



KENYA - NATIONAL ADOLESCENT MENTAL HEALTH SURVEY (K-NAMHS)

A REPORT ON KEY FINDINGS
SEPTEMBER 2022



Kenya – National Adolescent Mental Health Survey (K-NAMHS): A Report on Key Findings

African Population and Health Research Center

Yohannes Dibaba Wado, Frederick Wekesah, Sally Odunga, Vivian Nyakangi,
Anne Njeri, Caroline W. Kabiru

University of Queensland

Holly E. Erskine, Krystina Wallis, Cartiah McGrath, Sarah J. Blondell,
Harvey A. Whiteford, James G. Scott

Johns Hopkins Bloomberg School of Public Health

Robert Blum, Shoshanna Fine, Mengmeng Li, Astha Ramaiya

Suggested Citation:

African Population and Health Research Center (APHRC), University of Queensland, and Johns Hopkins Bloomberg School of Public Health. (2022). Kenya – National Adolescent Mental Health Survey (K-NAMHS): A Report on Key Findings. Nairobi, Kenya: APHRC

Table of Contents

LIST OF TABLES	IV
LIST OF FIGURES	V
ACRONYMS	VI
ACKNOWLEDGEMENTS	VII
EXECUTIVE SUMMARY	VIII
KEY MESSAGES	X
INTRODUCTION	1
Background	1
What is K-NAMHS?	2
Who conducted K-NAMHS?	2
Who participated in K-NAMHS?	2
What were participants asked?	3
When was K-NAMHS conducted?	4
Did COVID-19 impact K-NAMHS?	4
What is the scope of this report?	4
SAMPLE CHARACTERISTICS	5
Adolescent	5
Primary caregiver	6
MENTAL HEALTH	8
Overview	8
Measurement	8
Measures	8
Mental health problems and mental disorders	9
Findings	10
Mental health problems	10
Mental disorders	13
Suicidal behaviors and self-harm	15
Discussion	16
Interpretation	16
Limitations	16
Implications	17
SERVICE USE	18
Overview	18
Measurement	19
Findings	19
Service use frequency and type	19
Perceived need and barriers to care	21
Informal support	21
Self-help strategies	22

Discussion	23
Interpretation	23
Limitations	23
Implications	23
COVID-19	25
Overview	25
Measurement	25
Findings	26
Discussion	27
Interpretation	27
Limitations	27
Implications	28
APPENDIX 1 : MEASURES	29
Primary caregiver interview	29
Adolescent interview	30
APPENDIX 2 : METHODOLOGY	31
Sampling frame	31
Pilot study	32
Cognitive testing	33
Fieldwork	33
APPENDIX 3 : RESEARCH TEAMS	34
African Population and Health Research Center	34
University of Queensland	34
Johns Hopkins Bloomberg School of Public Health	34
APPENDIX 4 : GLOSSARY	35
REFERENCES	38

List of Tables

Table 1.	Sample recruitment for K-NAMHS	3
Table 2.	Adolescent sample by sex and age group	5
Table 3.	Adolescent sample by education and employment status	6
Table 4.	Primary caregiver sample by demographic information	6
Table 5.	Definitions of mental health problems and mental disorders	10
Table 6.	12-month prevalence of mental health problems among 10-17-year-olds by sex and age group	10
Table 7.	12-month prevalence of mental health problems among 10-17-year-olds by sex and type	11
Table 8.	12-month prevalence of mental health problems among 10-17-year-olds by age group and type	12
Table 9.	12-month prevalence of mental health problems among 10-17-year-olds endorsing impairment by impairment domain	13
Table 10.	12-month prevalence of mental disorders among 10-17-year-olds by sex	14
Table 11.	12-month prevalence of mental disorders among 10-17-year-olds by age group	14
Table 12.	12-month prevalence of mental disorders among 10-17-year-olds by impairment domain	14
Table 13.	Suicidal behaviors among 10-17-year-olds	15
Table 14.	Self-harm among 10-17-year-olds	15
Table 15.	Frequency of accessing services providing support or counselling for emotional and behavioral problems in the past 12 months among 10-17-year-olds by sex	19
Table 16.	Service provider used most for emotional and behavioral problems in the past 12 months among 10-17-year-olds	20
Table 17.	Barriers to seeking help or receiving help for emotional and behavioral problems in the past 12 months among primary caregivers of 10-17-year-olds	21
Table 18.	Person spoken to when having worries or concerns among 10-17-year-olds	22
Table 19.	Self-help strategies used to manage or prevent emotional and behavioral problems among 10-17-year-olds	22
Table 20.	Proportion often experiencing emotional and behavioral problems more than usual during the COVID-19 pandemic among 10-17-year-olds by sex	26

List of Figures

Figure 1.	12-month prevalence of mental health problems among 10-17-year-olds by type	11
Figure 2.	12-month prevalence of mental health problems by symptom threshold and impairment endorsement among 10-17-year-olds	12
Figure 3.	12-month prevalence of mental disorders among 10-17-year-olds by type	13
Figure 4.	Mental health problems among 10-17-year-olds using services in the past 12 months by symptom threshold and impairment endorsement.	20
Figure 5.	Experiences during the COVID-19 pandemic among 10-17-year-olds	27
Figure 6.	Map of counties in Kenya sampled for K-NAMHS	33

Acronyms

ADHD	Attention-deficit/hyperactivity disorder
APHRC	African Population and Health Research Center
DISC-5	Diagnostic Interview Schedule for Children, Version 5
DSM-5	Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition
EA	Enumeration area
ESRC	Ethics and Scientific Review Committee
GBD	Global Burden of Disease Study
GEAS	Global Early Adolescent Study
HICs	High-income countries
HREC	Human Research Ethics Committee
I-NAMHS	Indonesia - National Adolescent Mental Health Survey
JHSPH	Johns Hopkins Bloomberg School of Public Health
K-NAMHS	Kenya - National Adolescent Mental Health Survey
KNBS	Kenyan National Bureau of Statistics
LMICs	Low- and middle-income countries
MOH	Ministry of Health
NACOSTI	National Committee for Science, Technology and Innovation
NIHF	National Hospital Insurance Fund
NAMHS	National Adolescent Mental Health Surveys
NASSEP	National Sample Survey and Evaluation Programme
NUHDSS	Nairobi Urban Health and Demographic Surveillance System
PTSD	Posttraumatic stress disorder
TUQIA	The University of Queensland in America
UQ	The University of Queensland
V-NAMHS	Viet Nam Adolescent Mental Health Survey
WHO	World Health Organization

Acknowledgements

The Kenya - National Adolescent Mental Health Survey (K-NAMHS) was implemented through the efforts of several individuals, organizations, and stakeholders. We would particularly like to thank the study participants—adolescents and caregivers—who gave their valuable time to make K-NAMHS possible. We would also like to acknowledge the support of community leaders—chiefs and village elders—who were the first points of contact in the study areas when introducing K-NAMHS to the community. The field team, including data collectors, team leaders, and supervisors, deserve special thanks for working to ensure the data collected were of high quality despite the COVID-19 pandemic. We also thank Nelson Mbaya of the African Population and Health Research Center (APHRC) for programming the household listing and sampling template and for providing programming support for the electronic data capture.

We acknowledge the funder for providing the resources that made it possible to conduct the study. The National Adolescent Mental Health Surveys (NAMHS) is funded by The University of Queensland in America (TUQIA) through support from Pivotal Ventures, a Melinda French Gates company. The funding for NAMHS is administered by The University of Queensland (UQ), which, in turn, provided the funding for K-NAMHS to APHRC. NAMHS was implemented in three countries (Kenya, Indonesia, and Vietnam) led by the University of Queensland (UQ) in Australia, with Johns Hopkins Bloomberg School of Public Health (JHSPH) in the United States, Gadjah Mada University in Indonesia, and the Institute of Sociology in Vietnam as collaborating partners.

We acknowledge the support of the Kenya National Bureau of Statistics (KNBS) and the Ministry of Health (MOH) in the implementation of the study. The KNBS was instrumental in sampling enumeration areas (EAs), producing EA maps, supporting the mapping and demarcation of EA boundaries during data collection, and producing population weights. We particularly would like to thank Mr. James Kinyanjui (Manager, Sampling, Methods and Standards) and Mr. Zachary Ochola (Sampling Statistician) for their support throughout the implementation of the study.

The MOH, particularly the Division of Mental Health and Adolescent Health, provided support and guidance throughout the study period from the planning phase to the dissemination of the findings. Our gratitude also goes to Dr. Boniface Chitayi, a consultant clinician affiliated with the MOH and the President of the Kenya Psychiatric Association, who supported the review and adaptation of the data collection tool - the Diagnostic Interview Schedule for Children, Version 5 (DISC-5) - and the training of field interviewers.

We would also like to acknowledge Prudence Fisher, the author of the DISC-5, who generously provided the tool and supported its adaptation and implementation.

We are also grateful to the staff at APHRC and UQ who provided administrative and technical support that ensured the seamless implementation of the study. We would like to acknowledge the contributions of Meaghan Enright and Jamileh Shadid from UQ who provided support during the implementation of K-NAMHS including during the pilot study training, testing of data collection tools, programming, and other work on the survey. Additionally, we would like to acknowledge the work of the Johns Hopkins University Global Early Adolescent Study for their programming and data analysis support, especially the survey programming support of Mark Emerson.

Executive Summary

Introduction

Little is known about the prevalence of mental disorders among Kenyan adolescents. This is a critical gap in knowledge as studies have shown that mental disorders during adolescence, particularly those that remain untreated or under-treated, can have adverse outcomes throughout the life course. The lack of adequate evidence inhibits policymakers, practitioners, and researchers from appropriately targeting public health efforts, developing effective service planning, and increasing local and global attention and funding for adolescent mental health. The aims of the Kenya - National Adolescent Mental Health Survey (K-NAMHS) were to: a) determine the prevalence of mental disorders among adolescents aged 10-17 years; b) measure associated risk and protective factors; and c) examine service use. K-NAMHS also assessed the effects of the COVID-19 pandemic on adolescents as related to mental health.

Methods

K-NAMHS is a nationally representative household survey of adolescents and their primary caregivers, with data collection occurring from March to July 2021. A multistage stratified sampling design was employed whereby 5,290 households from 236 enumeration areas (EAs) across 14 counties in Kenya were approached. Households were randomly sampled after listing and mapping was conducted in each of the sampled EAs. Eligible adolescents were 10-17 year-olds who lived with their primary caregiver more than half of the time. A total of 5,155 pairs of adolescents and their primary caregiver were successfully interviewed, giving a response rate of 97.9%. All findings were weighted to represent the Kenyan population of adolescents aged 10-17 years (with the exception of those related to sample characteristics).

Mental disorders were assessed using a diagnostic measure specifically designed for children and adolescents: the Diagnostic Interview Schedule for Children, Version 5 (DISC-5). Five mental disorders were assessed: anxiety disorders (inclusive of social phobia and generalized anxiety disorder), major depressive disorder, conduct disorder, posttraumatic stress disorder (PTSD), and attention-deficit/hyperactivity disorder (ADHD).

In this report, findings are presented for both mental health problems and mental disorders. In K-NAMHS, adolescents with mental health problems were those who met at least half of the symptoms for a given mental disorder as measured by the DISC-5 but who may not necessarily meet all diagnostic criteria required for a diagnosis as specified in the Diagnostic and Statistical Manual-Fifth Edition (DSM-5). Adolescents with mental disorders were those who met the full diagnostic criteria for a mental disorder as specified by DSM-5. In addition, the term 'emotional and behavioral problems' was used in questions related to service use and COVID-19. This term was used, rather than referring to mental health directly, to account for variations in how mental disorder symptoms can manifest and to avoid issues of stigma or poor mental health literacy.

Findings

Over two-fifths (44.3%) of adolescents had a mental health problem in the past 12 months, while one in eight (12.2%) met criteria for a mental disorder according to DSM-5. No differences by age or sex were seen for mental health problems overall or mental disorders overall. However, there were age and sex differences in the prevalence of specific types of mental health problems and mental disorders. In regard to mental health problems, males had higher prevalence than females in terms of problems with inattention and/or hyperactivity (20.1% vs. 16.4%) and conduct problems (10.6% vs. 6.4%).

Younger adolescents (ages 10-13 years) had higher prevalence of problems with inattention and/or hyperactivity (21.3%) compared to older adolescents (ages 14-17 years; 14.6%), while older adolescents had higher prevalence of depression (9.9%) and posttraumatic stress (7.1%) in comparison to younger adolescents (4.6% and 4.4%, respectively). For both males and females, anxiety had the highest reported prevalence (26.2% and 27.2%, respectively) of any specific type of mental health problem. Further, about two-thirds of those with mental health problems reported some level of impairment due to their respective symptoms. In regard to mental disorders, males had a higher prevalence of ADHD (4.7% vs. 2.3%) and conduct disorder (4.0% vs. 1.5%) as compared to females. Younger adolescents had higher prevalence of ADHD (4.8%) compared to older adolescents (2.0%). Older adolescents had higher prevalence of major depressive disorder (3.0%) and conduct disorder (3.6%) as compared to younger adolescents (1.2% and 2.1%, respectively).

Use of services for emotional and behavioral problems was low. In the 12 months prior to the survey, only 11.1% of adolescents with a mental health problem had used any service that provides support or counselling for emotional and behavioral problems. Overall, less than one-tenth of adolescents (8.7%) had used services in the past 12 months. Of these adolescents, the majority had accessed services from religious/faith leaders (34.2%) and school staff (31.9%) the most, while only 10% had accessed services from doctors and nurses. Among primary caregivers reporting that their adolescent needed help for emotional and behavioral problems, nearly a quarter reported not being sure where to get help (24.3%) or preferring to handle the adolescent's problems themselves or with the support of family (24.1%).

Emotional and behavioral problems were impacted by the COVID-19 pandemic. One in six (16.4%) adolescents reported often experiencing at least one emotional or behavioral problem more than usual during the pandemic. This included feeling more anxious or stressed, feeling sadder or more depressed, having more problems concentrating, or feeling more lonely or isolated. Further, 15.1% of primary caregivers indicated that their adolescent needed help for emotional and behavioral problems during the pandemic. However, most did not access services with reasons including fear of contracting COVID-19 (36.8%) and/or services being unavailable because of the COVID-19 pandemic (34.8%).

Implications

The findings indicate that mental health problems and mental disorders are a common health issue among adolescents, with over two-fifths of Kenyan adolescents having experienced a mental health problem in the past 12 months and one in eight meeting criteria for a mental disorder. As well as showing the extent of poor mental health as a public health issue, K-NAMHS provides necessary evidence for more targeted and strategic interventions. For example, the vast majority of adolescents were currently attending school. The implementation of specific screening and management strategies, integrated with mental health promotion activities, within the school setting could therefore be one vehicle to address mental health problems in Kenyan adolescents.

The findings indicate a large unmet need for mental health services while also showing areas where efforts could potentially be most effective. For example, over a third of primary caregivers who accessed services for their adolescent's emotional and behavioral problems did so from religious/faith leaders. This highlights an opportunity to engage with religious/faith leaders and promote mental health awareness and literacy within this sector, as well as potentially establishing pathways for referral to clinical services. In addition, almost a quarter of primary caregivers whose adolescents needed help for emotional and behavioral problems reported that they were unsure where to get help. Programs to increase mental health literacy among families, both concerning the concept of mental health as well as where and how to access services, may also encourage effective help-seeking behaviors. Given the potential level of unmet need for mental health services in the Kenyan adolescent population, it is equally important to improve the availability and quality of mental health services for adolescents as well as taking steps to increase help-seeking behaviors.

Key Messages

- 1 Mental health problems and mental disorders are common among adolescents in Kenya.
 - Two-fifths of adolescents experienced a mental health problem in the past 12 months.
 - One in eight met criteria for a mental disorder in the past 12 months.
- 2 Differences in prevalence by sex and age were found for the specific types of mental health problems and mental disorders, indicating opportunities for more targeted interventions.
- 3 Use of services for emotional and behavioral problems by Kenyan adolescents is low.
 - Only 11.1% of adolescents with a mental health problem had accessed services in the past 12 months.
 - Overall, less than 10% had used such services in the past 12 months.
 - Of those who accessed services, most did so from religious/faith leaders, followed by school staff.
- 4 Barriers to care reported among primary caregivers whose adolescent needed help for emotional and behavioral problems appeared to relate to challenges of stigma (preferred to handle problems themselves) as well as mental health literacy and service availability (unsure where to get help).
- 5 One in six adolescents reported often experiencing at least one emotional or behavioral problem more than usual during the COVID-19 pandemic, indicating the need to consider mental health during such population-level events.



Introduction

Background

Adolescents (10-19 years of age) constitute about one-sixth of the global population [1] and nearly a quarter of the Kenyan population [2]. Adolescence is characterized by rapid physical, cognitive, emotional, and social changes. Although it is often thought of as a healthy life stage, there are significant rates of death, illness, and injury in the adolescent years that largely result from preventable or treatable causes [1]. Globally, mental and substance use disorders are the leading causes of disability among adolescents [1, 3-5]. Mental disorders among adolescents can have short- and long-term health and social consequences. For example, poor mental health during adolescence is associated with higher substance use, early pregnancy, dropping out of school, and risk-taking behaviors [4, 6-8]. Knowledge of the prevalence of mental disorders, as well as underlying risk and protective factors, is therefore essential to inform mental health policies and programs, as well as for effective resource planning.

Published in August 2015, the Kenya Mental Health Policy (2015-2030), aims to ensure that all persons have access to comprehensive, integrated, and high-quality mental healthcare services [9]. However, little progress has been made in improving existing services or creating new services, especially in the context of supporting adolescent mental health. In June 2021, the Ministry of Health (MOH) launched the Kenya Mental Health Action Plan (2021-2025) incorporating updated, rights-based strategies and plans to promote mental health for citizens. Although the Mental Health Policy recognizes children and adolescents as one of the vulnerable groups in need of targeted interventions, to date there is no adolescent mental health policy or strategy [10]. In addition, there is an acute shortage of human and other resources to effectively care for young people with mental disorders [11]. Service availability in rural and remote communities is especially sparse, and is compounded by cultural stigma around mental illness that is more likely to be present in these settings [11].

Efforts to improve adolescent mental health in Kenya are impeded by the lack of evidence on the prevalence of adolescent mental disorders in Kenya. Existing research on adolescent mental health is limited by geographic coverage, small sample sizes, and limited age ranges as well as the use of symptom measures rather than diagnostic instruments that more accurately assess mental disorders based on established definitions. A study by Erskine et al. [7] found that the 'coverage' or representativeness of prevalence data for child and adolescent mental disorders utilizing diagnostic instruments was only 6.7% globally, with a stark disparity between coverage for high-income countries (HICs; 26.4%) and low- and middle-income countries (LMICs; 4.5%) [7]. For Kenya, the same study found only one available estimate for anxiety disorders [12] which equated to coverage of less than 1% for mental disorders overall. The lack of such data for Kenya significantly inhibits policymakers, practitioners, and researchers from appropriately targeting efforts, developing effective service planning, engaging governments in action, and increasing attention and funding for adolescent mental health [13, 14].

The Kenya - National Adolescent Mental Health Survey (K-NAMHS) was developed and conducted with the specific aim of producing nationally representative estimates of the prevalence of mental disorders among Kenyan adolescents aged 10-17 years, while further measuring associated risk and protective factors as well as service utilization. Findings from K-NAMHS provide the national and county governments, as well as other stakeholders in Kenya, with the evidence needed to prioritize and plan services to address the burden of mental disorders among adolescents in Kenya. In addition, K-NAMHS provides a gold-standard survey methodology that can also be used as a starting point for studies focusing on special/subpopulations within Kenya. Finally, these data will provide prevalence estimates for international agencies and global research efforts, such as the Global Burden of Disease Study (GBD), which is used by policymakers to inform decision-making.

What is K-NAMHS?

K-NAMHS is a nationally representative household survey of adolescents and their primary caregiver. The core aims of K-NAMHS are to:

1. Determine the prevalence of mental disorders among adolescents aged 10-17 years in Kenya.
2. Identify risk and protective factors associated with adolescent mental disorders.
3. Ascertain the use of, perceived need for, and barriers to accessing mental health services.

Who conducted K-NAMHS?

The African Population and Health Research Center (APHRC) was responsible for the implementation of K-NAMHS. The survey was part of the National Adolescent Mental Health Surveys (NAMHS) implemented in three countries (Kenya, Indonesia, and Vietnam). NAMHS is led by the University of Queensland (UQ) in Australia, with the Johns Hopkins Bloomberg School of Public Health (JHSPH) in the United States, Gadjah Mada University in Indonesia, and the Institute of Sociology in Vietnam as collaborating partners. The project was developed and implemented collaboratively across all five institutions. Other collaborators on K-NAMHS included the Kenya National Bureau of Statistics (KNBS) and the MOH.

Ethical approval for the study was obtained from Amref Health Africa's Ethics and Scientific Review Committee (ESRC) (approval no. P654/2019) and UQ's Human Research Ethics Committee (HREC) (approval no. 2019001268). A research permit to conduct the study in Kenya was obtained from the National Committee for Science, Technology and Innovation (NACOSTI, license no. NACOSTI/P/19/837). Additional approval was obtained from county and sub-county commissioners in the respective study counties, and other local administrators such as chiefs and village elders for permission to collect data in their respective communities. Informed consent was obtained from all participating primary caregivers for themselves and on behalf of their adolescent minors. Assent was also sought from all participating adolescents. Interviews with all participants (primary caregivers and adolescents) were conducted in a private setting to avoid interference or influence by others.

Who participated in K-NAMHS?

Eligible adolescents were 10-17 years old and lived with their primary caregiver more than half the time. Adolescents aged 18-19 years were not in scope because a high proportion of these adolescents were likely to be living away from the family and because the diagnostic measures were not designed to be administered to people aged 18 years and older [15]. In households with more than one eligible adolescent, an adolescent was randomly selected from the household roster by the programmed data collection instrument. This ensured no unintentional bias in regard to selection of the reference adolescent.

A primary caregiver was considered an adult member of the household (i.e., 18 years of age or older) who had responsibility and provided care for the adolescent, knew the most about them, and was best placed to answer questions about their health and wellbeing. Households were excluded from the study if:

- There was no adolescent aged 10-17 years living in the household
- The adolescent lived elsewhere most of the time and/or was temporarily away from home
- The adolescent was married
- The adolescent or primary caregiver did not speak either English or Kiswahili
- There was no primary caregiver living in the household
- The primary caregiver did not provide consent to participate
- The adolescent was unable to participate due to severe physical or cognitive impairments (as assessed by a standardized measure)

As shown in Table 1, a total of 5,290 households from 14 counties across Kenya were randomly selected for approach as per the survey sampling frame (see Appendix 2: Methodology for further information). Of these, 5,160 households were eligible and agreed to participate, giving a total response rate of 97.9% (calculated by dividing the total number of participating, eligible households [n = 5,160] by the total number of households after discounting ineligible households [n = 5,270]). Five households had incomplete data and were not included in the final sample, giving a final K-NAMHS reporting sample of 5,155 primary caregiver-adolescent pairs.

Table 1 : Sample recruitment for K-NAMHS

Total number of households in scope for approach	5,290
Total number of households that were not approached or unavailable	70
Total number of households that refused participation	40
Total number of ineligible households	20
Total number of participating, eligible households	5,160
Total number of households with incomplete data	5
Total number of households with complete data	5,155

What were participants asked?

Mental disorders were assessed using a diagnostic measure specifically designed for children and adolescents: the Diagnostic Interview Schedule for Children, Version 5 (DISC-5). The mental disorders included in K-NAMHS were social phobia, generalized anxiety disorder, major depressive disorder, conduct disorder, posttraumatic stress disorder (PTSD), and attention-deficit/hyperactivity disorder (ADHD). Social phobia and generalized anxiety disorder are presented collectively as 'anxiety disorders' in this report. These disorders were chosen as they are the most prevalent mental disorders in adolescence and are responsible for a significant proportion of disease burden in this age group [3]. Except for ADHD (which was asked of the primary caregiver), all DISC-5 modules (i.e., measures of individual disorders) were administered to the adolescent. The survey also measured risk and protective factors for adolescent mental health including (but not limited to) bullying, substance use, adverse childhood experiences, parental mental illness, and self-esteem. Questions related to service use were also asked, with these covering utilization, perceived need, and barriers to accessing care. A module assessing relevant experiences during the COVID-19 pandemic was also developed and included. Further information on the instrument is provided in Appendix 1: Measures.

When was K-NAMHS conducted?

Data collection for K-NAMHS commenced on March 22, 2021, with household listing and mapping in 14 counties. Training of field interviewers took place in Nairobi from February 22 to March 6, 2021. A total of 68 field interviewers and team leaders were trained and administered the survey across Kenya. Data collection for K-NAMHS was completed on July 28, 2021, although the dates of completion varied by county.

Did COVID-19 impact K-NAMHS?

The COVID-19 pandemic began in Kenya in March 2020. This resulted in the suspension of in-person interaction, closure of APHRC offices, and suspension of research activities involving face-to-face approaches. The suspension of the implementation of projects caused almost a full year's delay in the recruitment and training of field interviewers. Shortlisting of individuals for training and fieldwork that had started in February 2020 was suspended, affecting the timelines for implementation of actual training activities.

The start of fieldwork/data collection was delayed until it was deemed safe to bring teams together for face-to-face training. APHRC developed protocols and guidelines, including mandatory use of personal protective equipment, to mitigate against transmission and infection with COVID-19 among APHRC staff and field staff. These protocols were approved by the relevant ethical bodies and at the end of data collection, no COVID-19 cases had been reported among project staff. The delay also provided an opportunity to develop and include a COVID-19 module to assess the impact of the pandemic on adolescents and their families (in the context of mental health).

Project implementation resumed in 2021 and data collection continued without disruption in 13 counties. However, Nairobi County reported high COVID-19 infection rates which resulted in the suspension of data collection within the county from mid-April to mid-May 2021. Refresher training was conducted for the Nairobi team after the suspension was lifted in May. The refresher training covered infection control and the use of personal protective equipment as well as the data collection tools and interview administration.

What is the scope of this report?

This report provides key findings from K-NAMHS that reflect the core aims of the study and are relevant for Kenyan stakeholders. The report has three main chapters: mental health (inclusive of suicidal behaviors and self-harm), service use, and COVID-19. Sample characteristics (i.e., demographics) are included while other information related to methodology and conduct of the survey is included in the Appendices (see Appendix 2: Methodology). All findings (proportions and numbers) have been weighted to represent the Kenyan population of adolescents aged 10-17 years as per population weights supplied by the KNBS. While tests of statistical significance are not included in the report, differences that are statistically significant have been highlighted in the relevant table or text. Only differences that are statistically significant are discussed in the text.

This report is neither designed nor intended to provide a comprehensive record of all data and findings from K-NAMHS. Other findings and more in-depth analyses, including disaggregation by area of residence (urban versus rural) and socio-economic status where possible, will be provided in upcoming reports and publications. The information presented here is intended to provide the MOH and other stakeholders with a better understanding of the prevalence of mental disorders so as to improve the promotion of mental health and increase availability of mental health services for adolescents.

Sample Characteristics

Tables 2 and 3 show the demographic characteristics of the adolescent sample while Table 4 shows the demographic characteristics of the primary caregiver sample. All findings reported in these tables are unweighted. All information was provided by the primary caregiver and input into the adolescent survey form prior to the interview with the adolescent. Where discrepancies occurred, these were resolved using pre-determined methods.

Adolescent

Table 2 shows the age and sex of adolescents who participated in the survey (n = 5,155). The average age of the adolescent participants was 13.3 years, with younger adolescents aged 10-13 years constituting more than half (54.6%) of the adolescent sample. In terms of sex distribution, the sample consisted of more females (53.1%) than males (46.9%).

Table 2 : Adolescent sample by sex and age group

Age (years)	Males, % (n)	Females, % (n)	Total, % (n)
10-13	25.7 (1,323)	29.0 (1,493)	54.6 (2,816)
14-17	21.2 (1,093)	24.2 (1,246)	45.4 (2,339)
10-17	46.9 (2,416)	53.1 (2,739)	-

Table 3 shows the education and employment status of the adolescent sample. The majority of adolescents were currently attending school (97.4%) and had never been employed (98.4%).

Table 3 : Adolescent sample by education and employment status

Measure	Proportion, % (n)
Education status	-
Currently attending school	97.4 (5,023)
Not currently attending but has attended in the past 12 months	1.6 (83)
Has attended but not in the past 12 months	0.7 (34)
Never attended school	0.3 (15)
Employment status	-
Currently employed	1.1 (57)
Not currently employed but has been employed in the past 12 months	0.1 (6)
Has been employed but not in the past 12 months	0.4 (18)
Never been employed	98.4 (5,074)
Not currently attending school AND not currently employed	2.3 (119)

Primary caregiver

Table 4 shows the characteristics of the primary caregiver sample (n = 5,155). The mean age of primary caregivers was 40.8 years and the majority of them were the adolescent's mother or step-mother (72.0%). Nearly half (49.5%) had only completed primary education, while about a quarter (23.9%) had completed secondary education. In terms of employment, only 16% reported that they were employed full time, while nearly half (45.3%) were employed part-time. Just under half (47.1%) reported that they also headed the household.

Table 4 : Primary caregiver sample by demographic information

Measure	Proportion, % (n)
Age (mean, years) ^a	40.8
Sex	-
Male	16.3 (838)
Female	83.7 (4,317)
Relationship with adolescent	-
Mother/stepmother	71.9 (3,708)
Father/stepfather	14.0 (724)
Grandparent	7.0 (360)
Other	7.0 (363)
Marital status	-
Married	75.2 (3,878)
Never married	4.9 (252)
Other	19.8 (1,019)

Measure	Proportion, % (n)
Education level (highest level completed)	-
None	10.4 (534)
Primary school	49.5 (2,554)
High school	23.9 (1,234)
Trade/vocational school or equivalent	7.5 (384)
Tertiary education	8.4 (433)
Currently studying	3.0 (154)
Employment status	-
Full-time	16.0 (822)
Part-time/casual	45.3 (2,336)
Not employed but seeking employment	16.2 (833)
Not employed and not seeking employment	22.6 (1,164)
Proportion who are also the head of the household ^b	47.1 (2,426)

^a n = 5,132 (after excluding ages <18 years [n=5] and non-meaningful responses [n=18]); ^b Head of household not identified in all households

A young girl with dark hair is shown from the chest up, wearing a blue long-sleeved shirt. She is hugging a large, brown, textured stuffed animal that resembles a bear or a dog. The background is slightly blurred, showing what appears to be a room with some furniture. The overall lighting is soft and natural.

Mental Health

Overview

Little is known about the prevalence of mental disorders among Kenyan adolescents. This is a critical gap, as studies have found that mental disorders during adolescence, particularly those that remain untreated or under-treated, can have adverse outcomes throughout the life course [7, 8]. The literature that is available for adolescent mental disorders in Kenya is limited by small sample sizes, restricted locations or age ranges, a lack of diagnostic assessments (i.e., using symptom measures rather than trying to identify a disorder), and a focus on specific disorders. While some studies of adolescent mental health do exist, the generalizability of these studies is limited. When looking at the representativeness of the prevalence data for mental disorders in children and adolescents, one study found that less than 1% of the Kenyan population of young people was represented by available data using diagnostic measures of mental disorders [14]. This means that the evidence to inform adolescent mental health policy in Kenya, and the subsequent ability to act positively for adolescent mental health, is extremely limited.

The core aim of K-NAMHS was to generate nationally representative prevalence estimates for mental disorders among Kenyan adolescents. This section outlines the measurement of mental disorders in K-NAMHS and presents the findings (as both weighted proportions and numbers). Findings for mental health problems and mental disorders are presented. In addition, the prevalence of suicidal behaviors and self-harm are also presented in the context of mental disorders. While tests of statistical significance are not included in the report, differences that are statistically significant have been highlighted in the relevant table and only statistically significant differences are discussed in the text. Finally, considerations related to the interpretation and limitations of these findings are briefly discussed while the implications for policymakers are outlined.

Measurement

Measures

Diagnostic modules from the DISC-5 were used to assess the prevalence of selected mental disorders in the past 12 months. The DISC-5 is a standardized diagnostic instrument [16, 17], first developed by Columbia University through support from the United States National Institute of Mental Health. The DISC-5 is designed to be administered by trained 'lay' interviewers, individuals who do not have any clinical training but who are trained on the DISC-5. The DISC-5 was used to assess five mental disorders in K-NAMHS: major depressive disorder, anxiety disorders (inclusive of social phobia and generalized anxiety disorder), PTSD, conduct disorder, and ADHD. Except for ADHD (which was asked of the primary caregiver), all DISC-5 modules (i.e., measures of individual disorders) were administered to the adolescent.

Measures of suicide and self-harm are also included. Suicidal behaviors refer to: 1) suicidal ideation (serious thoughts about taking one's life); 2) suicide planning (making a plan to end one's life); and 3) suicide attempts (where the self-injury or action is intended to end one's life). Self-harm means deliberately hurting or injuring yourself without trying to end your life (i.e., non-suicidal self-injury). All adolescents were asked questions related to suicidal behaviors and self-harm, regardless of their mental disorder status. For suicidal behaviors in the past 12 months specifically, adolescents were only asked about suicide planning if they reported suicidal ideation, and only asked about suicide attempts if they reported suicide planning.

Mental health problems and mental disorders

The content and structure of the DISC-5 was designed to follow established diagnostic criteria for mental disorders and was recently updated to reflect the DSM-5 [18], the most recent diagnostic criteria for mental disorders. A diagnosis of a mental disorder according to DSM-5 requires an individual to not only endorse the core symptoms of a certain mental disorder but to meet specific thresholds regarding the duration, frequency, severity, and expression of these symptoms, while also reporting a minimum level of impairment caused by these symptoms. The questions in the DISC-5 reflect this by first asking about a given symptom and then asking further detailed questions about the specific characteristics of this symptom as required for diagnosis. This differentiates a diagnostic instrument, such as the DISC-5, from 'symptom scales' which only ask about the general presence of a symptom. As such, symptom scales tend to report much higher prevalence than diagnostic instruments [19-21] as they are assessing symptoms not disorders.

However, individuals can still experience a range of symptoms and associated impairments without necessarily meeting the DSM-5 criteria for diagnosis of a specific mental disorder. These individuals may be an important group for intervention. In parallel, questions have also been raised regarding the applicability of DSM-5 diagnostic criteria to non-Western cultures, as well as the impact of cultural factors when administering a standardized instrument such as the DISC-5 [22, 23].

In recognition of these potential challenges, two sets of findings are presented. First, the prevalence of 'mental health problems' is reported which, for the purposes of this Report, includes individuals who meet at least half of the symptoms for a given mental disorder as measured by the DISC-5 but who may not necessarily meet all diagnostic criteria required for a diagnosis as specified in DSM-5. Second, the prevalence of mental disorders is reported. This includes individuals who meet the diagnostic criteria for a mental disorder as specified by DSM-5. Table 5 below gives the general definition for mental health problems and mental disorders, as well as the operational definition applied in K-NAMHS. The terminology used for the different types of mental health problems vs mental disorders are also shown.

Table 5 : Definitions of mental health problems and mental disorders

	Mental health problem	Mental disorder
General definition	Interferes with how a person thinks, feels, and behaves, but to a lesser extent than a mental disorder. They can be experienced temporarily, or as an acute reaction to the stresses of life.	Clinically significant behavioral or psychological syndrome or pattern that occurs in an individual and is associated with present distress (e.g., a painful symptom), disability (i.e., impairment in one or more important areas of functioning), and/or a significantly increased risk of suffering death, pain, disability, or an important loss of freedom.
Applied definition within K-NAMHS	An adolescent was considered to have a mental health problem if at least half of the symptoms required for diagnosis of a given mental disorder were endorsed (i.e., 'subthreshold symptoms'). Adolescents with mental health problems therefore included those with subthreshold' or full threshold symptoms, with or without impairment. As such, this group also includes adolescents who meet criteria for a mental disorder.	An adolescent was considered to have met DSM-5 criteria for a mental disorder if all required symptoms (i.e., 'full threshold symptoms') and a level of impairment due to these symptoms were endorsed. This diagnosis followed standard scoring algorithms which were provided by the DISC-5 authors.
Terminology for different types	Depression	Major depressive disorder
	Anxiety	Anxiety disorders
	Posttraumatic stress	PTSD
	Conduct problems	Conduct disorder
	Problems with inattention and/or hyperactivity	ADHD

Findings

Mental health problems

Two-fifths (44.3%) of adolescents reported mental health problems in the past 12 months (Table 6). No difference in prevalence was seen between males and females, or younger (10-13 years) and older (14-17 years) adolescents.

Table 6 : 12-month prevalence of mental health problems among 10-17-year-olds by sex and age group

Mental health problems	10-13 years, % (n)	14-17 years, % (n)	10-17 years, % (n)
Males	47.5 (664)	43.6 (515)	45.7 (1,179)
Females	42.2 (588)	43.7 (515)	42.9 (1,104)
Total	44.9 (1,253)	43.6 (1,030)	44.3 (2,283)

Weighted N: males = 2,416; females = 2,739; 10-13 years = 2,816; 14-17 years = 2,339

As shown in Figure 1, anxiety had the highest prevalence (26.7%) of any mental health problem, followed by problems with inattention and/or hyperactivity (18.2%).

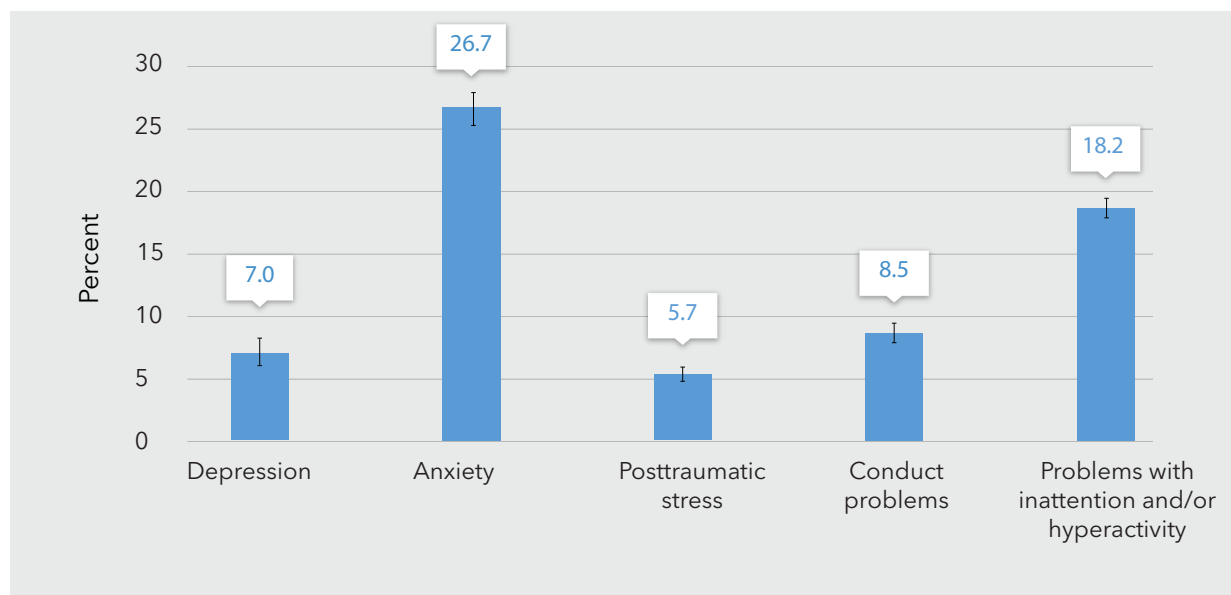


Figure 1 : 12-month prevalence of mental health problems among 10-17-year-olds by type

For both males and females, anxiety had the highest reported prevalence (26.2% and 27.2%, respectively) of any mental health problem (Table 7). Males had higher prevalence of problems with inattention and/or hyperactivity (20.1% vs. 16.4%) and conduct problems (10.6% vs. 6.4%) than females.

Table 7 : 12-month prevalence of mental health problems among 10-17-year-olds by sex and type

Mental health problems	Males, % (n)	Females, % (n)
Depression	6.8 (175)	7.3 (187)
Anxiety	26.2 (677)	27.2 (700)
Posttraumatic stress	5.0 (130)	6.3 (161)
Conduct problems*	10.6 (273)	6.4 (165)
Problems with inattention and/or hyperactivity*	20.1 (519)	16.4 (421)

*Statistically significant difference between males and females for conduct problems and problems with inattention and/or hyperactivity. Weighted N: males = 2,416; females = 2,739

As shown in Table 8, older adolescents had a higher prevalence of depression (9.9%) and posttraumatic stress (7.1%) than younger adolescents (4.6% and 4.4%, respectively). Comparatively, younger adolescents had a higher prevalence of problems with inattention and/or hyperactivity (21.3%) than older adolescents (14.6%).

Table 8 : 12-month prevalence of mental health problems among 10-17-year-olds by age group and type

Mental health problems	10-13 years, % (n)	14-17 years, % (n)
Depression*	4.6 (128)	9.9 (235)
Anxiety	26.9 (752)	26.4 (625)
Posttraumatic stress*	4.4 (123)	7.1 (168)
Conduct problems	7.5 (210)	9.7 (229)
Problems with inattention and/or hyperactivity*	21.3 (596)	14.6 (344)

*Significant difference between age groups for depression, posttraumatic stress, and problems with inattention and/or hyperactivity
Weighted N: 10-13 years = 2,816; 14-17 years = 2,339

Adolescents with a mental health problem were then further analyzed to determine the proportion reporting impairment due to their symptoms in combination with the proportion reporting full threshold vs subthreshold symptoms. Symptom thresholds were based on DSM-5 criteria whereby subthreshold symptoms indicate at least half of the required symptoms were met while full threshold symptoms indicate that all required symptoms were met. This meant that adolescents with a mental health problem were categorized into one of the four groups shown in Figure 2 (noting that full threshold symptoms with impairment equate to those meeting criteria for a mental disorder). Figure 2 shows that most adolescents with a mental health problem reported some level of impairment due to their respective symptoms, whether endorsing all symptoms required for a diagnosis according to DSM-5 (12.2%) or at least half of required symptoms (17.9%).

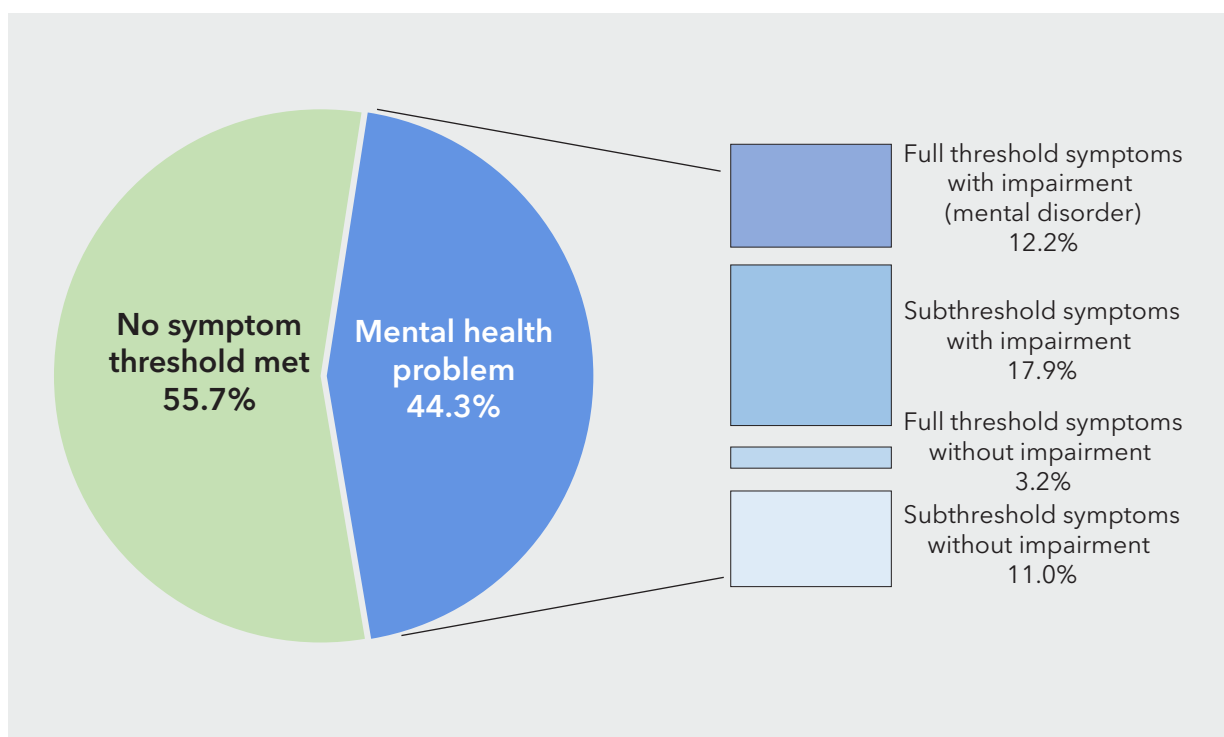


Figure 2 : 12-month prevalence of mental health problems by symptom threshold and impairment endorsement among 10-17-year-olds

The DISC-5 assessed impairment caused by symptoms across four domains: family (problems in relationships with caregivers, difficulties spending time with family), peer (difficulties spending time with peers), school or work (difficulties with school or work), and personal distress (whether the symptoms bothered or upset the adolescent). Impairment in more than one domain could be endorsed. Among those reporting impairment (n = 1,547), almost half reported impairment in the family domain (49.9%) while over two-fifths reported impairment with regard to personal distress (44.6%) or school/work (42.3%) (Table 9).

Table 9 : 12-month prevalence of mental health problems among 10-17-year-olds endorsing impairment by impairment domain

Impairment domain	Proportion, % (n)
Family	49.9 (772)
Peers	25.4 (393)
School or work	42.3 (655)
Personal distress	44.6 (690)

Weighted N = 1,547

Mental disorders

DSM-5 diagnostic criteria for any mental disorder were met by 12.2% (n = 627) of adolescents, with 2.4% (n = 126) having two or more mental disorders in the past 12 months. As shown in Figure 3, anxiety disorders had the highest prevalence (5.6%) of any mental disorder.

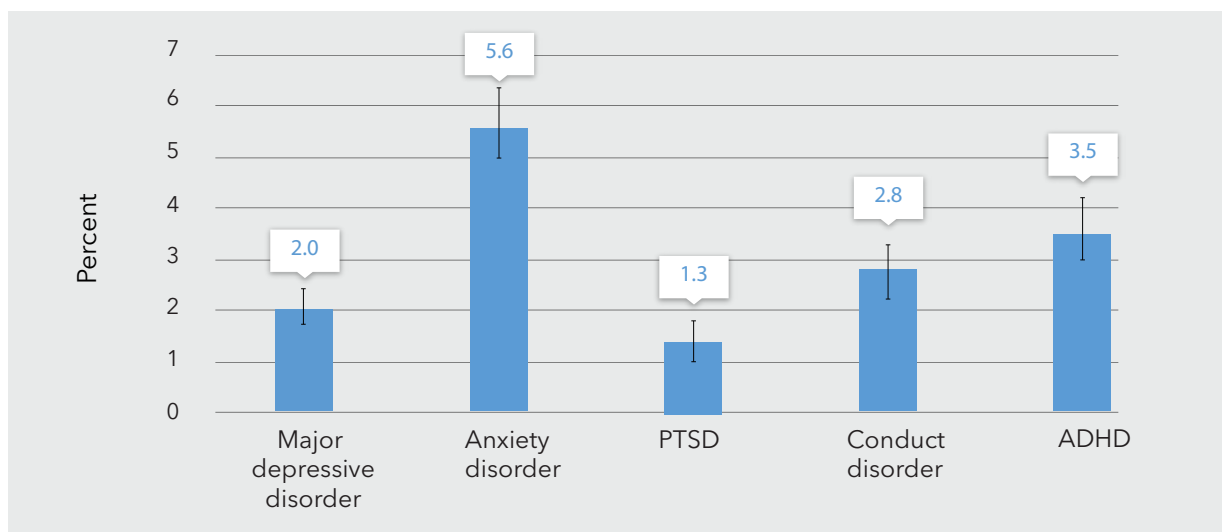


Figure 3 : 12-month prevalence of mental disorders among 10-17-year-olds by type

Table 10 shows the prevalence of mental disorders by sex. No difference in overall prevalence of mental disorders was seen between males (13.1%) and females (11.2%). Male adolescents had a higher prevalence of ADHD (4.7% vs 2.3%) and conduct disorder (4.0% vs 1.5%) as compared to female adolescents.

Table 10 : 12-month prevalence of mental disorders among 10-17-year-olds by sex

Mental disorder	Males, % (n)	Females, % (n)
Anxiety disorders	5.2 (133)	6.1 (157)
ADHD*	4.7 (122)	2.3 (60)
Conduct disorder*	4.0 (104)	1.5 (38)
Major depressive disorder	1.8 (46)	2.2 (57)
PTSD	1.3 (33)	1.4 (35)
Any mental disorder	13.1 (338)	11.2 (289)

*Significant difference between males and females for ADHD and conduct disorder
Weighted N: males = 338; females = 289

Similarly, no difference in overall prevalence of mental disorders was seen between younger (11.8%) and older (12.6%) adolescents overall (Table 11). Younger adolescents had a higher prevalence of ADHD (4.8%) compared to older adolescents (2.0%). Older adolescents had a higher prevalence of major depressive disorder (3.0%) and conduct disorder (3.6%) in comparison to younger adolescents (1.2% and 2.1%, respectively).

Table 11 : 12-month prevalence of mental disorders among 10-17-year-olds by age group

Mental disorder	10-13 years, % (n)	14-17 years, % (n)
Anxiety disorders	5.5 (154)	5.8 (136)
ADHD*	4.8 (133)	2.0 (48)
Conduct disorder*	2.1 (57)	3.6 (84)
Major depressive disorder*	1.2 (36)	3.0 (72)
PTSD	1.0 (28)	1.7 (40)
Any mental disorder	11.8 (328)	12.6 (298)

*Significant difference between younger and older adolescents for ADHD, conduct disorder, and major depressive disorder
Weighted N: younger adolescents = 332; older adolescents = 295

Of those with any mental disorder, close to two-thirds reported impairment in the family domain (63.0%), with over half reporting impairment in the school/work (56.4%) and personal distress (54.2%) domains, respectively (Table 12).

Table 12 : 12-month prevalence of mental disorders among 10-17-year-olds by impairment domain

Impairment domain	Proportion, % (n)
Family	63.0 (395)
Peers	35.8 (224)
School or work	56.4 (353)
Personal distress	54.2 (340)

Weighted N = 627

Suicidal behaviors and self-harm

Few adolescents reported suicidal behaviors in the past 12 months. Among the whole sample in the past 12 months, 4.6% reported suicidal ideation, 2.4% reported making a suicide plan, and 1.0% reported attempting suicide. Only 2.1% reported ever attempting suicide. However, as shown in Table 13, over 80% of those endorsing a suicidal behavior (ideation, planning, and/or attempt) in the past 12 months had a mental health problem while close to half had a mental disorder.

Table 13 : Suicidal behaviors among 10-17-year-olds

	Suicidal ideation in past 12 months, % (n)	Suicidal planning in past 12 months, % (n)	Suicide attempt in past 12 months, % (n)	Suicide attempt ever, % (n)
Mental health problem	83.5 (197)	87.8 (108)	94.7 (49)	84.9 (91)
Mental disorder	47.7 (112)	57.3 (70)	56.8 (30)	47.3 (51)

Weighted N: suicidal ideation (12m) = 236; suicide planning (12m) = 123; suicide attempt (12m) = 52; suicide attempt (ever) = 107

Slightly more than 4% of adolescents reported ever having done something to deliberately harm themselves (4.3%), with 1.2% reporting having self-harmed in the past 12 months. However, as shown in Table 14, almost all adolescents who reported deliberately harming themselves in the past 12 months had a mental health problem (89.6%), with half (50.3%) having a mental disorder.

Table 14 : Self-harm among 10-17-year-olds

Self-harm	Self-harm in past 12 months, % (n)	Self-harm ever, % (n)
Mental health problem	89.6 (55)	77.7 (171)
Mental disorders	50.3 (31)	36.5 (80)

Weighted N: self-harm (12m) = 61; self-harm (ever) = 220

Discussion

Interpretation

K-NAMHS found that mental health problems and mental disorders are common among adolescents in Kenya. Over two-fifths of adolescents (44.3%) had a mental health problem in the past 12 months, with one in eight adolescents (12.2%) meeting criteria for a mental disorder. A further 2.4% had more than one mental disorder in the past 12 months. Adolescents reporting suicidal behaviors and self-harm were more likely to be those with a mental health problem.

Only a handful of population-based studies have measured the prevalence of mental disorders among adolescents in Kenya. Overcoming methodological limitations in existing studies is a core feature of K-NAMHS and, as such, direct comparison is challenging given fundamental differences in methodology. Most existing studies are either based on clinical/hospital samples [24], focused on subpopulations (such as adolescents with HIV/AIDS [25] or pregnant adolescents [26]), or are limited in terms of geographic coverage, age groups, and measurement tools.

For instance, a study of depression and anxiety prevalence among Kenyan high school students (aged 12-19 years) found the prevalence of depressive and anxiety symptoms to be 45.9% and 38.0% respectively [27], using short symptom measures (the Patient Health Questionnaire-9 for depression and Generalized Anxiety Disorder-7 for anxiety). Further, unlike K-NAMHS, the study only covered Nairobi and did not include the youngest adolescent ages.

Similarly, another study that assessed emotional and behavioral problems during childhood and adolescence (ages 6-18 years) by administering the Child Behavior Checklist to parents and found 27% and 17% at the borderline and clinical range, respectively [6]. Again, this study utilized a short symptom measure not designed to comprehensively assess mental health problems nor determine the presence of a mental disorder. Many other small-scale studies that used similar symptom scales have also reported higher prevalence than K-NAMHS [25, 26, 28, 29]. The lack of existing comparable studies demonstrates the significant evidence gap addressed by K-NAMHS, as well as the importance of utilizing comprehensive measures across a nationally representative sample to better understand the prevalence of mental disorders in the adolescent population.

Limitations

While K-NAMHS was intentionally designed to address the methodological limitations of existing studies, some aspects of the K-NAMHS methodology may have impacted the reported prevalence. For example, interviews were administered face-to-face by a trained interviewer. It is possible that the stigma associated with mental health problems and general lack of awareness about mental health in the community impacted participant willingness to disclose information despite comprehensive interviewer training, the insistence on privacy as a requirement for the interview, and all participants being advised that collected data would be anonymous. A similar issue may have been present in regard to suicidal behavior and self-harm, particularly given the criminalization of suicide attempts in Kenya.

A further challenge may relate to the definitions of mental disorders as per the DSM-5 (as this is what the DISC-5 is based on). The DSM-5 was developed by the American Psychiatric Association and largely reflects Western-based criteria [18]. It is therefore possible that the established requirements for diagnosis may not account for cultural differences in how mental health is described, experienced, or expressed in a Kenyan population. For example, a diagnosis of conduct disorder according to the DSM-5 requires endorsement of specific behaviors that violate societal or age-appropriate norms. However, the norms on which the DSM-5 bases this diagnosis (and, subsequently, the behaviors included in the DISC-5) are US-centric. This posed a challenge when adapting the DISC-5 for the Kenyan context where, for example, antisocial behaviors such as animal cruelty and arson required further explanation and nuance to clearly distinguish them from culturally accepted practices related to agriculture and food preparation.

To address these challenges throughout the DISC-5 and ensure the fidelity of the tool, substantial efforts were made to adapt the DISC-5 for use in the Kenyan setting within the confines of the diagnostic requirements of DSM-5. This included careful translation of the instrument (including the DISC-5), back-translation, and review of back-translations by the NAMHS teams. Revisions were also made based on feedback from participants in initial trainings and a review of the instrument by in-country clinicians. The aim was to ensure that the language of the instrument (including grammar, idioms, and examples of behaviors) was adequately adapted to the Kenyan context while still measuring the same concepts as originally intended. Changes were also made in response to the pilot study (further described in the Appendix 2: Methodology) and revision continued throughout 2019 and 2020. In addition, face validity testing was conducted to improve the translation and meanings of some of the problematic concepts and questions that were identified during the pilot study. This was done according to a protocol developed by the UQ team. Finally, to better understand the potential interplay between cultural differences in mental health and the diagnostic requirements of the DSM-5, both 'mental health problems' and 'mental disorders' were included in this report. This allows a more comprehensive understanding of the mental health of the Kenyan adolescent population beyond the requirements for diagnosis established by the DSM-5.

Implications

The findings of K-NAMHS indicate that mental health problems and mental disorders are a common health issue among adolescents, with two-fifths of Kenyan adolescents experiencing a mental health problem in the past 12 months and one in eight meeting criteria for a mental disorder. This prevalence indicates that mental health is a public health issue that requires the attention of policymakers and planners in Kenya, and the data from K-NAMHS provides a foundational evidence base for such policy and health initiatives. For example, the vast majority of adolescents were currently attending school. As such, implementation of specific screening and management strategies, integrated with mental health promotion activities, within the school setting could be one vehicle to reduce the prevalence of mental health problems. Similarly, the observed age and sex differences in the prevalence of specific mental health problems and mental disorders indicate a potential opportunity for more targeted strategies. For example, designing school-based programs that focus on problems with inattention and/or hyperactivity among younger adolescents while developing depression management strategies for older adolescents could be a more effective use of limited resources. Preventive interventions targeting younger adolescents may also lower the risk of depression in older adolescence [30].



Service Use

Overview

The onset of mental disorders tends to occur during adolescence, offering a unique opportunity to provide early intervention and mental health services tailored to adolescents [31]. Effective treatment and support can decrease or resolve symptoms and improve functioning, while early positive experiences accessing mental healthcare can promote future help-seeking behaviors, reducing the burden on the individual and the health system into adulthood [32].

Understanding existing patterns of service utilization is necessary for adequate adolescent mental health service planning and delivery. Collecting information on service use patterns can help identify service delivery gaps, inform whether existing mental health services are appropriate and accessible, and address barriers to care. This is especially important for adolescents who face unique challenges in accessing care due to family pressure, peer influence, and difficulties in paying for services [33-35]. Further, both mental health stigma and lack of mental health knowledge can reduce help-seeking and impact an adolescent's or parents' 'perceived need' (i.e., whether an individual thinks that help is required). An understanding of what challenges are most pertinent to adolescents allows direct action to be taken to reduce barriers to improve service utilization and care outcomes for those experiencing mental health problems.

Evidence from international health surveys conducted in LMICs also show that few of those with mental disorders receive any treatment [36]. This may stem from various factors including the shortage of mental health services, lack of awareness of mental health in the community, and stigma surrounding mental disorders and accessing mental health services [11, 37, 38]. There is an acute shortage of mental health professionals and health facilities to effectively care for people with mental disorders in Kenya [11]. The specialist mental health workforce in Kenya consists of approximately 116 psychiatrists and fewer than 500 registered psychiatric nurses [11, 37]. The few available psychiatrists are clustered in major cities such as Nairobi and in private facilities. Moreover, there is a shortage of child and adolescent mental health specialists in the country [24]. Large populations in rural areas rely on informal sources such as traditional and faith healers who play an important role in provision of care for mental disorders, particularly as many individuals attribute mental disorders to spiritual dimensions [11, 39].

In addition, health insurance coverage is uncommon in Kenya. In 2016, only 19% of the population had any form of health insurance coverage [40]. Although mental health is covered under the National Hospital Insurance Fund (NHIF), employee insurance, and other insurance arrangements, membership of NHIF is based on monthly premium contributions which the majority of people in rural areas are unable to afford. As such, poverty and resource constraints are common barriers to accessing mental health services [41].

A qualitative study conducted with community health workers and traditional and faith healers from Makueni County in Kenya found that people wanting to access services lacked the funds to pay for public transport to the hospital or for food while away for treatment at referral facilities. They also identified logistical challenges during treatment at the referral facilities as barriers to care [42]. Such financial and resource constraints can also impact what types of services are accessed and from whom. For example, a study conducted in the informal settlements of Nairobi found that individuals with mental health problems reported that traditional healers were more affordable, accessible, and approachable than formal health professionals [43].

One of the core aims of K-NAMHS was to determine mental health service utilization among Kenyan adolescents, as well as levels of perceived need and barriers to care. This section outlines the measurement of service use, which was broadened to include any provider offering support or counselling for emotional and behavioral problems, and related factors in K-NAMHS and then presents the findings. Finally, considerations related to the interpretation and limitations of these findings and implications for policy makers are briefly discussed.

Measurement

Service use questions were asked to all participants, regardless of whether any mental disorder symptoms had been endorsed. To understand whether services had been accessed to support the adolescent's mental health, the term 'emotional and behavioral problems' was used to frame each service use question. This term was chosen to reduce any stigma or potential impact from a limited understanding of mental health terms. Additionally, 'emotional and behavioral problems' accounts for the broad range of ways that mental disorder symptoms can manifest, which differ across age groups and cultural settings. This approach is consistent with similar studies of mental health and service use implemented elsewhere [44]. Further, K-NAMHS recognized that the services used may include providers beyond formal healthcare services. For this reason, a broad range of service providers were included in the measures across health, education, religious/traditional, and other sectors. All questions related to the past 12 months and all were asked to the primary caregiver except for informal support and self-help strategies that were asked of the adolescent.

Findings

Service use frequency and type

Only 11.1% of adolescents with a mental health problem had used any service that provides support or counselling for emotional and behavioral problems in the past 12 months. Overall, 8.7% (n = 450) of adolescents had used a service in the past 12 months, with a higher proportion of females (10.3%; n = 185) than males (7.2%; n = 264) accessing services. Of those adolescents who had used services, most primary caregivers reported that these were helpful or very helpful (95.3%). Table 15 shows that almost a third (29.4%) of these adolescents had used services only once. Among those who had accessed services, no differences were seen between males and females except for females being more likely to access services five or more times (41.2%) compared to males (25.2%).

Table 15 : Frequency of accessing services providing support or counselling for emotional and behavioral problems in the past 12 months among 10-17-year-olds by sex

Sex	Once, % (n)	2-4 times, % (n)	5 or more times, % (n)*
Males	35.2 (65)	38.6 (72)	25.2 (47)
Females	25.4 (67)	33.1 (87)	41.2 (109)
Total	29.4 (132)	35.3 (159)	34.6 (156)

*Statistically significant difference between females and males for this category
Weighted N: males = 185; females = 264; total = 450

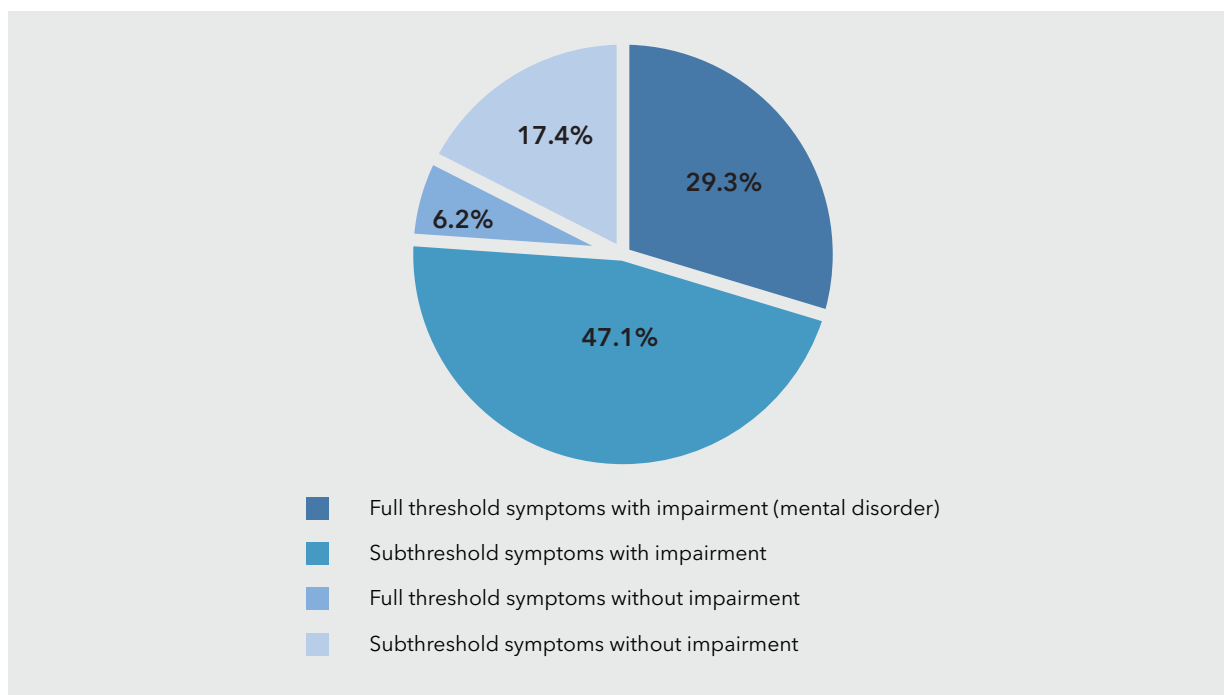
A third (34.2%) of adolescents sought services from religious/faith leaders the most, followed by school staff (31.9%). Only 10% of those who received services for emotional and behavioral problems accessed services from a doctor or nurse the most, while just 2% accessed services from psychiatrists (Table 16).

Table 16: Service provider used most for emotional and behavioral problems in the past 12 months among 10-17-year-olds

Type of service provider	% (n)
Religious/faith leader	34.2 (154)
School staff	31.9 (144)
Doctor or nurse	10.0 (45)
Community health worker	8.6 (39)
Specialist e.g., psychiatrist	2.1 (9)
Other	12.6 (57)

Weighted N = 540

Of those who had accessed services, over half (56.4%) had a mental health problem. However, more than two-fifths (43.6%, n = 196) of those who had accessed services in the past 12 months did not report sufficient symptoms on the DISC-5 to indicate the presence of a mental health problem. As shown in Figure 4, adolescents with a mental health problem who had accessed services were more likely to report impairment, regardless of whether they endorsed full threshold (29.3%, n = 74) or subthreshold (47.1%, n = 119) symptoms.



Weighted N = 254

Figure 4: Symptom threshold and impairment endorsement among 10-17-year-olds with a mental health problem using services in the past 12 months.

Perceived need and barriers to care

Approximately one in six (17.0%, n = 878) primary caregivers reported that their adolescent had needed help for emotional and behavioral problems in the past 12 months. Among those reporting that their adolescent needed help, only 18.2% (n = 160) reported that their adolescent had received all the help they needed. As shown in Table 17, close to a quarter of primary caregivers reported not knowing where to access help (24.3%) while an equal proportion reported that they preferred to handle the problem themselves or with the support of family (24.1%). Note that primary caregivers were able to endorse multiple options with the exception of those who indicated that none of the listed reasons applied.

Table 17 : Barriers to seeking help or receiving help for emotional and behavioral problems in the past 12 months among primary caregivers of 10-17-year-olds

Reason	% (n)
Wasn't sure where to get help	24.3 (213)
Preferred to handle adolescent's problems alone or with the support of family	24.1 (212)
Wasn't sure if adolescent needed help	12.9 (112)
There wasn't anywhere to get help	11.7 (103)
Thought the problem would get better by itself	10.6 (93)
It cost too much or our family couldn't afford it	9.5 (83)
None of these reasons (other) [^]	7.5 (66)
There was a problem getting to a service that could help	6.9 (60)
Asked for help but didn't get it	4.8 (43)
Didn't want to discuss it with a stranger	3.1 (27)
Worried about what other people may think	2.7 (24)
Adolescent refused help/did not show up at appointment/did not think they had a problem	1.4 (12)
Couldn't get an appointment when it was needed	1.0 (9)

Weighted N = 878

[^] Only available as a single choice option

Informal support

All adolescents were asked about who they usually speak to when they have worries or concerns. Except for those who opted not to speak with anyone (12.7%), adolescents were able to select more than one option. Over three-quarters (78.9%) said they spoke to a family member while a quarter (25.1%) endorsed speaking to a friend (Table 18).

Table 18 : Person spoken to when having worries or concerns among 10-17-year-olds

Who the adolescent usually talks to when they have worries or concerns	% (n)
Family member	78.9 (4,067)
Friend	25.1 (1,294)
Teacher	7.0 (361)
Religious/faith leader	2.2 (111)
Community member	1.5 (79)
Partner (boyfriend/girlfriend)	1.1 (57)
Doctor	0.5 (24)
Other	0.5 (26)

Self-help strategies

All adolescents were asked about their strategies for managing and preventing emotional and behavioral problems over the past 12 months. Adolescents could select more than one option except for when they indicated that they did not use any self-help strategies (16.7%). Table 19 shows that more than two-fifths of adolescents (42.8%) reported doing more exercise or said they started playing a sport. This was followed by engaging in more of the activities they enjoy (34.1%), seeking support from family (26.1%), and praying (25.9%).

Table 19 : Self-help strategies used to manage or prevent emotional and behavioral problems among 10-17-year-olds

Self-help strategy	% (n)
Did more exercise or took up a sport	42.8 (2,207)
Did more of the things you enjoy	34.1 (1,760)
Sought support from family	26.1 (1,343)
Prayed	25.9 (1,332)
Sought support from friends	17.3 (890)
Meditated or did relaxation therapy	16.9 (869)
Improved diet	12.3 (636)
Sought information in books, magazines or on TV	8.9 (458)
Joined a social group	3.3 (171)
Sought support through social networking	1.1 (57)
Stopped smoking, drinking alcohol or using drugs	0.3 (16)

Discussion

Interpretation

The findings indicate a large unmet need for mental health services among adolescents in Kenya. Only 8.7% of adolescents had used any service that provides support or counselling for emotional and behavioral problems in the past 12 months, while only 11.1% of adolescents with a mental health problem accessed services in the past 12 months. This finding is in line with international surveys that indicate that the majority of people in LMICs with mental disorders do not receive treatment [36]. In addition, although about one in six (17.0%) primary caregivers indicated that their adolescent needed help for emotional and behavioral problems, less than one-fifth (18.2%) of these primary caregivers reported that their adolescent had received all the help they needed.

Measures of barriers to care among primary caregivers identifying that their adolescent needed help appeared to have some relation to both mental health literacy and stigma. That close to a quarter of primary caregivers (24.3%) reported not knowing where to get help is concerning, given the majority of adolescents (78.9%) reported speaking to a family member when having worries or concerns. This indicates that the family (particularly caregivers) are the likely 'gatekeepers' within the home to accessing mental health services. Further, the preference by a quarter (24.1%) of these primary caregivers to handle their adolescent's problem themselves may indicate a level of stigma surrounding accessing support for mental health. Previous studies from Kenya also identified lack of awareness of mental health in the community, and stigma against mental illness and mental health services as barriers to accessing services [11, 37, 38].

Limitations

The K-NAMHS findings regarding service use for emotional and behavioral problems should be interpreted with some caution. First, the small number of adolescents accessing services makes it difficult to identify clear patterns in service use (e.g., provider type). However, these findings are a starting point and, at the broadest level, demonstrate the unmet need and barriers to care among the Kenyan adolescent population. Second, most questions were asked of the primary caregiver rather than the adolescent due to considerations related to the potential length of the interview. This means that the adolescent's perspectives, particularly regarding barriers to care, is not measured. However, given that the majority of adolescents reported speaking to a family member whenever they have worries or concerns, the caregivers' role as 'gatekeeper' to accessing mental health services indicates that the primary caregiver is well-placed to provide information on barriers to care that are most pertinent to policymakers. Further, the service use questions asked of the primary caregiver could be easily adapted to adolescent respondents in future studies.

Implications

While the findings of K-NAMHS indicate a large unmet need for mental health services, they also show areas where efforts would potentially be most effective. For example, over a third (34.2%) of primary caregivers who accessed services for their adolescent's emotional and behavioral problems reported doing so most through religious/faith leaders. This finding may reflect the strong ties that families have with faith communities, the high regard for faith leaders within communities, or the lack of other available options for mental health support. It may also reflect existing cultural beliefs attributing mental disorders to witchcraft, ancestral curses, or evil spirits [45, 46]. The implication of this finding is two-fold. First, there is an opportunity to engage religious/faith leaders and promote mental health awareness and literacy within this sector, as well as to potentially establish pathways for referral to clinical services if needed by an individual. Programs providing mental health education and services should also consider working with religious/faith leaders to provide mental health outreach and basic support. Similarly, a high proportion of primary caregivers endorsed accessing services from school staff the most for emotional and behavioral problems in the past 12 months.

In addition to the potential school-based strategies and programs mentioned earlier in this report, there may also be an opportunity to establish mechanisms for referral to clinical services through schools as well as training for appropriate school staff. Second, efforts to increase mental health literacy among families, both in regard to the concept of mental health as well as where and how to access services, is important as the majority of adolescents report speaking to a family member when they have worries or concerns.

In addition to increasing the propensity of adolescents and their families to seek help, it is equally important to improve the availability of mental health services for adolescents. This requires recognition of mental disorders in appropriate policies and strategies that can guide improved resource allocations for adolescent mental health. Further, given the shortage of specialist mental health professionals, promoting task shifting by training lower-level health workers such as community health workers is essential to provide community-based services. As highlighted in the Mental Health Policy of 2015 and the recent Mental Health Action Plan (2021-2025) [9, 47], improving access to comprehensive and integrated preventive, curative and rehabilitative mental health services at all levels of healthcare is essential. The findings of K-NAMHS indicate that such opportunities for task-shifting exist, particularly in the religious/faith sector and the school sector, which were endorsed as the most commonly used providers among those who accessed services. Further, data from K-NAMHS can be used as a starting point to determine the level and distribution of service need based on the proportion of adolescents with mental health problems who endorsed impairment, as well as those meeting criteria for a mental disorder. Future analysis of different levels of impairment among those with mental health problems and mental disorders, as well as other factors measured by NAMHS but not reported here, can further establish an evidence base for effective service planning.



COVID-19

Overview

The COVID-19 pandemic impacted the lives of adolescents across the globe through the enforcement of containment measures (including school closures) leading to social isolation, restructured daily routines, and household stress. In Kenya, the first case of COVID-19 was reported on March 12, 2020. The subsequent increase in the number of cases resulted in the Government of Kenya instituting precautionary and preventive measures to control the spread of the virus. The measures included the suspension of public gatherings, temporary closure of schools, bars, and restaurants, a dusk-to-dawn curfew, and restricted travel between counties with high infection rates [48]. Schools remained closed until January 2021 although other measures were relaxed during periods where COVID-19 cases declined. According to data from the World Health Organization (WHO), by July 15, 2022, there had been 336,445 confirmed cases of COVID-19 and 5,668 COVID-19-related deaths in Kenya [49]. During the height of the COVID-19 pandemic in 2020 and 2021, families experienced reduced household income and food insecurity while children and adolescents experienced increases in mental health problems and witnessed increases in family violence [50-53].

Understanding how the COVID-19 pandemic may have affected adolescent mental health is necessary for future pandemic preparations and for providing the support that young people need to address what some are referring to as “a lost generation” [54]. Currently, there is a lack of nationally representative data from either adolescents or their parents on how the COVID-19 pandemic has impacted their lives in relation to mental health and wellbeing. The delay to the commencement of data collection for K-NAMHS provided a unique opportunity to develop a series of questions designed specifically for this purpose. This section outlines how elements of the COVID-19 pandemic most pertinent for K-NAMHS were measured. Considerations related to the interpretation and limitations of these findings are then briefly discussed.

Measurement

The COVID-19 questions focused on factors most likely to be associated with mental health as per the core aims of K-NAMHS. It was not intended nor designed to be a comprehensive measure of all experiences during the COVID-19 pandemic. The questions were specifically designed for the survey, initially based on a review of relevant literature and then in consultation with all five international NAMHS teams. Questions related specifically to experiences during the pandemic were asked both of the primary caregiver and the adolescent.

Both the primary caregiver and the adolescent were first asked if they had heard of COVID-19. Those who had were then asked a series of questions related to their experiences. The primary caregiver was asked questions about their direct contact with COVID-19, quarantine, stigma, economic impacts on the household (including any change in household income and insufficient funds for necessities), and changes to their own use of alcohol and illicit drugs.

The primary caregiver was asked questions about their direct contact with COVID-19, quarantine, stigma, economic impacts on the household (including any change in household income and insufficient funds for necessities), and changes to their own use of alcohol and illicit drugs. The primary caregiver was also asked about their adolescent's need for help for emotional and behavioral problems during the pandemic, whether they used services for these problems during the pandemic, and what barriers related to COVID-19 stopped them from getting the help for their adolescent.

The adolescent was asked about their education status (including their school situation during the pandemic and whether they permanently stopped going to school during the pandemic) and different experiences during the COVID-19 pandemic (including witnessing violence between adults in the household, use of alcohol and illicit drugs by adults in the household, and their own alcohol and illicit drug use). Further, they were also asked about increases in specific emotional and behavioral problems during the COVID-19 pandemic and whether they had someone to talk to while experiencing these problems.

Findings

As shown in Table 20, one in six adolescents (16.4%) reported often experiencing at least one emotional or behavioral problem more than usual during the COVID-19 pandemic, with no differences between males and females.

Table 20 : Proportion often experiencing emotional and behavioral problems more than usual during the COVID-19 pandemic among 10-17-year-olds by sex

Sex	More anxious or stressed, % (n)	Sadder or more depressed, % (n)	More problems concentrating, % (n)	More lonely or isolated, % (n)	Total (increase in any problem), % (n)
Males	12.3 (317)	7.9 (203)	5.3 (137)	3.9 (100)	17.0 (439)
Females	10.4 (266)	7.3 (188)	6.3 (161)	3.6 (94)	15.7 (404)
Total	11.3 (583)	7.6 (390)	5.8 (298)	3.8 (194)	16.4 (844)

Weighted N: males = 2,581; females = 2,574

A total of 15.1% (n = 779) of primary caregivers reported that their adolescent needed help for emotional and behavioral problems during the COVID-19 pandemic. Of those, most (n = 557) did not access services. These primary caregivers reported not accessing services for a variety of reasons (note that more than one reason could be endorsed) including fear of contracting COVID-19 (36.8%; n = 205), health services being unavailable because of the COVID-19 pandemic (34.8%; n = 194), or other reasons (31.3%; n = 175).

Figure 5 shows the proportion of adolescents endorsing different experiences occurring during the COVID-19 pandemic and the proportion of adolescents who reported that this was an increase compared to before the pandemic. Close to 10% (9.8%) of adolescents reported witnessing adults in the household use illicit drugs or drink alcohol. A quarter of these (2.5%) reported that this was an increase in comparison to the period before the pandemic.

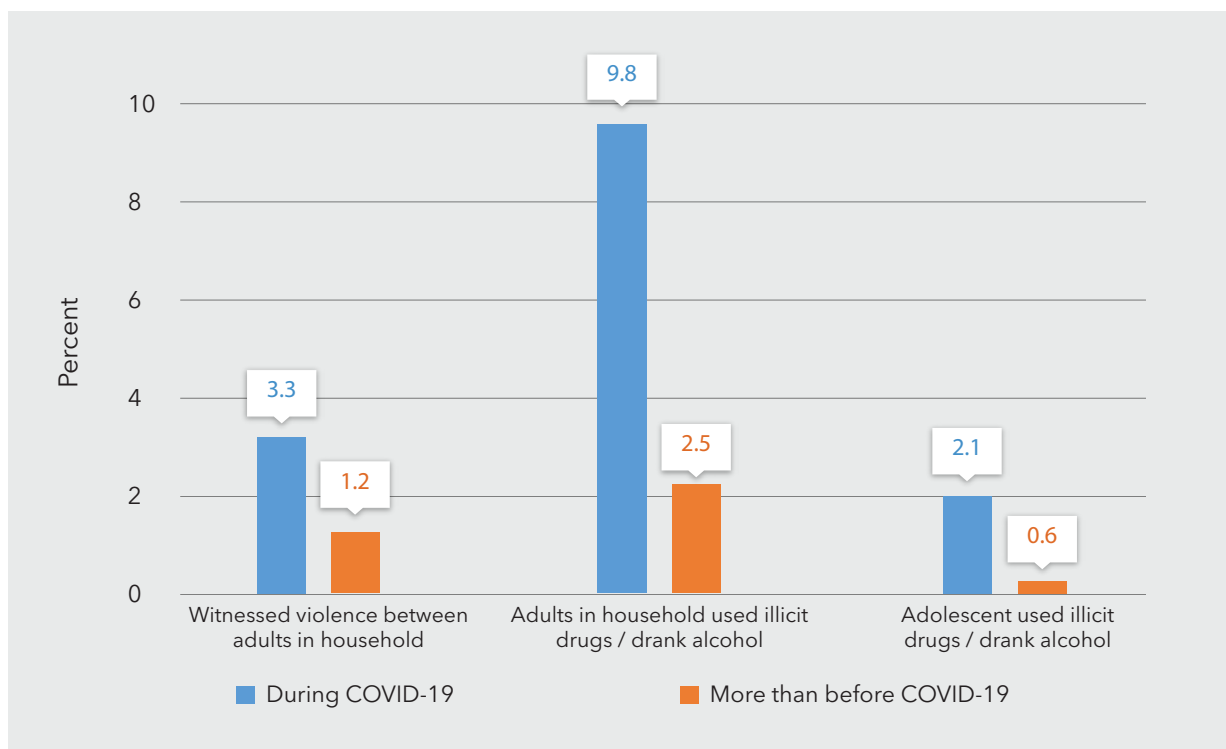


Figure 5 : Experiences during the COVID-19 pandemic among 10-17- year-olds

In terms of the economic impacts on the household, over three-quarters of primary caregivers (77.8%) reported a decrease in household income during the COVID-19 pandemic while almost a third (32.2%) reported that they often did not have enough money for necessities.

Discussion

Interpretation

One in six adolescents reported often feeling more depressed, more anxious, more isolated, or having more problems concentrating during the COVID-19 pandemic. A previous study conducted in Kenya found that almost half of adolescents experienced depressive symptoms during the COVID-19 pandemic [55]. While the findings from K-NAMHS appear lower, K-NAMHS specifically measured increases in emotional and behavioral problems as opposed to measuring current prevalence only. Other studies conducted in LMICs have also reported increases in the rates of anxiety and depression among adolescents during the COVID-19 pandemic [56].

While approximately 15% of primary caregivers reported that their adolescent needed help for emotional and behavioral problems during the COVID-19 pandemic, almost three-quarters of them reported that they did not seek help, either because of fear of contracting COVID-19 (36.8%) or because services were unavailable during the pandemic (34.8%). This is in line with studies conducted in LMICs that also reported that a considerable proportion of adolescents and young people felt that they needed help related to their physical and mental wellbeing during the COVID-19 pandemic but did not ask for help [57].

Limitations

While K-NAMHS provided a unique opportunity to assess the impacts of the COVID-19 pandemic on adolescent mental health and wellbeing, the study was not designed nor intended to comprehensively measure all aspects of the COVID-19 pandemic.

Rather, the questions were designed to provide a brief 'snapshot' of the COVID-19 pandemic in the context of K-NAMHS and provide the opportunity for future analysis accounting for the impact of the pandemic. It is possible that some relevant aspects of the pandemic period were not captured. Further, the majority of adolescents had returned to school by the time data collection commenced. As such, there may be some recall bias about the impacts of the COVID-19 pandemic on mental health and experiences during that time. While initially there were concerns that fears around contracting COVID-19 may impact the response rate of K-NAMHS and potentially bias the findings, the final response rate of 97.9% indicates that this was not an issue.

Implications

The findings of K-NAMHS demonstrated that the COVID-19 pandemic adversely impacted the mental health and wellbeing of Kenyan adolescents. These findings, coupled with those regarding service use more broadly (outlined earlier in this report), demonstrate the need for ensuring appropriate and accessible adolescent mental health services for this cohort of young people. For example, services that are easy to access (such as phone lines or online chat services) may be a prudent approach to initially address the potentially large unmet need for services while also ensuring that crisis care and continuity of existing mental health care can be ensured during unforeseen circumstances. In these situations, tailored health promotion may also be useful to target adolescents who have developed mental health problems in relation to specific stressors e.g., loneliness and depression related to school closures. Adolescents who need to access services for the first time may be particularly vulnerable, and public health messaging that provides knowledge, reduces stigma, and normalizes mental health may be of particular importance. The reported increase in emotional and behavioral problems during the COVID-19 pandemic highlights the importance of including mental health in planning for future population-level events such as pandemics, natural disasters, and conflict.

Appendix 1: Measures

The measures administered to the primary caregiver and adolescent are shown below. This information was adapted from Erskine et al., 2021 [15].

Primary caregiver interview

Measure	Description
Demographics	Collects demographic information pertaining to the household, adolescent, and primary caregiver. Eligibility is also assessed in this module according to the exclusion criteria detailed in the Introduction under 'Who participated in K-NAMHS'?
Chronic illness	Measures serious or chronic illness experienced by the adolescent or caregiver/s.
Pediatric Symptom Checklist - 17 (PSC-17)	Brief screening questionnaire that assesses internalizing and externalizing symptoms in adolescents, used to measure the primary caregiver's perspective of the adolescent's mental health.
Patient Health Questionnaire - 9 (PHQ-9)	Brief screening measure used to screen the primary caregiver's depressive symptomology.
Generalized Anxiety Disorder - 7 (GAD-7)	Brief screening measure used to screen the primary caregiver's anxious symptomology.
DISC-5: Introductory module	Establishes a timeline of significant events in the past 12 months to assist the participant with recall and instructs participants on how to answer questions in the DISC-5 modules.
DISC-5: ADHD	Measures the prevalence of ADHD in the past 12 months.
Service use	Collects information from the primary caregiver about service use, barriers to care, and perceived need for care in relation to the adolescent.
COVID-19	Measures direct contact with COVID-19, stigma, economic impact on the household, substance use by the primary caregiver, and the adolescent's service use during the COVID-19 pandemic.

Adolescent interview

Measure	Description
DISC-5: Introductory module	Establishes a timeline of significant events in the past 12 months to assist the participant with recall and instructs participants on how to answer questions in the DISC-5 modules.
DISC-5: Social phobia	Measures the prevalence of social phobia in the past 12 months.
DISC-5: Generalized anxiety disorder	Measures the prevalence of generalized anxiety disorder in the past 12 months.
DISC-5: Major depressive disorder	Measures the prevalence of major depressive disorder in the past 12 months. Includes suicidal behavior questions which are asked of all adolescents.
Self-harm	Measures the prevalence, age of onset, and recency of self-harm.
DISC-5: Conduct disorder	Measures the prevalence of conduct disorder in the past 12 months.
DISC-5: PTSD	Measures the prevalence of PTSD in the past 12 months.
Informal help and self-help strategies	Collects information about informal help and self-help strategies.
Self-rated health and body image	Measures the adolescent's self-rated health and body image.
Physical activity	Measures the adolescent's physical activity.
Media and internet use	Collects information about the adolescent's problematic internet and media use behaviors.
Rosenberg Self-Esteem Scale	Brief standardized measure of self-esteem.
Bullying	Measures bullying victimization and perpetration frequency, including the mode of bullying.
School and education	Measures academic aspirations (both current and past aspirations depending on current school status), expectations, and pressure.
Peer relationships and loneliness	Collects information about the adolescent's friendships (including peer deviance) and loneliness.
GEAS Family Connectedness	Collects information about the adolescent's relationship with their primary caregiver.
Religiosity	Measure of perceived support from faith community.
Safety and security	Measures perceived personal safety in different contexts e.g., home, school, and the neighborhood.
Sexual behavior*	Collects information on the adolescent's sexual behavior, sexuality, and gender identity. Only asked to adolescents aged 12-17 years-old.
Adverse Childhood Experiences (ACEs) questionnaire*	Measures lifetime exposure to multiple types of abuse, neglect, violence between parents or caregivers, other kinds of serious household dysfunction, and violence.
Substance use*	Measures of use of cigarettes, alcohol, cannabis, and other illicit drugs.
COVID-19	Measures direct contact with COVID-19, education impacts, household/individual adversities, and emotional and behavioral problems during the COVID-19 pandemic.

* These modules were self-administered by the adolescent.

Appendix 2: Methodology

Sampling frame

K-NAMHS employed a multi-stage stratified sampling design to generate a nationally representative sample of adolescents and their primary caregiver. A total of 5,290 households were randomly sampled from 236 EAs in 14 counties across Kenya. The sample size was determined using standard survey methodology and incorporated available prevalence estimates, response rates of previous large-scale surveys, relevant design effects, and a margin of error. Sampling was done without replacement as non-response was factored into the sample size for each country. The following formula and assumptions were used in the calculation of sample size:

The formula for the sample size, n_h , is given as [58];

$$n_h = \frac{(z^2)(r)(1-r)(f)(k)}{(p)(\check{n})(e^2)}$$

where:

- n is the sample size
- z , level of confidence, is set at 1.96 for the 95 percent level of confidence.
- r is an estimate of the expected lowest prevalence of mental disorders.
 - GBD estimated the prevalence of conduct disorder among boys and girls aged 10 - 19 years in Kenya at 3.6% [5]. This estimate was used as a proxy for mental disorders among adolescents aged 10-17 years in this survey.
- f is the sample design effect assumed to be 2.0 (default value) since sampling will be conducted at a minimum of two stages.
- k is a multiplier required to account for the anticipated rate of non-response. For adult populations and in previous adolescent studies in Kenya, non-response has normally been estimated at 10% such that $k = 1.1$.
- p is the proportion of adolescents in the total population. This is set at 19.3% [59].
- \check{n} is the number of young people aged 10-17 years per household. The entire household size is estimated at 3.9 people according to the 2014 Kenya Demographic Health Survey [60]. Considering that 19.3% of the population comprises adolescents aged 10-17 years, the number of adolescents per household is estimated at 0.75.
- e is the level of precision to be attained set at 50% of r such that $e = 0.0180$ (preferred instead of the usual 0.05 for rare events with prevalence of less than 10%).

Based on the formula and assumptions shown above, approximately 4,690 adolescents were required for the survey. In addition, two urban slum sites were identified for oversampling ($n = 600$) in order to generate separate prevalence estimates for urban slum populations. With the additional sample from the urban slums, the required sample size was 5,290 households.

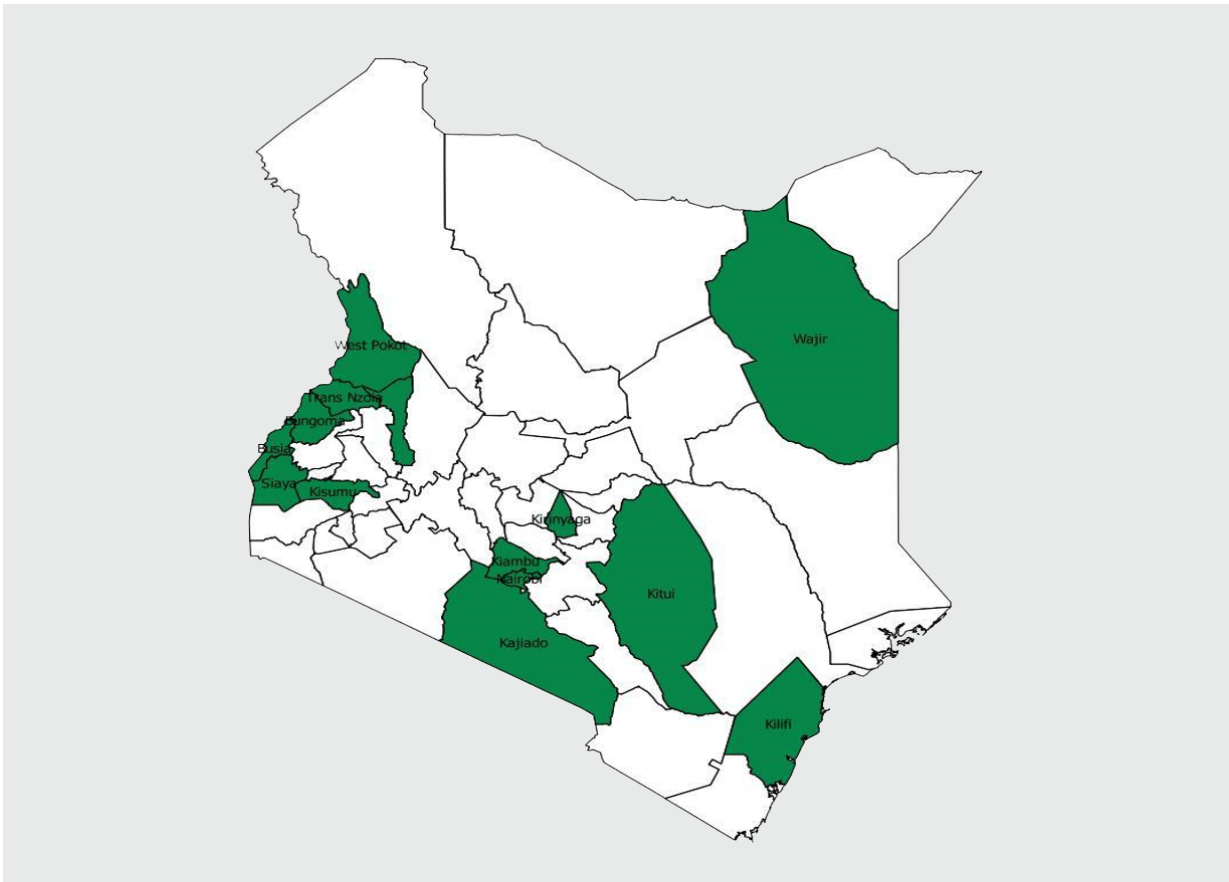


Figure 6 : Map of counties in Kenya sampled for K-NAMHS

Figure 6 shows the 14 counties included in K-NAMHS. The counties sampled covered all eight regions (formerly provinces) of Kenya to further ensure nationally representative data. The Kenya National Bureau of Statistics (KNBS) determined the sampling frame and sampled EAs from the National Sample Survey and Evaluation Programme (NASSEP-V) EA sampling frame as used in Kenya Demographic and Health Survey [60]. For the two urban slum sites, the sampling frame of the Nairobi Urban Health and Demographic Surveillance System (NUHDSS) was utilized, and the data was further weighted using a post-stratification approach based on consultation with KNBS and international experts.

After the selection of the EAs by the KNBS, the K-NAMHS team carried out a household listing operation in all selected EAs before the start of fieldwork. This consisted of teams visiting each of the selected EAs to record all households in the EA and their addresses with the help of village chiefs. This list of households served as the sampling frame for the third stage of sample selection.

Pilot study

A pilot study was conducted in the Riruta Ward of Nairobi County from November 18 to 27, 2019. Six experienced field interviewers were recruited and trained to conduct the pilot study. Of the 70 households that were listed for the interviews, 57 were interviewed and 53 complete pairs of primary caregiver-adolescent interviews were successfully submitted. The pilot study was conducted to test consistency and coherence of study questions, length of interviews, language appropriateness, and administration of difficult or sensitive questions. The pilot study was also used to test how well the tools were programmed in the SurveyCTO platform as well as to inform survey planning and organization.

A debrief meeting was held after the pilot study where the field interviewers shared experiences and challenges identified during the data collection. Most of the challenges were related to the length of the tools, comprehension difficulties for younger adolescents, and programming issues. These challenges were reviewed and necessary revisions were made to the instrument prior to data collection.

Cognitive testing

To further address issues raised during the pilot study, the K-NAMHS team also conducted face validity testing for a number of questions that had been identified as potentially problematic during the pilot study. The methodology for cognitive testing followed a protocol developed specifically for NAMHS by the UQ team, with input from all NAMHS teams. Accordingly, in-depth qualitative interviews were conducted with 12 adolescents of different ages and sex. These interviews involved exploring each flagged question with the adolescent to determine what they understood as the question's meaning and intention, whether the translation made sense, how appropriate the wording was based on context, and alternative framings to the question that would make it easier to comprehend. The findings from this face validity testing informed changes to the translation, wording, and framing of the questions that were made before data collection commenced.

Fieldwork

Data collection for K-NAMHS commenced on March 22, 2021. A total of 68 trained field interviewers and team leaders administered the survey across Kenya. The field teams worked closely with the local/community leaders to get the necessary local approvals to collect data and mobilize study participants in various counties. The teams also worked with KNBS staff to identify study boundaries during household listing and mapping in the 14 counties. Data collection for K-NAMHS was completed on July 28, 2021, although the completion dates varied by county. Fourteen teams of four to six interviewers were deployed in each of the selected counties. There was a deliberate effort to have the field research teams work in their local counties where they understood the context, culture, and could navigate the terrain easily. In each team, there was a team leader whose role was to oversee all data collection activities in the county and report any challenges to the project team members. The project team members conducted regular field visits to monitor the progress of data collection.

Community mobilization and sensitization preceded household listing and data collection. At the county level, project team members organized meetings with county health leadership where they presented study approvals and permits. Team leaders and onsite enumerators from KNBS led community engagement at the EA level. Approvals from community leadership to carry out the survey in the site were sought by the research team. Household listing was conducted in all EAs before data collection. The field research team leaders worked with the KNBS enumerators to identify EA demarcations and strategize on the best approach to cover the whole EA for the household listing exercise. Village elders and local guides supported the team when entering communities and locating households. During the household listing visit, the head of the household or their representative was interviewed about the membership of their household and a list of members developed. Data generated from the household listing exercise was then used to sample households with adolescents, who were the target for the study.

About 30 households with adolescents were randomly sampled and approached for interview in each EA.

Team leaders assigned codes to each sampled household within an EA and ensured that the sampled households were the only ones that were approached for interviews. An eligible adolescent, randomly selected by the SurveyCTO program, and their primary caregiver were interviewed in each household. Sampled households that did not agree to participate were not replaced but were documented as refusals.

Appendix 3: Research teams

African Population and Health Research Center

Dr. Yohannes Dibaba Wado	K-NAMHS Project Manager
Dr. Frederick Wekesah	K-NAMHS Senior Research Officer
Sally Odunga	K-NAMHS Research Officer
Vivian Nyakangi	K-NAMHS Research Officer
Dr. Caroline W. Kabiru	K-NAMHS Technical Lead
Anne Njeri	K-NAMHS Data Analyst

University of Queensland

Dr. Holly Erskine	NAMHS Principal Investigator
Prof Harvey Whiteford	NAMHS Senior Advisor
Prof James Scott	NAMHS Clinical Advisor
Dr. Sarah Blondell	NAMHS Senior Research Officer
Krystina Wallis	NAMHS Research Officer
Cartiah McGrath	NAMHS Research Officer

Johns Hopkins Bloomberg School of Public Health

Prof Robert Blum	JHSPH NAMHS Project Lead
Dr. Shoshanna Fine	JHSPH NAMHS Postdoctoral Fellow
Mengmeng Li	JHSPH NAMHS Data Analyst
Astha Ramaiya	JHSPH NAMHS Research Associate

Appendix 4: Glossary

Term	Definition
12-month prevalence	<p>Meeting established criteria for mental health problem or mental disorder as measured by the DISC-5 in the 12 months prior to the interview.</p> <p>This includes those whose symptoms first developed during the 12 months prior to the interview, and those whose symptoms developed earlier but who continued to meet criteria during the past 12 months.</p>
Adolescent	<p>A young person aged 10-17 years.</p> <p>While WHO defines adolescents as those aged 10-19 years-old, adolescents aged 18-19 years-old were excluded from the study as they are more likely to be living independently and/or working away from home. Further, diagnostic measures (such as the DISC-5) are not designed to be administered to people aged 18 years and older who are normally assessed using instruments designed for adults in surveys focused on adults.</p>
Anxiety disorders	<p>A class of mental disorders defined by excessive fear and anxiety. Social phobia and generalized anxiety disorder were the two anxiety disorders included in this survey.</p>
Attention-deficit/hyperactivity disorder (ADHD)	<p>Characterized by persistent patterns of inattention and/or hyperactivity-impulsivity. Adolescents may have troubles with attention and concentration, have excessive movement and/or trouble controlling impulsive behaviors. These behaviors are inconsistent with the adolescent's age or developmental level and occur across numerous settings.</p> <p>The DISC-5 ADHD module was administered to the primary caregiver.</p>
Conduct disorder	<p>Characterized by a repetitive pattern of behaviors violate the rights of others and/or major societal rules or norms. The behaviors can include aggression to people or animals, destruction of property, deceitfulness or theft, or a serious violation of rules.</p> <p>The DISC-5 conduct disorder module was administered to the adolescent.</p>
Diagnostic criteria	<p>A set of specific requirements an adolescent must meet in order to be considered to have a mental disorder. Criteria can include:</p> <ul style="list-style-type: none"> • A set number or combination of symptoms • The age of onset for symptoms or behaviors • Frequency and duration of symptoms • Distress or impairment <p>In K-NAMHS, diagnostic criteria were determined according to DSM-5 (see below).</p>
Diagnostic Interview Schedule for Children, Version 5 (DISC-5)	<p>A fully structured diagnostic instrument designed to identify children or adolescents meeting DSM-5 diagnostic criteria for a mental disorder.</p> <p>Six diagnostic modules from the DISC-5 were included in the survey and adapted to ensure cultural relevance while maintaining conceptual consistency.</p>
Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5)	<p>Definition of individual mental disorders published by the American Psychiatric Association and used to define and diagnose mental disorders.</p>
Full threshold symptoms	<p>Endorsement of all symptoms required to meet DSM-5 diagnostic criteria for a mental disorder (noting that impairment must also be endorsed to be given a DSM-5 mental disorder diagnosis).</p>

Term	Definition
Generalized anxiety disorder	<p>Characterized by excessive anxiety and worry about a number of events or activities. The intensity, frequency, and duration of the anxiety and worry is out of proportion to the actual likelihood or impact of the anticipated event.</p> <p>The DISC-5 generalized anxiety disorder module was administered to the adolescent.</p>
Impairment	<p>Where symptoms of a mental disorder adversely impact or interfere with functioning and/or different aspects of an adolescent's life.</p> <p>Endorsement of impairment is required to meet DSM-5 diagnostic criteria for a mental disorder (along with endorsement of all required symptoms i.e., full threshold symptoms).</p>
Impairment domains	<p>In the DISC-5 impairment was assessed by six questions which measured impairment caused by symptoms across four domains: family (problems with relationships with caregivers, difficulties spending time with family), peer (difficulties spending time with peers), school or work (difficulties with school or work), and personal distress.</p>
Major depressive disorder	<p>Characterized by a period of at least two weeks during which there is depressed mood, loss of interest or pleasure in nearly all activities, and/or irritability. These feelings are also associated with other physical symptoms such as fatigue, sleep disturbances or concentration issues.</p> <p>The DISC-5 major depressive disorder module was administered to the adolescent.</p>
Mental disorder	<p>A mental disorder is a clinically significant behavioral or psychological syndrome or pattern that occurs in an individual and is associated with present distress (e.g., a painful symptom), disability (i.e., impairment in one or more important areas of functioning), and/or a significantly increased risk of suffering death, pain, disability, or an important loss of freedom.</p> <p>For the purposes of this report, adolescents with a mental disorder were those meeting DSM-5 diagnostic criteria for a specific mental disorder (i.e., a mental disorder measured in K-NAMHS).</p>
Mental health problem	<p>A mental health problem is similar to a mental disorder in that it also interferes with how a person thinks, feels, and behaves, but to a lesser extent than a mental disorder. It can be experienced temporarily, or as an acute reaction to various life stresses.</p> <p>For the purposes of this report, adolescents with a mental health problem includes those who met DSM-5 criteria for a mental disorder (i.e., full threshold symptoms and endorsement of impairment) as well as those who did not endorse impairment (i.e., full threshold symptoms but no impairment) and those who met at least half of the symptoms required by DSM-5 (i.e., subthreshold symptoms) with or without impairment.</p>
Posttraumatic stress disorder (PTSD)	<p>Characterized by intrusive or recurrent thoughts, disassociation, distorted or negative cognitions, increased arousal or reactivity or other intrusive symptoms or physical reactions, all in relation to a specific trauma.</p> <p>The DISC-5 PTSD module was administered to the adolescent.</p>
Primary caregiver	<p>The person who has responsibility for, cares for, and is best able to provide information about the adolescent.</p> <p>This primary caregiver self-identified at the beginning of the interview after being read the above definition. This was done prior to commencing the administration of survey measures.</p>
Self-harm	<p>Self-harm is the act of doing something to deliberately cause harm or injury to oneself, without the intent of ending one's life. This differentiates self-harm from a suicide attempt.</p>

Term	Definition
Service	<p>In this survey, services were considered any provider who provided support or counselling for emotional and behavioral problems. Service providers included in this survey were:</p> <ul style="list-style-type: none"> • Doctor or nurse • Specialist (such as a psychologist or psychiatrist) • Community health worker • School staff (such as a teacher, coach, or school counsellor) • Religious/faith leader • Other (as defined by the participant) <p>The definition of service providers was expanded to include those not generally considered as providers (e.g., religious/faith leader) given the anticipated likelihood that these sectors would be accessed for such services.</p>
Service use	<p>Defined as use of any service (by providers listed above) for support or counselling for emotional and behavioral problems.</p> <p>Service use questions were asked of the primary caregiver.</p>
Social phobia	<p>Characterized by the fear of one or more social situations, in which the adolescent is the focus of other people’s attention, which might cause a feeling of embarrassment and humiliation. This can lead to the adolescent avoiding these situations or enduring them but dreading doing so.</p> <p>In adolescents, the situations that induce the anxiety must be in a peer-setting, not only around adults.</p> <p>The DISC-5 social phobia module was administered to the adolescent.</p>
Subthreshold symptoms	<p>In the DISC-5, an adolescent was considered to have subthreshold symptoms if they endorsed at least half of the symptoms required by the DSM-5 but not all.</p>
Suicidal behaviors	<p>Inclusive of suicidal ideation, suicide planning, and suicide attempt.</p>
Suicidal ideation	<p>Thinking about wanting to die or general thoughts about ending one’s own life.</p>
Suicide attempt	<p>Harming oneself with the intention of ending one’s own life.</p>
Suicide planning	<p>Making a plan to end one’s life</p>

References

1. WHO, Working for a brighter, healthier future: how WHO improves health and promotes well-being for the world's adolescents, <https://apps.who.int/iris/rest/bitstreams/1405782/retrieve>. 2021, World Health Organization: Geneva.
2. KNBS, 2019 Kenya Population and Housing Census; Distribution of Population by Age and Sex 2020, Kenya national Bureau of Statistics: Nairobi, Kenya
3. Erskine, H.E., T.E. Moffitt, W.E. Copeland, E.J. Costello, A.J. Ferrari, et al., A heavy burden on young minds: the global burden of mental and substance use disorders in children and youth. *Psychol Med*, 2015. 45(7): p. 1551-63.
4. WHO, Adolescent mental health, <https://www.who.int/news-room/fact-sheets/detail/adolescent-mental-health> (accessed on 12/11/2018). 2018, World Health Organization: Geneva.
5. IHME, Global Burden of Disease Results Tool, <http://ghdx.healthdata.org/gbd-results-tool>. 2017, Institute of Health Metrics and Evaluation, University of Washington: Seattle, WA.
6. Magai, D., J. Malik, and H. Koot, Emotional and behavioural problems among children and adolescents in central Kenya. *Child Psychiatry and Human Development*, 2018. 49: p. 659-671.
7. Ormel, J., A.M. Oerlemans, D. Raven, O.M. Laceulle, C.A. Hartman, et al., Functional outcomes of child and adolescent mental disorders. Current disorder most important but psychiatric history matters as well. *Psychol Med*, 2017. 47(7): p. 1271-1282.
8. Erskine, H.E., R.E. Norman, A.J. Ferrari, G.C. Chan, W.E. Copeland, et al., Long-Term Outcomes of Attention-Deficit/Hyperactivity Disorder and Conduct Disorder: A Systematic Review and Meta-Analysis. *J Am Acad Child Adolesc Psychiatry*, 2016. 55(10): p. 841-50.
9. MOH, Kenya Mental Health Policy 2015-2030, M.o. Health, Editor. 2015, Ministry of Health: Nairobi.
10. Mathai, M., A. Mwayo, T. Mutavi, and D. Bukusi, Child and Adolescent Mental Health in Kenya: Do We Need a Child and Adolescent Mental Health Policy?, in *C Child Behavioral Health in Sub-Saharan Africa: Towards Evidence Generation and Policy Development*, O.S.B. Fred M. Ssewamala, Mary M. McKay Editor. 2021, Springer.
11. Meyer, A. and D. Ndetei, Providing Sustainable Mental Health Care in Kenya: A Demonstration Project, in *Providing Sustainable Mental and Neurological Health Care in Ghana and Kenya: Workshop Summary*. 2016, National Academies Press: Washington, D.C.
12. Seedat, S., C. Nyamai, F. Njenga, B. Vythilingum, and D.J. Stein, Trauma exposure and post-traumatic stress symptoms in urban African schools. Survey in CapeTown and Nairobi. *Br J Psychiatry*, 2004. 184: p. 169-75.
13. Sankoh, O., S. Sevalie, and M. Weston, Mental health in Africa. *Lancet Glob Health*, 2018. 6(9): p. e954-e955.
14. Erskine, H.E., A.J. Baxter, G. Patton, T.E. Moffitt, V. Patel, et al., The global coverage of prevalence data for mental disorders in children and adolescents. *Epidemiol Psychiatr Sci*, 2017. 26(4): p. 395-402.
15. Erskine, H., S. Blondell, M. Enright, J. Shadid, Y. Wado, et al., Measuring the Prevalence of Mental Disorders in Adolescents in Kenya, Indonesia, and Vietnam: Study Protocol for the National Adolescent Mental Health Surveys. *Journal of Adolescent Health*, 2021. July 2021.

16. Shaffer, D., P. Fisher, C.P. Lucas, M.K. Dulcan, and M.E. Schwab-Stone, NIMH Diagnostic Interview Schedule for Children Version IV (NIMH DISC-IV): description, differences from previous versions, and reliability of some common diagnoses. *J Am Acad Child Adolesc Psychiatry*, 2000. 39(1): p. 28-38.
17. Bitsko, R., H. Adams, J. Holbrook, A. Vierhile, P. Morrison, et al., Diagnostic Interview Schedule for Children, version 5 (disc-5): development and validation of ADHD and TIC disorder modules. *Journal of the American Academy of Child and Adolescent Psychiatry* 2019. 58(10): p. s187.
18. American Psychiatric Association, *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition 2013*, American Psychiatric Association, Arlington, VA.
19. COVID-19 Mental Disorders Collaborators, Global prevalence and burden of depressive and anxiety disorders in 204 countries and territories in 2020 due to the COVID-19 pandemic. *Lancet*, 2021. 398(10312): p. 1700-1712.
20. GBD Mental Disorders Collaborators, Global, regional, and national burden of 12 mental disorders in 204 countries and territories, 1990-2019: a systematic analysis for the Global Burden of Disease Study 2019. *Lancet Psychiatry*, 2022. 9(2): p. 137-150.
21. Ferrari, A.J., F.J. Charlson, R.E. Norman, A.D. Flaxman, S.B. Patten, et al., The epidemiological modelling of major depressive disorder: application for the Global Burden of Disease Study 2010. *PLoS One*, 2013. 8(7): p. e69637.
22. Canino, G. and M. Alegría, Psychiatric diagnosis – is it universal or relative to culture? *J Child Psychol Psychiatry*, 2008. 49(3): p. 237-250.
23. Skinner, D., C. Sharp, M. Serekoane, and M. Ross, The Cultural Adaptation of the DISC-IV: Appropriateness for Sotho-Speaking South Africans. *Journal of Ethnic & Cultural Diversity in Social Work* 2016. 25(1): p. 1-19.
24. Kamau, J.W., O.O. Omigbodun, T. Bella-Awusah, and B. Adedokun, Who seeks child and adolescent mental health care in Kenya? A descriptive clinic profile at a tertiary referral facility. *Child Adolesc Psychiatry Ment Health*, 2017. 11: p. 14.
25. Gaitho, D., M. Kumar, D. Wamalwa, G. Wambua, and R. Nduati, Understanding mental health difficulties and associated psychosocial outcomes in adolescents in the HIV clinic at Kenyatta National Hospital, Kenya. *Annals of General Psychiatry*, 2018. 17(1).
26. Osok, J., P. Kigamwa, A.V. Stoep, K.Y. Huang, and M. Kumar, Depression and its psychosocial risk factors in pregnant Kenyan adolescents: a cross-sectional study in a community health Centre of Nairobi. *BMC Psychiatry*, 2018. 18(1): p. 136.
27. Osborn, T., k. Venturo-Conerly, A. Wasil, S. J., and R. Weisz, Depression and Anxiety Symptoms, Social Support, and Demographic Factors Among Kenyan High School Students. *Journal of Child and Family Studies*, 2020. 29: p. 1432-1443.
28. Khasakhala, L., M. Ndetei, V. Mutiso, A.W. Mbwaiyo, and M. Mathai, The prevalence of depressive symptoms among adolescents in Nairobi public secondary schools: association with perceived maladaptive parental behaviour. *Afr J Psychiatry* 2012. 15: p. 106-113.
29. Ndetei, D., L. Khasakhala, L. Nyabola, F. Ongecha-Owuor, S. Seedat, et al., The prevalence of anxiety and depression symptoms and syndromes in Kenyan children and adolescents *J Child Adolesc Ment Health*, 2008. 20(1): p. 33-51.
30. WHO, *World mental health report: transforming mental health for all*, <https://www.who.int/publications/i/item/9789240049338>. 2022, World Health Organization: Geneva, Switzerland.
31. Colizzi, M., A. Lasalvia, and M. Ruggeri, Prevention and early intervention in youth mental health: is it time for a multidisciplinary and trans-diagnostic model for care? *Int J Ment Health Syst*, 2020. 14: p. 23.
32. Schnyder, N., D. Lawrence, R. Panczak, M.G. Sawyer, H.A. Whiteford, et al., Perceived need and barriers to adolescent mental health care: agreement between adolescents and their parents. *Epidemiol Psychiatr Sci*, 2019. 29: p. e60.
33. WHO, *Health for the world's adolescents: A second chance in the second decade*, <https://apps.who.int/adolescent/second-decade>. 2014, World Health Organization: Geneva, Switzerland.

34. Memiah, P., F.A. Wagner, R. Kimathi, N.I. Anyango, S. Kiogora, et al., Voices from the Youth in Kenya Addressing Mental Health Gaps and Recommendations. *Int J Environ Res Public Health*, 2022. 19(9).
35. Persson, S., C. Hagquist, and D. Michelson, Young voices in mental health care: Exploring children's and adolescents' service experiences and preferences. *Clin Child Psychol Psychiatry*, 2017. 22(1): p. 140-151.
36. Demyttenaere K, Bruffaerts R, Posada-Villa J, Gasquet I, L. Kovess V, et al., Prevalence, severity, and unmet need for treatment of mental disorders in the World Health Organization world mental health surveys. *JAMA*, 2004. 291: p. 2581-90.
37. Kiima, D. and R. Jenkins, Mental health policy in Kenya -an integrated approach to scaling up equitable care for poor populations. *Int J Ment Health Syst*, 2010. 4: p. 19.
38. Marangu, E., F. Mansouri, N. Sands, D. Ndetei, P. Muriithi, et al., Assessing mental health literacy of primary health care workers in Kenya: a cross-sectional survey. *Int J Ment Health Syst*, 2021. 15(1): p. 55.
39. Marangu, E., N. Sands, J. Rolley, D. Ndetei, and F. Mansari, Mental healthcare in Kenya: Exploring optimal conditions for capacity building *African Journal of Primary Health Care & Family Medicine*, 2014. 6(1): p. 682.
40. Barasa, E., K. Rogo, N. Mwaura, and J. Chuma, Kenya National Hospital Insurance Fund Reforms: Implications and Lessons for Universal Health Coverage. *Health Syst Reform*, 2018. 4(4): p. 346-361.
41. Dashiff, C., W. DiMicco, B. Myers, and K. Sheppard, Poverty and adolescent mental health. *J Child Adolesc Psychiatr Nurs*, 2009. 22(1): p. 23-32.
42. Musyimi, C.W., V.N. Mutiso, D.M. Ndetei, I. Unanue, D. Desai, et al., Mental health treatment in Kenya: task-sharing challenges and opportunities among informal health providers. *Int J Ment Health Syst*, 2017. 11: p. 45.
43. Mbwanyo, A.W., D.M. Ndetei, V. Mutiso, and L.I. Khasakhala, Traditional healers and provision of mental health services in cosmopolitan informal settlements in Nairobi, Kenya. *Afr J Psychiatry (Johannesbg)*, 2013. 16(2): p. 134-40.
44. Hafekost, J., D. Lawrence, K. Boterhoven de Haan, S.E. Johnson, S. Saw, et al., Methodology of Young Minds Matter: The second Australian Child and Adolescent Survey of Mental Health and Wellbeing. *Aust N Z J Psychiatry*, 2016. 50(9): p. 866-75.
45. Amunga, C., The Impact of cultural beliefs on mental health: A world view from selected communities in western Kenya. *East African Journal of Traditions, Culture and Religion*, 2020. 2(1): p. 34-38.
46. Ongeru, L., M. Nyawira, S.M. Kariuki, C. Theuri, M. Bitta, et al., Sociocultural perspectives on suicidal behaviour at the Coast Region of Kenya: an exploratory qualitative study. *BMJ Open*, 2022. 12(4): p. e056640.
47. MOH, Kenya Mental Health Action Plan 2021-2025: Towards attainment of the highest standards of mental health. 2021, Ministry of Health Kenya: Nairobi, Kenya.
48. MOH, Press statement on the update of Coronavirus in the country and response measures as at 20th March 2020, <https://www.health.go.ke/wp-content/uploads/2020/03/1584711987736-Press-statement-20th-March-2020.pdf>. 2020: Nairobi, Kenya
49. WHO, WHO Coronavirus (COVID-19) Dashboard-Kenya, <https://covid19.who.int/region/afro/country/ke> (accessed on 03/06/2022). 2022, World Health Organization.
50. Pape, U., A. Delius, A. Haynes, E. Cameron, R. Gupta, et al., How COVID-19 Continues to Affect Livelihoods in Kenya: Rapid Response Phone Survey Rounds 1 to 5. <https://openknowledge.worldbank.org/handle/10986/36650>. 2021, World Bank: Washington, DC.
51. Pinchoff, J., E. Friesen, B. Kangwana, F. Mbushi, E. Muluve, et al., How Has COVID-19-Related Income Loss and Household Stress Affected Adolescent Mental Health in Kenya? *Journal of Adolescent Health*, 2021. 69(5): p. 713-720.
52. Kithiia, J., I. Wanyonyi, J. Maina, T. Jefwa, and M. Gamoyo, The socio-economic impacts of Covid-19 restrictions: Data from the coastal city of Mombasa, Kenya. *Data Brief*, 2020. 33: p. 106317.

53. Janssens, W., M. Pradhan, R. De Groot, E. Sidze, H. Donfouet, et al., The short-term economic effects of COVID-19 on low-income households in rural Kenya: An analysis using weekly financial household data. *World Development* 2021. 138.
54. Hafstad, G.S. and E.M. Augusti, A lost generation? COVID-19 and adolescent mental health. *Lancet Psychiatry*, 2021. 8(8): p. 640-641.
55. Mwabe, J., K. Austrian, and S. Macharia, Promises to keep: Impact of COVID-19 on Adolescents in Kenya. https://www.popcouncil.org/uploads/pdfs/2021PGY_ImpactCovidAdolKenya.pdf. 2021, Population Council.
56. Jones, E., A. Mitra, and A. Bhuiyan, Impact of COVID-19 on Mental Health in Adolescents: A Systematic Review *International Journal of Environmental Research and Public Health*, 2021. 18(5): p. 1-9.
57. UNICEF, The impact of COVID-19 on the mental health of adolescents and youth, <https://www.unicef.org/lac/en/impact-covid-19-mental-health-adolescents-and-youth>. 2021, UNICEF.
58. UNDESA, *Designing Household Survey Samples: Practical Guidelines*. 2005, United Nations Department of Economic and Social Affairs: New York.
59. UNDESA, *GLOBAL Revision of the World Population Prospects 2017*. 2018, United Nations Department of Economic and Social Affairs, Population Division: New York.
60. KNBS and I. International, *Kenya Demographic and Health Survey 2014*. 2015 Kenya National Bureau of Statistics and ICF International Nairobi, Kenya and Calverton, Maryland.



Kenya - National Adolescent Mental Health Survey (K-NAMHS): A Report on Key Findings