

# COVID-19 Snapshot Monitoring (COSMO) Saudi Arabia - Wave 1

Results from repeated cross-sectional monitoring of knowledge, risk perception, protective behaviour and trust during the current outbreak in Saudi Arabia

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## Target

The aim of this study is to assess changes in risk perceptions, the level of knowledge, trusted sources of information, trust in healthcare workers, correct knowledge about and uptake of preparedness and protective behaviours. As well as, to explore how changes in risk perceptions relate to characteristics of the outbreak and other psychological variables such as knowledge, affect, and misinformation. It also aims at exploring 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).

Such information gained from our study intends to serve different sectors of the society. For example, it can serve authorities by understanding what affects people's perception and protective behaviour thus it helps in the distribution of efforts and available resources. Not only does it serve the general population but also the different stakeholders across government, private sector, and third sector.

All data and conclusions are to be regarded as provisional and are subject to constant change. A review team of academic colleagues also ensures the quality of the data and conclusions. Despite the greatest scientific care and the multiple-eyes principle, the participating scientists are not liable for the content.

# Information about COVID-19 and the outbreak

Important: Here you will NOT find any information about COVID-19 and the pandemic in Saudi Arabia. If you are looking for that, please click here:

Ministry Of Health:

<https://www.moh.gov.sa/en/HealthAwareness/EducationalContent/PublicHealth/Pages/corona.aspx>

COSMO Saudi Arabia Study protocol<sup>1</sup>: <http://dx.doi.org/10.23668/psycharchives.2878>

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## 1. Summary

### 1.1. Results of the current wave

Analysis of the 1<sup>st</sup> wave data collection (Date 29.04.2020 - 30.04.2020). The data collection takes place every two weeks.

2984 respondents filled out the online questionnaire which was shared via social media for higher reach. We used an IP-Based duplicate protection system to avoid participants to respond to the link survey more than once. IP addresses can be traced to a single device, proxy server, or group of devices on the same network, but can't be traced to an individual person. This procedure ensures both anonymity of participants and identification of duplicates.

#### Psychological Situation:

30% of the population estimated their probability of getting infected with the new coronavirus as likely/very likely. 50% of the population perceived their probability of getting infected with the new coronavirus as neither likely nor unlikely. While 20% perceived their probability of getting infected with the new coronavirus as unlikely/very unlikely. Around 31% of the population believed that they are susceptible/very susceptible to an infection with the new coronavirus, while 22% believed they are insusceptible/very insusceptible. Around 70% of the population perceived the disease as moderately to very severe. 46.1% of the population reported that they think about the new coronavirus frequently and 42.19% reported that they find it worrying. Around third of the population found the new coronavirus to be fear inducing. All the findings might change with time and events; and it will be shown in the following waves from upcoming data collection.

Higher risk perception was seen in older people, those who are or might be infected with the new coronavirus, those who know anyone who is or might be infected with the new

coronavirus, healthcare workers, people with higher incomes, those who feel that the new coronavirus is close, makes them feel helpless, makes them feel worried and people with chronic diseases. On the other hand, lower risk perception was seen in females and those who take ineffective protective measures. Although low severity risk perception was seen with people who have higher incomes and higher education; high levels of probability and susceptibility risk perception was seen in them. High severity risk perception was seen in Saudis, those who received the flu vaccine in 2019 and those who feel that the new coronavirus is fear inducing. High probability risk perception was seen in those who feel that COVID-19 is new to them and something they think about. Low susceptibility risk perception was seen in those who feel that the new coronavirus is spreading slowly.

### **Knowledge and Behaviour:**

Overall, the population is well informed about transmission routes, incubation times and effective protective behaviours. Almost all of the population knew that avoiding close contact with infected others, cough hygiene, avoiding crowds, staying home when sick, and social distancing are effective. Approximately 20% didn't know that washing hands for 20 seconds is effective.

On a subjective level, respondents felt well informed about COVID-19 and protection options. Yet perceived and actual knowledge about COVID-19 were very weakly related. In addition, feeling like you know how to protect yourself from COVID-19 and actually taken effective protective behaviour were also weakly related.

Effective protective behaviour was taken more by people who are older and by people with higher levels of actual knowledge of COVID-19.

Knowing someone who is or might be infected with the new coronavirus had little impact on effective protective behaviour and ineffective protective behaviour. But people who personally knew a suspected/confirmed case in their environment perceived more risk (probability, susceptibility).

### **Adverse Behaviour**

Actionism (taking ineffective protective behaviour such as taking herbal supplements) was relatively low, with the highest actionism percentage being taking precaution when opening packages. While the lowest actionism percentage was avoiding eating meat. Actionism was seen more in older people, females, people with higher actual knowledge and in those who feel that COVID-19 is media hyped. Less actionism was seen in people who believed they have a low probability of being infected with COVID-19.

## **Individual Pandemic Preparation**

A very small percentage of the population bought extra disinfectants and regular medications or was planning to do so. On the contrary, more than half of the population stayed away from social events and avoided people who came from infected countries but only around a quarter of the population are planning to do so. Less than 6% of the population bought food supplies on a large scale or are planning to do so. Pandemic preparation was seen more in people who trust healthcare workers, in those who believe that COVID-19 would infect them severely and in people who feel that the new coronavirus is close.

## **Sources of Information**

To find information about the new coronavirus, our participants ranked the following sources as the most relevant: Consultation with healthcare workers, Television channels, social media and online news pages. In general, participants were feeling that the new coronavirus is somewhat not media hyped.

### **1.2. Change to the previous wave**

In the future you will find a comparison with the previous survey [here](#).

## **2. Conclusions (based on our data analysis; recommendations)**

### **Implementing Protective Behaviour:**

The level of actual knowledge was high among the population, yet it was lower than the perceived level of knowledge. The majority of people were feeling sure about the protective measures and were actually implementing them.

### **Managing Risk Perception:**

Younger people, those who were not infected with the new coronavirus and those who feel that the new coronavirus is spreading slowly have low perception of susceptibility. This might actually affect their implementation of protective measures. We recommend clarifying that immunity varies among individuals and the perceived immunity might not be always accurate.

### **Precautionary Purchases:**

People who feel that the new coronavirus is close to them were more likely to buy extra food supplies. While those who perceived the new coronavirus as media hyped were more likely to buy extra medications and disinfectants. People who search for information about the new coronavirus more frequently were more likely to buy extra disinfectants.

### **Information Seeking Behaviour**

71% of the population were searching for information about the new coronavirus frequently. The most used sources of information were social media and online websites. The most trusted and the most relevant sources were consultations with health care workers and TV channels. Moreover, the most needed type of information were details about the curfew and scientific progress in development of the treatment and the vaccine.

## **3. The Pandemic Status:**

The reported total number of COVID-19 cases during the period of data collection was 21402 with the following breakdown: 18292 active cases, 2953 recovered cases, 157 deaths, and 125 critical cases.

Saudi Arabia has instated early measures and below are key measures that were in place during the period of data collection:

- 1- Suspension of entry for Umrah in Mecca.
- 2- Schools closure
- 3- Mosques closure
- 4- Travel bans to and from Saudi Arabia.
- 5- Travel bans between administrative regions of Saudi Arabia.
- 6- Work from distance.
- 7- Partial curfew from 5 pm to 9 am in most administrative regions of Saudi Arabia excluding Makkah and previously isolated districts which remained under a 24-hour curfew.

## **4. Methods<sup>2</sup>**

### **4.1. The Sample**

The study was conducted with an online electronic survey employing convenience sampling technique using an IP-Based duplicate protection system to avoid participants to respond to the link survey more than once. Data was collected through a 20 minutes web link from citizens of Saudi Arabia (Saudis and Non-Saudis) that are 18 years and older. We got 2984 complete responses in the first wave which was opened for 24 hours on 29\04\2020.

## 4.2. Measurements

- **Demographic Data:**

Age, gender, education, size of residence, region of residence, working in the health sector, chronic illnesses, the number of inhabitants living in the same residence, having children living in the same residence, marital status, monthly income, nationality and whether they are currently in Saudi Arabia or not and if not which country are they at.

- **Risk Perceptions<sup>3</sup>:**

3 questions about perceived susceptibility, probability and severity of infection, answers are assessed on 5-point scale.

- **Perceived and Actual knowledge about the New Coronavirus and COVID-19:**

- Perceived Knowledge<sup>4</sup>:**

- 3 questions about awareness and level on knowledge of the new coronavirus

- Actual Knowledge:**

- Groups at risk of severe illness related to the new coronavirus (8 items, *e.g. Pregnant women*) assessed by 3-points scale.
    - Symptoms of the new coronavirus, (9 items, *e.g. Fever*) assessed by 3- points scale.
    - General knowledge of COVID-19 with items for the correct treatment, transmission path, incubation time and immunity against the new coronavirus.

- **Infection with the New Coronavirus:**

3 questions about being infected or knowing people that have been infected with the new coronavirus, answers are assessed by 4-points scale.

- **Feeling Prepared (self-efficacy):**

2 questions about protection<sup>5</sup> and avoiding<sup>6</sup> an infection with the new coronavirus, assessed by 5-points scale.

- **Knowledge about and Uptake of Preparedness and Protective Behaviours:**

- Questions about effectiveness and actual applications of the recommended protective measures<sup>7</sup> *e.g. social distancing*, we also included items for distraction (actionism) *e.g. Avoid eating meat* to look for irrelevant protective behaviour.
  - 19 items about the knowledge of effective measures to prevent the spread and infection of the new coronavirus *e.g.: hand washing for 20 seconds*.
  - 18 items about the measures taken to prevent infection of the new coronavirus *e.g.: hand washing for 20 seconds*.

- **Information Seeking Behaviour:**
  - Information search frequency:** Question about frequency of searching Information about the new coronavirus answers are assessed on 5-point scale.
  - Trust and frequency of use:** 9 items about trust<sup>8,9</sup> and frequency of use for different media *e.g. Newspapers* and assessed by a 5-point scale.
  - Type of information needed:** 9 items about information needed the most *e.g. Symptoms of the new coronavirus*.
- **Public life Restoration after Curfew**

8 items about public life restoration after curfew *e.g. only people over the age of 70 should stay at home*, assessed by 5-point scale.
- **Feelings and Behaviours:**
  - Seeing people:** 2 items about emotions related to not seeing friends and family, assessed by 5-point scale.
  - Spread control plan implementation and crisis Behaviour:** 9 items about spread control plan implementation and crisis behaviour *e.g. Bought food supplies on a large scale*, assessed by 3-point scale.
- **Risk Perception of Influenza**

3 items about probability, severity and vulnerability of getting influenza<sup>10</sup>, assessed by 5-point scale.
- **Influenza Vaccine**

Question about receiving the seasonal influenza vaccine in 2019.
- **Policies**

9 items about acceptance of policies, vaccine and resurrections, assessed by 5-point scale.
- **Affective Assessment:**

8 items about the new coronavirus and how it feels<sup>11</sup> is assessed by 5-point scale *e.g. (1) worrying - (5) not worrying* and *(1) spreading slowly - (2) spreading fast*.
- **Resilience**

Resilience<sup>12</sup> is measured using the Brief Resilience Scale *e.g. I don't need much time, to recover from a stressful event* assessed by 5-point scale.
- **Fears**

9 items about fears<sup>13</sup> *e.g. losing someone I love* assessed by 5-point scale.

### 4.3. Execution

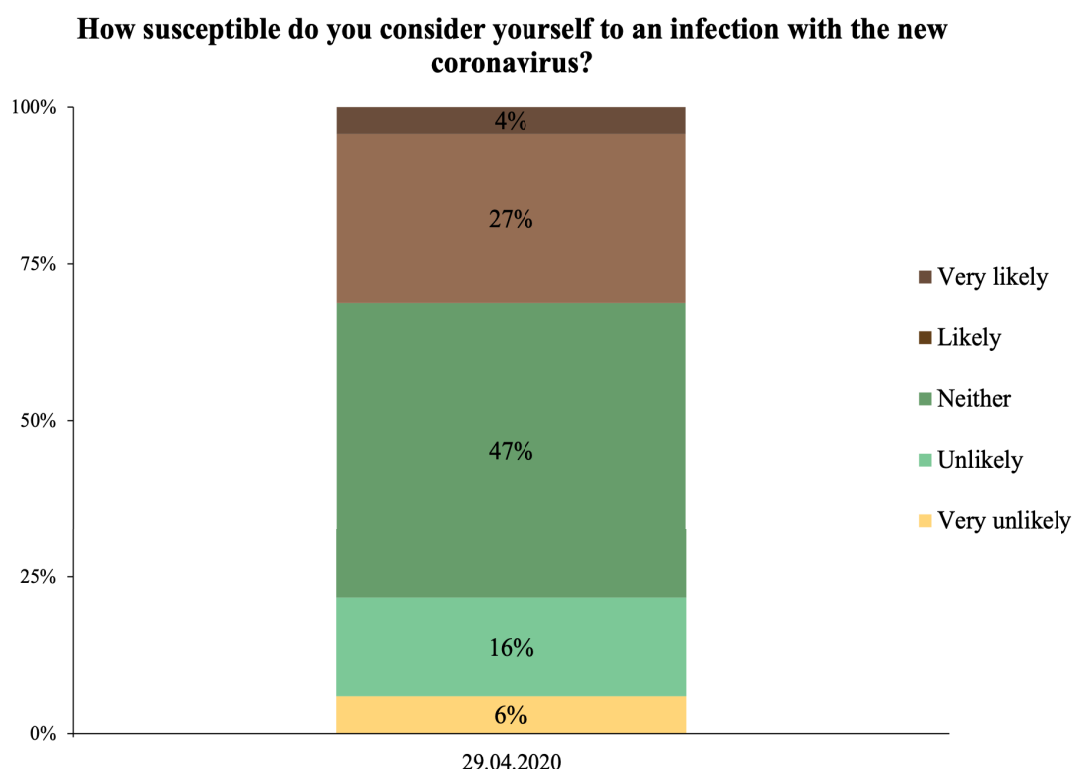
The online survey was carried out for test subjects from Wednesday 29/4/2020 till Thursday 30/4/2020. All subjects were actively consented to data processing. Based on the socio-demographic data, subjects who are under the age of 18 were filtered out. Subjects who accepted to participate in the survey were given instructions and if necessary, a brief explanation of the new coronavirus and the current outbreak. The online survey was shared via social media for higher reach, we used an IP-Based duplicate protection system to avoid participants to respond to the link survey more than once. IP addresses can be traced to a single device, proxy server, or group of devices on the same network, but can't be traced to an individual person. This procedure ensures both anonymity of participants and identification of duplicates.

## 5. Psychological Situation

Risk perception can be defined as the individual's judgement regarding a threat, thus it plays an important role in the process of decision making, health behaviour, and emotions such as fear, stress, or feeling threatened.

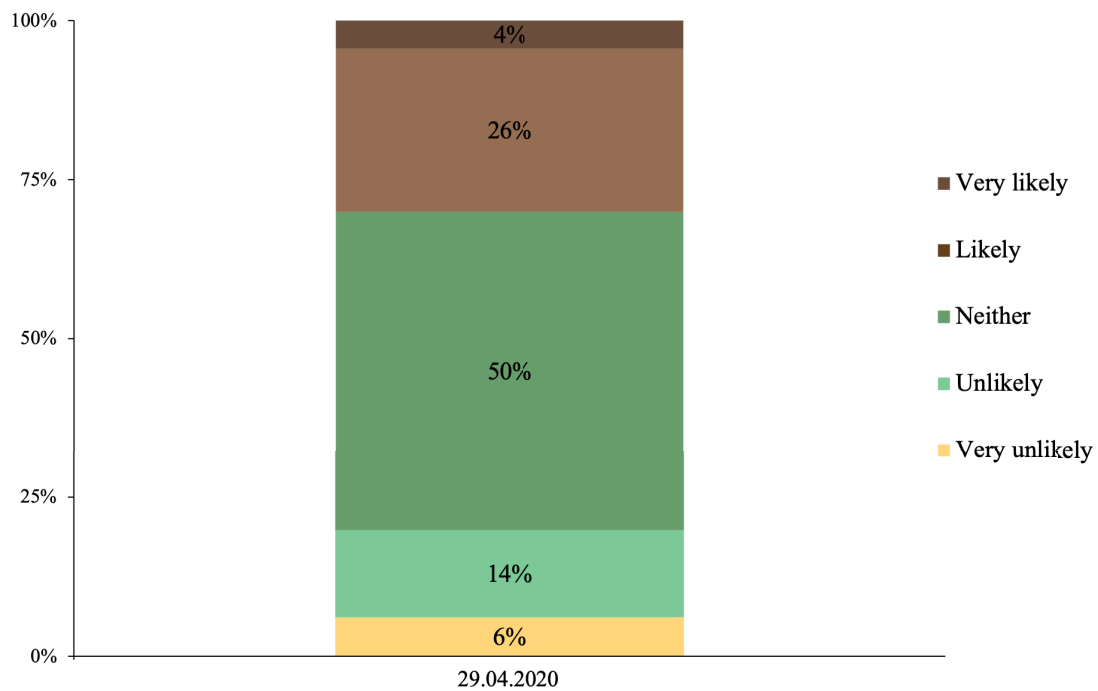
### 5.1. Risk Perception

The following three graphs show different aspects of risk perception in the course of the survey.

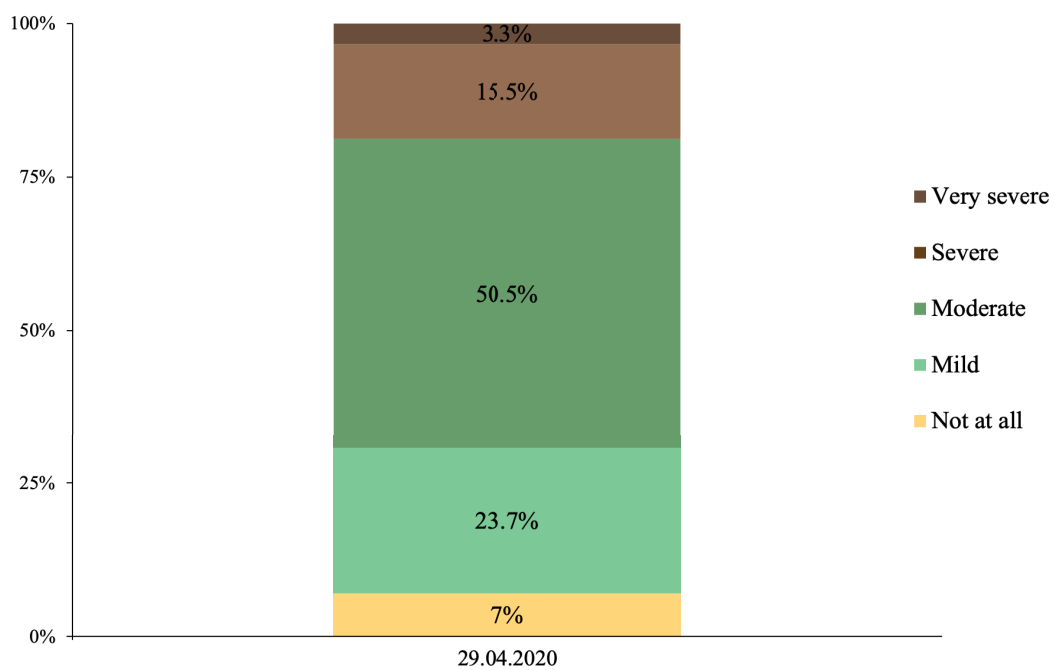




### What is your probability of getting infected with the new coronavirus?

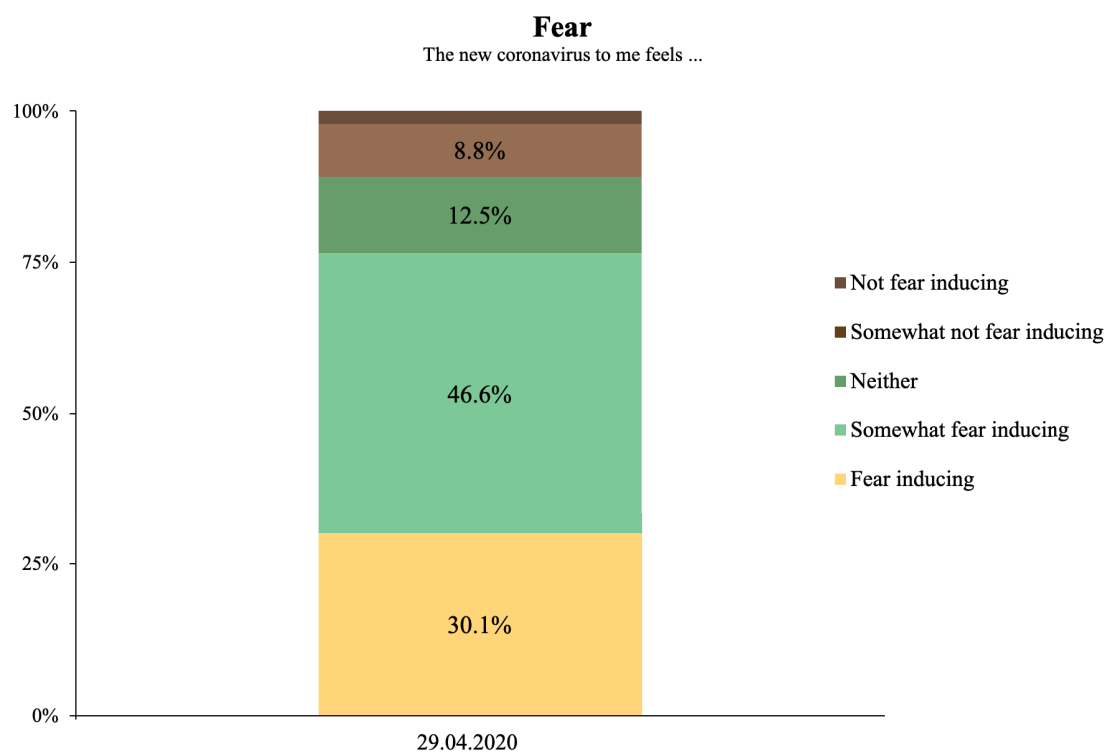
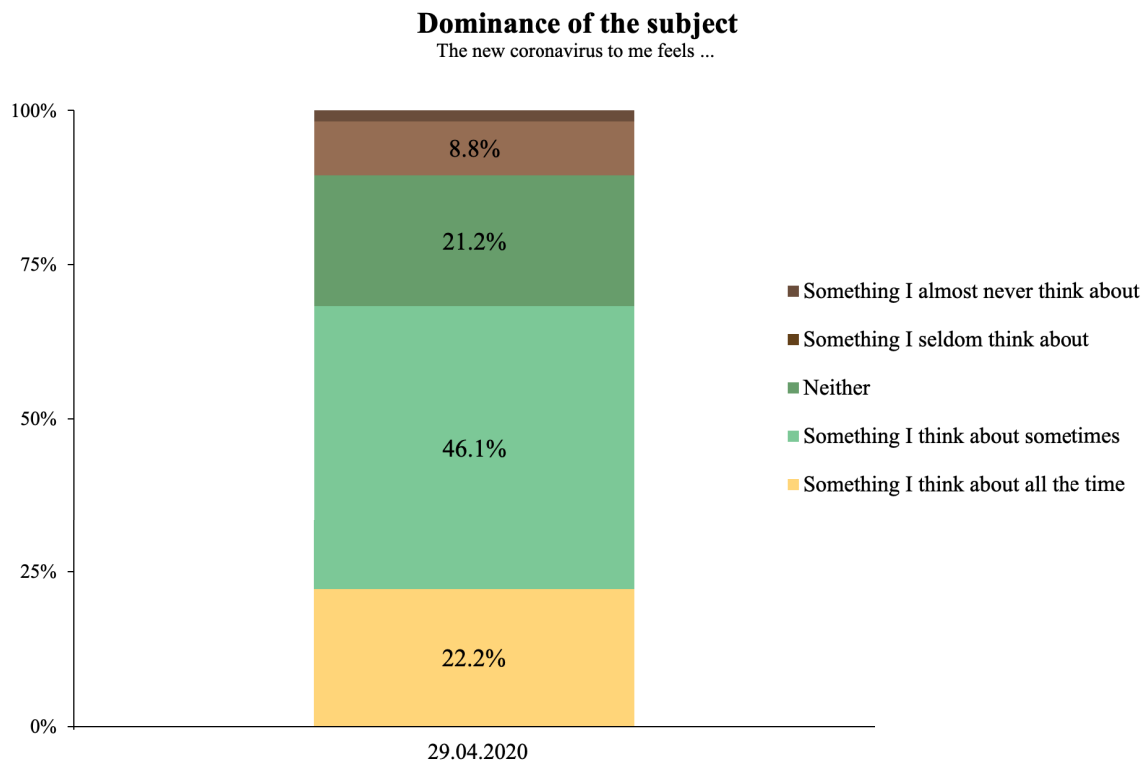


### How severe would contracting the new coronavirus be for you?



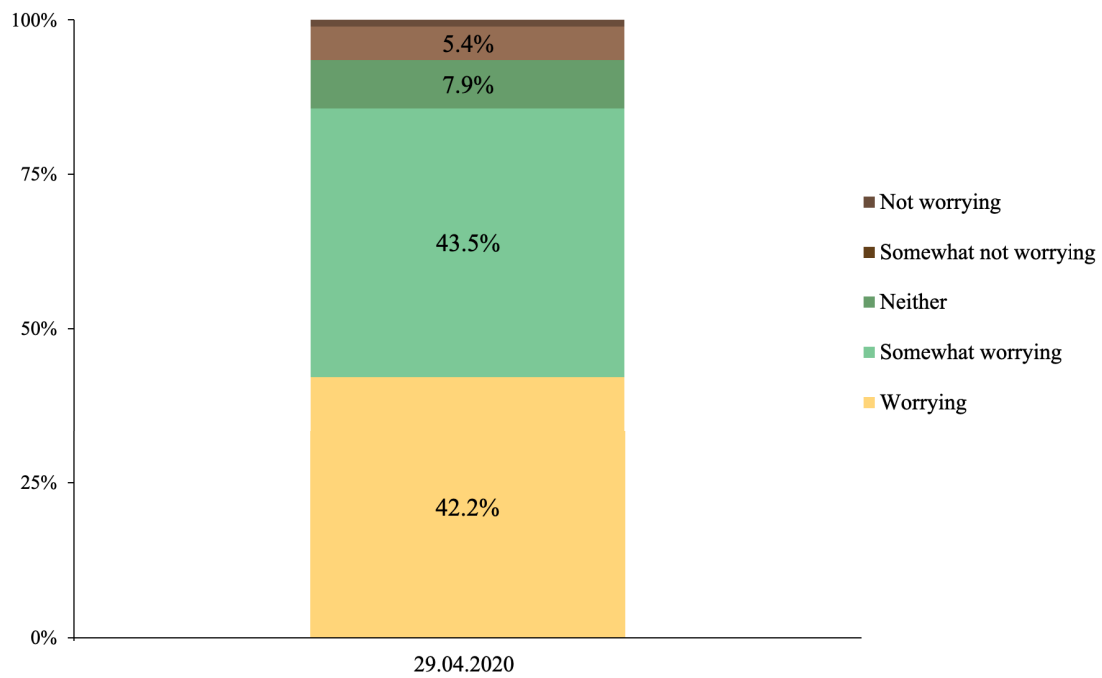
## 5.2. Coronavirus and Emotions

The following three graphs show different emotional aspects about the course of the surveys.



## Worrying

The new coronavirus to me feels ...



### 5.3. Perceived and Actual Knowledge

Actual knowledge, feeling prepared and self-efficacy to avoid an infection with the coronavirus are important factors as they enable protective behaviour.

The following graph shows this wave's level of and difference in perceived and actual levels of knowledge.

#### How would you rate your knowledge level on the new coronavirus?

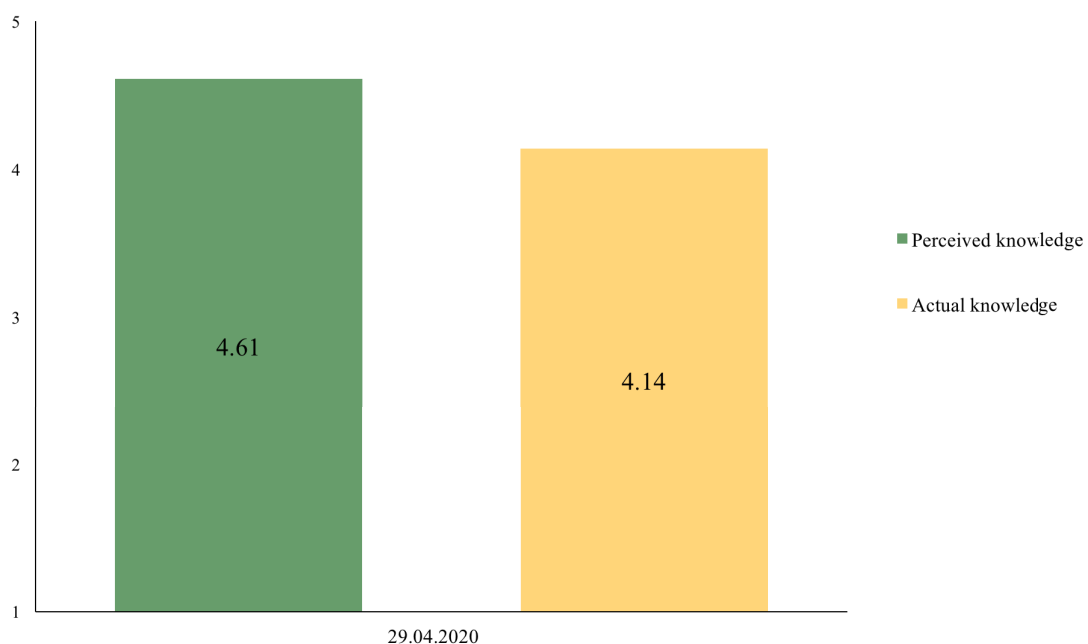
##### Overview of actual knowledge

Actual knowledge of the participants about the name of the virus, treatment options, vector and incubation period;

The graph shows mean perceived and actual knowledge over time. Error bars are 95% CI.

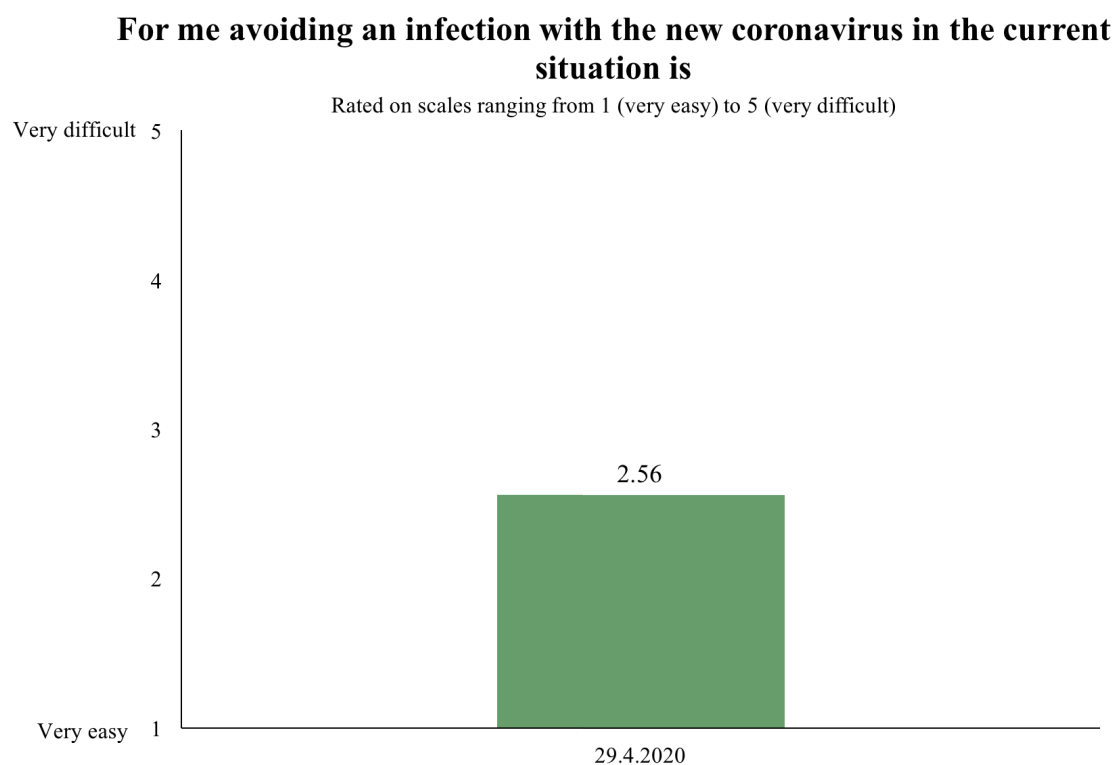
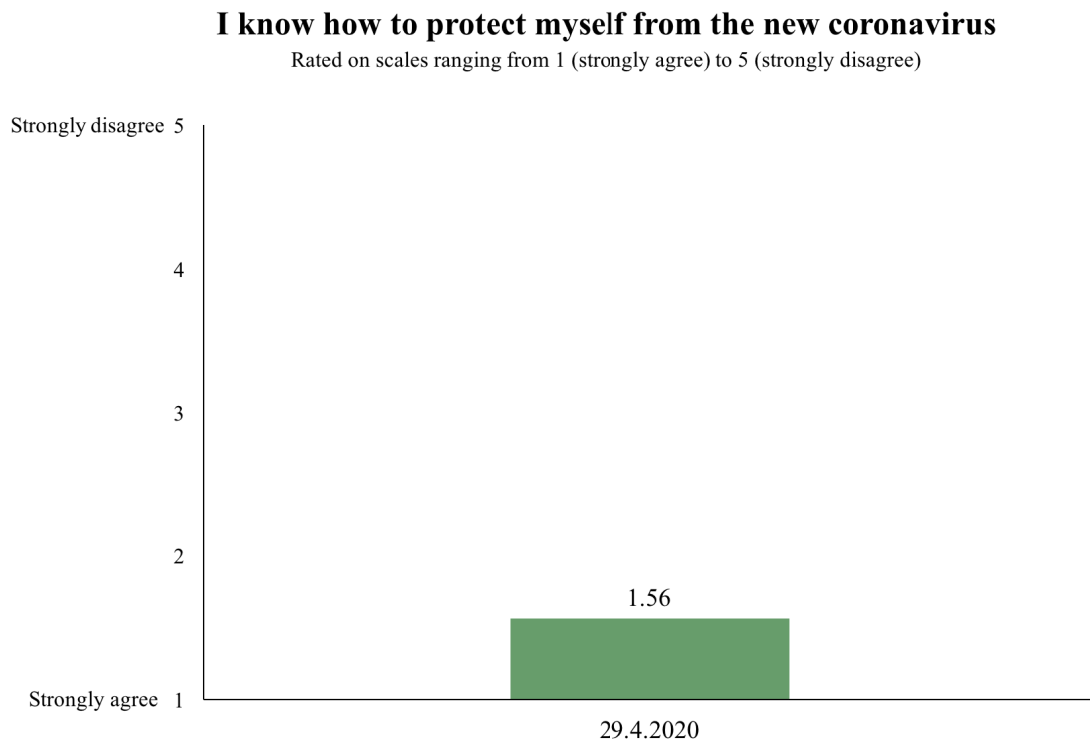
#### Perceived and actual knowledge about the new coronavirus

Perceived knowledge was rated on a scale ranging from 1 (no knowledge) to 5 (very much knowledge)

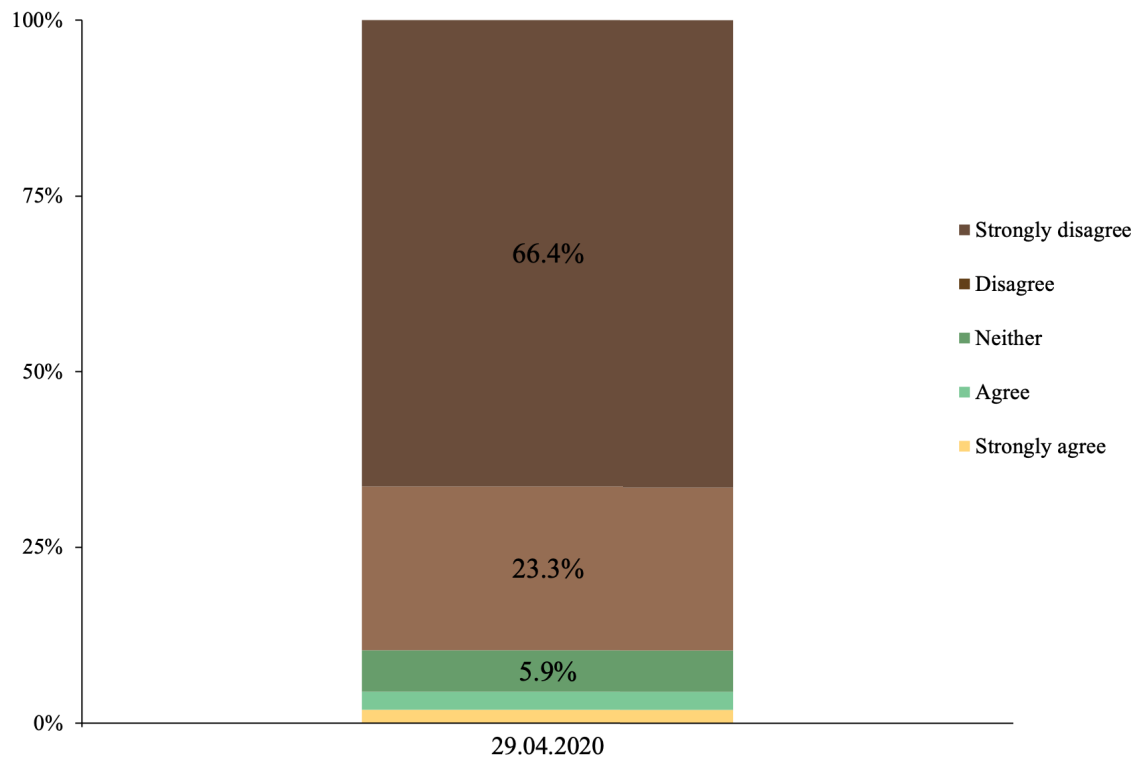


## 5.4. Preparedness

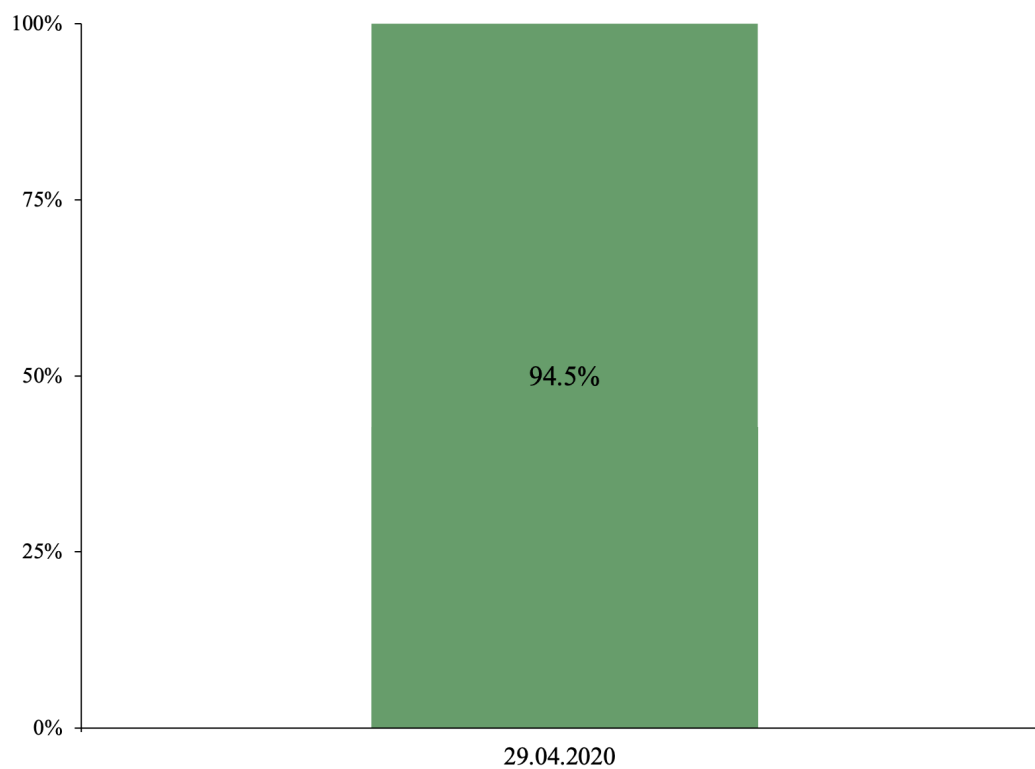
The following graphs show mean preparedness and self-efficacy over time. Error bars are 95% CI.



**I think that the restrictions currently being implemented are greatly exaggerated.**



**Proportion of the people that have correctly identified all the effective protective measures**



## 5.5. Relationships

The following examine how strongly subjective assessments are related to actual knowledge and behaviour.

*Interpretation: In the following overview, higher values indicate a stronger connection, values close to zero show that there is no connection. Values around 0.3 show a medium relationship, from 0.5 one speaks of a strong relationship. A negative sign means that high values occur on one variable with low values on the other variable. Bold print shows statistically significant relationships.*

- **Correlation:**
  - **Perceived knowledge and actual knowledge about COVID-19:  $0.12$**
  - **Find it easy to avoid an infection with the new coronavirus and protective behaviour (number of seized effective protective measures):  $-0.05$**
  - Measures that are currently being taken are exaggerated and your own protective behaviour:  $0.01$
  - Measures that are currently being taken are exaggerated and own pandemic preparedness:  $0.01$
  - **Knowing how to protect yourself from an infection with the new coronavirus and taken effective protective behaviour:  $-0.09$**

## 6. What influences risk perception

Due to the evolving circumstances, the perception of risk among the population is likely to change. Risk is recorded as the probability of becoming ill, the severity of the disease and one's own susceptibility.

Table below describes the factors related to risk perception. Demographic variables along with the following factors: Perception of the new coronavirus, actual knowledge about the new coronavirus, being infected with the new coronavirus, knowing someone who is/might be infected, actionism and trust in media were analyzed.

*The analysis of the probability shows:* Older people, males, those who are or might be infected with the new coronavirus, people who know anyone who is or might be infected by the new coronavirus, healthcare workers, people who feel that the new coronavirus is close to them, is new to them, makes them feel helpless, is something they think about, is worrying, people with higher actual knowledge about COVID-19, people with higher education and higher income had higher perception of the disease probability. Participants who took ineffective protective measures had lower perception of disease probability.

*The analysis of the degree of severity shows:* Males, Saudis, people who feel that the new coronavirus is close to them, makes them feel helpless, is worrying, is fear inducing, people with chronic health conditions, people with higher actual knowledge about COVID-19 and those who received the flu vaccine in 2019 had higher perception of disease severity. People with higher monthly income and those with higher education had lower perception of disease severity.

*The analysis of perceived Susceptibility show:* Older people, males, those who are or might be infected with the new coronavirus, people who know anyone who is or might be infected with the new coronavirus, healthcare workers, people who feel that the new coronavirus is close to them, is worrying, people with chronic health conditions, people with higher income and higher education had higher perception of disease susceptibility. Participants who feel that the new coronavirus is spreading slowly and those who took ineffective protective measures had lower perception of disease susceptibility.

*As soon as several measurement times are available, the change over time is also considered.*

*Interpretation: The results of a linear regression analysis are shown. Influencing factors in bold are significant and have a statistically significant influence. For values with a positive sign, this means that higher values on this influencing factor lead to more risk perception. That means for values with negative sign: higher values on this influencing factor lead to less risk perception.*



<i>Predictors</i>	<b>Probability</b>			<b>Severity</b>			<b>Susceptibility</b>		
	<i>Beta</i>	<i>standardized CI</i>	<i>p</i>	<i>Beta</i>	<i>standardized CI</i>	<i>p</i>	<i>Beta</i>	<i>standardized CI</i>	<i>p</i>
(Intercept)	0.00	-0.03 – 0.03	<b>&lt;0.001</b>	-0.00	-0.03 – 0.03	<b>&lt;0.001</b>	0.00	-0.03 – 0.03	<b>&lt;0.001</b>
Age (Older people)	0.06	0.02 – 0.10	<b>0.002</b>				0.06	0.02 – 0.10	<b>0.004</b>
Gender (Female)	-0.14	-0.18 – -0.11	<b>&lt;0.001</b>	-0.12	-0.15 – -0.08	<b>&lt;0.001</b>	-0.17	-0.20 – -0.13	<b>&lt;0.001</b>
Own Infection	0.05	0.02 – 0.09	<b>0.003</b>	-0.03	-0.06 – 0.01	0.150	0.04	0.01 – 0.08	<b>0.016</b>
Cases in a circle*	0.06	0.02 – 0.09	<b>0.001</b>				0.08	0.04 – 0.11	<b>&lt;0.001</b>
Occupation	0.07	0.04 – 0.10	<b>&lt;0.001</b>				0.06	0.03 – 0.10	<b>&lt;0.001</b>
Monthly income (Higher income)	0.07	0.03 – 0.11	<b>0.001</b>	-0.04	-0.08 – -0.00	<b>0.044</b>	0.05	0.01 – 0.10	<b>0.008</b>
Nationality (Saudi)	0.02	-0.01 – 0.06	0.147	0.04	0.00 – 0.07	<b>0.041</b>			
Education (Higher education)	0.06	0.03 – 0.10	<b>0.001</b>	-0.04	-0.07 – -0.00	<b>0.050</b>	0.05	0.02 – 0.09	<b>0.004</b>
Have any children	-0.03	-0.06 – 0.01	0.120						
feels close to me	0.23	0.20 – 0.26	<b>&lt;0.001</b>	0.08	0.04 – 0.11	<b>&lt;0.001</b>	0.19	0.15 – 0.22	<b>&lt;0.001</b>
It makes me feel helpless	0.04	0.00 – 0.07	<b>0.028</b>	0.06	0.03 – 0.10	<b>0.001</b>	0.03	-0.00 – 0.07	0.061
feels new to me	0.05	0.01 – 0.08	<b>0.008</b>						
feels spreading slowly	-0.03	-0.06 – 0.00	0.070				-0.05	-0.08 – -0.01	<b>0.007</b>
feels something I think about	0.04	0.00 – 0.07	<b>0.039</b>				0.03	-0.00 – 0.07	0.077
feels worrying	0.04	0.00 – 0.08	<b>0.033</b>	0.05	0.01 – 0.09	<b>0.018</b>	0.06	0.03 – 0.10	<b>&lt;0.001</b>
Actionism**	-0.05	-0.09 – -0.02	<b>0.003</b>	-0.03	-0.07 – 0.00	0.081	-0.07	-0.10 – -0.03	<b>&lt;0.001</b>
Actual knowledge	0.04	0.00 – 0.07	<b>0.037</b>	0.03	-0.00 – 0.07	<b>0.050</b>	0.03	-0.00 – 0.07	0.051
Chronic health condition				0.20	0.16 – 0.23	<b>&lt;0.001</b>	0.06	0.02 – 0.09	<b>0.001</b>
Trust in media				0.03	-0.00 – 0.07	0.076			
Vaccine received in 2019				0.05	0.01 – 0.08	<b>0.005</b>			
feels fear-inducing				0.07	0.03 – 0.11	<b>0.001</b>			
Observations	2971			2971			2971		
R <sup>2</sup> / R <sup>2</sup> adjusted	0.152 / 0.147			0.090 / 0.086			0.138 / 0.134		

\*Individuals with a confirmed/suspected diagnosis of COVID-19 that one knows personally

\*\*Ineffective Protective Behavior

## 6. What Affects Behaviour

### 6.1. Effective Protective Behaviour

Protective behaviour in this section reflects on the effective protective behaviour. Protective behaviour is recorded as a percentage: the higher the value, the more effective protective measures. As well as, the more measures taken by a participant the higher the percentage. In the following table factors that affect the effective protective measures can be seen.

The analysis shows (see table): Protective behaviour is taken more by people who are older and those with higher actual knowledge about COVID-19.

*Interpretation: The results of a linear regression analysis are shown. Influencing factors in bold are significant and have a statistically significant impact. For values with a positive sign: higher values on this influencing factor lead to more protective behaviour. That means for values with negative sign: higher values on this influencing factor lead to less protective behaviour.*

Effective Protective Behaviour			
Predictors	Beta	standardized CI	P
(Intercept)	0.00	-0.04 – 0.04	<b>&lt;0.001</b>
Age (Older people)	0.12	0.08 – 0.16	<b>&lt;0.001</b>
Gender (Female)	-0.01	-0.05 – 0.03	0.651
People per household (Larger number)	-0.01	-0.05 – 0.02	0.447
Trust in healthcare	0.03	-0.00 – 0.07	0.058
Trust in media	-0.02	-0.05 – 0.02	0.355
Education (Higher education)	0.02	-0.02 – 0.06	0.318
Probability	-0.00	-0.04 – 0.04	0.979
Severity	0.00	-0.03 – 0.04	0.809
Cases in a circle*	-0.01	-0.04 – 0.03	0.654
Actual knowledge	0.11	0.08 – 0.15	<b>&lt;0.001</b>
Feels close to me	-0.03	-0.07 – 0.01	0.125
Feels media hyped	-0.03	-0.06 – 0.01	0.136
Feels spreading slowly	-0.02	-0.06 – 0.01	0.180
Observations	2971		
R <sup>2</sup> / R <sup>2</sup> adjusted	0.036 / 0.032		

\*Cases in a circle: Individuals with a confirmed/suspected diagnosis of COVID-19 that one knows personally.

## 6.2. Actionism (Ineffective Protective Behaviour)

Actionism which is ineffective protective behaviour is recorded as a percentage: the higher the value, the more the ineffective protective measures. The more measures taken by a participant the higher the percentage as well. The following table shows which factors influence the ineffective behaviour (which was asked in the questionnaire).

The analysis shows (see table): Actionism is seen more in older people and females. Actionism is also seen in people with higher actual knowledge and those who feel that COVID-19 is media hyped. Less actionism is seen in people who believe they have a low probability of being infected with COVID-19.

*Interpretation: The results of a linear regression analysis are shown. Influencing factors in bold are significant and have a statistically significant impact. For values with a positive sign: higher values on this influencing factor lead to more actionism. That means for values with a negative sign: higher values on this influencing factor lead to less actionism.*

<b>Ineffective Protective Behaviour (Actionism)</b>			
<i>Predictors</i>	<i>Beta</i>	<i>standardized CI</i>	<i>P</i>
(Intercept)	0.00	-0.04 – 0.04	<b>&lt;0.001</b>
Age (Older people)	0.15	0.11 – 0.18	<b>&lt;0.001</b>
Gender (Female)	0.06	0.03 – 0.10	<b>0.001</b>
People per household (Larger number)	0.02	-0.02 – 0.05	0.345
Trust in healthcare	-0.02	-0.05 – 0.02	0.353
Trust in media	-0.01	-0.04 – 0.03	0.682
Education (Higher education)	-0.02	-0.06 – 0.02	0.257
Probability	-0.05	-0.09 - -0.02	<b>0.005</b>
Severity	-0.02	-0.05 – 0.02	0.414
Cases in a circle*	0.03	-0.00 – 0.07	0.078
Actual knowledge	0.09	0.06 – 0.13	<b>&lt;0.001</b>
Feels close to me	0.03	-0.01 – 0.06	0.155
Feels media hyped	0.07	0.04 – 0.11	<b>&lt;0.001</b>
Feels spreading slowly	0.04	-0.00 – 0.07	0.180
Observations	2971		
R <sup>2</sup> / R <sup>2</sup> adjusted	0.045 / 0.041		

\*Cases in a circle: Individuals with a confirmed/suspected diagnosis of COVID-19 that one knows personally.

### 6.3. Pandemic Preparedness

Pandemic preparation (preparedness) includes multiple behaviours such as buying large scales of food, staying away from social events and more. Preparedness is recorded as a percentage: the higher the value, the higher preparedness measures. The following table examines factors that influence the preparation for a pandemic.

The analysis shows (see table): Pandemic preparation is seen more in people who trust healthcare workers, in those who believe that COVID-19 would infect them severely and in people who feel that the coronavirus is close.

*Interpretation: The results of a linear regression analysis are shown. Influencing factors in bold are significant and have a statistically significant impact. For values with a positive sign: higher values on this influencing factor lead to more crisis preparation. That means for values with a negative sign: higher values on this influencing factor lead to less crisis preparation.*

Pandemic Preparedness			
Predictors	Beta	standardized CI	P
(Intercept)	0.00	-0.04 – 0.04	<b>&lt;0.001</b>
Age (Older people)	0.02	-0.02 – 0.06	0.241
Gender (Female)	0.02	-0.02 – 0.06	0.320
People per household (Larger number)	0.01	-0.02 – 0.05	0.488
Trust in healthcare	0.05	0.01 – 0.09	<b>0.007</b>
Trust in media	-0.00	-0.04 – 0.03	0.792
Education (Higher education)	-0.02	-0.05 – 0.02	0.422
Probability	-0.03	-0.07 – 0.01	0.179
Severity	0.06	0.02 – 0.10	<b>0.002</b>
Cases in a circle*	0.03	-0.01 – 0.06	0.145
Actual knowledge	0.00	-0.03 – 0.04	0.833
Feels close to me	0.07	0.03 – 0.10	<b>0.001</b>
Feels media hyped	0.01	-0.02 – 0.05	0.484
Feels spreading slowly	-0.00	-0.04 – 0.04	0.994
Observations	2971		
R <sup>2</sup> / R <sup>2</sup> adjusted	0.045 / 0.041		

\*Cases in a circle: Individuals with a confirmed/suspected diagnosis of COVID-19 that one knows personally.

## 6.4. Precautionary Purchases

This section examines which factors are related to whether people have

- a) bought extra food as a precaution
- b) bought extra medications which include buying extra over the counter medications, extra prescription medication and extra medications that they take regularly.
- c) purchasing extra disinfectants.

“Data in Detail” lists how often these behaviours are shown.

People who know someone who is or might be infected, those who received the flu vaccine in 2019 and those who feel that the new coronavirus is close to them were more likely to buy extra food.

Older people, males and those who feel that the new coronavirus is media hyped were more likely to buy extra medications.

People who received the flu vaccine in 2019, people who feel that the new coronavirus is media hyped, people who are married, those who live in larger houses and those who search for information about the new coronavirus more frequently were more likely to buy extra disinfectants. People who live in Riyadh were less likely to buy extra disinfectants.

*Interpretation: The table presents the results of three linear regression analyses (backwards elimination). Best statistical model is presented in this table. Odds ratio makes a statement about the extent to which the presence or absence of a feature A (e.g. perceived closeness) is related to the presence or absence of another feature B (e.g. precautionary purchases). Influencing factors in bold are significant and have a statistically significant influence. Values above 1: higher values on this influencing factor lead to more buying behaviour. Values below 1: smaller values on this influencing factor lead to less buying behaviour.*

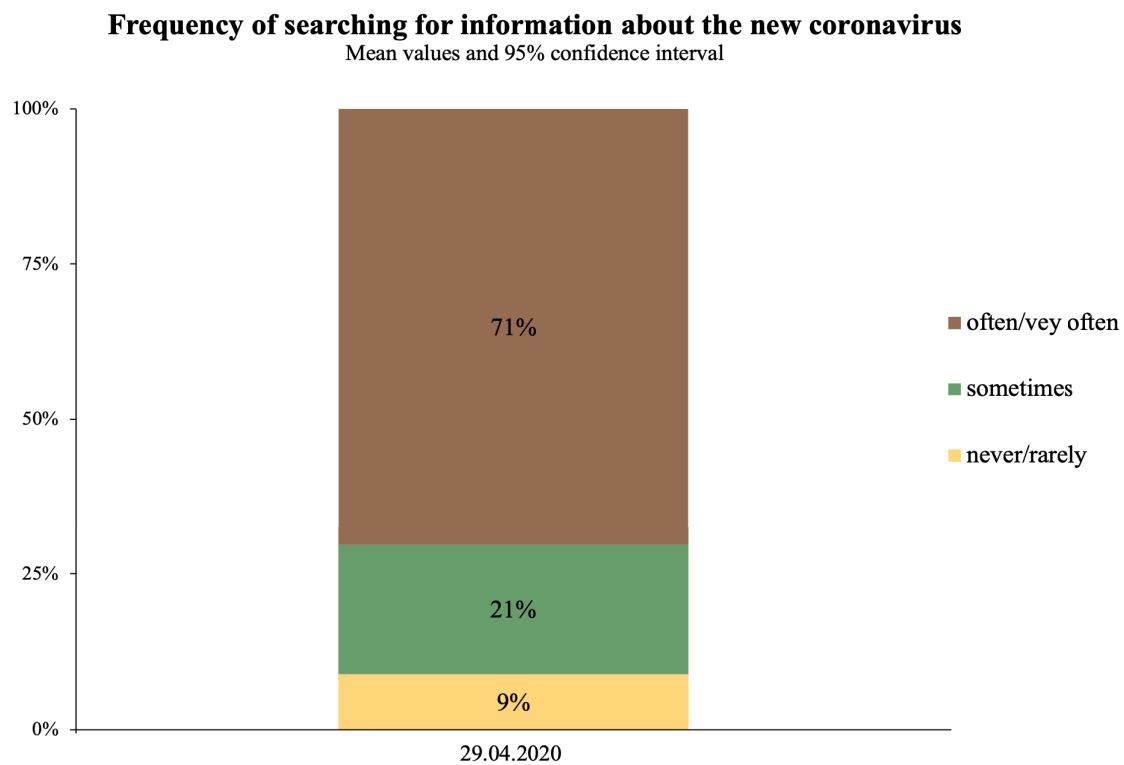
<i>Predictors</i>	<b>Purchasing food</b>			<b>Purchasing extra medications</b>			<b>Purchasing disinfectants</b>		
	<i>Odds Ratios</i>	<i>CI</i>	<i>p</i>	<i>Odds Ratios</i>	<i>CI</i>	<i>p</i>	<i>Odds Ratios</i>	<i>CI</i>	<i>p</i>
(Intercept)	0.15	0.08 – 0.30	<b>&lt;0.001</b>	0.09	0.04 – 0.19	<b>&lt;0.001</b>	0.03	0.01 – 0.06	<b>&lt;0.001</b>
Trust in media	1.08	0.99 – 1.18	0.098						
Cases in a circle*	1.54	1.07 – 2.18	<b>0.018</b>	1.32	0.92 – 1.86	0.122	1.29	0.91 – 1.80	0.141
Actual knowledge	0.54	0.25 – 1.18	0.119	0.57	0.28 – 1.20	0.137			
Feels close to me	1.38	1.00 – 1.88	<b>0.044</b>	1.31	0.96 – 1.76	0.077	1.33	0.99 – 1.76	0.052
Feels media hyped	1.27	0.98 – 1.64	0.066	1.47	1.16 – 1.86	<b>0.001</b>	1.35	1.06 – 1.70	<b>0.012</b>
Occupation	1.42	0.93 – 2.12	0.094						
Vaccine received in 2019	1.35	1.00 – 1.80	<b>0.047</b>				1.34	1.02 – 1.74	<b>0.032</b>
Have any children	0.83	0.66 – 1.05	0.122						
Age (Older people)				1.30	1.08 – 1.57	<b>0.005</b>			
Gender (Female)				0.75	0.60 – 0.93	<b>0.009</b>	0.82	0.66 – 1.01	0.065
Trust in healthcare				1.30	1.00 – 1.71	0.057			
Severity				1.11	0.99 – 1.26	0.086	1.10	0.98 – 1.24	0.115
Region (People living in Riyadh)				1.15	0.93 – 1.43	0.193	0.75	0.61 – 0.94	<b>0.011</b>
People per household (Larger number)							1.13	0.99 – 1.29	0.070
Type of housing (Larger houses)							1.06	1.00 – 1.12	<b>0.047</b>
Marital status							1.39	1.07 – 1.82	<b>0.015</b>
Monthly income (Higher income)							1.10	1.00 – 1.20	0.056
Frequency of information search about the situation							1.17	1.04 – 1.33	<b>0.010</b>
Observations	2971			2971			2971		
R Tjur	0.011			0.008			0.023		

\*Cases in a circle: Individuals with a confirmed/suspected diagnosis of COVID-19 that one knows personally.

## 7. Information Seeking Behaviours

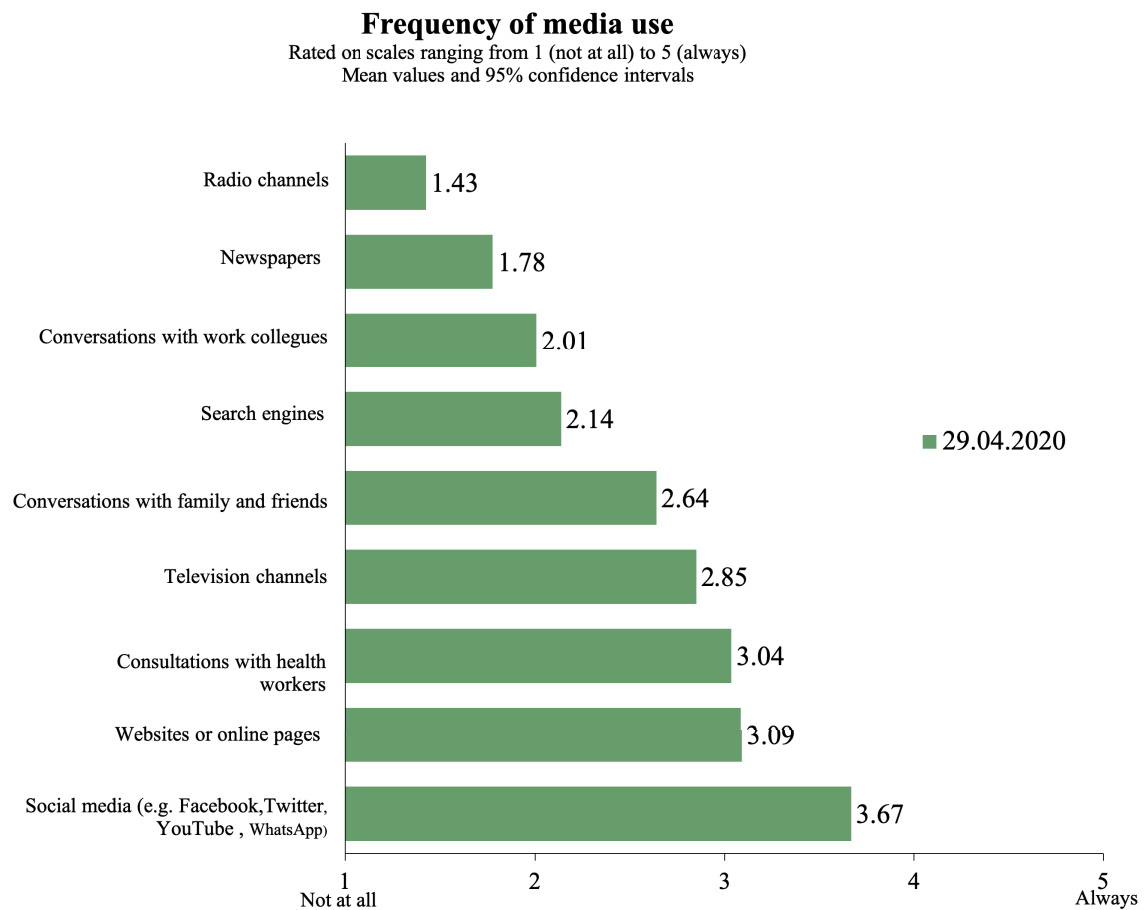
### 7.1. Information Search Frequency

How often do you inform yourself about the new coronavirus / COVID-19? Answers are assessed on 5-point scales from never - very often, 1-2 lowest category, 3 mid category, 4-5 highest category.



## 7.2. Use

How often do you use the following sources of information to stay informed about the new coronavirus?

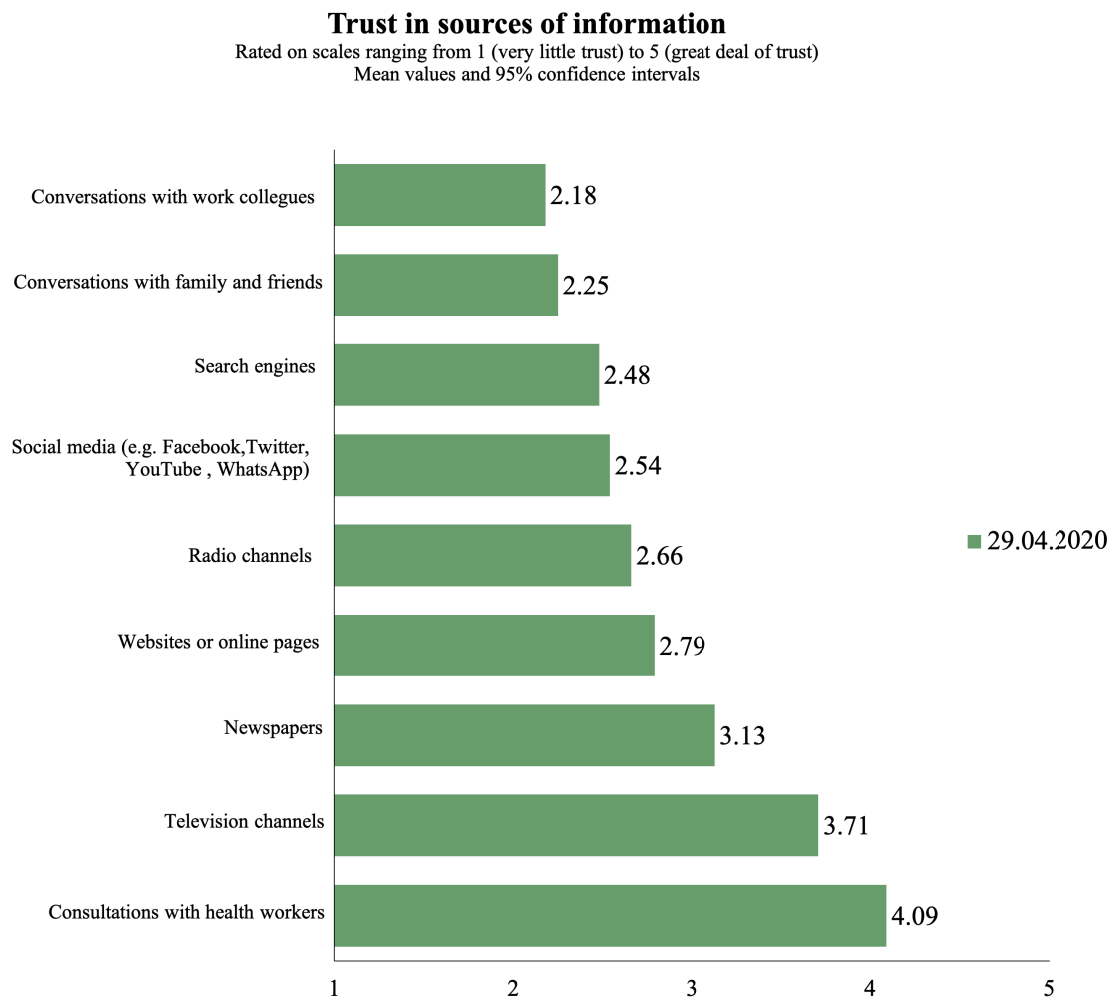




### 7.3. Trust

How much do you trust the following source of information in their reporting about the new coronavirus?

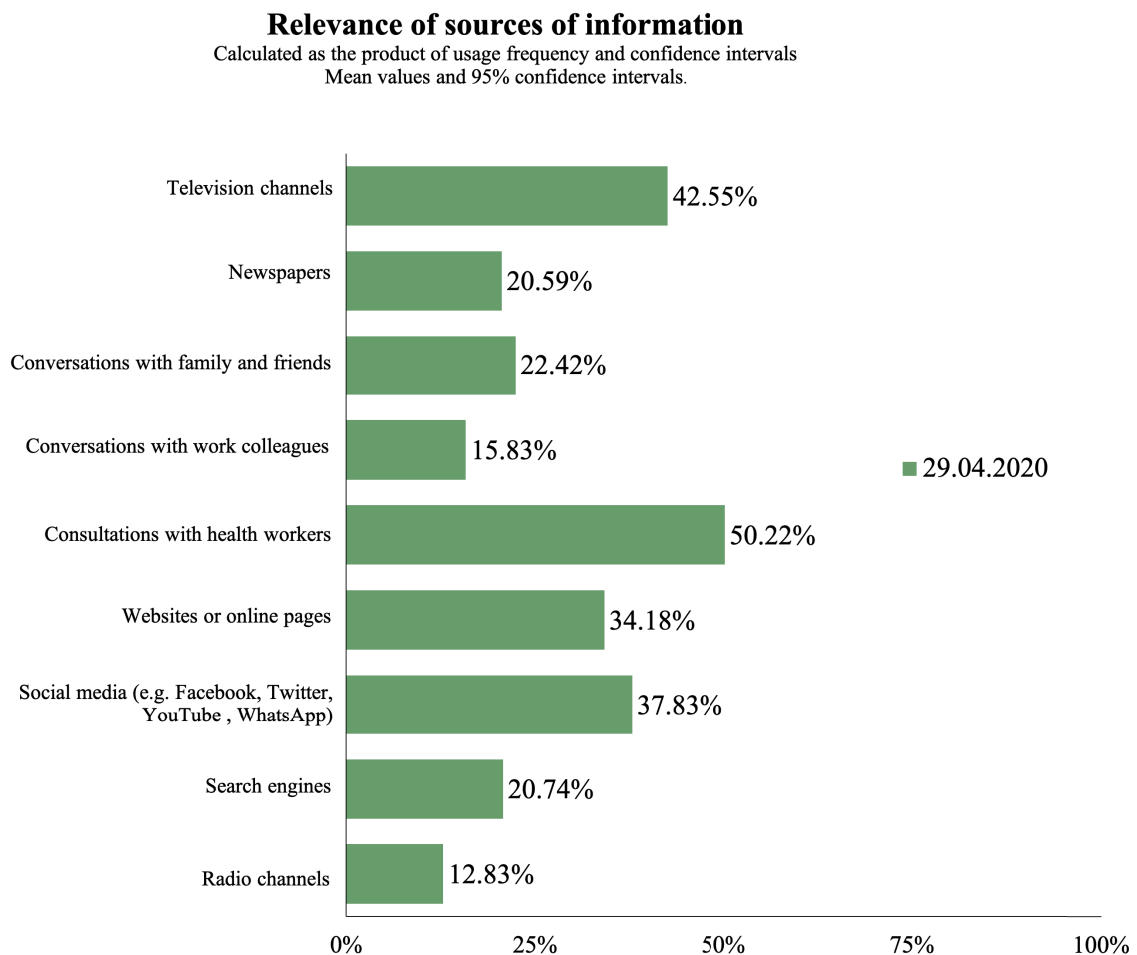
The graph displays mean trust, error bars are 95% CIs.



## 7.4. Relevance

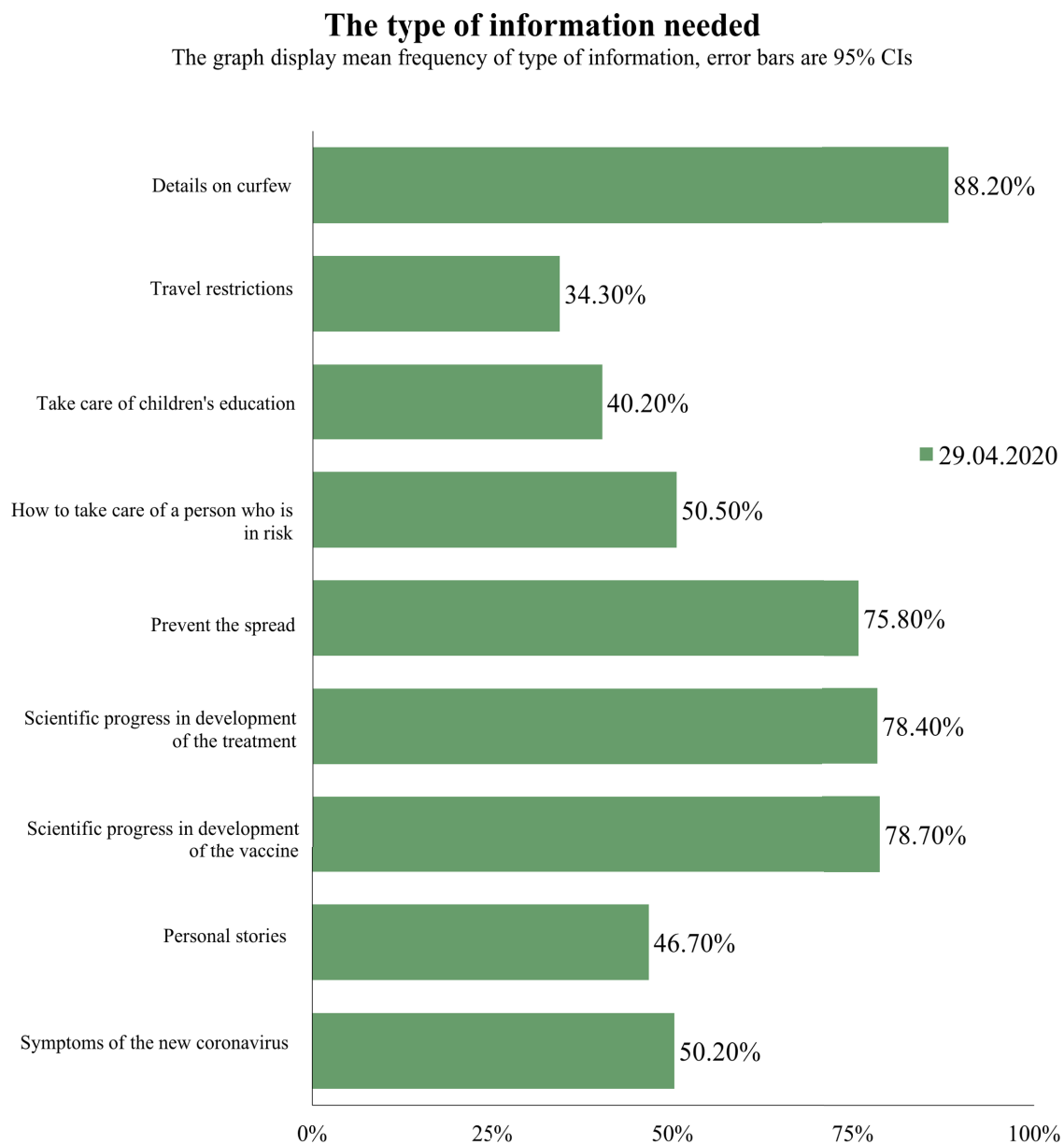
Relevance is the normalized mathematical product of trust x frequency of use

The graph displays mean relevance, error bars are 95% CIs.



## 7.5. Type of Information

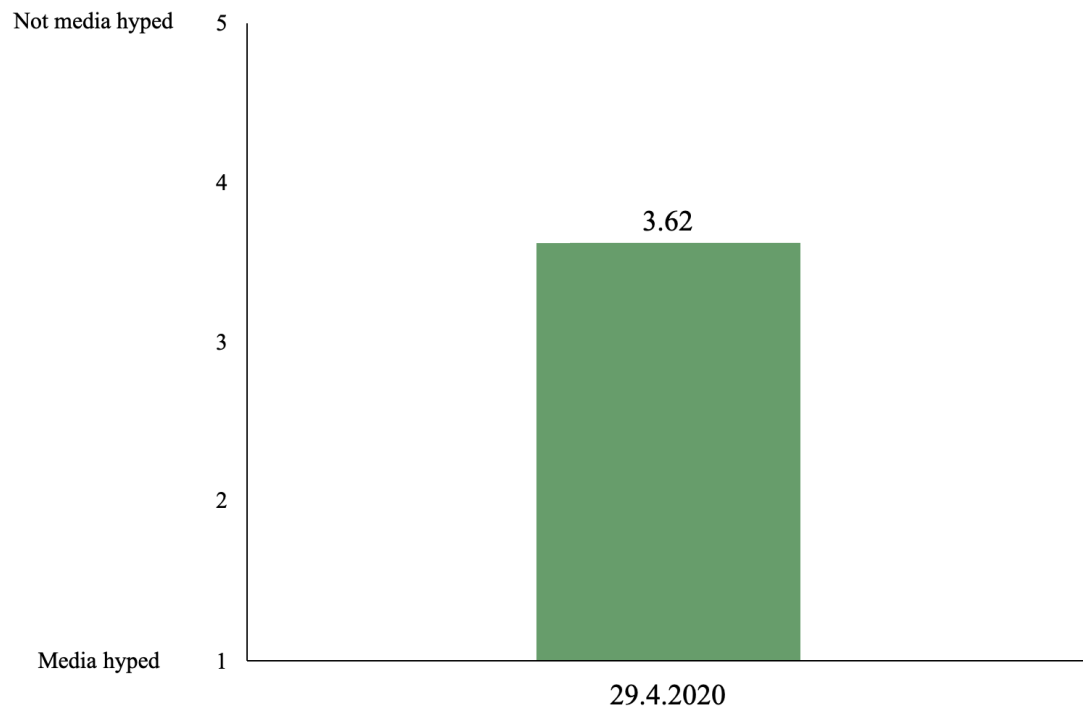
The type of information I need the most is related to the following items



## 7.6. Coronavirus as a Media Hype

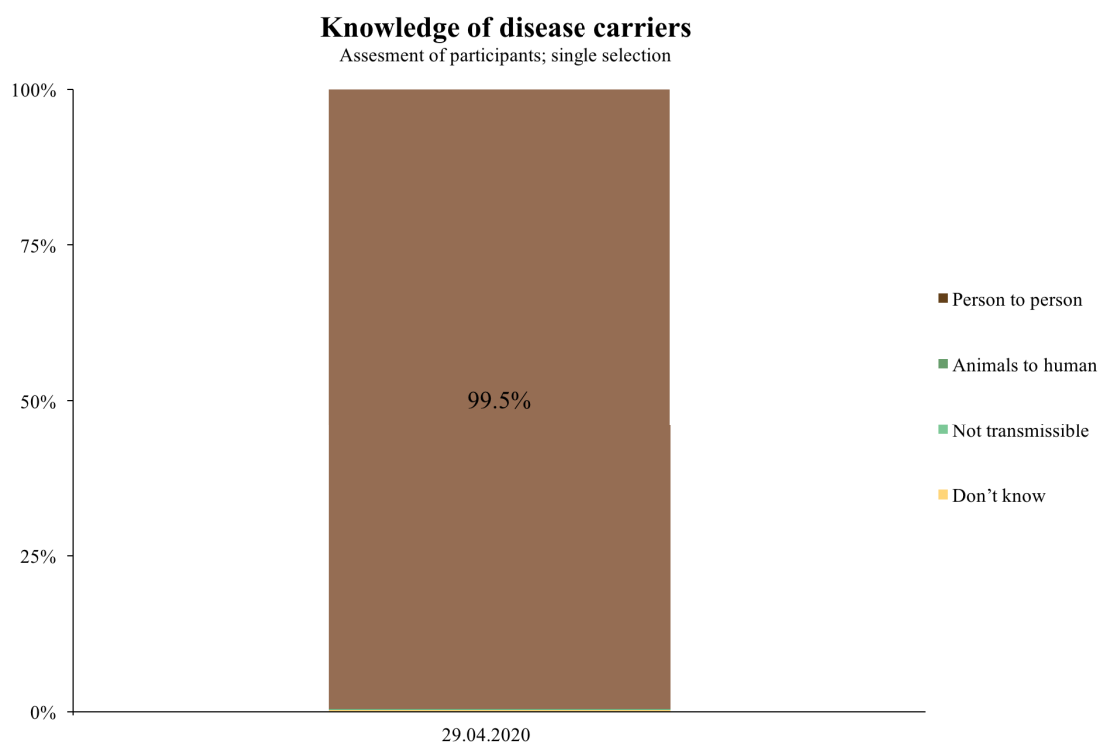
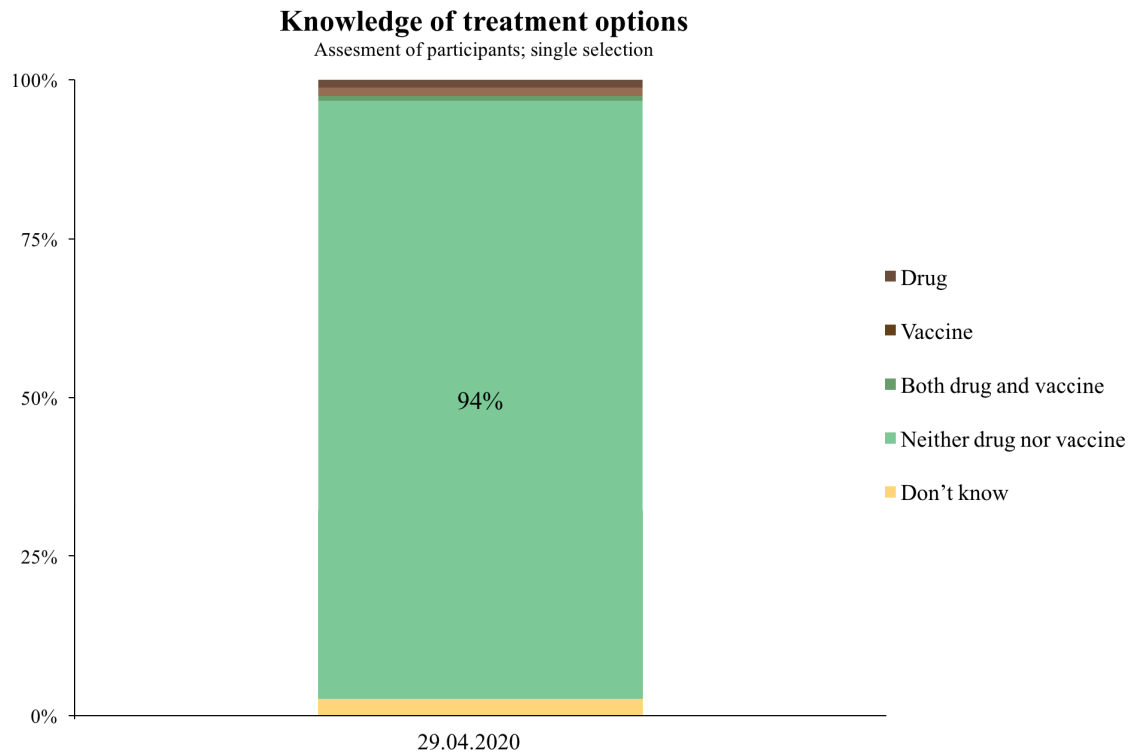
### **The new coronavirus to me feels ...**

Rated on scales ranging from 1 (media hyped) to 5 (not media hyped)



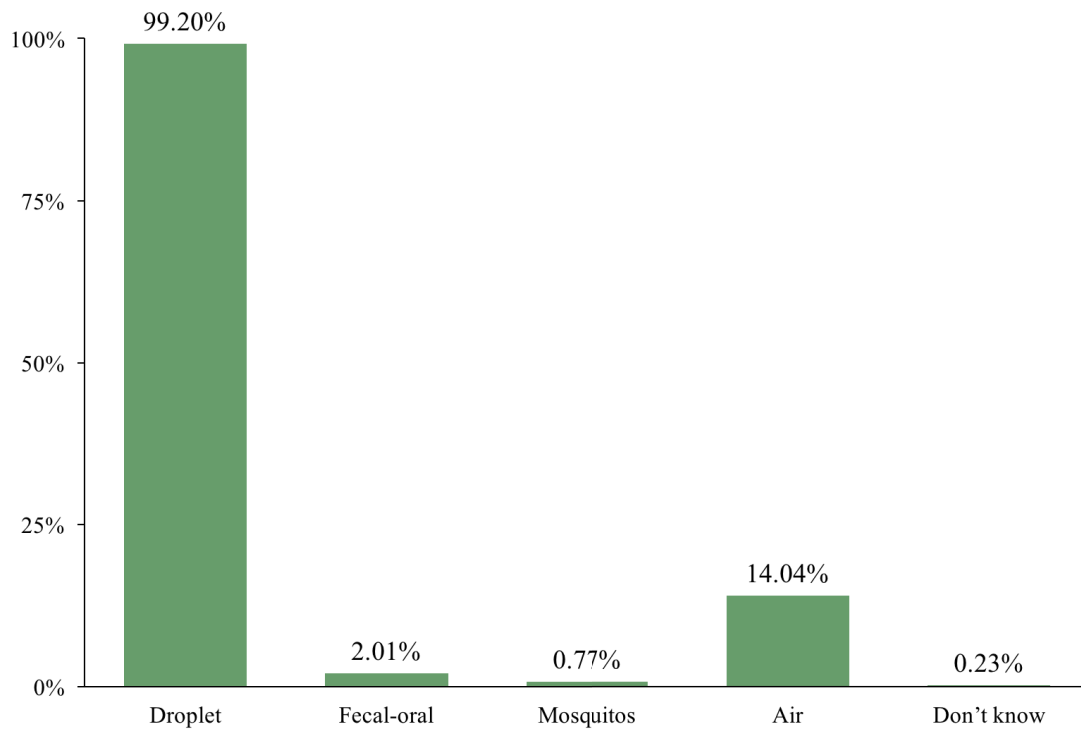
## 8. Data in details

### 8.1. Knowledge about COVID-19



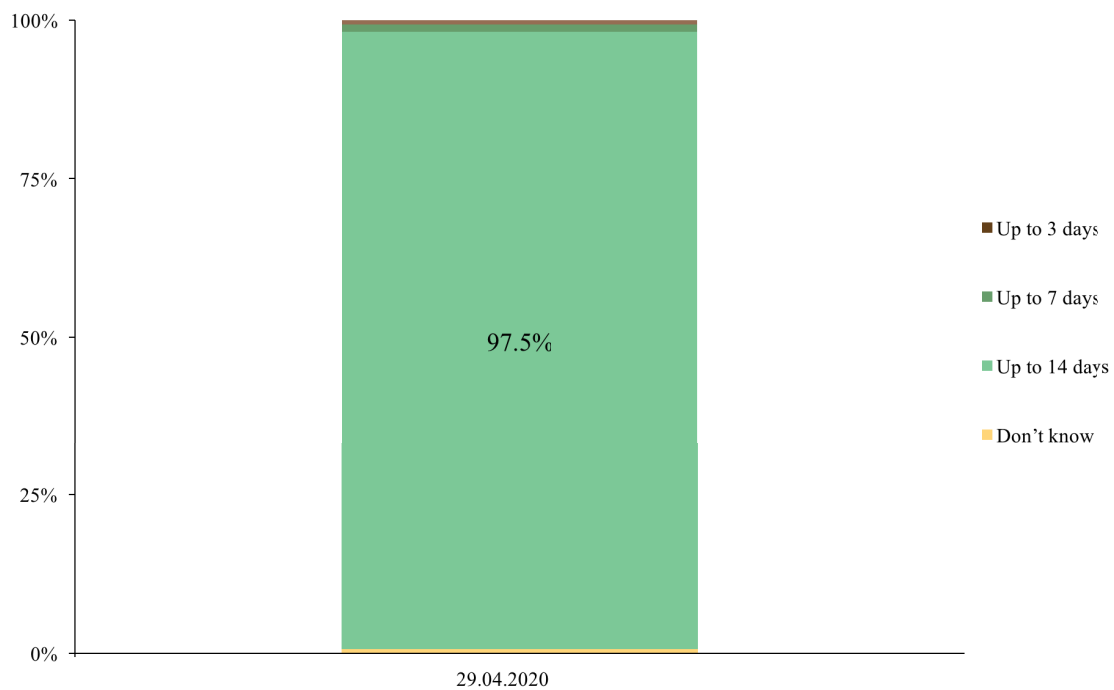
## Knowledge about the route of infection

Assessment of participants; multiple selection is possible



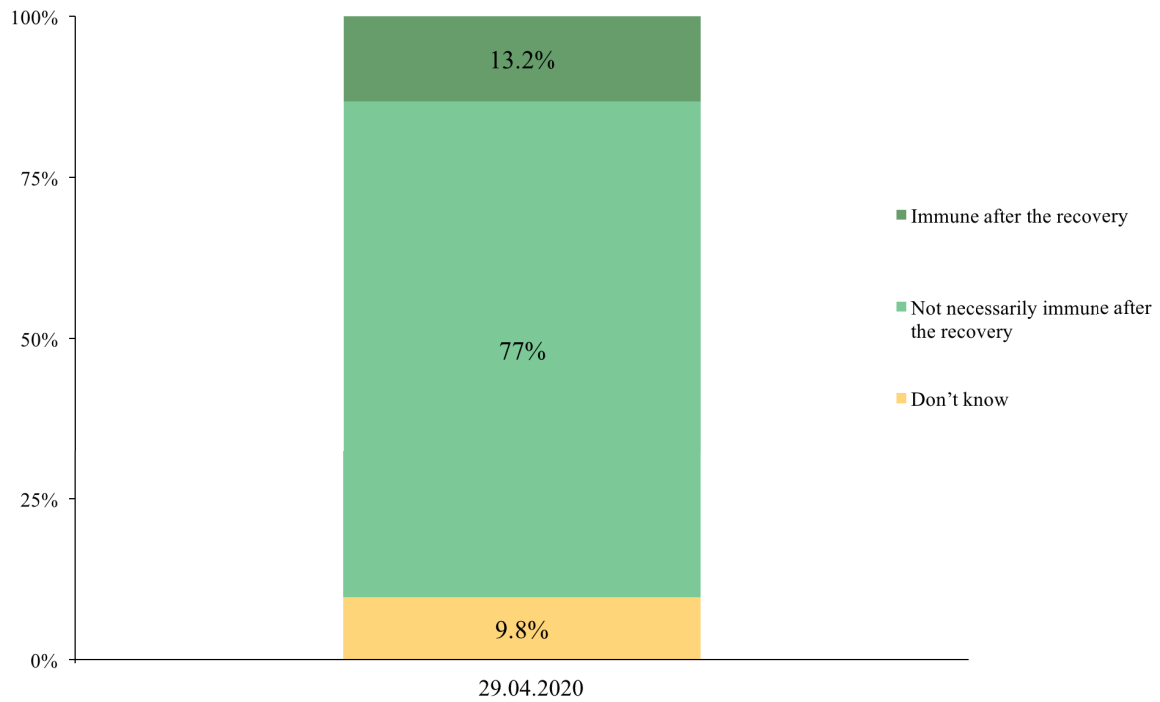
## Knowledge about the incubation period

Assesment of participants; single selection



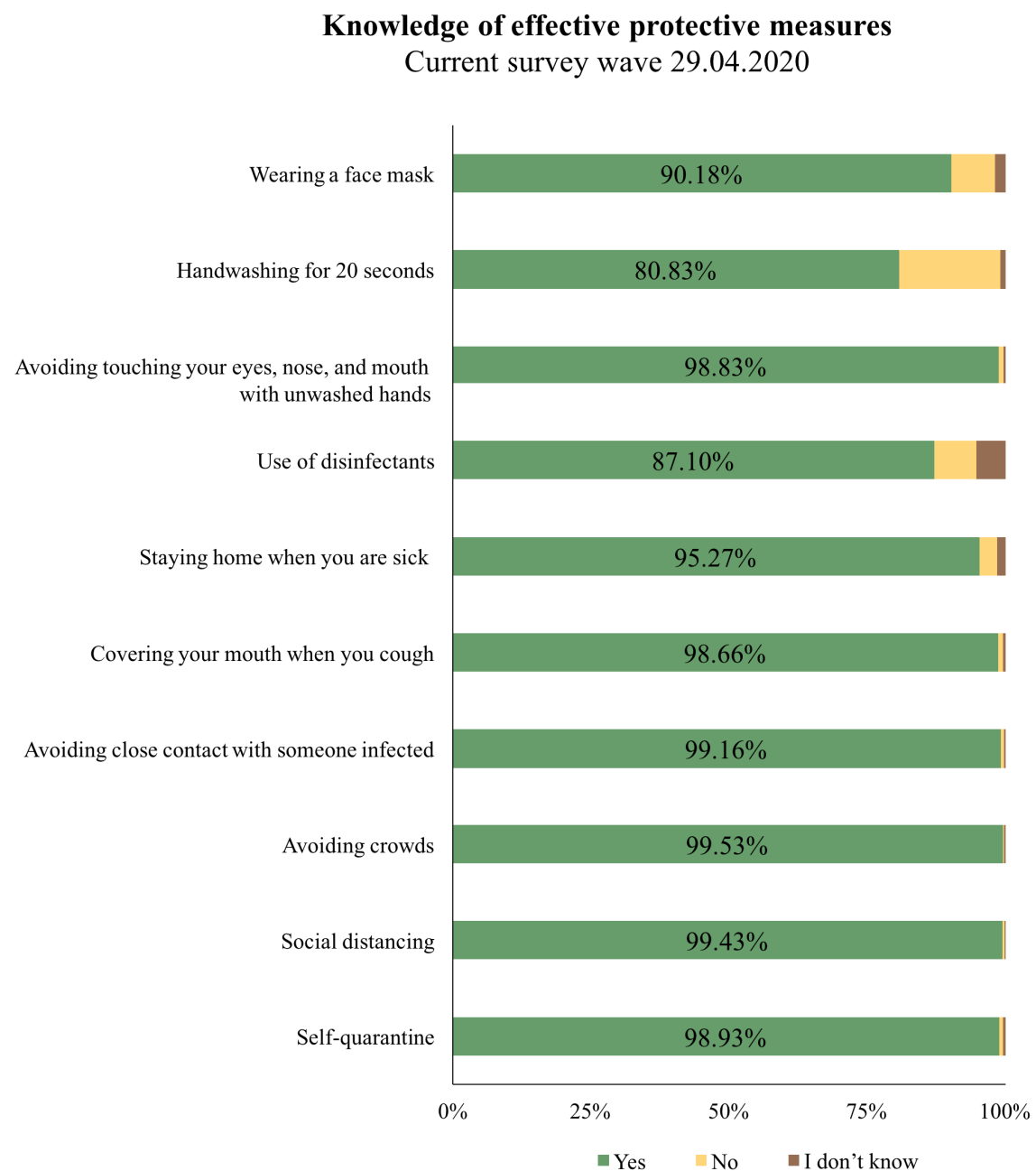
## Knowledge of the consequences of surviving the illness

Assesment of participants; single selection



## 8.2. Know and Take Effective Protective Measures

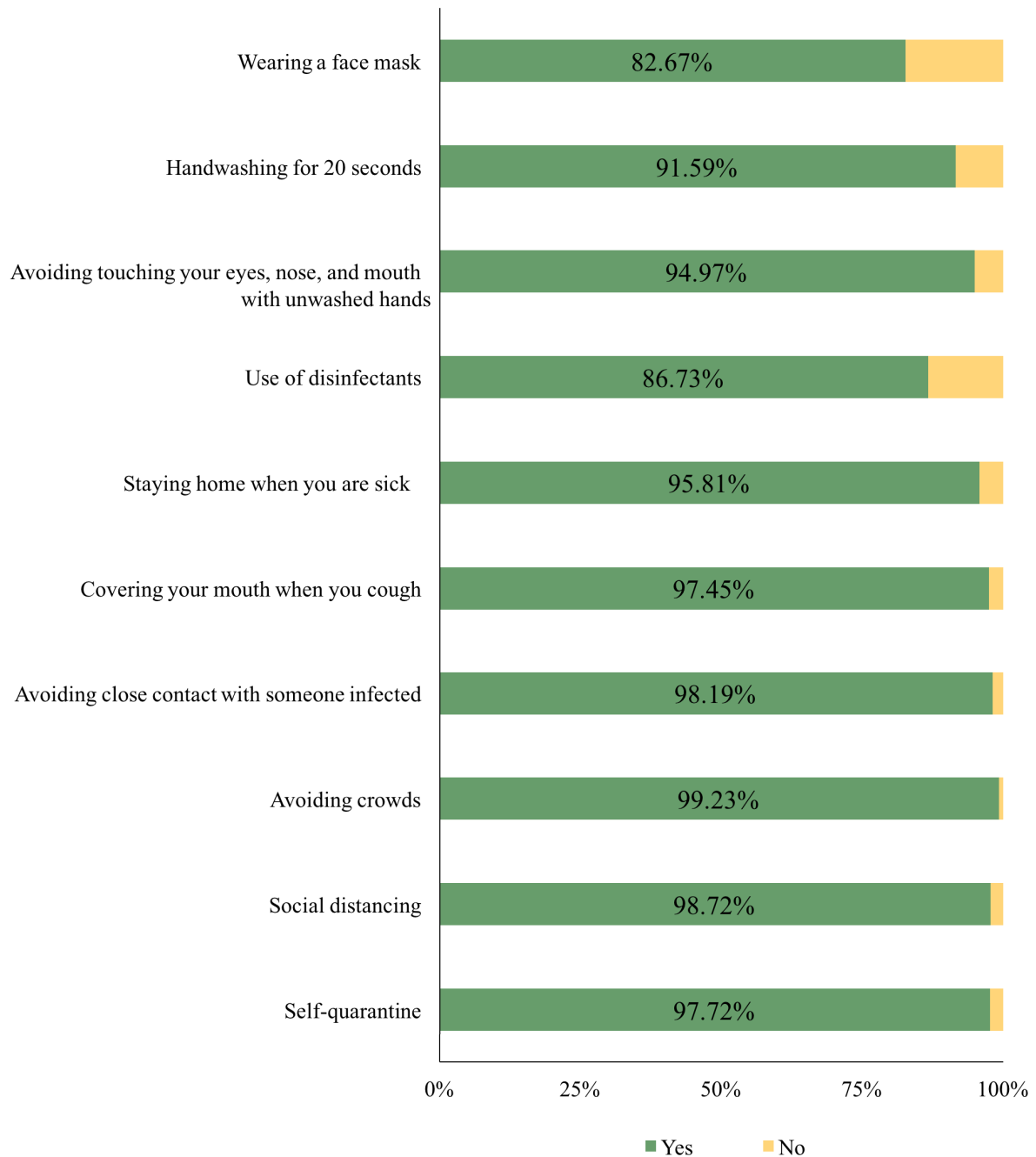
Which of the following measures are effective protective measures to prevent the spread and infection with the new coronavirus? (Illustration: effective protective measures)





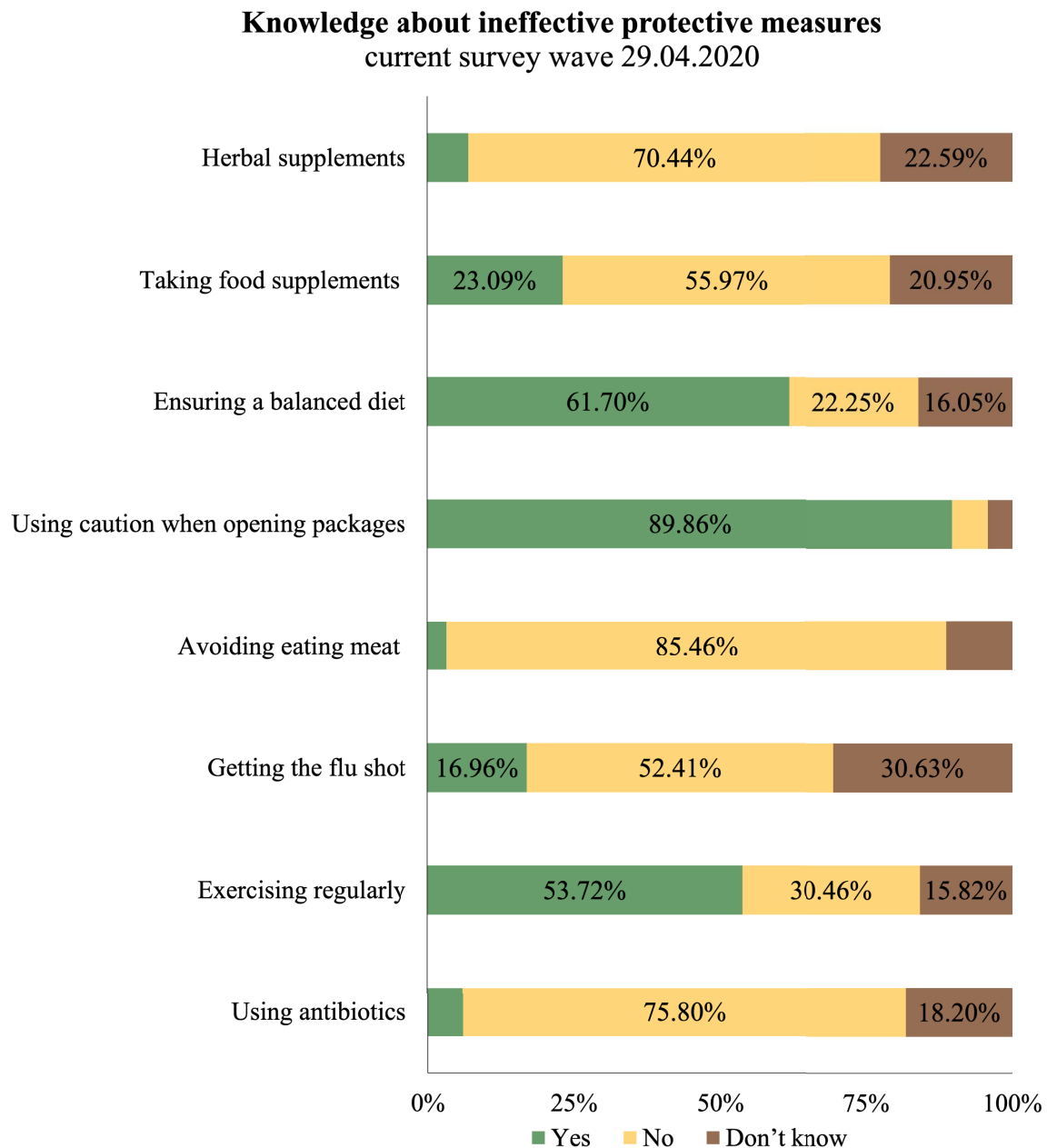
## Effective protective measures that were actually implemented

Current survey wave 29.04.2020

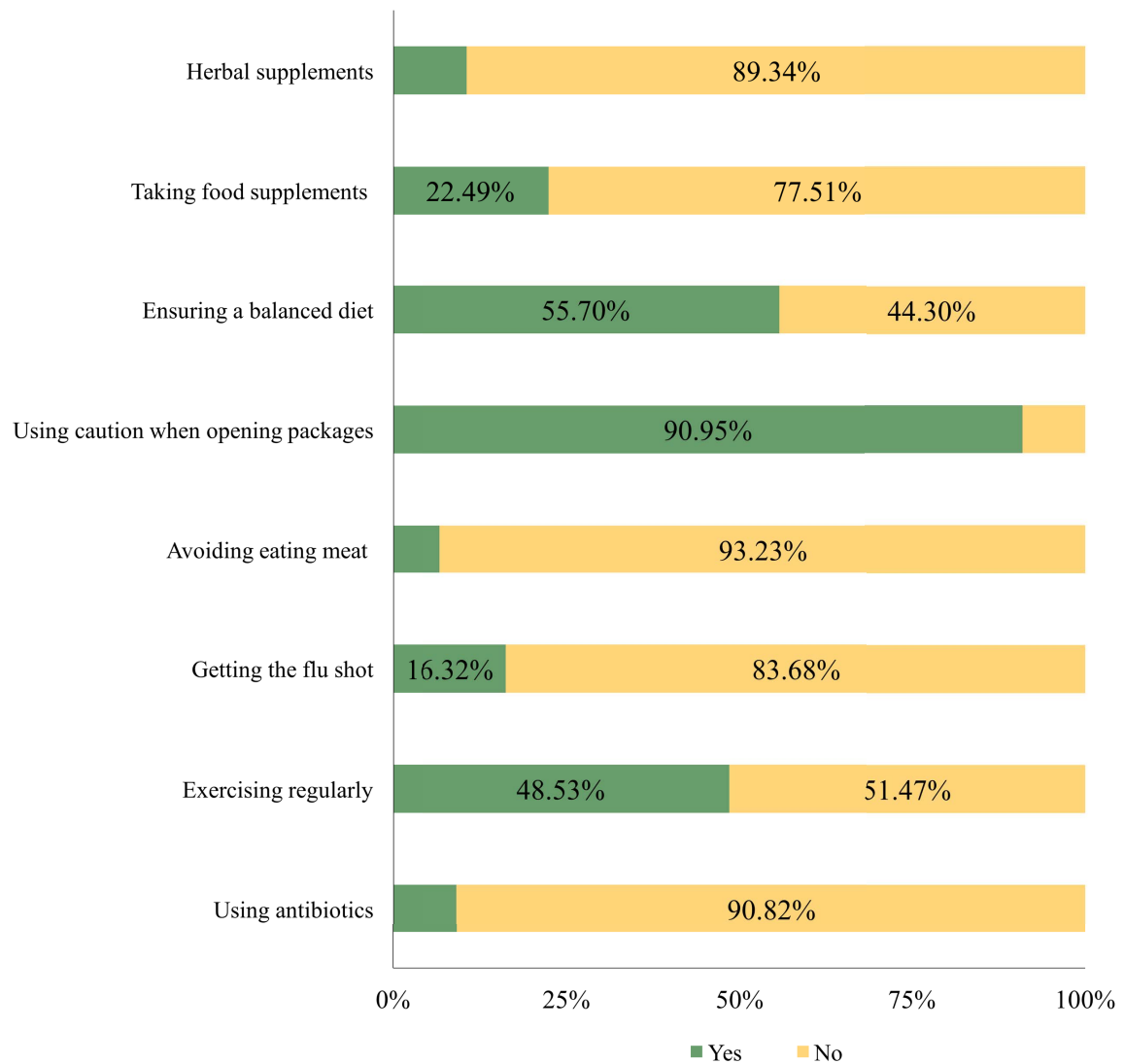


### 8.3. Ineffective Protective Measures and Actionism

Which of the following measures are effective protective measures to prevent the spread and infection with the new coronavirus? (Illustration: ineffective protective measures, interpreted as actionism)

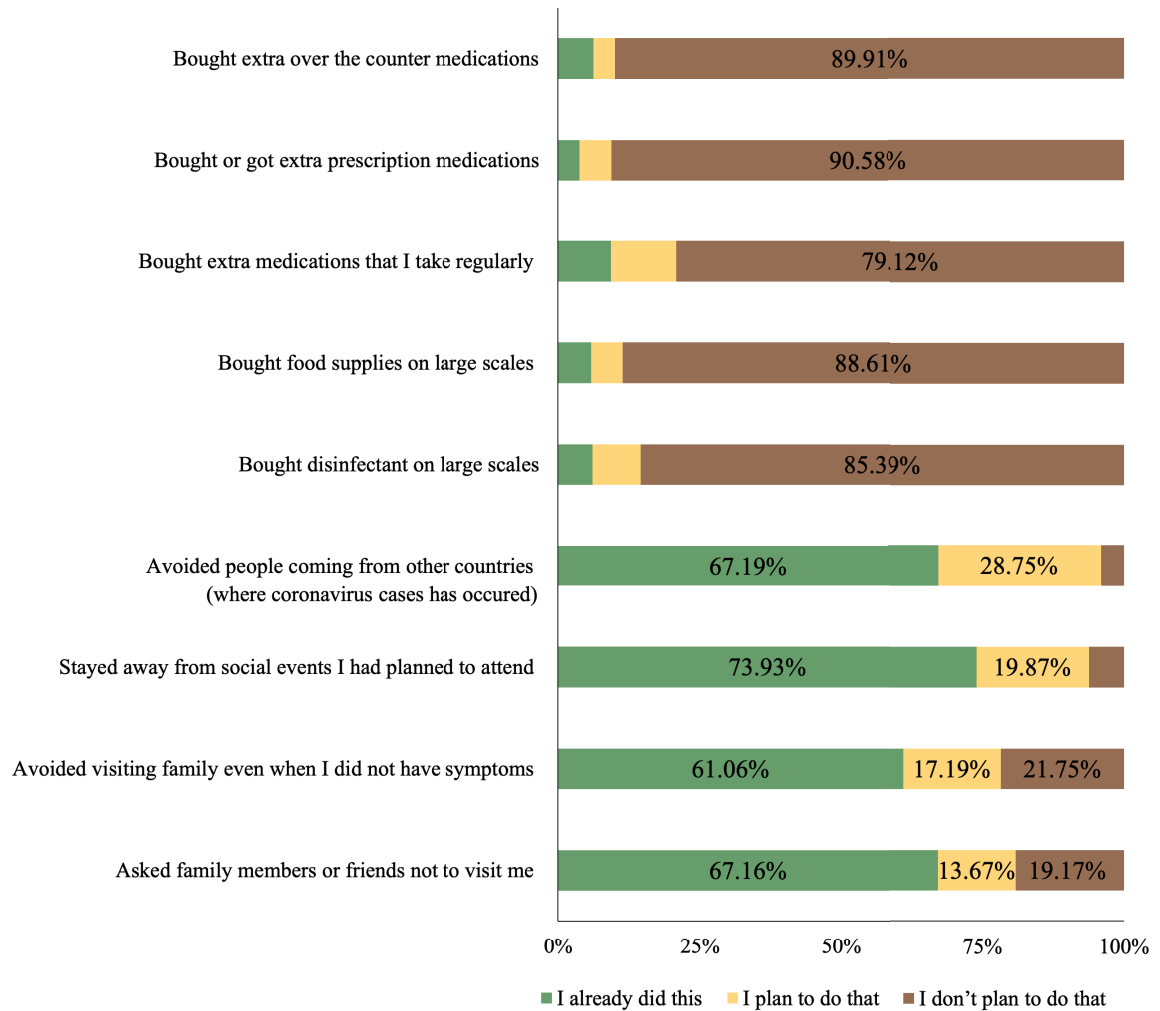


**Ineffective protective measures that were actually implemented**  
current wave survey 29.04.2020



## 8.4. Pandemic Preparedness

**Pandemic Preparedness**  
current wave 29.04.2020



## 9. Data by Demography

The following tables show variables for the current wave split according to key demographic characteristics of the respondents.

### 9.1. Age

Administrative regions	Age			
	18-29 years	30-49 years	50-64 years	65 and above
Riyadh (n=1329)	67.94%	27.91%	3.83%	0.30%
Makkah (n=551)	68.96%	29.94%	1.08%	0%
Madinah (n=184)	74.45%	25%	0.54%	0%
Qassim (n=204)	74.50%	22.54%	2.45%	0.49%
Tabuk (n=67)	64.17%	34.32%	1.4%	0%
Northern Border (n= 19)	78.94%	21.05%	0%	0%
Jawf (n=17)	76.47%	23.52%	0%	0%
Hail (n=56)	78.57%	19.64%	1.78%	0%
Baha (n=18)	72.22%	27.7%	0%	0%
Jizan (n=39)	56.41%	41.02%	2.56%	0%
Asir (n=80)	67.5%	31.25%	1.25%	0%
Najran (n=20)	60%	40%	0%	0%
Eastern Region (n=365)	64.93%	33.15%	1.91%	0%

## 9.2. Gender

Administrative regions	Gender	
	Female	Male
Riyadh (n=1329)	52.44%	47.55%
Makkah (n=551)	54.49%	45.55%
Madinah (n=184)	46.73%	53.26%
Qassim (n=204)	59.80%	40.19%
Tabuk (n=67)	47.76%	52.23%
Northern Border (n= 19)	57.89%	42.10%
Jawf (n=17)	29.41%	70.58%
Hail (n=56)	66.07%	33.92%
Baha (n=18)	38.88%	61.11%
Jizan (n=39)	46.15%	53.84%
Asir (n=80)	47.5%	52.5%
Najran (n=20)	20%	80%
Eastern Region (n=365)	43.01%	56.98%

### 9.3. Education

Administrative regions	Education					
	LH	H	ND	D	B	PG
Riyadh (n=1329)	1.12%	23.10%	10.98%	6.99%	51.31%	6.47%
Makkah (n=551)	3.08%	20.87%	10.88%	5.98%	54.80%	4.35%
Madinah (n=184)	0.54%	21.19%	12.5%	10.86%	51.08%	3.80%
Qassim (n=204)	1.47%	22.54%	12.25%	6.37%	45.83%	3.43%
Tabuk (n=67)	1.49%	2.98%	11.94%	4.47%	55.22%	2.98%
Northern Border (n= 19)	0%	15.78%	5.26%	10.52%	57.89%	10.52%
Jawf (n=17)	0%	17.64%	11.76%	0%	70.58%	0%
Hail (n=56)	0%	21.42%	7.14%	1.78%	66.07%	3.57%
Baha (n=18)	5.55%	22.22%	11.11%	11.11%	44.44%	5.55%
Jizan (n=39)	2.56%	7.69%	7.69%	5.12%	74.35%	2.56%
Asir (n=80)	0%	12.55%	11.25%	10%	61.25%	5%
Najran (n=20)	0%	10%	5%	15%	70%	0%
Eastern Region (n=365)	0.82%	17.26%	13.15%	13.97%	51.23%	3.56%

“LH” = Less than high school degree, “H” = High school degree, “ND” = Some college but no degree, “D” = Diploma degree, “B” = Bachelor degree, “PG” = Post-graduate degree

## 9.4. Type of housing

Administrative regions	Type of housing						
	A	DV	V	FTH	FV	TH	T
Riyadh (n=1329)	20.01%	6.92%	60.42%	0.75%	10.91%	0.82%	0%
Makkah (n=551)	57.16%	3.26%	22.86%	3.26%	6.71%	6.53%	0.18%
Madinah (n=184)	55.97%	2.71%	21.73%	3.80%	4.34%	11.41%	0%
Qassim (n=204)	11.27%	10.29%	62.25%	3.43%	9.80%	2.94%	0%
Tabuk (n=67)	38.80%	1.49%	23.88%	5.97%	16.4%	10.44%	2.98%
Northern Border (n= 19)	21.05%	0%	57.89%	5.26%	5.26%	10.52%	0%
Jawf (n=17)	17.64%	5.88%	52.94%	11.76%	5.88%	5.88%	0%
Hail (n=56)	14.28%	1.78%	67.85%	0%	5.35%	10.71%	0%
Baha (n=18)	27.77%	0%	27.7%	5.55%	27.77%	11.11%	0%
Jizan (n=39)	46.15%	2.56%	26.64%	5.12%	5.12%	5.12%	0%
Asir (n=80)	23.75%	2.5%	47.5%	2.5%	15%	8.75%	0%
Najran (n=20)	40%	0%	20%	5%	15%	20%	0%
Eastern Region (n=365)	34.79%	6.30%	50.95%	0.27%	4.83%	3.28%	0%

“A” = Apartment, “DV” = Duplex villa. “V” = Villa, “FTH” = A floor in a traditional house, “FV” = A floor in a villa, “TH” = Traditional house, “T” = Tent.



## 10. References:

1. Alamro, N., Almana, L., Alabduljabbar, A., AlKahtani, M., AlDihan, R., Almansour, A., ... & Alshunaifi, A. (2020). Saudi Arabia COVID-19 Snapshot MOnitoring (COSMO Saudi): Monitoring knowledge, risk perceptions, preventive behaviours, and public trust in the current coronavirus outbreak in Saudi Arabia.
2. WHO Regional Office for Europe. (2020). COVID-19 Snapshot MOnitoring (COSMO Standard): Monitoring knowledge, risk perceptions, preventive behaviours, and public trust in the current coronavirus outbreak-WHO standard protocol.
3. Brewer, N. T., Chapman, G. B., Gibbons, F. X., Gerrard, M., McCaul, K. D., & Weinstein, N. D. (2007). Meta-analysis of the relationship between risk perception and health behaviour: the example of vaccination. *Health psychology*, 26(2), 136.
4. Krawczyk, A., Stephenson, E., Perez, S., Lau, E., & Rosberger, Z. (2013). Deconstructing human papillomavirus (HPV) knowledge: objective and perceived knowledge in males' intentions to receive the HPV vaccine. *American Journal of Health Education*, 44(1), 26-31.
5. Bandura, A. (2006). Guide for constructing self-efficacy scales. *Self-efficacy beliefs of adolescents*, 5(1), 307-337.
6. Renner, B., & Schwarzer, R. (2005). The motivation to eat a healthy diet: How intenders and nonintenders differ in terms of risk perception, outcome expectancies, self-efficacy, and nutrition behaviour. *Polish Psychological Bulletin*, 36(1), 7-15.
7. Steel Fisher GK et al (2012). Public response to the 2009 influenza A H1N1 pandemic: a polling study in five countries. *Lancet Infectious Diseases* 2012; 12: 845–50
8. Schweitzer, M. E., Hershey, J. C., & Bradlow, E. T. (2006). Promises and lies: Restoring violated trust. *Organizational behaviour and human decision processes*, 101(1), 1-19.
9. Pearson, S. D., & Raeke, L. H. (2000). Patients' trust in physicians: many theories, few measures, and little data. *Journal of general internal medicine*, 15(7), 509-513.
10. Brewer, N. T., Chapman, G. B., Gibbons, F. X., Gerrard, M., McCaul, K. D., & Weinstein, N. D. (2007). Meta-analysis of the relationship between risk perception and health behaviour: the example of vaccination. *Health psychology*, 26(2), 136.
11. Bradley, M. M., & Lang, P. J. (1994). Measuring emotion: the self-assessment manikin and the semantic differential. *Journal of behaviour therapy and experimental psychiatry*, 25(1), 49-59.
12. Smith, B. W., Dalen, J., Wiggins, K., Tooley, E., Christopher, P., & Bernard, J. (2008). The brief resilience scale: assessing the ability to bounce back. *International journal of behavioural medicine*, 15(3), 194-200.
13. McCarthy-Larzelere, M., Diefenbach, G. J., Williamson, D. A., Netemeyer, R. G., Bentz, B. G., & Manguno-Mire, G. M. (2001). Psychometric properties and factor structure of the Worry Domains Questionnaire. *Assessment*, 8(2), 177-191.