

# Nature, prevalence and determinants of mental health problems experienced by adolescents in south Asia: a systematic review



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## Summary

**Background** Adolescence is a sensitive phase of human development where individuals, aged 10–19 years, are particularly vulnerable to developing mental health problems (MHPs). South Asia, home to 24% of the world's population, is mostly comprised of low- and middle-income countries (LMIC). Most of the world's young people live in LMICs. This systematic review aims to assess the available evidence on the nature, prevalence and determinants of MHPs experienced by adolescents in south Asia.

**Methods** Following PRISMA guidelines, searches were conducted in four online databases (Ovid Medline, Ovid EMBASE, Ovid Global Health, Ovid PsycInfo), titles, abstracts, and full-texts were screened, data extracted and quality assessed. Extracted data were categorised into school-based studies (SBS) and non-school-based studies (NSBS). Data were further stratified according to country, MHPs and narratively synthesised.

**Findings** Of the 5847 records identified in the searches, 117 met inclusion criteria. Most (n = 87) were SBS. Key MHPs reported across countries include anxiety disorders and depression. Wide ranges of prevalence rates were reported for anxiety in Indian SBS (1.5–81.6%) and NSBS (1.8–88.1%), and for depression, Pakistani SBS (21–79%) and Indian NSBS (0.4–98.5%). Determinants include individual characteristics; violent victimisation; poor family/home/school environment/peer relationships; already experiencing MHPs and substance use/abuse. Increased physical activity, adequate nutrition, safe/positive homes/family environment, being unmarried females, higher maternal education, peer support/friendship, higher education level and engaging in extra-curricular activities were protective of mental well-being.

**Interpretation** Prevalence of MHPs among south Asian adolescents appears high. Determinants include social, cultural, environmental and socioeconomic factors often beyond individual control. Mental health policies and programs and research appropriate to the cultural context, that address social determinants of MHPs and evidence gaps, are needed to tackle the significant mental health burden among south Asian adolescents.

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**Keywords:** Mental health; South Asia; Adolescent; LMIC; Mental health problem; Prevalence; Determinants; Risk factors; Protective factors; Associated factors

## Introduction

Adolescence, generally described as the life phase between 10 and 19 years,<sup>1</sup> is a unique period of human

development where formative physical, emotional, and social growth occurs. Global estimates suggest that 1 in 7 adolescents (14%) experience at least one mental

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### Research in context

#### Evidence before this study

Current research indicates that mental health problems begin during adolescence (age 10–19 years). Failure to address these problems in this group may have adverse consequences, which manifest into adulthood. In south Asia, mental health infrastructure is weak. Given the cultural, religious, geographical and political diversity of this region, south Asian adolescents face unique mental health burdens. A database search conducted on four online databases (Ovid Medline, Ovid EMBASE, Ovid Global Health and Ovid PsycInfo) from Jan 01, 2000, to April 05, 2022 did not yield a published synthesis of the evidence. There remains little clarity regarding the nature of mental health in the adolescent population of this region, the prevalence of mental health problems and the multi-factorial determinants of mental health problems in this group.

#### Added value of this study

In 117 published studies of varying quality, this systematic review found that adolescents in south Asia experience a high prevalence of mental health problems, which are predominantly determined by social, cultural, environmental and socioeconomic factors beyond individual control. Most of the evidence were from India, highlighting a large evidence gap in adolescent mental health burdens across south Asia. This high prevalence of mental health problems in this region could not be compared to findings of other low- and middle-income countries because of the lack of prevalence data for the adolescent age group. Observations were made that the magnitude of prevalence identified in this review were

substantially higher than those reported in studies of populations in high-income countries. This association cannot be completely explained because of differences in study methodology but may be attributed to differences in life circumstances of adolescents. This review further identified an extensive list of determinants that were categorized using the Bronfenbrenner socioecological framework to understand the interplay of factors surrounding an adolescent that may affect their mental health. The determinants did not act uniformly across countries or mental health problems. There was considerable heterogeneity.

#### Implications of all the available evidence

The present synthesis of evidence identified potential universal prevention methods actioned by individuals, institutions, through public policy, public health strategies or research to address risk factors and enhance protective factors of mental health problems. These include health promotion strategies and policies to enhance individual level protective factors; programs enacted through schools to improve microsystemic protective factors; and broader preventative policies addressing income inequality, affordability and accessibility of mental healthcare to address exosystemic and macrosystemic risk factors of mental health problems. Future research will need to incorporate population level epidemiological data from all countries in south Asia to bridge the large evidence gap. Further, research funding that target initiatives to identify and address protective factors across multiple systems rather than single factors will lead to significant advancements in adolescent mental health.

health problem (MHP).<sup>2</sup> Depression and anxiety, the most common MHPs, are among the leading causes of mental illness and disability in this group, and suicide, usually a consequence of depression, is the fourth leading cause of death among adolescents aged 15–19 years.<sup>2</sup>

More than 80% of people who have MHPs live in low- and middle-income countries (LMICs).<sup>3</sup> It is estimated that by 2030, depression will be the third leading cause of disease burden in low-income countries and the second leading cause of disease burden in middle-income countries.<sup>4</sup> Given that almost 90% of all children and adolescents across the globe live in LMICs, where they constitute up to 50% of a country's population,<sup>5</sup> failure to address MHPs among adolescents in LMICs can have significant adverse consequences as a large proportion of MHPs begin in adolescence.<sup>5,6</sup>

South Asia, comprising Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka, is home to approximately 24% of the world's population.<sup>7</sup> Seven of the eight south Asian countries are classified by the World Bank as LMICs.<sup>7</sup> In many south Asian countries, prevalence data of MHPs among

adolescents is lacking. Available data are either limited to the adult population, aggregated in countries such as India and Pakistan, and even so, to certain pockets of communities.<sup>3</sup> Existing research including a review of mental health studies of adolescents in India found that the psychiatric morbidity of this population ranged from 1.81% to 24.7%.<sup>8</sup> Further a Pakistani study which was conducted in a specific population in the country reported a prevalence of depression and anxiety among adolescents at around 17.2% and 21.4%.<sup>9</sup> Overall population-wide prevalence estimates of MHPs specific to south Asian adolescents remain to be determined. Similar findings are identified in the broader LMIC context where only 32 of the world's 112 LMICs report prevalence data of common MHPs specific to adolescents.<sup>10</sup>

Mental health is multi-factorially determined. Determinants of MHPs can influence presence of MHPs and its severity across an individual's life span directly.<sup>11</sup> Across the lifespan, a complex interplay between psychosocial, environmental, cultural, socioeconomic, biological and genetic factors contribute to protecting or harming mental health.<sup>12</sup> This interplay of factors is

particularly important during the formative years of adolescence.<sup>6</sup> The more adversity an adolescent experience across the multiple levels of their environment, the greater impact on their mental health.<sup>12</sup> Growing evidence highlights that MHPs in populations are strongly socially, economically and culturally determined and, therefore, are unlikely to be addressed by mental health treatments alone.<sup>11</sup> In the south Asian region and the broader LMIC setting, there is very little consolidated evidence on social determinants of MHPs specific to adolescents.<sup>11</sup> The available evidence highlights poverty and community level violence as significant structural determinants of MHPs in the general population.<sup>11</sup> Given the cultural, religious, geographical and political diversity in the south Asian region, identifying determinants of MHPs among south Asian adolescents can inform future mental health policies and programmes in this region.

Currently, existing mental health policies in the region take a more human rights-based approach and include provisions for community mental healthcare where mental health is incorporated into primary care, medication is made available, the patient's family is involved, and a focus is placed on access to mental healthcare for all.<sup>13</sup> Despite these policies, the mental health infrastructure in this region is weak, with south Asian countries allocating less than 1% of their total national budget to mental healthcare.<sup>14</sup> There is also a dire shortage of mental health professionals.<sup>14</sup> Data specific to adolescent mental health service access and availability is limited. However, treatment gaps (difference between the number of people that need care and receive care) for MHPs among the general population in this region are estimated to be as high as 90%.<sup>15</sup> Access is a major concern, with most child and adolescent mental healthcare services concentrated in urban areas and institutions.<sup>15</sup>

Therefore, to address the mental health burden in this underserved population of south Asian adolescents, the current review aims to synthesise available evidence on the nature, prevalence and determinants of MHPs experienced by adolescents living in south Asia.

## Methods

### Study description

A systematic review of peer-reviewed journal articles, research reports, and government publications was conducted following the PRISMA reporting guidelines.<sup>16</sup> The review was registered via PROSPERO, the international prospective register of systematic reviews, on April 06, 2022 (CRD42022312109).

### Search strategy and selection criteria

Potential studies for this review were identified through a systematic search of four online databases (Ovid Medline, Ovid EMBASE, Ovid Global Health, and Ovid

PsycInfo) from Jan 01, 2000 to April 05, 2022. Search terms included a mix of subject headings such as MeSH and free text terms that related to four domains within the topic: population, mental health problems, setting, and determinants. The search strategies were intentionally broad to capture the diversity of MHPs and determinants affecting the population. The search strategy for the Medline database can be found in Additional File 1. In addition, article references were scrutinised for possible studies and cross-referencing of included studies occurred to further identify studies for inclusion.

MHPs included the mental, behavioural and neurodevelopmental disorders defined by the International Classification of Diseases 11th Edition (ICD-11). Specifically, anxiety, catatonia, disorders of bodily distress, disorders specifically associated with stress, disruptive behaviour or dissocial disorders, dissociative disorders, feeding or eating disorders, impulse control disorders, mood disorders, neurocognitive disorders, obsessive-compulsive or related disorders, personality disorders and related traits, and schizophrenia or other primary psychotic disorders were included.

Due to the broad nature of MHPs classified in the ICD-11, substance use disorders, elimination disorders, factitious disorders, mental or behavioural disorders associated with pregnancy, childbirth, and the puerperium, neurodevelopmental disorders, and paraphilic disorders were excluded from the search. The researchers believe these problems require an independent investigation to understand their complexities and effects on adolescents.

### Inclusion and exclusion

Studies were eligible if they were written in English and if they reported the following: data from south Asia defined as Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka<sup>7</sup>; data related to adolescents (aged 10–19 years, as defined by WHO<sup>1</sup>) and mental health; the primary outcome included a mental health measure; and the paper discussed the nature, prevalence or determinants of MHPs.

Studies reporting data from specific sub-populations with a specific problem other than a MHP were excluded (for example, depression among people with heart failure). Publications reporting data from clinics or hospitals where participants were patients with MHPs were excluded because this review is of the community prevalence of MHPs.

### Data extraction

Authors CM and MW screened titles and abstracts. Articles meeting the inclusion criteria were included for full-text screening. Full-texts for each article selected for inclusion were obtained. If the researchers were unable to find full-texts, the study authors were contacted via e-mail to obtain a copy. CM and MW independently

screened full-texts applying the inclusion and exclusion criteria. All eligible studies progressed to the data extraction stage. Differences between included and excluded studies were resolved through discussion among the investigator team. All screening processes were conducted through Covidence Systematic Review Manager (Covidence).<sup>17</sup>

Next, CM and MW independently extracted relevant data from the eligible studies through Covidence. Data extracted from each study include: author and date, title, country, setting, sample size, response rate of study participants, sampling method, participant age range, participant sex, types of mental health problems discussed, instruments used, prevalence, determinants of MHPs based on p-values, and other key findings. Prevalence rates were reported in the form of percentages or proportions scoring above a cut off score on a standardised measure. If a study reported data from a range of age groups, the data specific to adolescents within the age group 10–19 years were extracted.

Following data extraction, the researchers independently conducted a quality assessment of each study using the Kmet Standard Quality Assessment Criteria for Evaluating Primary Research Papers.<sup>18</sup> Separate checklists were used for quantitative and qualitative studies. The questions specific to randomised controlled trials in the quantitative checklist were not used. Next, CM and MW met to resolve any discrepancies in the data extractions and quality assessments. Any disagreements were resolved through discussion among the whole team.

### Data analysis

A meta-analysis was originally considered for this study. However, the database search yielded a large volume of studies of varying quality, a high degree of heterogeneity in data collection, participant characteristics, outcome measures and statistical analyses. Therefore, a narrative synthesis of the nature, prevalence and determinants of MHPs was deemed more appropriate.

All extracted data in Covidence were exported to Microsoft Excel and categorised into two groups: school-based studies (SBS) and non-school-based studies (NSBS). Next, the data in each group were stratified according to the eight south Asian countries from which the data were reported. We determined the prevalence range according to the lowest and highest prevalence rates reported for each condition in each country. Finally, SBS and NSBS data were stratified according to conditions reported and the number of studies reporting each condition.

### Role of the funding source

All funders had no role in the study design, data collection, data analysis, data interpretation or writing of this publication. The corresponding author had full access to all data in the study and had final responsibility for the decision to submit for publication.

## Results

Totally 117 studies were included in this review. The screening and selection process are elaborated in [Fig. 1](#). [Supplementary Tables S1 and S2](#) provides the citations, methodological descriptions, data extraction and quality assessments of all included studies.

There were 114 quantitative studies comprising of cross-sectional (n = 113) and case-control study designs (n = 1). Two studies were qualitative obtaining data through interviews and focus group discussions. One longitudinal study used a mixed-methods design. Most were SBS (n = 87) ([Supplementary Table S1](#)), while data from particular communities or large-scale populations were collected through the NSBS (n = 30) ([Supplementary Table S2](#)). The total sample size of included studies was 155,374 participants. Many studies gathered data from both male and female adolescents (n = 104). The overall average response rate was 89.45%.

The Strengths and Difficulties Questionnaire (SDQ) was the most commonly used instrument in the studies (n = 22), followed by Beck's Depression Inventory (BDI) (n = 17), Depression Anxiety and Stress Scale (DASS) (n = 8) and General Health Questionnaire (GHQ) (n = 8), Global School-Based Health Survey (GSHS) (n = 7), Centre for Epidemiological Studies-Depression Scale (CES-D) (n = 6) and the Patient Health Questionnaire (PHQ) (n = 6), Screen for Child Anxiety Related Emotional Disorders Scale (SCARED) (n = 5), Youth Self Report (YSR) (n = 5), and the Generalised Anxiety Disorder Scale (GAD) (n = 4). Six studies used study specific, pre-tested questionnaires.<sup>19–26</sup> Two studies used locally validated questionnaires.<sup>27,28</sup> One instrument was formally validated in the local context using the gold-standard method of psychiatric interviews,<sup>27</sup> where it reported 66% sensitivity and 79% specificity. Other instruments used in the included studies can be found in [Supplementary Tables S1 and S2](#).

No study used diagnostic tools to obtain prevalence data. Hence, the prevalence rates identified in this review refer to clinically significant self-reported symptoms of the respective MHPs. Overall, the quality assessment of the studies included in this review were diverse. Quality assessment scores can be found in [Supplementary Tables S1 and S2](#).

After the data were sub-categorised according to the eight south Asian countries ([Tables 1 and 2](#)), we found that the greatest number of studies were conducted in India (n = 74), then Bangladesh (n = 12), Nepal (n = 11), Pakistan (n = 10), Sri Lanka (n = 8), Afghanistan (n = 2), and finally Bhutan (n = 1). One study<sup>29</sup> was conducted in Nepal and Sri Lanka. No relevant studies were identified from the Maldives.

Among SBS ([Table 1](#)), Indian studies had the largest sample size. Sri Lankan studies reported the highest overall average response rate. Key MHPs reported across countries include anxiety disorders, depression,

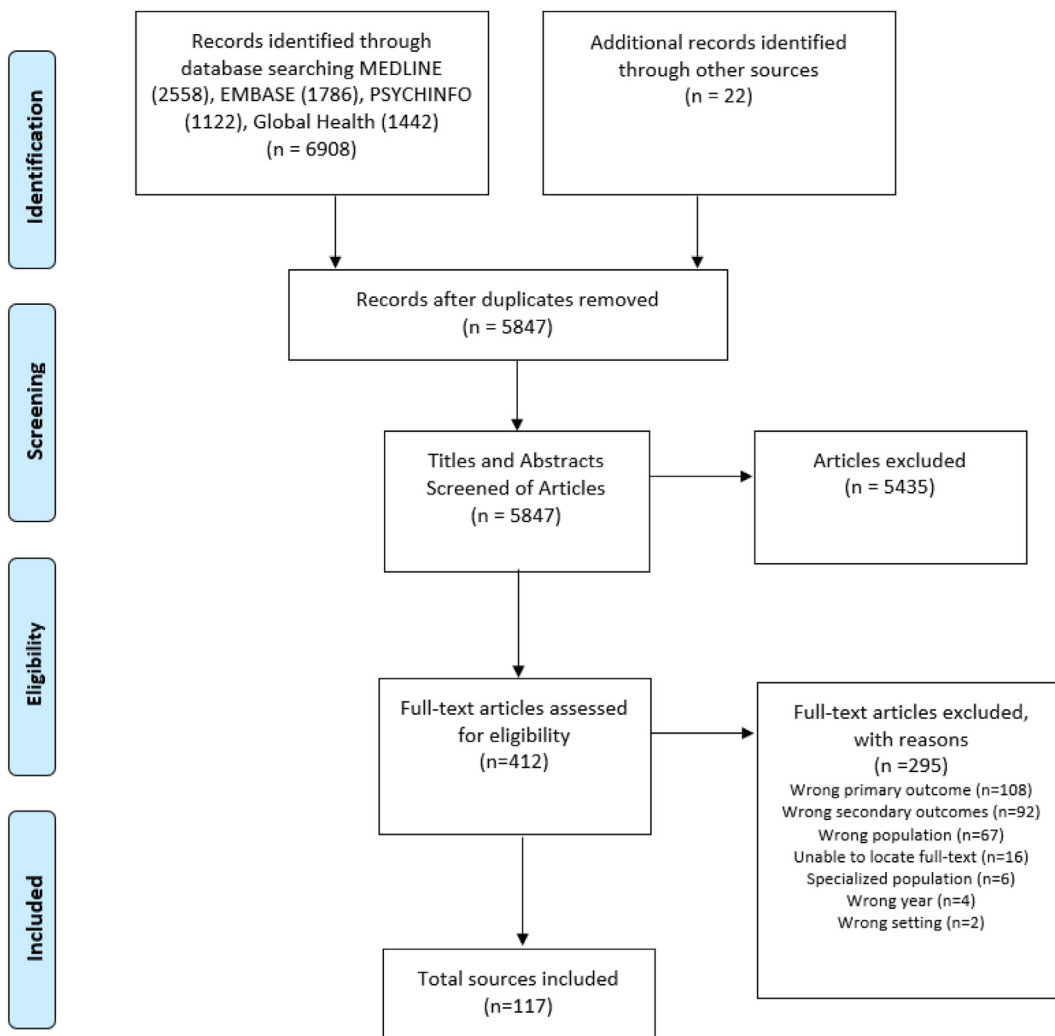


Fig. 1: PRISMA flow chart of the screening process.

psychological/psychiatric distress and psychosocial symptoms. The highest prevalence values were reported for anxiety disorders in India (81.6%) and Pakistan (68%) and depression in Sri Lanka (57.7%). Other common MHPs such as suicidal behaviours and post-traumatic stress disorder (PTSD) were identified in the literature, although prevalence was not as prominent in comparison to other MHPs (see Table 1). Frequently identified determinant categories include individual factors, family/home environment and school environment. In these categories, some risk factors include being female, later adolescent years, lower socioeconomic status, parents with lower education level or poor student academic performance. Across all countries, determinants of MHPs were similar. Protective factors such as positive family environment, safety at home, increased physical activity and positive peer relationships were identified in the studies from Afghanistan, Bhutan, India and Pakistan.

In NSBS, the overall largest sample size was in studies from India (see Table 2). There were no NSBS from Afghanistan or Bhutan. The highest overall average response rate was recorded in Nepali studies. Key MHPs reported across countries include depression and anxiety. The highest prevalence values were reported for depression in India (98.5%), PTSD in Sri Lanka (40.9%) and phobias in Nepal (35.9%). Other common MHPs such as anxiety and suicidal behaviours were not as prominent among NSBS in this review and therefore are listed in Table 2. Fewer determinants were identified in NSBS than in SBS. Determinants were frequently found in the following categories: individual factors, family or home environment and violent victimisation. In these categories, risk factors were similar to those in SBS. For example, being female, later adolescent years, parents with a lower education level or experiencing violence negatively correlated with mental health. Protective factors such as being unmarried

Country	Number of studies	Sample size	Response rate	Types of mental health problems (MHPs) assessed	Prevalence range	Group of determinants or associated factors of MHPs
Afghanistan	2	2813	72%	Psychological distress, Psychosocial problems or symptoms, Depression, post-traumatic stress disorder (PTSD)	Psychological Distress: 27.7–28.4%	Individual factors, Family or home environment, Peer relationships, Substance use or abuse, Violent victimisation, Experiencing significant life events
Bangladesh	10	11,430	90.58%	Psychosocial problems or symptoms, Depression, Anxiety disorders, Suicidal behaviours, Psychiatric disorders	Psychiatric Disorders: 18.7%, Anxiety disorders: 1.06–51.4%, Depression: 0.53–49%, Phobias: 2.3–2.7%, Panic disorder: 0.6%, Psychosocial symptoms or problems: 11.2–21.6%, Suicidal behaviour: 12.4%, PTSD: 1.1%	Individual factors, Family or home environment, School environment, Peer relationships, Substance use or abuse, Violent victimisation, Experiencing significant life events, Experiencing emotional or mental health problems at the time of the study
Bhutan	1	7576	95%	Anxiety disorders, Depression	Anxiety and Depression: 15.8%	Individual factors, Family or home environment, School environment, Peer relationships, Substance use or abuse, Violent victimisation,
India	51	42,541	93.32%	Depression, Psychiatric morbidity, Internalising and Externalising behaviours, Emotional symptoms or problems, Psychosocial problems or symptoms, Anxiety disorders, Psycho or somatic symptoms, Psychological well-being, Psychiatric disorders, Mood disorders, Suicidal behaviours, Panic disorder, Psychological distress, Eating disorders, Emotional well-being, PTSD	Anxiety disorders: 1.5–81.6%, Depression: 0.2–64%, Psychiatric distress: 4.9–79%, Panic disorders: 2.4–19.3%, Phobias: 3.6–19.4%, Psychiatric morbidity: 32.6%, Eating disorders: 0.6–1%, Psycho or Somatic symptoms: 2%, Psychosocial symptoms or problems: 1.4–36%, Internalising problems: 25.8–32%, Externalising problems: 2.6–3.5%, Mood disorders: 0.9%, PTSD: 31–38.8%	Individual factors, Family or home environment, School environment, Peer relationships, Substance use or abuse, Violent victimisation, Substance use or abuse, Experiencing significant life events, Experiencing emotional or mental health problems at the time of the study
Nepal	9	8860	82.85%	Depression, Anxiety disorders, Psychosocial problems or symptoms, Psycho or somatic symptoms, PTSD, Suicidal behaviours, Psychological distress	Anxiety disorders: 4.4–46%, Depression: 3–59%, PTSD: 43.3%, Psychosocial symptoms or problems: 2.8–26.4%, Psycho/Somatic/Internalising/Externalising problems: 15%, Suicidal behaviour: 4.4–13.6%	Individual factors, Family or home environment, School environment, Peer relationships, Substance use or abuse, Violent victimisation, Experiencing significant life events, Experiencing emotional or mental health problems at the time of study
Pakistan	8	2137	91%	Anxiety disorders, Emotional well-being, Psychological well-being, Clinically relevant MHPs, Depression, Eating disorders	Anxiety disorders: 7–68%, Depression: 21–79%, Eating disorders: 42%, Psychological Well-being: 23.2–43.4%, Psychosocial symptoms or problems: 14%	Individual factors, Family or home environment, School environment, Experiencing significant life events
Sri Lanka	7	5829	99%	Depression, Anxiety disorders, Psychosocial problems or symptoms, Psychological well-being, Suicidal behaviours, PTSD, Psychological distress, Clinically relevant MHPs	Anxiety: 5.5–28%, Depression: 36–57.7%, Psychosocial symptoms or problems: 3.2–27.4%, Suicidal behaviours: 4.4–21.9%, Clinically relevant MHPs: 32.2%	Individual factors, Family or home environment, School environment, Peer relationships, Substance use or abuse, Violent victimisation, Experiencing significant life events, Experiencing emotional or mental health problems at the time of the study

(-) Risk factor; (+) Protective factor; (±) Mixed evidence. **Individual factors:** Being female (-), higher age (-), lower socioeconomic status (-), rural area of residence (-), less sleep (-), negative body image perception (-), higher weight/negative weight perception/higher BMI (-), lower height (-), lesser life satisfaction level (-), increased sexual activity (-), high leisure time sedentary behaviour (-), lesser participation in cultural or religious activities (-), belonging to a religion (-), increase in birth order (-), lower proficiency in English (-), lower self-esteem (-), presence of disability (-), increased social media use (-), increased screen time (-), adequate fruit and vegetable consumption (+), higher physical fitness/health (+); **Family/home environment:** Nuclear family type (-), increased family conflict (-), increased family size (-), parents' with lower education level (-), parental involvement/expectations in academic/career activities (-), negative relationship with parents and family (-), parents substance use or addiction (-), parental emotional neglect (-), room sharing (-), punishment at home (-), poor relationship between parents (-), strict parenting style (-), increased household size (-), lesser happiness at home (-), feeling safe at home (+), positive family environment (+), parents' occupation (+/-); **School environment:** Higher year level (-), poor safety at school (-), school truancy (-), poor school environment (-), poor academic performance/stress/conflict/frustration (-), engaging in tuition (-), punishment at school(-), criticism from teachers (-), extra-curricular activities (+), type of school (+/-); **Peer relationships:** Being in a relationship (-), peer pressure(-), not spending time with friends (-), not having friends (-), peer support/friendship (+); **Substance use/abuse:** Smoking (-), drug use (-), alcohol use (-), addiction (-); **Violent victimisation:** Bullying victimisation (-), experiencing violence or domestic violence or witnessing domestic violence (-), involvement in fights (-), physical abuse(-), being injured (-), experiencing sexual harassment (-), trauma exposure (-); **Experiencing significant life events:** Movement of family (-), illness or death in the family (-), exposure to stressful life events (-), food insecurity (-), experiencing natural disasters (-), loss of pets (-), displacement (-), COVID-19 (-), experiencing illness (-), experiencing terrorist attacks (-); **Experiencing emotional or mental health problems at the time of the study:** already having anxiety or depression (-), loneliness (-), already experiencing PTSD/PTSS (-). Refer to [Supplementary Table S1](#) to see factors specific to the participants of each individual study.

**Table 1: School-based studies stratified according to country.**

females, higher education level or socioeconomic status and higher maternal education level were identified in studies from Bangladesh and India.

The SBS and NSBS were further categorised according to conditions (see [Table 3](#)). 19 separate MHPs

were assessed across SBS and 17 across NSBS. In both SBS and NSBS depression was the most frequently measured MHP (n = 50 and n = 30), followed by anxiety (n = 30 and n = 13) and psychosocial problems or symptoms (n = 18 and n = 7). Here, determinant

Country	Number of studies	Sample size	Average response rate	Types of MHPs assessed	Prevalence range	Group of determinants/ associated factors of mental health problems
Bangladesh	2	12,296	95%	Depression	Depression: 13.9–24.5%	Individual factors, Family or home environment, Violent victimisation
India	24	49,460	91%	Anxiety disorders, Psychosocial problems or symptoms, Depression, Emotional symptoms or problems, Suicidal behaviours, PTSD, Panic disorder, Psycho or somatic symptoms, Oppositional defiant problems, Dysthymic disorder, school Phobia, Mood disorder, Clinically relevant mental health problems, Internalising problems, Externalising problems	Anxiety: 1.8–88.1%, Depression: 0.4–98.5%, Psychosocial symptoms or problems: 1.1–88.1%, Suicidal behaviours: 1.8–35.9%, Panic disorders: 6.6–16.7%, Phobias: 4.8–7.9%, Psychological well-being: 51.8%, PTSD: 12.6–33.5%, Psycho or somatic problems: 11.1–33.5%, Oppositional defiant problems: 12.6–33.5%, Clinically relevant MHPs: 31–36%, Internalising problems: 59%, Externalising problems: 34%	Individual factors, Family or home environment, School environment, Peer relationships, Substance use or abuse, Violent victimisation, Experiencing emotional or mental health problems at the time of study
Nepal	2	11,580	100%	Psychosocial problems or symptoms, Psychiatric disorders, Emotional symptoms or problems	Depression: 6.8%, Anxiety: 9.7–27.2%, Phobias: 30.1–35.9%, PTSD: 18.4%, Eating disorders: 6.8–7.8%, Psychosocial symptoms or problems: 5–17.5%, Oppositional defiant problems: 5.8%	Individual factors, Family or home environment, School environment, Violent victimisation
Pakistan	2	527	52%	Depression, Emotional symptoms or problems	Depression: 19%, Emotional Symptoms or Problems: 12%	Individual factors, Family or home environment
Sri Lanka	1	325	84%	Depression, PTSD	PTSD: 40.9%	Family or home environment, Experiencing significant life events

(-) Risk factor; (+) Protective factor; (±) Mixed evidence. **Individual factors:** Higher Age (-), rural area of residence (-), being female (-), lower educational status (-), belonging to a religion (-), lower socioeconomic status (-), inadequate dietary diversity (-), increased screen time (-), negative height perception (-), overweight/normal weight/underweight/negative weight perception (-), increased media exposure (-), being married (-), lesser sleep (-), playing outdoor games (-), working adolescents (-), increased social media use (-), lower caste (-), having an occupation (-), lower physical activity (-), not engaging in hobbies (-), lower monthly income (-), higher education level (+), being and unmarried female (+); **Family/home environment:** Family history of mental health problems (-), parents with lower education level (-), increased household size (-), lesser freedom to express own opinions (-), poor relationship with parents (-), joint family type (-), decreased family happiness level (-), higher parental expectations (-), poor relationship between parents (-), family history of substance abuse (-), physical punishment at home (-), decreased neighbourhood safety (-), parents' occupation (+/-), higher maternal education level (+); **School environment:** Academic pressure (-), truancy (-); **Peer relationships:** Being in a relationship (-); **Substance use/abuse:** smoking (-); **Violent victimisation:** Experiencing violence (-), experiencing or witnessing domestic violence (-), experiencing physical, verbal or sexual abuse (-), engaging in physical fights (-), being injured (-), experiencing neglect (-); **Experiencing significant life events:** Food insecurity (-), experiencing gender-based discrimination (-), illness (-), Psychosocial losses (-), exposure to natural disasters (-); **Experiencing emotional or mental health problems at the time of study:** already having symptoms of depression (-), already having an anxiety disorder (-), hopelessness (-). Refer to [Supplementary Table S2](#) to see factors specific to the participants of each individual study.

**Table 2: Non-school based studies stratified according to country.**

categories and their risk factors were similar to the findings when SBS and NSBS data were stratified according to countries in [Tables 1 and 2](#).

## Discussion

This systematic review found that adolescents in south Asia experience a high prevalence of MHPs, which are predominantly determined by social, cultural, environmental and socioeconomic factors beyond individual control.

The nature of MHPs identified in this review include a wide range of problems recognised in the ICD-11 as well as symptoms of poor mental health. In this review 58% of SBS and 80% NSBS were conducted in India. Hence, an accurate population-level estimate of

prevalence and therefore inter-country comparisons of the data cannot be made. Although it has to be noted that three-fourths of the south Asian population lives in India.<sup>30</sup>

Comparisons of this review's findings to other LMIC were mostly precluded because population level prevalence data for MHPs in the adolescent age group are not reported.<sup>10,11</sup> A systematic review by Fisher and colleagues<sup>10</sup> highlights that, although prevalence data is lacking, most studies in LMICs conclude that depressive and other symptoms of MHPs are common among adolescents in LMICs, as is evident in this review. If prevalence data from particular communities in LMICs are observed, they indicate similar high prevalence values to that reported in this review. For example, a study conducted on adolescents from a slum

Condition	Number of school-based studies	Group of determinants/associated factors of mental health problems (MHPs) in school-based studies	Number of non-school-based studies	Group of determinants or associated factors of MHPs in non-school-based studies
Anxiety Disorders	30	Individual factors, Family or home environment, School environment, Peer relationships, Substance use or abuse, Violent victimisation, Experiencing significant life events, Experiencing emotional or mental health problems at the time of the study	13	Individual factors, Family or home environment, School environment, Substance use or abuse, Violent victimisation, Experiencing significant life events
Clinically Relevant MHPs	2	Family or home environment, school environment, Peer relationships, Experiencing significant life events	2	Individual factors, Family or home environment, School environment
Depression	50	Individual factors, Family or home environment, School environment, Peer relationships, Substance use or abuse, Violent victimisation, Experiencing significant life events, Experiencing emotional or mental health problems at the time of the study	20	Individual factors, Family or home environment, School environment, Substance use or abuse, Violent victimisation, Experiencing significant life events, Experiencing emotional or mental health problems at the time of the study
Dysthymic Disorder	N/A	N/A	1	Individual factors
Eating Disorders	2	Individual factors, Family or home environment, Experiencing significant life events	1	Individual factors, Violent victimisation,
Emotional Symptoms or Problems	4	Individual factors	2	Individual factors, Family or home environment
Emotional Well-being	1	Individual factors, Family or home environment, School environment	N or A	N or A
Externalising Behaviours	3	Individual factors, Family or home environment, School environment, Substance use or abuse, Experiencing significant life events	1	Violent victimisation
Internalising Behaviours	3	Individual factors, Family or home environment, School environment, Substance use or abuse. Experiencing significant life events	1	Violent victimisation
Mood Disorders	1	Individual factors, Family or home environment	1	Not mentioned
Oppositional Defiant Problems	N/A	N/A	2	Individual factors, Family or home environment, Violent victimisation, Experiencing significant life events,
Panic Disorders	1	Individual factors	3	Experiencing emotional or mental health problems at the time of the study
Phobias	1	Individual factors	4	Individual factors, Violent victimisation, Experiencing emotional or mental health problems at the time of the study
Psychiatric Disorders	3	Individual factors, Family or home environment, School environment, Violent victimisation	N/A	N/A
Psychiatric Distress	6	Individual factors, School environment, Family or home environment, Substance use or abuse, Violent victimisation,	N/A	N/A
Psychiatric Morbidity	3	Individual factors, Family or home environment, School environment, Experiencing significant life events	N/A	N/A
Psycho or Somatic Symptoms	3	Individual factors, Family or home environment, Experiencing significant life events	2	Family or home environment, Experiencing significant life events at the time of the study
Psychological Well-being	5	Individual factors, Family or home environment, School environment, violent victimisation	1	Individual factors, Family or home environment
Psychosocial Problems or Symptoms	18	Individual factors, Family or home environment, School environment, Peer relationships, Violent victimisation, Experiencing significant life events	7	Individual factors, Family or home environment, School environment, Violent victimisation, Experiencing significant life events, Experiencing emotional or mental health problems at the time of the study

(Table 3 continues on next page)

Condition	Number of school-based studies	Group of determinants/associated factors of mental health problems (MHPs) in school-based studies	Number of non-school-based studies	Group of determinants or associated factors of MHPs in non-school-based studies
(Continued from previous page)				
Post-traumatic stress disorder (PTSD) or post-traumatic stress syndrome (PTSS)	4	Individual factors, Family or home environment, School environment, Violent victimisation, Experiencing significant life events, Experiencing emotional or mental health problems at the time of the study,	4	Individual factors, Family or home environment, Violent victimisation, Experiencing significant life events,
Suicidal Behaviours	5	Individual factors, Family or home environment, School environment, Peer relationships, Substance use or abuse, Violence victimisation, Experiencing emotional or mental health problems at the time of the study	5	Individual factors, Family or home environment, School environment, Substance use or abuse, Violent victimisation, Experiencing emotional or mental health problems at the time of the study

(-) Risk factor; (+) Protective factor; (±) Mixed evidence. **School-Based Studies: Individual factors:** Being female (-), higher age (-), lower socioeconomic status (-), rural area of residence (-), lesser sleep (-), negative body image perception (-), higher weight/negative weight perception/higher BMI (-), lower height (-), lesser life satisfaction level (-), increased sexual activity (-), high leisure time sedentary behaviour (-), lesser participation in cultural or religious activities (-), belonging to a religion (-), increase in birth order (-), lower proficiency in English (-), lower self-esteem (-), presence of disability (-), increased social media use (-), increased screen time (-), adequate fruit and vegetable consumption (+), higher physical fitness/health (+); **Family/home environment:** Nuclear family type (-), increased family conflict (-), increased family size (-), parents' with lower education level (-), parental involvement/expectations in academic/career activities (-), negative relationship with parents and family (-), parents substance use/addiction (-), parental emotional neglect (-), room sharing (-), punishment at home (-), poor relationship between parents (-), strict parenting style (-), increased household size (-), lesser happiness at home (-), feeling safe at home (+), positive family environment (+), parents' occupation (+/-); **School environment:** Higher year level (-), poor safety at school (-), school truancy (-), poor school environment (-), poor academic performance/stress/conflict/frustration (-), engaging in tuition (-), punishment at school(-), criticism from teachers (-), extra-curricular activities (+), type of school (+/-); **Peer relationships:** Being in a relationship (-), peer pressure(-), not spending time with friends (-), not having friends (-), peer support/friendship (+); **Substance use/abuse:** Smoking (-), drug use (-), alcohol use (-), addiction (-); **Violent victimisation:** Bullying victimisation (-), experiencing violence or domestic violence or witnessing domestic violence (-), involvement in fights (-), physical abuse(-), being injured (-), experiencing sexual harassment (-), trauma exposure (-); **Experiencing significant life events:** Movement of family (-), illness or death in the family (-), exposure to stressful life events (-), food insecurity (-), experiencing natural disasters (-), loss of pets (-), displacement (-), COVID-19 (-), experiencing illness (-), experiencing terrorist attacks (-); **Experiencing emotional or mental health problems at the time of the study:** already having anxiety or depression (-), loneliness (-), already experiencing PTSD/PTSS (-). **Non-School Based Studies: Individual factors:** Higher Age (-), rural area of residence (-), being female (-), lower educational status (-), belonging to a religion (-), lower socioeconomic status (-), inadequate dietary diversity (-), increased screen time (-), negative height perception (-), overweight/normal weight/underweight/negative weight perception (-), increased media exposure (-), being married (-), lesser sleep (-), playing outdoor games (-), working adolescents (-), increased social media use (-), lower caste (-), having an occupation (+), lower physical activity (-), not engaging in hobbies (-), lower monthly income (-), higher education level (+), being and unmarried female (+); **Family/home environment:** Family history of mental health problems (-), parents with lower education level (-), increased household size (-), lesser freedom to express own opinions (-), poor relationship with parents (-), joint family type (-), decreased family happiness level (-), higher parental expectations (-), poor relationship between parents (-), family history of substance abuse (-), physical punishment at home (-), decreased neighbourhood safety (-), parents' occupation (+/-), higher maternal education level (+); **School environment:** Academic pressure (-), truancy (-); **Peer relationships:** Being in a relationship (-); **Substance use/abuse:** smoking (-); **Violent victimisation:** Experiencing violence (-), experiencing or witnessing domestic violence (-), experiencing physical, verbal or sexual abuse (-), engaging in physical fights (-), being injured (-), experiencing neglect (-); **Experiencing significant life events:** Food insecurity (-), experiencing gender-based discrimination (-), illness (-), Psychosocial losses (-), exposure to natural disasters (-); **Experiencing emotional or mental health problems at the time of study:** already having symptoms of depression (-), already having an anxiety disorder (-), hopelessness (-). Refer to [Supplementary Tables S1 and S2](#) to see factors specific to the participants of each individual study.

**Table 3: School-based and non-school based studies categorised according to condition.**

community in Bangkok reported similar high depressive symptoms in 40.4% of the female population.<sup>31</sup>

Similar to LMICs, prevalence comparisons to populations in high-income countries (HICs) cannot be strictly drawn as the methodologies used in the studies of this review and those of HICs may vary. Furthermore, it must be noted that no study included in this review utilised diagnostic tools to attain prevalence data. Hence, MHPs and prevalence reported in this review refer to clinically significant self-reported symptoms. Nevertheless, observations can be made that prevalence values identified in the present study are substantially higher than those reported in studies of populations in HICs. European data estimates 4.7–13.9% prevalence range for anxiety disorders among European children and adolescents aged 5–18 years.<sup>32</sup> Similarly, 9.4% of American children and adolescents aged 6–17 years are

diagnosed with anxiety disorders.<sup>33</sup> In comparison, the highest prevalence value for anxiety disorders among south Asian adolescents was 81.6% in SBS and 88.1% in NSBS. Almost six-times higher than European and nine-times higher than American populations. These differences are likely to be attributable to differences in their life circumstances. For example, adolescents in south Asia are more exposed to poverty, resource limitations, different parenting styles and school environments and inadequate access to mental health infrastructure, which all contribute to presence and severity of MHPs.<sup>11,15,34</sup>

The present review identified an extensive list of determinants or associated factors of MHPs that encompass an adolescent's immediate and surrounding environments. The Bronfenbrenner Socioecological Framework provides a comprehensive understanding of how interactions between and within multiple levels of

child's surrounding environment can affect child development.<sup>12</sup> In the context of mental health, determinants or associated factors of MHPs are embedded in multiple socioecological systems of a child.<sup>12</sup> Thus, a socioecological systems perspective offers a way to understand that the interplay of factors surrounding a child can affect not only their development but their mental health.<sup>35</sup> The Bronfenbrenner model specifically highlights five interrelated systems that surround an individual: micro-, meso-, exo-, macro- and chronosystems. The microsystem includes factors that are directly involved with the child such as parents, teachers or peers. The mesosystem involves interactions between factors in the microsystem, for example, parents and teachers. The exosystem incorporates formal and informal social structures which can indirectly influence the child, for example, mass media or parents' occupation. The macrosystem involves cultural elements such as socioeconomic status. Finally, the chronosystem comprises all environmental changes that occur over a child's lifetime such as, displacement or experiencing natural disasters.

In this review, the determinants or associated factors of MHPs were identified at all levels of the Bronfenbrenner Framework. At the individual level some common risk factors include higher age, being female and forms of violent victimisation. These findings align with international research, including data from other LMICs, that show similar risk factors creating inequities in the distribution of MHPs within a population.<sup>6,36</sup> Furthermore, several protective factors that positively correlated with mental well-being were identified at an individual level. These include physical activity, being unmarried and female, and adequate fruit and vegetable consumption. The association between these protective factors and mental well-being are supported by current literature. For example, a recent review of reviews recognised a partial causal association between lack of physical activity and depression in children and adolescents.<sup>37</sup> Furthermore, the protective nature of being unmarried and female towards developing depressive symptoms,<sup>38</sup> may be a wider reflection of the complex relationship between early marriage and its consequences on the mental health of adolescent girls.<sup>39</sup> Additionally, adequate fruit and vegetable consumption acting protectively towards developing psychological distress<sup>40</sup> may be an indication of resource availability where food security is positively associated with mental well-being.<sup>41</sup>

A south Asian adolescent's microsystem comprises home or family environment, peer groups and school environment. Common risk factors here include poor relationships with parents or between parents, punishment at school and not having friends. Higher education level and having peer support or friendship were consistently associated with better mental health. These protective factors all align with research that strongly

associates low education levels, school-dropouts and negative peer relationships with poor mental health and faster disease progression.<sup>11</sup> Maternal education level was also identified as a protective factor. Recent global evidence suggests that high maternal education level is related to better mental health during childhood and adolescence.<sup>42</sup> Although the effects of this interaction on south Asian adolescents needs to be further examined.

As identified in this review, family and school are perhaps the two most important microsystems of a south Asian adolescent. If adolescents are exposed to the risk factors identified in the family or home environment, this will likely affect their performance in school.<sup>43</sup> Thereby the student-teacher-parent mesosystem plays a significant role in a south Asian adolescent's mental health. This is further supported by the finding that feeling safe at home and having a positive family environment were protective towards mental well-being.

A commonly identified exosystemic risk factor was social media exposure. The literature highlights both positive and negative associations between social media use and mental health.<sup>44</sup> However, there is no overall consensus on the direction and impact of this association on this demographic. Other exosystemic factors such as parents' occupation associated positively and negatively with adolescent mental health. This maybe a broader reflection of socioeconomic inequalities, as it was found that lower household wealth, socioeconomic status and monthly income increased the risk of MHPs.

Several macrosystemic risk factors that were consistently identified across studies include lower socioeconomic status and rurality. These findings indicate that adolescents with a higher socioeconomic status or living in urban areas will be more influenced by mental health promoting schools and communities, thereby having better mental health in comparison to their peers.<sup>11</sup>

Finally, common chronosystemic risk factors identified across studies and across countries include experiencing chronic illness, displacement, and natural disasters. This association is consistently strongly supported in the literature highlighting increased psychological distress among victims of emergencies.<sup>45</sup>

All determinants identified in this review do not act uniformly across countries or MHPs. There is considerable heterogeneity. The findings are consistent with the growing body of evidence that social determinants have a significant influence on an individual's mental well-being throughout their life course.<sup>11</sup>

Protective factors provide a potential starting point for developing and implementing mental health policies, programs and future research. Protective factors were only reported in 10 studies included in this review, highlighting the inattention to factors that may advance adolescent mental health resilience. Furthermore, the identified protective factors are either unique to individuals or found in social systems that young people

are connected to. For example, physical fitness, peer support and parental occupation. When risk factors at multiple levels of an individual's ecosystem affect mental well-being, as identified in the present review, the multisystemic science of resilience emphasises the need to recognise the complex interactions across physiological, psychological, social, institutional or structural and ecological systems that contribute to mental health resilience and positive mental well-being.<sup>46</sup>

Several directions for policy and programs can be drawn from the findings at individual, microsystemic, macrosystemic and chronosystemic levels. At an individual level, health promotion strategies to increase physical activity in schools and policies to address domestic violence and food insecurity can enhance protective factors. In the microsystem, the broader school system can create peer support programs, promote extra-curricular activities and create programs that specifically support girl's education and education to children from lower socioeconomic backgrounds to further build from the protective factors identified in this review. Exosystemic and macrosystemic risk factors can be addressed by addressing income inequality, affordability and accessibility of mental healthcare. Finally, in the chronosystem, as suggested in previous literature, incorporating mental health in disaster management would act as an early intervention by addressing MHPs in adolescents exposed to disasters.<sup>47</sup>

This review provides potential areas for future research. Most of the studies were from India. It is essential that future research incorporates population level epidemiological data from all countries in south Asia to bridge this large evidence gap. Large scale quantitative research is needed to identify prevalence and determinants as well as qualitative research to understand underlying problems faced by south Asian adolescents and finding local solutions. It is also important that all future research use consistent data collection methods that are culturally relevant to study populations. In the past, research funding has been targeted towards finding treatments and interventions for mental disorders in low-resource settings.<sup>5,11</sup> Future research funding targeting initiatives that address determinants of MHPs will be more beneficial.<sup>11</sup> Further to this, research that is designed to identify protective factors across multiple systems rather than single factors, will lead to significant advancements in adolescent mental health.<sup>48</sup> As suggested in previous literature, and further supported by the extensive list of determinants identified in this review, robust indicators to track determinants that align with the already existing Sustainable Development Goals (SDG) are also essential.<sup>11</sup>

This review has several strengths. Rigorous methods were used to provide a comprehensive and exhaustive review of evidence. The database search was led by a specialist information analyst in all relevant databases

using systematic terms. All steps from screening to data extraction were conducted independently by two researchers and then compared to reduce bias. Risk of bias were thoroughly assessed using a standard quality assessment criteria and data were synthesised using an appropriate conceptual framework. Relevant studies in all countries in south Asia were included. This review can be used as a potential resource for researchers, policy makers and organisations that are working in the field of adolescent mental health in south Asia.

However, there are a number of limitations to this review. First, although considerable effort was made to capture a large body of evidence, given the diversity in the south Asian population, potential language bias persists as only studies published in English were included. Second, only studies published after 2000 were included, and relevant studies might have been published before this date. Although, given rapid geo-socio-political changes in this region, studies prior to 2000 may be less relevant to knowledge of current prevalence or determinants.

The potential limitations of reviewed studies should be carefully considered. First, not all instruments utilised in the studies were formally validated against a local gold standard diagnostic interview. Furthermore, no diagnostic tools were identified in the studies included in this review. This limits the ability to ensure accurate prevalence and determinants of MHPs, especially in populations from LMICs for whom the validity of instruments developed for western populations may not provide a true representation of a given problem. Second, the quality of evidence was diverse due to substantial variations in the sampling, analysis methods and outcome definitions across studies and across countries. This limits the ability to ascertain prevalence as well as effects of determinants on populations. Third, most studies were from India, which poses a significant barrier to extrapolating the findings to the wider south Asian adolescent population.

Findings from this review highlight the nature, prevalence and determinants of MHPs experienced by adolescents living in south Asia. Across south Asian countries, there is high prevalence of several key MHPs such as depression, anxiety, psychological or psychiatric distress and psychosocial symptoms. Further, the mental well-being of south Asian adolescents are strongly influenced by a wide variety of determinants/associated factors of MHPs, that are strongly socially, culturally and economically influenced, and identified in all ecosystems a south Asian adolescent directly and indirectly interacts with. A valuable first step in addressing the mental health burden among south Asian adolescents can be through public health policies, programs and research which aims to build mental health resilience by enhancing protective factors and addressing social determinants of MHPs identified in

all ecosystems of south Asian adolescents' immediate and surrounding environment.

#### Contributors

CM, MW, TT, JA, LR, MC, JF conceptualised and designed this review. CM contributed to running the searches, data extraction, data analysis, data interpretation, writing the original draft and reviewing and editing manuscripts. MW contributed to data extraction and reviewing and editing manuscripts. TT contributed to supervision, methodology, data interpretation, reviewing and editing manuscripts. JA contributed to supervision, data interpretation, reviewing and editing the manuscripts. LR developed the database-specific search strategies, contributed to running the searches, reviewing and editing manuscripts. MC contributed to supervision, data interpretation, reviewing and editing the manuscripts. JF contributed to supervision, data interpretation, reviewing and editing the manuscripts. All authors drafted and approved the final version of the manuscript.

#### Data sharing statement

All data collected for this systematic review are publicly available. The study protocol is available on PROSPERO, the international prospective register of systematic reviews (CRD42022312109).

#### Declaration of interests

We declare no conflicts of interest.

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#### Appendix A. Supplementary data

Supplementary data related to this article can be found at <https://doi.org/10.1016/j.jansea.2025.100532>.

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