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# Adolescent and youth mental health and their use of healthcare services

## Statistical analysis plan

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## Introduction

A significant proportion of adolescents have been diagnosed with mental health conditions or suffer from mental health problems to such an extent that it affects their everyday life. We previously found that about half of all teenagers suffered from such mental health problems, but only about half of these youth consulted with a healthcare practitioner. Moreover, one third did not discuss their mental problems with anyone. There is a need to improve access to mental health services for adolescents and youth, and to better adapt the services to their healthcare needs. Therefore, there is a need to expand the research-base to determine factors facilitating and hindering adolescents' use of healthcare services, what they want and expect from healthcare practitioners and how they would like for these services to be formed. Increased research-based knowledge will help in improving and developing services so that they meet the needs of adolescents and youth. For these reasons, we are in 2020 carrying out a cross-sectional survey among adolescents and youth in the age range from 12 to 25 years. The survey will contribute by answering questions such as the following:

- What potential barriers and facilitators for adolescents' and youths' use of mental health services exist?
- What are characteristics of adolescents and youths who do not seek help from the services?
- What are gender differences in help-seeking behaviors among adolescents and youth with mental health problems?
- Which service characteristics are associated with adolescents' and youths' experiences of benefit from and satisfaction with their use of mental health services?
- Which characteristics and factors are associated with use of mental health services among adolescents and youths who have a background as refugees?
- What are the experiences and perspectives of adolescents and youths who need an interpreter in their mental health treatment, either due to hearing impairment or due to language barriers?

This survey will also contribute to further develop the InvolveMENT research project at the *Centre for Resilience in Healthcare (SHARE)* at the *University of Stavanger*. As part of this process, we are setting up a cohort using the Trials within Cohorts (TwICs) design. Adolescents' and youths' experiences with and perspectives of the existing mental health services are needed as part of this process, to answer questions addressing not only their mental health, but in the long term also drop-out from school, work life and general life satisfaction. Therefore, the above list of research questions is not exhaustive and additional research questions will be considered.

## Recruitment

Adolescents and youths in the age range from 12 to 25 years are invited to participate in this cross-sectional survey. A random selection of participants is not feasible as this would require access to the entire population of adolescents and youths. We therefore invite a wide range of lower and upper secondary schools (high schools), folk high schools and learning centers offering language courses for non-Norwegian ethnic adolescents and youths. The geographical areas of invited schools include a widespread geographical distribution of municipalities in the counties of Agder and Rogaland, and a limited selection of schools in Vestlandet county. Smaller and larger schools in cities and in rural districts are invited to participate. Upper secondary schools include both those offering general subject studies and those providing vocational courses. Additionally, participants can be recruited through mental health organizations and organizations representing minority groups.

## Survey development

This survey is based on the experiences gathered through three smaller surveys carried out by our research team at the *Centre for Resilience in Healthcare (SHARE)*. The questions include validated outcome measures, as well as additional questions based on previous surveys and questions further developed with the input from adolescent co-researchers, healthcare practitioners and researchers in SHARE. Pilot testing suggested that it would take from 15 to 30 minutes to complete the survey. By recommendation of former survey participants and adolescent co-researchers, the survey was set up for online participation. It was available in four languages (Norwegian, English, Dari/Persian and Arabic) to increase the chance that non-Norwegian ethnic adolescents and youth could participate.

## Project assessment, survey participation and participants' rights

The research proposal was considered by the Data Protection Services (NSD) which concluded that the project was in line with requirements for General Data Protection Regulation (GDPR). On this basis, NSD recommended that the survey could be started (reference number 842923). Adolescents and youths in the age range from 16 to 25 years with capacity to consent can participate at their own volition. Those who are in the age group from 12 to 15 years need their parents' or legal guardians' written consent. The survey is anonymous, i.e. it does not include person identifiable information.

Participants who still think they might be identified through their submitted responses retain the right to see their information, for it to be corrected or deleted, if they can be identified in the data set. Only researchers at the University of Stavanger can access the survey data set.

## Data analysis

Univariate analyses will be carried out for all variables, reporting both frequencies and percentages.

Bivariate analyses include the following:

- A) Categorical (binary) and continuous variable: Independent samples t-test (normal distribution) or Mann Whitney U-test (skewed data)
- B) Categorical (binary) and nominal variable: Chi-square test
- C) Categorical (binary) and ordinal variable: Rank correlation (Mann Whitney U-test)
- D) Two categorical variables: Chi-square test

Regression analyses will be used to develop models for hypothesis testing in future research.

Distribution of data will be considered using histograms. Parametric tests will be used for normally distributed data and non-parametric tests for skewed data.

Cronbach's alpha will be calculated for what are expected to be unidimensional measures, in order to assess internal consistency and thereby to determine if it is probable that the outcome is a measure of a single latent trait or construct. Scores of 0.7 or higher will be considered satisfactory. A satisfactory result suggests the individual items are inter-related. Lower results suggest the measurement error rate is too high. In the event of a too low Cronbach's alpha value (below 0.7) or a too high value (above 0.9), exclusion of individual items may be considered following correlation analyses between individual items. Furthermore, the use of factor analysis will be considered. None of the unidimensional measures used in this survey include a high number of items, so a high Cronbach's alpha due to large numbers of items is not expected.

Data is initially managed using Excel and statistical analyses are carried out using SPSS (version 25).

## Missing data

Some survey questions are compulsory, i.e. participants will be unable to continue the survey without responding to these questions. However, some questions are optional. Overall, the approach reduces the overall amount of missing data from individual participants. For analyses which involve questions where missing data is allowed, missingness will be managed through listwise deletion in the event of missingness up to 5% and multiple imputation will be used where missingness is higher than 5%. For bivariate analyses pairwise deletion will be used in the event of missing data, whereas listwise deletion will be used in regression analyses with missingness up to 5%. However, an assessment will also be carried out to determine whether data are Missing Completely at Random (MCAR), Missing at Random (MAR), or Missing Not at Random (MNAR).

## Reporting of results

Results of this survey will be published through three Master Dissertations at the *University of Stavanger* and through articles published in peer-reviewed journals. Furthermore, results will be presented at research conferences and included in funding applications to expand the research.

## Contact information and links

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*SHARE – Centre for Resilience in Healthcare (SHARE)* <https://www.uis.no/research-and-phd-studies/research-centres/share-centre-for-resilience-in-healthcare/>

The InvolveMENT project <https://www.uis.no/research-and-phd-studies/research-centres/share-centre-for-resilience-in-healthcare/projects/involvement/?s=24535>

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