



Review Article

The Impact of Adolescent Indulgence on Adult Health Outcomes

Funmilola Dunni Ayanrinde*, Ifeoluwapo Oluwafunke Kolawole

Beatrice M. Ohaeri

Department of Nursing Science, University of Ibadan, Oyo State, Nigeria.

*Corresponding author: funmiayanrinde@yahoo.com

Abstract

This review explores the impact of adolescent indulgence on adult health outcomes to comprehensively understand the implications of indulgent behaviors during adolescence. The significance lies in addressing the long-term consequences of dietary choices, substance use, physical activity, and risky sexual behaviors on adult health. The aim is to analyze existing literature, identify moderating factors, and propose recommendations for future research and interventions. A systematic review method is employed to synthesize longitudinal studies, revealing complex associations influenced by gender, socioeconomic status, and cultural factors. Results underscore the need for tailored interventions, early prevention programs, and technology integration in health education. The conclusion emphasizes the multifaceted nature of adolescent indulgence and the importance of holistic, culturally sensitive approaches. Recommendations highlight the necessity for multidisciplinary research, policy advocacy, and community engagement to promote positive health trajectories from adolescence to adulthood.

Keywords: Adolescent health, indulgent behaviors, adult health outcomes, longitudinal studies, protective factors.

Received: 30 September 2023

Accepted: 26 December 2023

Introduction

Background

Adolescence represents a critical period in human development characterized by numerous physical, psychological, and social changes. During this transitional phase, individuals often engage in a variety of behaviors, some of which may have lasting implications for their health and well-being in adulthood. This review article delves into "The Impact of Adolescent Indulgence on Adult Health Outcomes," aiming to comprehensively explore the long-term consequences of certain behaviors and choices made during adolescence.

This work is licensed under a [Creative Commons Attribution 4.0 Unported License](https://creativecommons.org/licenses/by/4.0/)

ISSN: 1597 – 9928. Science and Education Development Inst., Nigeria

The intricate interplay between adolescent behaviors and adult health outcomes has attracted growing attention from researchers, clinicians, and policymakers alike. Adolescents commonly experience heightened experimentation, exploration, and risk-taking, which can manifest in various forms, such as dietary choices, substance use, physical activity patterns, and sexual behaviors. Understanding how these indulgences during adolescence contribute to adult health outcomes is crucial for developing targeted interventions and promoting long-term health and well-being.

The relationship between adolescent indulgence and adult health outcomes is a complex topic that has been studied by many researchers. One study conducted by NHS Health Scotland in 2019 found that having a trusted adult during adolescence can have a positive impact on health and education outcomes in adulthood (Whitehead et al. 2019). Another study published in *Frontiers in Human Neuroscience* in 2020 found that individuals who grew up in a suboptimal environment have been found to experience poorer health as adults, independent of their current living conditions (Brandt and Hertzog, 2012; Wehre et al., 2020). It is important to note that the term “adolescent indulgence” is not a well-defined term in the scientific literature. However, it is possible that certain behaviors during adolescence, such as substance abuse, could have negative effects on adult health outcomes.

In nursing practice, the subject of adolescent indulgence and its effects on adult health outcomes is extremely pertinent. It guides the work that nurses do in the areas of behavioral health, community health, holistic patient evaluation, cultural competency, family-centered care, and advocacy for health legislation. Through the use of this information, nurses make a substantial contribution to the general health and well-being of people throughout their lives. The exploration of indulgent behaviors during adolescence reveals a spectrum of choices that individuals make, including dietary preferences, substance experimentation, sedentary lifestyles, and engagement in risky sexual behaviors (Chen and Jacobson, 2012; Smith et al., 2014). Each of these behaviors has the potential to shape health trajectories into adulthood. Examining longitudinal studies provides valuable insights into the connections between adolescent indulgence and adult health outcomes. Research suggests that certain dietary patterns in adolescence may contribute to the development of chronic conditions, such as cardiovascular disease and obesity, in adulthood. Similarly, substance use during adolescence has been linked to increased risks of addiction and mental health disorders in later life.

Understanding the impact of moderating factors, such as gender, socioeconomic status, and cultural influences, adds nuance to the analysis (Cuenca-García et al., 2014). Variations in how indulgent behaviors affect different demographic groups underscore the importance of considering these factors in intervention strategies. Identifying protective factors and mitigating strategies during adolescence is crucial for promoting positive health outcomes in

adulthood. Positive interventions, such as supportive family environments, access to education, and health-promoting policies, may counterbalance the negative impact of indulgent behaviors.

This review encompasses a wide array of indulgent behaviors exhibited during adolescence, including but not limited to dietary habits, substance use, sedentary lifestyles, and risky sexual behaviors (Kugler et al., 2017; Sushil et al., 2023). By synthesizing existing literature, this article aims to provide a comprehensive overview of the diverse ways in which adolescent indulgence influences subsequent adult health outcomes. The significance of this review lies in its potential to inform public health strategies, clinical interventions, and educational programs targeting adolescents (Shakya et al., 2019). By identifying patterns and associations between adolescent indulgence and adult health outcomes, stakeholders can develop evidence-based interventions to mitigate potential negative consequences and promote healthier trajectories into adulthood.

Despite the recognition of adolescence as a critical developmental period, there remains a gap in our understanding of the specific ways in which indulgent behaviors during this time contribute to adult health outcomes. This review seeks to address this gap by synthesizing existing research and identifying key patterns and associations between adolescent indulgence and subsequent health outcomes. There is the need to inform both researchers and practitioners about the potential long-term effects of adolescent indulgence. By consolidating and critically examining the available literature, this article aims to contribute to the existing knowledge base, facilitating the development of targeted interventions to promote healthier transitions from adolescence to adulthood. It is essential to acknowledge the limitations inherent in any literature review, such as potential publication bias and variations in study methodologies. Additionally, the dynamic nature of adolescent development may introduce complexities in establishing causal relationships. Recognizing these limitations is crucial for interpreting the findings presented in this review.

Research Questions:

- i. What specific indulgent behaviors during adolescence are associated with adverse adult health outcomes?
- ii. Are there gender, socioeconomic, or cultural variations in the impact of adolescent indulgence on adult health?
- iii. How do protective factors or mitigating strategies during adolescence influence adult health outcomes?

Aim and Objectives:

Aim: To systematically review and synthesize existing literature on the impact of adolescent indulgence on adult health outcomes.

Objectives:

- i. To identify and categorize indulgent behaviors exhibited during adolescence.
- ii. To examine the longitudinal associations between adolescent indulgence and specific adult health outcomes.
- iii. To explore potential moderating factors, such as gender, socioeconomic status, and cultural influences.
- iv. To provide recommendations for future research and interventions aimed at promoting positive health trajectories from adolescence to adulthood.

Methodology

A comprehensive literature search was done to locate relevant research and data on the Impact of Adolescent Indulgence on Adult Health Outcomes. in order to complete this evaluation. Among the databases examined were academic journals, government documents, and publications from international organizations. The most recent results were ensured to be included because the search parameters encompassed research conducted up until September 2023. The WHO, NHS Health Scotland, Psychology and Educational Studies, Nutrition, nursing, and scholarly journals in the domains of neuroscience, child development, and public health were consulted as part of the literature study. Academic databases such as PubMed and Google Scholar were also employed. Term searches that were conducted often included "Adolescent indulgence," "Factors Influencing Health Trajectories," "Cultural Influences," "Adult Health Outcomes," and "Health Disparities."

Discussion

1. The Identification and Categorize Indulgent Behaviors Exhibited During Adolescence

Adolescence is a critical period marked by heightened exploration and experimentation, during which individuals often engage in various indulgent behaviors. Understanding and categorizing these behaviors are essential steps towards unraveling their impact on adult health outcomes. This section aims to identify and categorize indulgent behaviors exhibited during adolescence, laying the groundwork for a comprehensive analysis.

Adolescent dietary patterns play a crucial role in long-term health outcomes. Studies by Movassagh et al.(2018) and Appannah et al. (2021) have explored the impact of dietary choices

during adolescence on adult health, emphasizing the need to categorize specific dietary behaviors for a nuanced understanding.

The exploration of indulgent behaviors extends to substance use, a prevalent aspect of adolescence. Loke and Mak (2013) and Scalese et al. (2014) have delved into the categorization of substance use patterns, revealing associations with mental health and addiction in adulthood.

Physical Activity Patterns: Adolescent engagement in physical activity has been examined by Telford et al. (2023) highlighting the need to categorize various activity patterns. Sedentary behaviors and the lack of physical activity during adolescence have been associated with adverse adult health outcomes.

Risky Sexual Behaviors: Indulgent behaviors in the realm of sexual activity have implications for both adolescent and adult health (Vasilenko, 2022). Mirzaei et al.(2016) and Karle et al.(2023) emphasize the importance of categorizing risky sexual behaviors to understand their impact on sexual health and overall well-being in adulthood.

Exploring Cultural Influences: Cultural factors significantly influence indulgent behaviors during adolescence. Study by Latif et al. (2020) stresses the importance of categorizing behaviors within cultural contexts to better comprehend their varying impact on adult health outcomes.

Socioeconomic Dimensions: Socioeconomic status plays a crucial role in shaping adolescent behaviors. Mudd et al. (2021) highlight the need to categorize indulgent behaviors within socioeconomic dimensions to address health disparities in adulthood.

Protective Factors: Identifying protective factors during adolescence is essential. Telzer et al. (2018) and Frosch et al. (2019) emphasize the categorization of positive influences such as family support, education, and community engagement in mitigating the impact of indulgent behaviors on adult health.

2. Examining Longitudinal Associations between Adolescent Indulgence and Specific Adult Health Outcomes

Understanding the longitudinal associations between adolescent indulgence and adult health outcomes is essential for uncovering the lasting impact of certain behaviors. This section aims to examine the existing literature on these longitudinal associations, emphasizing specific indulgent behaviors during adolescence and their subsequent influence on distinct adult health outcomes.

Dietary Patterns and Adult Health: Longitudinal studies by Ruiz et al. (2020) and Lister et al. (2023) have explored the relationship between adolescent dietary patterns and adult health outcomes. These studies emphasize the need to understand how specific dietary choices during adolescence may contribute to conditions such as cardiovascular disease, obesity, and metabolic disorders in adulthood.

Substance Use Trajectories and Mental Health: Lee et al. (2010) used trajectories during adolescence, uncovering associations with mental health outcomes in adulthood. Understanding the persistence of these associations over time is crucial for targeted prevention and intervention efforts.

Physical Activity Patterns and Long-Term Health: Kumar et al. (2015) and (Leung et al., 2019) have examined the longitudinal impact of adolescent physical activity patterns on adult health. This research underscores the importance of regular physical activity during adolescence in mitigating the risk of chronic conditions and promoting overall well-being in adulthood.

Risky Sexual Behaviors and Sexual Health: Longitudinal studies by Loureiro et al. (2021) shed light on the enduring consequences of risky sexual behaviors during adolescence on adult sexual health. These findings highlight the need for comprehensive sexual education and intervention strategies to promote healthy behaviors from an early age.

Socioeconomic Status and Health Disparities: Examining the longitudinal associations between adolescent indulgence and adult health outcomes within different socioeconomic contexts is crucial. Belardinelli et al. (2022) have conducted research highlighting the persistent health disparities associated with indulgent behaviors across socioeconomic strata.

Protective Factors Mitigating Long-Term Impact: Research by Loke and Mak (2013) and Elizabeth et al. (2015) explores protective factors during adolescence that may mitigate the long-term impact of indulgent behaviors. These studies emphasize the importance of identifying factors that contribute to resilience and positive health outcomes despite indulgent behaviors during adolescence.

3. Exploring Potential Moderating Factors: Gender, Socioeconomic Status, and Cultural Influences in the Context of Adolescent Indulgence and Adult Health Outcomes

Understanding the impact of adolescent indulgence on adult health outcomes necessitates a nuanced exploration of moderating factors that shape these associations. This section aims to investigate potential moderating factors, including gender, socioeconomic status (SES), and cultural influences, highlighting their significance in influencing the relationship between adolescent indulgence and long-term health outcomes.

Gender Differences: Studies by Kaniušonytė and Laursen, (2021) and au et al. (2022) have explored gender differences in the manifestation and consequences of indulgent behaviors during adolescence. Understanding how gender moderates the impact of indulgence on adult health outcomes is critical for tailoring interventions to specific needs.

Socioeconomic Status (SES): The relationship between adolescent indulgence and adult health outcomes may vary across different socioeconomic strata. Research by Ran et al. (2022) and Zhang et al. (2022) investigates the moderating role of SES, shedding light on disparities and potential mechanisms through which socioeconomic factors influence health trajectories.

Cultural Influences: Cultural contexts significantly shape the nature and consequences of indulgent behaviors during adolescence. Telzer et al. (2018) and Latif (2020) have explored the impact of cultural influences, highlighting how cultural norms, values, and practices moderate the relationship between adolescent indulgence and adult health outcomes.

Intersectionality of Moderating Factors: An emerging area of research considers the intersectionality of moderating factors. Griffin and Hu (2015) and Koengkan and Fuinhas, (2023) delve into how the interplay between gender, SES, and cultural influences may result in unique health trajectories for individuals with diverse backgrounds.

Implications for Intervention: Understanding moderating factors has direct implications for the development of targeted interventions. Feldstein et al. (2012) and Martow et al. (2022) discuss how tailoring interventions based on gender, SES, and cultural considerations can enhance their effectiveness in mitigating the potential negative impact of indulgent behaviors during adolescence.

4. Providing Recommendations for Future Research and Interventions: Fostering Positive Health Trajectories from Adolescence to Adulthood

As we strive to comprehend the impact of adolescent indulgence on adult health outcomes, it becomes imperative to outline recommendations for future research and interventions. This section aims to provide a roadmap for advancing knowledge and implementing strategies that promote positive health trajectories from adolescence to adulthood.

Future Research Directions

- a. **Causality and Mechanisms:** Research should focus on establishing causality and elucidating underlying mechanisms. Studies like those by Tsang et al. (2012) and Lawrence et al. (2022) to uncover causal relationships between indulgent behaviors in adolescence and specific health outcomes in adulthood.

- b. **Longitudinal Studies with Diverse Samples:** Expand longitudinal studies to include diverse demographic groups, considering factors such as race, ethnicity, and geographic location. This approach, advocated by Tysinger and Hlava (2022), will enhance the generalizability of findings and illuminate potential health disparities.
- c. **Interaction of Moderating Factors:** Investigate the complex interplay of moderating factors, such as gender, socioeconomic status, and cultural influences. Studies like those by Burton-Jeangros et al. (2015) indicate the need for research exploring how these factors interact and influence health trajectories.

Intervention Strategies

- a. **Early Prevention Programs:** Develop and implement early prevention programs targeting indulgent behaviors in adolescence. Griffin and Botvin (2011) underscore the importance of interventions that start early to prevent the establishment of harmful behaviors.
- b. **Tailored Interventions for At-Risk Groups:** Tailor interventions for specific at-risk groups based on gender, socioeconomic status, and cultural considerations. Research by Marsiglia and Booth (2015) emphasizes the importance of cultural sensitivity in designing interventions that resonate with diverse populations.
- c. **Integration of Technology and Education:** Leverage technology and educational platforms to disseminate information and support positive health behaviors. Haleem et al. (2022) and Giovanelli et al. (2020) highlight the potential of integrating technology and educational tools to reach and engage adolescents effectively.

Multidisciplinary Approaches: Encourage multidisciplinary collaborations between researchers, healthcare professionals, educators, and policymakers. A holistic approach, as suggested by Schalet et al. (2014), is essential for developing comprehensive interventions that address the multifaceted nature of adolescent indulgence and its long-term consequences.

Community Engagement and Policy Advocacy: Promote community engagement and advocate for policies that support positive health behaviors. Studies by Haldane et al. (2019) and Anthony (2023) highlight the importance of community involvement and policy advocacy in creating environments that foster healthy choices.

Conclusions

In conclusion, the intricate relationship between adolescent indulgence and adult health outcomes underscores the need for comprehensive understanding and targeted interventions. The evidence synthesized in this review highlights the multifaceted nature of indulgent behaviors during adolescence and their lasting impact on health trajectories into adulthood.

Adolescent indulgence encompasses diverse behaviors, including dietary choices, substance use, physical activity patterns, and risky sexual behaviors. The complexity arises from the interplay of these behaviors, making it crucial to dissect their individual and collective contributions to adult health outcomes. Longitudinal studies have been instrumental in unraveling the associations between adolescent indulgence and adult health outcomes. However, further research is needed to establish causality and elucidate the intricate pathways through which indulgent behaviors in adolescence contribute to specific health conditions in adulthood.

Gender, socioeconomic status, and cultural influences emerge as significant moderating factors shaping the impact of adolescent indulgence. Future investigations should delve into the interaction of these factors, recognizing their nuanced roles in influencing health trajectories and creating health disparities. Identifying protective factors, such as supportive family environments, access to education, and positive community influences, offers avenues for developing mitigating strategies. Interventions targeting these factors may serve as buffers against the potential negative consequences of indulgent behaviors during adolescence.

Recommendations

Future research endeavors should adopt multidisciplinary approaches, integrating insights from psychology, sociology, nutrition, and public health. This collaboration will foster a more comprehensive understanding of the complex factors influencing the impact of adolescent indulgence on adult health outcomes. Interventions aimed at mitigating the impact of adolescent indulgence should be tailored to diverse populations. Recognizing the influence of gender, socioeconomic status, and cultural factors is crucial for designing interventions that resonate with the unique needs and contexts of different individuals and communities.

The development and implementation of early prevention programs should be prioritized. Initiatives targeting schools, families, and communities can play a pivotal role in promoting positive health behaviors from an early age, preventing the establishment of detrimental indulgent patterns. Leveraging technology for health education and intervention delivery is essential. Educational tools, mobile applications, and online platforms can serve as effective mediums to reach and engage adolescents, providing them with valuable information and support for making healthier choices.

Advocacy for policies that create supportive environments for healthy choices is paramount. Collaborative efforts between researchers, policymakers, and communities can drive the development and implementation of policies that foster positive health trajectories for individuals transitioning from adolescence to adulthood. In navigating the impact of

adolescent indulgence on adult health outcomes, these conclusions and recommendations provide a foundation for advancing research, shaping interventions, and advocating for policies that promote long-term health and well-being.

References

Anthony, B. (2023). The Role of Community Engagement in Urban Innovation Towards the Co-Creation of Smart Sustainable Cities. *J Knowl Econ*. <https://doi.org/10.1007/s13132-023-01176-1>

Appannah, G., Murray, K., Trapp, G., Dymock, M., Oddy, W.H., Ambrosini, G.L. (2021). Dietary pattern trajectories across adolescence and early adulthood and their associations with childhood and parental factors. *The American Journal of Clinical Nutrition*, Volume 113, Issue 1, January 2021, Pages 36-46. <https://doi.org/10.1093/ajcn/nqaa281>

Burton-Jeangros C, Cullati S, Sacker A, et al. Introduction. In: Burton-Jeangros C, Cullati S, Sacker A, et al., editors. *A Life Course Perspective on Health Trajectories and Transitions* [Internet]. Cham (CH): Springer; 2015. Chapter 1. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK385366/> doi: 10.1007/978-3-319-20484-0_1

Brandt N, Hertzog C.(2012). The paradox of environmental support among older adults. *J Gerontol B Psychol Sci Soc Sci*. 2012;67(1):34-41. doi:10.1093/geronb/gbr071.

Chen P, Jacobson KC. (2012). Developmental trajectories of substance use from early adolescence to young adulthood: gender and racial/ethnic differences. *J Adolesc Health*. 2012 Feb;50(2):154-63. doi: 10.1016/j.jadohealth.2011.05.013.

Cuenca-García M, Ortega FB, Ruiz JR, González-Gross M, Labayen I, Jago R, Martínez-Gómez D, Dallongeville J, Bel-Serrat S, Marcos A, Manios Y, Breidenassel C, Widhalm K, Gottrand F, Ferrari M, Kafatos A, Molnár D, Moreno LA, De Henauw S, Castillo MJ, Sjöström M; HELENA Study Group (2014). Combined influence of healthy diet and active lifestyle on cardiovascular disease risk factors in adolescents. *Scand J Med Sci Sports*. 24(3):553-62. doi: 10.1111/sms.12022.

Dou,D., Shek,D.T.L.,Kwok,K.H.R.(2020). Perceived paternal and maternal parenting attributes among Chinese adolescents: A meta-analysis *International Journal of Environmental Research and Public Health*, 17 (23), p. 8741, [10.3390/ijerph1723874](https://doi.org/10.3390/ijerph1723874)

Feldstein Ewing SW, Wray AM, Mead HK, Adams SK. (2012). Two approaches to tailoring treatment for cultural minority adolescents. *J Subst Abuse Treat.* 43(2):190-203. doi: 10.1016/j.jsat.2011.12.005.

Giovanelli A, Ozer EM, Dahl RE. (2020). Leveraging Technology to Improve Health in Adolescence: A Developmental Science Perspective. *J Adolesc Health.* 67(2S):S7-S13. doi: 10.1016/j.jadohealth.2020.02.020.

Griffin KW, Botvin GJ.(2011). Evidence-based interventions for preventing substance use disorders in adolescents. *Child Adolesc Psychiatr Clin N Am.* 19(3):505-26. doi: 10.1016/j.chc.2010.03.005.

Griffin B, Hu W.(2015). The interaction of socio-economic status and gender in widening participation in medicine. *Med Educ.* 49(1):103-13. doi: 10.1111/medu.12480.

Haleem, A., Javaid, M., Qadri, M.A. Suman, R. (2022). Understanding the role of digital technologies in education: A review. [Sustainable Operations and Computers. Volume 3](https://doi.org/10.1016/j.susoc.2022.05.004), Pages 275-285. <https://doi.org/10.1016/j.susoc.2022.05.004>

Haldane V, Chuah FLH, Srivastava A, Singh SR, Koh GCH, Seng CK, Legido-Quigley H.(2019). Community participation in health services development, implementation, and evaluation: A systematic review of empowerment, health, community, and process outcomes. *PLoS One.*14(5):e0216112. doi: 10.1371/journal.pone.0216112.

Kaniušonytė, G., & Laursen, B. (2021). Parenting styles revisited: A longitudinal person-oriented assessment of perceived parent behavior. *Journal of Social and Personal Relationships*, 38(1), 210-231. <https://doi.org/10.1177/0265407520960818>

Karle, A., Agardh, A., Larsson, M. et al. (2023). Risky sexual behavior and self-rated mental health among young adults in Skåne, Sweden – a cross-sectional study. *BMC Public Health* 23, 9 (2023). <https://doi.org/10.1186/s12889-022-14823-0>

Koengkan, M., Fuinhas, J.A.(2023). The influence of gender inequality on women's cancer mortality in European countries: a quantitative study. *J Public Health (Berl.)*. <https://doi.org/10.1007/s10389-023-02175-x>

Kugler KC, Vasilenko SA, Butera NM, Coffman DL. (2017). Long-term consequences of early sexual initiation on young adult health: A causal inference approach. *J Early Adolesc.* 37(5):662-676. doi: 10.1177/0272431615620666.

- Latif AS. (2020). The Importance of Understanding Social and Cultural Norms in Delivering Quality Health Care-A Personal Experience Commentary. *Trop Med Infect Dis.* 5;5(1):22. doi: 10.3390/tropicalmed5010022.
- Lawrence, D., Hunter, S.C., Cunneen, R. et al. (2021). Reciprocal Relationships between Trajectories of Loneliness and Screen Media Use during Adolescence. *J Child Fam Stud* 31, 1306–1317. <https://doi.org/10.1007/s10826-021-02066-3>
- Loke AY, Mak YW. Family process and peer influences on substance use by adolescents. *Int J Environ Res Public Health.* 10(9):3868-85. doi: 10.3390/ijerph10093868.
- Marsiglia FF, Booth JM. (2015). Cultural Adaptation of Interventions in Real Practice Settings. *Res Soc Work Pract.* 25(4):423-432. doi: 10.1177/1049731514535989.
- Martow, J. H., Heaman, J. A. L., & Lumley, M. N. (2022). The What, Why, and How of Adolescent Interpersonal Goal Setting Following a Growth Mindset Intervention. *Journal of Adolescent Research*, 0(0). <https://doi.org/10.1177/07435584221137066>
- Mirzaei M, Ahmadi K, Saadat SH, Ramezani MA. (2016). Instruments of High Risk Sexual Behavior Assessment: A Systematic Review. *Mater Sociomed.* 28(1):46-50. doi: 10.5455/msm.2016.28.46-50.
- Movassagh EZ, Baxter-Jones ADG, Kontulainen S, Whiting S, Szafron M, Vatanparast H. (2018). Vegetarian-style dietary pattern during adolescence has long-term positive impact on bone from adolescence to young adulthood: a longitudinal study. *Nutr J.* 17(1):36. doi: 10.1186/s12937-018-0324-3.
- Mudd, A.L., van Lenthe, F.J., Verra, S.E. et al. (2021). Socioeconomic inequalities in health behaviors: exploring mediation pathways through material conditions and time orientation. *Int J Equity Health* 20, 184. <https://doi.org/10.1186/s12939-021-01522-2>
- Njau, A. U., Othuon, L. & Oburu, P. (2022). Gender and age differences in the relationship between sensation-seeking and sexual risk-taking behavior among adolescents in Kenya. *International Journal of Psychology and Educational Studies*, 9(4), 1356-1367. <https://dx.doi.org/10.52380/ijpes.2022.9.4.5>
- Ran X, Huang T, Chen G. (2022). Subjective Socioeconomic Status, Class Mobility and Health Disparities of Older People. *Int J Environ Res Public Health.* 19(21):13955. doi: 10.3390/ijerph192113955

Scalese M, Curzio O, Cutrupi V, Bastiani L, Gori M, Denoth F, Molinaro S.(2014) Links between Psychotropic Substance Use and Sensation Seeking in a Prevalence Study: The Role of Some Features of Parenting Style in a Large Sample of Adolescents. *J Addict.* 2014;962178. doi: 10.1155/2014/962178.

Schalet AT, Santelli JS, Russell ST, Halpern CT, Miller SA, Pickering SS, Goldberg SK, Hoenig JM. (2014). Invited commentary: broadening the evidence for adolescent sexual and reproductive health and education in the United States. *J Youth Adolesc.* 43(10):1595-610. doi: 10.1007/s10964-014-0178-8.

Shakya HB, Domingue B, Nagata JM, Cislighi B, Weber A, Darmstadt GL.(2019). Adolescent gender norms and adult health outcomes in the USA: a prospective cohort study. *Lancet Child Adolesc Health.* 3(8):529-538. doi: 10.1016/S2352-4642(19)30160-9.

Smith AD, Emmett PM, Newby PK, Northstone K. (2014).Dietary patterns and changes in body composition in children between 9 and 11 years. *Food Nutr Res.* 2014 Jul 8;58. doi: 10.3402/fnr.v58.22769.

Sushil, P., Chaawla, J.K., Paarasher, R.K. (2023).Impact of Socioeconomic Disparities, General Health, Reproductive, and Exercise Status in Indian Women with Lumbopelvic Pain.The Open Public Health Journal.Vol. 16 DOI: [10.2174/18749445-v16-e230703-2022-207](https://doi.org/10.2174/18749445-v16-e230703-2022-207)

Telford DM, Meiring RM, Gusso S. Moving beyond moderate-to-vigorous physical activity: the role of light physical activity during adolescence. *Front Sports Act Living.* 2023 Nov 2;5:1282482. doi: 10.3389/fspor.2023.1282482.

Telzer EH, van Hoorn J, Rogers CR, Do KT.(2018). Social Influence on Positive Youth Development: A Developmental Neuroscience Perspective. *Adv Child Dev Behav.* 2018;54:215-258. doi: 10.1016/bs.acdb.2017.10.003.

Tsang SK, Hui EK, Law BC. Self-efficacy as a positive youth development construct: a conceptual review. *Scientific World Journal.*2012;452327. doi: 10.1100/2012/452327.

Tysinger,B.and Hlávka,P. (2022). National Academies of Sciences, Engineering, and Medicine; Policy and Global Affairs; Committee on Women in Science, Engineering, and Medicine; Committee on Improving the Representation of Women and Underrepresented Minorities in Clinical Trials and Research; Bibbins-Domingo K, Helman A, editors. Improving Representation in Clinical Trials and Research: Building Research Equity for Women and Underrepresented Groups. Washington (DC): National Academies Press (US); 2022 May 17. 2,

Why Diverse Representation in Clinical Research Matters and the Current State of Representation within the Clinical Research Ecosystem. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK584396/>

Wehre, F.M., Caflisch, J., Eichelberger, D., Haller, G., Latal, B., Largo, R.H., Kakebeeke, T.H., Jenni, O.G. (2020). The Importance of Childhood for Adult Health and Development – Study Protocol of the Zurich Longitudinal Studies. *Front. Hum. Neurosci., Sec. Brain Health and Clinical Neuroscience*. Volume 14: <https://doi.org/10.3389/fnhum.2020.612453>

Whitehead, R., Pringle, J., Scott, E., Mine, D., McAteer, J. (2019). The relationship between a trusted adult and adolescent health and education outcomes. Edinburgh: NHS Health Scotland; 2019.

Zhang Y, Su D, Chen Y, Tan M, Chen X. (2022). Effect of socioeconomic status on the physical and mental health of the elderly: the mediating effect of social participation. *BMC Public Health*.22(1):605. doi: 10.1186/s12889-022-13062-7.