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# Suicidal behavior in relation to anxiety, depression and conduct disorder – a Norwegian child welfare study

Graduate thesis in Programme of Professional Study, Medicine

Supervisor: Hanne Klæboe Greger

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Kunnskap for en bedre verden



## 1. Introduction:

### 1.1. Suicide in our society

Suicide: death caused by injuring oneself with the intent to die. Ever since the 5<sup>th</sup> century AD, this word was widely condemned by the western societies (1). Suicide stands as the second leading cause of death in individuals aged 15-29, accounting for 800 000 deaths worldwide per year, only preceded by traffic accidents (2).

The many lives lost to suicide have been talked little about. In general, that has been the custom attitude until recent years. To quite some extent it is still considered taboo, but according to a Dutch cross-sectional study, the stigma has decreased resulting in more openness around this problem, especially amongst the younger generations (3).

Studies have shown an increase in self-reported suicidal behavior. This might be because of more truthful self-reporting because of increased awareness around the problem, or simply because of increased suicidal behavior. For instance, a cross-sectional study of Norwegian adolescents, has found that self-harming, with or without intention to die, increased from 4.1% in 2002 to 16.2% in 2018 (4). Another cross-sectional study looked at suicide ideation amongst students, of both sexes, undergoing higher education in Norway. The results showed an increase from 7.7% in 2010 to 11.4% in 2018 (5). On the contrary, in Norway, the total suicide rate did show a decline during 1990-95, but since then stabilized at around 12-13 suicides per 100 000 per year, even after the national program for suicide prevention was established in 1993 (6).

Looking at Statistics Norway, the total number of suicides amongst Norwegian adolescents aged 10-19 has varied inconsistently the last decades. Statistics Norway gathered data of suicide rates from 1986-2009 based on sex and age. During this period the total number varies between 18-42 and 5-17 completed suicides per year, separating between male and female. Age also seems to be an important factor. The total number of suicides in the age group 15-19 is significantly greater compared to those aged 10-14 (7). The prevalence of suicide amongst adolescents in recent years have been difficult to find, but one can assume that these numbers from Statistics Norway are representative of today's suicide prevalence, as the numbers have been quite stable from 1986-2009.

According to an international study from the 2000's, the single most important risk factor for completed suicide was previous suicide attempts. Some other important risk factors were suicide ideation, suicide plans, lethality of suicide attempt (e.g., hanging, shooting as opposed to overdose on medication), interpersonal conflict or loss, substance abuse, mental disorders, physical or sexual

maltreatment, especially the latter, in addition to age and sex. There were less completed suicides in adolescents under the age of 15 compared to ages 15 and up, and males were more likely to die of completed suicide, while females in the older adolescent age group were more likely to attempt suicide (8).

The term suicidal behavior consists of three categories (9):

1. Suicide ideation: having thoughts of engaging in actions with the intent to end one's life.
2. Suicide plan: having constructed a specific plan through which one intends to die.
3. Suicide attempt: taking participation in potentially self-harming behavior where at least some intent to die is present.

Self-injury without intent to die is excluded from this study.

The goal of this study is to contribute to the important collection of new information on the topic "suicide", by researching a complex minority which we don't know that much about, more specifically the adolescents living in residential youth care institutions. By analyzing statistical data from the Norwegian research project *Mental health in children and adolescents in child welfare institutions* (10, 11), this study will analyze suicidal behavior in adolescents living in Norwegian residential youth care institutions.

## 1.2. The child welfare services

The main purpose of the child welfare services is to ensure the safety, care, and the opportunity for normal development of children and adolescents. They may provide help from an outside position or, if considered necessary, overtake the parental responsibilities, and all the nuances in between. If it comes to the point where the parents or guardians lose their legal right to raise and care for their child, the child welfare services would firstly work on getting the child into a foster home, being a more favorable and less invasive intervention. If living foster homes don't work sufficiently, then as a last resort, the child would be placed in a residential youth care institution (12).

The adolescents under the care and supervision of the child welfare services have increased risk of psychiatric disorders compared to the public. In a Norwegian study about psychiatric morbidity and prematurity, the control group consisted of 75 randomly selected people around 20 years of age. 8% of these participants fulfilled the DSM-IV criteria for at least one psychiatric diagnosis (13). In comparison, 76% of the adolescents living in Norwegian residential youth care had at least one DSM-IV diagnosis, some of the most frequent being depression, anxiety and conduct disorder. In addition, they had increased risk of having more than one disorder compared to the public (10, 11).

### 1.3. Diagnoses

#### Conduct disorder

Conduct disorder is a broad and common psychiatric disorder characterized by severe antisocial aggressive behavior, and a persistent behavioral pattern of rule and norm violation (14). Some examples of such behavior include threatening and aggressive behavior, initiating physical fights, physical cruelty towards people and animals, stealing and forcing someone into sexual activity. The diagnosis precedes to antisocial personality disorder in adulthood in 43-49% of the cases(15), and those with CD has a 10-times increased risk of being diagnosed with ADHD (16).

According to a study published in 2019, the worldwide prevalence was about 3% in school-aged children, and males were diagnosed around twice as frequently. Narrowing the representing areas to just Denmark and Sweden, the prevalence of conduct disorder amongst children and adolescents was around 1.5-2.5% (16). In Norway, statistics representing the public prevalence of conduct disorder are difficult to find, but we can assume it to be somewhat equal the Danish and Swedish prevalence. In comparison, 19% of adolescents living in Norwegian residential youth care were diagnosed with conduct disorder (10).

#### Anxiety

The term anxiety can be divided into six major subcategories; separation anxiety, specific phobia, social phobia, elective mutism, generalized anxiety disorder and panic disorder, with the first three being the most prevalent amongst children and adolescents (17). Anxiety is categorized by excessive worrying, more days than not. Those affected lack control of the worrying, to an extent where bodily, cognitive, and behavioral symptoms are expressed (e.g. tachycardia, negative thoughts, and actively avoiding triggering situations) (14).

According to an American study about lifetime prevalence of mental disorders, anxiety disorders collectively accounted for the most prevalent psychiatric condition amongst adolescents, with a lifetime expectancy of around 32% (18). Looking at British and American cross-sectional studies of children and adolescents aged between 5-17, the prevalence for any anxiety disorder was 3.6-6.9% (19, 20). In comparison, 34% of adolescents in Norwegian residential youth care were diagnosed with anxiety (10).

#### Depression

Depression is a psychiatric disorder, with a higher post-pubertal prevalence amongst females (21, 22), causing persistent feelings of sorrow, fatigue as well as loss of interest. Furthermore, it causes

disability and suffering in those affected. It can be divided into major and minor depressive disorders, and dysthymias, based on the severity and duration of the symptoms (14).

The prevalence of depression of any kind (depressive disorders, dysthymias, and depression NOS) ranged from 1.6-9.3% in adolescents (22-24), according to French, American and Norwegian studies. In contrast, the prevalence in adolescents living in Norwegian residential youth care was found to be 37% (10).

#### 1.4. The categories.

Compared to the general population, research has shown that adolescents with one or more psychiatric diagnoses have increased risk of expressing suicidal behavior (8, 25). According to an American survey, the majority of adolescents with suicide ideation, plans and attempts had one or more psychiatric disorder, the most prevalent being depression (25). Anxiety and conduct disorder also increased the risk of suicide, by almost 3 and 5 times, respectively (8).

The aim of this study is to compare the difference in suicidal behavior, being suicide attempts, suicide plans and suicide ideation, between four categories of adolescents living in Norwegian residential youth care institutions:

1. Those without a diagnosis.
2. Those with any form of anxiety and/or any depression disorder with conduct disorder.
3. Those with any form of anxiety and/or any depression disorder without conduct disorder.
4. Those with any other diagnoses.

In addition to this, we will analyze age and sex as independent variables, and see whether they affect the risk of suicidal behavior or not.

## 2. Method

### 2.1. Participants and recruitment

The data of this study was obtained from the Norwegian research project *Mental health in children and adolescents in child welfare institutions* (10). All residential youth care institutions housing adolescents aged 12–20 years in Norway were invited to participate in the study. Collection of data from unaccompanied minors without asylum in Norway and adolescents on acute placement was not included because they were in such a high state of crisis. Therefore these, as well as those with insufficient Norwegian language qualifications to be interviewed, were excluded from the study. 86



of 94 eligible institutions accepted the invitation and 400 of 601 qualified adolescents participated, giving a response rate of 67%. From the initial 400 participating, 335 completed the psychiatric interview according to the DSM-IV classification.

## 2.2. Procedures

Data collection was conducted by trained research assistants. They visited the institutions and completed structured psychiatric interviews with adolescents and their primary contacts, and collected questionnaires from adolescents, primary contacts, and leaders of the institutions. Data was collected from June 2011 until July 2014.

## 2.3. Instruments

*Psychiatric diagnostic interview: Child and Adolescent Psychiatric Assessment (CAPA)*. The CAPA is a semi-structured psychiatric interview designed to gather information from children and adolescents. This study looks at those fulfilling the criteria for depression, dysthymias, or depression NOS, any anxiety diagnosis and conduct disorder. The classification system *DSM-IV* was used for the data collection and is hence the classification system used for this study. To ensure that the interviewer compiled the information needed for diagnostic conclusions according to the DSM-IV, there were a set of required questions, as well as optional ones, used for more detailed information, e.g. onset dates, duration, frequency and intensity of the symptoms (26). For diagnostic evaluation resulting in DSM-IV diagnoses, the CAPA uses a computer-based algorithm.

## 2.4. Ethics

The Norwegian Regional Committee for Medical and Health Research Ethics (REK) approved the main study (2013/1128/REK midt). Written informed consent was obtained, and if the participant was under 16 years, consent from the guardian was also obtained. REK has also approved for the collected data of the main study to be used in this study (2010/1965/REK midt).

## 2.5. Data analysis

To analyze the prevalence of suicidal behavior between the different variables the statistics program IBM SPSS Statistics (Version 28) was used. We used the analyzing methods chi-square test and logistic regression to find the p-values, confidence intervals and odds ratios. P-values  $\leq 0.05$  were considered significant.

A dropout analysis showed no significant difference between age and sex amongst the group of 335 and 400. There were 2, 6 and 3 more missing cases amongst "Suicide attempts", "Suicide plans" and "suicide ideation", making the total numbers of valid answers 333, 329 and 332.

The category “No diagnosis” was removed from the logistic regression analysis of “Suicide plans” due to perfect prediction, meaning that nobody with no diagnosis reported having suicidal plans.

### 3. Results

Table 1: Characteristics of participants divided by sex.

	Boys (n=138)	Girls (n=197)
Mean age in years	16, SD = 1.4	16.5, SD = 1.2
Attend school	76.1%	61.7%
Employed	5.1%	3.6%
Taking an internship	5.1%	9.1%
Applying for jobs	2.9%	3.0%
Finished wanted education	0.0%	1.0%
Other <sup>1</sup>	9.4%	20.8%
Mean age of first relocation in years	12.4, SD = 4.0	12.6, SD = 3.8
Mean number of relocations	3.0, SD = 2.1	3.6, SD = 2.7
Depression	22.5%	47.2%
Anxiety	25.4%	40.1%
Conduct disorder	26.1%	12.7%
Anxiety/depression with C.D.	15.9%	10.7%
Anxiety/depression without C.D.	18.8%	47.7%
Other diagnosis	37.7%	19.3%
No diagnosis	27.5%	22.3%
Suicide attempts (ever)	23.2%	44.6%
Suicide plans (within the last 3 months)	0.7%	5.7%
Suicide thoughts (present)	5.8%	15.4%

<sup>1</sup> Disability benefits, unemployed, don't attend school, dropped out of work or school, free year, under examination

Table 2a: Difference in suicide attempts between groups of adolescents. Logistic regression analysis controlled for age and sex, with “No diagnosis” as reference category. (n = 333)

Covariates	Odds ratio	95% CI for OR	P-value
No diagnosis			<0.001
Anxiety/depression with C.D.	6.00	2.57-13.80	<0.001
Anxiety/depression without C.D.	4.07	2.07-8.00	<0.001
Other diagnosis	1.07	0.49-2.33	0.86
Age	1.21	1.00-1.47	0.056
Sex	2.05	1.20-3.52	0.009

Table 2b: Difference in suicide plans between groups of adolescents. Logistic regression analysis controlled for age and sex, with “Anxiety/depression with C.D.” as reference category. (n = 329)

Covariates	Odds ratio	95% CI for OR	p-value
Anxiety/depression with C.D.			0.68
Anxiety/depression without C.D.	1.00	0.20-5.10	1.00
Other diagnosis	0.49	0.07-3.70	0.49
Age	0.94	0.58-1.50	0.79
Sex	6.94	0.83-57.93	0.07

Table 2c: Difference in suicide ideation between groups of adolescents. Logistic regression analysis controlled for age and sex, with “No diagnosis” as reference category. (n=332)

Covariates	Odds ratio	95% CI for OR	p-value
No diagnosis			<0.001
Anxiety/depression with C.D.	25.18	3.07-206.73	0.003
Anxiety/depression without C.D.	16.48	2.16-125.82	0.007
Other diagnosis	2.83	0.29-27.98	0.37

Age	0.77	0.58-1.02	0.073
Sex	2.48	1.01-6.12	0.048

Looking at table 1, 72.5% of the boys and 77.7% of the girls met the criteria for at least one or more psychiatric diagnosis. The most prevalent diagnosis of the three was depression, being more than twice as frequent amongst girls. Anxiety had the second highest prevalence, while conduct disorder had the lowest. There was a similar difference between anxiety and depression, comparing prevalence between the sexes. The opposite was true for conduct disorder; boys were twice as likely to be diagnosed compared to girls.

All suicidal behavior was more frequent amongst the girls compared to the boys, according to tables 2a-c, though all results of table 2b showed not statistically significant p-values. Looking at tables 2a and 2c, the adolescents with anxiety and/or depression with or without co-occurring conduct disorder reported more suicide attempts and suicide ideation compared to those with no diagnosis. The odds ratios were significantly increased, and highest amongst those with anxiety and/or depression and co-occurring conduct disorder. The results in tables 2a-c concerning the participants age, as well as those with other diagnoses than the three were not statistically significant.

#### 4. Discussion

This study measured the associations between suicidal behavior and different psychiatric diagnoses amongst adolescents living in residential youth care in Norway. In addition, it assessed the relation between suicidal behavior and sex, age. After comparing the analyses, we found that there were some statistically significant differences of suicidal behavior between the four different groups.

Participants diagnosed with depression and/or anxiety without conduct disorder were 4 times more likely to report ever attempting suicide, compared to those with no or a different diagnosis. Co-occurring conduct disorder further increased the risk to 6 times. This is similar to a follow-up study, conducted in the U.S., looking at suicidal behavior in early adolescents. They found that co-occurring symptoms of depression and conduct disorder increased the risk of future suicide attempts, in comparison to those with symptoms of only one of the disorders (27). However, the participants were not diagnosed with the disorders, and only self-reported symptoms in questionnaires were used as basis of the study. It is safe to assume that the results from this study indicate that comorbidity of anxiety and/or depression and conduct disorder is an important compound risk factor of suicidal behavior amongst adolescents in Norwegian youth care. Therefore, more research

targeting different age groups, the general population and different countries should be conducted, further investigating the comorbidity of affective disorders and conduct disorder.

The prevalence of suicide attempts amongst the participants was approximately 10 times higher, compared to adolescents and young adults representing the normal population in Germany (28). This is an important finding as suicide attempts are one of the strongest risk factors for suicide completion, putting this adolescent group at risk. Around 7% of suicide attempters later die by suicide, compared to 1 in 10 000 people a year among the normal population (29). Patients with increasing age had a slight increase in risk of having attempted suicide. This was to be expected as the prevalence of ever having attempted suicide is cumulative with increasing age.

Looking at suicide plans, there is no statistically significant difference between the different categories. However, as only 12 of all participants reported to have prepared suicide plans within the last 3 months, a larger group of participants should be researched for more conclusive results. Although not statistically significant, an interesting finding for future research is that girls were 6 times more likely to construct suicide plans than boys. There were also none without any diagnosis which had suicide plans, which might suggest that having no psychiatric diagnosis might be a protective factor against making suicide plans. It might also suggest that those without suicide plans were less likely to be diagnosed, as having suicide plans largely contributes to getting diagnosed with depression, according to the Montgomery and Åsberg Depression Rating Scale (MADRS). The small number of participants constructing suicide plans compared to those having attempted suicide suggests that the participants in this age-group act impulsively, which is a well-known phenomenon amongst adolescents compared to adults (30).

Assessing the prevalence of suicide ideation, we found that patients with anxiety and/or depression with comorbidity of conduct disorder were 25 times more likely to experience suicide ideation compared to those without any diagnosis. Non-comorbidity of conduct disorder reduced the odds ratio to 16.5. The same study mentioned in the paragraph describing suicide attempts, showed that participants with only high conduct disorder symptoms were 0.35 times as likely to endorse in suicide ideation compared to participants with both high co-occurring depression and conduct disorder symptoms, which furthermore was the group with the highest reported suicide ideation (27). Amongst those with any other diagnosis than the three mentioned, we found no statistically significant increase in risk of having suicide ideation ( $p=0.37$ ). These results shows that there is a clear correlation between the three main disorders and being at risk of experiencing suicide ideation.

There was a clear difference in prevalence in suicide attempts and suicide ideation between the two sexes. The female participants had increased risk in both categories, with odds ratios of approximately 2 and 2.5. As the analyses were controlled for both age and sex, the similarity of increased risk between suicidal behavior among girls and suicidal behavior among those with any internalizing disorder is probably independent of each other. As mentioned earlier girls had a higher prevalence of anxiety and depression, while boys had a higher prevalence of conduct disorder. These findings are similar to previously conducted research about the intersexual ratios of depression, suicide attempts and suicide ideation, with the important distinction that the prevalence of these groups was higher in this study(16, 21, 22, 31, 32). The post-pubertal increased hormonal activity in girls can explain this difference, as the prevalence before puberty is similar between the sexes (33). Looking at the increased prevalence of conduct disorder amongst boys, one possible explanation is that boys show more physical aggression (34), which might increase the amount diagnosed with conduct disorder as it is one of the main criteria needed to make the diagnosis. Either way, comparing the sexes, the main point to take from this study is that girls living in the residential youth care institutions are more likely to express suicidal behavior.

We found that all diagnoses were more prevalent amongst the participants compared to other studies looking at the prevalence of adolescents not living in residential youth care. (10, 13, 19, 22-24, 35, 36). The most prevalent diagnosis was depression. The prevalence of any form of anxiety came in a close second. Both diagnoses co-occurred often, similarly to existing literature(37, 38). The same can be said about the comorbidity between the anxiety and/or depression and conduct disorder (39, 40).

Compared to the normal population, the adolescents living in residential youth care have greater risk of being diagnosed with one or more psychiatric diagnoses. Only 27.5% of boys and 22.3% of girls didn't have any psychiatric diagnosis. This is probably because parents or guardians afflicting mental and physical trauma towards their children are more likely to lose child custody, as well as the children being at increased risk of getting a psychiatric disorder (41). Therefore, these children have a higher risk of ending up within the child welfare services, and as a last resort end up living in the residential youth institutions.

## 5. Conclusion

This study analyzed the self-reported suicidal behavior of adolescents living in Norwegian residential youth care. The most important finding was the increased risk of suicide ideation and suicide

attempts among those diagnosed with anxiety and/or depression AND conduct disorder. These results are important in suicidality risk assessment and indicate the importance of increased care in treatment and follow-up of this group.

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