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HEALTH BEHAVIOUR IN SCHOOL-AGED CHILDREN
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Suicidal Behaviour in Youth in Luxembourg -

Findings from the HBSC 2014 Luxembourg Study

HBSC LUXEMBOURG SUICIDE REPORT

HEALTH BEHAVIOUR IN SCHOOL-AGED CHILDREN: WORLD HEALTH ORGANIZATION COLLABORATIVE CROSS-NATIONAL STUDY (HBSC)

LE GOUVERNEMENT
DU GRAND-DUCHÉ DE LUXEMBOURG
Ministère de l'Éducation nationale,
de l'Enfance et de la Jeunesse

LE GOUVERNEMENT
DU GRAND-DUCHÉ DE LUXEMBOURG
Ministère de la Santé

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Carolina Catunda
Claire van Duin
Andreas Heinz
Helmut Willems

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Contributors

Authors

Dr. Carolina Catunda	Postdoctoral Researcher, University of Luxembourg
Claire van Duin, M.Sc.	PhD student, University of Luxembourg
Dr. Andreas Heinz	Research Scientist, University of Luxembourg
Prof. Dr. Helmut Willems	Principal Investigator, University of Luxembourg

HBSC Luxembourg Team

Amina Afif, M.Sc., M.A.	Service de Coordination de la Recherche et de l'Innovation pédagogiques et technologiques (SCRIPT)
Dr. Claudine Duschinger	Ministère de la Santé/Direction de la Santé
Dr. Senad Karavdic	Service de Coordination de la Recherche et de l'Innovation pédagogiques et technologiques (SCRIPT)
Nathalie Keipes, M.A.	Ministère de l'Éducation nationale, de l'Enfance et de la Jeunesse
Matthias Robert Kern, M.Sc.	PhD student, University of Luxembourg
Scharel Lehners, M.A.	Ministère de la Santé/Direction de la Santé
Dr. Katharina K. Pucher	Ministère de la Santé/Direction de la Santé
Caroline Residori, M.A.	Research (and development) specialist, University of Luxembourg
Conny Roob, M.A.	Ministère de l'Éducation nationale, de l'Enfance et de la Jeunesse
Dr. Bechara Georges Ziadé	Ministère de la Santé/Direction de la Santé

Foreword

Suicide is a major public health problem and one of the leading causes of death among young people worldwide (WHO, 2018). Suicides and suicide attempts have a devastating effect on the lives of people at risk of suicide, as well as on their families, friends and community (D'Onghia, D'Alimonte & Louazel, 2015). The taboo surrounding the topic of suicide persists to this day, regardless of increased knowledge on suicide and prevention. Unfortunately, many people do not reach out or seek help (WHO, 2014).

The suicide rate in Luxembourg has been relatively stable for over a decade. Regarding adolescents specifically, the Health Behaviour in School-aged Children study found that 15% of adolescents had thought seriously about committing suicide, and 8% of adolescents indicated at least one suicide attempt. Data on suicidal behaviour is vital for effective suicide prevention.

This report provides a comprehensive insight regarding suicidal behaviour in the adolescent population of Luxembourg through prevalence data, trends over time and the identification of groups at risk. The data presented aim to inform the public, professionals working with adolescents and policy makers about adolescent suicidal behaviour in Luxembourg, and serves as an evidence base for national suicide prevention efforts and policies.

Successful suicide prevention can only be achieved through the collaboration between researchers, health practitioners and policy makers. Additionally, as mental health is strongly influenced by social and economic determinants, a multisectoral approach is required. Luxembourg is the ideal context for this to happen, using scientific data for policy and intervention development. This increased activity in existing collaborations allows professionals across different fields and disciplines to achieve their common goal, for the common good and in our case, to improve and maintain health and well-being of adolescents in Luxembourg.

Helmut Willems and Bechara Georges Ziadé
Principal Investigators HBSC Luxembourg

Executive summary

Suicide is one of the leading causes of death among young people worldwide. In order to prevent suicides, early identification of groups at risk is needed. In the Luxembourgish HBSC study, data on suicidal behaviours among adolescents were collected in 2006, 2010 and 2014. These can be used to identify suicide risk factors and to develop comprehensive suicide prevention programs.

In Luxembourg, the suicide rate has fluctuated around 15 deaths per 100 000 inhabitants per year, for more than ten years. In the period 2006 – 2016, 20 deaths were registered as suicide in the age group of 10 to 19-year-olds. These suicides represent approximately 19% of all deaths registered in this age group.

In the Luxembourgish HBSC study conducted in 2014, 875 adolescents indicated to have contemplated suicide in the last 12 months, which amounts to 15.1% of the adolescents in the study. In the same year, 811 adolescents (14.0%) indicated to have made a suicide plan in the last 12 months, and 448 adolescents (7.7%) to have attempted suicide (at least once) in the last year.

In first instance, bivariate logistic regressions analyses were conducted for 24 independent variables with three suicidal behaviours (contemplation of suicide, planning of suicide and suicide attempt) and sadness as dependent variables in order to identify potential risk factors. These risk factors were further tested in multivariate logistic regressions, in order to make a statement about the relevance of these factors for suicidal behaviour of adolescents in Luxembourg, while taking into account the dependence between the risk factors.

Results from multivariate logistic regressions indicate that subjective health complaints are the most important risk factor for suicidal behaviour. Adolescents who have recurrent multiple health complaints are at higher risk for suicidal behaviour than adolescents who do not have health complaints. Life satisfaction is the second most important risk factor for suicidal behaviour. Adolescents with lower levels of life satisfaction are at higher risk for suicidal behaviour than adolescents who have higher levels of life satisfaction.

Gender-specific analyses show that the risk factors differ between girls and boys for suicidal behaviour.

Résumé

Le suicide est l'une des principales causes de décès chez les jeunes au niveau mondial. Pour prévenir le suicide, les groupes à risque doivent être identifiés à un stade précoce. Dans l'étude luxembourgeoise HBSC 2006, 2010 et 2014, les adolescents ont été interrogés sur des comportements suicidaires. Ces données peuvent être utilisées pour identifier les facteurs de risque de suicide et de ce fait peuvent servir à élaborer des programmes de prévention du suicide.

Au Luxembourg, depuis plus de dix ans le taux de suicide fluctue autour de 15 décès par an pour 100 000 habitants. Entre 2006 et 2016, 20 décès ont été enregistrés en tant que suicides dans le groupe d'âge 10-19 ans. Ces suicides représentent environ 19 % de tous les décès recensés pour cette tranche d'âge.

Dans l'étude HBSC luxembourgeoise de 2014, 875 adolescents ont déclaré avoir pensé au suicide au cours des 12 derniers mois, ce qui représente 15,1 % des participants à l'étude. Pour la même année, 811 adolescents (14,0 %) ont indiqué qu'ils avaient planifié un suicide au cours des 12 derniers mois alors que 448 adolescents (7,7 %) ont déclaré avoir fait au moins une tentative de suicide au cours de la dernière année.

Afin d'identifier les facteurs de risque potentiels de comportements suicidaires, des analyses de régression logistique bivariées ont été effectuées pour 24 variables indépendantes. Dans ce contexte trois comportements suicidaires (pensées suicidaires, planification du suicide et tentative de suicide) et la tristesse ont été utilisés comme variables dépendantes.

Afin d'analyser la pertinence des facteurs de risque respectifs chez les jeunes au Luxembourg tout en tenant compte de leur interdépendance, ces derniers ont été examinés dans une analyse de régression multivariée.

Suivant l'analyse de régression multivariée, les plaintes de santé subjectives constituent le principal facteur de risque de comportements suicidaires chez les adolescents au Luxembourg. Les adolescents ayant des plaintes de santé multiples et récurrentes présentent un risque plus élevé de comportements suicidaires que les adolescents sans plaintes de santé. La satisfaction de vie est le deuxième facteur de risque associé aux comportements suicidaires. Dans ce contexte, les adolescents ayant une satisfaction de vie plus faible sont plus exposés au risque potentiel de comportements suicidaires en comparaison avec les adolescents ayant une satisfaction de vie plus élevée.

Les analyses spécifiques liées au sexe montrent que les facteurs de risque de comportements suicidaires diffèrent entre les filles et les garçons.

Zusammenfassung

Selbstmord ist eine der häufigsten Todesursachen bei jungen Menschen weltweit. Um Selbstmord zu verhindern, müssen Risikogruppen frühzeitig erkannt werden. In der luxemburgischen HBSC-Studie 2006, 2010 und 2014 wurden Jugendliche zu suizidalen Verhaltensweisen befragt. Diese Daten können dazu dienen, Risikofaktoren für Selbstmord zu identifizieren und sie können zur Entwicklung umfassender Suizidpräventionsprogramme verwendet werden.

In Luxemburg schwankt die Selbstmordrate seit mehr als zehn Jahren um die Zahl von etwa 15 Todesfällen pro 100 000 Einwohner pro Jahr. Im Zeitraum 2006 - 2016 wurden in der Altersgruppe der 10- bis 19-Jährigen 20 Todesfälle als Selbstmord registriert. Diese Selbstmorde machen etwa 19% aller für diese Altersgruppe registrierten Todesfälle aus.

In der luxemburgischen HBSC-Studie 2014 gaben 875 Jugendliche an, dass sie in den letzten 12 Monaten an Selbstmord gedacht haben, was 15,1% der Jugendlichen in der Studie entspricht. Für das gleiche Jahr gaben 811 Jugendliche (14,0%) an, in den letzten 12 Monaten einen Selbstmord geplant und 448 Jugendliche (7,7%) gaben an, mindestens einen Selbstmordversuch in den letzten 12 Monaten durchgeführt zu haben.

Um mögliche Risikofaktoren zu identifizieren, wurden zunächst bivariate logistische Regressionsanalysen für 24 unabhängige Variablen durchgeführt, wobei drei suizidale Verhalten (Selbstmordgedanken, Selbstmordplanung und Suizidversuch) sowie Traurigkeit als abhängige Variablen verwendet wurden.

Diese Risikofaktoren wurden anschließend in einer multivariaten Regressionsanalyse getestet, um unter Berücksichtigung der Abhängigkeit zwischen den Risikofaktoren, eine Aussage über die Relevanz der jeweiligen Risikofaktoren für suizidales Verhalten bei Jugendlichen in Luxemburg zu treffen.

Laut der multivariaten logistischen Regressionsanalysen sind subjektive Gesundheitsbeschwerden der wichtigste Risikofaktor für ein suizidales Verhalten bei Jugendlichen in Luxemburg. Jugendliche mit häufigen (mehrfachen) Gesundheitsbeschwerden haben ein höheres Risiko für suizidales Verhalten als Jugendliche ohne Gesundheitsbeschwerden. Die Lebenszufriedenheit ist der zweitwichtigste Risikofaktor für suizidales Verhalten. Jugendliche mit geringerer Lebenszufriedenheit sind einem höheren Risiko für suizidales Verhalten ausgesetzt als Jugendliche mit höherer Lebenszufriedenheit.

Die geschlechtsspezifischen Analysen zeigen, dass sich die Risikofaktoren für suizidales Verhalten zwischen Mädchen und Jungen unterscheiden.

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HBSC is an international survey carried out in collaboration with the World Health Organization Europe (WHO Europe). The International Coordinator of the 2005-2006, 2009-2010 and 2013-2014 surveys was Professor Candace Currie from the University of St. Andrews, the United Kingdom. The International Databank Manager of the 2005-2006 to 2013-2014 surveys is Professor Oddrun Samdal from Bergen University, Norway.

In Luxembourg, the HBSC study is a collaboration between the University of Luxembourg, the *Ministère de la Santé* and the *Ministère de l'Éducation nationale, de l'Enfance et de la Jeunesse* since 2016. Dr Yolande Wagener was the Principal Investigator of the HBSC study in Luxembourg prior to the 2018 survey. 2006, 2010 and 2014 data were gathered by the *Ministère de la Santé* in cooperation with the Luxembourg Institute of Health (the then *CRP-Santé*) and the *Ministère de l'Éducation Nationale*. We would like to take this opportunity to thank Dritan Bejko, Chantal Brochmann, Sophie Couffignal, Louise Crosby, Serge Krippler, Marie-Lise Lair, Christelle Roth, Michel Vaillant, Astrid Schorn, Ralph Schroeder, Yolande Wagener and Guy Weber for their work and cooperation.

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For the HBSC Luxembourg Team:

Helmut Willems and Bechara Georges Ziadé (Principal Investigators)

1. Introduction to suicidal behaviour among adolescents

1.1. Aim of the report

Suicide is a global health problem. Every year, around 800 000 people worldwide commit suicide, with long-term consequences for their families and friends, affecting entire communities and countries (World Health Organization, 2018). In 2013, the World Health Organization (WHO) found that suicide rates had fallen only in a few countries over the past two decades, while in most countries they had either remained stable or even increased (World Health Organization, 2013). Accordingly, WHO has made suicide prevention a priority and has set two global targets in its Mental Health Action Plan 2013-2020:

- First, by the year 2020, 80% of countries will have at least two functional promotion and prevention programs in mental health that operate on a national level and are multi-sectoral.
- Second, by the year 2020, the rate of suicide in the respective countries should be reduced by 10%.

Suicide prevention requires collaboration from health and non-health sectors, as mental health is strongly influenced by social and economic determinants (World Health Organization, 2013; World Health Organization, 2014). As such, a multi-sectoral suicide prevention strategy is needed.

Suicide can be understood as the end point of a continuum of suicidal behaviour, which includes thinking about suicide as well as planning and attempting suicide (Miller & Eckert, 2009). This continuum starts with the presence or absence of emotions that might predispose to suicide (e.g. persistent sadness, hopelessness) (Currie et al., 2018). Although the frequency of each behaviour decreases as individuals move along this continuum (in other words, there are more people contemplating than attempting suicide), the level of lethality and the likelihood of death increases (Miller & Eckert, 2009).

In order to efficiently prevent suicides, not only data on suicides but also on suicidal behaviour are necessary. Data on suicides are available in Luxembourg in the form of the Causes of Death Register and these data are already being used for prevention

(D'Onghia, D'Alimonte & Louazel, 2015). In contrast, data on suicidal behaviour among adolescents in Luxembourg has been scarce to date. To close this gap, this report publishes data from the study Health Behaviour in School-aged Children (HBSC) on suicidal behaviour, collected in 2006, 2010 and 2014. This report aims to define groups at risk and present an overview of adolescents' suicidal behaviour in Luxembourg, in order to inform the public, professionals working with adolescents and policymakers and provide evidence on which national suicide prevention strategies and policies can be based.

A note on terminology

There is an ongoing discussion on terminology with regards to suicide. Although interesting, it is beyond the scope of this report. With the intent of clarification and for the purpose of this report, the terms are used similarly to the ones figured in the WHO publication "Preventing suicide: a global imperative" (WHO, 2014):

Suicide is the act of deliberately killing oneself,

A suicide attempt is a self-inflicted act with a fatal intent,

Suicidal behaviour corresponds to a range of behaviours including contemplating, planning and attempting suicide.

In addition, **sadness** is the term chosen for the purpose of this report for the feeling of sadness or hopelessness for almost every day for two weeks or more in a row during the past twelve months (as in the question addressed to the pupils in HBSC Survey, originally based on the Youth Risk Behavior Survey questions).

1.2. Epidemiology of suicide

To compare causes of death, the death rate is often given, i.e. the number of people who died of a particular cause of death in a given year. Usually, this number is calculated for a population of 100 000 people. To compare death rates in different countries, they are age-standardised because countries differ in age structure and many causes of death are age-dependent. According to Eurostat, 10.9 out of 100 000 people died of suicide in the EU in 2015. These death rates range from 4.4 in Cyprus to 30.3 in Lithuania. With a death rate of 13.9 in 2015, Luxembourg was slightly above the EU average, but the number in Luxembourg varies more than in other EU countries because of the size of the country, there are only a few cases and even small changes in the number of suicides have a strong impact on the rate. For example in 2011-2013 (in international comparisons the three-year average is often taken), the rate was below the EU average. In neighbouring countries, Germany

(11.7), France (14.1) and Belgium (16.9) death rates were also above the EU average in 2015 (Eurostat, 2018).

In the period of 2000 to 2013, 1 017 deaths were registered as suicides in Luxembourg. From these deaths, 7.7% were among persons below the age of 25 (amounting to 78 suicides). Although the crude death rate by suicide tends to increase with age, suicide is one of the leading causes of death among young people, since at that age only a minority dies from natural causes. In the period 2006 – 2016, 20 deaths were registered as suicides in the age group 10 to 19 years old, this represents approximately 19% of all deaths registered for this age group[1] (Direction de la santé, consulté en 2019).

The WHO (2014) estimates for each person that dies of suicide, there are more than 20 people attempting suicide. Information on suicide attempts is crucial for the identification of high-risk groups, especially since a previous suicide attempt is the most important predictor for death by suicide (World Health Organization, 2014).

1.3. Suicidal behaviour during adolescence

Adolescence is a critical developmental time during which adolescents undergo biological, social and psychological changes, which can contribute to increased stress. These increased stress-levels, in turn, amplify risk behaviours and psychopathology (Castellví et al., 2017). Multiple factors influence adolescent mental health, such as socioeconomic factors, relationships with parents and friends, risk-taking behaviours, exploration of sexual identity and discrimination or exclusion. The more risk factors, the greater the potential impact on the mental health of an adolescent. To promote mental well-being, it is important that adolescents maintain healthy social and emotional habits, limit risk-taking behaviours, as well as have supportive environments at their school, family and wider community (World Health Organization, 2018). Furthermore, adolescents at increased risk of psychological and social adjustment problems are also at an increased risk of suicide behaviours (Geoffroy et al., 2016).

The WHO estimates that 62 000 adolescents died as a result of suicide in 2016 worldwide. There is a concern that suicides might be underreported, meaning that the actual number of youth suicides may be higher (World Health Organization, 2014). In order to decrease rates of suicide mortality, it is important to address suicidal contemplation among adolescents, as most transitions to a suicide attempt may occur within a year (Chau, Kabuth & Chau, 2016). Especially when considering

[1] Estimate obtained by adding the numbers available in the *Registre des causes de décès* (Direction de la santé, consulté en 2019), using the following ICD-10 codes X60 – X84, Y10 – Y34

suicide in a continuum, it is natural to inquire on persistent sadness, suicide contemplation, suicide planning and suicide attempts (Currie et al., 2014; Miller & Eckert, 2009). After all, individuals do not necessarily move linearly through them (in other words, many who are considering suicide will not necessarily move to attempt it and some who attempted suicide were not necessarily planning to do so). Thus, individuals who attempt suicide do not necessarily have the same profile as individuals who are considering suicide.

Suicide behaviours are considered serious public health problems as well as priorities when it comes to raising awareness and the development of comprehensive suicide prevention strategies. Through the data collected with the HBSC study, it is possible to gain insight regarding the suicidal behaviour of the adolescent population of Luxembourg. With the data on prevalence, trends over the years and identification of groups at risk, this report can contribute to the understanding of the scope of the problem.

1.4. Objectives and design of the different chapters

The objective of this report is to define groups at risk and present an overview of adolescents' suicidal behaviour in Luxembourg in order to inform the public, professionals working with adolescents and policymakers and provide evidence on which national suicide prevention strategies and policies can be based.

With this purpose in mind, this report has three main results chapters (chapters 3, 4 and 5), designed with a specific objective in mind.

Chapter 3 aims to present the distribution of adolescents who engaged in the different suicidal behaviours in 2006, 2010 and 2014, in order to observe trends over time.

Chapter 4 aims to identify risk groups. Bivariate logistic regressions analyses were conducted for 24 independent variables with three suicidal behaviours (contemplation of suicide, planning of suicide and suicide attempt) and sadness as dependent variables in order to identify possible risk factors.

Chapter 5 aims to go further in the identification of risk groups, taking into consideration the relationships between the independent variables presented in chapter 4 and ranking them in order of relevance (in general and using a gender approach).

2. Methods

2.1. The Health Behaviour in School-aged Children Study

HBSC is a cross-national study that investigates health and health behaviour of adolescents. The study takes place in more than 45 countries and regions across Europe and North America with a standardised questionnaire, which includes mandatory and optional items. The mandatory items are asked in each country participating in the HBSC study, ensuring the comparability of the study across countries (see Table 1).

Table 1: Mandatory themes of the HBSC-study in 2014

HBSC study 2014 themes
Sociodemographic factors and socio-economic environment
Subjective well-being, health problems, body image and life satisfaction
Dietary habits, dieting
Oral health
Physical injuries
Involvement in bullying and physical fighting
Physical activity
Relationships with family members and friends
School environment
Sexual behaviour
Substance use: alcohol, tobacco and cannabis

The optional items can be chosen from existing question packages related to the main survey themes, allowing the national research team to collect more data on a topic of interest for the country.

The questions, originally in English, are translated to the country's language (in the case of Luxembourg, both French and German). The translated questions are back-translated to English and compared with the original to ensure that the meaning of the questions did not change during the translation process.

2.2. Suicidal behaviour in the HBSC Study

The questions on suicidal behaviour were adopted from the Youth Risk Behavior Survey in the United States (May & Klonsky, 2011). Within the HBSC study, these questions are part of an optional package, meaning that each country participating in the study can decide whether to include the questions in their survey or not. In Luxembourg, the questions were included in the survey rounds of 2006, 2010 and 2014. Unfortunately, it was no longer possible for the HBSC Luxembourg team to ask questions on suicidal behaviour in 2018 in the same way as before, so no more recent data than those from 2014 are available.

Table 2 presents the questions asked in the same logical sequence of the questionnaire. First, the adolescents were asked about sadness, an emotion that could predispose them to suicide. Then follow questions on the contemplation of suicide, planning of suicide attempts and whether the adolescents made suicide attempts.

Table 2: Questions on suicidal behaviour in the HBSC-study of 2006, 2010 and 2014

Topic	Complete question
Sadness	"During the past 12 months, did you ever feel so sad or hopeless almost every day for two weeks or more in a row that you stopped doing some usual activities?"
Contemplation of suicide	"During the past 12 months, did you ever seriously consider suicide?"
Planning of suicide	"During the past 12 months, did you ever make a plan as to how you would attempt suicide?"
Attempting suicide	"During the past 12 months, how many times did you actually attempt suicide?"

2.3. HBSC in Luxembourg

Luxembourg participated in the HBSC study in the survey rounds 2006, 2010, 2014 and 2018. Schools teaching according to the Luxembourgish national curriculum were included in the study, whereas schools that deviate from the national curriculum were excluded. Within these schools, pupils from class level 4.1 (*cycle 4.1.*) in *fondamental* up to class level 12 from the then *secondaire technique* (currently named *secondaire général*) and class level 2 from the *secondaire classique* were asked to participate in the survey. For the 2014 survey, data was collected from 29.04.2014 to 04.07.2014 (Heinz, Kern, Residori, Catunda & Willems, 2017).

The HBSC-study was approved by the *Comité National d'Ethique de Recherche* (CNER, approval number 201403/07) and the *Commission Nationale pour la Protection des Données* (CNPD) was informed about the study.

Table 3: Overview of the HBSC-study in 2014

Drawing of the sample	Randomized selection of school classes in which pupils aged 11, 13, 15 and 17 are taught. All pupils in the selected classes are invited to participate in the survey.
Methods	Written (paper/pencil) survey during school hours (approx. 1 hour).
Excluded	The HBSC study cannot make statements about pupils that receive tuition abroad, at *Education différenciée* or at schools that deviate from the national curriculum (i.e. international schools).
Full sample size	7233 pupils aged 11 to 18 years old.
Sample for the purpose of this report	**This report is based on 5262 secondary school pupils aged 12 to 18 years old.** **Questions about suicidal behaviour were not asked in primary schools, thus primary school pupils are excluded from the analysis in this report.**

Parents of pupils that were invited for the study were provided with an information letter regarding the survey, as well as a form to indicate whether they allowed their child to participate in the study (an implied consent was used). Then, teachers from included classes administered the questionnaire during class and instructed their pupils to respond with sincerity and reinsured their right to refuse participation at any time. To ensure anonymity, teachers were not allowed to read the questionnaires, placed in sealed envelopes, filled out by their pupils. An overview of the sampling methodology of the HBSC-Luxembourg study in 2014 can be found in Table 3.

Table 4 describes the unweighted samples for the HBSC survey rounds of 2006, 2010 and 2014. The sample of 2006 includes 6 672 adolescents, 50.8% of whom are boys. Within this sample, there are 2 846 pupils from the *enseignement secondaire classique* (ESC, 42.0%) and 3 790 pupils from the *enseignement secondaire technique* (currently named *secondaire général*, EST, 58.0%). The sample of 2010 includes 7 187 adolescents, 49.5% of whom are boys. Within this sample, there are 2 607 pupils from the *ESC* (36.3%) and 4 580 pupils from the *EST* (63.7%). The sample of 2014 includes 5 262 pupils, 47.3% of whom are boys. Within this sample, there are 1 958 pupils from the *ESC* (35.8%) and 3 304 from the *EST* (64.3%). In all rounds of the survey, relatively few pupils at the age of 12 are included, because some pupils at this age still attend the primary school where no questions about suicide intentions were asked.

Table 4: Description of the sample (unweighted data)

	2006	2010	2014
Gender			
Boy	3437 (50.8%)	3557 (49.5%)	2481 (47.3%)
Girl	3330 (49.2%)	3622 (50.5%)	2764 (52.7%)
School type			
ESC	2846 (42.0%)	2607 (36.3%)	1958 (35.8%)
EST	3926 (58.0%)	4580 (63.7%)	3304 (64.3%)
Age			
12	420 (6.2%)	184 (2.6%)	160 (3.0%)
13	1098 (16.2%)	1195 (16.6%)	780 (14.8%)
14	1305 (19.3%)	1298 (18.1%)	861 (16.4%)
15	1259 (18.6%)	1245 (17.3%)	973 (18.5%)
16	1259 (18.6%)	1248 (17.4%)	947 (18.0%)
17	1237 (18.3%)	1138 (15.8%)	879 (16.7%)
18	194 (2.9%)	879 (12.2%)	662 (12.6%)
Total *	6672	7187	5262

*Deviations regarding the total number of respondents are due to missing data

2.4. Statistical analysis

In this section, the statistical analyses used throughout the report are described. Unless mentioned otherwise, all statistical analyses were done using weighted data. This ensures that the survey results reflect an accurate picture of reality. As participation rates vary according to class level, and many behaviours also vary with the class level, the data were weighted, i.e. the structure of class levels in the sample was brought into line with the structure in the pupil population. More specifically,

pupils from underrepresented grades were weighted higher and, analogously, pupils from overrepresented grades were weighted lower.

Confidence Intervals (CI) are used throughout the report as an indicator of the precision of an estimated parameter. The smaller the confidence interval, the more accurate the estimate. To give an example, in table 5 the CI for the OR (odds ratio) of pupils who feel “too thin” to be sad is 1.44 with a CI of 1.12 – 1.84. Assuming the point estimate of 1.44 is the true value in a certain population, if we drew a lot of samples from this population, we would find point estimates in the range of 1.12 to 1.84 in 95% of these samples.

Table 5: Interpreting logistic regression and confidence intervals through an example with body image variable

Body image	**OR**	**95% CI**	**Cross tabulation**	
			1 =sadness	0 =no sadness
Right size (ref.)	1.00		18.2%	81.8%
Too thin	1.44 **	1.12 – 1.84	31.2%	68.8%
Too fat	1.53 ***	1.29 – 1.83	38.1%	61.9%

* p <.05; ** p <.01; ***p <.001

In **chapter 3**, the trends presented are a comparison of the percentages and respective CI of the different suicidal behaviours in each survey cycle.

Chapter 4 makes use of logistic regressions, a method that analyses correlations between a dependent variable and one or several independent variables. In a binary logistic regression, the independent variables can be metric (e.g. life satisfaction; on a scale from 0 to 10), ordinal (e.g. pressure by schoolwork; categories with intrinsic order) or nominal (e.g. gender; categories without intrinsic order), whereas the dependent variable (or “outcome”) is coded in a binary fashion. To illustrate this, in Table 5 “1 =sadness” means that the adolescent indicated to have experienced sadness in the past year and the code “0 =no sadness” means that the adolescent has not experienced sadness.

Odds ratios (ORs) are the main result of logistic regressions. They indicate the chance that adolescents with certain characteristics (e.g. male, low life satisfaction) report a certain behaviour more or less often than the reference group they are compared to. In the example in Table 5, we examine the relationship between long-lasting sadness and the pupils' body image. The OR of 1.44 means that pupils who think they are too thin are also more likely to have been sad for a long time last year than pupils who think their bodies have the "right size". In reverse, pupils who thought they were too fat also reported more long-lasting sadness than the reference group. The asterisks (*) indicate that both ORs are statistically significant, meaning that the differences between each group and the reference group are unlikely to be due to chance. The

ORs generally correspond to the cross-tabulation percentages. Accordingly, 38.1% of adolescents that perceived their body to be “too fat” indicated sadness, in contrast to the 18.2% of adolescents that perceived their body to be “the right size”.

In this report, logistical regressions are used in two variants. In Chapter 4, the relationships between each of the 24 independent variables and suicidal behaviour as a dependent variable are considered in isolation. For example, the relationship between gender and long-lasting sadness is examined, and the relationship between psychosomatic health complaints and long-lasting sadness is examined. These two comparisons will show that girls have a higher risk of long-lasting sadness and that the number of psychosomatic complaints also increases the risk of long-lasting sadness. For prevention, these results indicate which groups should be kept in mind as risk groups. However, these isolated analyses lead to a multitude of results that are difficult to comprehend. Besides, the isolated analysis does not take into account the fact that there are also correlations between the independent variables.

For this reason, **Chapter 5** presents logistic regressions in which all independent variables are taken into account in the model simultaneously. Thus the number of independent variables can be reduced and the results from chapter 4 can be summarized. To stay with the example: Girls not only have a higher risk of long-lasting sadness but on average they also have more psychosomatic complaints. If gender and psychosomatic complaints are considered simultaneously, there is no link between gender and long-lasting sadness. This suggests that girls are not more vulnerable to sadness per se, but because they have more risk factors for sadness. In other words, girls and boys with the same number of psychosomatic complaints also have the same risk of sadness.

If an isolated relationship between an independent variable from Chapter 4 and suicidal behaviour is no longer significant in the multivariate analysis in Chapter 5, this does not mean that the variable is unimportant for prevention. Rather, the characteristics examined in Chapter 4 can serve to identify risk groups. Chapter 5, by contrast, is intended to facilitate the understanding of the many risk factors by indicating whether the property in question is itself a risk, or whether pupils with this property have more risk factors.

3. Trends of suicidal behaviour

Key findings

In 2006, 2010 and 2014, of the 19 328 pupils aged between 12 and 18 years who answered suicide related questions, one-quarter expressed to have experienced such sadness during two weeks in a row (over the past twelve months) that they stopped doing their usual activities and almost 15% indicated to have seriously thought about committing suicide in the previous year.

In addition, the results from 2010 and 2014 show that one out of eight adolescents reported having developed a plan to commit suicide in the previous year. Furthermore, respectively 6.7% and 7.7% reported having attempted suicide in the previous year. This corresponds to a total of 916 surveyed pupils in 2010 and 2014.

Principales conclusions

En 2006, 2010 et 2014, sur les 19 328 élèves âgés de 12 à 18 ans qui avaient répondu à des questions sur le suicide, un quart des adolescents déclare avoir ressenti une telle tristesse pendant deux semaines consécutives (au cours des 12 derniers mois) qu'ils ont cessé leurs activités habituelles, et près de 15 % des adolescents indiquent avoir eu des pensées suicidaires au cours de l'année précédente.

En outre, les résultats de 2010 et de 2014 montrent qu'un adolescent sur huit déclare avoir planifié un suicide au cours de l'année précédente. Par ailleurs, 6,7 % et 7,7 % des adolescents indiquent avoir fait une tentative de suicide durant l'année passée. Cela correspond à un total de 916 élèves interrogés en 2010 et 2014.

Wichtigste Erkenntnisse

In den Jahren 2006, 2010 und 2014 haben insgesamt 19 328 Schüler im Alter von 12 bis 18 Jahren Fragen zum Thema Selbstmord beantwortet. Innerhalb der vergangenen 12 Monate hat sich ein Viertel der Schüler während zwei Wochen am Stück so traurig gefühlt,

dass sie ihre üblichen Aktivitäten eingestellt haben. Zudem gaben fast 15 % an, im Vorjahr ernsthaft über Selbstmord nachgedacht zu haben.

In den Jahren 2010 und 2014 berichtete jeder achte Jugendliche, dass er im vergangenen Jahr einen Selbstmord geplant hatte. Zudem berichteten 6,7 % beziehungsweise 7,7 % der Jugendlichen, dass sie in den vergangenen 12 Monaten tatsächlich einen Selbstmordversuch unternommen hatten. Dies entspricht insgesamt 916 Schülern, die in den Jahren 2010 und 2014 befragt wurden.

How to interpret the results

Data from the years 2006, 2010 and 2014 were put together side by side to give an overview of the percentages of the suicide behaviours in those years. To this end, it is necessary to take into consideration both the presented percentages and the confidence intervals (CI, the bars accompanying the percentages). The trends can be considered significant if the CIs do not overlap.

3.1. Frequency of suicidal behaviour in 2006, 2010 and 2014

Suicide is one of the most tragic causes of death for loved ones, both because of the multitude of emotions involved and because of the risk of pathological grief, contagion, etc. (Miklin, Mueller, Abrutyn & Ordonez, 2019). The majority of people who commit suicide are going through a depressive episode (World Health Organization, 2014). Major symptoms of depression include intense sadness for at least two weeks that interferes with daily activities, as well as suicidal thoughts (American Psychiatric Association, 2013).

Table 6: Frequencies of suicidal behaviour for the survey rounds of 2006, 2010 and 2014

	2006	2010	2014
Sadness			
No	4682 (73.4%)	5483 (78.5%)	4146 (71.4%)
Yes	1700 (26.6%)	1506 (21.5%)	1657 (28.3%)
Contemplation of suicide			
No	5384 (84.5%)	6076 (87.3%)	4918 (84.9%)
Yes	988 (15.5%)	882 (12.7%)	875 (15.1%)
Planning of suicide	*		
No	-	6176 (88.7%)	4980 (86.0%)
Yes	-	783 (11.3%)	811 (14.0%)
Suicide attempt	*		
No	-	6493 (93.3%)	5347 (92.3%)
Yes	-	468 (6.7%)	448 (7.7%)

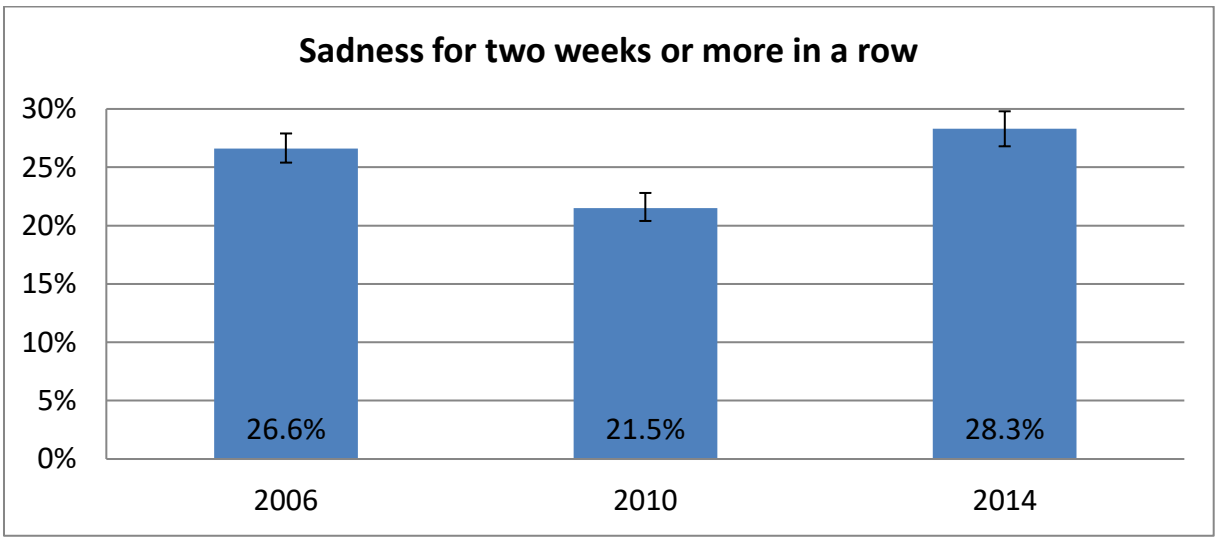
Table 6 gives an overview of the frequencies of sadness, contemplation of suicide, planning of suicide and suicide attempt for the different survey cycles. In the year 2006, the questions regarding the planning of suicide and suicide attempt were asked differently than in the years 2010 and 2014. Due to this deviation, the results are not comparable and the data for planning of suicide and suicide attempt of 2006 is not included in the overview.

In sum, in 2014 28% of Luxembourgish adolescents participating in the survey experienced sadness for at least two weeks in a row during the last 12 months, 15% have seriously contemplated suicide in the last 12 months, 14% have made a plan for suicide in the last 12 months and 8% have attempted suicide at least once in the last 12 months. Although the proportion might seem elevated, the HBSC is a probabilistic survey and all trends presented are significant which means that we can make population inferences very safely. In addition, the numbers are comparable to other countries. In the USA, for example, the Youth Risk Behavior Surveillance System (Centers for Disease Control and Prevention, 2018) presents similar results, using the same questions. 17% of the students participating in their survey seriously considered attempting suicide and 8% reported making at least one suicide attempt in the past 12 months (data from 2013). HBSC data from other countries are also similar (Zaborskis, Ilionsky, Tesler & Heinz, 2018). In Israel, 11% seriously considered attempting suicide and 7% reported at least one suicide attempt in the past 12 months; in Lithuania, they were 23% to have seriously considered attempting suicide and 12% to reported at least one suicide attempt in the past 12 months (data from 2014). Accordingly, in Slovenia, the 2014 HBSC showed that 16% have seriously considered attempting suicide (Bračič, Roškar, Zager Kocjan & Jeriček Klanšček, 2019).

3.2. Trends in sadness and contemplation of suicide

In 2006, 2010 and 2014, the HBSC Luxembourg study collected data on sadness and contemplation of suicide among adolescents. Using data from the different survey cycles, it is possible to examine the trends over time. In the following Figure 1 and 2, data is presented including 95% confidence intervals.

Figure 1: Trends for enduring sadness in survey cycles 2006, 2010 and 2014



As Figure 1 displays, 26.6% of adolescents indicated to have experienced sadness for at least two weeks in a row in 2006. In 2010, this percentage dropped to 21.5%. In 2014, the largest percentage of adolescents indicated sadness with 28.3%. These percentages, with the lowest amount of sad pupils in 2010, create a slightly U-shaped curve.

Figure 2: Trends for contemplating suicide in survey cycles 2006, 2010 and 2014

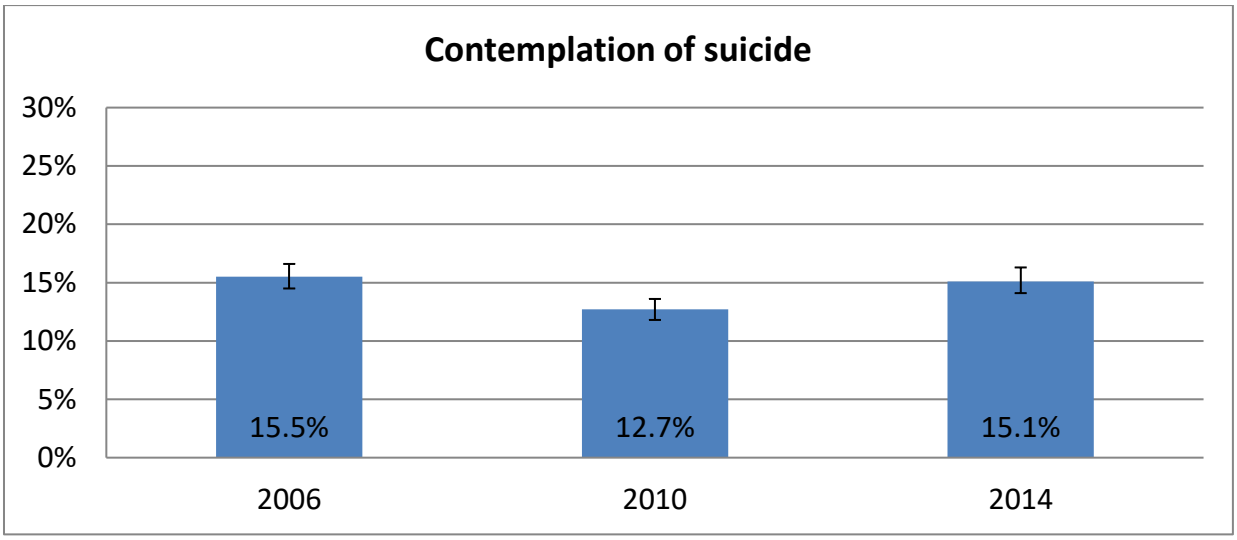


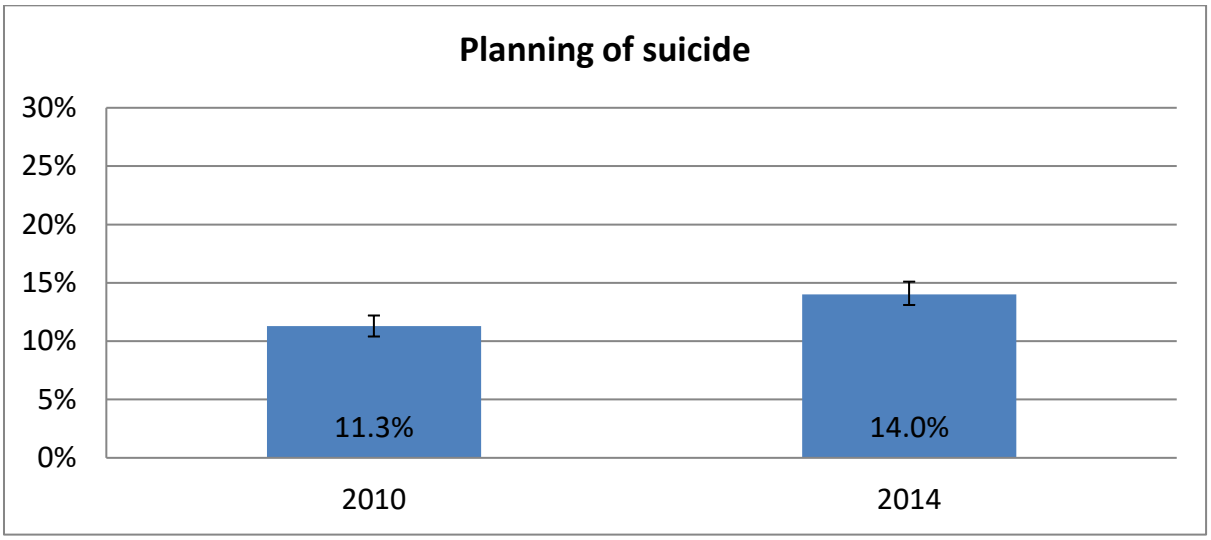
Figure 2 displays the trends for adolescents who indicated to have seriously contemplated attempting suicide. Similar to the trends for sadness, a U-shape curve can be observed. In 2006, 15.5% of the pupils indicated to have seriously contemplated suicide. There was a decrease in 2010 when 12.7% of pupils indicated to have contemplated suicide and in 2014 the percentage increased to 15.1%.

In sum, from 2006 to 2014 the percentage of adolescents who experienced sadness for at least two weeks in a row during the last 12 months did not significantly change (with 27% and 28% respectively). Regarding contemplation of suicide, the findings are similar, with 16% in 2006 and 15% in 2014, no difference can be seen. In other countries, such as the USA, this variable did not change significantly either (Centers for Disease Control and Prevention, 2018).

3.3. Planning and attempting suicide (2010 versus 2014)

Regarding planning and attempting suicide, only a comparison between the years 2010 and 2014 is possible. In the year 2006, the question on the contemplation of suicide was phrased differently, proposing the respondents to skip the next two questions in the case of a “no” as the answer for seriously thinking about suicide. These differences, although minor, thus do not allow for a comparison using the 2006 data. In order to draw a conclusion if an increase or decrease in suicidal behaviours takes place, multiple survey rounds have to be analysed.

Figure 3: Percentage of adolescents who planned suicide in survey cycles 2010 and 2014



Data for planning suicide for survey cycles 2010 and 2014 are displayed in Figure 3 with 95% confidence intervals. There was an increase in the percentage of pupils that made a suicide plan between these two survey years. In 2010, 11.3% of pupils indicated to have made a plan, whereas in 2014 this percentage was 14.0% of pupils.

Figure 4: Percentage of adolescents who attempted suicide in survey cycles 2010 and 2014

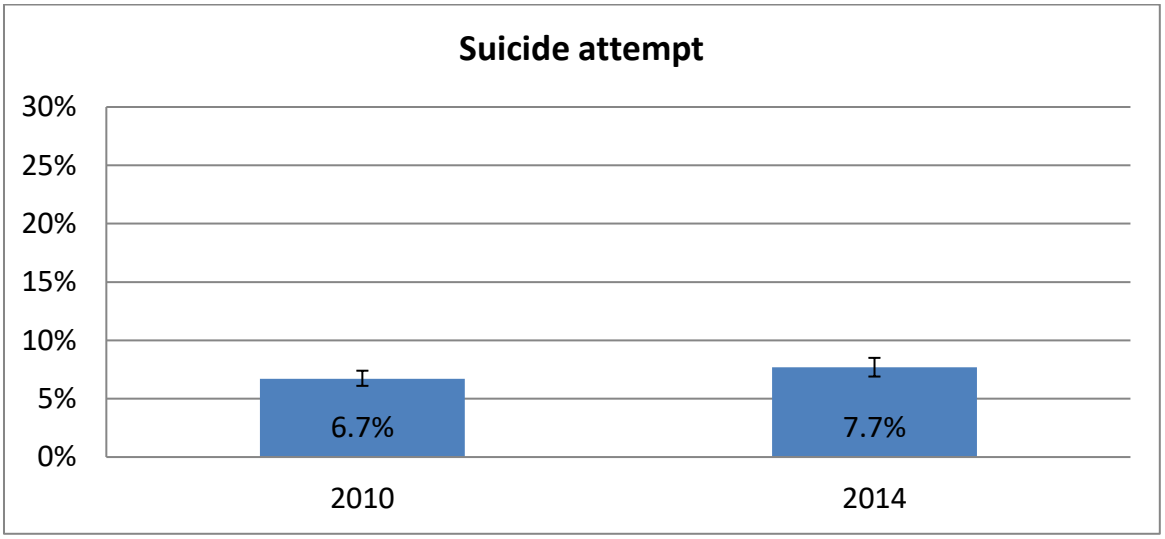


Figure 4 indicates that the percentage of pupils attempting suicide went from 6.7% in 2010 to 7.7% in 2014. This slight increase, however, is not significant, as the confidence intervals presented do overlap.

In sum, from 2010 to 2014 there has been a significant increase in the percentage of adolescents who planned suicide (11% and 14% respectively) and a small non-significant increase in suicide attempts (7% and 8% respectively). However, those are punctual results, specific to the two years of data collection, in order to draw a conclusion on trends data of multiple survey rounds have to be taken into consideration.

4. Risk factors for suicidal behaviour: bivariate analysis

Key findings

For suicidal behaviour, the analyses indicated the following risk groups related to demographic factors: girls (twice as concerned as boys)[2], adolescents aged about 14 years, foreign-born adolescents, adolescents who do not reside with both parents and adolescents who perceive their family's financial situation as poor.

Furthermore, suicidal behaviours among adolescents were associated with a lack of perceived social support, particularly low parental support in schooling, low classmates supportive and very difficult communication with mother or father.

The risk for suicidal behaviour was higher among adolescents who have repeated a school year, pupils who experience high schoolwork pressure, who consider their academic achievement to be below average, who feel they cannot count on the support of their teachers. Pupils from "*secondaire classique*" indicate less suicidal behaviour than pupils from the "*secondaire technique*".

The results of the survey indicated that being sexually assaulted increases the risk of attempted suicide by a factor of five, being a victim of bullying increases the risk of attempted suicide by a factor of four, being a bully doubles the risk of attempted suicide and being involved in fights increases the risk of suicide by a factor of two (at least) when compared to adolescents who were not involved in fights.

The risk of suicidality increases with the number of recurrent health problems encountered. Suicide attempts are 3 times more frequent among adolescents with low life satisfaction than among adolescents with high life satisfaction. Adolescents who feel too thin or too fat have a twofold and three-fold risk of attempting suicide respectively compared to adolescents who think that they are about the right size. Adolescents who are not physically active show a higher risk of suicidal behaviour. Spending more than eight hours a day in front of screens increases the risk of suicidal contemplation by two and of attempted suicide by three times when compared to adolescents that spend less than 4 hours a day in front of screens. While the use of tobacco, alcohol or cannabis

[2] While suicidal ideation and suicide attempts are higher among female adolescents, it is important to notice that male adolescents have higher rates of completed suicides. For more information on gender differences, see chapter 5 page 56.

doubles the risk of suicide attempt, the combined use of these three substances increases the risk six-fold when compared to adolescents who do not consume substances.

Principales conclusions

Pour les variables comportements suicidaires, les analyses ont révélé des groupes à risques liés aux facteurs démographiques suivants : les filles (celles-ci sont deux fois plus exposées que les garçons)[3], les adolescents âgés d'environ 14 ans, les adolescents nés à l'étranger, les adolescents qui ne vivent pas avec leurs deux parents et les adolescents qui estiment que la situation financière de leur famille est faible.

Par ailleurs, le comportement suicidaire est plus fréquent chez les adolescents, lorsqu'ils perçoivent leur soutien social comme faible, c'est-à-dire lorsqu'ils pensent que leurs parents ne les soutiennent pas sur le plan scolaire, lorsqu'ils pensent que leurs camarades de classe ne les soutiennent pas et lorsque la communication avec leur mère ou leur père est difficile.

En outre, le risque de comportements suicidaires est plus élevé chez les adolescents ayant redoublé une année scolaire, qui ressentent une forte pression liée au travail scolaire, qui perçoivent leurs résultats scolaires comme inférieurs à la moyenne, et qui ont le sentiment de ne pas pouvoir compter sur le soutien de leurs professeurs. Les comportements suicidaires sont moins prononcés chez les adolescents du secondaire classique que chez les élèves du secondaire technique.

Les résultats de l'enquête ont montré que les agressions sexuelles augmentent de cinq fois le risque de tentative de suicide. Celui-ci est quatre fois plus élevé chez les victimes de harcèlement et deux fois plus élevé chez les auteurs de harcèlement. Finalement les adolescents qui ont participé à des bagarres présentent au moins deux fois plus de risques de tentative de suicide que ceux qui n'ont pas participé à des bagarres.

Le risque de comportement suicidaire augmente avec le nombre de plaintes de santé récurrentes. En outre, les adolescents qui ont une satisfaction de vie faible présentent trois fois plus de risques de tentative de suicide que les adolescents qui ont une satisfaction de vie élevée. Chez les adolescents qui se sentent trop minces ce risque est deux fois plus grand alors que chez ceux qui se sentent trop gros ce risque est multiplié par trois par rapport aux adolescents qui pensent qu'ils sont au bon poids. Le risque de comportement suicidaire augmente chez les adolescents qui ne pratiquent aucune activité physique. Passer plus de huit heures par jour devant un écran augmente de deux fois le risque de pensées suicidaires et de trois fois le risque de tentative de suicide par rapport aux adolescents qui passent moins de 4 heures par jour devant un écran. Alors que la consommation de tabac, d'alcool ou de cannabis double le risque de tentative de

[3] Alors que les pensées et les comportements suicidaires sont plus fréquents chez les filles, il est important de noter que les garçons ont un pourcentage plus élevé de suicides réalisés. De plus amples informations sur la différence entre les sexes sont décrites au chapitre 5, p. 56.

suicide, la consommation combinée de ces trois substances multiplie ce risque par six comparé aux adolescents qui ne consomment pas de substances.

Wichtigste Erkenntnisse

Die Analysen ergaben folgende soziodemographische Risikogruppen für Suizidverhalten: Mädchen (doppelt so oft betroffen wie Jungen[4]); Jugendliche im Alter von etwa 14 Jahren; im Ausland geborene Jugendliche; Jugendliche, die nicht bei beiden Elternteilen wohnen sowie Jugendliche, die die finanzielle Situation ihrer Familie als schlecht empfinden.

Des Weiteren ist suizidales Verhalten unter Jugendlichen häufiger, wenn sie ihre soziale Unterstützung als gering wahrnehmen, das heißt wenn sie glauben, dass ihre Eltern sie in schulischen Angelegenheiten nicht unterstützen; wenn sie denken, dass ihre Klassenkameraden sie nicht unterstützen und wenn die Kommunikation mit Mutter oder Vater schwierig ist.

Das Risiko für Suizidverhalten war höher bei Jugendlichen, die ein Schuljahr wiederholt haben, bei Schülern, die unter hohem schulischen Leistungsdruck stehen, die ihre schulischen Leistungen als unterdurchschnittlich einschätzen, die das Gefühl haben, nicht auf die Unterstützung ihrer Lehrer zählen zu können. Bei Schülern des *Secondaire classique* sind Suizidgedanken und -verhalten geringer ausgeprägt als bei Schülern des *Secondaire technique*.

Die Ergebnisse der Befragung zeigten, dass sexuelle Übergriffe das Risiko eines Selbstmordversuchs um das Fünffache erhöhen. Bei Mobbingopfern ist das Risiko eines Selbstmordversuchs um das Vierfache erhöht und bei Mobbingtätern um das Doppelte. Schüler, die sich an Schlägereien beteiligen, haben ein wenigstens doppelt so hohes Risiko verglichen mit Schülern, die im vergangenen Jahr nicht an Schlägereien beteiligt waren.

Das Risiko für Suizidverhalten nimmt mit der Anzahl von wiederkehrenden Gesundheitsbeschwerden zu. Jugendliche mit geringer Lebenszufriedenheit haben dreimal mehr Selbstmordversuche unternommen, als Jugendliche mit einer hohen Lebenszufriedenheit. Jugendliche, die sich zu dünn oder zu dick fühlen, haben ein doppelt bzw. dreifach höheres Risiko für Suizidversuche, im Vergleich zu Jugendlichen, die denken, ungefähr das richtige Gewicht zu haben. Das Risiko für Suizidverhalten steigt an, wenn Jugendliche keine körperliche Aktivität ausüben. Wer täglich mehr als acht Stunden vor dem Bildschirm verbringt, erhöht das Risiko von Selbstmordgedanken um das Zweifache und von Selbstmordversuchen um das Dreifache, verglichen mit Jugendlichen, die weniger als 4 Stunden täglich vor einem Bildschirm verbringen. Während der Konsum von Tabak, Alkohol oder Cannabis das Suizidrisiko verdoppelt, erhöht der kombinierte Konsum

[4] Während Suizidgedanken und – verhalten bei Mädchen häufiger sind, ist wichtig anzumerken, dass Jungen eine höhere Rate an vollendeten Selbstmorden haben. Weitere Informationen über den Unterschied zwischen den Geschlechtern sind in Kapitel 5, S. 56 beschrieben.

dieser drei Substanzen das Risiko um das sechsfache, verglichen mit Jugendlichen, die keine Substanzen konsumieren.

How to interpret the results

In the following, we present the results of bivariate logistic regressions using the 2014 data only. For this purpose, the relationships between 24 independent variables and the 4 outcomes are examined individually. The 24 independent variables are regarded as risk factors and outcomes refer to the 4 questions on suicide (sadness, contemplation and planning of suicide, suicide attempt). The direction and strength of the relationship are presented as odds ratios (OR). An odds ratio greater than 1 means that a person with the respective characteristic (e.g. feeling fat) has a higher probability of occurrence of the respective outcome compared to a person from the reference group (here: persons who consider their body to be "right size"). The larger the OR, the greater the probability.

4.1. Sociodemographic risk factors

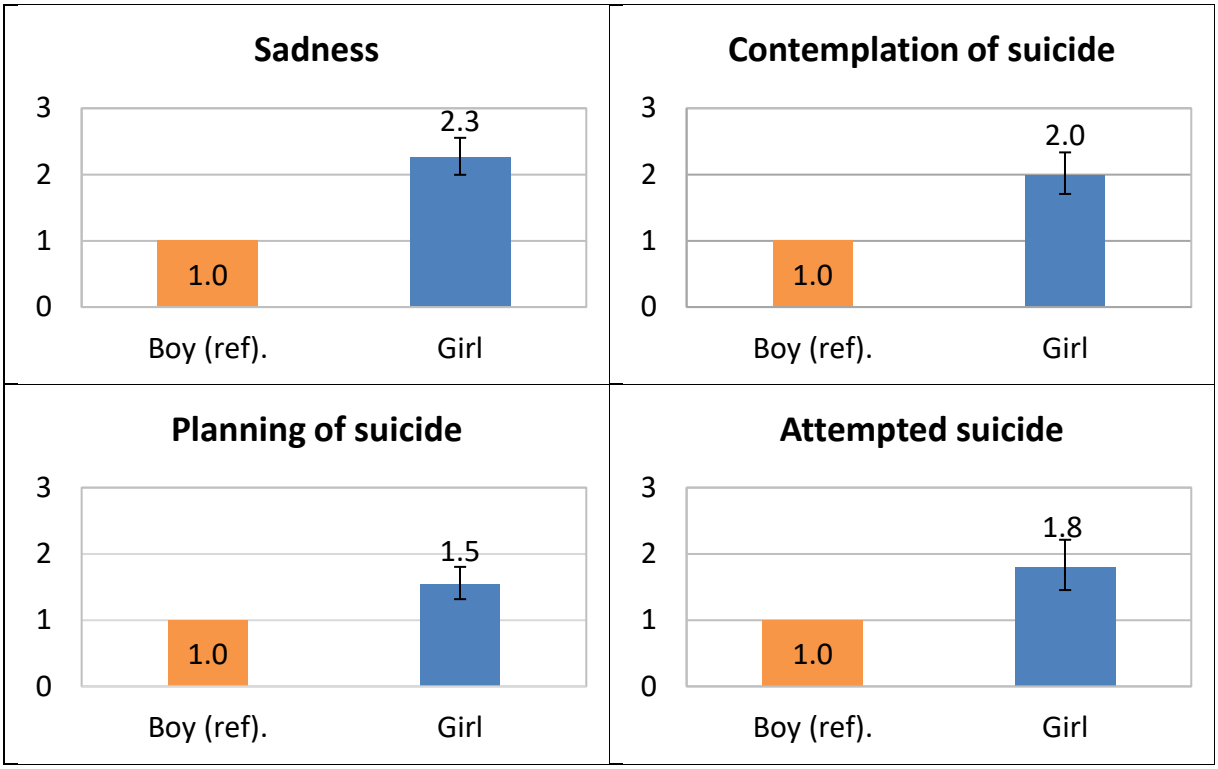
Suicidal thoughts and behaviours are more or less present depending on socio-demographic characteristics. A variable taken separately does not necessarily indicate a risk. The risk increases especially when a person has several risk factors at the same time.

Gender

Multiple studies have found a paradoxical relationship between gender and suicidal behaviour. This means that while suicidal contemplation and suicide attempts are higher among female adolescents, male adolescents have higher rates of completed suicides (Im, Oh & Suk, 2017; Miller & Eckert, 2009; Roh, Jung & Hong, 2018). There are multiple possible explanations for this finding. Males are for example less likely than females to display protective behaviours, such as seeking help from their environment (Miller & Eckert, 2009). Additionally, males more often use highly lethal suicide methods than females (Mergl et al., 2015).

The odds ratio of girls for long-lasting sadness is 2.3 times higher compared to boys (Figure 5). Likewise, their odds ratios to contemplate, plan and attempt suicide are respectively 2.0, 1.5 and 1.8 times higher. Girls are thus more likely to experience and report suicidal behaviours than boys. The HBSC study does not provide data on completed suicides, but the *Plan National de Prévention du Suicide Luxembourg* confirms that in Luxembourg from 2000 to 2013 more men than women in each age group committed suicide (D'Onghia, D'Alimonte & Louazel, 2015).

Figure 5: Odds ratios with 95% confidence intervals for suicidal behaviours for gender



The pattern found in the Luxembourgish adolescent population where gender and suicidal behaviour is concerned is similar to patterns found in previous studies (e.g. Im et al., 2017; Miller & Eckert, 2009; Roh et al., 2018); girls had higher odds for all suicidal behaviours. These findings highlight the importance of addressing male and female adolescents differently in suicide prevention campaigns, as they have different profiles.

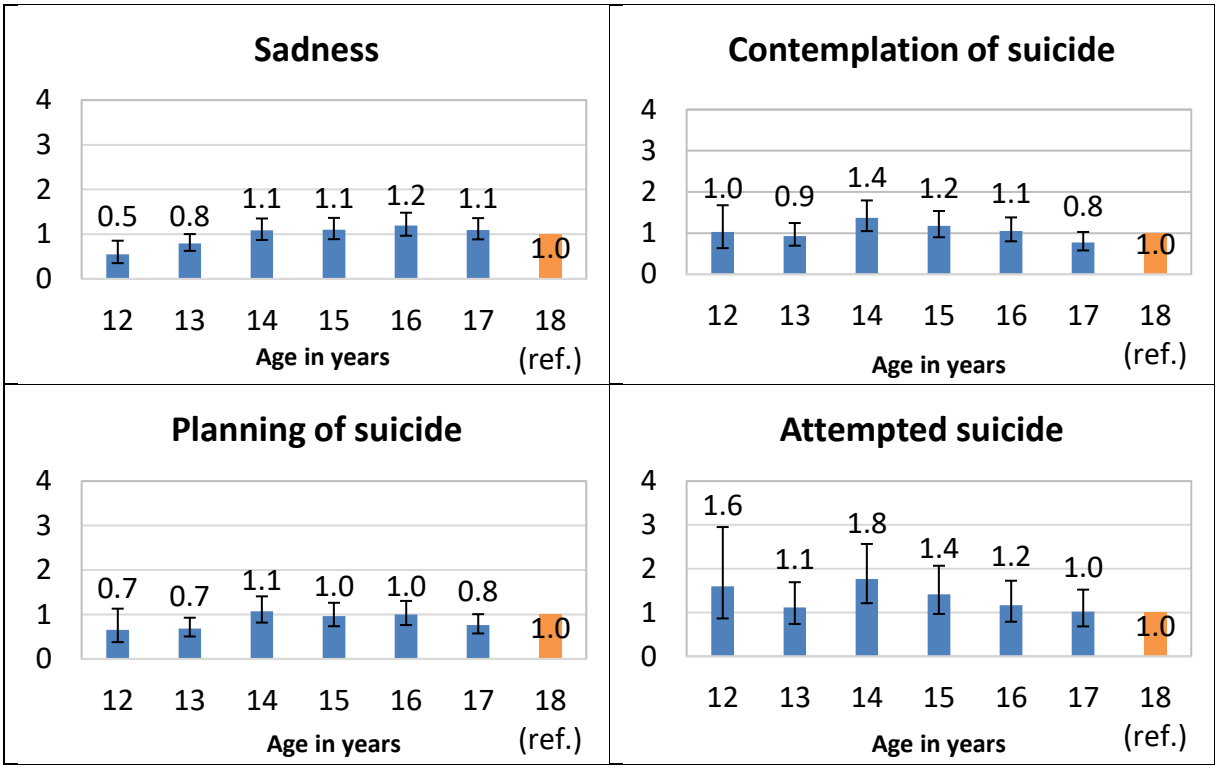
Age

Generally, the probability of suicide increases with age. Suicide rates are reported to be higher for 15 to 19 year old adolescents compared to 10 to 14 year olds. However, multiple studies have found that suicide rates have increased for adolescents aged 14 and younger over the past two decades (Miller & Eckert, 2009; Roh et al., 2018).

14 year olds are the ones in the HBSC study having the highest odds ratios for contemplation and planning of suicide and suicide attempts. The odds ratios for suicide attempts tend to be higher for younger adolescents than for older adolescents. Although age has an overall significant effect on the risk of suicidal behaviour of Luxembourgish adolescents, there is no strong pattern visible.

Although 14 year olds are the ones having the highest odds ratios for suicide behaviours, it is important to notice that even very young adolescents may have suicidal thoughts and prevention should also be targeted at this group.

Figure 6: Odds ratios with 95% confidence intervals for suicidal behaviours for age



Migrant status

One could suspect that immigrants have a higher risk of mental health problems than their native counterparts, due to the stressors that are connected with immigration and acculturation (such as low language proficiency in their receiving country). However, research results are divided on this topic. Although some studies support that idea (Chau et al., 2016), others state that immigrants tend to have better mental health than natives, a phenomenon called the healthy migrant effect (Vazsonyi, Mikuška & Gaššová, 2017).

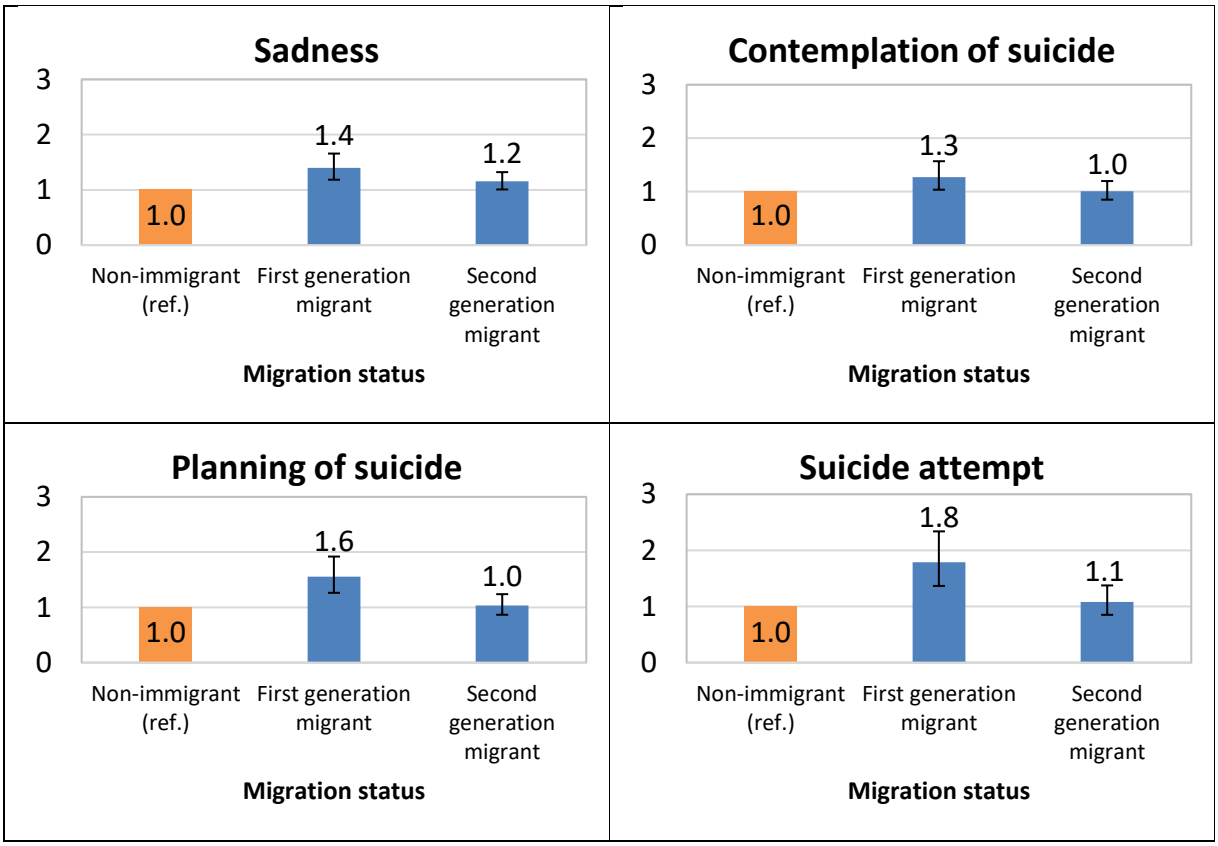
In the 20th century, Luxembourg has experienced notable population growth, largely due to immigration. Currently, the population is comprised of 47.5% of non-Luxembourg nationals (STATEC, 2019b). As a big percentage of the Luxembourgish population has an immigrant background, it is important to understand how such a background correlates with mental health.

For this report, we define the different migrant statuses as following. Non-migrants are the ones who were born in Luxembourg as children of parents who were also born in Luxembourg. First-generation immigrants are born outside of Luxembourg (regardless of where their parents were born). Second-generation immigrants are born in Luxembourg and at least one parent is born abroad.

The Luxembourgish HBSC data indicate that the odds ratios for all suicidal behaviours are higher for first-generation immigrants compared to non-immigrants (figure 7). For suicide

attempts specifically, the odds ratio for first-generation immigrants are 1.8 times higher compared to the reference group. However, second-generation migrants are very similar to non-migrants in terms of suicidal behaviour.

Figure 7: Odds ratios with 95% confidence intervals for suicidal behaviours for migrant status



These findings are thus in contrast with the healthy migrant effect, supporting the results of Chau, Kabuth & Chau (2016), as first-generation immigrants are at higher risk for suicidal behaviour than natives. Also, these results highlight the differences between first and second-generation immigrants, suggesting some level of acculturation. As time passes immigrants adapt to the new culture and, in Luxembourg, second-generation adolescents do not appear to be at higher risk than natives. Suicide prevention programmes should thus pay special attention to first-generation immigrants, as they comprise a large part of Luxembourg's population.

Family structure

Over the past decade, the proportion of children who grew up in a "traditional" family (i.e. a family composed of a biological father and mother) has reduced, which can lead to psychological instability for the children involved (Im et al., 2017; Zaborskis, Sirvyte & Zemaitiene, 2016). Research has indicated that all types of suicidal behaviour were significantly higher among adolescents living in non-traditional families (Zaborskis et al., 2016). Additionally, living with one parent or having absent parents is associated with increased suicidal contemplation in adolescents (Im et al., 2017).

In the HBSC study, adolescents were asked to specify which other persons live in the home where they live the majority of the time. Based on their answers we distinguish four types of families: 1. Living with both parents means that the respondent lives in the same household together with father and mother, which is the case for 70.3% of pupils in the sample. 2. Single parents means the adolescent lives with only one parent, which is true for 15.3%. 3. Another 11.9% live in a stepfamily, i.e. the adolescent lives with one parent and a stepparent. 4. There were less than 100 pupils in the entire sample who indicated the "other" category when asked about the persons they spent most time living with. This was an open question and answers in this category included for example living with aunts and uncles, siblings, boarding school, foster families or friends.

Figure 8: Odds ratios with 95% confidence intervals for suicidal behaviours for family structure

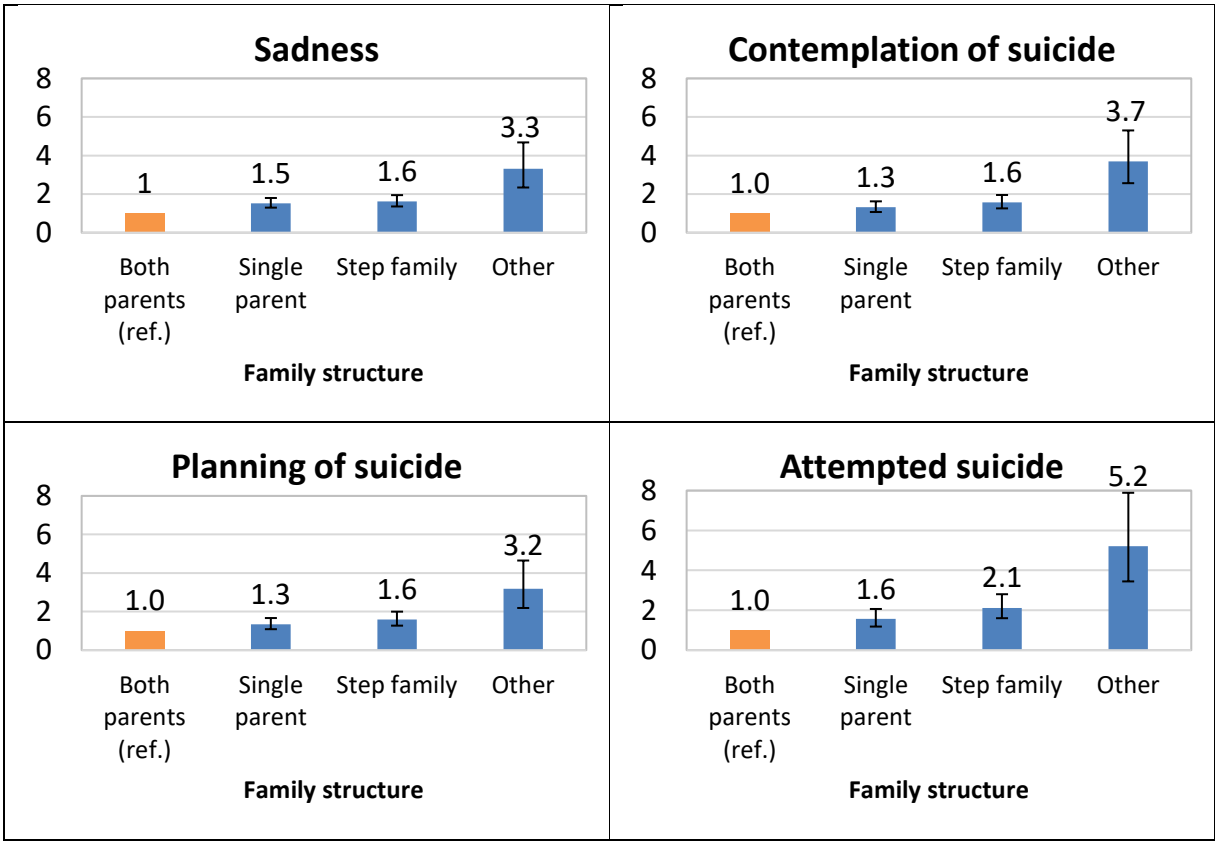


Figure 8 displays the odds ratios for the four suicidal behaviours. For all, the odds ratios are the lowest for adolescents living with both parents, and the highest for adolescents having an "other" family structure. For sadness, the odds ratio for the "other" category is 3.3 times higher compared to the reference group. For suicide attempts, the difference between both groups is even bigger with an odds ratio of 5.2.

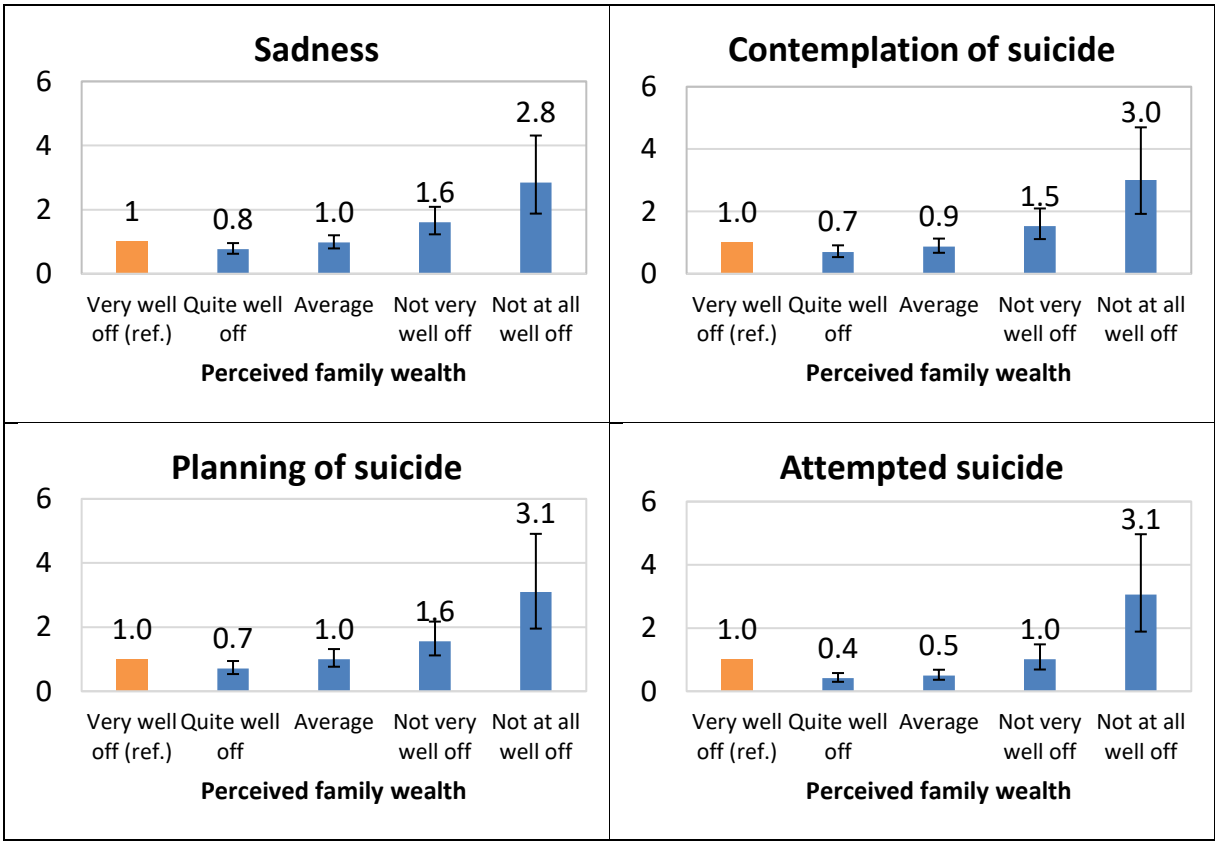
The data indicate that adolescents from non-traditional families have higher odds of suicidal behaviour compared to adolescents from traditional families. These findings are compatible with the results found in previous studies (e.g. Im et al., 2017; Zaborskis et al., 2016).

Socioeconomic status

The measure of perceived wealth is used to assess the adolescents` perception of their family`s socioeconomic circumstances. Zaborskis et al. (2016) found that the prevalence of suicidal contemplation was higher among adolescents who reported lower levels of family affluence. An analysis of data from the Danish register of causes of death showed that young people from low-income families have a higher risk of suicide than young people from high-income families. However, taking into account that other risk factors for suicide are more common in low-income families (mental illness, family history of suicide), these other factors are more important than income (Agerbo, Nordentoft & Mortensen, 2002).

The HBSC study asks adolescents to assess how well off their family is. The answers vary between very well off (reference category) and not at all well off. Figure 9 shows that the odds ratios for all four suicidal behaviour variables increase as the pupils' perception of their family`s socioeconomic circumstances decrease. For instance, the odds ratio for the sadness of pupils who indicated that their family was "not at all well off" are almost 3 times higher compared to the reference group. For the measure of attempted suicide only, the differences between the categories "quite well off", "average", "not very well off" and "not at all well off" are all statistically significant. Interestingly, the odds ratios for all behaviours for the categories "quite well off" and "average" are lower or similar to the odds ratios of the "very well off" category.

Figure 9: Odds ratios with 95% confidence intervals for suicidal behaviour for perceived family wealth



The Luxembourgish data indicate that adolescents who report that their family is not well off have higher odds for suicidal behaviour. This finding is in accordance with results from previous studies (e.g. Zaborskis et al., 2016).

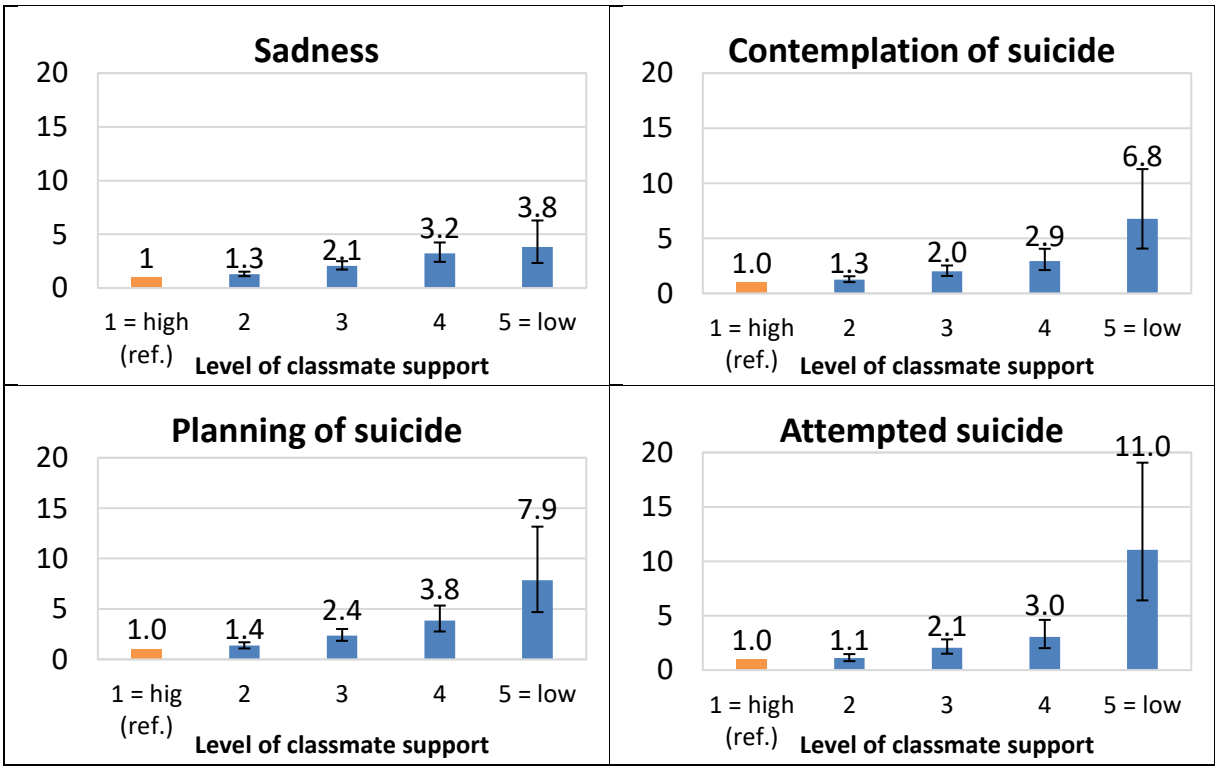
4.2. Social support and quality of communication

Social support is essential to psychological well-being. Among adolescents, parental support remains essential, while peer support is becoming increasingly important. It is recognized that a person's perception of the quality of support they receive is more reliable than objective support in predicting their effects on mental health (Prati & Pietrantoni, 2010).

Classmate support

The social support that adolescents receive from their parents and peers plays an important role in their risk for suicidal behaviour. Supportive peer groups can assist adolescents in dealing with burdensome situations while being a protective source to prevent suicidal behaviour (Delfabbro, Winefield & Winefield, 2013).

Figure 10: Odds ratios with 95% confidence intervals for suicidal behaviours for classmate support



Classmate support is calculated using three statements (e.g. “most of the pupils in my class(es) are kind and helpful”). These three statements were answered on a scale ranging from 1 to 5. For the variable "classmate support" the mean value of the answers was calculated and rounded, with 1 representing a high level of support and 5 a low level.

As can be seen in Figure 10, for each of the suicidal behaviours, the odds ratios increase as the level of classmate support decreases. To illustrate, the odds ratio for sadness for adolescents reporting the lowest level of support are 3.8 times higher compared to the reference group (adolescents reporting the highest level of support). Additionally, in cases of low support, the odds for the behaviours increase as the severity of the suicidal behaviour increases. The odds ratio for attempted suicide is 11 times higher for the lowest level of support compared to adolescents with the highest level of support.

The trend observed in the Luxembourgish HBSC data is in accordance with results found in previous research (e.g. Delfabbro et al., 2013). Adolescents that experience higher levels of social support from classmates and peers have lower odds for suicidal behaviour.

School-related parental support

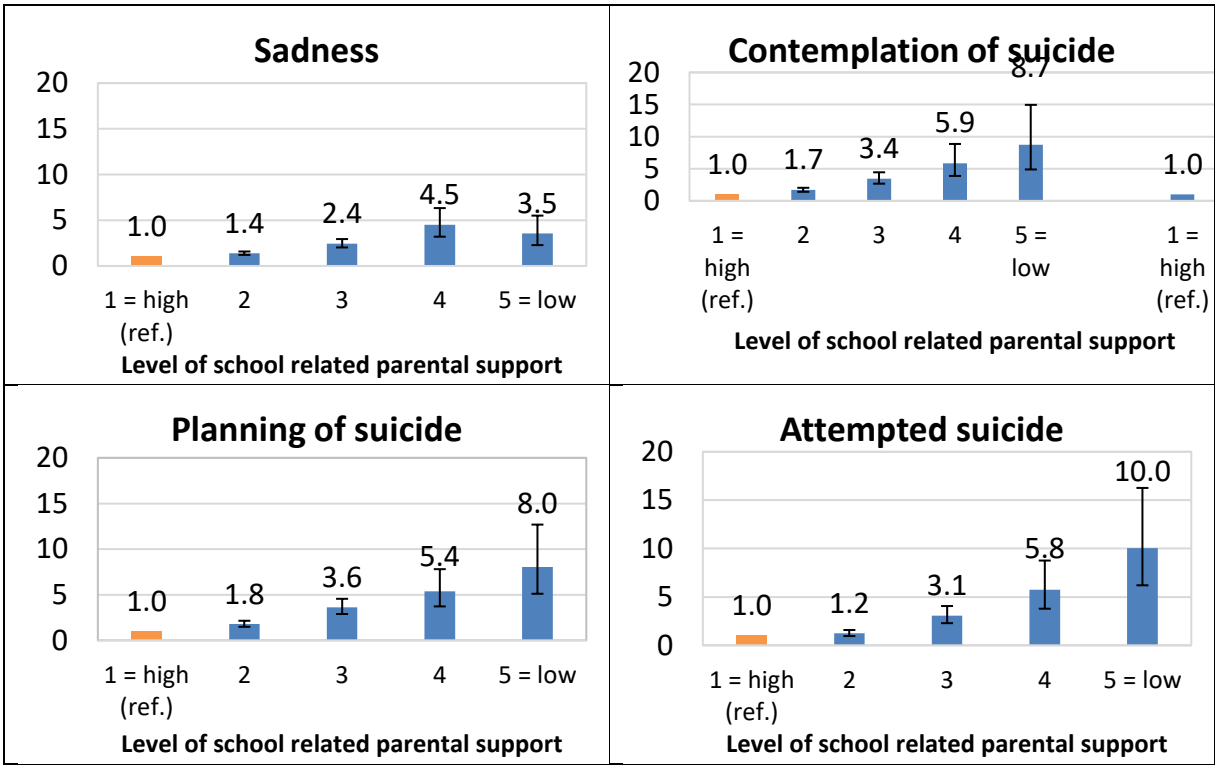
Social support is an important protective factor for the development of suicidal behaviours among adolescents (Rojas et al., 2017). When it comes to predicting suicidal behaviours in adolescents, family support appears to be more important than peer support (Miller, Esposito-Smythers & Leichtweis, 2015). Previous research has indicated that adolescents reporting a low level of school-related parental support are more at risk for suicidal behaviour compared to their peers reporting a high level of support (e.g. Zaborskis, Sirvyte & Zemaitiene, 2016).

In the HBSC Luxembourg study, school-related parental support is calculated using the mean score of 4 statements. For illustration, one of these statements is “when I have problems in school, my parents help me”. A mean of 1 represents the reference group reporting the highest level of support and 5 represents the lowest level.

For all four suicidal behaviours, the odds ratios increase as the level of support decreases. Additionally, the differences in odds ratios between the lower and higher support levels increase with the severity of the suicidal behaviour. For example, the odds ratio for sadness for adolescents who report the lowest level of support is 3.5 times compared to the reference group. This difference is the largest for the variable of attempted suicide. The odds for contemplation of suicide for adolescents who report the lowest level of support are 10 times higher than the odds of their peers with the highest level of support.

The Luxembourgish data shows similar patterns as the previously discussed research (e.g. Zaborskis et al., 2016), as the odds for all four suicidal behaviours increase when the level of school-related parental support decreases.

Figure 11: Odds ratios with 95% confidence intervals for suicidal behaviours for school-related parental support



Communication with father and mother

Positive relationships with parents can reduce the risk of suicidal behaviour in adolescents. Previous research has indicated that adolescents who report poor communication with their parents are more likely to display suicidal behaviour than adolescents who report good communication with their parents (Mark et al., 2013).

To measure communication with parents, the pupils were asked: “How easy is it for you to talk to the following persons [mother/father] about things that really bother you?” The Luxembourgish data show that adolescents who indicate poorer communication with their mother or father have higher odds for all suicidal behaviours. When compared to the reference group (very easy communication), the adolescents who feel it is very difficult to communicate with their father have an odds ratio for sadness that is 5 times higher. The odds ratios decrease as the severity of the behaviour increases. The odds ratio for attempted suicide is 3.4 times higher for adolescents who have very difficult communication with their father than adolescents who indicate to have very easy communication. The pattern is more or less the same regarding the communication with the mother.

Figure 12: Odds ratios with 95% confidence intervals for suicidal behaviours for communication with father

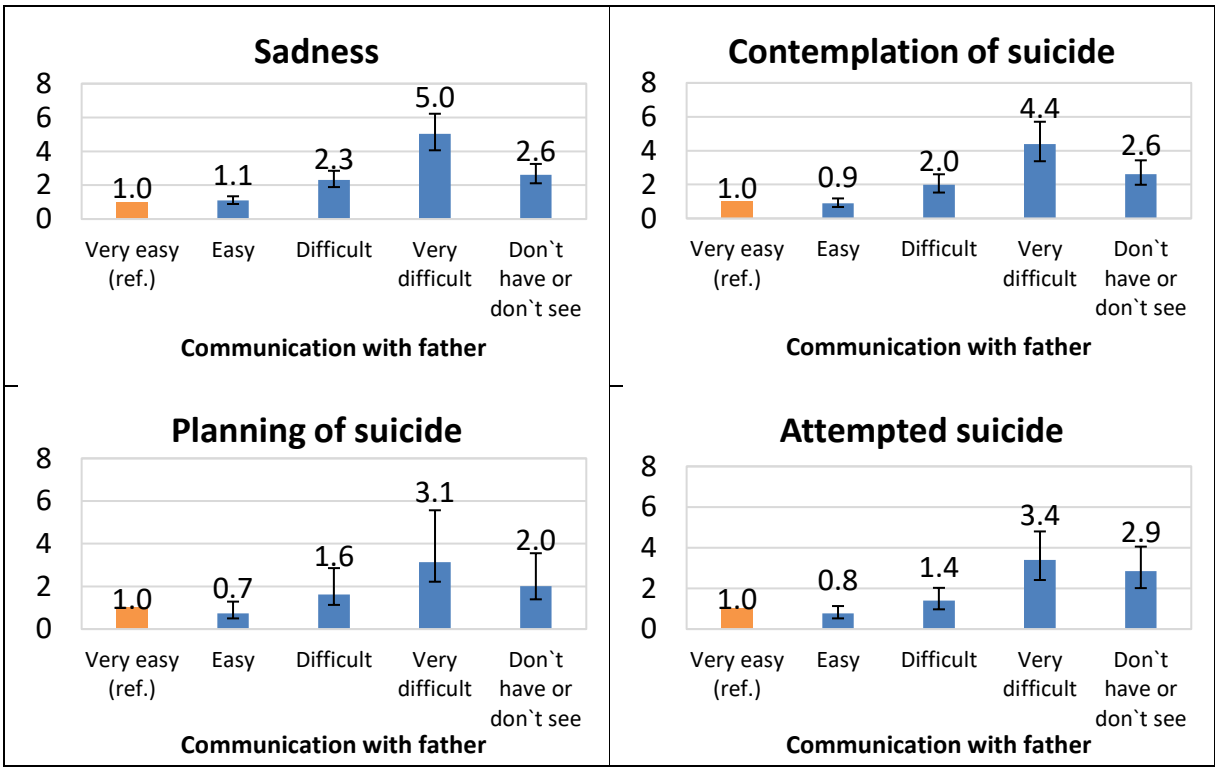
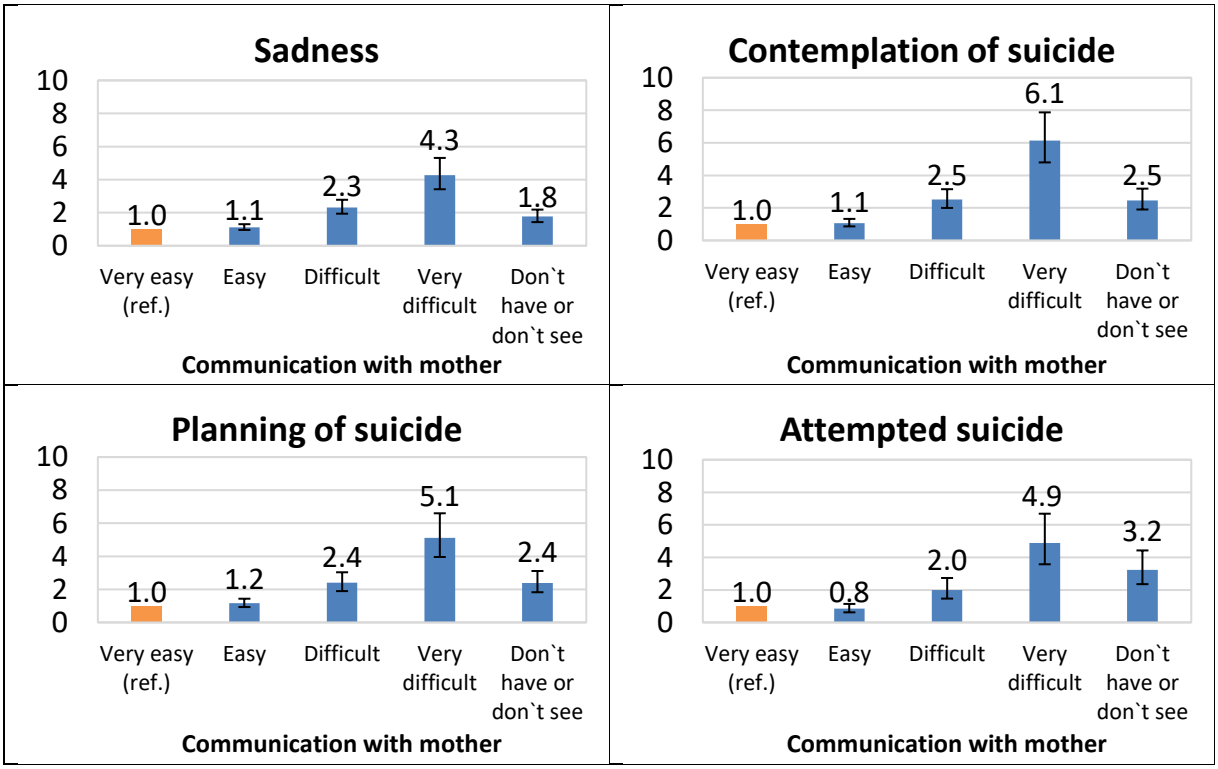


Figure 13: Odds ratios with 95% confidence interval for suicidal behaviour for communication with mother



Finally, it is worth noting that adolescents who answered “don’t have or don’t see” their mother or father are also at increased risk for the different suicidal behaviours. In general, the odds ratios for the suicidal behaviours are comparable to the ones of adolescents who feel it is difficult to communicate with their parents, and the odds ratios are similar for both mother and father. Similar results can be seen regarding the odds of attempting suicide.

The Luxembourgish findings are similar to the results of previous research (e.g. Mark et al., 2013). Odds ratios for suicidal behaviour increase as the quality of communication decreases. Additionally, poor communication with fathers has a bigger influence on the odds for sadness, whereas poor communication with mothers has a bigger influence on the odds for attempted suicide. Adolescents who do not have or do not see their mother or father are at increased risk for the suicidal behaviours, although the odds are not as high as the odds for adolescents that indicate difficult communication with their parent(s).

4.3. School-related risk factors

School is a central element in the life of adolescents, where they spend most of their days. In a society that puts a lot of emphasis on academic success, the school environment can be perceived as a source of stress. This pressure, combined with a perception of lack of support, for example, can become an issue (World Health Organization, 2014).

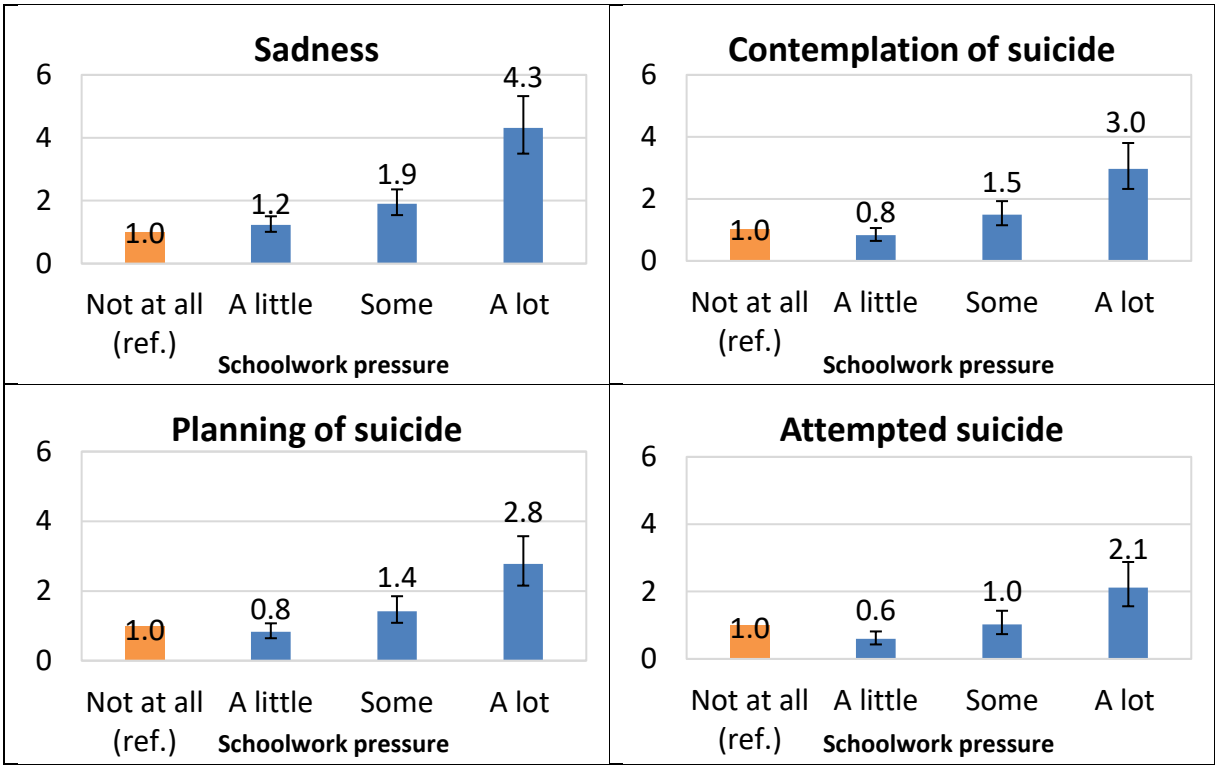
Schoolwork pressure

Adolescents can encounter various sources of stress in the school setting, such as schoolwork pressure or worries about grades obtained at exams. Previous research has indicated that adolescents view schoolwork as an important source of stress (LaRue & Herrman, 2008). Stress, combined with other risk factors can increase the vulnerability to suicidal behaviour (World Health Organization, 2014). However, no research up to date has studied the relationship between schoolwork pressure and suicidal behaviours.

Schoolwork pressure was measured by one item asking: “Do you feel pressured by schoolwork?”. Pupils could answer on a 4-point Likert scale ranging from “not at all” to “a lot”.

Luxembourgish adolescents who feel pressured by schoolwork are more likely to engage in suicidal behaviours than adolescents who do not feel this pressure (reference group). The odds ratio for being sad is 4.3 times higher for adolescents that feel a lot of pressure compared to the reference group. The difference between these two groups is smaller for the other suicidal behaviours. The odds ratios of adolescents who indicate to feel “a little” or “some” pressure differ significantly from those who experience “a lot” of pressure.

Figure 14: Odds ratios with 95% confidence intervals for suicidal behaviour for school pressure



Among Luxembourgish adolescents, feelings of pressure as a result of schoolwork can contribute to suicidal behaviours, this is especially visible in the less severe of the suicidal behaviours: sadness and contemplating suicide. Although previous research has established the link between schoolwork and stress (LaRue & Herrman, 2008) on one hand, and stress and suicidal behaviour (World Health Organization, 2014) on the other, this is the first study to our knowledge to observe this direct relationship. More studies should be done in this sense in order to fully understand this relation.

Academic achievement

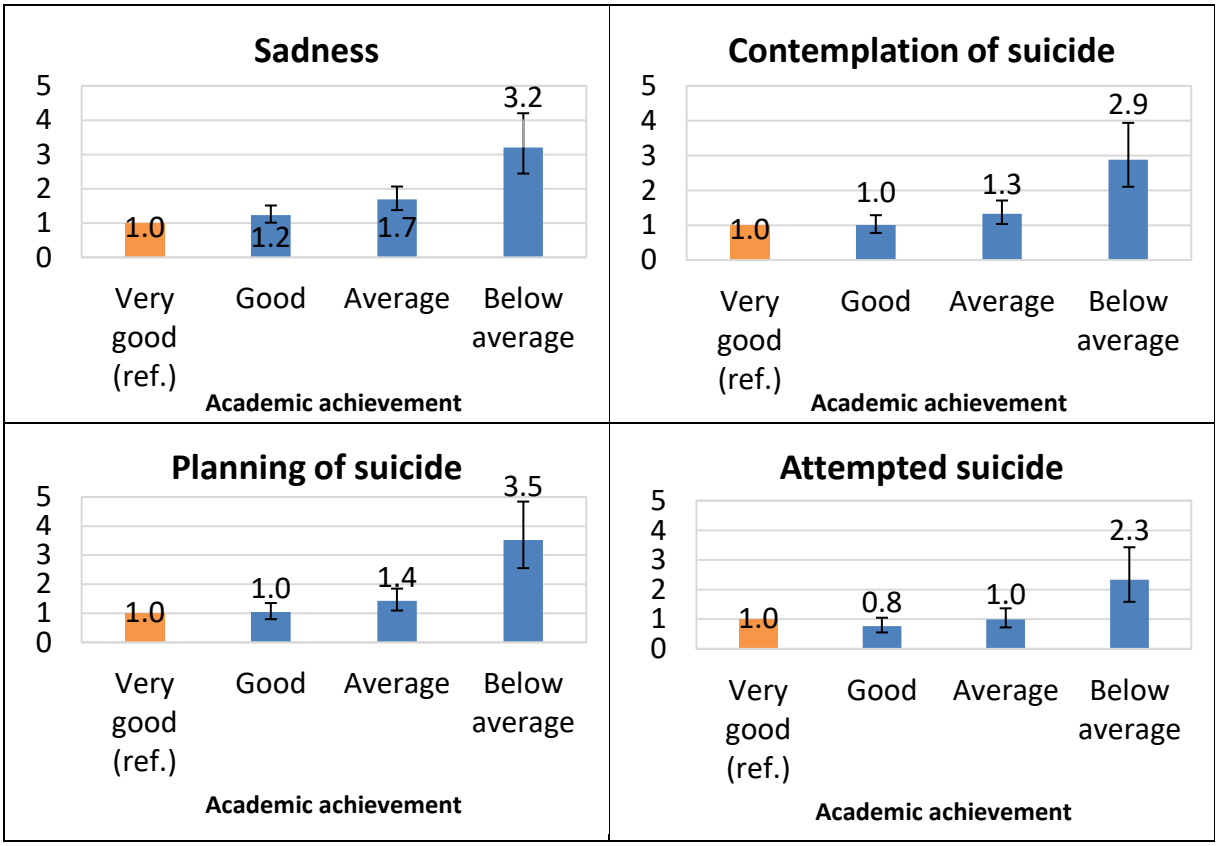
Previous research has indicated that adolescents report worrying about exams and obtaining good grades as a source of stress (LaRue & Herrman, 2008). Accordingly, a study has shown that low academic achievement is a risk factor for suicide attempts, even when controlled for other risk factors, like self-esteem, locus of control and depressive symptoms (Richardson, Bergen, Martin, Roeger & Allison, 2005).

This variable was measured using the following questions: “In your opinion, what do your teachers think of your academic results, compared to those of your classmates?”. The answers were presented in 4-point Likert scale ranging from “very good” to “below average”.

Luxembourgish adolescents who perceive their academic achievement to be below average are more likely to be sad, contemplate, plan and attempt suicide. This is most apparent for planned suicide; adolescents who perceive their academic achievement to

be below average have an odds ratio that is 3.5 times higher compared to the reference group (adolescents who perceive their achievement to be very good). The odds ratios for all suicide behaviours are similar for the categories of “very good”, “good” and “average” academic achievement.

Figure 15: Odds ratios with 95% confidence intervals for suicidal behaviours for academic achievement



As shown in the Luxembourgish data, pupils who perceive their academic achievement to be below average are more likely to engage in suicidal behaviour, which is in line with previous studies (e.g. Richardson et al., 2005).

Teacher support

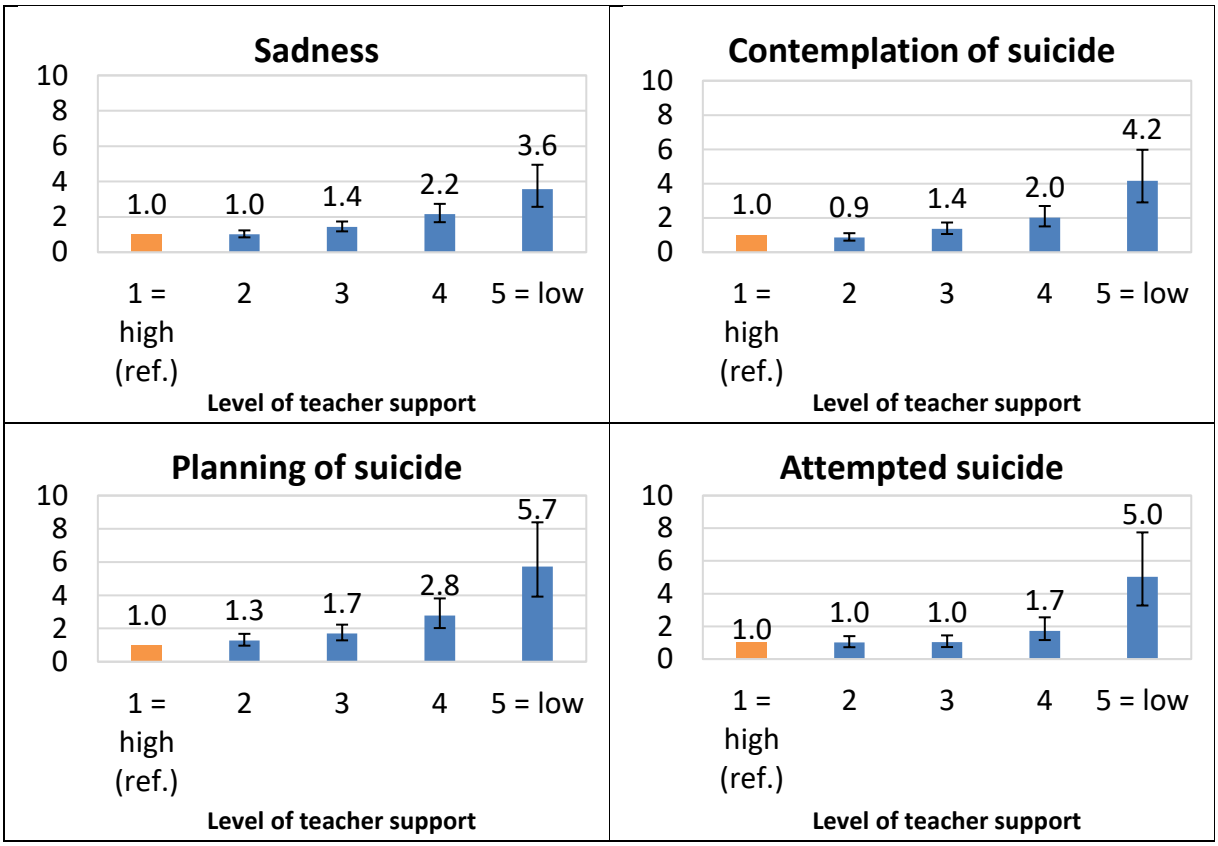
The maintenance of healthy relationships in the social network of school is important for the healthy socio-emotional development of adolescents (Miller et al., 2015). Previous studies have found that a low level of teacher support is associated with both suicidal contemplation and behaviour (Madjar et al., 2017; Madjar, Walsh & Harel-Fisch, 2018).

To measure teacher support, pupils assessed three statements regarding their teachers. For the analysis, the average of the three statements was calculated, ranging from 1 (high level of support as the reference group) to 5 (low level of support).

The Luxembourgish data shows that adolescents who indicate a low level of perceived teacher support have higher odds ratios to experience sadness and to contemplate, plan

and attempt suicide. The odds ratios of the suicidal behaviour increase as the level of teacher support decreases. Adolescents who indicate the lowest level of teacher support have an odds ratio for sadness that is 3.6 times higher compared to adolescents who indicate the highest level of support. With an odds ratio of 5.7, the difference between the lowest and highest level of support is even higher for the variable of planned suicide.

Figure 16: Odds ratios with 95% confidence intervals for suicidal behaviours for teacher support



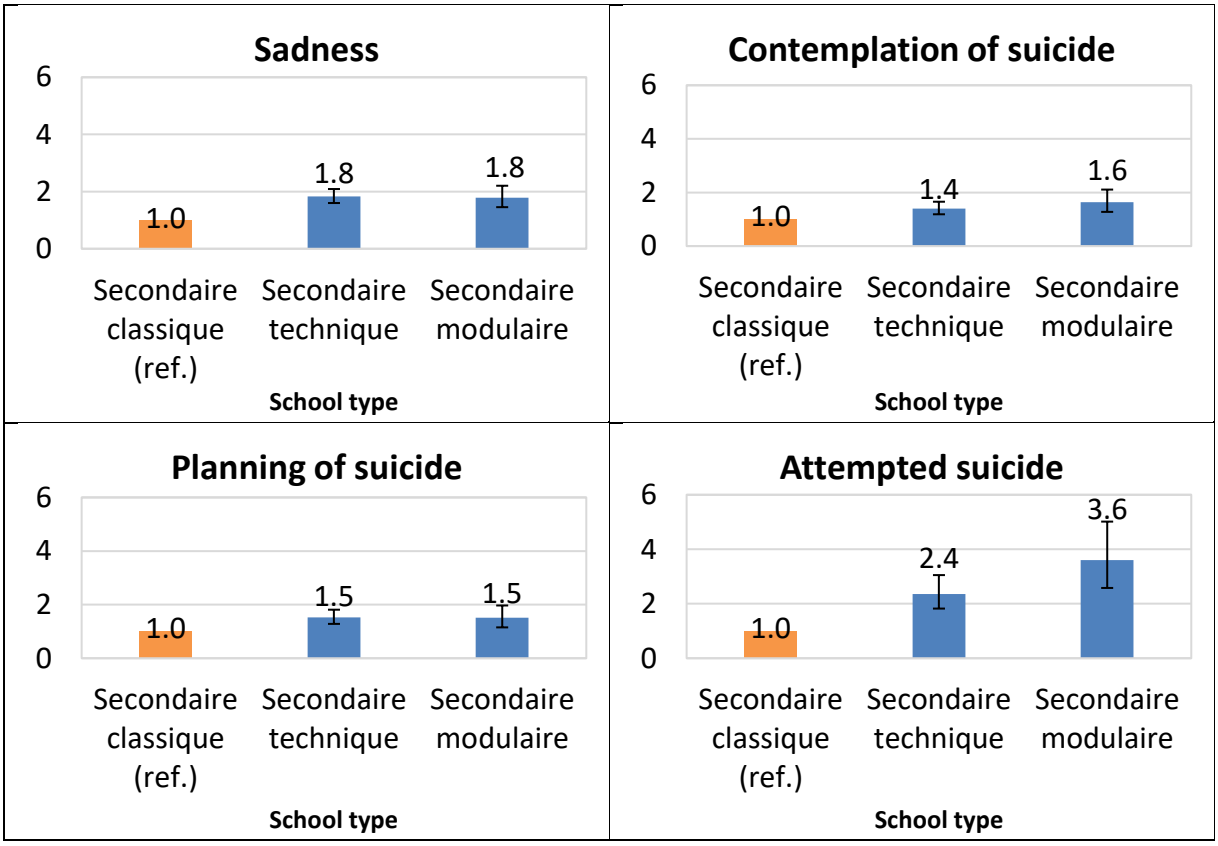
Among Luxembourgish pupils, the odds of experiencing suicidal behaviour increase as the level of teacher support decreases. This finding is in accordance with results from other studies (e. g. Madjar et al., 2017; Madjar et al. , 2018).

School type

The following analysis refers to the types of schools in 2014: *enseignement secondaire classique (ESC), enseignement secondaire technique (EST)* and *enseignement secondaire technique modulaire.* The ESC is a seven-year course that leads to a high school diploma, which prepares pupils for university studies. The EST included different training regimes, from five to eight years depending on the orientation chosen. The studies led to diplomas ranging from *Certificat de Capacité Professionelle (CCP)* to *Diplôme de fin d`études secondaires techniques*. The *secondaire technique modulaire* corresponded to the first three years of EST for pupils with lower academic achievement. The pupils later integrated one of the *secondaire technique* training regimes (Lenz & Heinz, 2018). The school types

examined differ regarding socio-demographic and socio-economic aspects. There is a higher percentage of girls, non-immigrants and adolescents with higher socio-economic status attending the *secondaire classique* compared to the *secondaire technique* and *secondaire technique modulaire* (Thill, Peltier, Heinz & Zahlen, 2014). Since 2017, the school system has been reformed, the EST has been converted to the *Enseignement Secondaire Général* and the *Modulaire* has been converted to the *voie de préparation*.

Figure 17: Odds ratios with 95% confidence intervals for suicidal behaviour for school type



With regard to sadness, the odds ratios for pupils from the *secondaire technique* and *technique modulaire* are 1.8 times higher compared to pupils from the *secondaire classique*. Pupils from these two school types additionally have higher odds ratios for the variables contemplation and planning of suicide. The biggest difference is found for attempted suicide; the odds ratio for attempted suicide of *secondaire technique* pupils is 2.4 times higher, and the odds ratio of *secondaire technique modulaire* pupils 3.6 times higher compared to the reference group.

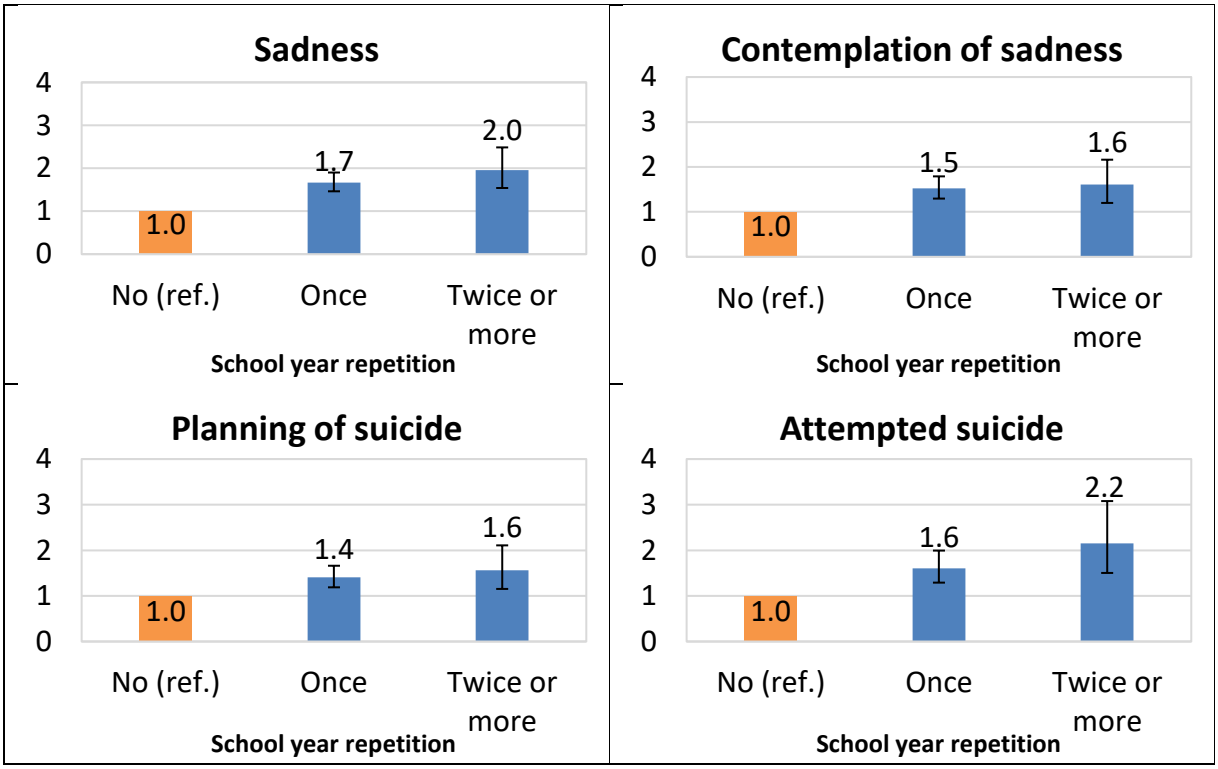
Pupils from the *secondaire classique* had the lowest odds to experience suicidal behaviours, whereas pupils from the *secondaire technique modulaire* had the highest odds. These results should be interpreted carefully, as the age and gender proportion within the different school types varies considerably.

School year repetition

It is during adolescence that most difficulties in school occur, such as failing exams, not making homework, skipping school and repeating classes. Grade repetition has been associated with a slight increase in risk for both suicidal contemplation and suicide attempts in previous research (Chau et al., 2016).

Of the participants in the HBSC study in Luxembourg, 27% stated they repeated one school year, another 6% said they repeated two or more school years. Accordingly, 67% of adolescents never repeated a school year and they are the reference group.

Figure 18: Odds ratios with 95% confidence intervals for suicidal behaviour for school year repetition



Adolescents who have repeated a school year are at higher risk to experience sadness and to contemplate, plan and attempt suicide than adolescents who did not repeat a school year. Adolescents who have repeated at least two school years have slightly higher odds for all suicide-related variables than adolescents who only had to repeat one school year, although this difference is not statistically significant. Compared to the reference group, the odds ratio for sadness of adolescents who had to repeat one school year is 1.7 times higher, for adolescents who repeated at least two school years it is 2.0 times higher.

The results in the Luxembourgish data are similar to results found in previous research (e.g. Chau et al., 2016). Repeating one or multiple grades is a risk factor for suicidal behaviours.

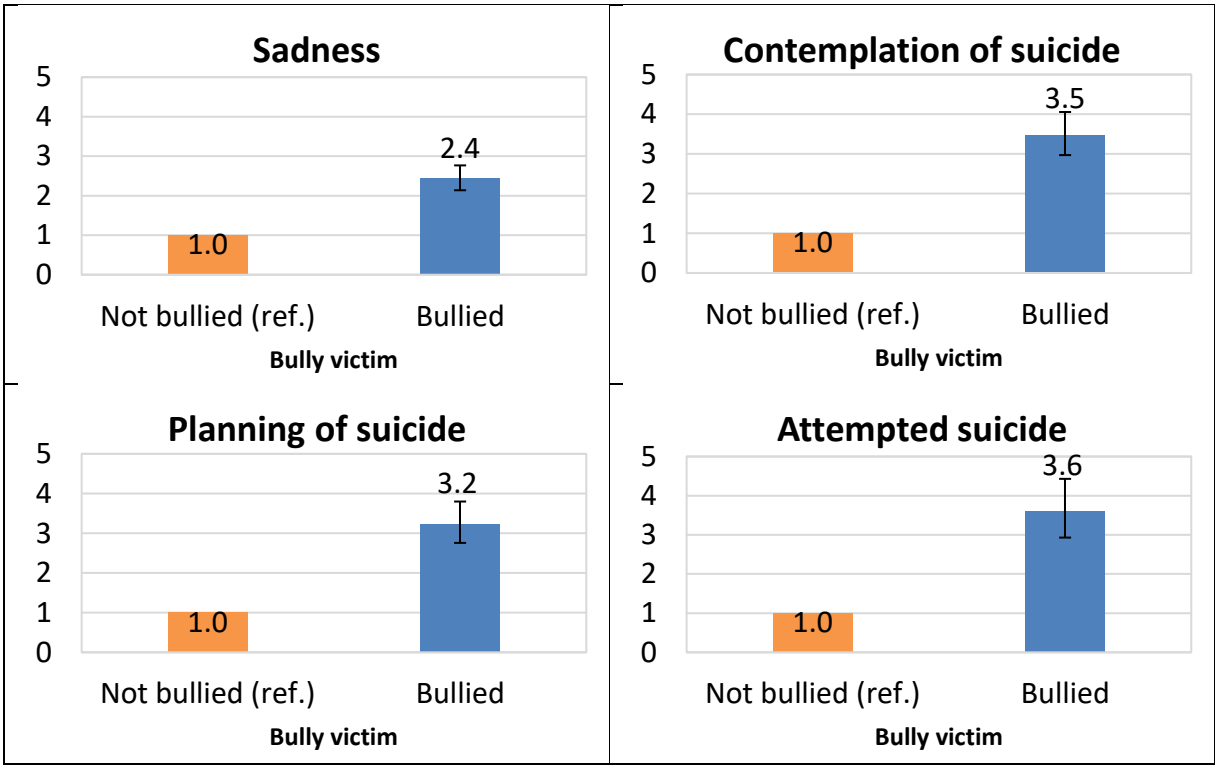
4.4. Bullying, fighting and sexual assault

There are different types of violence, more or less visible to others: fighting, bullying, sexual assault ranging from forced kissing to rape. Violence, whether they are the victim or perpetrator, can indicate or cause distress in adolescents.

Bullying victimisation

Bullying is a common phenomenon among adolescents, taking on the role of victim, bully, bully-victim and bystander (Espelage & Holt, 2013). As peers become increasingly important during adolescence, being victimized by peers can be a considerable source of stress (Geoffroy et al., 2016). Adolescent victims of traditional or cyberbullying are at an increased risk of suicidal contemplation (Zaborskis et al., 2018). Additionally, they have an increased risk of suicidal behaviours in adulthood (Arango, Opperman, Gipson & King, 2016; Barzilay et al., 2015).

Figure 19: Odds ratios with 95% confidence intervals for suicidal behaviour for bully victimisation



In the HBSC Luxembourg 2014 survey both bullying and cyberbullying were assessed using different statements, such as “Someone made unflattering or inappropriate photos without my permission and put them online”, “someone insulted me, made fun of me, annoyed me in a hurtful way” and “I was beaten, kicked, pushed, locked up”. Pupils had

to answer how frequently they were bullied, those who answered “2 or 3 times a month” or more frequently to at least one of those questions were considered as being bullied.

Adolescents who have been bullied are more likely to be sad, contemplate, plan and attempt suicide than their non-victimised peers (Figure 19). Their odds ratio for long-lasting sadness is 2.4 times higher compared to non-victims and their odds ratio for attempted suicide is 3.6 times higher. Both differences are statistically significant.

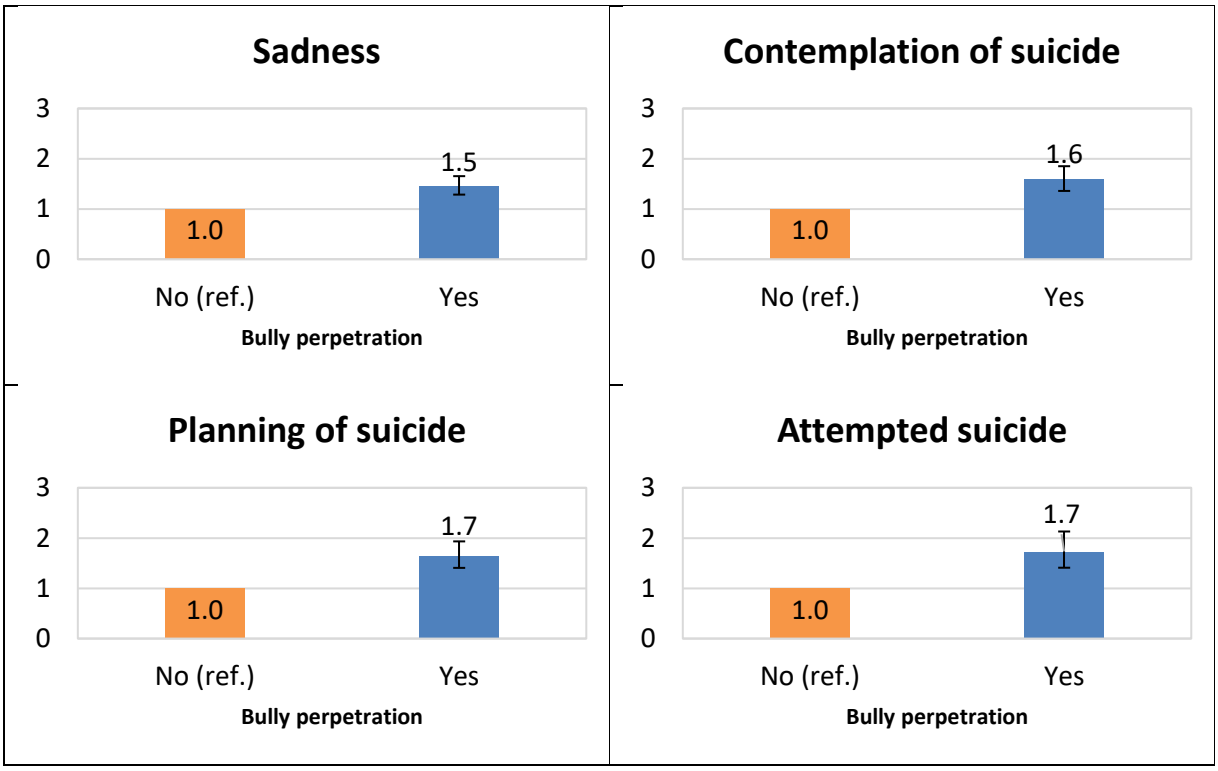
The Luxembourgish HBSC data shows that pupils that are bullied are more likely to experience suicidal behaviours, which is in accordance with findings from other studies (e.g. Zaborskis et al., 2018).

Bullying perpetration

Adolescent bullies are at an increased risk of suicidal behaviour compared to non-bullies. This risk is even higher for adolescents who are both bullies and victims of bullying (Espelage & Holt, 2013).

Bullying perpetration was assessed in a very similar way to bullying victimisation, using both bullying and cyberbullying. Pupils had to state how frequently: “I made unflattering or inappropriate photos without their permission and put them online”, “I insulted, I laughed, I hurt other pupils” and “I hit, pushed, kicked or locked up other pupils”. Those who answered “2 or 3 times a month” or more frequently to at least one of those questions were considered as bullies.

Figure 20: Odds ratios with 95% confidence intervals for suicidal behaviour for bullying perpetration



The Luxembourgish data shows that adolescent bullies are at a higher risk for all four suicidal behaviours compared to the reference group of adolescents who do not bully others. For example, the odds ratio for attempted suicide of adolescents who bullied others is 1.7 times higher compared to the reference group. The difference between bullies and adolescents who did not bully others is statistically significant for all suicidal behaviours. The increased odds for the suicidal behaviours are very similar to each other.

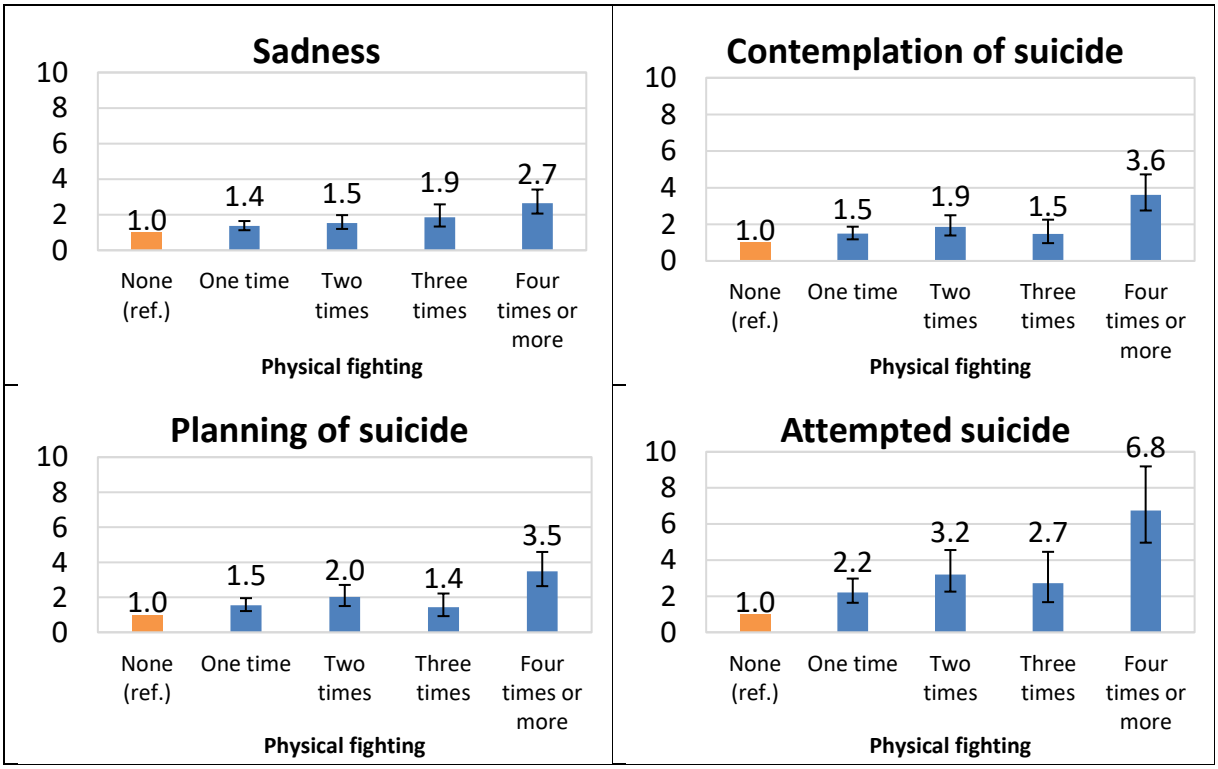
Luxembourgish pupils who bully their peers are at an increased risk for suicidal behaviours, which corresponds with results found in the literature (e.g. Espelage & Holt, 2013).

Physical fighting

Previous research has indicated that adolescents who engage in physical fighting are at increased risk for suicidal behaviour (Litwiller & Brausch, 2013; Nickerson & Slater, 2009). One possible explanation for this increased risk is that the pain and injuries resulting from physical fights have the capacity to accustom adolescents to suicidal behaviour (Litwiller & Brausch, 2013).

Physical fighting was evaluated using one question: "In the past 12 months, how often did you participate in a fight?". Answer options ranged from "never" to "four times or more".

Figure 21: Odds ratios with 95% confidence intervals for suicidal behaviour for physical fighting



The Luxembourgish data shows that the odds for suicidal behaviour increase with the frequency of physical fighting. For example, adolescents who were in a physical fight at least four times in the past twelve months have an odds ratio for sadness that is 2.7 times

higher compared to the reference group of adolescents who did not engage in physical fighting. This difference increases as the severity of the suicidal behaviour increases. Adolescents who were in a physical fight for at least four times in the past twelve months have an odds ratio for attempted suicide that is almost 7 times higher compared to the reference group. These differences are statistically significant.

In a nutshell: The odds of suicidal behaviours increase with the frequency of physical fighting. This is in accordance with results found in other studies (e.g. Litwiller & Brausch, 2013; Nickerson & Slater, 2009).

Sexual assault

Sexual assault or abuse has been linked to negative outcomes for adolescents, such as low self-esteem, depression and suicidal behaviours (Anderson, Hayden & Tomasula, 2015; McLean, Morris, Conklin, Jayawickreme & Foa, 2014). Research additionally has indicated that the frequency of the abuse is associated with suicidality, meaning that adolescents who suffered from continuous sexual abuse are at even higher risk of suicide compared to adolescents exposed to a single sexual incident of abuse (McLean et al., 2014).

In the HBSC Luxembourg survey, sexual assault was measured using a range of questions, such as “Have you ever had someone …touch you when you didn't want to? …force you to have sex? …make sexual remarks (verbal harassment)?”. The pupils had four answer categories: “yes, an adult”, “yes, a young person my age”, “no, it never happened to me” and “I do not want to answer”.

Figure 22: Percentage of pupils who said "yes" to the different questions on sexual assault

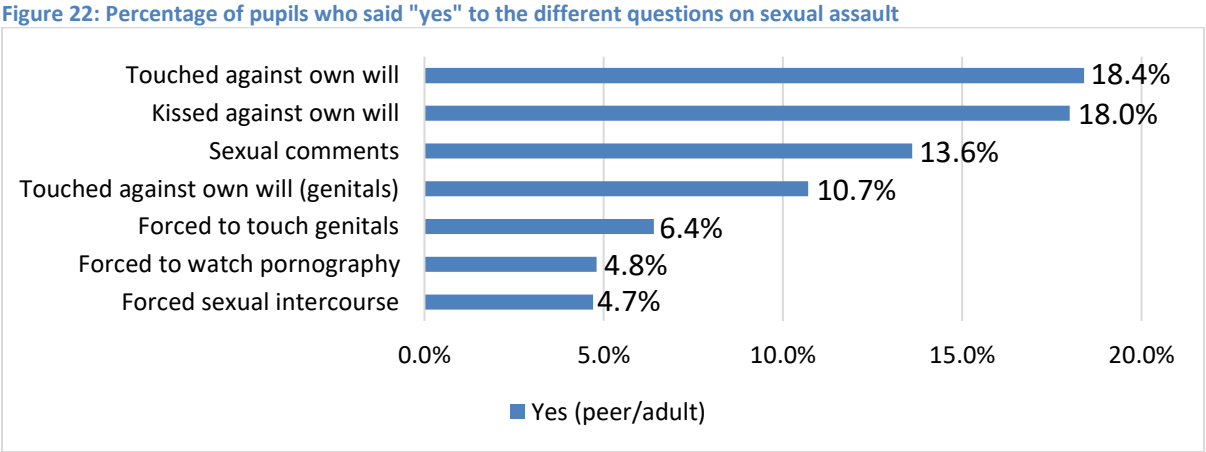


Figure 22 presents the percentage of adolescents who said yes to the different questions asked related to sexual assault and abuse. As can be observed, the percentage of pupils who said that they were touched or kissed against their own will is a lot higher (18.4% and 18.0% respectively) than the percentage of adolescents who were forced to have sexual intercourse (4.7%). Although the latter has stronger consequences for a person’s life (Joiner et al., 2007), for the purpose of this report they were categorized together. The reason for this is the complexity of separating pupils into different groups. As can be seen

in Figure 23, adolescents frequently answered yes to multiple questions. Additionally, around 10% of the pupils did not want to answer or did not answer the question (missing) (Figure 24), resulting in a multitude of possible combinations. Therefore, adolescents were then categorized into three groups only. In the “no sexual assault” group were the pupils who indicated no to all questions. In the “sexual assault” group were the pupils who responded yes to at least one question. The “don’t want to answer/no answer” group was composed of pupils who did not respond yes to any question (so they were excluded from the “sexual assault” group) and responded “I do not want to answer” or did not answer at least one question.

Figure 23: Number of pupils who responded “Yes” to x out of the 7 specific items on sexual assault

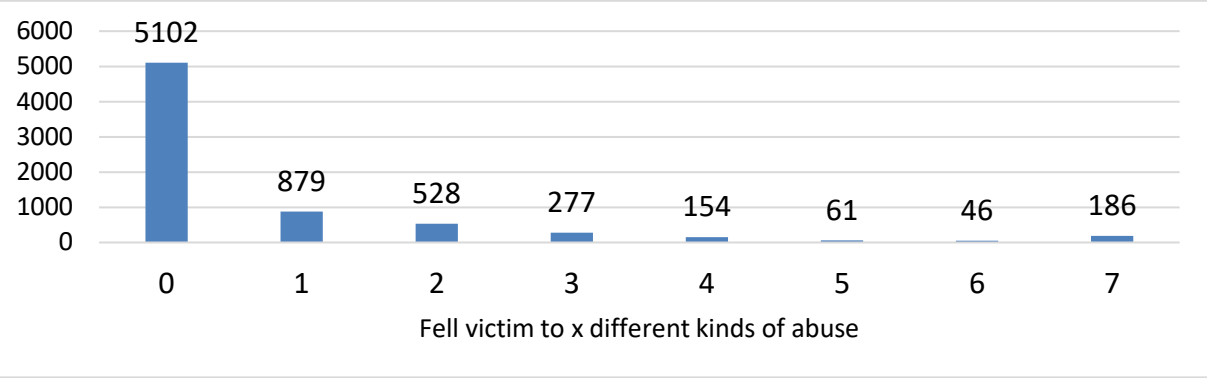
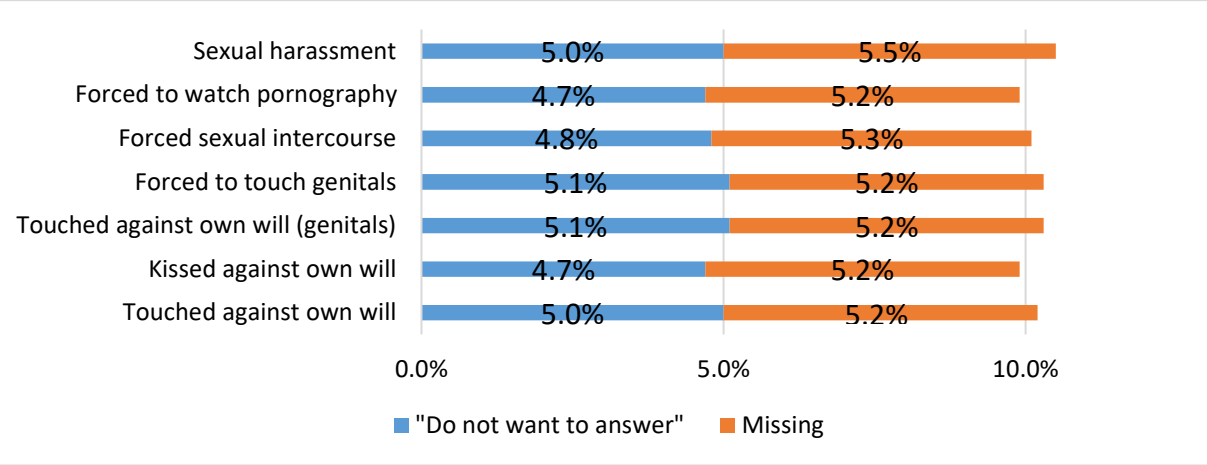
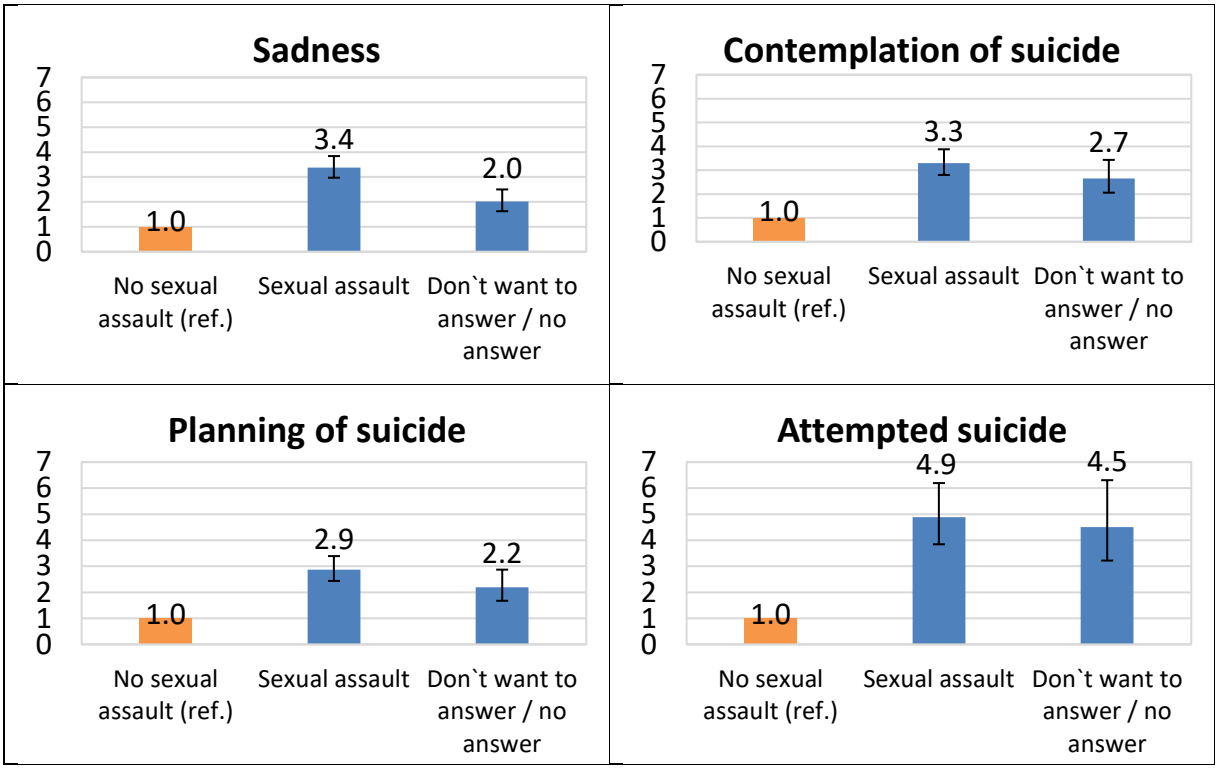


Figure 24: Percentage of pupils who responded "I don't want to answer" or did not respond each question on sexual assault



Adolescents who reported having been sexually assaulted and adolescents who did not want to answer/did not answer the question have a higher risk of sadness and suicidal behaviour (Figure 25) than adolescents who were not sexually assaulted. Sexually assaulted adolescents have an odds ratio for sadness that is 3.4 times higher, and their odds ratio for attempted suicide is 4.9 times higher compared to non-victims. It is noteworthy that the odds for the suicidal behaviours of the adolescents who didn’t answer are similar to those who were sexually assaulted. For example, the odds ratio for attempted suicide of the adolescents who did not answer the question is 4.5 times higher compared to non-victims.

Figure 25: Odds ratios with 95% confidence intervals for suicidal behaviour for sexual assault



Results from Luxembourg thus confirm other studies (e.g. Anderson et al., 2015; McLean et al., 2014), which have shown that sexual assault is a risk factor for long-lasting sadness and suicidal behaviour. Besides, they show that even those who do not answer the questions about sexual assault are at increased risk.

4.5. Health status and health behaviour

Adolescent health problems are frequent, 40% report they frequently encounter at least two health problems (Heinz, Kern, Catunda & Willems, 2018). While our society values lean and muscular bodies, the importance of exercising in order to function on a daily basis has never been this low. This is due to daily tasks having become sedentary and to an increasing amount of time spent in front of screens. Adolescence is also the time of life when substances such as tobacco, cannabis and alcohol are experimented with. It was relevant to observe the links between health behaviours, body image and suicidality.

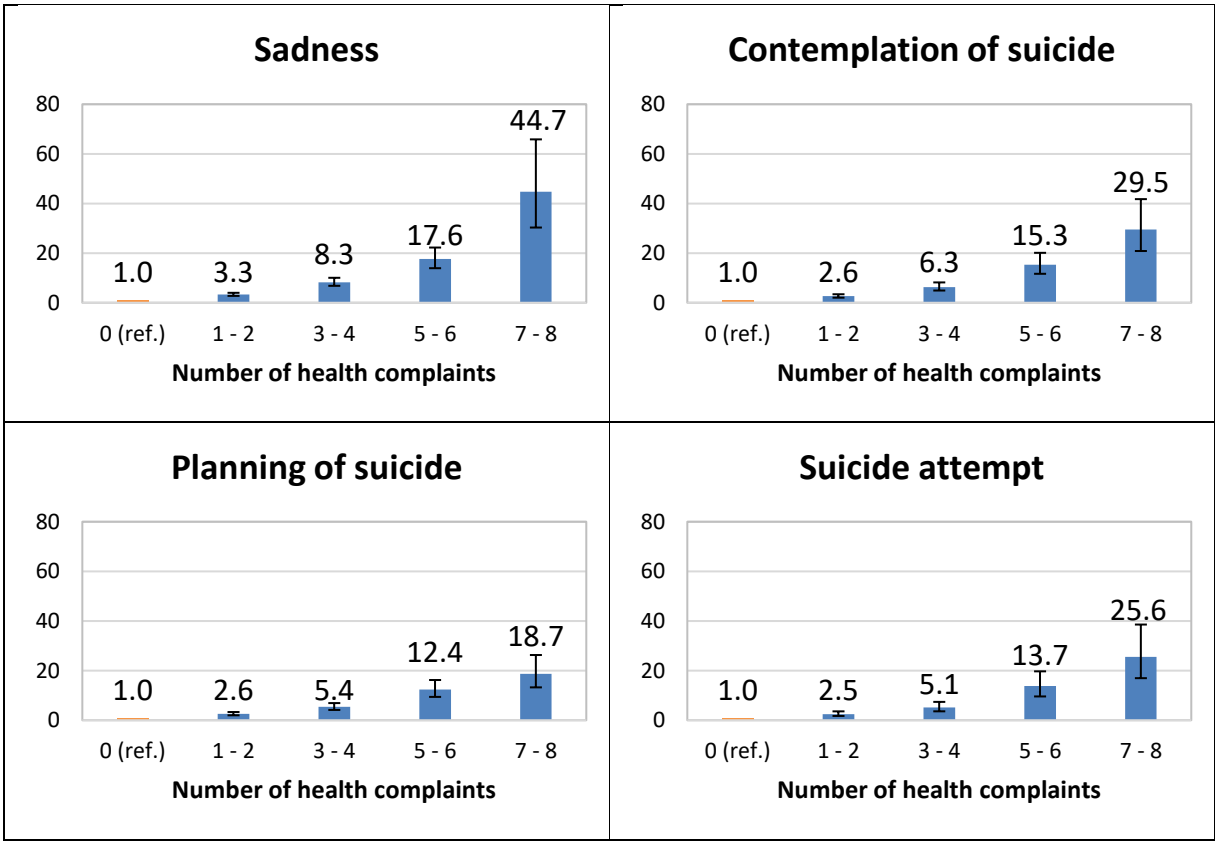
Number of health complaints

Subjective health complaints is the term used to describe a variety of health symptoms experienced by the individual, ranging from occasional health complaints to clinical manifestations, which may impair everyday functioning (Inchley et al., 2016). Subjective health complaints are very common among adolescents (Aanesen, Meland & Torp, 2017; Ravens-Sieberer et al., 2008; Ravens-Sieberer et al., 2009).

In the HBSC study, the occurrence of eight psychosomatic health complaints is surveyed (headache, abdominal pain, backache, feeling low, irritability or bad mood, feeling nervous, sleeping difficulties and dizziness). Pupils were asked how frequently they experienced those health complaints and the answer categories ranged from about every day to rarely or never. A health complaint was categorized as occurring when adolescents responded they experienced it more than once a week.

It is known that these complaints can be used as a measure of emotional well-being (Gariepy, McKinnon, Sentenac & Elgar, 2016). A study from Finland concluded that psychosomatic symptoms in adolescence might be the first signs of more severe mental health problems in early adulthood, such as anxiety and depression (Kinnunen, Laukkanen & Kylmä, 2010). The HBSC Slovenian survey observed a relationship between health complaints (two or more) and contemplation of suicide (Bračič et al., 2019). Finally, there is evidence that they can even be used as an indirect alternative for screening suicidal adolescents (Heinz, Catunda, van Duin & Willems, 2020).

Figure 26: Odds ratios with 95% confidence intervals for suicidal behaviour for health complaints



Accordingly, the odds ratios for suicidal behaviours increase with the number of health complaints. The increase is the strongest for sadness; for example, the odds ratio for sadness is 44.7 times higher of adolescents reporting 7 to 8 health complaints compared to adolescents without health complaints.

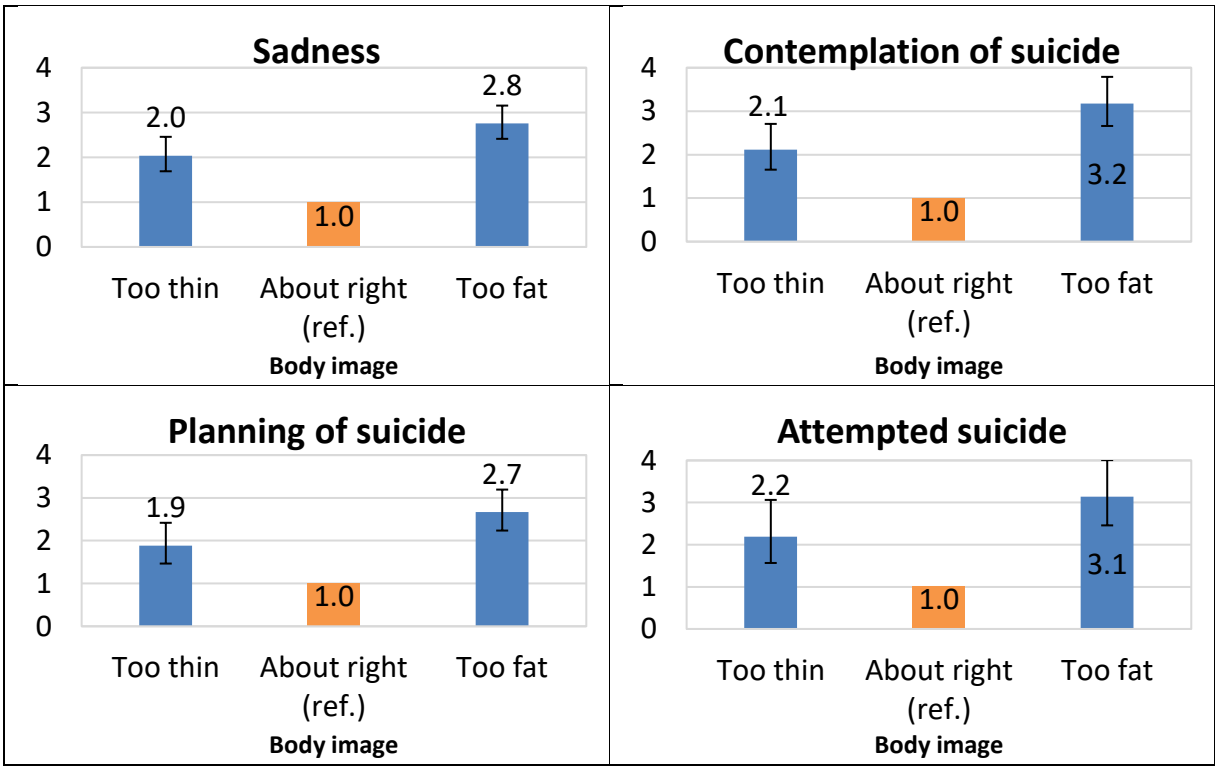
The data indicate that health complaints are an important risk factor for suicidal behaviour among Luxembourgish adolescents, supporting the literature in the field (e.g. Bračič et al., 2019; Heinz et al., 2020). Prevention efforts should include special attention for adolescents with multiple health complaints, as they are at increased risk of suicidal behaviours.

Body image

Having a poor body image has been identified as a risk factor for suicidal behaviours among adolescents (Du Roscoät, Legleye, Guignard, Husky & Beck, 2016; Minor, Ali & Rizzo, 2016). Brausch and Decker (2014) indicated that adolescents with negative feelings about their bodies may be more likely to contemplate suicide because they are less invested in protecting their bodies from harm (Brausch & Decker, 2014). Additionally, perceived weight may be equally if not more important for suicidal behaviour than actual weight (Minor et al., 2016; Swahn et al., 2009).

Pupils answer to the following: “Do you think you are…? Way too thin; A little too thin; About right; A bit too fat; Way too fat”. That was afterwards categorized in the following: “too thin”, “about right”, “too fat”.

Figure 27: Odds ratios with 95% confidence intervals for suicidal behaviour for body image



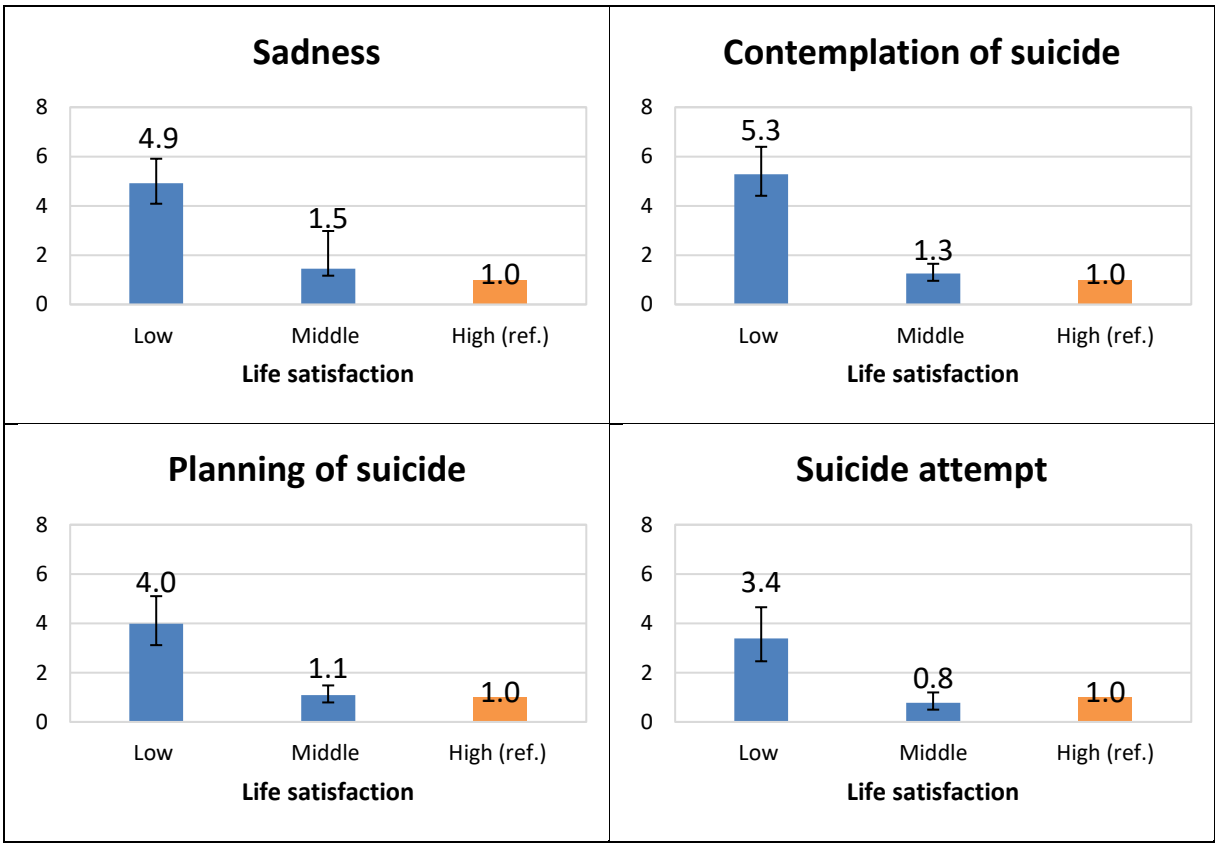
Results from the Luxembourgish data show that adolescents who think they are too thin have two times the odds ratio to engage in suicidal behaviour compared to the reference group, i.e. their peers who think they are about the right size. The odds for suicidal behaviour are even higher for adolescents who think they are too fat. To illustrate, the odds ratio for attempted suicide is 3.1 times higher.

The results found are in accordance with results in the literature (e.g. Brausch & Decker, 2014; Du Roscoät et al., 2016; Minor et al., 2016; Swahn et al., 2009); independently of their actual weight, Luxembourgish adolescents who perceive themselves as too thin or too fat are at increased risk to engage in suicidal behaviour.

Life satisfaction

Previous studies have found an association between low levels of life satisfaction and suicidal behaviour (Bray & Gunnell, 2006; Valois, Zullig, Huebner & Drane, 2004). Accordingly, a high level of life satisfaction is a protective factor for suicidal behaviours during adolescence (Park, Koo & Schepp, 2005; Schapir et al., 2016).

Figure 28: Odds ratios with 95% confidence intervals for suicidal behaviour for life satisfaction



The HBSC Luxembourg study asks adolescents to rate their satisfaction with life on a scale from 0 to 10. In this report, the adolescents are categorized into three groups: adolescents with low (0 – 6), middle (7) and high life satisfaction (8 – 10). These groups were obtained

by dividing the adolescents into three groups of equal size, meaning that two thirds of Luxembourgish adolescents rated their life satisfaction with a score of 7 or higher.

The odds ratio for sadness of adolescents who indicated a low level of life satisfaction is 4.9 times higher than the odds ratio of adolescents who indicated a high level of life satisfaction (the reference group). A similar pattern was found for the variables contemplation, planning of suicide and suicide attempts.

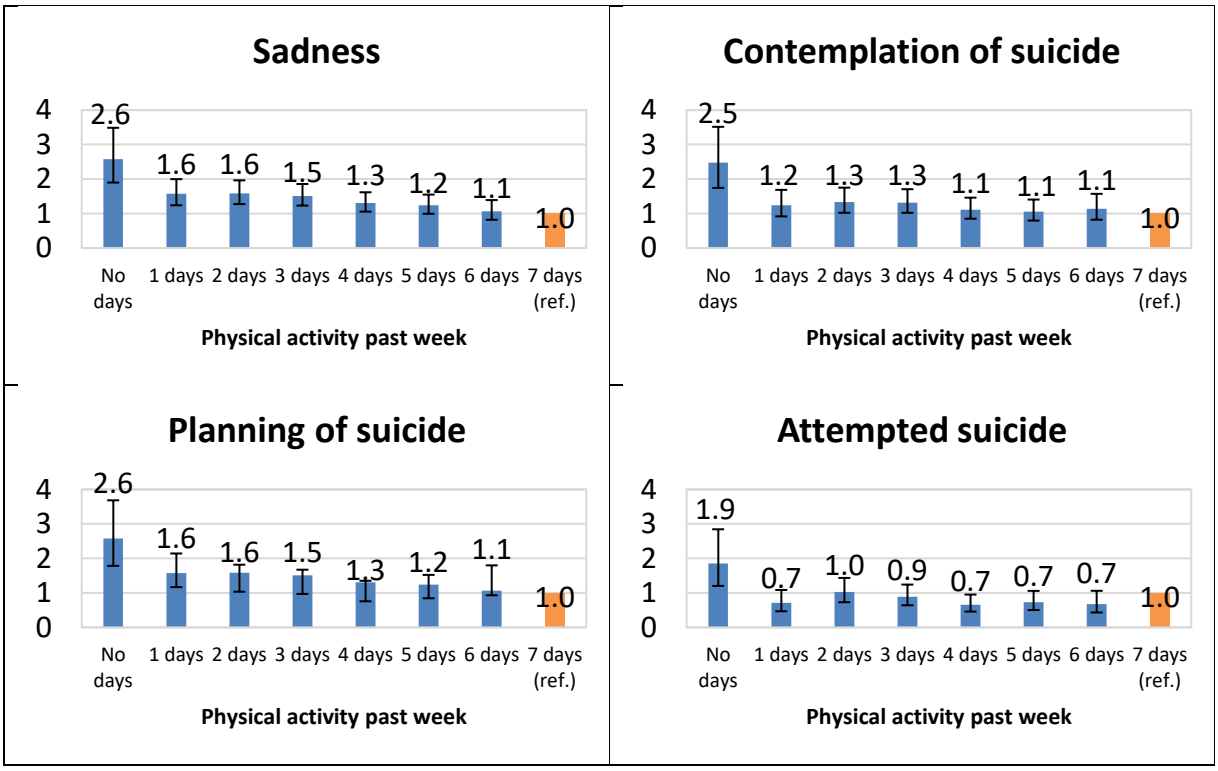
The HBSC data confirm the common finding that suicidal behaviour increases as life satisfaction decreases (e.g. Bray & Gunnell, 2006; Park et al., 2005; Schapir et al., 2016; Valois et al., 2004).

Physical activity

Physical activity is often undertaken together with peers, such as participating in a team sport, or as an individual activity, for example walking to school or riding a bicycle. A meta-analysis by Vancampfort et al. (2018) on the relationship between suicidal contemplation and physical activity demonstrated that being physically active reduces important risk factors for suicide, such as depression, and improves the body image of adolescents. Meeting physical activity guidelines also has a direct protective effect on suicidal contemplation, although this relationship was less clear for adolescents in comparison to adults (Vancampfort et al., 2018).

To measure physical activity, the HBSC Luxembourg study asked adolescents on how many days of the week they were physically active for at least 60 minutes a day.

Figure 29: Odds ratios with 95% confidence intervals for suicidal behaviour for physical activity



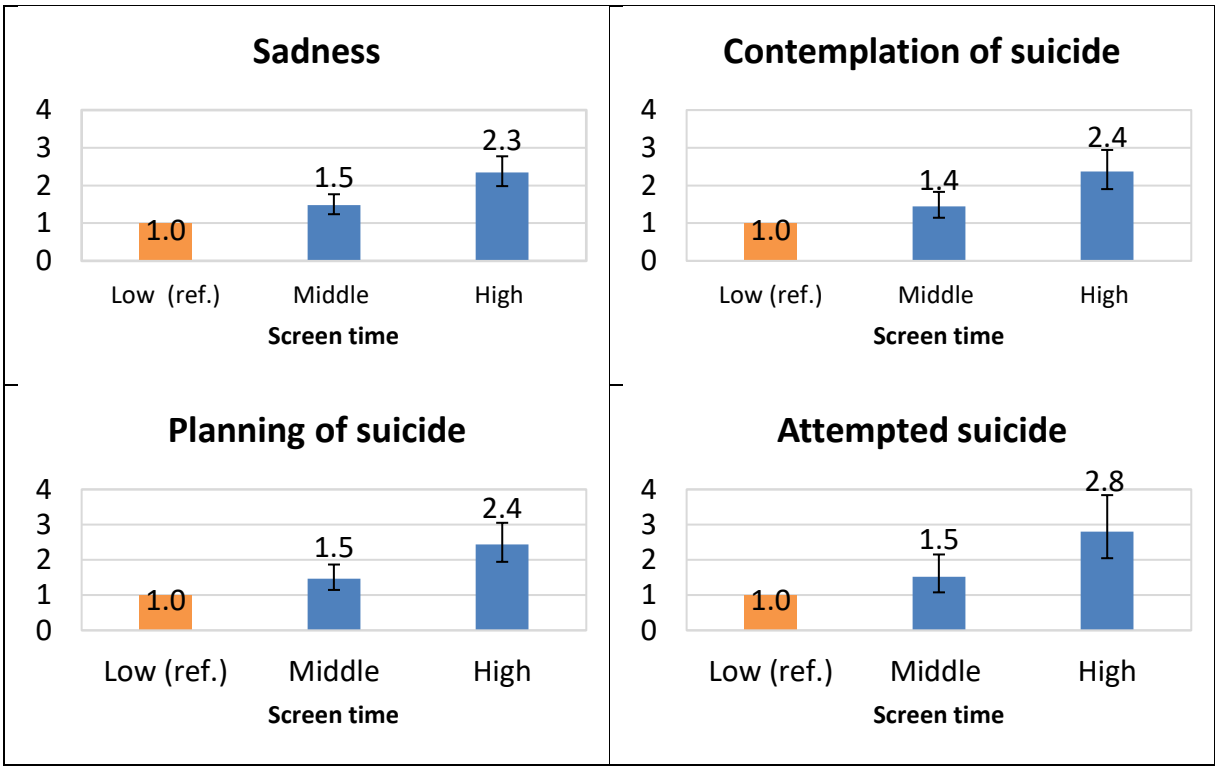
The data indicate that adolescents who are not physically active showed a higher risk for suicidal behaviours. Although the pattern changes depending on the suicidal behaviour analysed, when compared to the reference group (those who are active each day of the week), adolescents who do not engage in physical activity have higher odds to experience sadness, contemplate, plan and attempt suicide. To illustrate, their odds ratio for contemplation of suicide is 2.5 times higher compared to adolescents who are active 7 days a week.

The results indicate that being physically inactive is a risk factor for suicidal behaviour, which is in line with findings from the abovementioned study (Vancampfort et al., 2018).

Screen time

Adolescents use a wide range of digital media devices for leisure. On the one hand, the use of digital media can be beneficial, for example when online communication deepens friendships and thus increases social support (Valkenburg & Peter, 2011). On the other hand, several studies have found associations between higher screen exposure and increased depressive symptoms and suicidal behaviours (Lissak, 2018; Sampasa-Kanyinga & Lewis, 2015; Twenge, Joiner, Rogers & Martin, 2017).

Figure 30: Odds ratios with 95% confidence intervals for suicidal behaviour for screen time



The variable "screen time" was created by combining the answers adolescents gave on three questions: "How many hours a day do you usually watch during your free time on television, videos (including YouTube or other similar services), DVDs, and other on-screen

animations?", "How many hours a day do you usually play games on the computer or on a console, a tablet (such as the iPad), a smartphone or other electronic equipment during your time free time?" and "How many hours a day do you use electronic devices such as a computer, tablet (like iPad) or smartphone for other purposes in your spare time, such as for homework, sending or receiving e-mails, tweet, Facebook, chat or surf the Internet?". To calculate screen time, each of the answers was summed up. Based on the answers of the adolescents, they were divided into three groups with approximately the same number of pupils. As such, a third of the pupils were classified as having low screen time (which corresponds to approximately 4 hours a day or less), a second third of the pupils as middle screen time (the time spent was approximately 4 to 8 hours a day) and another third with high screen time (approximately 8 hours a day or more).

For all suicidal behaviours, the risk increases as the screen time increases (Figure 30). Adolescents belonging to the middle screen time group have an odds ratio that is 1.5 times higher compared to the reference group (low screen time). The odds ratios for suicidal behaviours are even higher for adolescents belonging to the high screen time group (ranging from 2.3 for sadness to 2.8 for attempted suicide).

The Luxembourgish data show an association between suicidal behaviour and increased screen time among adolescents, which is in line with previously mentioned studies that also found a similar association (e.g. Lissak, 2018; Sampasa-Kanyinga & Lewis, 2015; Twenge et al. , 2017).

Substance use

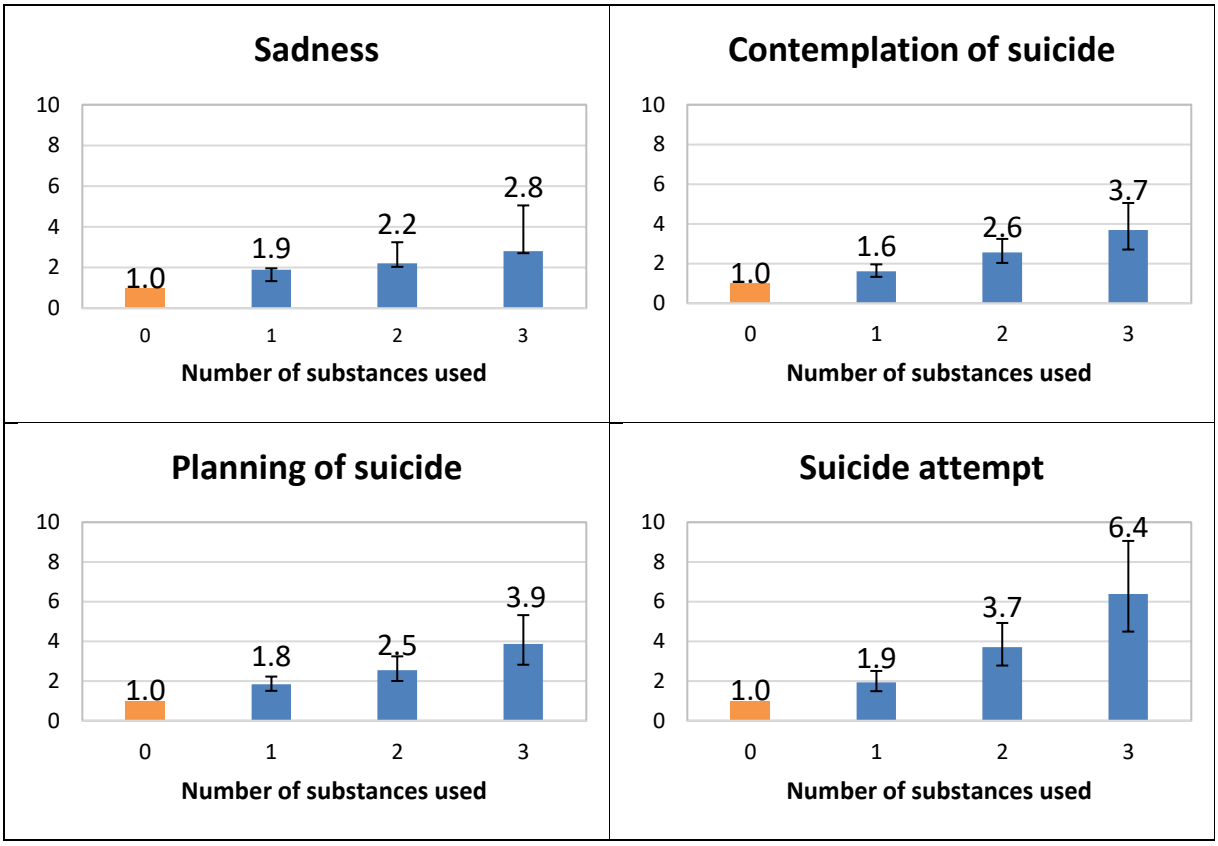
Multiple studies have found associations between substance use and suicidality among adolescents. The use of cannabis, tobacco and alcohol, for instance, has a small but significant association with suicidal behaviours (Wong, Zhou, Goebert & Hishinuma, 2013). The use of multiple substances (both legal and illegal) increased importantly the risk of suicidal behaviour (Kokkevi et al., 2012).

The adolescents were asked about cannabis, tobacco and alcohol use in the past month. The use of these substances was combined into a variable indicating whether the respondent had used none, one, two or all three substances in the previous month. This allows for the examination of increased risk when multiple substances are used.

The odds ratio for each suicidal behaviour increases as the number of substances used increases. For example, the odds ratio for sadness of adolescents who use cannabis, tobacco and alcohol are 2.8 times higher compared to the reference group of abstinent youths. For suicide attempts, the difference between both groups is even bigger, the odds ratio is 6.4.

In Luxembourg, the findings are in line with the literature (Wong et al., 2013), as the increased risk for suicidal behaviour when using one substance is significant, yet relatively small. However, and in accordance with the literature (Kokkevi et al., 2012), the use of multiple substances strongly contributes to increased risk for the suicidal behaviours and is thus an important risk factor.

Figure 31: Odds ratios with 95% confidence intervals for suicidal behaviour for substance use



5. Risk factors for suicidal behaviour: multivariate analysis

Key findings

The most important risk factors for sadness and suicidal behaviour are subjective health complaints for all four indicators (sadness, contemplation of suicide, planning of suicide and suicide attempt), closely followed by life satisfaction. Violence related experiences, in the forms of sexual assault, bullying and physical fighting are also important risk factors for suicidal behaviour.

When analyzed by gender, with regard to the risk factors for sadness, a very similar scenario appears for boys and girls, while the risk factors for a suicide attempt in the last 12 months differ between girls and boys. The most important risk factors for sadness are multiple and recurrent health complaints and low life satisfaction for both genders. For suicide attempt, low life satisfaction remains an important risk factor for both genders. Other major risk factors for boys are physical fights and substance use. For girls, the main risk factors are multiple and recurrent health complaints. Girls from *secondaire classique* declare less often to have attempted suicide during the last year than girls from *secondaire technique*.

Principales conclusions

Les facteurs de risque les plus importants pour la tristesse et les comportements suicidaires sont les plaintes de santé subjectives récurrentes pour les quatre indicateurs (tristesse, pensées suicidaires, planification d'un suicide, tentative de suicide), suivies de près par la faible satisfaction de vie. La violence subie sous forme d'agression sexuelle, de harcèlement ou de bagarres sont également des facteurs de risques importants de comportement suicidaire.

Pour les facteurs de risque du comportement suicidaire selon le sexe, en ce qui concerne les facteurs de risque pour la tristesse, les garçons et les filles se ressemblent fortement. En revanche, des différences plus prononcées entre les sexes sont observées pour la tentative de suicide au cours des 12 derniers mois. Les deux facteurs de risque les plus importants chez les garçons et les filles pour la tristesse, sont les plaintes de santé subjectives multiples et récurrentes et la faible satisfaction de vie. Pour la tentative de suicide, la faible satisfaction de vie reste un facteur de risque important pour les deux

sexes. A cela s'ajoutent les bagarres et la consommation de substances psychoactives pour les garçons, alors que le facteur de risque le plus important pour les filles est constitué par les plaintes de santé multiples et récurrentes. Les filles du secondaire classique déclarent moins souvent avoir fait une tentative de suicide au cours de l'année précédente, que les filles du secondaire technique.

Wichtigste Erkenntnisse

Die wichtigsten Risikofaktoren für Traurigkeit und suizidales Verhalten sind häufige und mehrfache subjektive Gesundheitsbeschwerden für alle vier Indikatoren (Traurigkeit, Selbstmordgedanken, Selbstmordplanung und Selbstmordversuch) dicht gefolgt von einer niedrigen Lebenszufriedenheit. Gewalterfahrungen in Form von sexuellen Übergriffen, Mobbing und Schlägereien sind ebenfalls wichtige Risikofaktoren für suizidales Verhalten.

Hinsichtlich der Risikofaktoren für Traurigkeit ähneln sich Jungen und Mädchen stark. Bei den Risikofaktoren für einen Selbstmordversuch in den vergangenen 12 Monaten gibt es hingegen größere Unterschiede zwischen den Geschlechtern. Die beiden wichtigsten Risikofaktoren für Traurigkeit sind für Jungen und Mädchen mehrfache und wiederkehrende Gesundheitsbeschwerden und eine niedrige Lebenszufriedenheit. Bei Selbstmordversuchen bleibt die niedrige Lebenszufriedenheit für beide Geschlechter ein wichtiger Risikofaktor. Für Jungen sind Schlägereien und der Konsum von Substanzen weitere wichtige Faktoren. Für Mädchen sind mehrfache und wiederkehrende Gesundheitsbeschwerden der wichtigste Risikofaktor. Mädchen aus dem secondaire classique geben seltener an, im letzten Jahr einen Suizidversuch durchgeführt zu haben als Mädchen aus dem secondaire technique.

How to interpret the results

In the previous chapter, results from bivariate logistic regressions were presented that showed the relationships between the suicidal behaviours (sadness, contemplation of suicide, planning of suicide and attempted suicide) and 24 independent variables. The information obtained is relevant for the practical implementation of prevention programmes because it indicates which groups are at higher risk for suicidal thoughts and behaviour. For example, professionals working with youth (e.g. psychologists, social workers, educators, medical professionals) could follow up on mental health issues when pupils report a variety of psychosomatic complaints. Teachers, SSE (*Service Socio-éducatif*) and SePAS (*Service psycho-social et d'accompagnement scolaires*) can also offer help when they realize that pupils are being bullied, have bad relationships with their classmates and parents, or that their academic performance is very poor. The same applies to parents and other persons from the adolescents' social environment.

However, with a large number of 24 independent variables, it is difficult to obtain an overview. Additionally, a large number of independent variables correlate with each other. This applies, for example, to the various variables that represent social relationships, like classmate support, school-related parental support, communication with parents and teacher support. It raises the question of whether some of these social relationships are more important than others, where suicidal behaviour is concerned.

For other variables, it can be assumed that they are not the cause of higher suicidal behaviour risk. That might be the case for gender, one can assume that it is not the gender itself that is responsible for the higher risk of suicide, but other variables that differ between boys and girls in regard to other risk factors for suicidal behaviour. For example, girls are much more likely to suffer from psychosomatic health problems, and boys fight more frequently, which were both risk factors in the bivariate analysis. When taking into consideration all three variables, one might question if gender is still a risk factor. In other words: Do boys and girls still show differences in suicide risk if we assume that both sexes have the same amount of health complaints and that they both fight just as often?

To answer these questions, this chapter presents the results of multivariate logistic regressions using the 2014 data. In these multivariate logistic regressions, odds ratios for suicidal behaviour are calculated while controlling for all other independent variables. In other words, to calculate the odds that adolescents experience sadness, not only one independent variable is taken into consideration, but simultaneously all of them. By doing this, these analyses take the relationships between the independent variables into consideration. This allows us to better assess the relative importance of the independent variables for suicidal behaviour among adolescents.

5.1. Classification of risk factors for suicidal behaviour

Although the analysis of the impact of each risk factor in the different suicidal behaviour is important for prevention in order to target more at-risk groups or behaviours, the actual risk attached to that factor might be due to another (e.g. gender example in the previous page).

Four multivariate logistic regressions were performed, one for each of the suicidal behaviour dependent variables. The following table (Table 7) lists those independent variables that showed a statistically significant relationship in the multivariate logistic regressions ordered by decreasing explained variance. In other words, they are ordered according to their importance, the further up a variable is, the more variance of the respective outcome it can explain. More detailed information, including the corresponding odds ratios and other statistical parameters, as well as the non-statistically significant variables can be found in the appendix.

Table 7: Risk factors for suicidal behaviour, results from multivariate logistic regressions

Sadness	Contemplation of suicide	Planning of suicide	Suicide attempt
Health complaints	Health complaints	Health complaints	Health complaints
Life satisfaction	Life satisfaction	Life satisfaction	Life satisfaction
Sexual assault	Bullying victimisation	Bullying victimisation	Physical fighting
Communication with father	Sexual assault	Substance use	Sexual assault
Body image	Communication with mother	School-related parental support	Bullying victimisation
Type of school	Substance use	Screen time	Substance use
Pressure by schoolwork	Body image	Sexual assault	Age
Bullying victimisation	Age	Pressure by schoolwork	Type of school
Substance use	Screen time	Body image	Communication with mother
Screen time	Pressure by school work	Migrant status	Body image
Gender	Gender	Communication with father	Socioeconomic status
Migrant status	School-related parental support	Communication with mother	Migrant status
	Physical fighting		

Subjective health complaints: At first glance, it may come as a surprise that psychosomatic health complaints is the most important risk factor of all four outcomes. Since the complaints in question are widespread (headache, abdominal pain, backache, feeling low, irritability or bad mood, feeling nervous, sleeping difficulties and dizziness), the link between them and suicidal behaviour may not be evident. However, it is known from previous HBSC studies that these complaints occur frequently in adolescents and that they usually occur together (Ravens-Sieberer et al., 2008). The Canadian HBSC study has shown that some complaints are strongly correlated with emotional complaints and emotional well-being, making them an indicator of psychological health (Gariepy et al., 2016). A longitudinal study from Finland showed that psychosomatic complaints in adolescence can be the first warning signs of serious mental health problems in adulthood, such as anxiety and depression (Kinnunen et al., 2010). This finding is also consistent with the WHO report "Preventing suicide", which identifies mental disorders and chronic pain as the main risk factors for suicide (World Health Organization, 2014).

This result can be used for prevention, as the health problems in question are often visible to others, but are not a sensitive issue to address. For example, the questions on health complaints could be used as an alternative tool for screening adolescents with suicidal behaviours (Heinz, Catunda, van Duin & Willems, 2020), followed by referral to appropriate service. Also, it is important that people working in health, social and educational services and institutions, as well as parents and teachers, are aware that health complaints, when multiple and frequent can be a warning sign of a deteriorated well-being. It could serve as a starting point of a conversation on mental health, an occasion to inquire about their well-being and offer help if necessary.

Life satisfaction is the second most important risk factor for suicidal behaviour among adolescents. Lower levels of life satisfaction are associated with a higher risk of suicidal behaviour. Life satisfaction is the overall evaluation of life by adolescents, a measure that is usually stable over time. Having a high level of life satisfaction is necessary for an individual to cope appropriately with the normal stresses of life. During adolescence, life satisfaction is strongly correlated with the quality of relationships with family members and friends, which is also a risk factor for suicidal behaviour. Promoting well-being and mental health is necessary to decrease risk factors in the population and, subsequently, suicide behaviour.

Life satisfaction can be similarly used for prevention as health complaints. If adolescents express dissatisfaction with their life to parents, friends, teachers or health professionals, it could be beneficial to ask about their well-being in general and offer help if necessary.

The third most important explained variance comprises a group of similar variables: **sexual assault, bullying and fighting**, all related to violence and aggression. This finding is also consistent with the WHO report, which identifies trauma and abuse as a major risk factor for suicide (World Health Organization, 2014). Trauma is an emotional response to an extremely negative event. Through increased emotional stress, it can trigger depression and suicidal behaviours. Stress can arise from different sources, such as bullying or sexual assault. On top of that, abuse in the form of violence, in general, and more specifically sexual abuse is also a risk factor of suicidal behaviour. The WHO (2014)

states that children, in particular, are at higher odds for suicidal behaviour if they have experienced sexual abuse. Similar findings can be observed throughout this report, as sexual assault is one important risk factor for suicidal behaviour in adolescents in Luxembourg. As explained in chapter 4 (page 40), a range of questions was used to measure sexual assault in this report. An adolescent answering yes to any of those questions was considered to have been sexually assaulted. However, we understand that different forms of unwelcomed sexual attention could have a different impact on the mental health of the victim. For that reason, it is very possible that if sexual abuse only was measured, the relationship with suicidal behaviour could be even higher.

The connection between fights and suicidal behaviour can be explained by the Interpersonal Theory of Suicide (Joiner, 2005). According to this theory, what separates individuals who have the desire to engage in suicidal behaviour from individuals who have a (nearly) lethal suicide attempt is the capability to enact lethal self-injury. This capability is acquired through a reduced fear of death and increased tolerance for pain. This means that an individual, by repeatedly exposing him or herself to painful or fearful experiences, weakens their instinct of self-preservation. Consequentially, their capability to enact lethal self-injury increases (Joiner, 2005; Joiner et al., 2009; van Orden et al., 2010).

The next group of variables relates to the topics of **social support and communication**: communication with mother/father and school-related parental support underlines the importance of parents as a health resource. This finding is supported by the WHO report, which identifies “sense of isolation and lack of social support” and “relationship conflict, discord or loss” as key risk factors of suicide (WHO 2014). Parents need to know that their support matters. In this context, it is also important to address the common belief “Talking about suicide is a bad idea and can be interpreted as an encouragement”. The WHO denies this myth and contradicts it: “Given the widespread stigma around suicide, most people who are contemplating suicide do not know who to speak to. Rather than encouraging suicidal behaviour, talking openly can give an individual other options or the time to rethink his/her decision, thereby preventing suicide.” (World Health Organization, 2014).

Another group of variables is related to **school as a social environment**. These include schoolwork pressure, type of school and to some extent school-related parental support. Teachers and parents need to know that pressure is a risk factor. One approach to prevention could be to signal to pupils that they will be offered help if the pressure to perform becomes too high. This may be particularly important for pupils who have little social support from their parents.

It is noteworthy that sociodemographic characteristics only play a subordinate role regarding the risk for suicidal behaviour. With regard to the outcomes "planning of suicide" and "suicide attempt", gender is not statistically significant. Migrant status and socio-economic status are statistically significant for the outcome suicide attempt, but the variance explained is very small. This is encouraging since the WHO report lists "stresses of acculturation and dislocation" and "discrimination" as key risk factors for suicide. In Luxembourg, however, these factors play only a minor role in suicidal behaviour. This has already been shown in the bivariate analysis, which indicated that second-generation

migrants do not have a higher risk than natives do. Although first-generation migrants are at a higher risk, these results indicate a successful culture of integration in Luxembourg and low stress of acculturation.

In conclusion, the two first risk factors for each suicidal behaviour are similar: health complaints and life satisfaction. However, the third factor varies: physical fighting, sexual assault and bullying victimisation. Interesting enough, those are the first five risk factors for suicide attempt.

5.2. Gender differences in risk factors for suicidal behaviour

Differences in gender might be better explained by differences in behaviours and social expectations for boys and girls than differences in biological sex. The separate analysis made by gender makes it possible for prevention to target those groups appropriately.

In order to identify differences between genders, the multivariate logistic regressions were performed separately for boys and girls for two outcomes: sadness and suicide attempt. Only these outcomes are discussed as they represent the least and most severe outcomes.

The results from the analyses for boys and girls regarding sadness can be found in Table 8. The two most important determinants for sadness are similar for both genders. The existence of (multiple) health complaints and a lower level of life satisfaction increases the risk of sadness for both boys and girls.

However, differences exist regarding the determinant in third place. Body image, differently than most would expect, is a highly important determinant for sadness for boys but ranks only on the 8th position for girls. Boys who perceive themselves as too thin or too fat are at higher odds of being sad than boys who think that they are the right size. However, only the girls who think of themselves as too fat are at higher odds of being sad. Girls who think that they are too thin have similar odds of girls who think they are the right size.

For girls, the third most important determinant for experiencing sadness is sexual assault. Although it significantly contributes to the risk of sadness of boys as well, it is of lower importance, placing in the 10th position. However, this might be due to the small number of cases, as both girls and boys who were sexually assaulted are at a higher risk for sadness than their peers who were not sexually assaulted.

The risk factors for suicide attempts differ more clearly between boys and girls. While multiple determinants are shared between the genders, their rank of importance is different for boys and girls respectively.

Table 8: Gender differences among risk factors for sadness and suicide attempt

Sadness	
Boys	**Girls**
Health complaints	Health complaints
Life satisfaction	Life satisfaction
Body image	Sexual abuse
Substance use	Communication with father
Communication with father	Type of school
Bully victimisation	Pressure by school work
Migrant status	Screen time
Pressure by school work	Body image
Type of school	Communication with mother
Sexual abuse	Bully victimisation
Screen time	School-related parental support

Suicide attempt	
Boys	**Girls**
Physical fighting	Health complaints
Life satisfaction	Life satisfaction
Substance use	Type of school
Bully victimisation	Physical fighting
Socioeconomic status	Sexual abuse
Sexual abuse	Age
Communication with mother	Bully victimisation
Screen time	School-related parental support
Health complaints	Pressure by school work
Academic achievement	Substance use

The most important determinant for boys is physical fighting. Boys who are involved in frequent physical fighting are at increased odds for a suicide attempt. Whereas involvement in frequent physical fighting significantly contributes to the risk for a suicide attempt for girls as well, for them this determinant is of slightly lower importance.

The most important determinant for girls is health complaints. Health complaints are of importance for boys as well but place almost at the bottom of the list. Girls (and boys) that have (multiple) health complaints have higher odds for a suicide attempt than adolescents who do not have health complaints. For prevention efforts, it is interesting to know that girls report more health complaints than boys. For that reason, while two frequent health problems might be an indicator of increased suffering for boys, for girls, three health complaints seem more adequate.

Life satisfaction is the second most important determinant for a suicide attempt for both genders; adolescents with lower levels of life satisfaction have higher odds of a suicide attempt than adolescents with higher levels of life satisfaction.

The third most important determinant for a suicide attempt differs between the genders. For boys, substance use is of high importance, whereas this determinant is at the bottom of the list for girls. Boys (and girls) who use substances have higher odds for a suicide attempt than adolescents who do not use substances. There is a big gender gap regarding substance consumption, with boys using alcohol, tobacco and cannabis more often than girls. However, this difference between boys and girls is decreasing. In some European

countries, girls now smoke more than boys, for example. It is necessary to pay special attention to this behaviour change and constantly evaluate its association with suicidal behaviour in a gender tailored approach.

The third most important determinant for girls is the type of school. Girls who attend *Secondaire technique* and *Secondaire modulaire* more often report having attempted suicide than girls who attend *Secondaire classique*. For boys, the type of school makes no significant difference in the probability of having attempted suicide.

The three first factors for sadness for boys are health complaints, life satisfaction and body image. For girls, the two first are also health complaints and life satisfaction. Sexual assault is the third most important factor for sadness. Regarding suicide attempt, physical fighting, life satisfaction and substance use are the first three factors for boys and health complaints, life satisfaction and type of school are the first three for girls. Although there were discussed only the three first ranked risk factors for boys and girls, the others are also significant. It is worth noticing that the comparison indicates that boys and girls differ increasingly as suicidal behaviour gets more severe and harmful. As such, the number of gender similarities is higher for sadness than for suicide attempt. As a consequence, when possible, interventions should be gender tailored in order to address those differences.

6. Conclusion

The analysis of the data from the 2014 HBSC study in Luxembourg provides a wealth of valuable information, both for the better understanding of suicide behaviour trends among adolescents in Luxembourg and in terms of the prioritization areas of prevention. The results made it possible to estimate the extent of suicidal behaviour in Luxembourg, identify the groups most at risk and extract the most at-risk profiles among adolescents.

The topic can sometimes intimidate some professionals and certainly parents, yet over a year, 15% of adolescents have had suicidal thoughts, and nearly 8% have attempted suicide. This is not a rare phenomenon. As each attempt carries the risk of death and suicide is one of the leading causes of death among adolescents (World Health Organization, 2018), it is crucial to prioritize suicide prevention and mental health promotion.

This report has made it possible to highlight groups at risk and to suggest ways of prevention accordingly. Some sociodemographic factors appear to increase the probability of suicidal behaviours, such as being female, being born abroad, perceiving the family to be not well off financially. Adolescents with a lack of perceived social support from teachers, classmates and parents, those who experience high schoolwork pressure or perceive their academic performance to be below average are also at increased risk for suicidal behaviours. Violence related experiences, such as experiences of sexual assault, fighting, bullying, whether inflicted or suffered, are also risk factors for suicidality in adolescents. Finally, adolescents who encounter frequent health problems, are less satisfied with their life, are not physically active, feel too thin or too fat, spend long hours in front of a screen and use substances (alcohol, tobacco, cannabis) are at increased risk for suicidal behaviours. The identification of risk factors and of the most vulnerable groups is extremely important in the field of prevention, as this knowledge can reinforce existing programs and help develop new strategies aimed at vulnerable groups who are underrepresented.

Suicidality is never the result of one isolated factor. It is the accumulation of risk factors that poses the risk of suicidality. Although this report does not incorporate all possible explanations related to suicidal behaviour, and there might be other variables playing an equally important role as those discussed, this document provides a very comprehensive overview of the matter. The analyses profiled adolescents who have suicidal thoughts and/or attempted suicide in the previous year. The adolescents most at risk are undeniably those who frequently suffer from a multitude of health problems, are not satisfied with their lives, might be victims of aggression and have difficulties

communicating with their parents. In this sense, this report should be widely disseminated among professionals working with adolescents, so that more and more people are aware of the risk factors and can collaborate in the screening of adolescents in difficulty.

In Luxembourg, many sources of help for adolescents already exist (familiar, psychological, social, etc.). It is necessary to raise awareness among young people so that they are able to ask for help if needed. In addition, more programs could be developed that aim to maximize their personal resources so adolescents can better cope with the difficulties they face.

In other countries, there is an alarming augmentation in the number of suicide attempts, especially among young people. We hope this is not the case in Luxembourg, but the lack of recent data does not allow such an inference. The constant survey of young people is another way of evaluating the effectiveness of the various existing programs aimed at adolescents. In this context, we hope to get this data in the 2022 survey to continue the study of trends that we started with this report. The best way to address the problem is to talk about it so that prevention strategies can be directed accordingly.

Appendix

Table 9: Results of multivariate logistic regression for the outcome variable sadness

	OR	p	95% CI	
Gender = female (male = ref.)	1,364	**	1,144	1,627
Migration status (Non-immigrant = ref.)		*		
First-generation	1,214		0,964	1,529
Second generation	0,901		0,751	1,081
Bully victimisation (not bullied = ref.)		***		
Bullied	1,433	***	1,206	1,701
No information about bullying	0,903		0,541	1,507
Sexual assault (No = ref.)		***		
Assault	1,963	***	1,657	2,325
Missing/Do not want to answer	1,419	*	1,019	1,977
Pressure by schoolwork (not at all = ref.)		***		
A little	1,058		0,813	1,376
Some	1,279		0,964	1,698
A lot	1,769	***	1,326	2,358
Type of school (Classique = ref.)		***		
Secondaire technique	1,570	***	1,31	1,882
Modulaire	1,606	**	1,184	2,179
Number of health complaints (0-8)	1,392	***	1,334	1,453
Body image (right size = ref.)		***		
Too thin	1,436	**	1,121	1,841
Too fat	1,533	***	1,288	1,826
Screentime (Low = ref.)		***		
Missing value	1,532	**	1,15	2,039
Middle screentime	1,259	*	1,002	1,584
High screentime	1,647	***	1,317	2,059
Substance use (smoking, alcohol, cannabis, last 30 days/range 0-3)	1,213	***	1,098	1,341
Life satisfaction (0= high to 10=low)	1,275	***	1,218	1,334
Communication with father (very easy = ref.)		***		
easy	0,983		0,758	1,275
Difficult	1,464	**	1,124	1,908
Very difficult	2,099	***	1,588	2,773
Don’t have or see father/no answer	1,329		0,982	1,799
Constant	0,217	***		

* p <.05; **p<.01; *** p <.001

a. Variable(s) entered on step 1: Number of Health Complaints.

b. Variable(s) entered on step 2: Life satisfaction.

c. Variable(s) entered on step 3: Sexual assault.

d. Variable(s) entered on step 4: Communication with father.

e. Variable(s) entered on step 5: Body image.

f. Variable(s) entered on step 6: Type of school.

g. Variable(s) entered on step 7: Pressure by schoolwork.

h. Variable(s) entered on step 8: Bully victimisation.

i. Variable(s) entered on step 9: Substance use.

j. Variable(s) entered on step 10: Screentime.

k. Variable(s) entered on step 11: Gender.

l. Variable(s) entered on step 12: Migration status.

Case Processing Summary			
Unweighted Cases[a]		N	Percent
Selected Cases	Included in Analysis	4376	83.2
	Missing Cases	886	16.8
	Total	5262	100.0
Unselected Cases		0	0.0
Total		5262	100.0
a. If weight is in effect, see classification table for the total number of cases.			

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	4482.631[a]	0.199	0.286
2	4267.321[b]	0.235	0.338
3	4147.876[b]	0.255	0.366
4	4083.490[b]	0.265	0.381
5	4046.785[b]	0.271	0.389
6	4015.365[b]	0.276	0.397
7	3989.353[b]	0.280	0.402
8	3973.620[b]	0.282	0.406
9	3961.818[b]	0.284	0.409
10	3945.129[b]	0.287	0.412
11	3932.739[b]	0.289	0.415
12	3925.316[b]	0.290	0.417
a. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.			
b. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.			

Table 10: Results of multivariate logistic regressions for the outcome variable contemplation of suicide

	OR	p	95% CI	
Age (12-18)	0,906	**	0,850	0,965
Gender = female (male = ref.)	1,385	**	1,102	1,741
Level of school-related parental support (1 high = ref.)		*		
2	1,330	*	1,054	1,678
3	1,602	**	1,169	2,196
4	1,756	*	1,056	2,923
5 low	1,344		0,669	2,696
Migration status (Non-immigrant = ref.)		*		
First-generation	1,214		0,964	1,529
Second generation	0,901		0,751	1,081
Bully victimisation (not bullied = ref.)		***		
Bullied	2,103	***	1,719	2,574
No information about bullying	1,161		0,615	2,192
Physical fight (no = ref.)		*		
1 fight	1,026		0,760	1,386
2 fights	1,2		0,793	1,817
3 fights	0,797		0,450	1,411
4 fights or more	1,813	**	1,208	2,720
Sexual assault (No = ref.)		***		
Assault	1,649	***	1,328	2,049
Missing/Do not want to answer	2,116	***	1,447	3,094
Pressure by school work(not at all = ref.)		*		
A little	0,729		0,524	1,015
Some	1,026		0,727	1,450
A lot	1,079		0,764	1,523
Type of school (Classique = ref.)		***		
Secondaire technique	1,57	***	1,310	1,882
Modulaire	1,606	**	1,184	2,179
Number of Health Complaints (0-8)	1,28	***	1,219	1,345
Body image (right size = ref.)		***		
Too thin	1,213		0,883	1,667
Too fat	1,555	***	1,244	1,945
Screentime (Low = ref.)		**		
Missing value	1,052		0,725	1,525
Middle screentime	1,293		0,968	1,728
High screentime	1,613	**	1,224	2,126
Substance use (smoking, alcohol, cannabis, last 30 days/range 0-3)	1,345	***	1,188	1,523
Life satisfaction(0= high to 10=low)	1,317	***	1,248	1,390
Communication with mother (very easy = ref.)		***		
easy	0,937		0,720	1,219
Difficult	1,304		0,969	1,754
Very difficult	2,125	***	1,496	3,019
Don’t have or see mother/no answer	1,587	*	1,073	2,349
Constant	0,031	***		

* p <.05; **p<.01; *** p <.001

a. Variable(s) entered on step 1: Number of Health Complaints.

b. Variable(s) entered on step 2: Life satisfaction.

c. Variable(s) entered on step 3: Bully victimisation.

d. Variable(s) entered on step 4: Sexual assault.

e. Variable(s) entered on step 5: Communication with mother.

f. Variable(s) entered on step 6: Substance use.

g. Variable(s) entered on step 7: Body image.

h. Variable(s) entered on step 8: Age in years.

i. Variable(s) entered on step 9: Screentime.

j. Variable(s) entered on step 10: Pressure by schoolwork.

k. Variable(s) entered on step 11: Gender.

l. Variable(s) entered on step 12: Level of school-related parental support.

m. Variable(s) entered on step 13: Physical fighting.

Case Processing Summary			
Unweighted Cases[a]		N	Percent
Selected Cases	Included in Analysis	4363	82.9
	Missing Cases	899	17.1
	Total	5262	100.0
Unselected Cases		0	0.0
Total		5262	100.0
a. If weight is in effect, see classification table for the total number of cases.			

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	3263.972[a]	0.129	0.226
2	3036.876[b]	0.171	0.299
3	2966.628[b]	0.183	0.321
4	2913.305[b]	0.193	0.338
5	2863.560[b]	0.201	0.353
6	2838.001[b]	0.206	0.361
7	2815.943[b]	0.209	0.367
8	2805.883[b]	0.211	0.370
9	2792.055[b]	0.213	0.374
10	2780.047[b]	0.215	0.378
11	2774.477[b]	0.216	0.380
12	2763.791[b]	0.218	0.383
13	2754.058[b]	0.220	0.386
a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.			
b. Estimation terminated at iteration number 6 because parameter estimates changed by less than .001.			

Table 11: Results of multivariate logistic regression for outcome variable planning suicide

	OR	p	95% CI	
Level of school-related parental support (1 high = ref.)		**		
2	1,358	*	1,075	1,715
3	1,782	***	1,308	2,429
4	1,241		0,742	2,077
5 low	1,177		0,604	2,293
Migration status (Non-immigrant = ref.)		**		
First generation	1,506	**	1,147	1,976
Second generation	0,971		0,777	1,214
Bully victimisation (not bullied = ref.)		***		
Bullied	1,893	***	1,546	2,317
No information about bullying	1,191		0,626	2,263
Sexual assault (No = ref.)		**		
Assault	1,489	***	1,209	1,835
Missing/Do not want to answer	1,495	*	1,008	2,218
Pressure by school work (not at all = ref.)		**		
A little	0,786		0,563	1,096
Some	1,121		0,792	1,587
A lot	1,302		0,922	1,838
Type of school (Classique = ref.)		***		
Secondaire technique		***		
Modulaire		***		
Number of Health Complaints (0-8)	1,236	***	1,178	1,298
Body image (right size = ref.)		**		
Too thin	1,068		0,779	1,464
Too fat	1,442	**	1,155	1,8
Screentime (Low = ref.)		***		
Missing value	1,001		0,685	1,463
Middle screentime	1,262		0,943	1,691
High screentime	1,741	***	1,323	2,29
Substance use (smoking, alcohol, cannabis, last 30 days/range 0-3)	1,334	***	1,193	1,491
Life satisfaction (0= high to 10=low)	1,287	***	1,22	1,358
Communication with mother (very easy = ref.)		*		
easy	1,223		0,924	1,617
Difficult	1,327		0,966	1,821
Very difficult	1,824	**	1,247	2,668
Don’t have or see mother/no answer	1,346		0,877	2,066
Communication with father (very easy = ref.)		*		
easy	0,598	**	0,422	0,848
Difficult	0,855		0,604	1,212
Very difficult	0,858		0,595	1,237
Don’t have or see father/no answer	0,682		0,461	1,009
Constant	0,011	***		

* p <.05; **p<.01; *** p <.001

a. Variable(s) entered on step 1: Number of Health Complaints.

b. Variable(s) entered on step 2: Life satisfaction.

c. Variable(s) entered on step 3: Bully victimisation.

d. Variable(s) entered on step 4: Substance use.

e. Variable(s) entered on step 5: Level of school-related parental support.

f. Variable(s) entered on step 6: Screentime.

g. Variable(s) entered on step 7: Sexual assault.

h. Variable(s) entered on step 8: Pressure by schoolwork.

i. Variable(s) entered on step 9: Body image.

j. Variable(s) entered on step 10: Migration status.

k. Variable(s) entered on step 11: Communication with father.

l. Variable(s) entered on step 12: Communication with mother.

Case Processing Summary			
Unweighted Cases[a]		N	Percent
Selected Cases	Included in Analysis	4372	83.1
	Missing Cases	890	16.9
	Total	5262	100.0
Unselected Cases		0	0.0
Total		5262	100.0
a. If weight is in effect, see classification table for the total number of cases.			

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	3196.928[a]	0.100	0.182
2	3008.105[a]	0.136	0.248
3	2959.934[b]	0.145	0.264
4	2915.013[b]	0.153	0.279
5	2887.261[b]	0.158	0.288
6	2862.197[b]	0.163	0.297
7	2846.582[b]	0.166	0.302
8	2831.432[b]	0.168	0.307
9	2819.682[b]	0.171	0.311
10	2808.947[b]	0.172	0.314
11	2795.087[b]	0.175	0.319
12	2785.304[b]	0.177	0.322
a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.			
b. Estimation terminated at iteration number 6 because parameter estimates changed by less than .001.			

Table 12: Results of multivariate logistic regression for outcome variable suicide attempt

	OR	p	95% CI	
Age (12-18)	0,849	***	0,781	0,924
Socioeconomic status (very well off = ref.)		*		
Quite well off	0,563	**	0,366	0,865
Average	0,502	**	0,330	0,764
Not very well off	0,491	**	0,292	0,826
Not at all well off	0,852		0,422	1,722
Migration status (Non-immigrant = ref.)		*		
First generation	1,465	*	1,020	2,106
Second generation	0,942		0,694	1,278
Bully victimisation (not bullied = ref.)		***		
Bullied	1,689	***	1,296	2,201
No information about bullying	0,157		0,024	1,006
Physical fight (no = ref.)		**		
1 fight	1,358		0,939	1,965
2 fights	1,371		0,839	2,242
3 fights	1,409		0,732	2,713
4 fights or more	2,421	***	1,566	3,744
Sexual assault (No = ref.)		***		
Assault	2,331	***	1,740	3,124
Missing/Do not want to answer	2,306	**	1,409	3,773
Type of school (Classique = ref.)		***		
Secondaire technique	1,911	***	1,378	2,650
Modulaire	2,053	**	1,284	3,283
Number of Health Complaints (0-8)	1,248	***	1,175	1,325
Body image (right size = ref.)		**		
Too thin	1,355		0,882	2,082
Too fat	1,745	***	1,279	2,380
Substance use (smoking, alcohol, cannabis, last 30 days/range 0-3)	1,426	***	1,228	1,656
Life satisfaction (0= high to 10=low)	1,246	***	1,167	1,330
Communication with mother (very easy = ref.)		***		
easy	1,048		0,729	1,507
Difficult	1,368		0,924	2,026
Very difficult	2,090	**	1,379	3,168
Don’t have or see mother/no answer	2,241	**	1,411	3,559
Constant	0,051	***		

* p <.05; **p<.01; *** p <.001

a. Variable(s) entered on step 1: Number of Health Complaints.

b. Variable(s) entered on step 2: Life satisfaction.

c. Variable(s) entered on step 3: Physical fight.

d. Variable(s) entered on step 4: Sexual assault.

e. Variable(s) entered on step 5: Bully victimisation.

f. Variable(s) entered on step 6: Substance use

g. Variable(s) entered on step 7: Age in years.

h. Variable(s) entered on step 8: Type of school.

i. Variable(s) entered on step 9: Communication with mother.

j. Variable(s) entered on step 10: Body image.

k. Variable(s) entered on step 11: Socioeconomic status.

l. Variable(s) entered on step 12: Migration status.

Case Processing Summary			
Unweighted Cases[a]		N	Percent
Selected Cases	Included in Analysis	4366	83.0
	Missing Cases	896	17.0
	Total	5262	100.0
Unselected Cases		0	0.0
Total		5262	100.0
a. If weight is in effect, see classification table for the total number of cases.			

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	2058.429[a]	0.070	0.173
2	1965.894[a]	0.089	0.219
3	1891.968[a]	0.103	0.255
4	1840.111[a]	0.113	0.280
5	1807.876[b]	0.119	0.295
6	1791.773[b]	0.122	0.302
7	1774.952[b]	0.125	0.310
8	1755.959[b]	0.129	0.319
9	1734.472[b]	0.133	0.329
10	1722.626[b]	0.135	0.335
11	1710.967[b]	0.137	0.340
12	1704.114[b]	0.139	0.343
a. Estimation terminated at iteration number 6 because parameter estimates changed by less than .001.			
b. Estimation terminated at iteration number 8 because parameter estimates changed by less than .001.			

Table 13: Gender differences among risk factors for sadness

Sadness									
Boys	Wald	OR	95% CI		**Girls**	Wald	OR	95% CI	
Health complaints	95.80***	1.46	1.35	1.57	**Health complaints**	131.77***	1.36	1.29	1.44
Life satisfaction	36.68***	1.23	1.15	1.32	**Life satisfaction**	65.25***	1.31	1.23	1.40
Body image	15.50***				**Sexual assault**	73.27***			
Too thin		1.61	1.14	2.28	Abuse		2.51	2.03	3.09
Too fat		1.75	1.31	2.34	Missing/Do not want to answer		Non-significant		
Substance use	12.17***	1.23	1.15	1.32	**Communication with father**	18.14**			
Communication with father	19.14**				Easy		Non-significant		
Easy		Non-significant			Difficult		Non-significant		
Difficult		1.77	1.2	2.61	Very difficult		1.69	1.11	2.55
Very difficult		2.13	1.39	3.26	Don’t have or see		Non-significant		
Don’t have or see		Non-significant			**Type of school**	22.57***			
Bully victimisation	9.72**	1.52	1.15	2	Technique		1.69	1.34	2.12
Migrant status	9.65**				Modulaire		1.91	1.27	2.87
First generation		1.39	0.96	2.01	**Pressure by school work**	19.59***			
Second generation		Non-significant			A little		Non-significant		
Pressure by school work	11.85**				Some		Non-significant		
A little		Non-significant			A lot		1.52	1.03	2.26
Some		1.74	1.13	2.67	**Screen time**	15.84**			
A lot		2.09	1.34	3.28	Middle screentime		Non-significant		
Type of school	5.84^{ns}				High screentime		1.66	1.26	2.18
Technique		1.45	1.07	1.99	**Body image**	10.41**			
Modulaire		Non-significant			Too thin		Non-significant		
Sexual assault	6.46*				Too fat		1.44	1.15	1.80
Abuse		1.41	1.06	1.89	**Communication with mother**	14.10**			
Missing/Do not want to answer		Non-significant			Easy		Non-significant		
Screen time	7.98*				Difficult		1.41	1.02	1.95
Middle screentime		1.58	1.03	2.41	Very difficult		1.90	1.23	2.95
High screentime		1.69	1.13	2.53	Don’t have or see		1.86	1.17	2.96
					Bully victimisation	7.67*	1.37	1.10	1.71

Sadness (continue)									
Boys	Wald	OR	95% CI		**Girls**	Wald	OR	95% CI	
					School-related parental support	10.35*			
					High		Non-significant		
					Medium		Non-significant		
					Low		Non-significant		
					Very low		0.34	0.14	0.82

Table 9: Gender differences among risk factors for suicide attempt

Suicide attempt									
Boys	Wald	OR	95% CI		**Girls**	Wald	OR	95% CI	
Physical fighting	11.53*				**Health complaints**	38.98***	1.29	1.19	1.40
1 time		Non-significant			**Life satisfaction**	31.88***	1.29	1.18	1.42
2 times		Non-significant			**Type of school**	31.27***			
3 times		Non-significant			Technique		3.27	2.10	5.07
4 or more times		2.91	1.52	5.56	Modulaire		4.29	2.32	7.93
Life satisfaction	15.56***	1.24	1.11	1.38	**Physical fighting**	10.38*			
Substance use	18.08**	1.66	1.32	2.09	1 time		1.61	1.00	2.57
Bully victimisation	7.55*	1.95	1.21	3.13	2 times		Non-significant		
Socioeconomic status	13.19*				3 times		Non-significant		
Quite well off		0.51	0.26	0.99	4 or more times		2.21	1.13	4.33
Average		0.39	0.20	0.75	**Sexual assault**	17.87***			
Not very well off		0.20	0.07	0.58	Abuse		2.20	1.50	3.24
Not at all well off		Non-significant			Missing/Do not want to answer		2.71	1.38	5.32
Sexual assault	9.93**				**Age**	17.68**	0.80	0.72	0.88
Abuse		2.18	1.32	3.62	**Bully victimisation**	14.87**	1.75	1.26	2.42
Missing/Do not want to answer		Non-significant			**School-related parental support**	14.32**			
Communication with mother	19.60**				High		Non-significant		
Easy		Non-significant			Medium	15.84**	Non-significant		
Difficult		Non-significant			Low		3.03	1.56	5.89
Very difficult		2.64	1.26	5.53	Very low		Non-significant		
Don’t have or see		3.90	1.84	8.26	**Pressure by school work**	9.94*			
Screen time	11.06*				A little		0.48	0.28	0.83
Middle screentime		Non-significant			Some		0.55	0.30	0.98
High screentime		2.96	1.26	6.96	A lot		Non-significant		
Health complaints	5.32*	1.15	1.02	1.30	**Substance use**	4.80*	1.25	1.02	1.52
Academic achievement	8.32*								
Good		Non-significant							
Average		0.46	0.22	0.95					
Below average		Non-significant							

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HBSC Luxembourg Suicide Report

HEALTH BEHAVIOUR IN SCHOOL-AGED CHILDREN (HBSC) STUDY

The HBSC Luxembourg Suicide Report presents an overview of adolescents' suicidal behaviour in Luxembourg. Data collected from the HBSC 2006, 2010 and 2014 Luxembourg Study give a first glimpse on Trends on sadness, suicide contemplation, planning of suicide and suicide attempt. In addition, based on the findings from the HBSC 2014 Luxembourg Study only, 24 variables (concerning sociodemographic aspects, social support and quality of communication, school-related risk factors, bullying, fighting and sexual assault, health status and health behaviour) are explored in relation to sadness and suicidal behaviour. Therefore this document can be a useful source of information to the public, professionals working with adolescents and policymakers.

University of Luxembourg
Campus Belval
Maison de Sciences Humaines
11, Porte des Sciences
L-4366 Esch-sur-Alzette

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