wiseman, 2008) on the mental health of children and adolescents.

3.1.1. Neighborhood characteristics

Research on neighborhood characteristics showed mixed effects on the mental health of children and adolescents. One study showed that neighborhood strain could precisely predict broader mental health problems in children but may not affect depressive symptoms specifically (Kemp et al., 2016). However, another study concluded a positive relationship between lower socioeconomic neighborhoods and

Table 2
Summary of Findings.

Theme	Sub-theme	Major Findings
Physical Environment	Neighborhood Characteristics	- Varied effects on the mental health of children. - Family income, maternal educational levels, organizational participation, and collective efficacy act as moderating variables.
	Climate Change and Natural Disasters	- Severe effect on children's mental health states. - Issues of PTSD, depression, anxiety, somatoform disorders, drug and alcohol abuse, and emotional difficulties.
Home Environment	Parenting (<i>Parental Involvement and Parental Expectations</i>)	- Positive involvement (not excessive) is directly proportional to reasonably better mental health states. - Early attachment determines future relationships and the child's emotionality. - The effect of parental expectations depends on the externalizing symptoms of the child.
	Family Structure	Family economy, education levels of parents, financial conditions, history of illness have an impact on a child's mental health and its subsequent behavioral tendencies.
	Family Environment (<i>Abuse</i>)	- Family violence, parental attitudes, alcoholic parents, divorce, and parental migration have a profound effect on a child's mental health. - Abuser's role (caregiver or stranger) determines the symptom levels in children's mental health. - Abuse has a varied effect on the mental health of children and adolescents.
Social Environment	Increasing Competitive Environment	- Varied effects on the mental health states - Exercise, diet, and peers play a mediating role. - Poly-victimization is more detrimental to the mental health of children as compared to a repeated single or severe abuse.
	Harassment and Trauma (<i>Bullying</i>)	- Type and frequency of harassment determine the impact on the psychological states of children. - Victims of bullying experience psychological (anxiety, depression, suicidal thoughts) and physical symptoms (headache and stomach pain). - Victims of bullying are at a higher risk of severe psychological problems compared to other harassment or trauma. - Boys are major victims of physical and psychological violence. Girls are major victims of sexual abuse.
Socioeconomic Environment	Poverty	- Cause and consequences of poverty generate learned helplessness and affect self-regulatory behavior in children. - Interrelated cause-and-effect relation exists between psychological adversities, environmental factors, and biological mechanisms causing psychological symptoms.
	Sociopolitical conditions	- Socioeconomic strata, long-term political conflicts, and food hardships cause issues like phobia, anxiety, increased aggression, PTSD, and obsessive-compulsive behavior. - Women are more vulnerable to mental health issues. - Religion acts as a moderating variable.
Digital Environment	FOMO	- Generates anxiety, stress, and depressed feelings among children. - Creates self-esteem issues.
	Impact on Sleep and Mental Health	Increased screen time before bed generates sleep discrepancies, depressive symptoms, and isolation.

increased mental health problems among children (Xue et al., 2005). Family income, maternal education levels & functioning, organizational participation, and collective efficacy seemed to have a moderating effect on this assumed causal relationship between mental health and neighborhood characteristics. All the authors believe that neighborhood characteristics have an overall impact on children's mental health in general, with various moderators influencing this effect.

3.1.2. Climate change and natural disasters

There is a strong consensus on the existence of global warming among us. The effects are visible through the melting glaciers, increasing sea-levels and floods, and, most importantly, climate change. Acute traumatic stress is the most common psychosocial response to a disaster (Fritze et al., 2008). Survivors continue to undergo post-traumatic stress disorder (PTSD), depression, anxiety, somatoform disorders, and substance abuse, with children illustrating more affliction than the adults (Fritze et al., 2008). Drought-affected children also have psychological difficulties like emotional issues, victimization, and depression (Becker-Blease, Turner, & Finkelhor, 2010; Dean & Stain, 2010). Additionally, increased levels of problematic behavioral patterns among children were associated with drought-related elements like family issues, financial constraints, loss of loved ones, and climate change (Becker-Blease et al., 2010). Thus, significant climatic changes that transform into disasters can have a severe impact on children's mental health.

3.2. Home Environment

Our second theme concentrates on parenting, family structure, and family environment.

3.2.1. Parenting

This sub-theme suggests that various issues related to parenting can have adverse effects on children and adolescents' mental health, as discussed in the following sections.

3.2.1.1. Parental involvement. Logistic regression models show increasing parental involvement levels are related to a minimum probability of poor mental health among children, irrespective of gender (Hasumi et al., 2012). Thus, the higher the involvement of parents in a child's functioning, the better their mental health. However, the word "higher" does not mean excessive in this context, but a considerable amount of involvement. Parental involvement may boost and encourage the morale of children, hence motivating a child's independence, which may, in turn, help children have healthy mental states. Temperamental issues, shyness, negative affection of parents, and decreased encouragement of a child's independence are factors that may cause anxiety disorders in children (Lindhout, Markus, Hoogendijk, & Boer, 2009).

Additionally, children's functioning and emotional availability are associated with their attachment security in maternal interactions (John, Morris, & Halliburton, 2012). In an instance where there is a minimal amount of attachment security, a child's decreased functionality may make them emotionally unavailable during their interactions

with others, leading to the risk of future insecure attachments. Hence, early attachment security determines the future relationships of children, especially in terms of their emotionality.

3.2.1.2. Parental expectations. Expectations of parents from their children impact their mental health, even though the external environment (family, friends, school, culture) and its nexus may also exert a profound effect (Ma, Siu, & Tse, 2018). Research has claimed a negative correlation between parental expectations and externalizing symptoms (Almroth et al., 2019). For example, a child will have higher externalizing symptoms like temper issues, excessive verbal aggression, physical aggression, when there are low expectations from his/her parents. However, this association depends on the level of mutual expectations and demands of both the parents and their children. The dissonance between a child's and the parent's expectations, for instance, on gaining an education lower than university, was correlated to higher odds of externalizing behavior than a congruent case of expectations between children and their parents (Almroth et al., 2019). Wherein low expectations from parents result in higher externalizing behaviors in children; other research shows that higher parental expectations, even though positively correlated with the academic performance of their children, were directly associated with depression among them (Ma et al., 2018). The effects of such expectations on the academic performance were mediated through the child's value of academic accomplishment and frequency of school support (Ma et al., 2018).

An increase in age, difficulties in studying at home, scoring less than 50% in exams, or failing at exams, social relationships, and relationships with parents are significant elements linked to the predisposition to mental health problems in children. Failure or below-average performance in exams is associated with low self-esteem and emotional and behavioral problems. Research indicates that about 66% of students feel pressured by their parents to improve their academic capabilities, and 81.6% of students develop anxiety associated with examinations (Deb, Strodl, & Sun, 2015). Gender differences suggest that girls face a higher number of emotional problems and stress for academic excellence, primarily when their fathers are employed in the service industry (Nair, Ganjiwale, Kharod, Varma, & Nimbalkar, 2017).

The positive effects of parental involvement on the mental health of children hold similar opinions among authors of the selected studies; however, the role of parental expectations seem conflicting (Almroth et al., 2019; Hasumi et al., 2012; Lindhout et al., 2009; Ma et al., 2018). On the one hand, research shows that high parental expectations lead to positive mental health outcomes (Almroth et al., 2019). On the other hand, high expectations are linked with depression among children (Ma et al., 2018). Even with this contrasting image of parental expectations, one may note the various mediators (similarity between a child's and parent's expectation levels, child's value of academic success, school support frequency) in this relationship.

3.2.2. Family Structure

Apart from individual members of a family, a holistic family structure also has several effects on children and adolescents' mental health. Behere, Basnet, and Campbell (2017) found that subjection to trauma and hospitalization are indicators of behavioral difficulties in children. Additionally, the existence of trauma and a family history of psychiatric illnesses anticipated increasing rates of admission. Elements of a family structure like the family economy and education levels of parents impact a child's mental health (Boe et al., 2014). Externalizing problems and influenced disciplinary measures are associated with the family economy, and parental wellbeing is related to emotionality and maternal education. This may show that a child's mental health may be affected by the financial situation of a family with parental emotional wellbeing and practices having a moderating effect. Thus, individual family members and the family structure in totality impact the mental health of children.

3.2.3. Family Environment

Children and adolescents who are exposed to family violence are at a higher risk for adjustment problems. More heightened aggression and social withdrawal during middle childhood and decreased socio-emotional competence during early adolescence are related to emotional neglect and abuse (Deb & Walsh, 2012). Unhealthy habits (drinking and smoking) and attitudes of parents, in general, have profound effects on the mental health of children. Consumption of alcohol is the fifth leading risk factor for premature death and disability among people between 15 and 49 years of age (WHO, 2020). Alcoholic parents can affect their children's mental health states adversely (Omkarappa & Rentala, 2019). Such children have higher degrees of anxiety, depression, social phobia, obsessive-compulsive problems, physical injury, and low self-esteem, compared to children with non-alcoholic parents. The higher depression rates among these children may be a consequence of negative experiences of abuse due to alcoholic parents at home. Since they are susceptible to so many disorders at once, they are seemingly at a higher risk for behavioral problems than others in their peer groups. Apart from alcoholism, parental attitudes and behaviors like migration and divorce also affect the children's mental health (Gao et al., 2010; Strohschein, 2005). Children exposed to parental migration and divorce have feeble lifestyle behaviors and emotional and mental problems. Unhappiness, suicidal ideations, and leaving home tendencies were found among children left behind by their parents due to migration (Gao et al., 2010). Gender differences have shown a more significant impact of parental migration on girls concerning substance abuse and mental health problems. Children of conflicted parents exhibit higher degrees of depression/anxiety even before the divorce takes place (Strohschein, 2005). Degree of child anxiety and depression increases when they see their parents announce lower marital satisfaction, higher dysfunctions within the family, and higher levels of depression.

3.2.3.1. Abuse. Abuse of various types is unfortunately widespread in several households. Globally, around one billion minors (from two to 17 years) were abused physically, emotionally, or sexually (WHO, 2004). Physical, sexual, or emotional violence is perpetrated by parents, relatives, or teachers globally. UNICEF (2017) data of 28 countries revealed that nine out of 10 adolescents had been victims of forced sexual relations with individuals they knew or were close to the family. Sexual and physical trauma, when committed by a non-caregiver, results in higher symptom levels among children with mental health concerns (Kiser et al., 2014). This finding was at a tangent since it was assumed that the severity of symptoms would be higher in children who were abused by caregivers. One should note the effect of a caregiver's role on a child, that is, the difference in a child's psychological distress if the abuser is a primary or a sole caregiver.

Most importantly, one may also note whether the child understands what is inappropriate and what should be one's response if she or he is uncomfortable. Moreover, the sample selected for this study was neither probability-based nor representative of the general population of children exposed to such kind of violence and trauma. However, irrespective of the nature of caregivers, sexual and physical abuse have a varied effect on children's mental health (Moffitt, 2013).

These studies' findings urge us to pay attention to all facets of a family structure, including the unhealthy lifestyles of parents and their attitudes towards their children, to discount and control the effects of such factors on children's mental health.

3.3. Social Environment

The social environment forms an integral part of society, especially in collectivist cultures (Darwish & Huber, 2003). However, at times, we are exposed to an unfortunate series of events that affect our mental health adversely. This theme is characterized by the effect of children's surrounding environment on their mental health. We discuss the impact

of competition (Arun & Chavan, 2009), peer bullying (Lereya, Copeland, Costello et al., 2015; Lereya, Copeland, Zammit et al., 2015), physical and sexual abuse (Deb & Walsh, 2012; Turner, Finkelhor, & Ormrod, 2010), academic stress, and parental pressure (Deb et al., 2015) on children's and adolescent's mental health under this theme.

3.3.1. Increasing competitive environment

There are differing findings on the effects of an increasingly competitive environment on children's mental health. Some studies assert that massive pressure in terms of increased competition results in negative affective states among children (Arun & Chavan, 2009; Donzella, Gunnar, Krueger, & Alwin, 2000). Another finding shows that participating in competitive sports is correlated with negligible mental health issues (Breistøl et al., 2017). However, exercise, a healthy diet, and friends play a mediating role between participation in non-competitive sports, competitive sports, and mental health issues. Arun and Chavan (2009) found a positive association between academic pressure and suicidal ideas and self-harm. Additionally, children who are extroverts appear to be at risk of stress due to competition (Donzella et al., 2000).

3.3.2. Harassment and trauma

Exposure to various types of harassment is more detrimental to a child and adolescent's mental health than repeated victimization of single and severe abuse. Turner et al. (2010) suggest that sexual victimization and assault are more likely to be experienced by a poly-victim group. Because of the exposure of different types of victimization, these children suffer from more trauma-related symptoms than those exposed to a single kind of victimization. Children belonging to the poly-victim group are likely to face abuse by peer groups at school, family members, and individuals in nearby communities and neighborhoods. This type of victimization destroys the child's future resiliency (Turner et al., 2010). Thus, the type and frequency of harassment and gender differences in response to such torture impact a child's mental health. Additionally, factors like peer problems, emotional, and conduct issues were the most common problems associated with children's mental health in a survey conducted in India (Nair et al., 2017).

3.3.2.1. Bullying. Children are at a higher risk of developing psychological problems like anxiety, depression, self-harm, and suicidality when they are bullied by peers (Lereya, Copeland, Costello et al., 2015; Lereya, Copeland, Zammit et al., 2015). Numerous studies have recorded the higher risk of mental health issues in individuals who bully or are victims (Lereya, Copeland, Costello et al., 2015; Lereya, Copeland, Zammit et al., 2015; Malhi, Bharti, & Sidhu, 2014; Ramya & Kulkarni, 2011; Sigurdson, Undheim, Wallander, Lydersen, & Sund, 2015). The intensity of the effect of a bully on a victim is significantly higher than maltreatment, that is, the impact of being bullied surpasses the combined effects of being bullied and maltreated (Lereya, Copeland, Costello et al., 2015; Lereya, Copeland, Zammit et al., 2015). The mental health problems range from psychotic experiences and depression (Lereya, Copeland, Costello et al., 2015; Lereya, Copeland, Zammit et al., 2015) to conduct problems and aggressive behavior (Malhi et al., 2014). Silberg et al. (2016) affirm that bullying victimization has an environmental dimension that affects childhood social and separation anxiety and suicidal ideation of monozygotic (MZ) discordant twins. Studies from India reveal that it has the highest reported bullying behavior with 53%, and that male students are more involved in such activities, either as victims or as bullies (Malhi et al., 2014, 2015). Research on gender differences suggests that while boys have been victims of physical and psychological violence, girls are victims of sexual abuse (Deb & Walsh, 2012). This research, conducted in India, shows that girls portray decreased social adjustment in response to violence compared to boys.

Additionally, a study highlighted physical symptoms, such as headaches, stomach pain, loose stools, and fever, because of getting bullied (Ramya & Kulkarni, 2011). Forms of bullying range from non-

physical such as calling names and body shaming, to physical abuse like hitting or beating in this study. Moreover, the psychological distress caused by cyberbullying has also become a significant issue among youth (Cénat, Blais, Lavoie, Caron, & Hébert, 2018). In summary, several factors present in our social environment negatively affect children's and adolescents' mental health. These factors must be considered when reviewing the status of mental states in children and adolescents.

3.4. Socioeconomic Environment

This theme consists of the social, political, and economic conditions in a country. It mainly emphasizes on the effect of poverty and socio-political conditions on the mental health of children adolescents.

3.4.1. Poverty

Research suggests a significant connection between income and self-regulatory behavior in children. For example, chaos (the result of poverty) impacts the socio-emotional development in children (Evans, Gonnella, Marcynyszyn, Gentile, & Salpekar, 2005). Besides, consequences like noise and crowd generate learned helplessness in humans. Thus, both the cause (poverty) and its consequences (noise, chaos, poor infrastructure) exert adverse and long-lasting effects on children, targeting their socio-emotional development. A direct correlation also exists between noises emitted from an aircraft, and impaired reading comprehension, and recognition memory in children (Stansfeld et al., 2005). The study also establishes an indirect link between aircraft and road traffic noises and annoyance among children. Even though chronic mental health effects of noise amongst children have not been established, one cannot ignore the impairments in some of the cognitive domains caused by extreme noise, leading to mental health difficulties in later years (Chen, Lawlor, Duggan, Hardy, & Eaton, 2006).

Psychological adversities, environmental influences, and biological mechanisms have a cause-and-effect relationship. For example, dysregulation in the hypothalamic-pituitary-adrenocortical (HPA) system plays a role in the etiology of various psychological disorders, namely anxiety, affective, and disruptive behavior disorders (Bruce, Fisher, Pears, & Levine, 2009). Children who stayed at foster homes and were maltreated showed low morning cortisol levels, which affects the HPA system (Bruce et al., 2009). Hence, a direct link between the environmental influence (maltreatment and condition of children at foster homes), the biological mechanism (disruptions at cortical levels affecting the HPA system), and psychological outcomes (anxiety, behavioral issues) are established from this study.

The environment we live in affects us psychologically and biologically, which leads to higher psychological distress, hence creating a vicious cycle. Children who stay in the slums near the airports or on the main roads, or even at low-maintenance foster care homes have impaired socio-emotional functioning due to the adversities they face in their poor living conditions. Against this backdrop, one may realize the potentiality of poverty-stricken living conditions affecting the mental health of children.

3.4.2. Sociopolitical condition

The socioeconomic condition, along with prolonged political conflict, has unfavorable effects on children's mental health (Al-Krenawi & Graham, 2012; Amone-P'Olak et al., 2009). Rodriguez, da Silva, Bettiol, Barbieri, and Rona (2011) affirmed the utilization of socioeconomic and demographic conditions as predictors of mental health problems. For example, a study in Palestine found a positive correlation between symptoms like obsession-compulsion, phobia, anxiety, PTSD, aggression, and exposure to political violence among children (Al-Krenawi & Graham, 2012). The findings show economic status and gender as predictors, with poor economic conditions and girls being more vulnerable to adverse mental health symptoms. Interestingly, religion also had a similar effect in this study, with more religiosity being associated with fewer mental health symptoms. On parallel lines, externalizing

symptoms of aggression and delinquent behavioral patterns, rather than emotional issues, were associated with the different levels of socio-economic indicators like unemployment and social disadvantage (Amone-P'Olak et al., 2009; Davis, Sawyer, Lo, Priest, & Wake, 2010).

In a comparison study on mental health among child soldiers in Nepal, Kohrt et al. (2008) found the expected adversities of depression, PTSD, and functional impairments. They also discovered a uniform pattern in the anxiety symptoms, which strongly suggests the generalized role of anxiety in response to war and conflict regardless of the status as soldiers or civilians. Research also asserts the relationship between food-hardships and behavioral problems in children, with young children being more susceptible to such hardships (Slack & Yoo, 2005). A positive association between depression and social status was asserted with humiliation being a moderator variable (Åslund, Leppert, Starrin, & Nilsson, 2009). Thus, socioeconomic environment, especially poverty and a child's sociopolitical conditions, cause psychological distress among children and adolescents.

3.5. Digital Environment

In recent times, several studies highlight the role of digitalization (social media, smartphones) in children and adolescents' mental health. The use of social media is highly intensive among this population. In this theme, we will address the emergence of negative feelings like the fear of missing out (FoMO) because of the overconsumption of social media and its consequences like disturbances in sleep patterns.

3.5.1. FoMO

FoMO, according to the Oxford Dictionary, refers to a state of anxiousness when an individual feels that there exists a more exciting situation elsewhere, and they are not present in that scenario (Dirda, 2013). Globally, social media profiles account for 18% of children between the ages of eight to 11 years, and 69% of children between 12 and 15 years (Chaffey, 2016). Around one in 10 adolescents appear to be stressed for not being affiliated with their friends on social media sites (Beyens, Frison, & Eggermont, 2016). Such websites create a strong need to connect, belong, be accepted, and famous. This highlights the importance of FoMO as an explanatory mechanism for such demanding needs among children (Beyens et al., 2016). It is validated as a mediator between psychopathological symptoms and the negative aftermath of social media usage through devices like smartphones (Oberst, Wegmann, Stodt, Brand, & Chamarro, 2017). For example, a child develops the feeling of FoMO based on their quantitative use² of social media platforms, which in turn leads to negative consequences like anxiety symptoms ("why am I not getting likes on my picture?") and symptoms of depression ("No one likes me"). The study indicates that girls are more susceptible to depression and anxiety symptoms (psychopathological symptoms), leading to FoMO compared to boys (Beyens et al., 2016; Oberst et al., 2017). Thus, FoMO can be viewed as both a cause and a consequence of using social media.

3.5.2. Impact on sleep and mental health

Adolescents happen to use one or more electronic devices before bedtime, which positively correlates with sleep onset latency and sleep deficiency. This leads to establishing an inverse relationship between media use and duration of sleep (Hysing et al., 2015; Lemola, Perkinson-Gloor, Brand, Dewald-Kaufmann, & Grob, 2015). The habit of using smartphones before bedtime not only affects the sleep patterns but strongly alters adolescent's habits of texting and calling more often (Lemola et al., 2015). Devoting more time on social media platforms was most positively associated with sleep discrepancies and depressive symptoms (Lemola et al., 2015).

Additionally, a positive correlation exists between the amount of

time consumed on social media platforms, social isolation (Best, Manktelow, & Taylor, 2014), and depression (Pantic et al., 2012). Further, lower self-esteem among children originates from a scattered pattern of sleep and the emotional involvement associated with their social media accounts ((Lemola et al., 2015; Woods & Scott, 2016). Hence, there are some intertwined factors related to social media usage. On one hand, sleep disturbances caused by the over-utilization of social media affect the self-esteem in children, which leads to depressive symptoms. On the other hand, the anxiousness of not being connected to social media results in its extensive use and hence, poor quality sleep, giving rise to lower self-esteem, leading to depression (Woods & Scott, 2016). The utilization of social media among children before bedtime and atypical sleep patterns are complementary, that is, affecting one another simultaneously. However, precaution must be taken to consider the use of such sites as the only explanation of mental health problems (Sampasa-Kanyinga & Lewis, 2015).

3.6. Emerging patterns in the selected studies

The research papers that were selected for the thematic analysis have studies conducted over the last 20 years. We observed a trend in the research on children's and adolescents' mental health based on the selected studies.

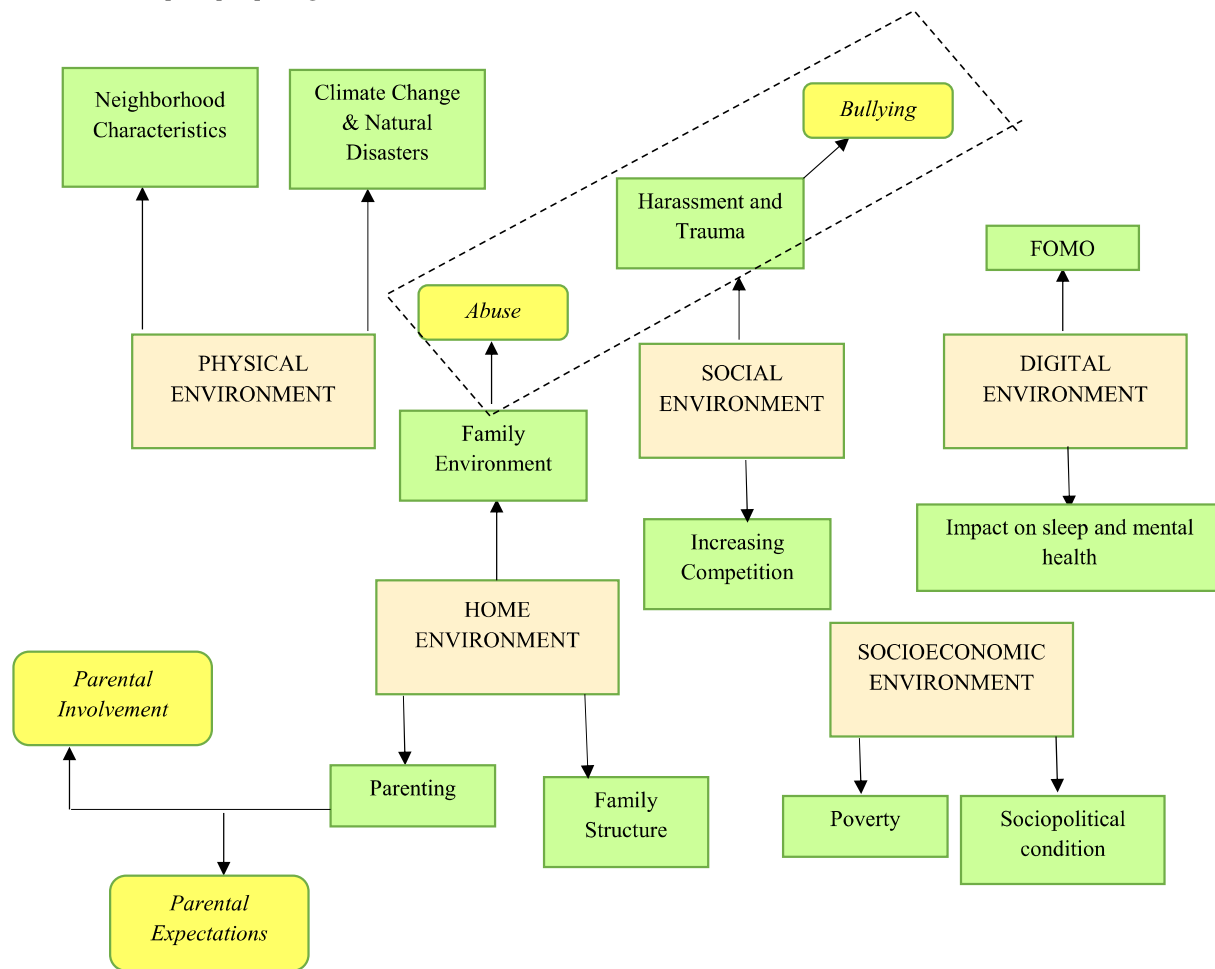
For the period from 2000 to 2005, enormous research was conducted on children's mental health concerning of increased competition (Donzella et al., 2000), abuse and neglect (Colman & Widom, 2004), parental divorce (Strohschein, 2005), and neighborhood characteristics like resident type, aircraft, and traffic noises, and food hardships (Evans et al., 2005; Slack & Yoo, 2005; Xue et al., 2005). This period of research studied mental health issues from an external perspective, that is, focused on external factors (abuse, divorce, traffic noise, etc.) responsible for the children and adolescent's mental health. The next phase between 2006 and 2010 had studies from both external and internal perspectives. The external aspects included maltreatment (Bruce et al., 2009), socioeconomic positions (Amone-P'Olak et al., 2009; Kohrt et al., 2008), rearing styles (Lindhout et al., 2009), migration (Gao et al., 2010), bullying (Ramya & Kulkarni, 2011), natural calamities (Becker-Blease et al., 2010; Dean & Stain, 2010), and perinatal factors (Rodriguez et al., 2011); whereas the internal perspectives consisted of temperamental issues (Lindhout et al., 2009) and suicidal ideations (Arun & Chavan, 2009).

The phase from 2011 to 2015 saw a significant shift towards technology and its impact on mental health. Studies included electronic devices like mobile phones and computers (Hysing et al., 2015), electronic media (video games) (Lemola et al., 2015; Sampasa-Kanyinga & Lewis, 2015), and online social networking (Pantic et al., 2012). Additionally, some studies significantly concentrated on bullying and psychological functioning (Bjereld, Daneback, Gunnarsdóttir, & Petzold, 2015; Lereya, Copeland, Costello et al., 2015; Lereya, Copeland, Zammit et al., 2015; Malhi et al., 2014; Sigurdson et al., 2015), which were missing in the initial two phases. The last stage (2016–2020) saw a continuation of previous research on technology and bullying (Oberst et al., 2017; Silberg et al., 2016). However, it also witnessed the advent of terms related to technology like FoMO (Beyens et al., 2016). Research on social media like Facebook and technology-related adversities like cyberbullying were prominent during this phase (Cénat et al., 2018; Woods & Scott, 2016).

Moreover, abuse in the form of sexual harassment, physical aggression, or cyberbullying was present in all the phases of studies. This is highly unfortunate since it reveals that despite ongoing awareness measures taken against children's exploitation, these heinous acts continue to happen worldwide. The topics in the different phases are not discrete, that is, the research topics that existed in the early 2000s even existed in the later stages. However, the primary target of the research studies shifted from parental factors' effect on the impact of technological realms on children's mental health. Fig. 2 depicts the

² Usage per hour (consumption against a quantitative measure such as time).

Concept map depicting the themes



Note. This flowchart shows the selected themes and their subthemes for the present review paper. The dotted box surrounding Abuse, Harassment, and Trauma, and Bullying shows that abuse of various types was consistent across themes.

Fig. 2. Concept map depicting the themes.

various themes which emerged during the analysis. It also represents the relatedness between themes from two different domains. Fig. 3 is the pictorial representation of the trend that we have discovered in this section.

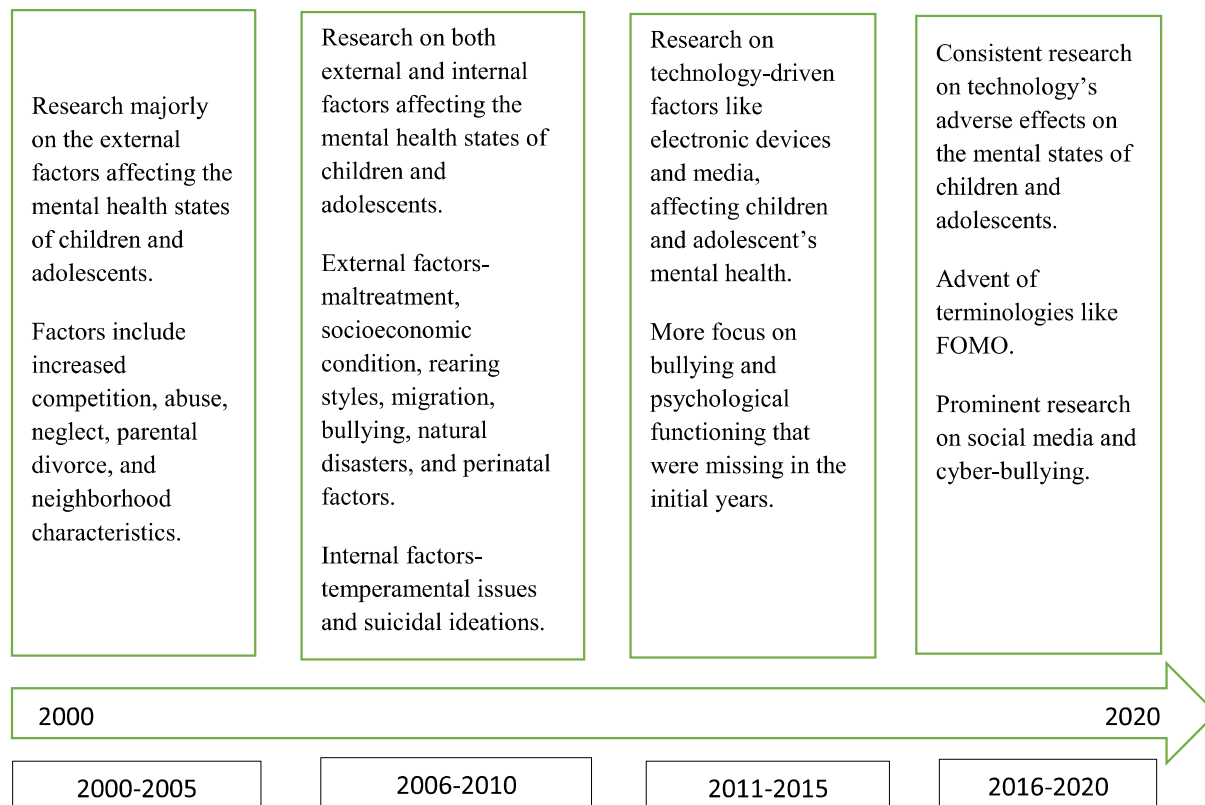
4. Discussion

This paper aims to recognize and indicate the factors adversely affecting children and adolescents' mental states. Through a systematic review of literature, we identified the five major themes, namely Physical Environment, Family Environment, Social Environment, Socioeconomic Environment, and Digital Environment. From these themes, negative consequences such as psychological (depressive symptoms, identity issues, trauma, anxiety, suicidal ideation) and physiological (sleep disturbances, biological issues, externalizing behavior) disturbances affected the mental states of children and adolescents.

From the section on Physical Environment, neighborhood characteristics showed a mixed picture of individuals' mental health status.

In contrast, poverty-driven areas, and climate change and natural disasters had a strong relationship with negative mental states. Additionally, we found strong links between abuse, family structure, and indifferent parenting with anxiety, depression, and increased aggression as they are subjected to trauma and loss of secured attachments (Almroth et al., 2019; Ma et al., 2018). Major psychological issues arose from the section on Social Environment, consisting of bullying, trauma, and harassment. We observed that abuse overlapped with the sections on both Family and Social Environment, which portrays the horrifying frequency of violence in different contexts. According to a BBC news report, there are four child victims every hour, and a child gets sexually abused every 15 min (BBC News, 2017).

In the current paper, abuse (of different types) influenced the mental health status of children and adolescents in all the themes existing in this paper. The section on Socioeconomic factors revealed that the poor and girls are more susceptible to mental health issues among the socioeconomic strata than the rich and boys, with religion having a moderating role (Al-Krenawi & Graham, 2012). Lastly, the findings from the section on Digital Environment reveal an increased utilization

The trend from the Selected Studies

Note. The highlighted text shows that abuse of various types have continued throughout the period of 20 years.

Fig. 3. The trend from the Selected Studies.

of technology among children and adolescents, resulting in significant psychological symptoms. However, such findings are contradicted by research showing the positive association between technology (video games, TV, social media), creativity (Jackson et al., 2012), increased identity experimentation (Best et al., 2014), academic achievement (Espinosa, Laffey, Whittaker, & Sheng, 2006), and entertainment and communication (O'Keeffe & Clarke-Pearson, 2011). Even though one may acknowledge the positive outcomes of technology among children, it is inevitable not to ignore the negative consequences which weigh down their mental health.

The major limitation of this study is that these broadly defined themes do not pin-point a specific problem responsible for unhealthy mental states. However, we developed broader themes to inculcate the various areas linked to one primary concept to give our readers an overall outlook of all the psychological health-related issues and their sources.

Findings from the current paper can be useful for devising strategic interventions, not only for children and adolescents suffering from psychological issues, but also in planning focused frameworks for the general population, school psychologists, curriculum for educational institutions, child welfare organizations, and non-governmental organizations (NGOs). Mental health professionals can direct their therapeutic approaches keeping in mind the other environmental factors that catalyze the deterioration of children and adolescent's psychological wellbeing and focus majorly on resilience strategies. Genes may also have a moderating role in aggravating specific psychological symptoms like anxiousness, impulsivity, depressive feelings, and conduct problems (Singham et al., 2017). Future researchers may explore this gene-environment interactional effect of the themes discussed in

the current review paper. For instance, how much of the environmental influences that affect individuals' mental health are mediated by genes? Researchers may also call for a model that can quantitatively measure such gene-environment interactions.

Moreover, there is a lack of proper policies and subsequent implementation when it comes to the mental health of children and adolescents, especially in low and middle-income countries (Mokitimi, Schneider, & de Vries, 2018). The current work can be incorporated as a preliminary reference for policymakers to create specific guidelines that safeguard the mental health interests of the young population, especially while making reality shows, developing school curriculums, cyber protection regulations, improving media content, and educating adults about parenting styles. While we acknowledge the complexities that come with the development of mental health policies, we still recommend its proper implementation to control the psychological burden on young people's wellbeing. For example, better health care facilities at a standardized price that cater specifically to harassment cases; and stricter laws against familial abuse can be taken under consideration. Importantly, these guidelines should also call for a durable solution to the continuous abuse of different types prevailing in our societies despite the ongoing awareness programs.

Though the themes discussed in this paper may seem to have an uncontrollable effect on children's and adolescents' mental health, researchers can create specific "mind-gym training" sessions to help maintain individuals' mental health. User-friendly technology with customized training for different psychological symptoms can be developed for such sessions. For example, specialized mindfulness training to relieve anxious feelings or depressive symptoms. Rigorous, scientifically acclaimed, and technology-oriented interventions are the

need of the hour to help develop healthy mental states, especially among children and adolescents.

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CRediT authorship contribution statement

Sandhya Basu: Conceptualization, Methodology, Visualization, Writing - original draft, Writing - review & editing. **Bidisha Banerjee:** Conceptualization, Methodology, Visualization, Supervision, Writing - review & editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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