



**15TH NATIONAL
CONVENTION
ON STATISTICS**

03-05 OCTOBER 2022

*Organized by the Philippine Statistical System
Spearheaded by the Philippine Statistics Authority*



Understanding vulnerabilities in mental health among Filipino adolescents before and during the pandemic

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Child and Youth Development Indicators Session

Crowne Plaza Manila Galleria

October 4, 2022, 3:30 to 5:00PM

Adolescent Mental Health

- One in seven adolescents, aged 10-19, around the world has a reported mental health disorder; mental health problems comprise 13% of the global burden of disease for adolescents
- Depression and anxiety are the most common mental health problems reported by adolescents

Source: <https://www.who.int/news-room/fact-sheets/detail/adolescent-mental-health>

Presentation Objectives

- Describe ***depression and anxiety*** among Filipino young adolescents in the course of:
 - Pubertal transition (a period of rapid emotional and psychological changes)
 - Pandemic (when COVID-19 restrictions potentially affected adolescents' mental health and lifestyles by limiting social interactions and shifting to distance learning)
- Examine constitutional factors (basic etiology): at the adolescent-, family-, community-levels (identify vulnerabilities in mental health among adolescents)
- Examine pandemic situations further compromising adolescent mental health

The Longitudinal Cohort Study on the Filipino Child

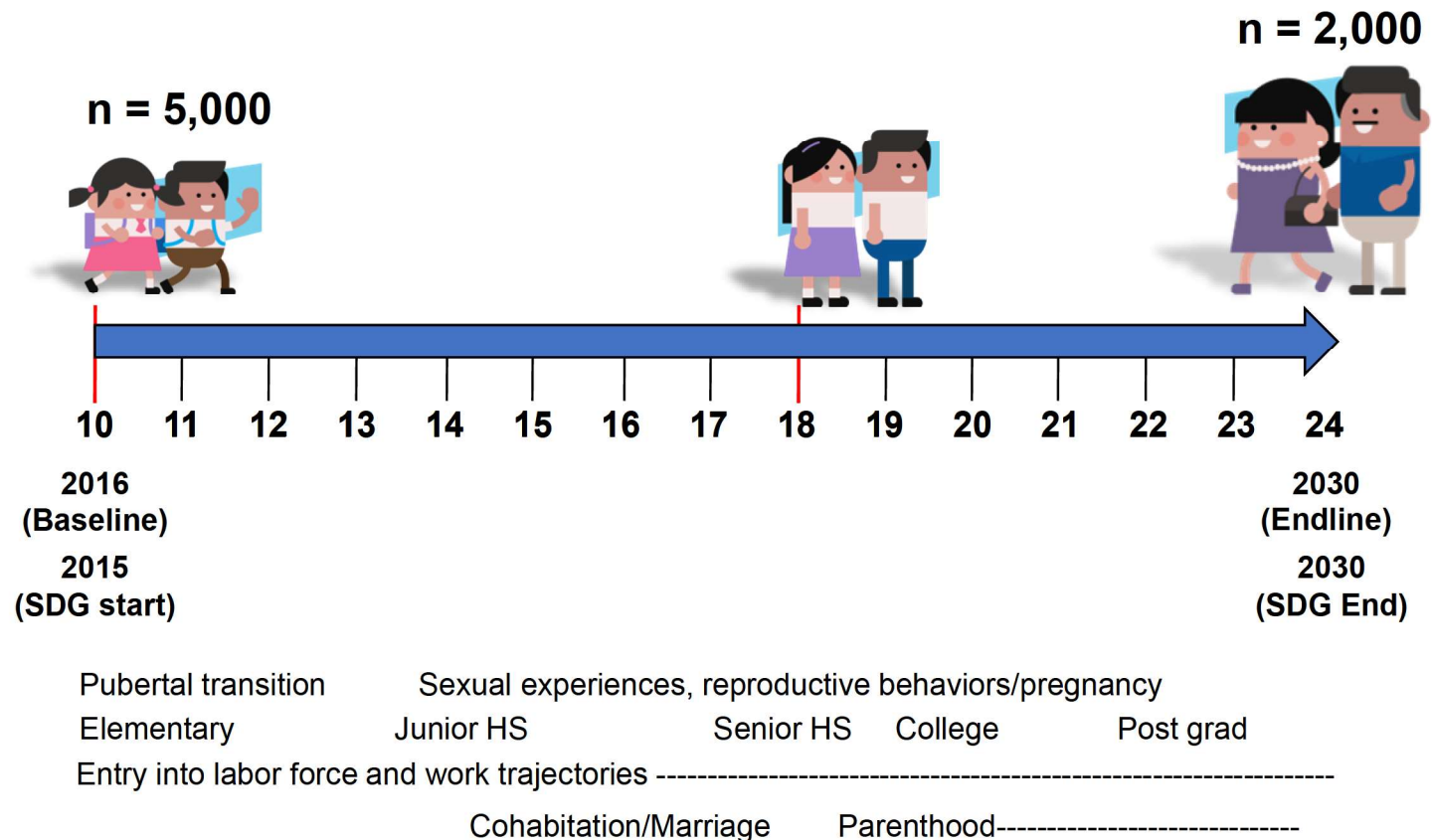
GOAL:

To examine how the Sustainable Development Goals (SDGs) influence the lives of **Filipinos from childhood through young adulthood** throughout the **SDG implementation period: (2015-2030); data on 13 of 17 goals**

The study is designed to prospectively observe a **nationally representative cohort** of Filipinos **from age 10 (2016) to 24 (2030)**



The study is designed to track key milestones in the lives of cohort participants





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Surveys completed to date/ongoing

Surveys (data collection period)	Mean Age/Grade level	Sample sizes (retention rates)
Wave 1 (Baseline; Nov 2016-Jan 2017)	10.5/Gr. 4-5	4,952
Wave 2 (Feb-May 2018)	11.8/Gr. 5-6	4,734 (95.6%)
Wave 3 (Jan-Jun 2019)	12.8/Gr. 6-7	4,662 (94.1%)
Wave 4 (Jan-Mar 2020)	13.7/Gr. 7-8	3,079 (62.2%)
Wave 4A: supplemental Phone Survey (Nov 2020)	14.4/Gr. 8-9	3,182 (64.3%)
Wave 5: Phone Survey (Jun-Aug 2021)	15.1/Gr. 8-9	4,192 (84.6%)
Soon to start: Wave 6	16.1/Gr. 9-10	



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Achenbach System of Empirically Based Assessment (ASEBA): Adaptive and maladaptive functioning for youth (aged 11-18)

Pre-pandemic:

W2 2018 (**age 11**): Child Behavior Checklist (CBCL; mother's report)

W4 Mar 2020 (**age 13**): Youth Self Report (YSR; IC self-administered)

Early pandemic:

W4A Nov 2020 (**age 14**): CBCL, Anxiety items (mother's report)

Mid-pandemic:

W5 Jun-Aug 2021 (**age 15**): YSR, interviewer-administered (phone)

NOTE: studies have shown variations in cross-informant agreement between parents and children's reports. Assessments may also vary at different ages. Congruence analysis on ratings done by mothers vs adolescents is ongoing.

Diagnostic and Statistical Manual 5th Edition (DSM-5): **Depression**

DSM 5 characterizes depression as a slowing down of thought and reduction of physical movement, loss of interest in activities, fatigue or loss of energy, feelings of worthlessness or excessive or inappropriate guilt, decreased concentration or indecisiveness.

Categories:

Normal

Borderline

Clinical (problem identification likely to be true)

Depression Scale Components:

Enjoys little

Cries a lot

Harms self

Doesn't eat well

Feels worthless

Feels guilty

Feels tired, lacks energy

Sleeps less/more/trouble sleeping

Talks suicide

Unhappy

Diagnostic and Statistical Manual 5th Edition (DSM-5): **Anxiety**

DSM 5 describes anxiety as excessive worry and apprehensive expectations about a number of events or activities, such as work or school performance

Categories:

Normal

Borderline

Clinical (problem identification likely to be true)

Anxiety Scale Components:

Clings to adults/too dependent
Fears animals, situations, places
Fears going to school
Fears doing something bad
Nervous/tense
Having nightmares
Too fearful/anxious
Self-conscious
Worries a lot



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Modeling Strategies

- Depression/Anxiety Scale Summarized into a Score

- Depression scores: 0-22

- Anxiety scores: 0-18

- Proportional Odds Model

$$\text{Log} \left(\frac{\Pr(y \leq m|x)}{\Pr(y > m|x)} \right) = \tau_m - x\beta \quad (0 \leq m < M)$$

where m — is a category of the dependent variable

x — set of determinants

τ — is a cut point to separate odds between categories of y

β — are logit coefficients



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Modeling Strategies (con't)

- Ordered Logistic Regression Models: categories
- Depression/Anxiety Scale Summarized into Categories (varying cut-offs by age and sex, CBCL, YSR)

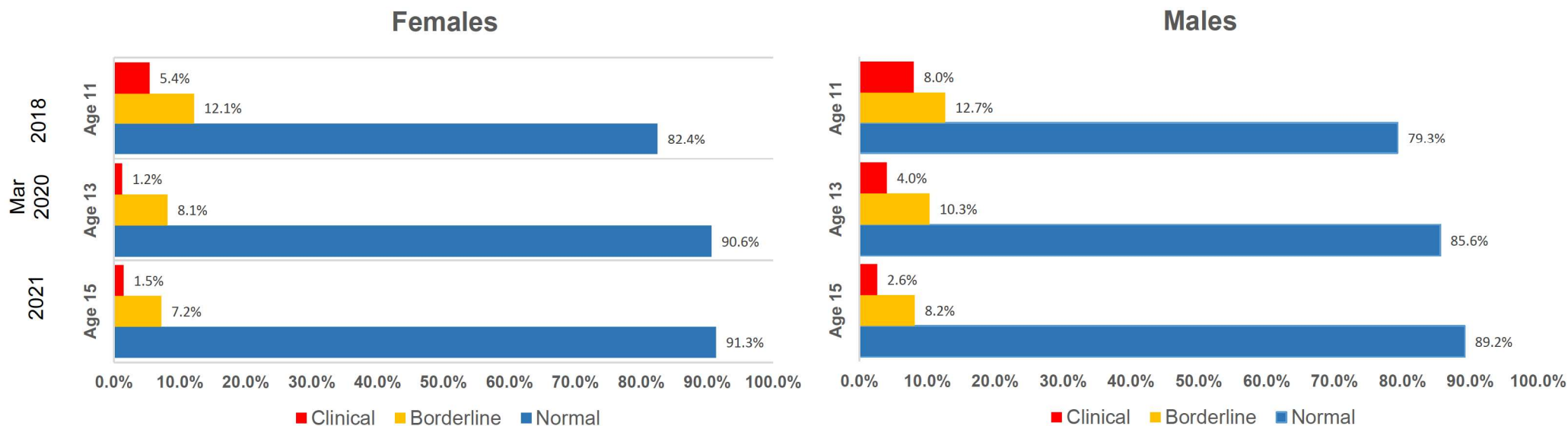
BOYS	Normal	Borderline	Clinical
Depression			
Age 11	0-4	5-6	≥ 7
Age 13/15	0-7	8-10	≥ 11
Anxiety			
Age 11/14	0-5	6-7	≥ 8
Age 13/15	0-7	8-9	≥ 10

Trend in DSM-Depression Scale Categories*

Proportion of adolescents with scores classified as **borderline/clinical significantly decreased over time** despite the pandemic

Borderline, all adolescents: Age 13 (9.2%), pandemic, age 15 (7.7%)

Clinical all adolescents : Age 13 (2.7%), pandemic, age 15 (2.1%)



* Sample with complete data across waves (n=2,627); significant differences based on linear combination of estimators; unweighted

Constitutional factors significantly associated with odds of being classified as borderline or clinical depression scale categories¹:

	Age 11 (n=3,560)	Age 13 (n=2,091)	Age 15 (n=2,002)
Being male	1.37**	1.87***	
Pubertal maturity index	0.84*	1.38**	
Being stunted	1.47***	2.03***	
Being enrolled in school	0.28***	0.37**	
Number of biological siblings	0.50***	0.57***	0.58***
Mother's age	0.87***	0.86***	0.83***
Mother/caregiver depression	1.17***		1.08***
Wealth index		1.09*	
Residing in urban area	1.62***		1.47*
Residing in Visayas ²	1.51***		

¹Odds Ratios derived from ordered logistic regression (cross-sectional) models; *** significant at p<0.001; ** at p<0.01; *at p<0.05; unweighted results

² Luzon as control group

Trend in DSM-Anxiety Scale Categories*

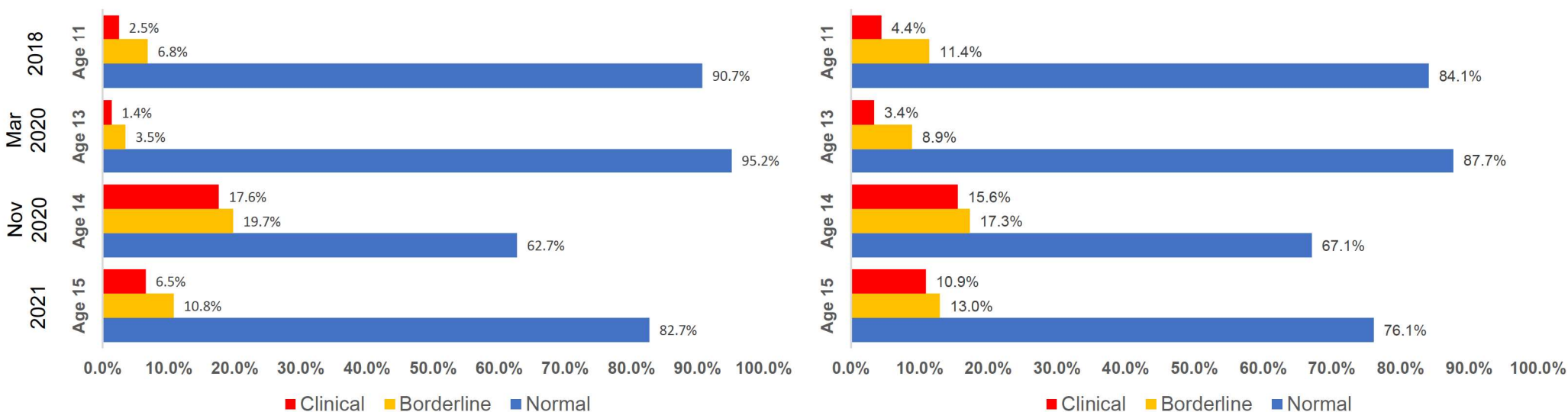
Proportion of adolescents with scores classified as borderline/clinical range significantly *increased* during the pandemic, particularly in early pandemic

Borderline, all adolescents: Age 13 (6.2%), early pandemic, age 14 (18.5%), age 15 (11.9%)

Clinical all adolescents : Age 13 (2.4%), early pandemic, age 14 (16.6%), age 15 (8.7%)

Females

Males



*Sample with complete data across waves (n=2,047); significant differences based on linear combination of estimators; unweighted

Constitutional factors significantly associated with odds of being classified as borderline or clinical anxiety categories¹:

	Age 11 (n=3,841)	Age 13 (n=2,182)	Age 14 (n=1,764)	Age 15 (n=1,829)
Being male	1.79***	3.78***	0.72**	1.68***
Pubertal maturity index		1.30*		
Raven's Score (intelligence test)				1.27***
Being enrolled in school	0.26***		0.38**	0.38**
Number of biological siblings	0.47***	0.55***	0.53***	0.59***
Mother's age	0.90***	0.85***	0.88***	0.83***
Mother/caregiver education			1.53***	
Mother/caregiver depression	1.09***		1.08***	
Wealth index				1.09*
Residing in urban area	1.40**			1.42*
Residing in Visayas	2.92***	3.09***	4.76***	16.14 ³ ***
Residing in Mindanao	2.41***	4.35***	5.02***	17.02***

¹Odds Ratios derived from ordered logistic regression (cross-sectional) models; *** significant at p<0.001; ** at p<0.01; *at p<0.05; unweighted results

Anxiety in early pandemic period (Nov 2020) survey:

- A third of the children complained about being indoors (can't play outdoors, be with friends, can't go to internet cafes, bored)
- Boys complained more than girls
- Complainers were more at risk of being categorized as having borderline or clinical anxiety (Odds ratio: 1.74^{***})¹

¹Odds Ratios derived from ordered logistic regression cross-sectional models; controlling for constitutional factors

*** significant at $p < 0.001$; ** at $p < 0.01$; * at $p < 0.05$; unweighted results

Anxiety in early pandemic period (Nov 2020) survey:

- About 63% of the mothers/caregivers perceived COVID-19 as a high/very high threat to household health
- Adolescents whose mothers/caregivers who perceived high health threat levels were more at risk of being categorized as having borderline or clinical anxiety (Odds ratio: 1.31*)¹

¹Odds Ratios derived from ordered logistic regression cross-sectional models; controlling for constitutional factors

*** significant at $p < 0.001$; ** at $p < 0.01$; * at $p < 0.05$; unweighted results

Summary: Anxiety

- Borderline- and clinical-level anxiety significantly increased during the pandemic, particularly in the early pandemic months. Remaining indoors and health threats to household contributed to anxiety levels.
- Independent of pandemic circumstances, constitutional changes (pubertal transition, family and community environments) also contribute to anxiety levels stressing the importance of factoring these in intervention planning.
 - Being male, urban residency and being in the Visayas and Mindanao increased risk of more severe anxiety status
 - Being enrolled in school, having older mothers and having more biological siblings protected against anxiety
 - At age 13, adolescents who had higher pubertal maturity scores were more likely to feel anxious than their less-developed peers.

Summary: Depression

- Borderline- and clinical-level depression scores significantly decreased as adolescents got older, despite pandemic
- Independent of pandemic circumstances, constitutional changes (pubertal transition, family and community environments) also contribute to depression scores stressing the importance of factoring these in intervention planning.
 - Being male, urban residency increased risk to more severe depression categories
 - Being enrolled in school, having older mothers and having more biological siblings protect against depression
 - At age 11, higher pubertal maturity scores appeared protective against depression; but at age 13 the more developed were more prone to more severe depressive levels.

Research Collaborators



Implementing institution:

USC-Office of Population Studies Foundation, Inc. (OPS)
University of San Carlos



Luzon:

Demographic Research and Development Foundation (DRDF)
University of the Philippines



Visayas:

Center for Social Research and Education (CSRE)
University of San Carlos



Mindanao:

Research Institute for Mindanao Culture (RIMCU)
Xavier University

Consultants:

Dr. Erniel B. Barrios (Statistics), Dr. Delia E. Belleza (Psychology), Dr. Alejandro Herrin (Policy Adviser)





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Thank you!



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