

# The Covid-19 pandemic, health and medicine: Sociological investigations and perspectives

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# “It is complex”: perception of uncertainty and inequality issues in the COVID-19 crisis. Results from a survey among university students in Switzerland (Research note)

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## Background

From the beginning, early in 2020, the coronavirus crisis created enormous societal challenges (Gamba et al., 2020). In particular, it has shown how much societies depend on their citizens to deal with and overcome viral pandemic threats. In the absence of medical solutions, governments have to rely on citizens to adjust their behaviours and help mitigate the problems.

Although major differences exist in national conditions, common features of the COVID-19 pandemic pose similar challenges in most countries. Scientific knowledge about the Sars-Cov-2 virus – its biomedical nature, mutations, and distribution patterns, etc. – has needed and still needs time to emerge; many questions remain unanswered at this time (Davey-Smith et al., 2020). This uncertainty in the science is likely to spill over to the policy arena and add to uncertainty in administrative and governmental decision-making. Even as scientific knowledge gets stronger over time and governments gather more experience on which to base decisions, the complexity of issues is not likely to decrease. In fact, new challenges have emerged as social inequalities have become apparent (e.g. school closures widening the social gap), the relevance and effectiveness of interventions has depended upon the contexts in which people live and work, and the contextual adaptation of mid- and long-term preventive measures by citizens has required their expertise (Cuerdo-Vilches et al., 2020; Mesa Vieira et al., 2020).

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Citizens are called upon to accept behavioural restrictions that often lead to drastic changes in their lives. For most, necessary adaptations in the organization of private and professional patterns are difficult to make. Health messages change and individuals are challenged by an overflow of information that is often inconsistent. Complexity inherent in the issues thus challenges not only scientists and politicians but also citizens in their active response to the crisis. Denying or ignoring uncertainty and complexity in public health communication may lead to reduced trust (van der Bles et al., 2019) and eventually contribute to citizens becoming sceptical and not following even the most basic behavioural rules.

Thus, beyond being aware of the urgency of the situation and the need to slow and reduce the spread of the virus, the crisis requires from all citizens a recognition and basic understanding of the complex issues associated with it. But even if the uncertainty of slowly emerging scientific knowledge and the complexity inherent in political action challenge everyone, the ability to recognize uncertainty and be aware of complexity may support citizens' adoption of appropriate measures – even when scientific knowledge is incomplete and political action far from coherent.

From a social science perspective, these conditions call for basic research addressing citizens' recognition and understanding of the uncertainties and complexities of a pandemic crisis. A focus on particular population groups may be helpful for this. Adolescents and young adults have been identified as problem groups in this crisis (Li et al.,

2020; Nivette et al., 2021). Initially, both scientific and public discourse have focussed on young adults as identifiable “carriers of risk”. More recently, the focus has shifted to recognize the health and social burdens this age group suffers, which include mental health problems, higher unemployment rates, increased stress, and uncertainty in academic training (OECD, 2020; Sahu, 2020). However, systematic social science research exploring the effects of the current pandemic on the lives of the younger population is only slowly emerging. More specifically, we know very little about their perceptions and understanding of complexity and uncertainty in a pandemic crisis.

We developed a small number of survey items to explore empirically the distribution and variation of the recognition of complex pandemic-related issues among a group of young adults who are university students in Switzerland. Our basic assumption was that, among those with the highest formal education, appropriate perception of complexity and awareness of uncertainty in slowly emerging scientific knowledge should be widespread in a pandemic crisis.

## **Aims of the study**

This population-level research explores citizens’ perceptions of pandemic-related uncertainty and complexity issues. Because we found no survey measures available on this topic, the first study aim was to develop an initial set of survey items to measure knowledge and awareness about key issues in dealing with complexity-related challenges in the current crisis.

The second aim was to apply these measures in a population group of major significance in the current pandemic crisis (young adults) and obtain insight into the social distribution of knowledge

and awareness of such complexity issues among highly educated young adults.

## **Methods**

### **Development of survey items on complexity perception**

Early in the COVID-19 pandemic, an interdisciplinary group of public health experts discussed relevant themes applicable to university students. Three rounds of expert feedback produced a set of five items that were then pretested in German, French, and English among young adults (n = 16). Respondents’ feedback focused on phrasing and wording and informed revisions of the survey questions. The final set of five items addressed a range of key issues in the pandemic, all which are linked to complexity and the uncertainty of knowledge in public health actions. (see Table 1, page 10).

### **The International Student Well-Being Survey**

The five new items were included in the COVID-19 International Student Well-Being Study (C19 ISWS). C19 ISWS is the result of a study design, study protocol, and questionnaire developed by a team of the University of Antwerp, Belgium (Van de Velde et al., 2020). Data were collected in 27 countries across Europe and North America, as well as in South Africa (Van de Velde et al., 2020). A comprehensive questionnaire was developed to assess the impact of COVID-19 on the university student population. The five new items presented here were included towards the end of questionnaire and distributed to students in Switzerland and Germany. In Switzerland, versions of the questionnaire were provided in German, French, and English.

The survey was distributed using the online survey-tool Qualtrics. For Switzerland, the online survey was open from 28 April through 27 May 2020. Participants were recruited at four universi-

ties in Switzerland: the University of Bern, Bern University of Applied Sciences, University of Fribourg, and the University of Geneva. Recruitment was conducted via email sent by the university administration to all students enrolled at the four universities. Participation in the study was voluntary and all data were collected anonymously.

### Sociodemographic characteristics

Sociodemographic characteristics including gender (male, female, diverse), study level (bachelors, masters, PhD), and affiliation (University of Bern, Bern University of Applied Sciences, University of Fribourg, and University of Geneva) were gathered by the questionnaire. Due to the low number of responses for the diverse gender option ( $n = 57$ ), we concentrated only on males and females. Universities were categorized into the German language region, including University of Bern and Bern University of Applied Sciences, and into French language region, including University of Fribourg and University of Geneva. Parental education was assessed by asking about the highest educational degree obtained by respondents' parents. This information was used to categorize parental education as low (both had less than secondary education), middle (at least one parent with secondary education), and high (at least one parent with a university degree) education.

### Statistical procedures

We employed basic descriptive statistics to examine the distribution of complexity perception, and odds ratio analysis. We calculated odds ratios in single (dichotomized) item analysis to measure bivariate associations between low complexity perception and selected sociodemographic (gender, parental education) and academic characteristics (study level, language region of university). The procedure

of dichotomization of response options for each item is described in the following chapter. Results were considered significant when  $p < 0.05$ . Stata 14 software was used for the analyses.

### Measures of complexity perception

The following five items were used to assess students' perception of key issues linked to complexity and knowledge uncertainty in the current pandemic.

### Distribution of complexity perception

The basic distribution of item responses in our sample is displayed in Table 2 (see next page). As expected with a highly educated population group, for most items the answers are not normally distributed; most students were aware of complexity and uncertainty issues.

The five items address different issues that all contribute to the complexity that is challenging public health, political action, and individual citizens. For a meaningful analysis, we dichotomized the response options with answer **categories in bold** indicating low complexity perception (see Table 2). This is based on plausibility as follows. At the time of the survey (May 2020) scientific knowledge about the Sars-Cov-2 virus and the disease COVID-19 was only emerging; many questions relevant to the planning and implementation of health measures were not answered. The scientific knowledge for political decision-making was neither "very strong" nor was it "very weak". For this analysis, we coded item 1 as follows: response options 1 and 5 (very strong/very weak) were combined to "low complexity perception". Item 2 addresses the degree of complexity in a reverse manner (simple, straightforward); we coded the response options 1 and 2 (fully agree and rather agree) as low perception of complexity. The importance of

**Table 1 Indicators of complexity perception; item definition and 5-point sets of Likert Response options**

Item	response options
1 How would you rate the current scientific knowledge on COVID-19 available to guide political decisions in Switzerland?	very strong; rather strong; neutral; rather weak; very weak
2 Please, indicate how much you agree or disagree with the following statement: Overall, the challenges in this COVID-19 crisis are simple and decision-making is fairly straightforward.	fully agree; rather agree; neutral, rather disagree; fully disagree
3 There are many organizations involved in the management of this crisis. How important is it for you to understand the often-different interests and motivations among the key players in this crisis (e. g. the government, political parties, employer organizations, unions, health authorities, etc.)?	very important; rather important, neutral; rather not important; not important
4 Please indicate how much you agree or disagree with the following statement: The biggest problem in this pandemic is with the high-risk groups (e. g. 65+; people with chronic health problems) – consequently the behavioral restrictions should apply only to them.	fully agree; rather agree; neutral, rather disagree; fully disagree
5 Please, indicate how much you agree or disagree with the following statement: Independent of their social class or status, individuals are equally affected by the current pandemic.	fully agree; rather agree; neutral; rather disagree; fully disagree

**Table 2 Relative frequency distribution (%) of answers**

Response option	Item number				
	1 "quality of sci. knowledge"	2 "decisions simple"	3 "varying Interests"	4 "solidarity"	5 "inequality"
1	4.3	1.3	34.2	2.7	16.0
2	33.9	8.3	46.5	11.8	14.9
3	31.9	12.0	14.6	9.4	5.7
4	25.4	38.7	4.0	34.1	28.6
5	4.5	39.7	0.7	42.0	34.8

Item definition and response options, see table 1. N=3616.

understanding the complexity of issues related to a multitude of interests at play is addressed in item 3 and coded as "low" when it is rather unimportant or not important to the respondent (response options 4 and 5). Item 4 alludes to an understanding of the need for preventive behaviours to help protect others and is coded as "low" when the respondent fully or rather agrees with the statement (response option

1 and 2). The understanding or awareness of social class differences in the pandemic crisis is addressed in item 5 and the corresponding response options 1 and 2 (fully agree/rather agree) were coded as "low".

Table 3 displays the proportion of respondents with low pandemic complexity perception or basic knowledge for each item. The distributions across all items and cofactors indicate a gender difference:

**Table 3** Frequency distribution of low perception of complexity in items 1 to 5) and odds ratios for bivariate associations

Variable	Proportion of low perception of complexity (%) and odds ratios (OR) in item number									
	1		2		3		4		5	
	"quality of decisions simple knowledge"		"decisions simple"		"varying interests"		"solidarity"		"inequality"	
	%	OR	%	OR	%	OR	%	OR	%	OR
Gender										
male	11.9	1.64*	13.5	1.75*	4.8	1.07	19.4	1.62*	30.8	0.99
female (Ref.)	7.6		8.2		4.5		12.9		31.0	
Parental Education										
low	10.2	1.30	10.9	1.22	5.9	1.30	16.4	1.78	37.0	1.45*
middle	10.2	1.31	10.5	1.18	2.5	0.53*	13.1	0.90	31.8	1.15
high (Ref.)	8		9.1		4.6		14.2		28.8	
Study level										
bachelor	8.3	1.09	10.2	1.19	4.6	1.43	15.2	1.19	32.5	2.68*
master	9.9	1.33	8.1	0.92	5.1	1.59	12.2	0.92	28.9	2.27*
PhD (Ref.)	7.6		8.7		3.3		13.0		15.2	
Language Region										
german	9.5	1.22	10.3	1.21	5.1	1.22	17.2	1.50*	34.0	1.33*
french (Ref.)	7.9		8.7		4.0		12.1		28.0	

\*significant at  $p < 0.05$ .

in 3 out of 5 items there are fewer female students with low perceptions than male students. Among students from German-speaking universities, the proportion showing low complexity perception tends to be higher compared to their French-speaking fellows (although only 2 out of 5 are statistically significant). For all but one item, PhD students have a lower chance of low complexity perception compared to BA or MA students. Differences in the distribution according to education level in the family do not show a clear trend.

### Perception of social inequality

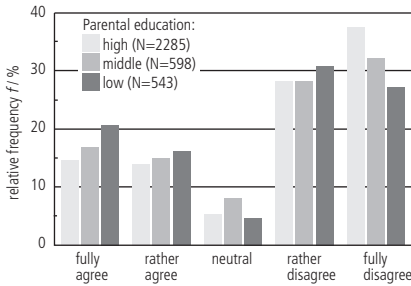
The item on social inequality in the burden of the pandemic (item 5) reveals interesting associations with the selected cofactors. The proportion of students unaware of social class differences in the impact of the coronavirus crisis is higher in

the German-speaking than the French-speaking universities (OR = 1.33; 95 % CI = 1.15–1.54). Study-level differences indicate that the perception of class differences in disease burden may increase with exposure to advanced science as indicated by the gradual increase from BA (OR = 2.68, 95 % CI = 1.50–5.16) to MA (OR = 2.27, 95 % CI = 1.25–4.41) to PhD level.

From a sociological perspective, perhaps even more interesting is the gradient effect of parental education on the awareness of social class differences in the coronavirus crisis (see Fig. 1). Students coming from low-education families show the largest proportion of not being aware of social class differences in the pandemic (OR = 1.45; 95 % CI = 1.18–1.78). This finding is in line with earlier studies that found recognition of social health inequalities more pronounced among the middle

class compared to working class women (Calnan, 1987). This preliminary finding and the other results above await confirmation in further studies.

**Figure 1 Social inequality perception by parents' education**



Item 5: Individuals are equally affected independent of their social status.

## Discussion

Pandemics such as this COVID-19 crisis cause huge damage to individuals and societies. The challenges are complex for citizens who are asked to follow strict behavioural rules often based on scientific knowledge that slowly emerges yet is subject to revision within rather short periods. A surfeit of information, and misinformation, and political failure in public communication make it even more difficult for citizens to deal with pandemic challenges. However, even if communication with the public was perfect citizens would still need to find ways to deal with the complexities and uncertainties of pandemics (Abel and McQueen, 2020).

This study's five survey items assess proxies for young adults' perceptions of complexity and the uncertainty of knowledge during the current pandemic crisis. The survey suggests that even among Switzerland's educational elite a considerable proportion of young people do not seem to be sufficiently cognizant of prevailing complexities and uncertainties in key issues caused by this

pandemic. As a case in point, we found insufficient awareness of social inequality in this pandemic, especially among students from families with lower educational background. Earlier studies in medical sociology found that lay theories of health inequalities differ across social classes and have offered potential explanations (Blaxter, 1997). The preliminary results presented here indicate that perceptions of pandemic burdens are likely to also vary by social class and deserve special attention.

The findings and suggestions of this study await critical consideration and confirmation. Since more pandemics are likely to emerge, and the current crisis will remain with us for some time, the conditions for citizen engagement in preventing and successfully handling such crises need to be better understood. The field is now open for social science research to pay more attention to the perception of complex, pandemic-related uncertainty and inequality.

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