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Young People's Risk Perception and Experience in Connection with COVID-19

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ABSTRACT

In 2020, Norwegian society was in lockdown for seven weeks due to the rapid spread of the corona virus. During this period, young people (YP) aged 13–20 years participated in a survey investigating risk perception and experiences related to COVID-19. Participants ($n = 244$) were recruited from a popular website for youths in Norway. YP's experience of risk was related to their concern about spreading the virus to close loved ones. They worried about their future with regards to education and social life. They called for more information directed at young people. Being informed and trusting the information received, decreased anxiety.

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COVID-19; adolescents;
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Introduction

In 2020, the COVID-19 crisis gradually spread and became a pandemic reaching every corner of the world. The pandemic has led to lockdown and great limitations in the lives of children and YP. Reviews that document early studies of adolescents during the COVID-19 pandemic support an increased risk of PTSD, depression and anxiety symptoms (Guessoum et al., 2020). It is speculated what harmful effects “social distancing” and school closure will have for YP (Clemens et al., 2020). Social deprivation is believed to have a particularly negative effect on YP, because they are in a sensitive stage of life with regard to social interaction (see overview by Orben et al. (2020)). We know relatively little about what information YP need and what factors can contribute to coping.

In a Norwegian study Kyrrestad et al. (2020) found that YP retrieved most information from the internet, followed by online news and TV. Most YP perceived the information as sufficient, understandable, trustworthy and covering their informational needs. Larcher et al. (2020) did a focus group interview with fifteen YP (age 11–18) and found that their main concern were the effects on vulnerable others and their own education and future. The YP also wanted information adapted to their needs.

A UNICEF study from Australia of YP (age 13–17) found a slight improvement in their rating of their ability to cope from April to July/August, 2020 when the lockdown was eased, but it was far worse than how they rated this in January before the pandemic (UNICEF Australia, 2020). They remain worried about their education (45%), their connection to friends (46%), and the risk of a friend or family member contracting COVID-19 (42%). In an Italian study of YP (age 13–20), Commodari and La Rosa (2020) found that YP had a low risk perception of COVID-19, and that they underestimated the probability of getting the disease. Females perceived the seriousness and susceptibility as higher than males, as did those residing in a “red” zone.

In the spring of 2020, Norwegian society was shut down for almost seven weeks from March 12. Primary schools reopened April 27, while higher school education reopened on May 11. The aim of this study was to obtain information about YP’s risk perception and experiences in the COVID-19 period.

Method

Participants and procedure

Participants were recruited from a popular website for youths in Norway (www.ung.no). This is the official information channel for YP between the ages of 13 and 20 in Norway.

On this website, brief information was posted about the purpose of the survey with a link to a questionnaire on SurveyXact, a program used for online surveys at the University of Bergen. Data collection was between April 21 and May 12, 2020.

The study was approved by the Regional Ethics Committee (REK Vest) (#132345).

Measures

The questionnaire was developed for this project, and consisted of the following parts: (a) demographic variables and information about COVID-19 infection among family and friends, (b) concerns about getting infected (oneself, family, friends) and about infecting others (four items, see Table 1), (c) different reactions, thoughts and coping strategies related to COVID-19 (14 items, see Table 2), (d) questions related to information sources about the virus, trust in and adequacy of information, effect of the information, and their assessment of expected compliance with government regulations (10 items, see Tables 3 and 4), (e) various questions about their own and their family’s preparedness for COVID-19 (4 items), f) STAI—

TABLE 1. Adolescent's concerns about the COVID-19 virus (in %).

	No	A little	Much	Very much
Are you worried about getting COVID-19 virus?	40.0	43.8	11.4	4.8
Are you worried that someone close to you will get the virus?	10.0	45.2	24.8	20.0
Are you worried that friends will get the virus?	34.8	46.2	12.9	6.2
Are you worried about infecting others?	20.0	33.8	24.8	21.4

N = 210.

TABLE 2. Different reactions, thoughts and behaviors (in%).

	Not true at all	Somewhat untrue	Neither/nor	Somewhat true	Very true	<i>r</i> with STAI-SF
I have slept restlessly and have woken up at night because I fear the virus	74.7	8.6	8.1	5.9	2.7	0.35***
I listen carefully if adults are talking about it	13.4	9.7	22.6	40.3	14.0	0.28***
I read everything I find about the virus on the internet	24.3	25.4	24.9	18.9	6.5	0.37***
I try to stay away from anything that gets my mind on the virus	30.3	18.4	30.3	13.5	7.5	0.41***
I'm worried about going out because of the virus	35.9	21.2	19.0	16.8	7.1	0.44***
I'm more afraid of other things than this virus	4.8	10.8	26.9	28.5	29.0	-0.09
I've heard adults talk about the virus and it makes me uneasy	35.0	19.1	27.9	11.5	6.6	0.50***
I think adults are more afraid of the virus than they let young people know about	14.8	20.8	29.5	24.6	10.4	0.12
I live as normally as possible and do not think about the virus	12.8	20.6	22.8	23.9	20.0	-0.53***
I have had dreams about the virus	73.2	10.9	5.5	8.7	1.6	0.33***
I feel constantly on guard for something to happen	45.0	17.8	18.3	12.2	6.7	0.44***
I do not think there is anything I can do to protect myself	44.2	27.6	17.7	5.5	5.0	0.17*
I get anxious when I watch something on TV or read something online about the virus	33.7	23.2	20.4	13.8	8.8	0.50***
I've talked to my friends about the dangers of the virus	12.6	10.1	13.2	35.2	28.9	0.04

N varies between 180 and 186.

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

short form (six items) from the Spielberger State-Trait Anxiety Inventory (STAI) (Marteau & Bekker, 1992) to measure anxiety.

There were three open-ended questions: (1) What is your biggest concern about the COVID-19 virus? (2) What helps you best keep your worries about the COVID-19 virus at bay? (3) Do you have any suggestions for what can increase the sense of safety of YP in the new daily life situation that the COVID-19 virus has led to?

Analysis

The questions were analyzed using frequency analyses where ordinal variables were treated as continuous, and gender differences were examined with *t*-tests. The associations between reactions, thoughts, behavior,

TABLE 3. Adolescents' assessment of information (in %).

	Not true at all	Somewhat untrue	Neither/nor	Somewhat true	Very true	<i>r</i> with STAI-SF
I think I get all the information about the virus that I need	5.6	10.0	18.1	44.4	21.9	−0.29***
I find that information about the virus is easy to understand	6.9	10.6	15.6	42.5	24.4	−0.21*
I do not trust what we get from information about the virus	35.6	28.7	23.1	9.4	3.1	−0.28***
What is said on TV or written in newspapers and other media about the virus is reliable	3.1	7.5	37.7	39.0	12.6	−0.28***
We should get more information on what is being done to protect ourselves against the virus	9.5	15.2	32.9	25.9	16.5	0.28***
I have heard information from adults who specialize in the virus	13.8	11.9	17.6	34.6	22.0	0.10
Facts about the virus calm me down	13.1	16.9	40.6	21.9	7.5	0.02
I know who to ask if I have a question regarding the COVID-19 virus	15.2	17.1	21.5	20.9	25.3	−0.30***

N varies between 158 and 160.

* $p < .05$; *** $p < .001$.

perception of information, and preparedness with anxiety were investigated with correlation analyses.

The answers to the open-ended questions were collected in a matrix for each question and analyzed separately by two people (the two first authors) according to Kvale's (1996) phenomenological and thematic analysis method. First, relevant units of meaning were condensed. Then the condensed material was sorted into categories identified by the repeated use of similar descriptions. The independently organized categories and themes were discussed before making a final decision on meaningful themes. The categories were quantified. Statistical analysis was conducted with SPSS, version 22.0.

Results

We received responses from a total of 244 YP. There were more girls (69%) than boys (31%) in the sample, which reflects the usual gender balance of enquiries to ung.no (Lassemo et al., 2018). The participants were distributed relatively evenly over the different grade levels from eight grade to the third year of senior high school (8th = 41, 9th = 25, 10th = 47, high school 1 = 35, high school 2 = 32, high school 3 = 25, no answer = 34) with the highest number of participants in 10th grade.

Only 3% had someone in their family infected, with 13% ticking "do not know." Seventeen percent knew someone who had been infected.

Worries

The average score on the short version of the STAI was 12.8 ($SD = 3.4$) and Cronbach's alpha was 0.81. Girls scored significantly higher (more anxiety) than boys (Girls: $M = 13.3$, $SD = 3.2$; Boys: $M = 11.7$, $SD = 3.7$), $t(236) = 43.5$, $p < .001$; Cohen's $d = 0.46$. There is no established cutoff for short STAI. A score of 18 or higher means that participants have on average ticked "much" or "very much" for the six items. Using this as a measure, a total of 7.4% were "much" or "very much" concerned.

Table 1 shows that 60% are worried about getting COVID-19, but only 16% are much or very much worried. A large majority (90%) worried that someone close to them would get the virus and 45% experience this "much" or "very much." For friends, the concern is less, but close to 1/5 of the YP still experience this "much" or "very much." Eighty percent experience concern about infecting others to varying degrees. When asked how worried they are about the COVID-19 overall, 17 percent are unconcerned, most (66%) are "somewhat worried," while 17% are "very worried." While there were no gender differences in the questions in Table 1, there were significantly more girls than boys who were overall concerned about COVID-19 ($t(206) = -2.01$, $p < .05$; Cohen's $d = 0.30$).

Different reactions, thoughts, and behavior

Table 2 depicts different reactions, thoughts and behavior evidenced by the YP. The three questions with the highest scores were having talked to one's friends about the dangers of the virus (64.1%), being more afraid of other things than the virus (57.5%), and listening carefully if adults talk about it (54.3%). Girls acknowledge significantly more than boys that they try to avoid anything that prompts them to think about the virus ($t(182) = 4.27$, $p < .001$; Cohen's $d = 0.66$), that they become restless if they hear adults talk about the virus ($t(180) = 2.21$, $p < .05$; Cohen's $d = 0.35$), that they think adults are more afraid of the virus than they let YP know about ($t(180) = 2.00$, $p < .05$; Cohen's $d = 0.32$), that they constantly feel on guard for something to happen ($t(177) = 2.49$, $p < .05$; Cohen's $d = 0.38$) and that they become anxious when they watch something on TV or read something about the virus online ($t(178) = 4.36$, $p < .001$; Cohen's $d = 0.69$). The boys, on the other hand, indicate significantly more than the girls that they live as normally as possible and do not think about the virus ($t(177) = -2.28$, $p < .05$; Cohen's $d = 0.36$).

STAI showed associations with different reactions and behaviors (see Table 2). The strongest association was negative, indicating that higher scores on STAI were associated with YP to a lesser extent trying to live as normally as possible. The strongest positive associations were between

STAI and following news online or on TV, feeling on guard for something to happen, worrying about going out, and trying to stay away from anything that prompted them to think about the virus.

Their perception of information

Table 3 shows how YP perceive different aspects of information about the virus. About 2/3 thought they had received all the information they needed about the virus and that the information was easy to understand. Most YP (64%) trusted the information they received, and 51% agreed that the information was trustworthy. However, 42% acknowledged that they lacked information on what was being done to protect them against the virus. A majority (57%) ticked that they had listened to those who were specialists in the virus and almost half (46%) agreed that they knew who to ask if they had any questions about the COVID-19 virus. On a question about what they thought overall about the information they had received, a large majority (77%) thought it was “good” or “very good,” and less than 5% thought it was “bad” or “very bad.”

STAI correlated negatively with the fact that they agreed that they got all the information they needed about the virus, the experience that information was easy to understand, the fact that what was said on TV or in other media about the virus was reliable, and that they knew who to ask if they were wondering about something (see Table 3). This means that anxiety was greatest among those who did not receive enough information, did not think the information was easy to understand, did not think the information was reliable, or did not know who to ask. Those who lacked information on what was being done to protect them against the virus also scored higher on STAI.

YP's view of compliance with government regulations

Fifty-nine percent indicated that it is “somewhat true” or “very true” that YP will meet even if the authorities want them to stop. Less than 1/5 (18%) answered that this is not true. Thirty-eight percent agree that the authorities limit too much what YP can do during the COVID-19 crisis.

YP and preparedness

Almost all (94%) experienced that they have been given information on what to do to avoid infection. However, only 1/3 YP (34%) had discussed with parents what to do if someone in the family became infected. Only 22% ticked that it was true that they had a plan in their family for what to do if someone became infected. There was a significant negative correlation

between STAI and whether they agreed that they had been given information on what to do to avoid infection ($r(144) = 0.28, p < .001$), which means that there was more anxiety among those who had not received information.

Where did YP get their information from?

We asked the YP to rate from 1 to 3 which information sources were most important to them, where 1 was the most important. Internet news ($n = 58$) and public websites ($n = 53$) are the most used, followed by information from parents ($n = 44$), TV ($n = 41$) and social media ($n = 41$).

Qualitative results

What is your greatest worry in relation to the corona virus?

We identified three main themes: concern for others, concern for oneself, and concern for societal consequences.

Concern for others

Most YP ($n = 104$) expressed concern that they might infect others. Many stated that they had family members in the risk groups (elderly, sick) that they were afraid of infecting. They could mention this in connection with fear of getting infected themselves and then infecting family members, such as: "That I get infected and infect others like my grandmother even if I keep my distance" or they mentioned concern for several people at the same time: "I'm particularly worried that my grandparents and other elderly people I know will get the virus. I am also worried that someone I know with chronic diseases will be affected." The hidden danger increases the experience of a risk of infecting others: "Have it without knowing it and then infect others or that close family or friends will get the virus." Many YP mentioned diseases in the family, such as cancer, diabetes, immune deficiency, brain damage, lung disease, imminent operations, etc.

Concern for themselves

The worries they experienced in relation to themselves are primarily about the fear of becoming infected ($n = 55$).

Many are also worried about how the pandemic will affect their school performance and opportunities for education or work. One describes it like this: "That I will fail in subjects since I lack motivation and help from my teachers."

Several expressed concern about the lack of social contact with grandparents and friends. Most of them mentioned friends: "That I do not get to

meet my friends during the summer holidays.” Others were worried about activities that they are prevented from doing: “Not being able to exercise if authorities allow it.”

Concern for the societal consequences

Various concerns about the future were grouped under this main theme. Many YP ($n = 47$) expressed concerns about the impact the pandemic will have if it lasts a long time. An example: “That it will never pass in many years and the whole society will collapse. That schools are closed for many years and we cannot be with friends. Then I do not know if I can manage”. Others worried about the world economy or mass death: “That it destroys the world economy and the country’s economy.” “That very many people die.” Some worried about the “softening” of restrictions: “That the infection curve will rise again when schools start again”.

What helps you best to keep your COVID-19 worries at bay?

Here we identified three main themes: distraction, activities and thought management; following advice from the authorities; and contact with others.

Distraction, activities and thought management

Most YP ($n = 66$) mentioned activities and hobbies they do to stay busy, such as gaming, exercise, being on social media etc. As one of them wrote: “Do other things like watch series, listen to podcasts, draw, paint”. The YP also described how they specifically tried to distract themselves from thoughts and concerns about the virus: “Distracting myself with things like chatting, gambling, etc.”

Many also wrote that they tried to take control of their thoughts by thinking about other things, or tried not to think about the virus, often in combination with distraction and activities as mentioned above. The YP further wrote about how they used rationalization and positive thoughts to keep worries away. Some wrote that they tried to think about how the virus was not dangerous to them. One of the YP wrote: “Thinking that I most likely will not get it and that me and my family are not at risk”.

Follow advice from authorities

Many YP ($n = 27$) wrote that following advice from the authorities was important: “I stay as much as possible at home, keep a good distance from others and focus on hand hygiene”. They also wrote that it was good to have clear rules and that worries were less when they themselves and others comply with them.

Contact with others

Contact with other people were important to keep worries at bay ($n = 24$). One wrote: “Talking to family and loved ones.” Several also wrote that it was important to keep in touch with friends on social media and interactive games when you do not have the opportunity to meet physically.

Do you have any suggestions for what can increase the security of YP in the new life situation that the COVID-19 virus has led to?

Three main themes were identified: information and facts; advice and actions from adults and authorities; and help to understand the seriousness and limit infection.

Information and facts

Many ($n = 31$) wanted more information and preferably information that was aimed specifically at YP. They wanted their own websites or information on platforms that YP use daily. One wrote: “Own pages adapted to YP between 10th grade and the end of secondary school.” Several asked for more information from their schools. They wondered when the schools will reopen and what the next school year will be like. Several also mentioned that they want more positive news in the media and less focus on the virus.

Advice and actions from adults and authorities

The YP ($n = 28$) had several proposals for specific measures that the authorities and adults can contribute to. Some mentioned mental health and believed that more help for YP should be made available and communicated to them. One wrote: “Be even more clear about emergency telephones for those who do not have parents they can trust.” They also wanted advice on alternative activities.

Furthermore, there were those who called for measures from the school, reduced school requirements and better follow-up from the school. “We need teachers to help us with school and checkup if we do not show up.”

Help to understand seriousness and limit infection

Some ($n = 10$) suggested helping YP understand the seriousness and importance of limiting infection. They wanted better enforcement and stricter measures in case of routine breaches and that parents and other adults emphasize the seriousness. Several expressed that it is important to follow the advice of the authorities and that adults must help YP to comply

with instructions: “In such an uncertain crisis situation as this, it is important that we have adults around us who can keep a cool head.”

Discussion

Although most YP to varying degrees worry about getting COVID-19 themselves, only a few experiences great concern. Many try to live as normally as possible, and a majority state that they were more afraid of other things than the virus. However, there is a subgroup of around 20% who feel on guard and who are disturbed by what they see or read about the virus, and who are anxious to go outside. This corresponds with what Kyrrestad et al. (2020) found and the low perceived risk found by Commodari and La Rosa (2020).

All in all, very few of the YP in our study are very worried about COVID-19, but the girls are significantly more worried than the boys, with all differences estimated to be in the moderate effect size interval. In a study from China (Zhou et al., 2020), they found more anxiety associated with COVID-19 among girls than boys (YP aged 12–18 years) as did Commodari and La Rosa (2020).

The scores on STAI indicate that few of the YP (<10%) are anxious. There is little to suggest that those who have responded are particularly anxious or worried in everyday life. The answers to the open-ended questions about concerns about COVID-19 indicates that they are not carefree, but their concern does not appear to have led to a general anxiety or unrest measured via STAI. Their concerns are primarily a concern for family members and others close to them, and not a concern related to their own health. There is a possibility that the lockdown has reduced daily stressors for YP and that they may have benefited from changes in family routine (Bruining et al., 2020). Having your family always close can add to safety and thus lead to low STAI scores.

Girls to a much greater extent than the boys become anxious when they see news from TV or the internet, while the boys try to live as normal. The girls try to keep their minds off the virus, they feel more alert and they think adults are more scared than they let on. The strategies/reactions that the girls experienced more than the boys, such as trying to avoid things that make them think about the virus, feeling on guard for something to happen, and unrest when adults talked about the virus, showed association with higher STAI scores. Living as normally as possible, as the boys stated significantly more than the girls, on the other hand, was associated with a lower STAI score. Although correlations do not say anything about cause and effect, it is conceivable that some of the explanations for the girls having significantly higher STAI scores than the boys have to do with the

strategies they use. Girls may benefit from reduced news intake and perhaps also benefit from advice to live more as normal.

In addition to concerns about getting COVID-19 virus, there are also concerns about how the situation will impact on their school performance, studying and work. Many respondents are moving to new schools or were about to finish secondary education, and their future perspectives had to be adapted to the fact that the world situation changed rapidly, resulting in uncertainty and anxiety about what the future could bring. The fact that the danger is invisible, with an unpredictable course, gives cause for concern, and some also mention concern about how this can weaken mental health.

It is pertinent to ask what degree of worry is advisable. If it is too low, it may lead to lack of compliance with virus protection, if it is too high it may rise to a clinical level and require mental health intervention. There is a balance that is optimal regarding compliance with the virus protection measures put in place by governments. More research may help us understand how strong the worry messages should be to secure compliance and yet not trigger clinical levels of anxiety and worry in many YP.

The YP felt well informed, they found information about the virus easy to understand, they trusted the information, and they listened to information from adults who are virus specialists. There is a relatively large group (>40%) who agree that they should receive more information about what is being done to protect them against the virus. Although they are happy with the information, many YP found that it made them more anxious than calm, while most perceived that it did not affect them. They obtained their information from news sites on the internet, public websites, and to a certain extent from parents. Their perceptions of the information is largely similar to those found by Kyrrestad et al. (2020).

The connections with STAI show that the anxiety was greatest among those who experienced a lack of information, who did not perceive the information as easy to understand, did not think the information was trustworthy, or knew who to ask if they had any question about the COVID-19 virus. This indicates that anxiety is least when YP receive good, easy-to-understand information that they trust, and which can be supplemented when they want it. The main trend in the results indicates that good information is associated with lower anxiety. Getting more information, preferably specifically tailored to YP, was emphasized by many.

The qualitative results indicate that the YP had several coping strategies available that they could flexibly use. A common feature was to use active strategies that prevented them from spending time on their worries. We believe that it would be possible to broaden their repertoire of strategies in the event of future pandemics. A website where YP can add to their

repertoire of “tools” could be helpful, supplemented by clinical knowledge and research-based methods that can alleviate unnecessary worries.

Limitations

The sample consists of YP who have anonymously accessed our survey. We cannot rule out that someone outside the target group has participated and that the sample thus may contain persons outside the age range of 13–20. Furthermore, we used qualitative analyses, which can give different categories and conclusions based on who does the analysis.

There were relatively few who answered the questionnaire, even though ung.no had 7.7. million hits until June 8 this year (according to their Newsletter). The representativeness of those who responded is unknown, though the website is very well known among YP in Norway. The background information asked for was minimum to keep the questionnaire short. Thus, we have few opportunities to know more about the YP who responded. The low average score on STAI indicates that we do not have a sample with an abundance of mental health issues, at least concerning anxiety.

Conclusion

Young people’s experience of risk during the COVID-19 situation seems mostly to be about infecting loved ones. Furthermore, they are worried that the COVID-19 situation will lead to a loss of friendship, poorer school performance and fewer opportunities for the next school year or regarding work. Some have a broad perspective and worry about the social consequences in the long run, such as a poorer world economy and many deaths globally. They suggest a variety of measures to secure good coping with this unprecedented creeping crisis. They want government agencies to provide information channels directly aimed at them. Considering the importance of information to lessen anxiety, their proposed measures are well worth considering.

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Notes on contributors

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