

## COVID-19 Snapshot MOnitoring in Turkey (COSMO TURKEY): Study Protocol

### Aims and objectives of the study

The study will be initiated by individual countries with the overall aim **to inform their COVID-19 outbreak response measures, including policies, interventions and communications**. The underlying objectives are:

- Monitor variables that are critical for behaviour change in the population to avoid transmission of COVID-19, including risk perceptions, trust, use of information sources, knowledge as well as barriers and drivers to recommended behaviours – allowing adjustment of measures aiming to change behaviours.
- Document changes over time in these factors to understand the effect of measures taken.
- Monitor possible issues related to misinformation and stigma as they emerge to allow early response.
- Identify causal relations between variables to assess and define the most effective and cost-effective response.
- Explore the relationship of psychological variables (e.g. fear, worry, distance) with the evolution of the pandemic and epidemiological situation.
- Identify gaps between perceived and actual knowledge.
- Evaluate the effectiveness of pandemic response measures, and the acceptance and effectiveness of policies and restrictions implemented.
- Continuously learn from other countries as the situation evolves.
- Contribute to post-outbreak evaluation, thereby contributing to the continued regional/global efforts to better understand causal relations and effective mechanisms of crisis response.

### Research questions

The focus of the research is to inform effective and appropriate outbreak response interventions, policies and messages. Overall, research questions relate to

- The levels of and changes in risk perceptions, knowledge, used and trusted sources of information, confidence in crisis management, correct knowledge about and uptake of preparedness and protective behaviours, at each data collection point.
- How changes in risk perceptions relate to characteristics of the outbreak and other psychological variables such as knowledge, affect and misinformation.
- Whether participants report that they are aware of specific outbreak response measures and whether being aware of them influences risk perceptions.
- Whether risk perceptions are positively related to preparedness and protective behaviours and which other factors are relevant correlates of preparedness and protective behaviours (e.g. knowledge, misinformation, trust).
- Knowledge and misinformation about preparedness and preventive measures and whether the level of knowledge is related to certain sources of information.
- The availability of serial, cross-sectional data that allows testing these assumptions and explorations.

If additional research capacity is available, the data can be triangulated with data on media reporting, imported or confirmed cases, etc.:

- The relationship between psychological variables and characteristics of the outbreak situation (i.e. how closely the perceived risk mirrors reported cases, relative import risk, media reports) will be explored.
- Whether it is possible to identify the emergence of certain misinformation as a correlate of risk perceptions will be explored.

## Methodology

The study will be conducted online in a serial cross-sectional design with multiple data collections. For optimal monitoring, the data will be collected weekly, thereafter for a total of 20 waves. The data collection will begin approximately on July 17<sup>th</sup>, 2020.

In case of unexpected developments or new outbreak response measures implemented, the time frame between the data collections may change.

## Overview of variables

- Demographics (Age, Gender, district size, education)
- Knowledge about the novel coronavirus and COVID-19 (\*)
- Individual feeling of preparedness and perceived self-efficacy (\*) to avoid an infection with the coronavirus
- Perceived and actual knowledge about effective preventive measures to avoid infection with the coronavirus (\*)
- Uptake of preventive measures to avoid infection with COVID-19 (\*)
- Risk perceptions regarding the disease (probability, susceptibility, severity) (\*)
- Affective measures (feeling of closeness, novelty, threat, fear, and worry regarding the disease) (\*)
- Perception of the outbreak as a media-hype
- Trust and frequency of use of regarding different information channels (\*)
- Frequency of information search on COVID-19
- Trust in health authorities, government institutions, media and other relevant stakeholders (\*)
- Primary source of official health information (\*)
- Perceptions and acceptance of policies to control the outbreak (\*)
- Panic buying behaviour
- Discriminatory behaviour
- Rumours regarding COVID-19 (qualitative data, open text fields)
- Adaptive questions: If certain communication measures have been taken (e.g., large advertisements in newspapers, a social media campaign, debunking myths campaign ...) the questionnaire will assess whether participants have seen it and whether they can remember the content.

Randomization of answer options where suitable (\*).

## Flexibility and adaptation

As the COVID-19 pandemic evolves and the epidemiological and response situation rapidly changes, the study must be continuously updated so that the questions asked reflect the situation and provide the necessary information to shape effective and appropriate outbreak response measures and next steps.

## Sample

To obtain a high level of congruence between the distribution of the demographics in the sample and the population (regarding age, gender and living area), each wave will consist of 500 participants.

## Data collection and analysis

We will implement a serial cross-sectional study. Data will be collected through an approximately 15 minutes web survey with 18 years of age and older Turkish adults. We plan to have 20 data collections. At each data collection, we aim to collect 500 complete data sets, and a total of 10000 participants. Snowball sampling will be used. Research participants will recruit other participants for study. Participants take part in the survey voluntarily and will be not paid any money.

Data collection starts early as possible, preferable on 17<sup>th</sup> Friday 2020. Each data collection period will be 24 hours. Weekly data collection should take place with a new, independent sample at each data collection. The quota sample matches the current population in terms of age, gender and residency. Data collection can take place online.

An automated data analysis website (password protected) has been established by WHO allowing any country fast access to the results. Commented code for data analysis and website are available

## Institutional Review Board agreements, ethical standards met and safety monitoring

The study and handling of the data follow all national required data protection standards. In general, data will be collected anonymously, with no collection of names, phone numbers, email addresses or other information, which can identify participants or link participants to data. Gazi University Department of Public Health collecting such data are expected to have procedures to ensure this.

Also, participants provide informed consent before starting the questionnaire. Text on this is included in the questionnaire. The research contains negligible risks, as there is no more foreseeable risk of harm or discomfort other than potential inconvenience during participation. The study does not include deception and participants will be debriefed at the end of the survey. The study also involves only non-identifiable data about human beings.

## Ethical approval

Gazi University Faculty of Medicine The ethics committee Approval Number: 2020-409. WHO Regional Office for Europe approval for the study protocol and questionnaire is being sought.

## Tests

Analyses are integrated in a R Notebook environment. As all analyses are exploratory and may change based upon requirements of the situation. The data analysis script uses means of descriptive data presentation, regression analyses and correlation analyses.

Misinformation is collected as text fields and should be screened, summarized and offered to experts and those responsible for the crisis communication (e.g. to be debunked and inserted in FAQ lists).

Only completed data sets will be considered in the analysis. Missing values will be treated as missing values and not be imputed.

## Scientific review and validation of tools

Due to the urgency of the need for data, and the rapidly evolving situation (requiring constant adaptations of the tools used), the protocol and questionnaire have been reviewed and validated based on an ad hoc approach. The documents were originally prepared by Professor Betsch at the University of Erfurt, Germany, and subsequently reviewed by the COSMO group (see Box 2 above). This group represents leading global experts in behavioural insights research for health and in developing and validating survey tools similar to the current. In addition, following two rounds of data collection in Germany, two scientists (Prof. Robert Böhm, University of Copenhagen, Denmark, and Britta Renner, University of Konstanz, Germany) reviewed the data and how it was presented. This review cannot be shared as due to the urgency of the situation it was done via comments on PDF snapshots of the website where the data was presented. Lessons learned from the implementation in two rounds in Germany have led to continuous adjustments of the questionnaire.

In the Turkish context, the questionnaire will be reviewed and further adapted by an ad hoc Advisory Committee to ensure methodological soundness and appropriateness for the Turkish setting. The Committee is composed of subject matter experts, in areas related to epidemiology, behavioural science, infectious disease and/or public health.

## Limitations of the study

The urgency of the situation incurs some limitations to the study, including limited opportunities for scientific review and validation, as described above.

In addition, using online panels limits the participation of certain important population groups, including the elderly (a risk group for COVID-19) and disadvantaged population groups such as migrants, homeless people and other vulnerable groups.

## Publication of the study protocol

The study protocol and adapted questionnaire will be published on the PsychArchives repository, as recommended by the WHO.

## Background: Review of relevant literature

Models of crisis and emergency risk communication (5) suggest that it is crucial to understand the risk perception of the population and the sources of information that they trust to enable effective communication and framing key messages. Messaging should be evidence-based and respond to misinformation and induce rational, adaptive and protective behaviour (6). However, little is known

about the complex interplay of changing epidemiology, media attention, pandemic control measures, risk perception and public health behaviour (7). A study conducted during the influenza A(H1N1)pdm09 pandemic in 2009/2010 shows an “asynchronicity between media curves and epidemiological curves (...); media attention for influenza A H1N1 in Europe declined long before the epidemic reached its peak, and public risk perceptions and behaviours may have followed media logic, rather than epidemiological logic” (7). Thus, how people perceive the risk is not necessarily related to the actual risk. This perceived risk, nevertheless, influences protective behaviours (8). Yet, uncertainty about the situation and perceived exaggeration were associated with a reduced likeliness to implement the recommended protective behaviours during the 2009/10 pandemic (9). During the flu pandemic, a perceived inconsistency in recommendations was identified as a critical issue for non-compliance. Exaggeration of risks often happens on social media, where especially highly emotional and often false information are shared (10). While a serial cross-sectional study involving over 13,000 participants during the 2009/2010 pandemic (11) showed that the internet was significantly less used as a source of information than traditional media, this may well have changed over the last decade. For example, the number of monthly Twitter users multiplied by ten from 30 million in 2009 to 330 million in 2019 (12) and Twitter seems to be seen as an alert tool in times of a crisis and a gateway for information (13). Thus, knowledge acquired during the last pandemic is only of limited value to guide crisis responses in the current outbreak.

The coronavirus is new, there is no vaccine or known effective treatment, case fatality rates are still uncertain. Psychologically, this means high uncertainty regarding the likelihood of catching the disease, its potential severity and ability to take control over the process by preventive measure. These perceptions are thus likely to be updated based on changes in epidemiology, media reports, information and misinformation.

As media and communication measures can influence these variables (7)(11) and as these are relevant for preparedness and protective behaviour (5)(14), COSMO aims at monitoring these variables during the current COVID-19 pandemic and to feed them into the communication process during the crisis. COSMO also aims at reliably assess changes and shifts of risk perceptions and to identify the drivers and situations that are related to these shifts. How closely is risk perception related to actual risk? Further, it is important to understand the dynamics of risk perceptions, fears, misinformation and protective behaviours, understand which of the protective measures are known and which information is lacking. Based on this information it is possible to react to misinformation or suddenly increasing risk perceptions and panics.

## References

1. Uscher-Pines L, Omer SB, Barnett DJ, Burke TA, Balicer RD. Priority setting for pandemic influenza: an analysis of national preparedness plans. *PLoS Med* 2006; **3**: 436.
2. WHO Europe. (2017). Vaccination and trust—How concerns arise and the role of communication in mitigating crises.
3. Glik, D. C. (2007). Risk communication for public health emergencies. *Annual Review of Public Health*, 28, 33–54. <https://doi.org/10.1146/annurev.publhealth.28.021406.144123>
4. World Health Organization. (2017). Communicating risk in public health emergencies: A WHO guideline for emergency risk communication (ERC) policy and practice. World Health Organization.

5. Reynolds, B., & W. Seeger, M. (2005). Crisis and Emergency Risk Communication as an Integrative Model. *Journal of Health Communication*, 10(1), 43–55.  
<https://doi.org/10.1080/10810730590904571>
6. Rasmussen, S. A., & Goodman, R. A. (2018). *The CDC Field Epidemiology Manual*. Oxford University Press.
7. Reintjes R, Das E, Klemm C, Richardus JH, Keßler V, Ahmad A. “Pandemic Public Health Paradox”: Time Series Analysis of the 2009/10 Influenza A / H1N1 Epidemiology, Media Attention, Risk Perception and Public Reactions in 5 European Countries. *PLOS ONE* 2016; 11: e0151258.
8. Van der Pligt J. Risk perception and self-protective behavior. *European Psychologist* 1996; 1: 34–43.
9. Rubin, G. J., Amlot, R., Page, L., & Wessely, S. (2009). Public perceptions, anxiety, and behaviour change in relation to the swine flu outbreak: Cross sectional telephone survey. *BMJ*, 339(jul02 3), b2651–b2651. <https://doi.org/10.1136/bmj.b2651>
10. Vosoughi, S., Roy, D., & Aral, S. (2018). The spread of true and false news online. *Science*, 359(6380), 1146– 1151. <https://doi.org/10.1126/science.aap9559>
11. Walter, D., Böhmer, M. M., Reiter, S., Krause, G., & Wichmann, O. (2012). Risk perception and informationseeking behaviour during the 2009/10 influenza A(H1N1)pdm09 pandemic in Germany. *Eurosurveillance*, 17(13), 20131.
12. Statista. (2019). Number of monthly active Twitter users worldwide from 1st quarter 2010 to 1st quarter 2019.
13. Eriksson, M., & Olsson, E.-K. (2016). *Facebook and Twitter in Crisis Communication: A Comparative Study of*
14. Carpenter, C. J. (2010). A meta-analysis of the effectiveness of health belief model variables in predicting behavior. *Health Communication*, 25(8), 661–669.  
<https://doi.org/10.1080/10410236.2010.521906>
15. Betsch C, Bach Habersaat K, Deshevoi S, et al. Sample study protocol for adapting and/or translating the 5C scale to assess the psychological antecedents of vaccination. *BMJ Open* 2020;0:e034869. doi:10.1136/bmjopen-2019-034869.
16. Betsch C, Wieler L, Habersaat K, and the COSMO consortium (submitted). Rapid, flexible, cost-effective monitoring tool for behavioural insights related to COVID-19 across countries.