

COMMENT

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Young adulthood: a transitional period with lifelong implications for health and wellbeing

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This comment brings attention to young adulthood as a critical life phase, promoting an understanding of the distinctive health challenges that arise during this life phase. It proposes integrating life course theory with complex system approaches to understand the health and wellbeing of young adults across time and scale.

A period of important life transitions

Young adulthood is a crucial period involving significant life transitions, such as completing education, entering the workforce, and starting a family. Young adulthood broadly spans from 16 to 40 years of age, and physiological changes and social vulnerability emerging during this formative period of life may have long-lasting effects on health and social trajectories. In addition, many non-communicable diseases start to emerge during this life phase, especially among vulnerable subgroups. This aligns with life course theory, which provides a framework for understanding how exposures and experiences throughout life, including life transitions such as the shift to adulthood, contribute to health, disease, and social integration throughout life [1]. This framework considers the lifelong interplay between biological, psychological, social, and environmental factors, making young adulthood an important period for intervention.

Despite the critical nature of this life period, it is often underrepresented in scientific literature. Funding streams frequently prioritize research on aging, while young adult health issues receive comparatively less attention. This disparity may be partially attributed to the lower prevalence of somatic chronic disorders in young adults compared to older cohorts. However, we contend that several key issues specific to this age group warrant further investigation. Below, we present some examples that underscore the importance of dedicated research into young adult health issues.

Trends of depressive symptoms and obesity

Depression and obesity are among the most prevalent health issues in young adults according to the World Health Organization (WHO). Open-access data from Eurostat (<https://ec.europa.eu/eurostat/web/main/data/database>) shows that the percentage of young adults aged 15–34 who report depressive symptoms and obesity is relatively high, and, in 2019, the rates of both any depressive symptoms and obesity among young adults exceeded 10% in several countries, especially in North-Western Europe.

These data underscore the need for in-depth research into the underlying mechanisms, which are likely multifaceted and interlinked across biopsychosocial scales [2]. One area that requires further investigation is the impact of digital devices, which has raised concerns regarding their impact on mental health. While social media offers convenient and continuous access to entertainment, conversations, and acknowledgement, it can

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also act as a significant stressor, and there seems to be a complex and dynamic relationship between smartphone use, poor sleep quality, and mental health [3]. Early interventions to break this vicious cycle could yield lasting beneficial effects for individuals, families, and the wider society. However, further research is needed to better understand the long-term effects of digital devices on mental health.

According to Eurostat, the percentage of young adults reporting obesity increased in most European countries from 2014 to 2019, mirroring global trends. Research has demonstrated that obesity during young adulthood is particularly important for later health outcomes [4]. While significant attention has been devoted to comprehending obesity development stemming from an imbalance between caloric intake and expenditure, an alternative model proposes that a substantial portion of obesity's origins can be traced to the social domain [5]. This includes various forms of prolonged social adversity, operating in conjunction with genetic predisposition. Understanding the complex factors driving obesity in this age group necessitates further investigation.

Reproductive disorders and infertility

Pregnancy-related conditions are particularly prevalent in this age group. This involves, for example, abortions, miscarriages, and complications associated with childbirth. Notably, gestational diabetes mellitus stands out as one of the most prevalent pregnancy complications, associated with various adverse health outcomes such as preeclampsia, birth complications, and an elevated risk of obesity, cardiovascular disease, and type 2 diabetes in both the mother and child [6]. The etiology and consequences of these reproductive disorders are multifaceted, complex, and warrant focused attention.

Infertility issues are affecting many young adults globally. According to recent data from the WHO, approximately 1 in 6 people of the adult population worldwide experiences infertility issues [7]. While assisted reproductive technologies have improved success rates, the journey can indeed be physically and emotionally challenging for many individuals and couples, and there is a need for high-quality data and research to address this major global health challenge. Access to fertility treatments also remains a significant issue, with disparities in access and outcomes based on factors such as race, ethnicity, and socioeconomic status. Further research into treatment barriers is needed to address these disparities and improve access to effective treatments for all.

High rates of injury among young adults

The global rates of injury are particularly high in young adults. These high rates may partly be explained by

sports injuries but may also correlate with high-risk behaviors, for example, alcohol or drug intoxication, which is largely preventable. Early life factors and shared social norms and behaviors may contribute to such behaviors among specific subgroups of young adults. Our prior research has underscored that young men and women raised in families with social adversity face a heightened risk of injuries compared to their counterparts [8]. This substantial burden of disease is preventable and requires attention.

Next step: understanding the complexity of life course mechanisms

Health challenges that arise during young adulthood are likely to involve feedback loops and interactions across biological, health, and social domains. These are fundamental characteristics of complex systems, and it therefore becomes important to push the boundaries of research in health among young adults beyond single-factor analysis and into the real-world complexity of these health issues [9, 10].

To systematically generate knowledge on complex health issues, we have recently proposed an interdisciplinary framework that captures the patterns of these health issues, the underlying mechanisms, and the dynamics that drive changes over time [10]. Within this approach, studying the emergence of health issues in young adults across spatial-temporal scales becomes crucial. This involves addressing interactions between life course factors at different scales, from biological vulnerabilities arising from, e.g., underlying neurodevelopmental conditions to social conditions within the families and social network, and all the way to societal megatrends such as climate, environment, conflict, or crises.

Figure 1 illustrates examples of such life course mechanisms operating across different systems scales. Importantly, these life course mechanisms represent only a subset of the numerous cross-scale interactions and feedback mechanisms that could contribute to young adult health. However, we believe that paying attention to such interactions and feedback mechanisms across different scales and time frames is crucial for identifying strategic intervention points.

Applying a complex systems approach also allows us to envision that intervening at one scale may cascade to impact various levels, disrupting detrimental cycles throughout an individual's life course. Complex systems science provides a toolbox of methods including causal loop diagrams, network analysis, and systems dynamics models that can help facilitate such interdisciplinary research [10].

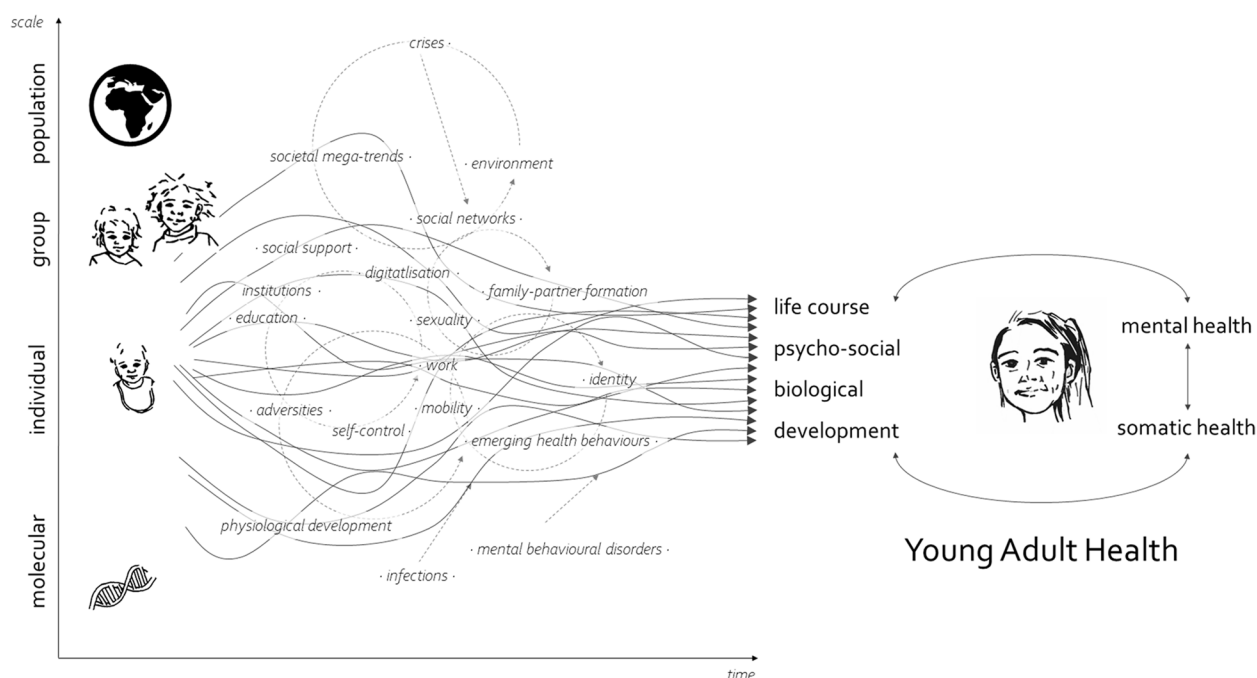


Fig. 1 Examples of interactions and feedback loops between life course mechanisms across different scales giving rise to the unique health issues observed among young adults

Conclusions

The relative neglect of young adult health in research agendas is concerning, given the significant life transitions and health challenges unique to young adults. These include, but are not limited to, mental health concerns, obesity, reproductive health issues, injuries, and the establishment of long-term health behaviors. Moreover, this period represents a critical window for interventions that could significantly impact long-term health trajectories.

There is a need to establish dedicated research initiatives aimed at addressing the distinct health challenges encountered by young adults which could yield valuable insights into the following:

1. The development and persistence of mental health issues and obesity and the underlying mechanisms that are particularly relevant to this age groups, such as their high engagement with digital devices
2. The unique conditions and circumstances that are particularly relevant to this age group, including reproduction, infertility, and family formation
3. The complex life course etiology of chronic diseases that typically manifests later in life but has its roots in young adulthood

4. The impact of social determinants on health outcomes during this transitional period, where some people may be more vulnerable due to life course exposures to adversity

These health concerns not only impact the individuals themselves but also hold implications for their ability to effectively enter the labor market, start a family, and maintain their long-term mental and physical well-being across the life course. This again has broader implications for the welfare state, the onset of lifelong vulnerability and health inequality, and the conditions in which the next generation is coming of age.

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Authors' contribution

All authors were collectively involved in conceptualizing and developing the research arguments. NHR drafted the initial manuscript version. Subsequently, all co-authors critically reviewed and revised the comment. All authors read and approved the final manuscript.

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Data availability

No datasets were generated or analysed during the current study.

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Consent for publication

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Competing interests

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References

1. Kuh D, Ben-Shlomo Y, Lynch J, Hallqvist J, Power C. Life course epidemiology. *J Epidemiol Community Health*. 1978;2003(57):778–83.
2. van der Wal JM, van Borkulo CD, Deserno MK, et al. Advancing urban mental health research: from complexity science to actionable targets for intervention. *Lancet Psychiatry*. 2021;8:991–1000.
3. Andersen TO, Sejling C, Jensen AK, et al. Nighttime smartphone use, sleep quality, and mental health: investigating a complex relationship. *Sleep*. 2023;46:1–12.
4. Cheng HL, Medlow S, Steinbeck K. The health consequences of obesity in young adulthood. *Curr Obes Rep*. 2016;5:30–7.
5. Hemmingsson E, Nowicka P, Ulijaszek S, Sørensen TIA. The social origins of obesity within and across generations. *Obes Rev* 2023;24. <https://doi.org/10.1111/OBR.13514>.
6. Ovesen PG, Jensen DM, Damm P, Rasmussen S, Kesmodel US. Maternal and neonatal outcomes in pregnancies complicated by gestational diabetes: a nation-wide study. *J Matern Fetal Neonatal Med*. 2015;28:1720–4.
7. WHO. World Health Organization (WHO). Infertility prevalence estimates, 1990–2021. Geneva: World Health Organization; 2023. Licence: CC BY-NC-SA 3.0 IGO. <https://iris.who.int/bitstream/handle/10665/366700/9789240068315-eng.pdf?sequence=1>.
8. Rod NH, Bengtsson J, Elsenburg LK, Taylor-Robinson D, Rieckmann A. Hospitalisation patterns among children exposed to childhood adversity: a population-based cohort study of half a million children. *Lancet Public Health*. 2021;6:e826–35.
9. Rutter H, Savona N, Glonti K, et al. The need for a complex systems model of evidence for public health. *Lancet*. 2017;390:2602–4.
10. Rod NH, Broadbent A, Rod MH, Russo F, Arah OA, Stronks K. Complexity in epidemiology and public health. Addressing complex health problems through a mix of epidemiologic methods and data. *Epidemiol*. 2023;34:505–14.

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