

SUPPLEMENTARY MATERIAL**Adherence to stay-at-home orders: awareness, implementation and difficulties of the officially ordered quarantine measures in the context of the COVID-19 pandemic in Cologne - a retrospective cohort study**

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Table S1: Awareness of isolation/quarantine recommendations. *(yes=1; no=2); CBR=Community based recommendation; HBR= Household based recommendation

Recommendation		Infected persons			Contact persons			p-value	
		N	Mean value *	SD	N	Mean value *	SD		
1	Do not leave your home.	CBR	3773	1.01	0.11	5822	1.02	0.14	.003
2	Do not receive visitors.	CBR	3773	1.01	0.10	5822	1.02	0.12	.009
3	Avoid personal contact with postal and delivery workers and have deliveries left outside the house or flat entrance.	CBR	3773	1.07	0.25	5822	1.12	0.32	<.001
4	Stay apart from other household members in a single room.	HBR	1184	1.06	0.24	1801	1.11	0.32	<.001
5	Sleep separately from other household members in a single room.	HBR	1182	1.12	0.33	1792	1.20	0.40	<.001
6	Have contact with other household members only when you need their help.	HBR	1173	1.19	0.39	1783	1.29	0.45	<.001
7	Keep at least a 1.5m distance when in contact with other household members.	HBR	1154	1.11	0.32	1772	1.16	0.37	<.001
8	Wear a mouth-nose mask when in contact with other household members.	HBR	1152	1.26	0.44	1767	1.37	0.48	<.001
9	Take your meals in a different room from other household members.	HBR	1145	1.20	0.40	1750	1.29	0.46	<.001
10	Use the bathroom, hallway, kitchen and other common areas only when absolutely necessary.	HBR	1144	1.19	0.39	1741	1.28	0.45	<.001
11	Use only one toilet. The rest of the household members should not use this toilet.	HBR	604	1.20	0.40	940	1.32	0.47	<.001
12	The bathroom you use should be cleaned at least once a day.	HBR	1142	1.47	0.50	1742	1.57	0.50	<.001
13	Surfaces you frequently touch (bedside table, door handles, smartphone, work surfaces, etc.) should be cleaned once a day.	HBR	1133	1.38	0.49	1729	1.48	0.50	<.001
14	Air all rooms regularly.	HBR	1130	1.08	0.27	1729	1.10	0.30	.160
15	Sneeze into the crook of your elbow or a disposable handkerchief.	HBR	1124	1.03	0.16	1723	1.02	0.14	.327
16	Wash your hands regularly for at least 20 seconds, especially after blowing your nose or sneezing.	HBR	1117	1.05	0.23	1715	1.05	0.21	.357
17	Collect tissues, gloves and other rubbish in a lidded bin in your room.	HBR	1112	1.56	0.50	1707	1.61	0.49	.018
18	After washing your hands, use paper towels or a towel that only you use, and change it daily.	HBR	1107	1.35	0.48	1685	1.44	0.50	<.001
19	Wash your clothes at a minimum of 60 degrees and separately from the laundry of other household members.	HBR	1107	1.63	0.48	1693	1.69	0.46	<.001

Table S2: Implementation of isolation/quarantine recommendations. *(not implemented at all=1; fully implemented=6); CBR=Community based recommendation; HBR= Household based recommendation

Recommendation		Infected persons			Contact persons			P-value	
		N	Mean value*	SD	N	Mean value*	SD		
1	Do not leave your home.	CBR	3710	5.92	0.37	5656	5.78	0.65	<.001
2	Do not receive visitors.	CBR	3724	5.96	0.26	5703	5.89	0.46	<.001
3	Avoid personal contact with postal and delivery workers and have deliveries left outside the house or flat entrance.	CBR	3497	5.91	0.42	5090	5.86	0.52	<.001
4	Stay apart from other household members in a single room.	HBR	1105	4.85	1.47	1590	4.38	1.62	<.001
5	Sleep separately from other household members in a single room.	HBR	1031	5.49	1.33	1418	5.00	1.82	<.001
6	Have contact with other household members only when you need their help.	HBR	936	5.29	1.33	1261	4.95	1.55	<.001
7	Keep at least a 1.5m distance when in contact with other household members.	HBR	1010	5.15	1.38	1474	4.70	1.62	<.001
8	Wear a mouth-nose mask when in contact with other household members.	HBR	846	5.20	1.47	1104	4.73	1.75	<.001
9	Take your meals in a different room from other household members.	HBR	908	5.12	1.53	1230	4.56	1.86	<.001
10	Use the bathroom, hallway, kitchen and other common areas only when absolutely necessary.	HBR	922	5.06	1.47	1239	4.55	1.77	<.001
11	Use only one toilet. The rest of the household members should not use this toilet.	HBR	482	5.52	1.20	633	5.37	1.37	.057
12	The bathroom you use should be cleaned at least once a day.	HBR	601	5.30	1.22	741	5.18	1.34	.065
13	Surfaces you frequently touch (bedside table, door handles, smartphone, work surfaces, etc.) should be cleaned once a day.	HBR	686	5.13	1.30	902	5.00	1.37	.071
14	Air all rooms regularly.	HBR	1028	5.72	0.65	1556	5.69	0.70	.275
15	Sneeze into the crook of your elbow or a disposable handkerchief.	HBR	1080	5.91	0.40	1681	5.88	0.47	.13
16	Wash your hands regularly for at least 20 seconds, especially after blowing your nose or sneezing.	HBR	1048	5.74	0.65	1630	5.72	0.67	.363
17	Collect tissues, gloves and other rubbish in a lidded bin in your room.	HBR	485	5.64	0.95	667	5.59	1.02	.455
18	After washing your hands, use paper towels or a towel that only you use, and change it daily.	HBR	715	5.66	0.83	942	5.61	0.86	.230
19	Wash your clothes at a minimum of 60 degrees and separately from the laundry of other household members.	HBR	408	5.26	1.39	515	5.11	1.49	.118

Table S3: Difficulty of isolation/quarantine recommendations. *(very difficult=1; not difficult at all=6); CBR=Community based recommendation; HBR=Household based recommendation

Recommendation		Infected persons			Contact persons			P-value	
		N	Mean value *	SD	N	Mean value *	SD		
1	Do not leave your home.	CBR	3722	4.24	1.74	5686	3.60	1.81	<.001
2	Do not receive visitors.	CBR	3729	4.72	1.69	5713	4.23	1.84	<.001
3	Avoid personal contact with postal and delivery workers and have deliveries left outside the house or flat entrance.	CBR	3499	5.64	0.97	5089	5.54	1.13	<.001
4	Stay apart from other household members in a single room.	HBR	1102	2.89	1.89	1583	2.55	1.77	<.001
5	Sleep separately from other household members in a single room.	HBR	1026	4.24	2.09	1409	3.91	2.17	<.001
6	Have contact with other household members only when you need their help.	HBR	938	4.02	2.00	1256	3.70	2.02	<.001
7	Keep at least a 1.5m distance when in contact with other household members.	HBR	1010	3.80	2.04	1467	3.35	1.97	<.001
8	Wear a mouth-nose mask when in contact with other household members.	HBR	843	4.36	1.90	1091	3.91	1.97	<.001
9	Take your meals in a different room from other household members.	HBR	904	3.90	1.99	1224	3.47	2.00	<.001
10	Use the bathroom, hallway, kitchen and other common areas only when absolutely necessary.	HBR	919	3.93	1.96	1233	3.49	1.99	<.001
11	Use only one toilet. The rest of the household members should not use this toilet.	HBR	481	5.31	1.46	627	5.20	1.50	.259
12	The bathroom you use should be cleaned at least once a day.	HBR	596	4.85	1.61	738	4.86	1.59	.905
13	Surfaces you frequently touch (bedside table, door handles, smartphone, work surfaces, etc.) should be cleaned once a day.	HBR	682	4.71	1.63	899	4.64	1.61	.353
14	Air all rooms regularly.	HBR	1030	5.57	0.98	1553	5.54	1.00	.483
15	Sneeze into the crook of your elbow or a disposable handkerchief.	HBR	1079	5.81	0.73	1679	5.80	0.75	.824
16	Wash your hands regularly for at least 20 seconds, especially after blowing your nose or sneezing.	HBR	1047	5.59	0.94	1631	5.64	0.86	.219
17	Collect tissues, gloves and other rubbish in a lidded bin in your room.	HBR	480	5.56	1.01	664	5.54	1.07	.675
18	After washing your hands, use paper towels or a towel that only you use, and change it daily.	HBR	716	5.56	1.00	940	5.54	0.97	.676
19	Wash your clothes at a minimum of 60 degrees and separately from the laundry of other household members.	HBR	401	5.12	1.52	512	4.99	1.55	.177

Table S4: Views on COVID-19 in relation to quarantine. Hypothetical factors influencing the use of preventive health measures according to the Health Belief Model with statements adapted to the COVID-19 pandemic and isolation/quarantine. Sample size, mean value of agreement and standard deviation (SD) are shown separately for index persons and contact persons. P-value is given for the t-test for independent samples. * (1 \triangleq I do not agree at all; 6 \triangleq I fully agree); ** (1 \triangleq yes; 2 \triangleq no)

Influencing factor according to the Health Belief Model	Statement or question adapted to the COVID-19 pandemic and isolation/quarantine	Infected persons			Contact persons			P-Value
		N	Mean value	SD	N	Mean value	SD	
Perceived Severity/ Perceived Susceptibility	I think the coronavirus is dangerous.	3750	5.4*	1.1	5784	5.5*	0.9	<.001
Perceived Benefits	When I isolate/quarantine myself, I am protecting myself.	3685	3.7*	2.1	5730	3.9*	2.0	.008
	When I isolate/ quarantine myself, I am protecting other members of my household.	3712	4.6*	1.8	5725	4.4*	1.9	<.001
	When I isolate/ quarantine myself, I am protecting our society from a further spread of the coronavirus.	3748	5.8*	0.7	5790	5.8*	0.7	<.001
Perceived Barriers	I experienced difficulties in obtaining everyday necessities during isolation/quarantine	3748	2.4*	1.7	5781	2.3*	1.7	.061
	I suffered financial losses due to the isolation/quarantine (yes/no)	3239	1.8**	0.4	4956	1.8**	0.4	.271
Expected Result	I think the isolation/ quarantine measures are too strict.	3724	2.2*	1.7	5757	2.5*	1.7	<.001
	I think the quarantine measures are too lax.	3696	2.4*	1.7	5697	2.4*	1.6	.200
Psychological characteristics/ Peer group pressure	People in my professional and social environment have expected me to implement the quarantine measures.	3706	5.5*	1.2	5732	5.3*	1.3	<.001
Health Knowledge/ Cue to action	I have been given clear information about the reason for the isolation/quarantine.	3742	5.3*	1.3	5786	4.8*	1.7	<.001
	It was explained to me in an understandable way how to behave in isolation/quarantine.	3746	5.1*	1.4	5774	4.7*	1.7	<.001

Table S5: Distribution of the baseline adherence score

Baseline adherence score (points)	Infected persons		Contact persons		Total	
	N	%	N	%	N	%
0	17	0.5	51	0.9	68	0.7
>0-3	3	0.1	10	0.2	13	0.1
>3-6	24	0.6	89	1.5	113	1.2
>6-9	45	1.2	214	3.7	259	2.7
>9-11	295	7.8	688	11.8	983	10.2
>11-14	371	9.8	993	17.1	1364	14.2
15	3018	80.0	3777	64.9	6795	70.8

Table S6: Distribution of the household adherence score

Household adherence score (points)	Infected persons		Contact persons		Total	
	N	%	N	%	N	%
0	25	2.1	42	2.3	67	2.2
>0-5	52	4.3	105	5.8	157	5.2
>5-10	119	9.9	253	13.9	372	12.4
>10-15	191	16.0	373	20.6	564	18.7
>15-20	259	21.6	419	23.1	678	22.5
>20-24	278	23.2	348	19.2	626	20.8
25	273	22.8	274	15.1	547	18.2

Table S7: Factors influencing the baseline and household adherence score. Baseline models of linear backward regression analyses *(disagree=1; agree=2)

Baseline models	Non-Standardised Coefficients		Standardised Coefficients		95% Confidence Interval	
	Regression Coefficient (B)	Std. Error	Beta	Sig.	Lower Limit	Upper Limit
Baseline adherence score						
Infected persons (1) vs. Contact persons (2)	-0.030	0.003	-0.102	<.001	-0.037	-0.024
Age (years)	0.001	0.000	0.055	<.001	<0.001	0.001
Gender (female=1; male=2)	-0.001	0.003	-0.002	.860	-0.007	0.006
Migration background (no= 1; yes=2)	0.012	0.008	0.017	.133	-0.004	0.027
Socioeconomic status (SES) (high=1; middle and low=2)	-0.007	0.004	-0.018	.116	-0.016	0.002
Comorbidity (yes=1; no=2)	0.002	0.004	0.004	.708	-0.007	0.010
Married/ living in a Relationship (no=1; yes=2)	-0.001	0.004	-0.003	.791	-0.009	0.007
Having Children (yes=1; no=2)	-0.010	0.004	-0.033	.023	-0.018	-0.001
Access to balcony or garden (yes=0; no=1)	-0.002	0.005	-0.006	.640	-0.012	0.007
I think the coronavirus is dangerous. *	0.011	0.008	0.017	.175	-0.005	0.027
When I isolate/quarantine myself, I am protecting myself. *	0.004	0.004	0.013	.268	-0.003	0.011
When I isolate/ quarantine myself, I am protecting other members of my household. *	0.012	0.004	0.038	.002	0.005	0.020
When I isolate/ quarantine myself, I am protecting our society from a further spread of the coronavirus.*	0.044	0.013	0.041	.001	0.019	0.070
I experienced difficulties in obtaining everyday necessities during isolation/quarantine *	-0.015	0.004	-0.044	<.001	-0.023	-0.007
I suffered financial losses due to the isolation/quarantine (yes=1; no=2)	-0.005	0.004	-0.012	.294	-0.013	0.004
I think the isolation/ quarantine measures are too strict. *	-0.016	0.004	-0.048	<.001	-0.024	-0.008
I think the isolation/ quarantine measures are too lax. *	-0.012	0.004	-0.037	.002	-0.020	-0.005
People in my professional and social environment have expected me to implement the quarantine measures. *	0.037	0.006	0.070	<.001	0.025	0.049
I have been given clear information about the reason for the isolation/quarantine. *	0.007	0.006	0.017	.244	-0.005	0.018
It was explained to me in an understandable way how to behave in quarantine. *	0.047	0.006	0.125	<.001	0.036	0.058
Household adherence score						
Infected persons (1) vs. Contact persons (2)	-0.052	0.010	-0.102	<.001	-0.072	-0.032
Age (years)	0.002	0.001	0.104	<.001	0.001	0.003
Sex (female=1; male=2)	0.023	0.010	0.046	.023	0.003	0.043
Migration background (no= 1; yes=2)	0.067	0.022	0.060	.003	0.023	0.110

Socioeconomic status (SES) (high=1; middle and low=2)	-0.028	0.012	-0.045	.024	-0.053	-0.004
Comorbidity (yes=1; no=2)	-0.006	0.012	-0.010	.608	-0.030	0.018
Married/ living in a Relationship (no=1; yes=2)	0.064	0.014	0.101	<.001	0.036	0.091
Having Children (yes=1; no=2)	-0.029	0.013	-0.058	.029	-0.054	-0.003
Access to balcony or garden (yes=0; no=1)	-0.015	0.017	-0.017	.391	-0.048	0.019
I think the coronavirus is dangerous. *	0.055	0.023	0.049	.019	0.009	0.101
When I isolate/quarantine myself, I am protecting myself. *	0.008	0.010	0.015	.455	-0.012	0.028
When I isolate/ quarantine myself, I am protecting other members of my household. *	0.142	0.013	0.236	<.001	0.117	0.167
When I isolate/ quarantine myself, I am protecting our society from a further spread of the coronavirus.*	0.069	0.042	0.034	.099	-0.013	0.150
I experienced difficulties in obtaining everyday necessities during isolation/quarantine *	-0.004	0.012	-0.006	.766	-0.028	0.021
I suffered financial losses due to the isolation/quarantine (yes=1; no=2)	-0.025	0.013	-0.040	.049	-0.049	<0.001
I think the isolation/ quarantine measures are too strict. *	-0.015	0.012	-0.026	.201	-0.038	0.008
I think the isolation/ quarantine measures are too lax. *	-0.012	0.011	-0.022	.276	-0.035	0.010
People in my professional and social environment have expected me to implement the quarantine measures. *	0.007	0.019	0.007	.729	-0.031	0.045
I have been given clear information about the reason for the isolation/quarantine. *	0.040	0.017	0.057	.019	0.007	0.074
It was explained to me in an understandable way how to behave in quarantine. *	0.032	0.016	0.048	.047	0.000	0.064