

PARTICIPANT INFORMATION LEAFLET AND CONSENT FORM FOR ONLINE SURVEYS/QUESTIONNAIRES

TITLE OF RESEARCH PROJECT: COVID-19 screening by cough sound analysis

What is the study about?

As you may be aware, the world is currently in the grip of a pandemic of the novel coronavirus, SARS-CoV-19, also referred to as COVID-19. This virus has infected over two million people world-wide and has led to a death toll in the hundreds of thousands within just a few months. We would like to develop a smartphone app that can prompt potential COVID-19 infected individuals to have a SARS-CoV-19 laboratory test. Our app, which will be used by someone feeling ill who suspects they may have COVID-19, will include the usual screening questions about health status and potential COVID-19 contacts, but will also listen to cough sounds and to evaluate whether it is likely to be caused by the coronavirus. In order to develop this app, we need to train a computer to recognize the difference between a coronavirus cough and coughs caused by other lung problems. To achieve this we need recordings of coughs from people who have had SARS-CoV-19 laboratory test, confirming that they are infected with coronavirus or not.

We are a group of researchers at Stellenbosch University, South Africa, and the project is led by Dr Marisa Kloppe from the Department of Biomedical Sciences and Prof Thomas Niesler from the Department of Electronic Engineering.

We would like to invite you to take part in this research project by completing an online questionnaire and uploading a recording of your cough. Your participation is **entirely voluntary** and **anonymous** and you are free to decline to participate or to stop completing the questionnaire at any time, even if you have agreed to take part initially. However, once you have submitted your completed questionnaire online, you will no longer be able to withdraw your responses as there will be no way of linking your responses back to you.

This study aims to

1. Recruit participants who have recently had a laboratory test for the coronavirus (also known as SARS-CoV-2)

We will recruit participants in two ways: by asking the local authorities who already have your contact details (because you have had the laboratory test) to send you a link to the survey, or by publishing the link on social media for anybody to participate, as long as they have had a laboratory test for the coronavirus. **The researchers will never have access to your personal information, such as your name, phone number or email address.**

2. Collect basic demographic and lung health information, as well as cough recordings

We will ask you a few questions to help us to understand factors that may influence cough sounds, such age and sex (male or female), as well as questions relating to general lung health. These questions should take you no more than 5 minutes to complete. We will also require you to make a short recording on your smartphone or computer of your cough, and upload it to the questionnaire.

3. Train a computer programme to identify coughs caused by the coronavirus

This aim will make use of the cough recordings received. Based on the test result that each participant reports we will tell/ teach the computer whether each recording represents a coronavirus cough or not. Once the computer has listened to enough recordings, it will be able to identify a pattern which is unique to a coronavirus cough. We will test this by using some more recordings, asking the computer to identify the cough as coronavirus or not, without providing it with the correct answer. If the computer can correctly identify the coronavirus coughs most of the time, we can develop it further for use in our app. If not, the study will be terminated.

4. Develop a smartphone app to help with screening patients for laboratory testing

We will develop an app that uses the usual symptom screening questions, such as whether the patient has a dry cough, fever, body aches, etc., in conjunction with the computer programme that can identify coronavirus coughs to determine the likelihood of coronavirus infection. If there is a high likelihood that the app user's reported symptoms (including, but not limited to cough) is from coronavirus, the user will be advised to have a laboratory test done via the appropriate route.

Currently there is a major challenge across the world to perform SARS-CoV-19 laboratory tests because these tests are expensive, time consuming and directly and indirectly present transmission risks. Having such an app as a screening tool is important, because it will enable resources to be applied more effectively, for instance to improve efforts to limit transmission. Additionally, the app will be available for by anybody with a smartphone, in the privacy of their own home. This has the advantage of not needing an appointment or going anywhere, and it reduces the need for health care workers to conduct active screening. Simultaneously, it reduces the risk of infection of health care workers.

While you will not benefit directly right now by taking part in the study, it is possible that you or a friend or family member may need the app in future to decide whether or not to have a lab test done.

You are being asked to participate if you have had a laboratory test for coronavirus infection. We can only use your answers if we know whether you have recently tested positive or negative for the coronavirus. It is very important that you be honest when you give your answers, in order for us to train the computer to be accurate.

Who will benefit from this research?

This research will contribute to reducing the risk of healthcare workers to COVID-19 infection by reducing the need for health care workers to conduct active screening. It will also contribute to the better use of resources, as coughs related to other illnesses, such as asthma or TB, will be ruled out instead of being thought of as COVID-19 and subjecting the patient to a SARS-CoV2 test. This app will also help alleviate the stress and anxiety some may experience when deciding to seek medical attention, as it can be done in the privacy of their home.

While you will not benefit directly right now by taking part in the study, it is possible that you or a friend or family member may need the app in future to decide whether or not to have a lab test done.

Are there any risks involved in your taking part in this research?

Your participation in this study is entirely voluntary. We do not collect any identifying information such as your name, identification number, phone number, etc. We cannot contact you directly in any way. Your cough sound and the demographic information you provide may be used in subsequent studies to identify coughs caused by other diseases. This information, which is referred to as data, remains anonymous and will be stored on a secure server that is accessible only by approved researchers.

You can email the Principal Investigator of this study, Dr Marisa Klopper at covidcoughglobal@gmail.com if you have any questions about this study or encounter any problems.

This study has been approved by the **Health Research Ethics Committee at Stellenbosch University (N20/05/017_COVID-19)**. The study will be conducted according to the ethical guidelines and principles of the international Declaration of Helsinki, and the Department of Health Ethics in Health Research: Principles, Processes and Studies (2015).

You can phone the Health Research Ethics Committee at 021 938 9677/9819 (international +27 21 938 9677) if there still is something that concerns you about how this study is being conducted, or if you have a complaint.

You can download a copy of this information and consent form for you to keep safe.

For adults:

By clicking YES you are confirming that you are over 18 years old and have read and understood the above explanation about the study, and that you agree to participate. You also understand that your participation in this study is strictly voluntary.

For children under 18 years of age:

By clicking YES you are confirming that you have read and understood the above explanation about the study, you agree to participate and you understand that your participation in this study is strictly voluntary.

Your parents also need to agree for you to participate:

By clicking YES you are confirming that you have read and understood the above explanation about the study, you agree to that your child may participate and you understand that participation is voluntary.