

Rising Prevalence of Depression and Widening Sociodemographic Disparities in Depressive Symptoms among Filipino Youth: Findings from Two Large Nationwide Cross-Sectional Surveys

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Impact Statement

The rising prevalence of moderate to severe depressive symptoms (MSDS) among Filipino youth is a pressing public health concern that demands immediate attention. This study highlights a troubling trend, with MSDS nearly doubling from 9.6% in 2013 to 20.9% in 2021. This increase not only underscores the deteriorating mental health landscape for young people in the Philippines but also signals a potential crisis that could have long-term implications for individuals and society as a whole.

Particularly alarming is the disproportionate impact on specific sociodemographic groups, including females, non-cisgender individuals, and those from economically disadvantaged backgrounds. These disparities indicate that certain populations are not only more vulnerable to depression but also face barriers to accessing necessary mental health services. The findings call for targeted interventions that address these inequities and provide tailored support to those most at risk.

In low- and middle-income countries settings like the Philippines, where mental health services are often limited, this research serves as a critical foundation for policymakers and health professionals. It highlights the urgent need for expanding accessible, high-quality mental health services to cater to the unique needs of youth. It also underscores the necessity for ongoing research to monitor trends in MSDS and evaluate the effectiveness of interventions aimed at underserved populations. Addressing youth depression not only improves individual well-being but also promotes broader societal health, economic productivity, and social stability.

Abstract

Background: Youth depression is a critical target for early intervention due to its strong association with adult depression and long-term functional impairments. In low- and middle-income countries (LMICs) like the Philippines, there is a significant lack of epidemiological data to inform mental health service planning for young populations.

Methods: This study analyzed secondary data from two nationwide health surveys conducted in 2013 (n=10,949) and 2021 (n=19,178) to estimate the prevalence of moderate to severe depressive symptoms (MSDS) among Filipino youth aged 15 to 24 years. Depressive symptoms were assessed using the 11-item version of the Center for Epidemiologic Studies scale (CES-D). The distribution of MSDS was examined across key sociodemographic characteristics.

Results: Survey-weighted analyses showed that the prevalence of MSDS among Filipino youth doubled from approximately 9.6% in 2013 to 20.9% in 2021. Disparities in MSDS also widened over time, with the most significant increases observed among females (10.8% to 24.3%), non-cisgender or homonormative individuals (9.7% to 32.3%), youth with primary education or less (10.8% to 26.5%), youth from economically disadvantaged households (10.6% to 25.1%), and youth who were separated, widowed or divorced (18.3% to 41.3%).

Conclusions: The prevalence of MSDS has increased over time, disproportionately affecting specific sociodemographic groups. This rising trend highlights the growing mental health needs of youth in LMICs, such as the Philippines, and the necessity of expanding accessible, high-quality mental health services. Further research is essential to track the persistence of MSDS and to develop interventions aimed at the most vulnerable and underserved groups.

Introduction

Youth depression is a major concern and a critical focus for early intervention as it tends to foreshadow chronic, recurrent mental health problems in adulthood (Weersing *et al.* 2017). In the Philippines, the limited data collected before and during the COVID-19 pandemic, indicate that a significant number of Filipino youth are affected by depression (Alayon 2021; Alejandria *et al.* 2023) and other mental health problems such as suicide (Alayon 2021; Garcia 2019; Puyat *et al.* 2021).

Using data from a nationwide cross-sectional survey of Filipino youth in 2013, Puyat *et al.* (2021) estimated the prevalence of moderate to severe depressive symptoms (MSDS) to be 8.9% for young Filipino adults, with the prevalence being higher for females (10.2%) than males (7.6%). The study also found that the prevalence of MSDS differed by key demographics such as educational attainment, civil status, and living in urban versus rural areas. These findings underscore how structural and social factors such as poverty, limited education, and marginalization, give rise to and perpetuate mental health disparities.

The social determinants of health (SDH) framework helps explain these disparities by emphasizing that health outcomes, including mental health, are shaped by broader social, economic, and environmental conditions in which people are born, live, work and age (Allen *et al.* 2014). Within this framework, depression is not merely an individual concern but a reflection of systemic inequities that require structural solutions. Effective mental health strategies must, therefore, extend beyond individual-level interventions to address the underlying social conditions, such as economic insecurity, inadequate access to education, and social exclusion, that contribute to psychological distress.

The COVID-19 pandemic further exposed and deepened existing social and economic inequalities, amplifying the very conditions that contribute to mental health disparities. In addition to exacerbating poverty and marginalization, the pandemic brought about widespread social and physical restrictions that disrupted work, daily life, and recreation. These disruptions not only restricted access to health services, it also weakened individuals' and communities' ability to cope and thrive (WHO 2021). In the Philippines, government-imposed lockdowns and restrictions led to closure of local government facilities that offered counseling services, severely reducing access to mental health services. School closures further compounded these issues by limiting access to school-based mental health services, including school counselors, teachers, and peer support networks.

While only a few published studies have examined the COVID-19 pandemic's impact on the mental health of Filipino youth, existing research suggests a substantial burden. For instance, Montano and Abcedes (2020) surveyed 421 Filipinos aged 15-65 and found that 53.1% of respondents reported experiencing MSDS. Students and young adults – especially those who were unemployed – experienced the highest levels of COVID-19 related stress. More recently, Miranda and Tolentino (2023) found higher rates of depression among young Filipino women and participants who did not wish to disclose their gender. Although these studies provide valuable insights into the pandemic's impact on Filipino youth depression, neither was based on a nationally representative sample of young Filipinos.

In this study, we analyzed depression-specific data from two nationwide surveys on the health of Filipino youth, one conducted during the COVID-19 pandemic and another

eight years before the pandemic. Specifically, we addressed the following research questions: 1) What is the prevalence of MSDS among Filipino youth living in the midst of the COVID-19 pandemic and how does this compare to the MSDS prevalence eight years before the pandemic? 2) What is the impact of the COVID-19 pandemic on MSDS prevalence across key socio-demographic characteristics?

Methods

This study involves secondary data analysis and does not require institutional ethics review (Canadian Institutes of Health Research 2018). Data access was facilitated by the Philippine Population Data Archive, with permission from the University of the Philippines Population Institute and the Demographic Research and Development Foundation, Inc.

Study Population

Data examined in this study were from the Philippines – a democratic country in Southeast Asia with a presidential form of government and a population of about 109 million as of 2020. Up to 18.8% of the country's population are youth between the age of 15 and 24 years, with a nearly even distribution of males (51.5%) and females (48.9%). The majority of the population reported Roman Catholicism (78.8%) as their religious affiliation and the rest were affiliated with Islam (6.4%) or various other Christian denominations (Philippine Statistics Authority 2024). The World Bank (2023) puts the Philippines in the lower- middle-income category, with a gross national income per capita of US\$4,230.

We used data from the 2021 and 2013 survey rounds of the Young Adult Fertility and Sexuality Study (YAFS), a nationwide probability survey of Filipino youth aged 15-24. The

2021 YAFS survey (YAFS5) was conducted by the University of the Philippines Population Institute (UPPI) between August 2021 and January 2022, with funding from the Philippine Department of Health. The 2013 YAFS survey (YAFS4) was conducted by the UPPI and the Demographic Research and Development Foundation, Inc. (DRDF) between December 2012 and May 2013, with funding from the Australian government. The YAFS5 had a sample size of 10,949, while the YAFS4 had 19,178. A description of the complex, multi-stage sampling strategy employed in these surveys is available elsewhere (DRDF & UPPI 2016).

Variables

Both the YAFS4 and YAFS5 surveys collected information on depressive symptoms using comparable versions of the Center for Epidemiological Studies – Depression (CES-D) Scale originally developed by Radloff (1977). Various versions of the CES-D exist and have been used in different studies. Kohout et al. (1993) tested two shortened CES-D versions and found that an 11-item version with a 3-response category, labeled as the Iowa version, had a substantially lower response burden while still capturing the same symptom dimensions with comparable reliability to Radloff's (1977) original 20-item scale. The YAFS5 adopted the Iowa version of the scale (Kohout *et al.* 1993) containing 11 items that used second-person lead-in pronouns (e.g., "Your appetite was poor"). Depression scale items in the YAFS4 start with "I" and "my" and included an item that was not in the YAFS5 ("I felt hopeful about the future"). Scale items in both surveys used the same three response categories (0 – rarely/not at all, 1 – sometimes, 2 – often). To enable direct comparison, only the 11 items present in both YAFS4 and YAFS5 were included in the analysis. A listing of the CES-D items used in YAFS4 and YAFS5 can be found in the online supplement.

The CES-D scale, along with the other questions in the YAFS questionnaires were prepared in English and then translated into major Philippine languages including Tagalog, Cebuano, Ilonggo, Waray, Ilocano, and Bicol. The translations were then translated back to English to ensure that the Philippine languages were faithful to the original English version (DRDF & UPPI 2016).

Differences in depression scores were examined with respect to respondents' age, sex, education, marital status, socioeconomic status based on household wealth quintile, urbanity of place of residence, and sexual orientation, gender identity and expression (SOGIE). Categories of educational level was based on the Philippine Standard Classification of Education (Philippine Statistics Authority 2017), while the YAFS5 research team calculated wealth index based on ownership of household amenities and vehicles and housing characteristics such as type of toilet facilities following standard approaches developed by Rutstein and Johnson (2004) and Rutstein (2008).

There were no missing data for the CES-D scale and respondents' age, sex, education, marital status, place of residence and SOGIE and wealth index. Additionally, the survey had a considerable response rate (76% for the YAFS5), and non-response was accounted for in the calculation of sampling weights (Kabamalan and Marquez in press).

Analysis

Respondents with CES-D-11 sum-scores (minimum=0; maximum=22) greater than one standard deviation above the mean were identified as experiencing moderate to severe depressive symptoms (MSDS). This was based on a previous study (Puyat *et al.* 2021) that identified a pragmatic cutpoint for approximating the threshold (>20 sum-score) for

clinical depression adopted by other researchers that used the original 22-item CES-D instrument (Kohout *et al.* 1993).

We plotted the prevalence estimates and the 95% confidence intervals to illustrate the change between 2013 and 2021 and highlight the magnitude of differences between socio-demographic groups. In groups with more than two categories, i.e., income, education and marital status, we only plotted the estimates from the lowest and highest categories (e.g., poorest vs wealthiest income quintile).

We generated unadjusted log-binomial regression models to quantify the observed relative differences between groups. Prevalence ratios (PRs) from these models were interpreted as measures of disparity. Specifically, $PR > 1$ means that a group (e.g. females) had a higher MSDS prevalence compared to a reference group (e.g. males), and $PR < 1$ means the opposite. To determine if the differences with respect to a characteristic (e.g., sex) is not due to differences in other characteristics (i.e., age, education, etc.), we ran multivariable log-binomial regression models adjusting for all the other sociodemographic characteristics.

Survey weights provided by the UPPI were applied throughout the analysis, which we performed in R version 4.4.1 (R Core Team 2024) and R survey package 4.4-2 (Lumley *et al.* 2024).

Results

Sample and Population Characteristics

Table 1 describes the YAFS5 sample. There are slightly more males and youth aged 15-19 and about one in four youth had a college education. In YAFS5, 56% of individuals

aged 15–19 and 20.6% of those aged 20–24 reported being in school at the time of the survey. Similarly, in YAFS4, 53.7% of individuals aged 15–19 and 11.0% of those aged 20–24 were enrolled in school (not shown in the table).

A small share of the sample (15%) had ever been married and most were residing in rural areas (67%). The distribution of respondents by socio-demographic characteristics is similar in YAFS4 and YAFS5, except for a few differences: there were more youth with higher education, never-married, and living in urban areas in YAFS5 than in YAFS4.

Depression scores

The mean depression CES-D-11 scores in the YAFS5 and YAFS4 were 7.2 (SD=3.8) and 7.3 (SD=3.5), respectively. Cronbach's Alpha for CES-D-11 was 0.77 in YAFS5 and 0.75 in YAFS4. Based on the mean and standard deviation of the depression scores in both samples, CESD-11 > 11 was used as the cutpoint for MSDS.

Prevalence and relative differences in the prevalence of MSDS in 2021

In 2021, 20.9% of Filipino youth experienced MSDS (Table 2), and the prevalence was higher among females (24.3%), non-cisgender/homonormative (32.3%) youth, those in the 15 to 19 age group (21.8%), youth with no schooling or had elementary education only (26.5%), youth from the poorest income quintile (25.1%), youth residing in rural areas (21.4%), and youth who were separated/widowed/divorced (41.3%). Disparities in MSDS prevalence across various groups persisted even after accounting for differences in other sociodemographic characteristics using multivariable log-binomial regression analyses. In particular, females had 41% higher MSDS prevalence than males (aPR=1.41) and non-cisgender/homonormative youth had 60% higher MSDS prevalence than

cisgender/homonormative individuals (aPR=1.60). Youth who were separated, widowed/divorced had more than twice the prevalence of MSDS compared to youth who were never married (aPR=2.02). There were significant socioeconomic disparities in MSDS as demonstrated by wealth quintile differences, and more evidently through a dose-response association between education and MSDS where youth with no schooling/elementary education had the highest prevalence of MSDS (aPR=1.56) compared to youth with college education (Table 2).

Changes in the prevalence of MSDS and disparities in MSDS

The prevalence and relative differences in the prevalence of MSDS in 2013 have been reported and discussed in detail in a previous publication (Puyat *et al.* 2021). Prevalence estimates and results of the analyses of relative differences using the cutpoint obtained in this study were provided in Table 3.

As Tables 2 and 3 indicate, the prevalence of MSDS among Filipino youth surged from 9.6% in 2013 to 20.9% in 2021. This significant, two-fold increase was observed across all sociodemographic groups (Figure 1), though certain groups experienced more pronounced rises. In particular, the prevalence of MSDS prevalence significantly increased among females (from 10.8% to 24.3%), non-cisgender/homonormative individuals (from 7% to 32.3%), those with no schooling or only elementary education (from 10.8% to 26.5%), youth from the poorest income quintile (from 10.6% to 25.1%), and those who were separated, widowed or divorced (from 18.3% to 41.3%).

The comparison of adjusted PRs confirmed that the increase in MSDS disparities in 2021 was independent of variations in other sociodemographic characteristics. Specifically,

sex disparities widened from aPR=1.36 to aPR=1.40, indicating that females experienced a greater increase in MSDS prevalence than males in 2021 (Tables 2 and 3). Gender disparities also widened, rising from aPR=0.72 in 2013 to aPR=1.60 in 2021, suggesting a substantially higher increase in MSDS among non-cisgender/homonormative compared to cisgender/heteronormative youth. Additionally, disparities by education grew from aPR=1.41 to aPR=1.59, highlighting a substantial rise in MSDS among youth with less than secondary education in 2021. Notably, while wealth index disparities were not significant (aPR=0.99) in 2013, the 2021 results reveal that youth in the poorest wealth quintile (aPR=1.19) experienced the largest increase in MSDS prevalence compared to those in the richest households (Table 3).

Discussion

Consistent with studies that documented a doubling of the prevalence of depression among youth during the COVID-19 pandemic (Racine *et al.* 2021), our analysis of data from two nationwide probability surveys of Filipino youth aged 15-24 years indicate that the prevalence of MSDS rose from about 10% in 2013 to about 21% in 2021. Our findings also indicate that socio-demographic disparities in MSDS have worsened in 2021, suggesting a greater burden of MSDS among specific groups, including females, non-cisgender or homonormative individuals, youth with no schooling or only elementary education, youth from the poorest income quintile, and individuals who were separated, widowed or divorced.

This sudden and significant increase in the prevalence of and disparities in MSDS could largely be attributed to the nature of the COVID-19 pandemic as a global disaster.

Disasters exacerbate pre-existing inequalities and inefficiencies while creating new vulnerabilities. The pandemic exposed people and communities to higher levels of stress and crisis while greatly reducing access to support and services (Gaiser *et al.* 2023). This is especially true for marginalized groups that are more likely to experience social inequalities.

In the Philippines, the government's response to the pandemic consisted of near-total lockdowns—among the most stringent in the world (Herrerros and Svendsen 2024)—which affected livelihood, especially those of lower socioeconomic status, and restricted access to all levels of health care and to sources of socio-emotional support. Lockdown measures did not take into account income, livelihood, food security, space, and population density (Hapal, 2021), thus, affecting mostly the marginalized groups and those with fewer resources and less access to mental health support. For students, these lockdowns led to prolonged school closures, which were associated with significant learning loss (Patrinos *et al.* 2023). As schools eventually reopened, classes shifted to remote learning that required access to the internet and appropriate devices. This not only increased school expenses but also deprived students of the structure and support that in-person classes typically provide. Being kept indoors also decreased opportunities for social interaction and physical exercise, including sport and play, which are significant promotive factors for the youth's wellbeing (Andersen *et al.* 2021; Takiguchi *et al.* 2022; Kemel *et al.* 2022).

While COVID-19 contributed to the significant increase in the prevalence and sociodemographic disparities in MSDS, it is also likely that depression among Filipino youth was already on the rise before the pandemic. This aligns with studies from other countries, including the US, which have reported upward trends in youth depression over

the past decade (Daly 2022; Keyes *et al.* 2024). Various explanations have been proposed for this trend, such as the widespread use of digital technology and social media, but findings from meta-analysis and systematic reviews suggest these exposures have only small to negligible effects on youth depression (Ferguson *et al.* 2022; Hancock *et al.* 2022; Valkenburg *et al.* 2022; Appel *et al.* 2020). Another potential driver for the rising trend is the growing number of 'left-behind' children (those whose parents migrated), who are at higher risk of depression (Fellmeth *et al.* 2018).

We do not know if the MSDS experienced by respondents in the two surveys were self-limiting. A meta-analysis of antidepressant clinical trials involving children and adolescents (Meister *et al.* 2020) found a pooled estimate of clinician-rated placebo rates of about 45% (95%CI: 41–50%), indicating that a portion of youth with MSDS were either self-limiting or may recover without pharmacological intervention. Other studies, on the other hand, underscore the persistence of MSDS. One recent longitudinal analysis (Keyes *et al.* 2024), for example, found that among youth borne between 1997 and 2001 who exhibited high depressive symptoms at age 18, about 45.6% and 46.3% continued to report high depressive symptoms at ages 19 to 20 and 21 to 22 years, respectively. These findings suggest that a substantial proportion of youth with MSDS – roughly 5 to 6 out of 10 – could benefit from early intervention and prevention through various forms of mental health services, treatments and support. This is particularly crucial given evidence linking adolescent depressive symptoms with higher risk of adult depression (Gustavson *et al.* 2018) and impaired functioning (Weersing *et al.* 2017).

The study's findings on the disproportionate burden of depression among marginalized groups highlight the critical need to expand the availability and accessibility

of a broad range of mental health services, as outlined in the Philippines' 2018 Mental Health Act. A pre-pandemic assessment of the state of mental health care in the Philippines revealed a severe shortage of mental health professionals in the country, particularly in government-funded facilities, with the majority of services being delivered in hospital settings (Lally *et al.* 2019). That report also underscored the underdevelopment of community-based mental health services, leaving large gaps in accessible care (Lally *et al.*, 2019).

Incidentally, the onset of the COVID-19 pandemic may have accelerated the adoption of teletherapy as a practical and scalable method of delivering mental health services. Teletherapy has long been shown to be as effective as in-person therapy (Lin *et al.* 2022) and is beneficial for treating depression and other mental disorders (Varker *et al.* 2019). Specific guidelines are, therefore, needed to ensure teletherapy's effectiveness (Sablone *et al.* 2024) and to prevent further exacerbation of existing mental health treatment disparities. In the Philippines, access to teletherapy is largely limited to those with sufficient financial, technological resources, and private spaces, making it inaccessible for many low-income households and out-of-school youth. To address this gap, there is an urgent need to develop alternative mental health services, particularly those that are community- and peer-based.

Our analysis focused on the social determinants of health and did not include mediating variables or psychological constructs, such as resilience. Given this scope, we aimed to avoid extrapolating findings beyond the variables we analyzed. However, we acknowledge that constructs, such as resilience, provide important lens through which to interpret the experiences of Filipinos during the pandemic.

Some studies have highlighted that Filipino resilience is deeply rooted in a strengthened sense of *kapwa* or connectedness with others (Macaraeg and Bersamira 2024; Pacaol and Siguan 2024). These studies suggest that Filipinos enhance their resilience by nurturing relationships with friends, family, and their broader community. We note that pandemic-related disruptions, such as school closures, mobility restrictions, and the quarantine of family members, significantly constrained opportunities for such relationship-building. These disruptions may have, in turn, influenced the ability of individuals and communities to mobilize resilience during this period.

Future research should examine the role of resilience and related constructs as mediating factors in the experience of depression and access to mental health services during pandemics. Investigating how resilience and similar constructs mediate the effects of social and structural barriers on mental health outcomes could provide valuable insights for designing interventions that strengthen community-based support systems and improve mental health service delivery in times of crisis.

This study offers valuable insights into the magnitude of the burden of depression among Filipino youth and the characteristics of the groups disproportionately affected. The study's estimate provides essential data to inform policy, clinical practice and future mental health service planning. Nevertheless, several limitations need to be acknowledged. First, our findings were based on two cross-sectional surveys, which limit our ability to infer about the causal impact of COVID-19 on depression prevalence. Second, the reliance on self-reported data to assess MSDS may have introduced recall and social desirability biases, potentially impacting the accuracy of our estimates. Additionally, slight differences in the CES-D scale items between the two survey cycles may have influenced the

respondent' answers. Third, as the YAFS5 data were collected during the height of the COVID-19 pandemic, we cannot fully discount the potential effects that public health measures and survey restrictions may have had on responses. Fourth, while we accounted for various variables in our regression models, residual confounding due to unmeasured variables factors may still have affected our findings. Lastly, while our use of the mean and standard deviation to derive an MSDS threshold yielded near identical cutpoints for 2013 and 2021, a validated version of the CES-D scale and MSDS cutpoints specific to Filipino youth would have been preferable.

Conclusion

The prevalence of moderate to severe depressive symptoms among Filipino youth rose from about 10% in 2013 to 21% in 2021, disproportionately impacting females, non-cisgender or homonormative individuals, those who were separated, divorced or widowed, those with no schooling or with elementary education only, and youth from the poorest income groups. Expanding access to quality mental health services is needed to help alleviate depressive symptoms and to mitigate its long-term effects, particularly among the underserved and marginalized groups. Follow-up studies, including longitudinal surveys, are needed to assess whether the increase in prevalence between 2013 and 2021 will persist in the coming years. Additionally, future research should explore the types of support and services received by Filipino youth who experienced MSDS during the pandemic and evaluate their long-term outcomes.

Data availability. The data analyzed in this study are available for access from the University of the Philippines Population Institute (UPPI), the Philippine Population Data Archive, and the Demographic Research and Development Foundation, Inc. Researchers interested in obtaining the data can communicate with these organizations to request access and review any applicable usage guidelines.

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Author contribution. Conceptualization: JHP, DLS, ACT, SDA; Formal analysis: JHP; Methodology: JHP, DLS, ACT, SDA; Visualization: JHP; Writing-original draft: JHP, DLS, ACT; Writing-review and editing: JHP, DLS, ACT, SDA. All authors have read and approved the final version of the manuscript.

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Competing interest. The authors declare no potential conflict of interest with respect to the research, authorship, and publication of this manuscript.

Ethical statement. This study utilizes secondary data from two nationwide health surveys conducted in 2013 and 2021, and according to the 2018 Canadian Tri-Council Policy Statement (TCPS), formal ethical review is not required for secondary data analysis when data are de-identified and used for research purposes. The original data collection adhered to ethical standards, ensuring informed consent and participant confidentiality.

References

- Alayon ND** (2021) Predictors of Depression and Suicidal Ideation of Filipino College Freshmen in a Philippine State College. *Philippine Social Science Journal* **4**(1), 9–19.
<https://doi.org/10.52006/main.v4i1.296>.
- Alejandria MCP, Casimiro KMD, Gibe JAL, Fernandez NSF, Tumaneng DC, Sandoval ECA, Hernandez PJS, Quan-Nalus MA, Alipao FA and Alejandria MACP** (2023) Attaining Well-Being beyond the Home: A Socio-Cultural Framing of Mental Health among University Students in the Philippines. *Health Education Journal* **82**(2), 143–155.
<https://doi.org/10.1177/00178969221141547>.
- Allen J, Balfour R, Bell R and Marmot M** (2014) Social determinants of mental health. *International Review of Psychiatry* **26**(4), 392–407.
<https://doi.org/10.3109/09540261.2014.928270>.
- Andersen LMB, Rasmussen AN, Reavley NJ, Bøggild H and Overgaard C** (2021) The social route to mental health: A systematic review and synthesis of theories linking social relationships to mental health to inform interventions. *SSM - Mental Health* **1**, 100042.
<https://doi.org/10.1016/j.ssmmh.2021.100042>.
- Appel M, Marker C and Gnambs T** (2020) Are Social Media Ruining Our Lives? A Review of Meta-Analytic Evidence. *Review of General Psychology* **24**(1), 60–74.
<https://doi.org/10.1177/1089268019880891>.
- Canadian Institutes of Health Research** (2018) *Tri-Council policy statement: ethical conduct for research involving humans*. http://publications.gc.ca/collections/collection_2019/irsc-cihr/RR4-2-2019-eng.pdf (accessed 6 July 2020)
- Daly M** (2022) Prevalence of Depression Among Adolescents in the U.S. From 2009 to 2019: Analysis of Trends by Sex, Race/Ethnicity, and Income. *Journal of Adolescent Health* **70**(3), 496–499. <https://doi.org/10.1016/j.jadohealth.2021.08.026>.

DRDF & UPPI (2016) *The 2013 Young Adult Fertility and Sexuality Study in the Philippines*. Quezon

City: DRDF and UPPI. Retrieved from

<https://www.drdf.org.ph/sites/default/files/YAFS4%20Key%20Findings/YAFS4%20Key%20Findings.pdf>

Fellmeth G, Rose-Clarke K, Zhao C, Busert LK, Zheng Y, Massazza A, Sonmez H, Eder B, Blewitt

A, Lertgrai W, Orcutt M, Ricci K, Mohamed-Ahmed O, Burns R, Knipe D, Hargreaves S,

Hesketh T, Opondo C and Devakumar D (2018) Health impacts of parental migration on

left-behind children and adolescents: a systematic review and meta-analysis. *Lancet*

(London, England) **392**(10164), 2567. [https://doi.org/10.1016/S0140-6736\(18\)32558-3](https://doi.org/10.1016/S0140-6736(18)32558-3).

Ferguson CJ, Kaye LK, Branley-Bell D, Markey P, Ivory JD, Klisanin D, Elson M, Smyth M, Hogg

JL, McDonnell D, Nichols D, Siddiqui S, Gregerson M and Wilson J (2022) Like this meta-

analysis: Screen media and mental health. *Professional Psychology: Research and Practice*

53(2), 205–214. <https://doi.org/10.1037/pro0000426>.

Gaiser M, Buche J, Baum NM and Grazier KL (2023) Mental Health Needs Due to Disasters:

Implications for Behavioral Health Workforce Planning During the COVID-19 Pandemic.

Public Health Reports (Washington, D.C.: 1974) **138**(1_suppl), 48S-55S.

<https://doi.org/10.1177/00333549231151888>.

Garcia JAS (2019) Mental Health-Related Concerns of Filipino Adolescents: Selected Findings from

Global School-Based Health Survey and Implications to School Counseling. *Philippine Journal*

of Counseling Psychology **21**(1), 1–1.

Gustavson K, Knudsen AK, Nesvåg R, Knudsen GP, Vollset SE and Reichborn-Kjennerud T

(2018) Prevalence and stability of mental disorders among young adults: findings from a

longitudinal study. *BMC Psychiatry* **18**(1), 65. <https://doi.org/10.1186/s12888-018-1647-5>.

Hancock J, Liu SX, Luo M and Mieczkowski H (2022, March 9) Psychological Well-Being and

Social Media Use: A Meta-Analysis of Associations between Social Media Use and

Depression, Anxiety, Loneliness, Eudaimonic, Hedonic and Social Well-Being. SSRN

Scholarly Paper, Rochester, NY. <https://doi.org/10.2139/ssrn.4053961>.

Herreros F and Svendsen GT (2024) Social trust and the stringency of public policies against the COVID-19 pandemic. *European Politics and Society* **0**(0), 1–20.

<https://doi.org/10.1080/23745118.2024.2331156>.

Kabamalan M and Marquez M (in press) Studying Filipino adolescents and youth. In *The Filipino Adolescents and Youth: Context, Continuity, and Change*. Quezon City: University of the Philippines Press, 7–13.

Kemel PN, Porter JE and Coombs N (2022) Improving youth physical, mental and social health through physical activity: A Systematic literature review. *Health Promotion Journal of Australia* **33**(3), 590–601. <https://doi.org/10.1002/hpja.553>.

Keyes KM, Kreski NT and Patrick ME (2024) Depressive Symptoms in Adolescence and Young Adulthood. *JAMA Network Open* **7**(8), e2427748. <https://doi.org/10.1001/jamanetworkopen.2024.27748>.

Kohout FJ, Berkman LF, Evans DA and Cornoni-Huntley J (1993) Two Shorter Forms of the CES-D Depression Symptoms Index. *Journal of Aging and Health* **5**(2), 179–193. <https://doi.org/10.1177/089826439300500202>.

Lally J, Tully J and Samaniego R (2019) Mental health services in the Philippines. *BJPsych International* **16**, 1–3. <https://doi.org/10.1192/bji.2018.34>.

Lin T, Heckman TG and Anderson T (2022) The efficacy of synchronous teletherapy versus in-person therapy: A meta-analysis of randomized clinical trials. *Clinical Psychology: Science and Practice* **29**(2), 167–178. <https://doi.org/10.1037/cps0000056>.

Lumley T, Gao P and Schneider B (2024) *survey: Analysis of Complex Survey Samples*. <https://CRAN.R-project.org/package=survey>

Macaraeg J and Bersamira CS (2024) Intersecting kapwa, resilience, and empowerment: A case study of Filipinos in Hawai'i during the COVID-19 pandemic. *Asian American Journal of Psychology* **15**(4), 342–354. <https://doi.org/10.1037/aap0000348>.

Meister R, Abbas M, Antel J, Peters T, Pan Y, Bingel U, Nestoriuc Y and Hebebrand J (2020) Placebo response rates and potential modifiers in double-blind randomized controlled trials of second and newer generation antidepressants for major depressive disorder in children and adolescents: a systematic review and meta-regression analysis. *European Child & Adolescent Psychiatry* **29**(3), 253–273. <https://doi.org/10.1007/s00787-018-1244-7>.

Miranda JPP and Tolentino JCG (2023) Impact of COVID-19 and emotional states of Filipino university students. *International Journal of Evaluation and Research in Education (IJERE)* **12**(3), 1195–1205. <https://doi.org/10.11591/ijere.v12i3.24707>.

Montano RLT and Acebes KML (2020) Covid stress predicts depression, anxiety and stress symptoms of Filipino respondents. *International Journal of Research in Business and Social Science (2147- 4478)* **9**(4), 78–103. <https://doi.org/10.20525/ijrbs.v9i4.773>.

Pacaol NF and Siguan AA (2024) “we are not lazy (rather we persevere) but please...”: The resilience of homeless filipino youths in the covid-19 pandemic. *Journal of Social Service Research* No Pagination Specified-No Pagination Specified. <https://doi.org/10.1080/01488376.2024.2401820>.

Patrinos H, Vegas E and Carter-Rau R (2023) An Analysis of COVID-19 Student Learning Loss. In *Oxford Research Encyclopedia of Economics and Finance*. <https://doi.org/10.1093/acrefore/9780190625979.013.893>.

Philippine Statistics Authority (2017, January) Philippine Standard Classification of Education (PSCED). Philippine Statistics Authority.

Philippine Statistics Authority (2024, April 15) Total Population, Household Population, and Number of Households by Region and Province/Highly Urbanized City: Philippines, 2020.

https://openstat.psa.gov.ph/PXWeb/pxweb/en/DB/DB_1A_PO/0011A6DPHH0.px/table/tableViewLayout1/?rxid=1d463788-5100-4b49-b4f9-740e18fe5bf6 (accessed 13 August 2024)

Puyat JH, Gastardo-Conaco MaC, Natividad J and Banal MA (2021) Depressive symptoms among young adults in the Philippines: Results from a nationwide cross-sectional survey. *Journal of Affective Disorders Reports* **3**, 100073. <https://doi.org/10.1016/j.jadr.2020.100073>.

R Core Team (2024) *R: A Language and Environment for Statistical Computing*. Vienna, Austria: R Foundation for Statistical Computing. <https://www.R-project.org/>

Racine N, McArthur BA, Cooke JE, Eirich R, Zhu J and Madigan S (2021) Global Prevalence of Depressive and Anxiety Symptoms in Children and Adolescents During COVID-19. *JAMA Pediatrics* **175**(11), 1–10. <https://doi.org/10.1001/jamapediatrics.2021.2482>.

Radloff LS (1977) The CES-D Scale: A Self-Report Depression Scale for Research in the General Population. *Applied Psychological Measurement* **1**(3), 385–401. <https://doi.org/10.1177/014662167700100306>.

Rutstein S (2008, October) The DHS Wealth Index: Approaches for Rural and Urban Areas. Demographic and Health Research. <https://dhsprogram.com/pubs/pdf/wp60/wp60.pdf>

Rutstein S and Johnson K (2004) *The DHS Wealth Index*. <https://doi.org/10.13140/2.1.2806.4809>.

Sablone S, Bellino M, Lagona V, Franco TP, Groicher M, Risola R, Violante MG and Grattagliano I (2024) Telepsychology revolution in the mental health care delivery: a global overview of emerging clinical and legal issues. *Forensic Sciences Research* **9**(3), owae008. <https://doi.org/10.1093/fsr/owae008>.

Takiguchi Y, Matsui M, Kikutani M and Ebina K (2022) The relationship between leisure activities and mental health: The impact of resilience and COVID-19. *Applied Psychology. Health and Well-Being* 10.1111/aphw.12394. <https://doi.org/10.1111/aphw.12394>.

- Valkenburg PM, Meier A and Beyens I** (2022) Social media use and its impact on adolescent mental health: An umbrella review of the evidence. *Current Opinion in Psychology* **44**, 58–68. <https://doi.org/10.1016/j.copsyc.2021.08.017>.
- Varker T, Brand RM, Ward J, Terhaag S and Phelps A** (2019) Efficacy of synchronous telepsychology interventions for people with anxiety, depression, posttraumatic stress disorder, and adjustment disorder: A rapid evidence assessment. *Psychological Services* **16**(4), 621–635. <https://doi.org/10.1037/ser0000239>.
- Weersing VR, Jeffreys M, Do M-CT, Schwartz KTG and Bolano C** (2017) Evidence Base Update of Psychosocial Treatments for Child and Adolescent Depression. *Journal of Clinical Child and Adolescent Psychology: The Official Journal for the Society of Clinical Child and Adolescent Psychology, American Psychological Association, Division 53* **46**(1), 11–43. <https://doi.org/10.1080/15374416.2016.1220310>.
- WHO** (2021) *COVID-19 and the Social Determinants of Health and Health Equity: Evidence Brief*, 1st ed. Geneva: World Health Organization.
- World Bank** (2023) GNI per capita, Atlas method (current US\$) - Philippines. <https://data.worldbank.org> (accessed 13 August 2024)

Table 1. Sample and Population Characteristics

Characteristics	Sample (n)	Survey Weighted Distribution		
		%	95%CI	
Sex				
Male	5312	48.8	47.6	50.0
Female	5637	51.2	50.0	52.4
SOGIE				
Cisgender/Heteronormative	10058	91.4	90.7	92.1
Non-Cisgender/Homonormative	885	8.6	7.8	0.1
Not Reported	6	<.05	<.01	0.1
Age Group				
15-19	6490	58.9	57.8	60.1
20-24	4459	41.1	39.9	42.2
Education				
No schooling/Elementary	750	7.0	6.3	7.7
High School Undergraduate	4408	40.2	38.9	41.5
High school graduate/vocational	3132	28.5	27.4	29.6
College or higher	2659	24.3	23.1	25.5
Marital Status				
Never married	9288	84.7	83.6	85.9
Living-in	1259	11.5	10.5	12.5
Formally married	345	3.3	2.8	3.8
Separated/widowed/divorced	57	0.5	0.3	0.7
Residence				
Rural	8252	66.9	66.5	67.3
Urban	2697	33.1	32.7	33.5
Wealth Index (quintile)				
Poorest	1888	15.0	13.7	16.3
Second	2326	18.1	16.9	19.3
Middle	2330	18.9	17.7	20.2
Fourth	2300	22.2	20.7	23.7
Wealthiest	2105	25.7	24.0	27.5

Data source: 2021 Young Adult Fertility and Sexuality Study.

Wealth index is a measure of socioeconomic status.

Table 2. Prevalence of Moderate to Severe Depressive Symptoms by Demographic Characteristics (2021, YAFS5)

Characteristics	Prevalence ¹			Prevalence Ratio ²					
	%	95%CI		Unadjusted	95%CI		Adjusted ³	95%CI	
All	20.9	19.9	21.9	–	–	–	–	–	–
Sex									
Male	17.3	16.0	18.6		Reference			Reference	
Female	24.3	22.8	25.7	1.40	1.27	1.55	1.41	1.28	1.56
SOGIE									
Cisgender/Heteronormative	19.8	18.8	20.8	Reference	Reference				
Non-cisgender/Homonormative	32.3	28.4	36.1	1.63	1.42	1.86	1.60	1.40	1.84
Not reported	36.1	0.0	86.9	–	–	–	–	–	–
Age Group									
15-19	21.8	20.5	23.1		Reference			Reference	
20-24	19.6	18.2	21.0	0.90	0.82	0.99	0.97	0.86	1.10
Education									
No schooling/Elementary	26.5	22.6	30.4	1.59	1.33	1.90	1.56	1.28	1.90
High School Undergraduate	22.1	20.6	23.6	1.33	1.17	1.51	1.29	1.10	1.51
High school graduate/vocational	21.4	19.5	23.2	1.28	1.12	1.46	1.26	1.08	1.47
College or higher	16.7	14.9	18.4		Reference			Reference	
Marital Status									
Never married	20.4	19.3	21.5		Reference			Reference	
Living-in	22.1	19.3	25.0	1.08	0.94	1.25	0.99	0.84	1.16
Formally married	25.7	19.8	31.6	1.26	1.00	1.59	1.11	0.86	1.43
Separated/widowed/divorced	41.3	26.1	56.6	2.02	1.40	2.94	2.02	1.38	2.96
Residence									
Rural	21.4	20.2	22.6		Reference			Reference	
Urban	19.9	18.1	21.7	1.08	0.97	1.19	1.01	0.90	1.12
Wealth Index (quintile)									
Poorest	25.1	22.6	27.6	1.30	1.11	1.53	1.19	1.01	1.42
Second	21.8	19.8	23.9	1.13	0.97	1.32	1.09	0.92	1.29
Middle	22.6	20.3	24.8	1.17	1.00	1.37	1.15	0.97	1.35
Fourth	17.8	15.8	19.7	0.92	0.78	1.09	0.90	0.76	1.07

Wealthiest	19.3	16.9	21.6	Reference	Reference
¹ Prevalence (%) counts everyone with CESD-11 score >11. Prevalence estimates and their 95% confidence intervals were generated using YAFS5 survey weights and parameters. ² Prevalence ratio is a relative measure of association derived from dividing the prevalence estimate of one group to a reference group. ³ Adjusted prevalence ratio was estimated via log binomial regression, accounting for all the other listed covariates and survey weights and parameters. Wealth index is a measure of socioeconomic status.					

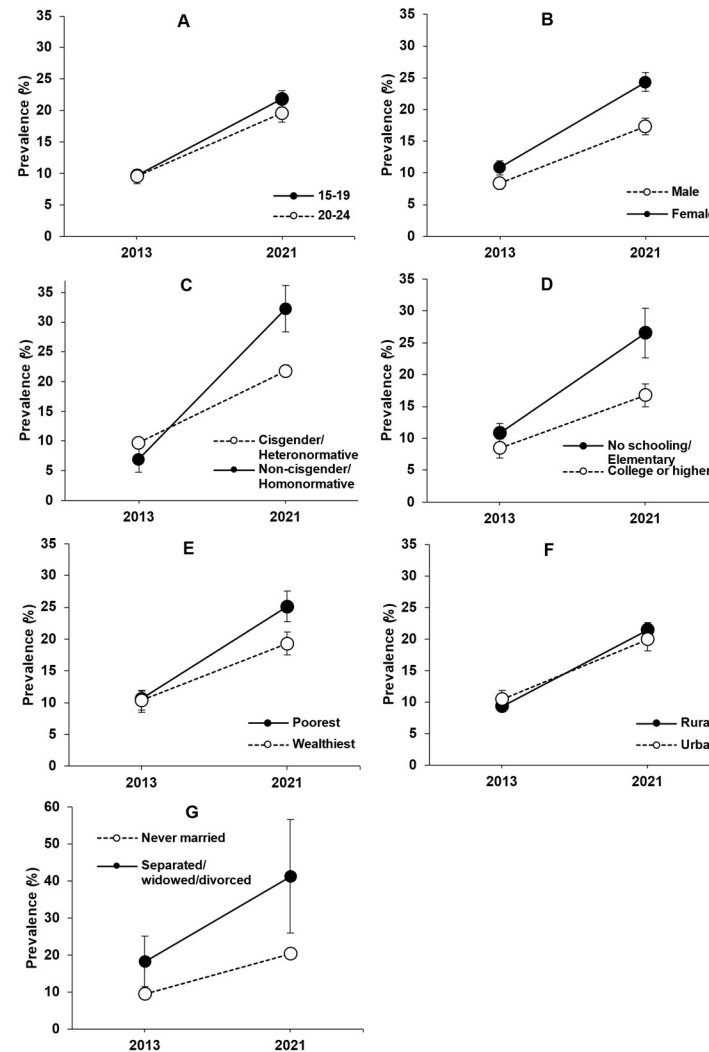
Table 3. Prevalence of Moderate to Severe Depressive Symptoms by Demographic Characteristics (2013, YAFS4)

Characteristics	Prevalence ¹			Prevalence Ratio ²					
	%	95%CI		Unadjusted	95%CI		Adjusted ³	95%CI	
All	9.6	8.9	10.3	–	–	–	–	–	–
Sex									
Male	8.3	7.4	9.2		Reference			Reference	
Female	10.8	9.8	11.9	1.31	1.13	1.51	1.36	1.17	1.58
SOGIE									
Cisgender/Heteronormative	9.7	9.0	10.4	Reference	Reference				
Non-cisgender/Homonormative	7.0	4.8	9.3	0.72	0.52	1.00	0.72	0.52	1.00
Not reported	1.3	0.0	4.0						
Age Group									
15-19	9.7	8.9	10.5		Reference			Reference	
20-24	9.5	8.4	10.6	0.98	0.85	1.12	1.08	0.92	1.26
Education									
No schooling/Elementary	10.8	9.2	12.4	1.28	1.02	1.62	1.41	1.12	1.78
High School Undergraduate	10.4	9.4	11.4	1.23	1.00	1.52	1.32	1.09	1.59
High school graduate/vocational	8.9	7.6	10.1	1.05	0.84	1.32	1.11	0.89	1.37
College or higher	8.4	6.9	9.9		Reference			Reference	
Marital Status									
Never married	9.5	8.8	10.3		Reference			Reference	
Living-in	8.7	6.7	10.8	0.91	0.71	1.17	0.80	0.63	1.03
Formally married	9.8	8.1	11.4	1.02	0.85	1.23	0.89	0.73	1.08
Separated/widowed/divorced	18.3	11.6	25.1	1.92	1.31	2.81	1.60	1.07	2.40
Residence									
Rural	9.3	8.5	10.1		Reference			Reference	
Urban	10.4	8.9	11.9	0.89	0.76	1.06	0.85	0.71	1.02
Wealth Index (quintile)									
Poorest	10.6	9.4	11.8	1.02	0.81	1.29	0.99	0.79	1.25
Second	9.7	8.4	11.0	0.93	0.74	1.18	0.93	0.74	1.15
Middle	9.2	7.9	10.5	0.89	0.69	1.14	0.89	0.70	1.14

Fourth	8.3	6.9	9.6	0.79	0.62	1.02	0.79	0.62	1.02
Wealthiest	10.4	8.3	12.5	Reference			Reference		

¹Prevalence (%) of moderate/severe depressive symptoms counts everyone with CESD-11 score >11. Prevalence estimates and their 95% confidence intervals were generated using YAFS4 (2013) survey weights and parameters. ²Prevalence ratio is a relative measure of association derived from dividing the prevalence estimate of one group by the prevalence estimate of a reference group. ³Adjusted prevalence ratios were estimated via log binomial regression, accounting for all the other listed covariates, survey weights and parameters. Wealth index is a measure of socioeconomic status.

Figure 1. Prevalence (%) of Moderate to Severe Depressive Symptoms in 2013 and 2021 by A) Age, B) Sex, C) Sexual Orientation, Gender Identity, and Gender Expression, D) Highest Education Level, E) Wealth Index, F) Urbanity, G) Marital Status



Prevalence (%) estimates and their 95% CIs were generated using survey weights provided by UPPI; 95% CIs for all prevalence estimates were plotted even for those with intervals that are too narrow to show up in the plots. In groups with multiple categories, only the highest and lowest categories were shown.

Wealth index is a measure of socioeconomic status.