Supplement File Materials

Summary

Supplement 1a. Guidelines for Reporting Survey-Based Research and Observational Studies (STROBE) **1**

Supplement 1b. Checklist for Reporting Results of Internet E-Surveys (CHERRIES) **3**

Supplement 2. Questionnaire **6**

Supplement 3. eMethods **10**

Supplement 4. Additional analyses on the whole cohort **12**

Table S1. Characteristics of overall respondents stratified by all diagnosis of COVID-19 ..... *12*

Table S2. Suspected COVID-19 stratified by NPS test results *15*

Box S1. Trend of performed NPSs and positive NPSs test per months *15*

Figure S1. Prevalence of symptoms stratified by confirmed diagnosis (A) and suspected COVID-19 (B) *16*

Table S3. Work-related risk exposure stratified by all diagnosis of COVID-19 ..... *17*

Table S4. NPS test results stratified by use of Personal Protective Equipment *18*

Supplement 5. Additional analysis on personal-related risk COVID-19 exposure **19**

Figure S1. Multiple Correspondence Analysis (MCA) *19*

Appendix A. Integrated surveillance of COVID-19 national data in Italy **20**

Appendix B. COVID-19 protocols in place in Italy during the period covered by the survey **22**

References **29**

Supplement 1a. Guidelines for Reporting Survey-Based Research and Observational Studies (STROBE)

	Item No	Recommendation	Page
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	1
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	3-4
Introduction			**5-6**
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	5-6
Objectives	3	State specific objectives, including any prespecified hypotheses	6
Methods			**6-10** **Supplement 3**
Study design	4	Present key elements of study design early in the paper	6
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	6-7
Participants	6	(*a*) Give the eligibility criteria, and the sources and methods of selection of participants	7- Supplement 3
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	7-8
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	*7-8-9-10*
Bias	9	Describe any efforts to address potential sources of bias	Supplement 3
Study size	10	Explain how the study size was arrived at	Supplement 3
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	8-9-10
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	8-9-10
		(*b*) Describe any methods used to examine subgroups and interactions	8-9-10, including cluster analysis
		(*c*) Explain how missing data were addressed	Supplement 3
		(*d*) If applicable, describe analytical methods taking account of sampling strategy	NA
		(*e*) Describe any sensitivity analyses	NA
Results			**8-11**

Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	11
		(b) Give reasons for non-participation at each stage	Figure 1
		(c) Consider use of a flow diagram	Figure 1
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	11-Table 1
		(b) Indicate number of participants with missing data for each variable of interest	11-Figure 1
Outcome data	15*	Report numbers of outcome events or summary measures	11-13
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	9-14
		(*b*) Report category boundaries when continuous variables were categorized	NA
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	NA
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	13-15, Supplement 4-5-6
Discussion			**14-20**
Key results	18	Summarise key results with reference to study objectives	14
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	16-17
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	17-18
Generalisability	21	Discuss the generalisability (external validity) of the study results	17-18
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	4; 10

Supplement 1b. Checklist for Reporting Results of Internet E-Surveys (CHERRIES)

Checklist Item	***Explanation***	***Page Number***
Describe survey design	Describe target population, sample frame. Is the sample a convenience sample? (In "open" surveys this is most likely.)	Page 6
IRB approval	Mention whether the study has been approved by an IRB.	Page 10
Informed consent	Describe the informed consent process. Where were the participants told the length of time of the survey, which data were stored and where and for how long, who the investigator was, and the purpose of the study?	Page 7
Data protection	If any personal information was collected or stored, describe what mechanisms were used to protect unauthorized access.	Page 7 + Supplement 3. eMethods
Development and testing	State how the survey was developed, including whether the usability and technical functionality of the electronic questionnaire had been tested before fielding the questionnaire.	Page 8
Open survey versus closed survey	An "open survey" is a survey open for each visitor of a site, while a closed survey is only open to a sample which the investigator knows (password-protected survey).	Page 6
Contact mode	Indicate whether or not the initial contact with the potential participants was made on the Internet. (Investigators may also send out questionnaires by mail and allow for Web-based data entry.)	Page 7 + Supplement 3. eMethods
Advertising the survey	How/where was the survey announced or advertised? Some examples are offline media (newspapers), or online (mailing lists – If yes, which ones?) or banner ads (Where were these banner ads posted and what did they look like?). It is important to know the wording of the announcement as it will heavily influence who chooses to participate. Ideally the survey announcement should be published as an appendix.	Page 7 + Supplement 3. eMethods
Web/E-mail	State the type of e-survey (eg, one posted on a Web site, or one sent out through e-mail). If it is an e-mail survey, were the responses entered manually into a database, or was there an automatic method for capturing responses?	Page 7 + Supplement 3. eMethods
Context	Describe the Web site (for mailing list/newsgroup) in which the survey was posted. What is the Web site about, who is visiting it, what are visitors normally looking for? Discuss to what degree the content of the Web site could pre-select the sample or influence the results. For example, a survey about vaccination on a anti-immunization Web site will have different results from a Web survey conducted on a government Web site	Page 7 + Supplement 3. eMethods

Mandatory/voluntary	Was it a mandatory survey to be filled in by every visitor who wanted to enter the Web site, or was it a voluntary survey?	Page 6
Incentives	Were any incentives offered (eg, monetary, prizes, or non-monetary incentives such as an offer to provide the survey results)?	Page 6
Time/Date	In what timeframe were the data collected?	Page 7
Randomization of items or questionnaires	To prevent biases items can be randomized or alternated.	database randomization: see Supplement 3. eMethods
Adaptive questioning	Use adaptive questioning (certain items, or only conditionally displayed based on responses to other items) to reduce number and complexity of the questions.	see Supplement 2
Number of Items	What was the number of questionnaire items per page? The number of items is an important factor for the completion rate.	Page 8. See Supplement 2 https://osf.io/x7cha
Number of screens (pages)	Over how many pages was the questionnaire distributed? The number of items is an important factor for the completion rate.	see Supplement 2 https://osf.io/x7cha
Completeness check	It is technically possible to do consistency or completeness checks before the questionnaire is submitted. Was this done, and if “yes”, how (usually JAVAScript)? An alternative is to check for completeness after the questionnaire has been submitted (and highlight mandatory items). If this has been done, it should be reported. All items should provide a non-response option such as “not applicable” or “rather not say”, and selection of one response option should be enforced.	see Supplement 3. eMethods
Review step	State whether respondents were able to review and change their answers (eg, through a Back button or a Review step which displays a summary of the responses and asks the respondents if they are correct).	Page 7, see also Supplement 3. eMethods
Unique site visitor	If you provide view rates or participation rates, you need to define how you determined a unique visitor. There are different techniques available, based on IP addresses or cookies or both.	Page 7, see also Supplement 3. eMethods
View rate (Ratio of unique survey visitors/unique site visitors)	Requires counting unique visitors to the first page of the survey, divided by the number of unique site visitors (not page views!). It is not unusual to have view rates of less than 0.1 % if the survey is voluntary.	Page 7, see also Supplement 3. eMethods
Participation rate (Ratio of unique visitors who agreed to participate/unique first survey page visitors)	Count the unique number of people who filled in the first survey page (or agreed to participate, for example by checking a checkbox), divided by visitors who visit the first page of the survey (or the informed consents page, if present). This can also be called “recruitment” rate.	Methods: Page 7, see also Supplement 3. eMethods Results: Page 11 https://osf.io/x7cha
Completion rate (Ratio of users who finished the	The number of people submitting the last questionnaire page, divided by the number of people who agreed to participate (or submitted the first survey page). This is	Methods: Page 7, see also

survey/users who agreed to participate)	only relevant if there is a separate “informed consent” page or if the survey goes over several pages. This is a measure for attrition. Note that “completion” can involve leaving questionnaire items blank. This is not a measure for how completely questionnaires were filled in. (If you need a measure for this, use the word “completeness rate”.)	Supplement 3. eMethods Results: Page 11 https://osf.io/x7cha
Cookies used	Indicate whether cookies were used to assign a unique user identifier to each client computer. If so, mention the page on which the cookie was set and read, and how long the cookie was valid. Were duplicate entries avoided by preventing users access to the survey twice; or were duplicate database entries having the same user ID eliminated before analysis? In the latter case, which entries were kept for analysis (eg, the first entry or the most recent)?	no cookies were used
IP check	Indicate whether the IP address of the client computer was used to identify potential duplicate entries from the same user. If so, mention the period of time for which no two entries from the same IP address were allowed (eg, 24 hours). Were duplicate entries avoided by preventing users with the same IP address access to the survey twice; or were duplicate database entries having the same IP address within a given period of time eliminated before analysis? If the latter, which entries were kept for analysis (eg, the first entry or the most recent)?	Page 7, see also supplement 3. eMethods
Log file analysis	Indicate whether other techniques to analyze the log file for identification of multiple entries were used. If so, please describe.	Page 7, see also supplement 3. eMethods
Registration	In “closed” (non-open) surveys, users need to login first and it is easier to prevent duplicate entries from the same user. Describe how this was done. For example, was the survey never displayed a second time once the user had filled it in, or was the username stored together with the survey results and later eliminated? If the latter, which entries were kept for analysis (eg, the first entry or the most recent)?	Page 7, see also supplement 3. eMethods
Handling of incomplete questionnaires	Were only completed questionnaires analyzed? Were questionnaires which terminated early (where, for example, users did not go through all questionnaire pages) also analyzed?	Figure 1. Page 11.
Questionnaires submitted with an atypical timestamp	Some investigators may measure the time people needed to fill in a questionnaire and exclude questionnaires that were submitted too soon. Specify the timeframe that was used as a cut-off point, and describe how this point was determined.	See supplement 3. eMethods.
Statistical correction	Indicate whether any methods such as weighting of items or propensity scores have been used to adjust for the non-representative sample; if so, please describe the methods.	No weighting of items or propensity scores were used

Supplement 2. Questionnaire

INFORMED CONSENT

1. Do you agree to participate in the study and treatment of your data?

- Yes
- No

SECTION 1. DEMOGRAPHIC CHARACTERISTICS

In the following section you will be asked (MANDATORY) questions aimed at identifying different social and demographic groups

2. What is your gender?

- Female
- Male

3. What is your age?

SECTION 2. PERSONAL RISK OF EXPOSURE

In the following section you will be asked (MANDATORY) questions aimed at identifying personal variables

4. Where do you live? (Please enter your 5-digit zip code)

5. Smoking behaviour
- Current smoker (more than 5 cigarettes/day)
- Current smoker (less than 5 cigarettes/day)
- Former smoker
- Never smoker

6. What is your weight? (i.e., 60 kg)

7. What is your height? (i.e., 170 cm)

8. Have you had your flu vaccination in the past 12 months?
- Yes
- No

9. How much time did you usually spend doing physical activity (before the emergency)?
- $\geq$ 150 min/week
- $\leq$ 150 min/week
- None

10. For which conditions have you been diagnosed, treated, medicated and/or monitored?
- Pulmonary diseases (i.e. asthma, chronic obstructive pulmonary disease)
- Cardiac diseases (i.e. coronary heart disease, atrial fibrillation)
- Hypertension
- Kidney diseases
- Immune system disorders (i.e. allergies, thyroiditis)
- Rheumatic diseases (i.e. rheumatoid arthritis, psoriasis)
- Oncologic conditions
- Metabolic diseases (i.e. diabetes, obesity, gout)
- Depression/anxiety
- Pregnancy
- Other conditions (i.e. surgery)
- None

11. Are you living with someone who might have coronavirus or has COVID-19 symptoms?
- Yes
- No

12. If yes, were/are you able to stay home, separate from the other persons living in the same household and using a separate bathroom? *
- Yes
- No

SECTION 3. WORK-RELATED RISK OF EXPOSURE

In the following section you will be asked (MANDATORY) questions aimed at identifying risk factors in the workplace

13. Where do you work? (Please enter your 5-digit zip code)

14. Currently, in what professional field do you mainly work?
- Orthopedic-Musculoskeletal
- Neurologic
- Oncologic
- Cardio-respiratory
- Urogynecologic
- Geriatric
- Pediatric
- Mixed

15. Select the facility you are working in:
- Private/Public hospital
- Residential Care Home
- Private setting
- Private/public rehabilitation clinics
- Home
- More (i.e. residential care home + private setting)

16. What is your current employment status?

- o On duty at the workplace
- o On duty on tele-work
- o Not on duty (on vacation, leave, parental leave, layoff, sick leave)
- o Not on duty (professional activity suspended by law or suspended due to COVID-19 outbreak)
- o Not on duty (diagnosis of COVID-19)
- o On quarantine (suspected COVID-19)

17. If you are on duty, have you been reallocated to a different unit (for example, from pediatric to respiratory area)? *

- o Yes
- o No

18. Did you change task job (for example, a physical therapist may be asked to support triage activities for COVID-19)? *

- o Yes
- o No

SECTION 4. PREVALENCE (infection, signs and symptoms)

In the following section you will be asked (MANDATORY) questions aimed at identifying the prevalence of SARS-COV-2 infection.

19. Do you have or think you might have COVID-19?

- o Yes
- o No

20. If you suspect or have contracted COVID-19, what signs and symptoms did you show (multiple choices allowed)*:

- □ Fever, with temperature above 37.5*C for at least three consecutive days
- □ Cough
- □ Fatigue, tiredness
- □ Headache
- □ Sore throat and/or sneezing
- □ Loss of smell
- □ Loss of taste
- □ Aches and pains
- □ Conjunctivitis/red eyes
- □ Respiratory issues
- □ Diagnosis of Pneumonia
- □ Difficulty breathing (shortness of breath at rest)
- □ Chest pain
- □ Tachycardia
- □ Diarrhea
- □ Other gastrointestinal problems
- □ No sign or symptoms/good health condition

21. If you presented with any signs or symptoms of COVID-19, in which month they appeared*:

- January
- February
- March
- April

22. If you answered yes to any of the above two questions, when you showed symptoms, at your workplace*:

- you had had contact with suspected/confirmed patients with COVID-19 (wearing Personal Protective Equipments)
- you had had contact with suspected/confirmed patients with COVID-19 (without Personal Protective Equipments)
- you had not had any known or confirmed contact with suspected/confirmed patients with COVID-19

23. Was a nasopharyngeal swab taken to test your exposure to SARS-COV-2?

- Yes, I tested positive
- Yes, I tested negative
- Yes, I do not know the result
- No, I have not been tested.

24. If you answered no, please explain why*:

- I did not present with symptoms requiring swab test to be taken
- The health surveillance services did not recommend it

25. Did you get any serological testing (blood drawn or rapid test) to assess your exposure to SARS-COV-2?

- Yes, I tested positive
- Yes, I tested negative
- Yes, I do not know the result
- No, I have not been tested

26. If you answered no, please explain why*:

- I did not present with symptoms requiring a serological test
- The health surveillance services did not recommend it

27. Have you been hospitalized because of COVID-19?

- Yes
- No

* adaptive questioning

Supplement 3. eMethods

Survey invitation

TSRM-PSTRP Registry (Federazione Nazionale Ordini dei Tecnici Sanitari di Radiologia Medica, delle Professioni Sanitarie Tecniche, della Riabilitazione e della Prevenzione) is the official National body legally recognizing professional PTs allowed to practice in Italy exercising control and surveillance over the members (http://www.tsrm.org/). In fact, without being registered with the national professional registry a physiotherapist cannot practice in Italy.

In our survey the recruitment of PTs was based on the TSRM-PSTRP Registry identifying all potential respondents by the authenticate e-mail address provided at the subscription and used for any official communication (e.g., annual payment).

The Italian Association of Physiotherapy (AIFI) is the official Scientific body of Italian Physical Therapists registered in the TSRM-PSTRP. AIFI is full member of World Confederation for Physical Therapy (WCPT) promoting and developing the scientific knowledge within the Profession (https://www.erwcpt.eu/about_er-wcpt/member_organisation/22-italian-association-of-physiotherapy-associazione-italiana-di-fisioterapia-a-i-fi).

Survey management

The study project and data collection was managed by the National Directive Committee of AIFI. An email newsletter was sent to all PTs belonging to the TSRM-PSTRP Registry to obtain informed consent and data protection. The invitation described the purpose of the study, the anticipated time need to complete the survey (5 minutes) and the content of questions. The survey was linked to a unique respondent that could never display the survey a second time once it had been completed. In order to

prevent that a single user fills in the same questionnaire multiple times, the IP address were used minimizing the chance of multiple responses. The IP address of the client computer was used to identify potential duplicate. Those having the same IP address were eliminated before analysis keeping the last completed entry. In addition, the completeness of all items was enforced with server-side techniques (i.e., after submission displaying the questionnaire and highlighting mandatory but unanswered items or items answered inconsistently). Questionnaires submitted with atypical characteristics (e.g., short timestamp, BMI and age implausible) were checked and/or excluded.

The scientific committee of AIFI piloted the questionnaire, whereas the study project was competence of the National Directive Committee of AIFI that managed the questionnaire through a SurveyMonkey link, collected the informed consent and data. Here, database randomization, and differential privacy access was achieved. In addition, "anonymisation" by generalization of some items was performed. (https://ec.europa.eu/justice/article-29/documentation/opinion-recommendation/files/2014/wp216_en.pdf).

Sample size

The National Order TSRM-PSTRP Italian PT database contains the addresses of 59 000 subscribers.[1] Approximately 35 938 are considered active members, defined by the National Order TSRM-PSTRP Italian PT secretariat as "members who receive emails and exchange and share links". Thus, using a sample size calculator, [2-4] based on the expected total of 59 000 responses to the survey, we calculated that at least 12 981 participants would be needed as the target sample to achieve high statistical precision at 99% confidence intervals with a type I error of 1%, taking into account the expected dropout rate.[3]

Supplement 4. Additional analyses on the whole cohort

Table S1. Characteristics of overall respondents stratified by all diagnosis of COVID-19

DEMOGRAPHIC CHARACTERISTICS											
		Confirmed COVID-19 diagnosis*		**Positive COVID-19 NPS test**		**Positive COVID-19 serological test**		**Suspected COVID-19**		**Not suspected COVID-19**	
		N	(%)	N	(%)	N	(%)	N	(%)	N	(%)
	Overall^	**736**	**100**	**530**	**100**	**279**	**100**	**1620**	**100**	**12084**	**100**
SEX	Men	285	39	208	39	111	40	595	37	4497	37
	Women	451	61	322	61	168	60	1025	63	7587	63
AGE-GROUP (YEARS)	20-29	146	20	98	19	61	22	362	22	2201	18
	30-39	214	29	161	30	76	27	508	31	3574	30
	40-49	167	23	119	23	60	22	363	22	2938	24
	50-59	161	22	111	21	67	24	325	20	2667	22
	60-69	18	2	12	2	11	4	34	2	687	6
	> 70	30	4	29	5	4	1	28	2	17	0
SMOKING STATUS	> 5 cigarettes/day	106	14	89	17	30	11	166	10	1089	9
	< 5 cigarettes/day	43	6	28	5	21	8	103	6	1028	9
	Ex	135	18	96	18	50	18	309	19	2350	19
	Never	452	61	317	60	178	64	1042	64	7617	63
	No reply										
BMI, KG/M2	< 18,5	22	3	16	3	7	3	53	3	374	3
	18,5 – 24,9	470	64	324	61	184	66	1118	69	8349	69

	25 – 29,9	148	20	102	19	61	22	314	19	2755	23
	30 – 39,9	36	5	32	6	9	3	79	5	549	5
	> 40	6	1	6	1	3	1	9	1	17	0
	Unavailable	54	7	50	9	15	5	47	3	39	0
PHYSICAL ACTIVITY (MINUTES/WEEK)	≥ 150	361	49	258	49	139	50	744	46	5283	44
	< 150	257	35	185	35	95	34	612	38	4449	37
	0	118	16	87	16	45	16	264	16	2352	19
	No reply							1620			
FLU VACCINATION (LAST 12 MONTHS)	Yes	165	22	129	24	59	21	296	18	1635	14
	No	571	78	401	76	220	79	1324	82	10449	86
	No reply										
HEALTH STATUS[§]	Pulmonary diseases	96	13	83	16	27	10	135	8	465	4
	Cardiac diseases	69	9	62	12	17	6	77	5	141	1
	Hypertension	104	14	96	18	21	8	153	9	821	7
	Kidney diseases	67	9	63	12	14	5	66	4	53	0
	Immune system disorders	144	20	116	22	43	15	263	16	1485	12
	Rheumatic diseases	75	10	65	12	21	8	88	5	248	2
	Oncology diseases	74	10	68	13	16	6	88	5	192	2
	Metabolic diseases	74	10	68	13	16	6	90	6	247	2
	Depression/anxiety	82	11	76	14	19	7	122	8	280	2
	Pregnancy	71	10	65	12	20	7	79	5	185	2
	Other (surgery…)	96	13	83	16	26	9	140	9	658	5
	Nothing	484	66	334	63	197	71	1083	67	8416	70
OCCUPATIONAL CHARACTERISTICS											
		N	(%)	N	(%)	N	(%)	N	(%)	N	(%)
	Overall	736	100	530	100	279	100	1620	100	12084	100

PROFESSSIONAL FIELD											
	Cardio-respiratory	34	5	21	4	18	6	68	4	295	2
	Geriatric	167	23	127	24	55	20	330	20	1318	11
	Neurologic	61	8	50	9	16	6	129	8	1181	10
	Oncologic	4	1	3	1	1	0	12	1	70	1
	Orthopedic-Musculoskeletal	112	15	70	13	52	19	407	25	4549	38
	Pediatric	22	3	10	2	19	7	23	1	365	3
	Urogynecologic	3	0	2	0	2	1	4	0	44	0
	Mixed	333	45	247	47	116	42	647	40	4262	35
WORKING FACILITIES											
	Residential care home	164	22	131	25	54	19	325	20	1263	10
	Private/public rehabilitation clinics	129	18	90	17	46	16	299	18	2736	23
	More than one (e,g,, residential care home + private setting)	144	20	116	22	42	15	278	17	1351	11
	Private/public hospital	249	34	171	32	104	37	458	28	2464	20
	Private setting	31	4	13	2	20	7	197	12	2943	24
	Home	19	3	9	2	13	5	63	4	1327	11
CURRENT EMPLOYMENT STATUS											
	On duty at the workplace	378	51	216	41	199	71	925	57	8258	68
	On duty (tele-work)	11	1	7	1	6	2	31	2	428	4
	Not on duty (on vacation, leave, parental leave, layoff, sick leave)	59	8	43	8	21	8	191	12	1500	12
	Not on duty (professional activity suspended by law or suspended due to COVID-19 outbreak)	19	3	10	2	12	4	126	8	1859	15
	Not on duty (diagnosis of COVID-19)	252	34	247	47	28	10	266	16	14	0
	Quarantined (suspected COVID-19)	17	2	7	1	13	5	81	5	25	0

Legend:

^ Totals in rows do not equal overall total, as some participants had multiple foci in more than 1 category (e.g., suspected and positive NPS test). Diagnosis refers to questions 19, 23, 25, Section 4 - Supplement 2.

*Confirmed COVID-19 diagnosis (NPS or serological test): we considered at least one diagnosis of NPS (n=530) or serological (n=279) test. We avoided double counting of participants with both diagnosis (n=73).

§more than one answer was possible.

Table S2. Suspected COVID-19 stratified by NPS test results

		Positive NPS	Negative NPS	Unkown result	Not performed	Missing data	Overall
Suspecting or having COVID-19							
	Yes	514	362	52	671	21	1620 (11.1%)
	No	16	2879	232	8945	12	12084 (82.7%)
	Missing	0	0	0	0	903	903 (6.2%)
	Overall	530	3241	284	9616	936	14607 (100%)

We found that among 14607 respondents, 1620 (11.1%) believed to having COVID-19. Among those, 928 had the opportunity to undergo NPS test (57.3%) and 671 did not performed the test (41.4%). Considering NPS results, 514 reported a positive NPS (31.7%) and 362 a negative NPS (22.4%).

Box S1. Trend of performed NPSs and positive NPSs test per months

		January	February	March	April
		0	0	0	0
Did you have a swab for SARS-COV-2?	none	89	170	356	56
	yes, with negative result	28	64	232	38
	yes with positive result	6	23	348	137
	yes, result unknow yet	0	10	23	19
total		123	267	959	250

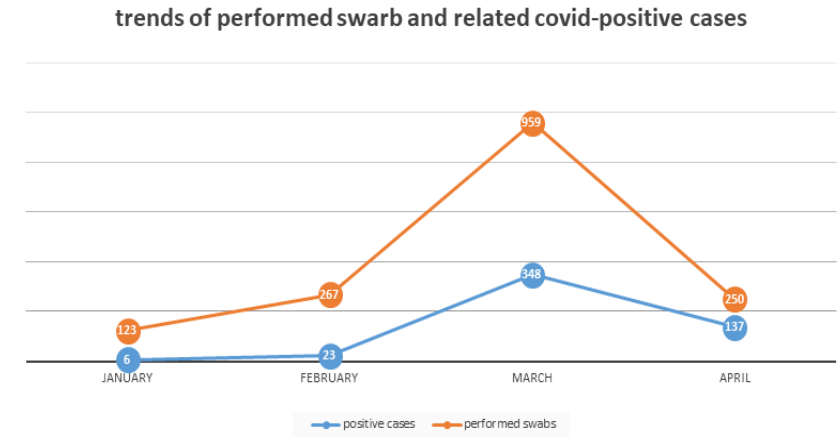


Figure S1. Prevalence of symptoms stratified by confirmed diagnosis (A) and suspected COVID-19 (B)

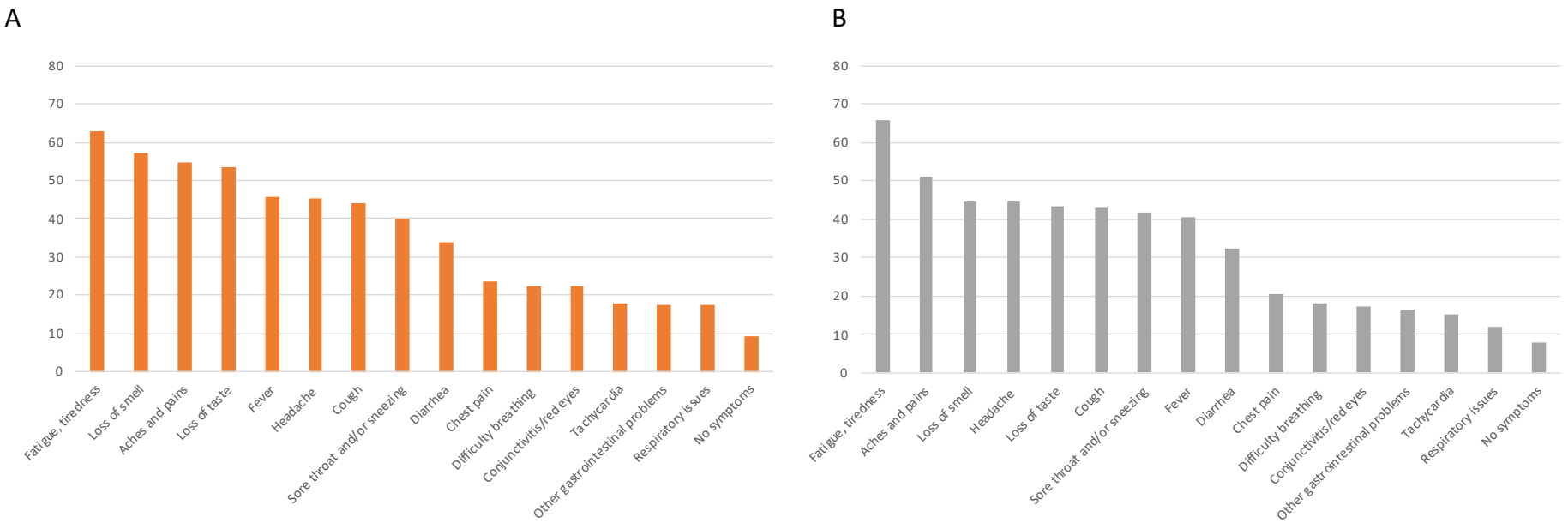


Table S3. Work-related risk exposure stratified by all diagnosis of COVID-19

	CONFIRMED DIAGNOSIS COVID-19 (NPS OR SEROLOGICAL TEST)			POSITIVE NPS			POSITIVE SEROLOGICAL TEST			SUSPECTED COVID-19		
	N tot	**OR**	**CI**	**N tot**	**OR**	**CI**	**N tot**	**OR**	**CI**	**N tot**	**OR**	**CI**
WORKING IN HEALTH CARE INSTITUTIONS*												
Total	13671	7.2	5.4-9.7	13671	12.0	7.8-18.4	13619	3.7	2.6-5.4	13704	2.9	2.5-3.3
REALLOCATION TO DIFFERENT UNIT**												
Total	6424	1.7	1.3-2.2	6426	1.9	1.3-2.7	6406	1.6	1.1-2.4	6436	2.0	1.7-2.5
CHANGING JOB TASKS***												
Total	6430	1.6	1.2-2.2	6430	1.6	1.1-2.3	6412	1.6	1.1-2.3	6442	2.2	1.8-2.7

*OR calculated as the ratio between the odds in the presence of characteristic variable against the odds of another category used to the reference group (i.e., WORKING IN HEALTH CARE INSTITUTION. The OR is the ratio between the odds of working in health care institution against the odds of working in private practice). For WORKING IN HEALTH CARE INSTITUTIONS, we included all answers except working in private practice (working at home and private setting). See item 15, Section 3-Supplement 2.

**OR calculated as the ratio between the odds in the presence of characteristic variable against the odds in the absence of the variable (i.e., REALLOCATION TO DIFFERENT UNIT. The OR is the ratio between the odds of reallocation to different unit against the odds of no reallocation to different unit). See item 17, Section 3-Supplement 2.

*** OR calculated as the ratio between the odds in the presence of characteristic variable against the odds in the absence of the variable (i.e., CHANGING JOB TASKS. The OR is the ratio between the odds of changing JOB tasks against the odds of no changing JOB tasks). See item 18, Section 3-Supplement 2.

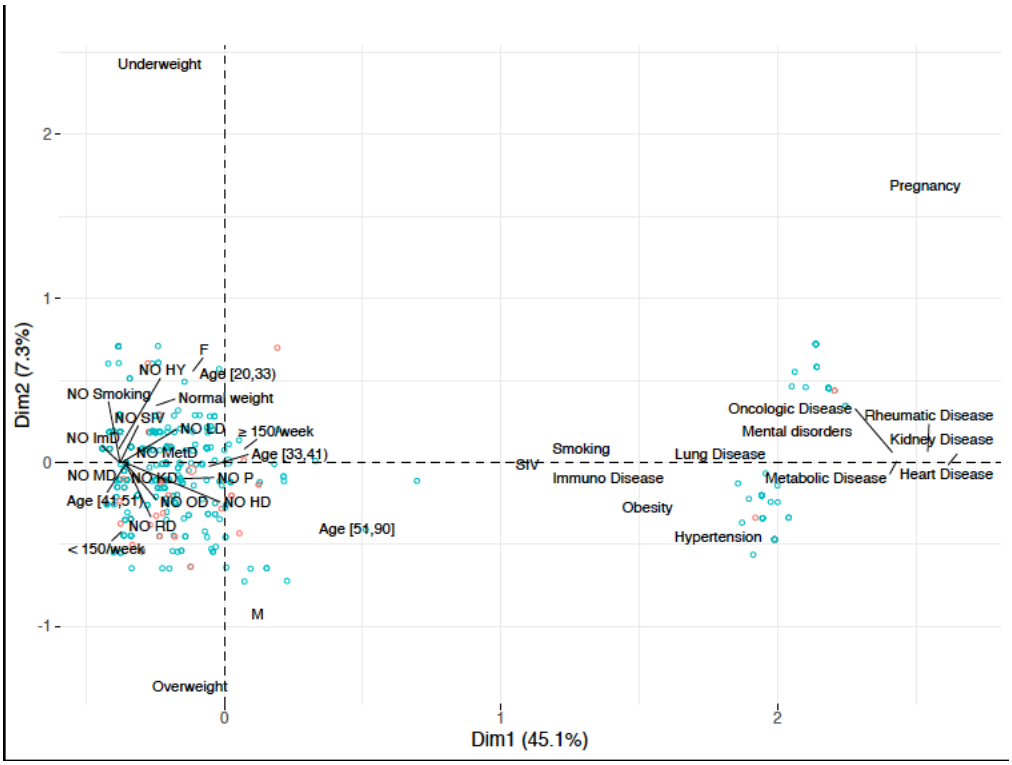
Table S4. NPS test results stratified by use of Personal Protective Equipment

	Positive NPS	%	Negative NPS	%	Unknown result	%	Not performed	%
PPE USE								
Overall (1599)	*514*	*100*	*362*	*100,0*	*52*	*100,0*	*671*	*100,0*
Contact with suspected/confirmed patients (with PPE)	216	42,0	94	26,0	15	28,8	101	15,1
Contact with suspected/confirmed patients (without PPE)	192	37,4	123	34,0	14	26,9	162	24,1
No contacts known	106	20,6	145	40,1	23	44,2	408	60,8

Among the PTs with a positive NPS test for COVID-19, 42% had had contact with patients with suspected/confirmed cases of COVID-19 while wearing personal protective equipment (PPE), 37.4% had had contact with such patients without wearing PPE and 20.6% reported no contact with such patients. Of the PTs with confirmed COVID-19, 32% worked in private/public hospitals, 24.7% worked in residential care homes, 21.9% worked in more than one location, 17% worked in private/public clinics, and 4.2% worked in private practice.

Supplement 5. Additional analysis on personal-related risk COVID-19 exposure

Figure S1. Multiple Correspondence Analysis (MCA)



Legend:

Biplot containing individuals (dots) and variables categories in two MCA dimensions. Red dots denote individuals without symptoms whereas blue dots symptomatic PTs. MCA referred to sex (F for females; M for males), smoking habit (smoking; NO smoking for never or former smokers), seasonal influenza vaccination (seasonal influenza vaccination, SIV; NO SIV), diagnosis of any lung disease (Lung Disease, LD; NO LD), diagnosis of any heart disease (Heart Disease, HD; NO HD), diagnosis of hypertension (hypertension, HY; NO HY), diagnosis of any kidney disease (kidney disease, KD; NO KD), diagnosis of any immune disease (immune disease, ImD; NO ImD), diagnosis of any rheumatic disease (rheumatic disease, RD; NO RD), diagnosis of any oncologic disease (oncologic disease, OD; NO OD), diagnosis of any metabolic disease (metabolic disease, MetD; NO MetD), diagnosis of any mental disorders (mental disorders, MD; NO MD), pregnancy (pregnancy, P; NO P).

Age is reported as quartiles ([20,33), [33,41), [41,51), [51,90], where "(" or ")" and "[" or "]" denotes open and closed intervals. BMI defines underweight when < 18.5 kg/m2, normal weight when it is comprised between 18.5 and 24.9 kg/m2, overweight when it is comprised between 25 and 29.9 kg/m2, and obesity when >30 kg/m2.

The Dim1 axis is the first dimension along which the samples show the largest variation, whereas Dim2 is the second most important dimension and it is orthogonal to the Dim1, which explain the 45% of variation in the data. Comorbidities have an important contribution to the positive pole of the first dimension, whereas sex and nutritional status contribute the most to the second dimension.

Variables with a similar profile are grouped together, whereas negatively correlated variable categories are positioned on opposite sides of the plot origin.

Appendix A. Integrated surveillance of COVID-19 national data in Italy

Data about Integrated COVID-19 surveillance data in Italy up to 26 May 2020 (published on 28 May 2020)[5]

• 228 125 cases among Italian population (Figure S1)

• 27.475 cases were diagnosed among HCWs (median age 48 years, 29.9% male) equal to 11.9% of the total cases reported. Figure 2 reports the percentage of HCWs among the positive cases reported in total in Italy by diagnosis period. The curve shows a downward trend in the last observation periods (Figure S2).

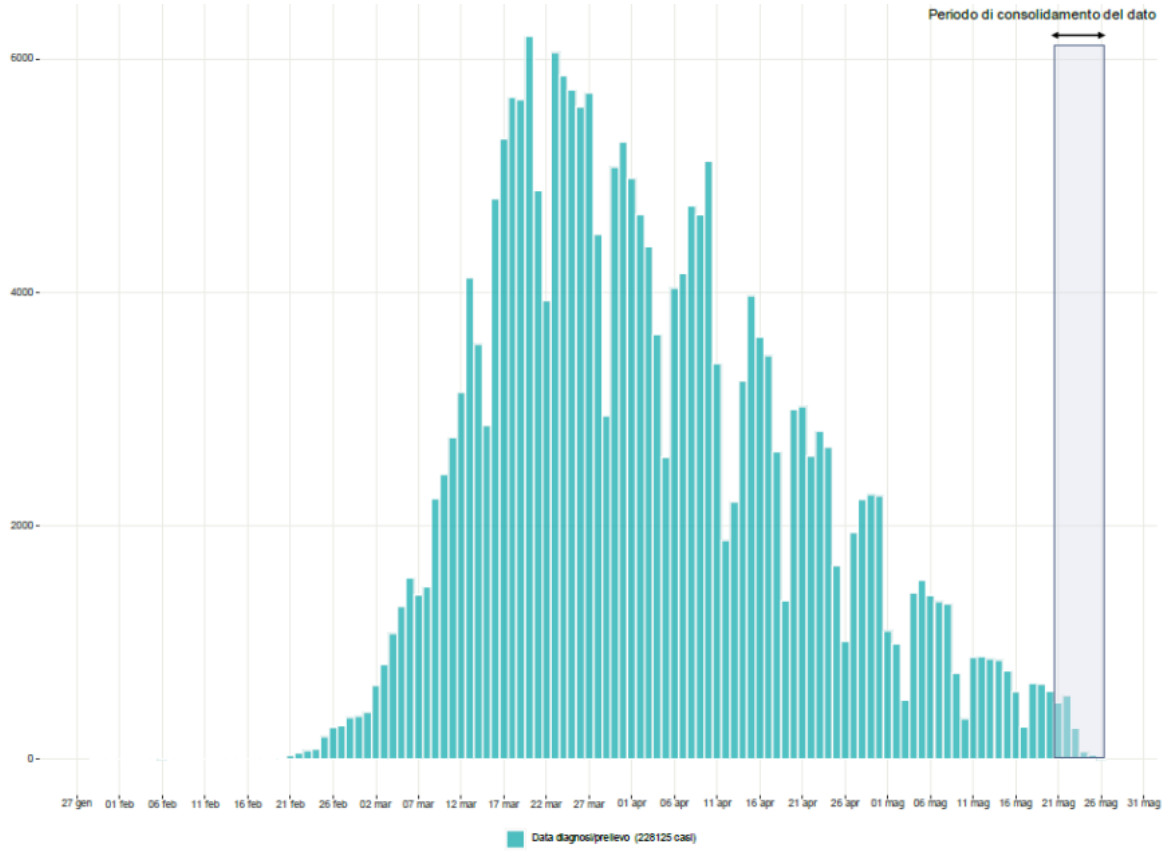


Figure S1. Covid-19 cases with confirmed diagnosis (n=228 125)

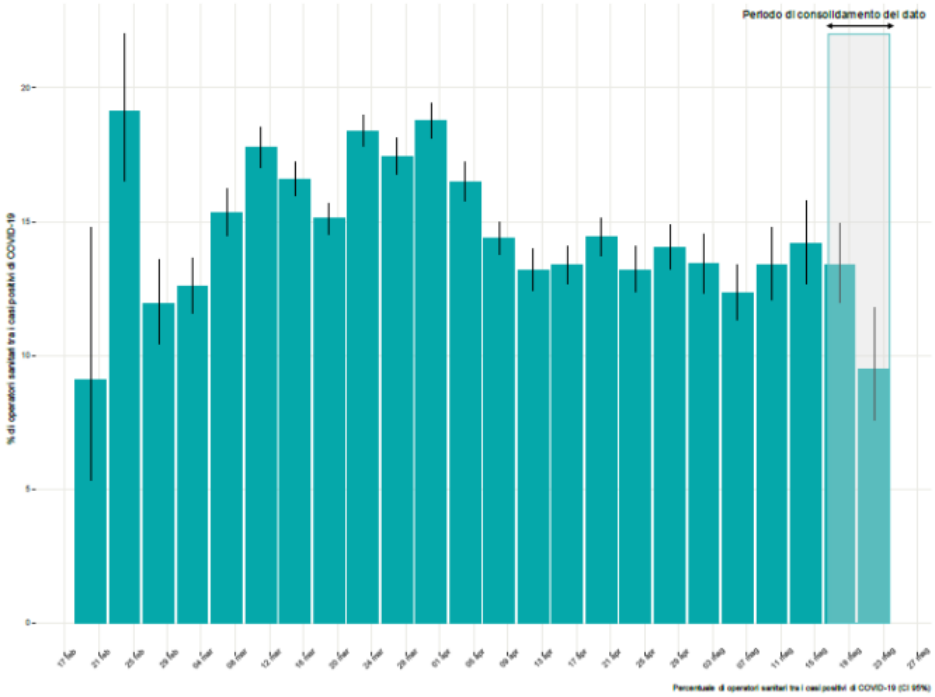


Figure S2. HCWs Covid-19 cases with confirmed diagnosis (n=29 397)

Note: each bar refers to the interval of time between the date shown below the bar and the next one (example: 19 feb refers to the period from 19-22 feb, 23 feb refers to the period from 23-26 feb)

Appendix B. COVID-19 protocols in place in Italy during the period covered by the survey

Table S1. Operating instructions in place in Italy during the period covered by the survey [6]

Item	Subcategory	Definition	References
A. Symptomatic healthcare worker	Case definition	Confirmed case: A case with laboratory confirmation for SARS-CoV-2 infection, performed at the national reference laboratory of the Istituto Superiore di Sanità (ISS) or regional laboratories	Circolare del Ministero della salute 9 marzo 2020. Aggiornamento della definizione di caso Ministero della Salute, https://www.trovanorme.salute.gov.it/norme/renderNormsanPdf?anno=2020&codLeg=73669&parte=1%20&serie=null
B. Surveillance of HCWs	Symptoms	1. In case of no symptoms of respiratory tract infection and / or fever (≥ 37.5 ° C) - Measure body temperature daily and for 14 days on entry and during the work shift; - Continue to work with the use of a surgical mask, complying with the hygiene rules and using the appropriate PPE, if necessary according to the provisions for normal health care activities. b. In case of symptoms of respiratory tract infection and / or fever (≥ 37.5 ° C) - Execution of NPS. - Temporarily absence from work.	Circolare del Ministero della salute 9 marzo 2020. Aggiornamento della definizione di caso Ministero della Salute, https://www.trovanorme.salute.gov.it/norme/renderNormsanPdf?anno=2020&codLeg=73669&parte=1%20&serie=null WHO-COVID-19-lab testing-2020.1-eng.pdf http://www.quotidianosanita.it/allegati/allegato9730025.pdf, 28 February 2020
	Quarantine	The rules to follow for home isolation are as follows: - stay at home, avoiding moving outside; - communicate the home isolation status to the regional and provincial by phone number with evaluation of each individual situation; - it is possible to stay in the same house but separately from one's own family; - have at least one room and a bathroom available for exclusive use; - it is allowed to use a shared bathroom only if after each use it is sanitized with	Covid-19, come funziona l'isolamento domiciliare (salute.gov.it) http://www.salute.gov.it/portale/nuovocoronavirus/dettaglioNotizieNuovoCoronavirus.jsp?lingua=italiano&menu=notizie&p=dalministero&id=4159

		0.1% sodium hypochlorite (eg Bleach, Amuchina); - limit the passage in the residential areas (kitchen, living room, etc.) to the bare essentials, however, gloves and a surgical mask must be used; - measure your body temperature daily twice a day preferably at the same time and keep a record.	
	End of quarantine, clinical recovery and readmission to work	14 days after the absence of fever and flu-like symptoms and two consecutive molecular tests for SARS-CoV-2, with negative results are indicative of viral "clearance" from the body	http://www.quotidianosanita.it/allegati/allegato9730025.pdf, 28 February 2020 https://www.trovanorme.salute.gov.it/norme/renderNormsanPdf?anno=2020&codLeg=73669&parte=1%20&serie=null
C. Other requirements	Use of PPE	With COVID-19 contact use surgical face mask, or N95 in setting with high-risk aerosol procedures. Tabella 1 Rapporto ISS	Rapporto ISS COVID-19 n. 2/2020 - aggiornato al 28 marzo 2020

Details of original report:

A. Symptomatic healthcare worker - Case definition

Circolare del Ministero della salute 9 marzo 2020. *Aggiornamento della definizione di caso*

La Circolare 9 Marzo 2020 fornisce la nuova definizione di caso, considerando l'evoluzione della situazione epidemiologica, le nuove evidenze scientifiche e le indicazioni degli organismi internazionali OMS e ECDC. Vista l'evoluzione epidemiologica dell'infezione da SARS-CoV-2, vengono inoltre fornite indicazioni per modulare le modalità di conferma di laboratorio dei casi di COVID-19 diagnosticati dai Laboratori di Riferimento Nazionale. In merito alla certificazione di decesso a causa di COVID-19, si precisa che dovrà essere accompagnata da parere dell'Istituto Superiore di Sanità.

Caso sospetto di COVID 19 che richiede esecuzione di test diagnostico

Definizione di caso di COVID-19 per la segnalazione. La definizione di caso si basa sulle informazioni attualmente disponibili e può essere rivista in base all'evoluzione della situazione epidemiologica e

delle conoscenze scientifiche disponibili. Caso sospetto di COVID 19 che richiede esecuzione di test diagnostico

1. Una persona con infezione respiratoria acuta (insorgenza improvvisa di almeno uno tra i seguenti segni e sintomi: febbre, tosse e difficoltà respiratoria) e senza un'altra eziologia che spieghi pienamente la presentazione clinica e storia di viaggi o residenza in un Paese/area in cui è segnalata trasmissione locale * durante i 14 giorni precedenti l'insorgenza dei sintomi; oppure

2. Una persona con una qualsiasi infezione respiratoria acuta e che è stata a stretto contatto con un caso probabile o confermato di COVID-19 nei 14 giorni precedenti l'insorgenza dei sintomi; oppure

3. Una persona con infezione respiratoria acuta grave (febbre e almeno un segno/sintomo di malattia respiratoria – es. tosse, difficoltà respiratoria) e che richieda il ricovero ospedaliero (SARI) e senza un'altra eziologia che spieghi pienamente la presentazione clinica. Nell'ambito dell'assistenza primaria o nel pronto soccorso ospedaliero, tutti i pazienti con sintomatologia di infezione respiratoria acuta devono essere considerati casi sospetti se in quell'area o nel Paese è stata segnalata trasmissione locale.

*Secondo la classificazione dell'OMS, consultare i rapporti quotidiani sulla situazione relativa al COVID19 disponibili al seguente link: https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports/

Per l'Italia, ove si renda necessaria una valutazione caso per caso, si può tener conto della situazione epidemiologica nazionale aggiornata quotidianamente sul sito del Ministero della Salute (http://www.salute.gov.it/portale/home.html) e, per l'esecuzione del test, tenere conto anche dell'applicazione del "Documento relativo ai criteri per sottoporre soggetti clinicamente asintomatici alla ricerca d'infezione da SARS-CoV-2 attraverso tampone rino-faringeo e test diagnostico" elaborato dal Gruppo di lavoro permanente del Consiglio Superiore di Sanità (sessione LII)

B. Operating Instructions for the Surveillance of HCWs COVID-19

Le presenti istruzioni operative recepiscono le indicazioni regionali. Di seguito le diverse casistiche e i percorsi da seguire:

1- Operatore a stretto contatto con paziente o altra persona COVID-19 sospetta o confermata avvenuto durante attività assistenziale o in ambiente extra lavorativo:

a. <u>In caso di assenza di sintomatologia da infezione delle vie respiratorie e/o febbre (≥ 37.5°C)</u>

→ Misura giornalmente e per 14 giorni in ingresso e durante il turno di lavoro la temperatura corporea;

→ Continua a svolgere l'attività lavorativa con utilizzo di mascherina chirurgica, attenendosi alle norme igieniche previste e utilizzando gli idonei DPI, qualora necessari in funzione di quanto previsto per le normali attività assistenziali.

b. <u>In caso di comparsa di sintomatologia da infezione delle vie respiratorie e/o febbre (≥ 37,5°C)</u>

→ programmare l'esecuzione del tampone.

→ Astenersi temporaneamente dall'attività lavorativa.

2- Esito del tampone nasofaringeo

a. <u>Esito negativo</u>

→ L'operatore contatta il suo MMG per le cure del caso e il certificato di malattia e viene riammesso al lavoro alla risoluzione dei sintomi.

b. <u>Esito positivo</u>

→ Viene attivato da parte della Medicina del Lavoro l'isolamento domiciliare obbligatorio dell'operatore.

→ L'operatore contatta il MMG e l'ATS di competenza per la sorveglianza sanitaria.

→ Durante il periodo di assenza dal lavoro l'operatore sarà in infortunio sul lavoro.

3- Quarantena

Le regole da seguire per l'isolamento domiciliare sono le seguenti:

- rimanere al domicilio, evitando gli spostamenti all'esterno;
- segnalare ai numeri regionali e provinciali lo stato di isolamento domiciliare e per la valutazione di ogni singola situazione;
- è possibile soggiornare nella stessa abitazione ma separatamente dal proprio nucleo familiare;
- avere a disposizione ad uso esclusivo almeno una stanza ed un bagno;

- è ammesso utilizzare un bagno condiviso solo se dopo ogni utilizzo lo stesso viene sottoposto a sanificazione con ipoclorito di sodio allo 0.1% (es. Candeggina, Amuchina);
- limitare allo stretto indispensabile il passaggio nei locali comuni abitativi (cucina, soggiorno, ecc.,),

  che comunque dovrà avvenire indossando guanti e mascherina chirurgica;
- misurare quotidianamente la temperatura corporea due volte al giorno preferibilmente allo stesso orario e tenere un registro.

4- Fine della quarantena, guarigione clinica e riammissione al lavoro

→ Trascorsi 14 giorni dall'assenza di febbre e sintomatologia simil-influenzale

→ Viene presa in carico la richiesta e trasmessa alla Medicina del lavoro, che contatta telefonicamente l'operatore per fissare la data di esecuzione del tampone.

→ Per dichiarare la guarigione da COVID-19 è necessario risultare negativi a due tamponi eseguiti a distanza di 24 h

→ In caso di esito positivo e assenza di sintomi, il tampone viene eseguito di nuovo a distanza di una settimana, fino alla negativizzazione.

→ La medicina del lavoro contatta l'operatore comunicando l'esito del tampone e la procedura da seguire per la riammissione al lavoro.

→ Gli operatori, in caso di necessità di prolungare il periodo di astensione dal lavoro, per perdurare dei sintomi o per tamponi ancora positivi, si devono rivolgere al proprio medico curante. Infatti è in capo al MMG sia il prolungamento dell'infortunio che la sua chiusura, che deve essere sempre eseguita al rientro in servizio dopo l'esito negativo di 2 tamponi.

C. Other requirement- Use of PPE

Rapporto ISS COVID-19 n. 2/2020 - aggiornato al 28 marzo 2020

Indicazioni ad interim per un utilizzo razionale delle protezioni per infezione da SARS-COV-2 nelle attività sanitarie e sociosanitarie (assistenza a soggetti affetti da Covid-19) nell'attuale scenario emergenziale SARS-COV-2

Gruppo di Lavoro ISS Prevenzione e Controllo delle Infezioni

http://www.salute.gov.it/portale/nuovocoronavirus/dettaglioContenutiNuovoCoronavirus.jsp?lingua=italiano&id=5373&area=nuovoCoronavirus&menu=vuoto#1

Tabella 1. DPI e dispositivi medici raccomandati per la prevenzione del contagio da SARS-CoV-2 per contesto lavorativo e destinatari dell'indicazione.

Contesto di lavoro	Destinatari dell'indicazione (operatori/pazienti)	Attività	Tipologia di DPI o misure di protezione
Aree di degenza			
Stanza di pazienti COVID-19[5]	Operatori sanitari (Si raccomanda riduzione al minimo del numero di operatori esposti; formazione e addestramento specifici)	Assistenza diretta a pazienti COVID 19	Mascherina chirurgica o FFP2 in specifici contesti assistenziali[6] Camice monouso /grembiule monouso Guanti Occhiali di protezione/occhiale a mascherina/visiera
		Procedure o setting a rischio di generazione di aerosol[7]	FFP3 o FFP2 Camice /grembiule monouso Guanti Occhiali di protezione/occhiale a mascherina/visiera
		Esecuzione tampone oro e rinofaringeo (stessi DPI anche per tamponi effettuati in comunità)	FFP2 o mascherina chirurgica se non disponibile Camice /grembiule monouso Occhiali di protezione (occhiale a mascherina/visiera) Guanti
	Addetti alle pulizie (Si raccomanda riduzione al minimo del numero di addetti esposti; formazione e addestramento specifici)	Accesso in stanze dei pazienti COVID-19	Mascherina chirurgica Camice /grembiule monouso Guanti spessi Occhiali di protezione (se presente rischio di schizzi di materiale organico o sostanze chimiche) Stivali o scarpe da lavoro chiuse

[5] in UTI l'operatore che passa da un paziente ad un altro effettuando procedure differenziate dovrebbe indossare sempre FFP2/FFP3, per un minor consumo di dispositivi o FFP3 o Powered Air Purifyng Respirator (PAPR) o sistemi equivalenti

[6] In contesti assistenziali ove vengono concentrati numerosi pazienti COVID-19, se sottoposti a CPAP/NIV, è necessario il ricorso a FFP2. Anche laddove non sia praticata CPAP/NIV è comunque preferibile, ove disponibili, il ricorso a filtranti facciali in base a una appropriata valutazione del rischio che tenga conto anche del significativo incremento del tempo di esposizione, effettuata a livello della struttura dal datore di lavoro con la collaborazione del responsabile del servizio di prevenzione e protezione e del medico competente

[7] Ad esempio rianimazione cardiopolmonare, intubazione, estubazione, broncoscopia, induzione di espettorato, terapie in grado di generare nebulizzazione, NIV, BiPAP, CPAP, tampone nasofaringeo.

	Visitatori (necessario limitare l'accesso)[8]	Accesso in stanze dei pazienti COVID-19, qualora eccezionalmente permesso	Mascherina chirurgica Camice monouso Guanti
Altre aree di transito e trasporto interno dei pazienti (ad esempio reparti, corridoi)	Tutti gli operatori inclusi gli operatori sanitari	Nessuna attività che comporti contatto con pazienti COVID-19	Non sono necessari DPI[9] Indossare mascherina chirurgica e guanti monouso solo in caso di trasporti prolungati (tempo superiore a 15 minuti)
Aree di degenza senza pazienti COVID accertati o sospetti, incluse unità di lungodegenza, Day Hospital, Day Services	Operatori sanitari	Contatto diretto con pazienti non sospetti COVID-19	DPI previsti per l'ordinario svolgimento della propria attività
Triage (in ambito ospedaliero per accettazione utenti)	Operatori sanitari (Si raccomanda riduzione al minimo del numero di esposti; formazione e addestramento specifici)	Screening preliminare che non comporta il contatto diretto	Vetrata Interfono citofono. In alternativa mantenere una distanza dal paziente di almeno 1 metro se possibile o indossare Mascherina chirurgica
		Screening con contatto diretto paziente COVID 19 positivo o sospetto	Mascherina chirurgica Camice monouso /grembiule monouso Guanti monouso occhiali /visiera protettivi

[8] I visitatori al momento della redazione di questo documento non sono consentiti in base alla circolare del Ministero della Salute del 24/2/2020. Se i visitatori devono entrare nella stanza di un paziente con COVID-19, devono ricevere istruzioni chiare su come indossare e rimuovere i DPI e sull'igiene delle mani da effettuare prima di indossare e dopo aver rimosso i DPI; questo dovrebbe essere supervisionato da un operatore sanitario

[9] In alcuni ambiti assistenziali sanitari, si valuti la possibilità di uso della mascherina chirurgica come presidio utilizzare all'interno dell'ospedale tout court per tutti i sanitari al fine di ridurre la trasmissione da eventuali operatori sanitari infetti

References

1. TSRM-PSTRP F. FNO TSRM-PSTRP - Ricerca Iscritti. https://webiscritti.tsrmweb.it/Public/RicercaIscritti.aspx. Published 2020. Accessed March 27 2020.
2. Ngonghala C. Mathematical assessment of the impact of non-pharmaceutical interventions on curtailing the 2019 novel Coronavirus. medRxiv preprint doi: https://doi.org/10.1101/2020.04.15.20066480. Now published in Mathematical Biosciences doi: 10.1016/j.mbs.2020.108364. 2020.
3. Brugliera L, Spina A, Castellazzi P, et al. Rehabilitation of COVID-19 patients. *Journal of rehabilitation medicine.* 2020;52(4):jrm00046.
4. SurveyMonkey. Sample Size Calculator. (https://www.surveymonkey.com/mp/sample-size-calculator. Accessed accessed on May 4 2020, https://www.surveymonkey.com/mp/sample-size-calculator/.
5. Epicentro "Portale di Epidemiologia per gli operatori sanitari" https://www.epicentro.iss.it/coronavirus/bollettino/Bollettino-sorveglianza-integrata-COVID-19_26-maggio-2020.pdf Accessed on December 2020
6. Covid-19 - Operatori sanitari http://www.salute.gov.it/portale/nuovocoronavirus/dettaglioContenutiNuovoCoronavirus.jsp?lingua=italiano&id=5373&area=nuovoCoronavirus&menu=vuoto#1, accessed on December 2020.