# An Overview of the Literature on the Relationship Between Social Media Influencers and the Health of Teenagers

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**ABSTRACT**

Teenagers are increasingly getting their health information from social media influencers (SMIs). However, SMIs' lack of experience and business objectives provide problems for the health of adolescents. In order to better understand these issues, this scoping review sought to compile the body of knowledge about the role of SMIs in adolescent health. We filtered papers according to predetermined criteria after doing a thorough search of eight databases. Between 2012 and 2024, 51 articles were included in the final sample. The findings showed that SMIs were not consistently defined or categorized. Substance abuse, diet, and attractiveness were the most often discussed themes, although mental and sexual health issues were less prevalent. The reviewed research illuminated the possible advantages and difficulties for adolescent health by highlighting SMIs' capacity to build reliable relationships with their followers. The majority of research, however, concentrated on the detrimental effects of SMIs, including the encouragement of distorted body images, poor eating habits, drug abuse, and incorrect diagnosis and treatment recommendations. Another significant issue was the improper promotion of unhealthy goods (such as junk food, alcohol, and tobacco items). Stricter regulation as well as enhanced social media and health literacy were noted in the assessed research as key avenues for policy action. The possible benefits of SMIs and the best ways to incorporate them into health promotion initiatives received little attention. Furthermore, the vast majority of research was carried out.

## 1. Introduction

For teenagers, social media influencers (SMIs) have become a major alternative source of health-related information. SMIs, the lowest common denominator, are people who have a sizable social media following and can significantly impact their audience by creating interesting content. For teenagers, SMIs can serve as reliable resources and exemplary role models (Hudders et al., 2021; Qutteina et al., 2019), offering insightful information on important health issues like mental and nutritional health. Thus, SMIs can spread healthy public health messages to teenagers who would be hard to reach with traditional media like radio, TV, or newspapers (Heiss and Rudolph, 2022; Lutkenhaus et al., 2019). Their appropriateness as substitutes for conventional information sources, such speaking with physicians, dietitians, psychologists, or parents directly, is called into question by this conundrum (Leader et al., 2021; Vranken et al., 2023). Therefore, it is yet unknown if SMIs improve or worsen the health of younger populations, who are dealing with urgent problems including rising obesity and mental health rates (CDC, 2021; NCD-RisC, 2017).

We concentrate on adolescence in our review for a number of reasons. Teenagers use social media extensively and are exposed to a lot of SMI content, to start (Schmuck, 2021; Vogels et

al., 2022). According to Valkenburg and Piotrowski (2017), teenagers also undergo new physical, cognitive, and socioemotional changes as they work to become independent of their parents. During this formative stage, behaviours and habits are formed that last throughout adulthood (Frech, 20123) and are greatly influenced by role models in the (digital) settings of teenagers, including SMIs.

A sizable amount of study has examined SMIs' involvement in adolescent development and health because to their increasing significance as sources of health information. Previous reviews and meta-analyses in this field of study have adopted distinct methodologies, concentrating on certain health issues, such as diet and nutrition, while ignoring a more comprehensive health viewpoint (Boyland et al., 2022b; Kucharczuk et al., 2022).

The current state of research on the particular phenomenon of SMIs and adolescent health from a meta-perspective has not yet been thoroughly investigated by any study. However, obtaining a thorough grasp of the expanding research activity in this sector requires the use of such a meta-perspective. By using this method, we may determine the areas that require more investigation and create a study agenda for subsequent investigations.To address this research gap, we conducted a pre-registered scoping review on the role of SMIs in adolescent health. In doing so, we sought to answer the following research question: How do existing studies investigate the link between health influencers and adolescent health, and which research trends can be identified? We outlined the current state of research in this topic using a descriptive method because of its novelty. An examination of the subjects discussed, the techniques and examples employed, and the advantages and difficulties noted in the literature were all part of this. In the field of research, we also sought to pinpoint certain patterns, like if studies are concentrated on certain subjects, approaches, or difficulties.

## 2. Review of Literature

There are a number of strong theoretical arguments supporting the significance of SMIs. According to Hudders et al. (2021), SMIs are important role models for adolescents. Humans learn by watching the actions of social role models and assessing the outcomes, according to the Social Cognitive Theory (Bandura, 1969, 2002). These observations, like first-hand experiences, can have an impact on the adoption of modelled patterns (Bandura, 2002). Young people today spend a lot of time observing role models in the symbolic world of mass media in addition to in real-life settings (Bandura, 2002). During adolescence, when young people actively seek out new sources of influence in their social and media contexts and strive for independence, it becomes more crucial to observe role models (Valkenburg and Piotrowski, 2017; Wilson and Wilson, 2014). Teenagers can monitor and interact with their peers and public figures, including influencers, through social media platforms, which serve as convergence points for various environments (Frey and Friemel, 2023; Schmuck, 2021).

According to a related line of research, the strength of the association determines how influential role models are. The emergence of parasocial relationships—the apparent one-sided familiarity between media consumers and public people, such SMIs—is a significant phenomenon in this context (Horton and Richard Wohl, 1956; Giles, 2002). By sharing genuine information and offering glimpses into their personal life, SMIs aim to build these kinds of connections. Some influencers also talk about their personal experiences with physical or mental illnesses. Often known as "patient influencers," these individuals provide information on their symptoms, therapies, and coping mechanisms (Heiss and Rudolph, 2022; Willis et al., 2023).

The formation of parasocial interactions may be facilitated by these acts of transparency and candour. This notion is supported by source credibility models (Jenkins et al., 2020; Phua et al., 2018), which highlight how favourable source attributes (such as attractiveness, dependability, and expertise) affect message reception.

SMIs' material can influence social media users who happen to stumble upon their posts due

of their widespread visibility. SMIs have been analysed, for example, as objects of objectification and comparison. Therefore, exposure to such content can result in upward comparison even if teenagers have not developed parasocial interactions or actively follow SMIs, since these influencers frequently portray unrealistic physique and lifestyle ideals (Sukamto et al., 2019). According to Schmuck et al. (2019), these upward comparisons can have detrimental effects on one's mental health, body dissatisfaction, and behavioural outcomes including eating disorders.

Lastly, SMIs are important suppliers of both sponsored and natural content. Young people can be significantly impacted by simply being exposed to this content repeatedly, either through relatively subtle priming effects or in-depth elaboration (Knoll et al., 2020; Rousseau, 2023). For example, studies on advertising indicate that food cues in social media advertisements cause psychological and physiological reactions (such as feelings of hunger and thoughts about food), which in turn affect eating habits and preferences (Boyland et al., 2022a; Folkvord et al., 2016; McCarthy et al., 2022; Sadeghirad et al., 2016; Van der Bend et al., 2022a). There is ample evidence that marketing has an impact on children's consumption patterns and preferences (Hastings et al., 2003; McGinnis et al., 2006). Moreover, the World Health Organisation has been pushing for limitations on these marketing strategies ever since acknowledging this influence in their report on Ending Childhood Obesity (World Health Organisation, 2016).

## 3. Methodology

Providing a thorough summary of the present status of research on SMIs and the health of adolescents is the goal of this scoping review.

### 3.1. Search strategy

To capture the full scope of relevant articles across disciplines, we identified 11 electronic databases. However, only eight databases produced relevant results, including PubMed, Scopus, Psyc Info, Communication Abstracts, Business Source, ProQuest, Web of Science, and Communication & Mass Media Complete. The final search string was created by collecting keywords based on the research question, which can be found in the pre-registration. We constructed the search string by focusing on three key elements: SMIs, adolescents, and health. In September 2022, the search string was applied to each database, with minor changes required for the specific use of each database. The resulting articles were then screened against predetermined eligibility criteria. In the second step, we implemented a backward reference searching strategy to identify any additional articles the search string might not have covered. We saved the final articles in the reference management software Zotero and transferred them into a spreadsheet for further analysis.

### 3.2. Eligibility criteria

We included only English journal articles, regardless of their publication date, and considered empirical (qualitative, quantitative, and mixed-methods designs) or theoretical studies, while excluding meta- analyses, systematic reviews, and scoping reviews. To ensure that the studies addressed our research question, four criteria were essential for inclusion: social media, influencers, health, and adolescents. Social media is defined in a more general sense, encompassing any online platform that people use to generate content and share opinions, experiences, or insights with each other (Harris et al., 2021). Based on previous literature, we recognized the diverse use of the term “influencer” and chose a broader definition to capture all relevant articles. We defined influencers as online users who have a significant number of followers, regularly share content, and possess the ability to influence others (De Veirman et al., 2017; Pedalino and Camerini, 2022; Qutteina et al., 2019). The health category focused on commonly researched topics among adolescents, including substance use, nutrition, sexual health, mental health, and physical activity (Best et al., 2014; Jackson et al., 2018; Moreno et al., 2018; Romer and Moreno, 2017). Inclusion required the samples of the included studies to

primarily focus on adolescents aged 13–19 years. To align with existing research, we set a cut-off point by excluding studies with participants aged over 25 or a mean age over 19. This decision was based on the common practice of including young adults within the adolescent category and the understanding that the age range of 18–25 represents the transition from late adolescence to emerging adulthood (Arnett, 2000). This transitional phase, characterized by identity exploration and heightened susceptibility to external influences (Arnett, 2000; Stockdale and Coyne, 2020; Zarrett and Eccles, 2006), is particularly intriguing when investigating the health impacts of SMIs.

### 3.3. Study selection

The database search returned 2291 articles. After duplicate removal, 1699 studies remained. Two researchers performed the selection of studies and derived from the application of inclusion and exclusion criteria. We evaluated the interrater reliability (IRR) during the initial screening stage to ensure clarity of the eligibility criteria. During this stage, both coders screened 1699 articles by title and determined whether the study met the criteria for inclusion or exclusion. We defined an acceptable agreement rate above 80%, commonly defined as high interrater reliability (Belur et al., 2021). The percentage of agreement in our screening process was 91.25%. The research team talked through and resolved the remaining discrepancies. The entire selection process is displayed in the PRISMA flowchart (Fig. 1). After conducting a screening of titles, abstracts, full texts, and additional references, a total of 51 articles published between 2012 and 2022 were deemed eligible for inclusion in the scoping review. Appendix A provides an overview of the included studies, presenting information such as authors, year of publication, title, country, methodology, sample size, health topic, and social media focus.

### 3.4. Data extraction and analysis

We extracted data from all included articles into a standardized spreadsheet containing the variables from the pre-registered codebook. For this review, we evaluated study characteristics (e.g., authors, title, year, country, sample size), health topics, definitions, and classifications of SMIs, sample characteristics, operationalization, outcomes, recommendations, and limitations.

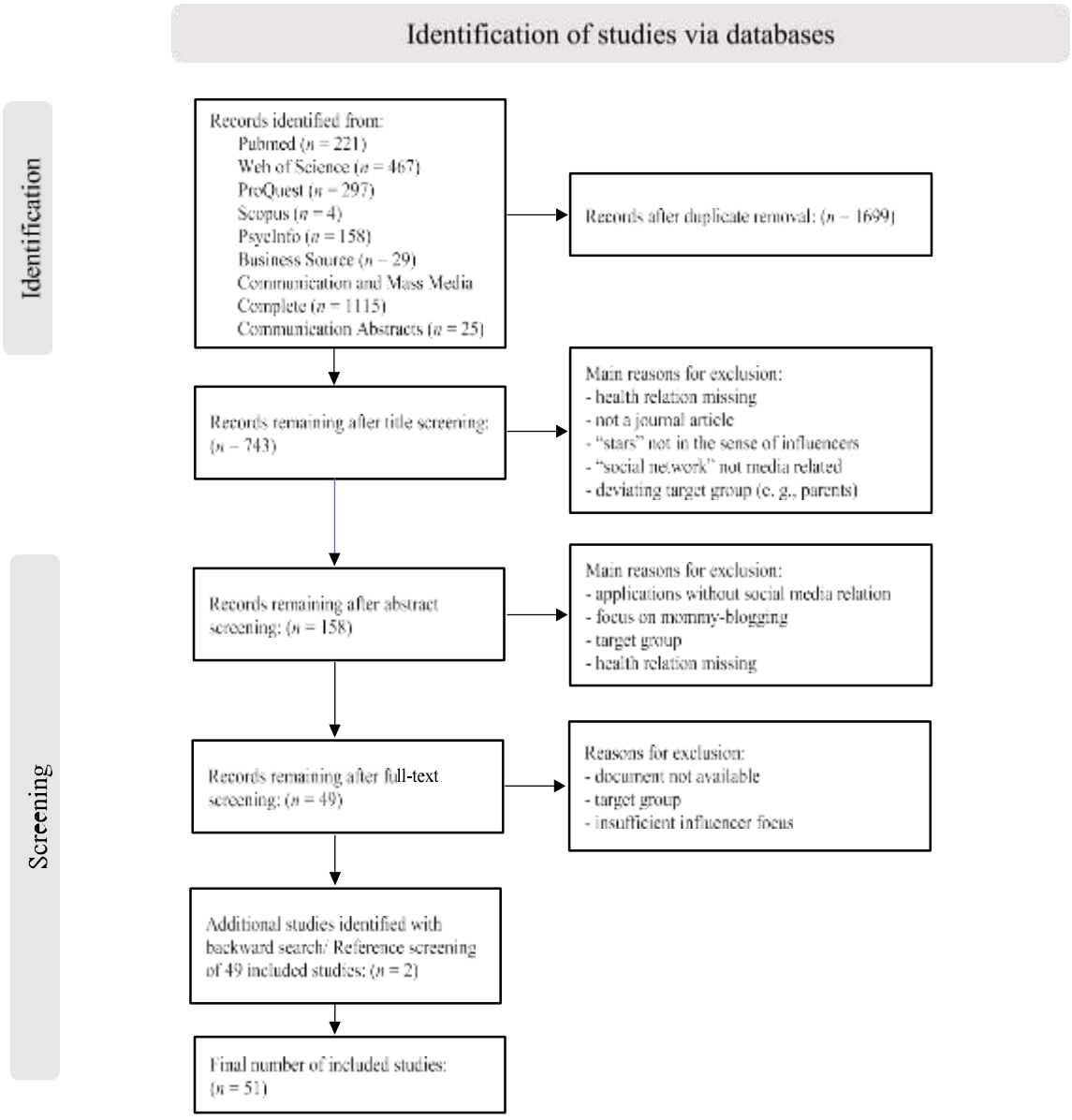


Fig. 1. Flow chart of search process based on PRISMA approach by Tricco et al. (2018)

## 4. Results

### 4.1. Definitions of influencers

The analysis of the included articles unveiled a range of definitions and types of SMIs. The reviewed articles employed different terms such as celebrity endorser, content creator, social influencer, and opinion leader. Out of the 51 studies, explicit definitions were provided in only 22, and a consensus on a definitive set of criteria is lacking. However, most defi- nitions focus on the fundamental criteria of having a certain number of followers on social media, creating content, and thereby influencing others. A closer examination of the definitions reveals further hetero- geneity in the research field of SMIs.

Profit-orientation. A considerable number of studies have defined influencers based on their

commercial interest and their intention to generate profit through corporate sponsorships or by promoting brands and products on social media (Ahrens et al., 2022; De Jans et al., 2022; Feijoo et al., 2022; Kong et al., 2019; Mayoh and Jones, 2021; Winzer et al., 2022; Lowe-Calverley and Grieve, 2021).

Niche topics. Some studies describe influencers based on their ability to provide content focused on specific subjects (e.g., sports, beauty, lifestyle), allowing them to reach out to target populations that are typically difficult to engage with (De Veirman et al., 2017; Guo et al., 2020).

Influencer-status. Furthermore, a few studies make a distinction be- tween influencers who gained fame primarily through social media platforms (Liu et al., 2020) and those who were already well-known outside of the social media environment, such as singers or actors (Feijoo et al., 2022; Qutteina et al., 2019).

Other factors. While most articles primarily refer to influencers as individuals, there are suggestions that influencers can be a group of individuals (Hendriks et al., 2020) or even organizations (Guo et al., 2020). Additionally, aspects like trust and credibility (De Veirman et al.,2017; Guo et al., 2020), the presence of high-quality aspirational or divergent definitions for each type.

Classification based on number of followers. When considering the number of followers, nine studies out of our total sample differentiate between various categories of influencers, including micro-, meso-, macro-, mega-, or celebrity influencers. Nevertheless, these studies employ different definitions for each category. While some of them provide specific thresholds for follower counts, others offer more gen- eral descriptions (e.g., a high number of followers). Table 1 presents the different types of influencers identified in the analysis and the corresponding definition as reported in the articles included in the review.

Classification based on health topic. Eight studies mentioned specific health influencer types based on their field of interest or the health topic they mainly post about. These types include mental health influencers (Koinig, 2022; Marcus et al., 2012), food influencers (Hendriks et al., 2020; Qutteina et al., 2021), fitness influencers (Ahrens et al., 2022; Hendriks et al., 2020), thin-ideal and overweight influencers (De Jans et al., 2022), e-cigarette influencers (Klein et al., 2020; Vassey et al., 2022), and vaping influencers (Vassey et al., 2020).

Nevertheless, only a few studies provided a specific definition for the reported types. Table 1 offers a comprehensive summary of the influ- encer types discussed in the articles and their corresponding definitions, where applicable. Hendriks et al. (2020), for instance, define an influ- encer as a sport and fitness influencer “when the account focuses on physical activity and visible sports outings (including sport supplements, sports clothing, and looking fit)” (Hendriks et al., 2020, p.4). Ahrens et al. (2022) define fitness influencers in more detail and provide four criteria: popularity, fitness-related content, having at least one commercial partnership with a company, and qualifying as a public figure. Hendriks et al. (2020) define food influencers as influencers who mainly post on food and drinks, such as posting recipes (Hendriks et al., 2020). Qutteina et al. (2021), however, also use the term food influ- encers without a specific definition. Furthermore, e-cigarette influencers on Instagram were defined by Klein et al. (2020) as individuals with roughly 10–50,000 followers who share content regarding e-cigarette brands at least several times per week. Thin-ideal vs. overweight influencers were defined based on the weight of the influencer (De Jans et al., 2022), while a definition for mental health influencers was not provided (Marcus et al., 2012).

Classification based on social media platform. Lastly, six studies used a specific social media platform to categorize influencers. Three studies focused on YouTube influencers (Coates et al., 2019; Harris et al., 2021; Kong et al., 2019), whereas three other studies investigated specifically Instagram influencers (Nouri, 2018; Vassey et al., 2020, 2022).

Fig. 2 presents a comprehensive overview of the approaches utilized in defining and classifying influencers, as described in the articles included in this review. The core definition characterizes influencers as influential social media users with large audiences. Additionally, the figure showcases specific criteria, referred to as "narrow definitions," which some studies utilize to further elaborate on their conceptualization of influencers. On the right side of the figure, the various types of influencers are illustrated and categorized based on health topics, social media platforms, and follower counts.

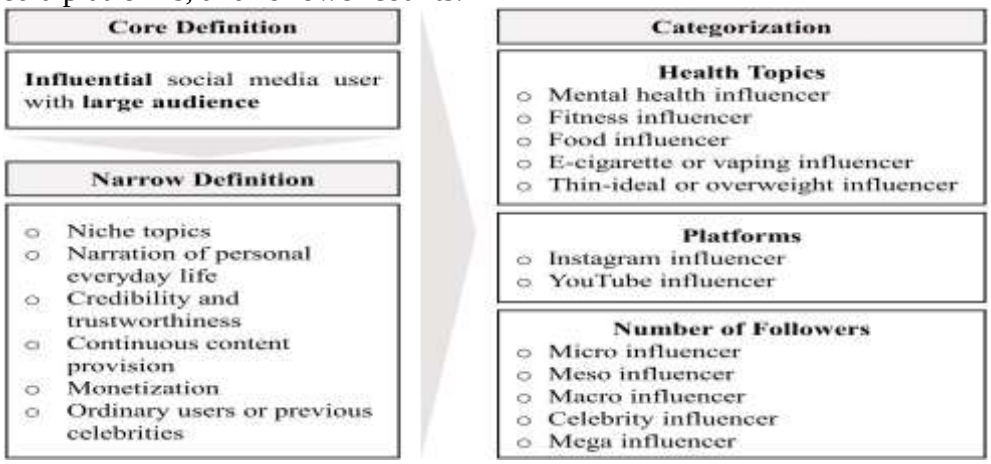


**Fig. 2. Overview of approaches to define and classify influencers**

### 4.3. Utilized methods

The included articles utilized qualitative methods in 13 cases, quantitative approaches in 29 cases, eight mixed method designs, and one theoretical approach. Studies with a qualitative research design followed traditional approaches utilizing interviews and focus groups. The interviews (n = 5) and focus groups (n = 3) exclusively included adolescent followers of influencers in their sample.

The interviews and focus groups employed exclusively semi- structured approaches for data collection, adhering to predeveloped literature-based guidelines that incorporated open-ended questions, providing a framework while still allowing for flexibility. Notably, only the study by Harris et al. (2021) made adaptations to the guideline based on the initial findings from the first focus group.

Apart from van der Bend et al. (2022b) and Harris et al. (2021), inductive thematic analysis was used for interview and focus group transcripts. Van der Bend et al. (2022b) used deductive coding, while Harris et al. (2021) followed an iterative approach. Van der Bend et al. (2022b), were the only who interviewed experts, all others involved adolescents only. The primary focus of the interviews and focus groups was on adolescents' perceptions of influencers and content, social media usage, interaction with influencers, and the impacts on health behaviour. The quantitative approaches encompassed one network analysis, one monitoring study, nine experiments, and 12 cross-sectional surveys. The single network analysis by Vassey et al. (2022), identified top e-cigarette influencers, conducted a network analysis to reveal their connections with brands, assessed centrality, disclosure compliance, and age-gating notifications. The monitoring study by Potvin Kent et al. (2019) observed adolescents' social media app usage while recording exposure to food marketing frequency and type of content using a mobile eye-tracking device (Potvin Kent et al., 2019).

Experimental designs employed diverse approaches, such as developing a feed mimicking Facebook with gender-matched celebrity posts and measure fixation with eye-tracking devices (Murphy et al., 2020), injecting manipulated posts using insertion software into participants' social media feeds paired with eye-tracking devices (Klein et al., 2020), or combining ECG measurements of physical and emotional arousal with self-assessment questionnaires (Han et al., 2022). In two experimental studies, questionnaires with stimuli and influencer posts were

contrasted with contributions from experts (Jen- kins et al., 2020) or brands (Phua et al., 2018) to observe different effects on adolescents depending on the content creator. One experiment utilized different post types (comics, quotes, influencer posts) to evaluate the impact of content format on adolescents' mental health (Koinig,2022). Among the 12 cross-sectional surveys, only one (Jenkins et al., 2020) included knowledge questions. The other 11 relied on adolescents' self-reports about influencers and social media content. Only three studies pretested their questionnaires, with Charmaraman et al. (2021) being the only one involving adolescents in survey development.

Various content analysis methods, such as textual, auditory, and visual analysis, were used on social media content like blog posts, images, music, and videos. These analyses mostly followed established coding schemes from previous research, with Marcus et al. (2012) and Kong et al. (2019) being exceptions. Marcus et al. (2012) focused on mental health among bloggers using Grounded Theory and consensual qualitative methods, while Kong et al. (2019) adapted their codebook during their study on YouTube vape trick videos. Three studies (Coates et al., 2019; Winzer et al., 2022; Qutteina et al., 2019) explored food-related content on social media, examining types, presentation, context, influencers, platforms, and food cues through auditory and vi- sual analysis. Ahrens et al. (2022) assessed "thinspiration" images for their purposes, body depictions, and sexualization. Albert et al. (2022), Kong et al. (2019), and Hendriks et al. (2020) investigated substance use content, examining availability, depiction types, influencer roles, brand visibility, context (positive/negative), and descriptive information (warning labels). The eight mixed method studies encompassed in this review employed concurrent and sequential designs that combined quantitative surveys with qualitative interviews or focus groups (Henning et al., 2022; Pfeiffer et al., 2014), qualitative interviews paired with questionnaires (van der Bend et al., 2022a), or machine-assisted deep learning analysis of images complemented by focus groups and in- terviews (Vassey et al., 2020). Especially noteworthy is the research from Vassey et al. (2020) since it was the only study which gathered data directly from influencers via interviews. They combined deep learning classifications, text analysis, and topic modelling with focus groups and interviews to explore content, collaboration, and marketing strategies, as well as influencers' motivations for promoting vaping content.

| **Health topic** | **Number of studies** |
|---|---|
| Appearance | 15 (29%) |
| Nutrition | 15 (29%) |
| Substance use | 12 (24%) |
| Health promotion in general | 3 (6%) |
| Mental health | 2 (4%) |
| Fitspiration | 2 (4%) |
| Sexual and reproductive health | 1 (2%) |
| Acute non-specific back pain | 1 (2%) |
| **Total** | **51 (100%)** |

### 4.4. Sample characteristics

The analysis of the sample characteristics revealed an overemphasis on girls and participants from Western countries. In total, 34 studies included mixed samples with girls, boys, non-binary, or diverse participants. However, 20 of the 34 studies included predominantly girls (i.e. at least two third of the sample were female). In contrast, only one study included predominantly male participants. Furthermore, eight studies included exclusively female adolescents, which all focused on appearance-related topics, such as body image, body positivity, body dissatisfaction, eating behavior or eating disorders in relation to body image, selfie-editing, and mood or well-being in relation to body image (Sukamto et al., 2019; Fastoso et al., 2021; Fardouly and Vartanian, 2015; Brown and Tiggemann, 2016; Fardouly et al., 2018; Pedalino and Camerini, 2022; Henning et al., 2022; Ando et al., 2021). None of the included studies targeted male adolescents only.

The studies mainly included participants from European countries (n= 17) and North America (n = 16), as shown in Table 2. Countries in Africa and Latin America received the least attention, with two studies conducted in Africa and four in Latin America. In terms of frequency, Australia and Asia were comparable, with six studies each.

Out of the 12 studies located in the Global South, 10 were conducted in developing economies (UNCTAD, 2023). There were no notable differences compared to studies in the Global North, except that the sole study related to sexual health was conducted in Tanzania (Pfeiffer et al., 2014). However, due to the small sample size and the inclusion of high-income countries such as Singapore, a reliable comparison cannot be made.

Further noteworthy sample characteristics included race and the socioeconomic status of the participating adolescents or their parents. As shown in Table 3, race was assessed in 14 samples, and socioeconomic status in nine samples.

Looking at the country locations, it is not surprising that if race was assessed, the samples consisted primarily of white people. The two studies that exclusively included indigenous people and minorities had race-related research objectives. Walker et al. (2021) examined social media effects on health, including comparison with influencers, among indigenous adolescents in Australia, while Henning et al. (2022) focused on bullying, teasing, and social comparison with models and celebrities on social media regarding the natural hair of African American girls. Nine studies assessed the socioeconomic status of participants in their samples. The largest proportion consisted of people from high-income groups or individuals with tertiary education. This indicates an over- representation of people with high socioeconomic status. However, none of the studies included socioeconomic status in their analysis, aside from describing the samples.

**Health topics**

The studies examined various health topics (see Table 4), and the analysis revealed that nutrition, appearance, and mental health topics were often closely intertwined. Nevertheless, three main health topics that emerged were: (1) appearance, (2) food and nutrition, and (3) substance use.

The first category revolves around appearance-related topics (n = 15). Most studies focused on negative aspects of influencers, for instance, on adolescents' concerns, attitudes, or behaviours related to their appear- ance. Only a few studies included positive aspects, such as body positivity, positive body image, and body satisfaction (Ando et al., 2021; Sukamto et al., 2019). Two studies focused on less common topics: drivers and consequences of selfie editing behaviour (Fastoso et al., 2021) and hair experiences of young African American girls with related factors like bullying and social comparison (Henning et al., 2022). However, the most popular topics were eating disorders (e.g., bulimia nervosa, anorexia nervosa), body (dis)satisfaction, specific beauty ideals (e.g., thin or muscular body), weight loss, and body comparison.

The second category consists of studies focusing on food and nutrition- related topics (n = 15). This includes food and beverage marketing, digital food environment, and food consumption behaviours. Studies investigated topics like unhealthy food high in fat, salt, and sugar, veganism, obesity, overweight, sustainable eating, and vegetable intake. Most of the studies focused on adolescents' exposure to influencer food marketing and the effects on outcomes such as food literacy, perceived norms, and food choice (Ares et al., 2022; Folkvord et al., 2020; Potvin Kent et al., 2019; Qutteina et al., 2021; Winzer et al., 2022).

The third health topic category was substance use (n = 12). Here, the studies primarily looked at e-cigarettes, cigarettes, vaping, and alcohol, but also marijuana, hookah, and combustible cigarettes. Studies exam- ined influencer communication toward younger audiences, such as communication on Instagram about alcohol or vape tricks promoted on YouTube (Hendriks et al., 2020; Kong et al., 2019). Furthermore, Klein et al. (2020) conducted an eye-tracking experiment to observe participants' attention to disclosure labeling strategies in e-cigarette posts from influencers. Besides the three main categories, we identified further health topics which were less prevalent in this review. Three studies looked at health promotion or health communication of influencers in general without a specific health topic (e.g. Macnab and Mukisa, 2019). Furthermore, two studies investigated mental health as the main topic of interest (e.g., depression and suicidality), and another study focused on sexual and reproductive health (Pfeiffer et al., 2014). Lastly, one study examined acute non-specific back pain (Zheluk et al., 2022), and two studies explored fitspiration content of influencers.

Ahrens et al. (2022) defines fitspiration as fitness content on social media, often showing slim or muscular bodies. Mayoh and Jones (2021) call it fitspo, short for fitness inspiration, encompassing fit individuals, gym scenes, healthy foods, and motivational quotes on visual content. They also contrast the masculine muscular ideal with the feminine thin yet shapely ideal.

### 3.5.Challenges

A total of 33 studies have focused on the challenges that SMIs pose to adolescent health. These challenges stem primarily from SMIs' ability to form intimate connections with adolescents, often achieved through sharing personal experiences, projecting authenticity, or cultivating parasocial relationships. Challenges identified include unrealistic body image standards, unhealthy food content, promotion of substance use, dissemination of inaccurate diagnostic and treatment advice, and inappropriate advertising.

#### 3.5.1.Unrealistic body images

SMIs can have a negative impact on body image, particularly among adolescent girls and young women. Influencers predominantly promote questionable and potentially harmful body ideals, emphasizing thin and muscular body types (Ahrens et al., 2022; Mayoh and Jones, 2021; Pedalino and Camerini, 2022; Ten-eni-Harari, 2017).

Exposure to such content can lead to the stigmatization of over- weight individuals (Ten-eni-Harari, 2017), the development of stereo- types (De Jans et al., 2022), and instances of bullying (Henning et al., 2022; Ten-eni-Harari, 2017). It also contributes to adolescents' appearance pressure (Ando et al., 2021) and increases negative self-perception and body dissatisfaction (Brown and Tiggemann, 2016; Fardouly et al., 2018; Ho et al., 2016; Teneni Harari, 2017). Comparing oneself to influencers results in lower body appreciation, higher levels of self-objectification, and self-sexualization (Ahrens et al., 2022; Fardouly et al., 2018), negative mood, and depressive symptoms (Brown, 2016; Charmaraman et al., 2021; Fardouly et al., 2018). The practice of influencer worship is often associated with upward comparison and mediates and intensifies the effects of body dissatisfaction and the internalization of thin and muscular body ideals (Brown, 2016; Fardouly et al., 2018; Ho et al., 2016). Additionally, influencer worship increases the frequency of social media usage (Charmaraman et al., 2021) to the extent of compulsive social media use (Caner et al., 2022).

A particularly concerning phenomenon in this context is the presence of so-called pro-ana and thinspiration content, which promote anorexia, extreme dieting, and self-harm to the point of suicide. This type of content poses severe threats to one's health but also leads to the isolation of adolescents from their peers and family (Castro and Oso´rio, 2012, 2013). At the same time, body-positive content remains scarce, lacks diversity, and is limited to already established celebrities and macro influencers (Ando et al., 2021; Henning et al., 2022).

3.5.2.Unhealthy food content

Unhealthy food and beverages are disproportionately displayed, advertised, and endorsed (Coates et al., 2019; Qutteina et al., 2019; Van der Bend et al., 2022a), and constitute a substantial portion of the content produced by TikTok, YouTube, and Instagram influencers (Winzer et al., 2022). Coates et al. (2019) and Qutteina et al. (2019) discovered that less than one-third of the food-related content featured healthy core foods.

Adolescents are heavily exposed to food promotion content, encountering over 12 promotional contents per minute on social media, with a high integration of influencers (e.g., influencers consuming the promoted products) (Van der Bend et al., 2022a). Social media food marketing has a disproportionately powerful impact on adolescents due to its emotionally engaging, interactive, and entertaining nature (Mur- phy et al., 2020). Unhealthy food content and advertisements from SMIs elicit higher recall, fixation, as well as pleasure and arousal, compared to other sources such as peers, brands, or experts (Kusumasondjaja and Tjiptono, 2019; Murphy et al., 2020). Lastly, adolescents often lack awareness of social media food promotions and fail to recognize them as advertisements (Van der Bend et al., 2022b).

3.5.3. Encouraging substance use

Challenges related to substance use mirror those of food and nutri- tion. Adolescents exhibit a heightened interest in influencer-endorsed content related to addictive substances (Han et al., 2022) and demon- strate better recall of advertisements featuring influencers (Jernigan et al., 2017). Influencers promoting substances gained greater credi- bility among adolescents regarding competence, trustworthiness, attractiveness, and goodwill compared to brands or average users (Liu et al., 2020; Phua et al., 2018). Influencers' endorsement of tobacco products has been shown to increase positive attitudes toward smoking among adolescents (Phua et al., 2018) and contribute to the perception that vaping is harmless (Vassey et al., 2020). Although negative images related to smoking were perceived as frightening, they did not effectively motivate adolescents to quit (Vassey et al., 2020). Notably, a significant proportion of tobacco influencer followers are adolescents (Vassey et al., 2020), and despite this, most influencers collaborating with tobacco brands do not have age restrictions on their content (Vassey et al., 2022).

3.5.4. Inaccurate diagnosis and treatment advice

In the context of health promotion (Harris et al., 2021) and the management of acute non-specific back pain (Zheluk et al., 2022), SMIs have been found to disseminate inaccurate information and offer ques- tionable treatment advice. Harris et al. (2021) discovered that SMIs tend to generalize their lived experience, resulting in biased accounts that may not accurately reflect the diversity of mental health problems among their audiences. This can potentially lead to inaccurate self-diagnosis of mental health issues, such as depression or anxiety (Harris et al., 2021). Additionally, SMIs often fall short in providing information about treatment options or discussing potential risks asso- ciated with pharmaceutical treatments. Zheluk et al. (2022) demon- strated that the majority of information shared by SMIs on platforms like YouTube and TikTok lacked comprehensiveness and did not align with evidence-based practices. Furthermore, only a minority of videos offered guidance on when to seek professional medical help or recognize red flags indicating potentially serious underlying health conditions (Zheluk et al., 2022).

3.5.5. Inappropriate advertisement

Adolescents are prime targets for endorsement endeavours due to their susceptibility, disposable income, and independent purchasing decisions (Potvin Kent et al., 2019). Advertised products by SMIs were examined by 14 studies using content analysis, focus groups and in- terviews, and past exposure surveys. Advertised products can be cate- gorized into non-restricted products (i.e. food or sportswear) and products that are subject to platform or governmental policies (i.e. to- bacco or alcohol). Seven of the eight studies examining non-restricted products mentioned brands whereas only two studies concerned with restricted products disclosed at least some of the involved brands (see Hendriks et al., 2020; Vassey et al., 2020). Table 5 displays the types of non-restricted and restricted products advertised by influencers.

## 4.8. Recommended actions

The studies analysed offer suggestions on how to tackle challenges and leveraging the benefits of using SMIs in health communication and promotion. Specifically, the articles identified 41 actions to combat challenges and 20 beneficial ways to incorporate influencers in health. E-cigarette products (i.e. vaping devices, liquids) JUUL, Voopotech, Innokin, Geekvape, Lostvape, Smok, Vaporesso, Asvape, Oxva.tech, Freemax, Wotofo, Augvape, Upends Communication. These actions encompass policy and regulatory issues (regulation
Hookah, Nicotine products (i.e. gums,pouches), Tobacco products. fitness related content (Ahrens et al., 2022). Influencers frequently collaborate with major companies like Coca Cola, Ferrero, and Mars, as well as fast food giants such as McDonalds or Starbucks, blurring the line between food marketing and entertainment (Coates et al., 2019; Potvin Kent et al., 2019; Qutteina et al., 2019; Van der Bend et al., 2022a; Winzer et al., 2022). Influencers resort to various product promotion strategies which feature sexualized content and make misleading claims, associating specific body types and happiness with dietary supplements and sportswear (see Ahrens et al., 2022; Feijoo et al., 2022; Pilgrim and Bohnet-Joschko, 2019).
Six of the studies focused on products subject to advertising regula- tions targeting adolescents, either through policy measures or platform restrictions. These studies encompassed a range of products, including alcohol, cannabis products, e-cigarettes, tobacco and nicotine products, as well as hookah, as detailed in Table 5.
Four of the six studies primarily investigated e-cigarettes, tobacco, nicotine products, and cannabis products (Albert et al., 2022; Kong et al., 2019; Liu et al., 2020; Vassey et al., 2020). While two studies examined advertising related to alcohol-related products (see Hendriks et al., 2020; Jernigan et al., 2017). The promotion of restricted products relied on various tactics, including the use of aesthetically pleasing models (Vassey et al., 2020), direct appeals to adolescents through colourful packaging, tempting flavours, and novel devices (Kong et al., 2019; Liu et al., 2020), presenting positive depictions and consumption contexts (Jernigan et al., 2017; Vassey et al., 2020), provide entertaining content like vape tricks (Kong et al., 2019), and making false claims through influencers (e.g. vaping as a harmless alternative to smoking tobacco) (Vassey et al., 2020).

## 3.6. Benefits

Only 8 studies explored the potential benefits of SMIs. Those revolve around mental health, sexual health, health promotion, and strategies to address substance use. Influencers can establish interpersonal relation- ships and social connections, fulfilling a need that may be lacking in the non-virtual world (Marcus et al., 2012; Zorell, 2022). They can also provide

support for mental health issues (Marcus et al., 2012) and offer
health content that resonates with their audience's experiences without positioning themselves as experts (Harris et al., 2021; Zorell, 2022).
Influencers enhance the reach and engagement of health content by delivering trustworthy, authentic, emotionally appealing, humorous, entertaining, culturally specific, and positively framed health messages and restriction of influencer marketing, adaptation and expansion of existing laws, enforcement and monitoring of laws), health-related so- cial media literacy (among adolescents and health professionals), and ethical responsibility among influencers and public awareness.
Policy and regulatory issues include the regulation and restriction of SMI marketing, the adaptation and expansion of existing laws to cover social media, and enforcing and monitoring laws regulating SMIs (see Klein et al., 2020; Phua et al., 2018; Qutteina et al., 2021). Enhancing social media literacy among adolescents includes addressing potential mental and physical health impacts, problematic information, chal- lenging beauty standards, and marketing techniques (see Fardouly et al., 2018; De Jans et al., 2022; Pilgrim and Bohnet-Joschko, 2019). In addition, training of health professionals, decision-makers, guardians, and teachers on navigating and utilizing SMIs was frequently mentioned (see Henning et al., 2022; Pilgrim and Bohnet-Joschko, 2019; Zheluk et al., 2022). Less attention was given to the challenging task of educating influencers about their ethical responsibility, especially when promoting harmful products (Hudders et al., 2021), and raising public awareness of influencers promoting unhealthy products (Folkvord and de Bruijne, 2020).
Only a few studies addressed how to capitalize on the positive impact influencers could have on adolescent health. Proposed actions (n = 20) mostly focused on the inclusion of influencers in health communication (see Table 7).
Most notably, the studies suggest that influencers inherit the exper- tise to tailor health information to diverse social media environments and the desires of specific target groups. The second area covers the utilization of the trustworthiness and authenticity of influencers to in- crease the range of public health campaigns, generate interest in health among adolescents, and encourage healthy behaviours.

## 4. Discussion

The review identified diverse definitions and classifications of influencers, a strong focus on a limited number of health topics, and an

**Actions to combat challenges introduced by SMIs.**

| Actions to Combat Challenges | Mentions in articles |
|---|---|
| Regulation and restriction of influencer marketing | 13 (32%) |
| Improving social media literacy among adolescents | 11 (27%) |
| Adapting and expanding existing laws | 5 (12%) |
| Enforcement and monitoring of existing laws | 5(12%) |
| Improving social media literacy among professionals, guardians, teachers, etc. | 5 (12%) |
| Educating influencers and creating public awareness | 2 (5%) |
| Total of reported actions | 41 (100%) |

**Beneficial impacts of SMIs.**

| Beneficial impacts | Mentions in articles |
|---|---|
| Utilize trustworthiness and authenticity | 9 (45%) |
| Provide tailored information and reach specific groups | 11 (55%) |
| Total of reported actions | 20 (100%) |

overemphasis on mitigating negative effects rather than leveraging the positive role of health influencers. Furthermore, existing research fo- cuses on populations from the Global North, with a need for represen- tation of socio-economically marginalized groups in future research. Gender balance is also lacking, as studies primarily centre on girls, despite the distinct ways in which boys may also be affected. While the field is still developing and requires input from young people to gain a better understanding of the phenomenon, current studies predominantly use quantitative methods, highlighting a need for more qualitative data. In particular, the research field could benefit from incorporating the perspectives of SMIs to gain a better understanding of their underlying motivations, knowledge, and awareness of their impact on adolescents.

### 4.1. Definitions and classifications of influencers

The reviewed studies presented diverse definitions for influencers and include terms like celebrity endorser, content creator, social media influencer, or simply influencer. However, the common denominator is that influencers are individuals who amass a significant followership on social media and employ captivating content to exert influence over their audience. Furthermore, the advertisement of products and mone- tization seems to be an important characteristic of influencers. However, some studies have not defined the term at all, and others have used various extensions or restrictions. While this heterogeneity should be embraced, it is important for researchers to have a common under- standing of the term and to specify the type of influencer they are investigating. Fig. 2 summarizes the core definitions and classifications of SMIs in the present studies and can serve as a guide for researchers. However, it should be noted that the classification provided in this review may not be exhaustive, as other approaches have been discussed in prior marketing research (Hudders et al., 2021). For example, influ- encers could be also classified based on their underlying motivations to share content. These can include for-profit motivations, but also altru- istic generosity and moral motives (Bucher et al., 2016). Here, future research could address the lack of studies focused on influencers themselves and, for example, delve into their non-commercial motiva- tions. Furthermore, influencers can also be classified based on their authenticity, accessibility, and likeability (Campbell and Farrell, 2020; De Veirman et al., 2017), expertise and interactivity (Wang and Chan-Olmsted, 2022), or the classification based on motivations of influencers to share content online (Gross and Wangenheim, 2018).

In sum, the persistent heterogeneity of definitions and classifications of influencers should not be seen as an obstacle. However, researchers need to clearly state how they define SMIs when referring to them and provide detailed explanations of their understanding of influencers or the specific type they choose to investigate (Vrontis et al., 2021).

### 4.2. Health topics

The World Health Organization (WHO) recognizes alcohol use, drug use, tobacco use, mental health, sexual health, nutrition, and physical activities as key topics affecting adolescent health (World Health Or- ganization, 2023a). These topics were all covered in the reviewed arti- cles, though some topics are underrepresented, including mental and sexual health.

Given the growing number of mental health issues in young people (CDC, 2021), this may come as somewhat surprising; however, it should be noted that the topics covered in the included studies are often interconnected. For example, physical activity is often discussed conjointly with the more dominant topics of nutrition or appearance. The same is true for mental health, wellbeing, and body image. How- ever, given the increasing number of reported mental health issues in young people, the impact of SMIs needs to be further investigated. For example, researchers need to answer the question how SMIs can promote mental health (O'Reilly et al., 2019) and raising awareness about stigmatized topics such as mental health disorders (Pavlova and Berkers,
2020). Research also needs to examine the potential negative impact of SMIs in the field of mental health. For example, Foulkes and Andrews (2023) argue that mental health awareness efforts may lead some in- dividuals to overinterpret mild and harmless mental health symptoms and label themselves as patients. Self-diagnosing can have negative psychological consequences and lead to overtreatment. Researchers need to examine how SMIs may encourage overinterpretation and inappropriate self-diagnosis.

Furthermore, although appearance-related research presented a dominant topic in our review, there is still much that needs to be addressed. For example, the effects of body-positive imagery on ado- lescents' body image still remains unclear (Vandenbosch et al., 2022). Preliminary evidence shows that body-positive messages are common in
youth-oriented television series (Maes and Vandenbosch, 2023). Thus, it can be assumed that this trend is also reflected on social media. Further research is also needed in explaining the underlying processes which might influence adolescents' body image following exposure to SMIs appearance-related content. For instance, internalization processes and social pressure (Vandenbosch et al., 2022), as well as the role of self-discrepancy (Robinson and Vendemia, 2023) could provide fruitful avenues for future research.

There is also a research gap in addressing sexual health on social media, as it was only covered in one of the included studies. Further investigation is needed considering the potential and challenges of sexual health promotion online (Moreno et al., 2018). Previous research has highlighted the benefits of social media in addressing sensitive topics like sexual health, due to the aspect of anonymity (Engel, 2023). Future studies could explore if this applies to SMIs as well.

In recent years, there has been a growing interest in nutrition and food-related topics in health research. This is likely due to the growing public health crisis of overweight and obesity among adolescents (World Health Organization, 2023b). Research has focused on investigating the effects of social media food marketing, which is considered a key factor in unhealthy dietary behaviours and related health issues like diabetes (Van der Bend et al., 2022a, 2022b). While most studies in our review have concentrated on the negative effects of social media food market- ing and called for stricter regulations (Van der Bend et al., 2022a, 2022b), there has been limited research on the potential of SMIs in promoting healthy food, especially among adolescents (Coates et al., 2019; De Jans et al., 2021; Folkvord and De Bruijne, 2020; Folkvord and de Bruijne, 2020). Over an extended period, numerous studies and or- ganizations, including the WHO and UNICEF, have advocated for stricter regulations. Furthermore, a recent systematic review by Boyland et al. (2022b) has highlighted that implementing measures to limit food marketing directed at children can successfully reduce children's exposure to such marketing, diminish its influence, and potentially lead to decreased purchases of unhealthy foods. This research gap highlights the need to better understand how influencers can be utilized to promote healthy food among adolescents.

In summary, the included studies primarily focused on food, appearance, and substances. The research interest in specific health topics changes over time, and the distribution identified in our review is a limited snapshot. We anticipate that the obesity and mental health crisis may

promote more research on topics like mental and sexual health, as they were relatively scarce in our review. It is also important to note the absence of articles on vaccination-related topics, despite including relevant terms in our search strategy. However, given the

COVID-19 pandemic and the heightened interest of public health orga- nizations in promoting health behaviour, we expect future research to explore the role of SMIs in disseminating vaccination-related content and preventive behaviours targeting adolescents. Some studies have already investigated this, although not specifically focused on adoles- cents or SMIs (Liu, 2021; Po¨yry et al., 2022; Wasike, 2022). Overall, we recommend that future studies continue to track the evolving landscape of health topics in relation to SMIs and adolescent health.

### 4.3. Benefits, challenges and actions

Existing studies highlight the importance of authenticity of SMIs and the development of parasocial relationships, often achieved through the communication of lived experience (Heiss and Rudolph, 2022; Willis and Delbaere, 2022). This presents opportunities, as SMIs can effectively communicate healthy lifestyles and habits, but also challenges, as they may also mislead their target audience on key health issues. In the studies reviewed, challenges were primarily related to peer comparison and idealized body image (e.g., Ahrens et al., 2022), unhealthy food and nutrition (e.g., Coates et al., 2019), and promotion of substance use (e.g., Vassey et al., 2020). In this context, SMIs often collaborate with industry actors. These include manufacturers and distributors of ultra-processed
foods (e.g., Coca-Cola, McDonald's), tobacco and alcohol producers (e. g., JUUL, Heineken), or dietary supplements (e.g., My Protein), among others.
Another challenge is the provision of inaccurate diagnosis and treatment advice. While the two mental health studies highlight the positive potential of SMI to promote mental health, Harris et al. (2021) also warn that SMIs with mental health problems themselves may generalize their own lived experience. This can lead to inaccurate self-diagnosis (i.e., overdiagnosis), which can ultimately lead to psy- chological distress and overtreatment (e.g., inappropriate use of medical products). Furthermore, Zheluk et al. (2022) observe a similar phe- nomenon for non-specific back pain, i.e. SMIs sharing inaccurate infor- mation for self-diagnosis.
These observations point to the importance of regulation. Although platforms have taken some steps to regulate content themselves (e.g., Meta, 2023), experts emphasize the importance of effective government regulation. This includes banning advertisements for ultra-processed foods (van der Bend et al., 2022b), tobacco and alcohol products (Smith et al., 2023; Jackson and Bartholow, 2020), or prescription drugs (Willis and Delbaere, 2022). The question of how to regulate the communication of SMIs is certainly an important avenue for future research. Beyond regulation, policymakers should also support digital and health education to equip young people with the tools and knowl- edge necessary to appraise health information from SMIs.
On a more positive note, some studies not included in this review have shown that influencers can be effectively used in public health campaigns. For example, Po¨yry et al. (2022) showed that influencers can effectively promote COVID-19 protective measures, and Bonnevie et al. (2021) demonstrated the positive outcomes of including SMIs in influ- enza vaccine promotion among hard-to-reach groups. The reason for these successes may be that SMIs are perceived as a highly trustworthy source and use plain language that the target audience can easily un- derstand and follow. This positive potential needs to be further explored for adolescent health issues.

Despite earlier calls for utilizing social media in health promotion (e. g., Korda and Itani, 2013; Heldman et al., 2013), SMIs were rarely included as subjects in the reviewed studies. However, Byrne et al. (2017) showed the possible positive impacts of influencers on food choices, while Lutkenhaus et al. (2019) provided evidence of the posi- tive impacts of influencer collaboration to reach specific online com- munities with niche interests and health-related topics via tailored information. Additionally, Willis et al. (2023) illustrated the potential positive role of patient influencers in communicating prescription drug information. However, they also note that many influencers have close ties to the pharmaceutical industry, which can lead to significant bias.

### 4.4.Under-representation of marginalized groups

Most of the included studies were conducted in Europe and North America, with a disproportionate focus on white girls. However, given the rapid proliferation of social media apps for mobile devices (Goggin, 2014) and their widespread adoption in the Global South (Enli and Moe, 2017; Highfield, 2016), the Global South has emerged as a significant social media audience with unique digital cultures (Willems, 2020), highlighting the need for studies targeting populations of the Global South.

The disproportionate attention given to white females in SMI research may be attributed to the female-dominated world of SMIs (Hudders and De Jans, 2022), which has led to a focus on gender-matched effects (Hudders and De Jans, 2022), follower-influencer similarity (Leung et al., 2022), and perceived attractiveness (Durau et al., 2022; Leung et al., 2022). However, this overrepresentation risks reinforcing gender stereotypes that are already deeply entrenched in social media research (Schroeder, 2021), social media algorithms (Fosch-Villaronga et al., 2021), and among adolescent social media users (Van Oosten et al., 2017), which systematically exclude non-binary, trans, and diverse individuals.

Moreover, this skewed focus on white females may also distort the findings, as demonstrated by Ritzhaupt et al. (2013), who found that high socioeconomic status white females tend to outperform other groups regarding social media literacy. Additionally, male adolescents exhibit higher rates of risky health behaviours compared to their female peers, specifically regarding substance use (Boyle et al., 2016; Copeland et al., 1996; Schulte et al., 2009), unhealthy nutrition (Olson et al., 2017), and potentially harmful coping mechanisms (Wilson et al., 2005; Wu et al., 2006). In turn, females tend to engage more frequently into harmful weight loss behaviours with excessive dieting and laxatives (Spencer et al., 2015; Wu et al., 2006). Furthermore, Tamplin et al. (2018) found that media literacy was only protective against potentially harmful influences among young women but not among young males. This highlights the importance of including male participants in research on SMIs.

Participation rates were higher among individuals with higher in- come and tertiary education. However, none of the nine studies that surveyed the participants' socioeconomic status included this information in their subsequent analysis. While previous social media research has identified socioeconomic status as a predictor of social media usage for entertainment or news (Ucar et al., 2021), self-representation or information-seeking behaviours (Hsu et al., 2015), varying levels of social media literacy and privacy concerns (Epstein and Quinn, 2020; Heiss et al., 2023), or responsible social media behaviour (Wang and Xing, 2018), socioeconomic factors have been largely overlooked in SMI research, presenting opportunities for further investigation.

## 5 Limitations

This scoping review certainly has some limitations. The search focused on English articles, potentially underrepresenting low- and middle-income countries. However, we expected that

most journal articles would be provided in English. Additionally, grey literature such as conference articles or books are excluded.

Furthermore, some topics might be overseen due to the terms chosen as keywords in the search string. It is important to note that this review did not incorporate very specific health-related terms, potentially leading to the exclusion of research on some topics like ADHD and autism spectrum disorders for instance within the context of mental health. However, to mitigate this limitation, we proactively screened current literature beforehand and incorporated recommendations from the World Health Organization regarding key health issues affecting adolescents to build the search string with relevant keywords (World Health Organization, 2023a). Nevertheless, exploring marginal health topics remains a promising avenue for future research.

Unlike systematic reviews, scoping reviews, as recommended in established guidelines (Tricco et al., 2018), typically do not include a risk of bias assessment. The purpose of our review was to offer an initial overview of current studies on the relationship between SMIs and adolescents' health, which is why a quality assessment was omitted. However, for future studies that specifically examine direct effects, it is advisable to incorporate a quality assessment, as suggested by Munn et al. (2018).

Although we might have missed some articles due to the chosen databases, we aimed to achieve the best coverage by including databases in relevant disciplines (e.g., health communication, medicine, and psychology). Furthermore, studies were required to focus on participants aged 13 to 25 for inclusion. However, it is unlikely that studies precisely targeted this age range, so participants slightly younger or older have been included. Nonetheless, if the mean age fell within the 13–25 years range and all other inclusion criteria were met, the studies were considered appropriate and relevant to the research question of this review. Lastly, the allocation of the primary health topic for each article is based on the main objective and title identified. This is intended to provide a broad overview, recognizing that health topics cannot be strictly separated from each other. A more detailed analysis could delve into the health topics and identify their interrelationships, such as the connection between mental health, appearance, and nutrition.

## 6. Conclusion

The scoping review synthesized a substantial body of literature and identified persistent research gaps that require further investigation. First, existing definitions and classifications of SMIs vary widely, and some studies have not defined the term at all. For future research, it is critical that researchers establish a common core understanding of the term and specify the type of influencer being studied. Relatedly, future research also needs to provide empirical evidence on the influence of SMIs, including how to measure SMI-specific factors that may enhance credibility, such as authenticity and parasocial relationships. To achieve this, future research may need to incorporate the perspective of SMIs and utilize qualitative as well as more robust experimental designs. Only then can we conclusively delineate the distinct effects of SMIs. Second, the current focus on appearance, nutrition, and substance use needs to be extended to mental and sexual health, topics that have received insufficient attention. Third, future studies must encompass a broader population, including the Global South, socially marginalized groups, and male populations.

Finally, the reviewed studies focus heavily on challenges such as the promotion of junk food, questionable body image, and tobacco or alcohol products. One study has also identified the problem that sharing lived experience of mental health influencers may lead to inflated perceptions of mental health problems (Harris et al., 2021). This is an important observation may also be transferred to physical diseases. Thus, future research needs to investigate how

sharing lived experience (e.g. by patient influencers) may also lead to inaccurate self-diagnosis, and all the potential negative follow up consequences, including psychological stress and overtreatment (Foulkes and Andrews, 2023; Kühlein et al., 2023).

To mitigate these negative outcomes, the reviewed studies have identified avenues for policy action, such as regulating potentially harmful content in SMI marketing. Another area for action is educational policy, such as supporting programs that promote health and social media literacy. However, this must be done without placing the responsibility solely on the individual. Finally, given the central role of SMIs in the lives of adolescents, it will be essential to gather more evi- dence on how to involve SMIs in public health campaigns and to raise awareness of their influence on adolescent health.

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