

# Improving professional confidence about the proper use of N95 masks at the beginning of the COVID-19 pandemic: a QI approach

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## BACKGROUND

- At the beginning of the COVID-19 pandemic, healthcare professionals (HCP) faced many clinical uncertainties that generated anxiety and concerns.<sup>1-7</sup> The rapid evolution of knowledge about this disease and how to adequately protect oneself contributed to this climate of uncertainty.<sup>1</sup>
- Various educational approaches (e.g. e-learning module<sup>8-10</sup>, training on wearing personal protective equipment<sup>11-12</sup>) have been implemented in hospitals worldwide to increase HCPs' knowledge of personal protective equipment in this urgent sanitary context.
- The impact of a workshop alone on improving HCPs' knowledge of the proper use of N95 masks according to the clinical situation and the risk of contamination was unknown.

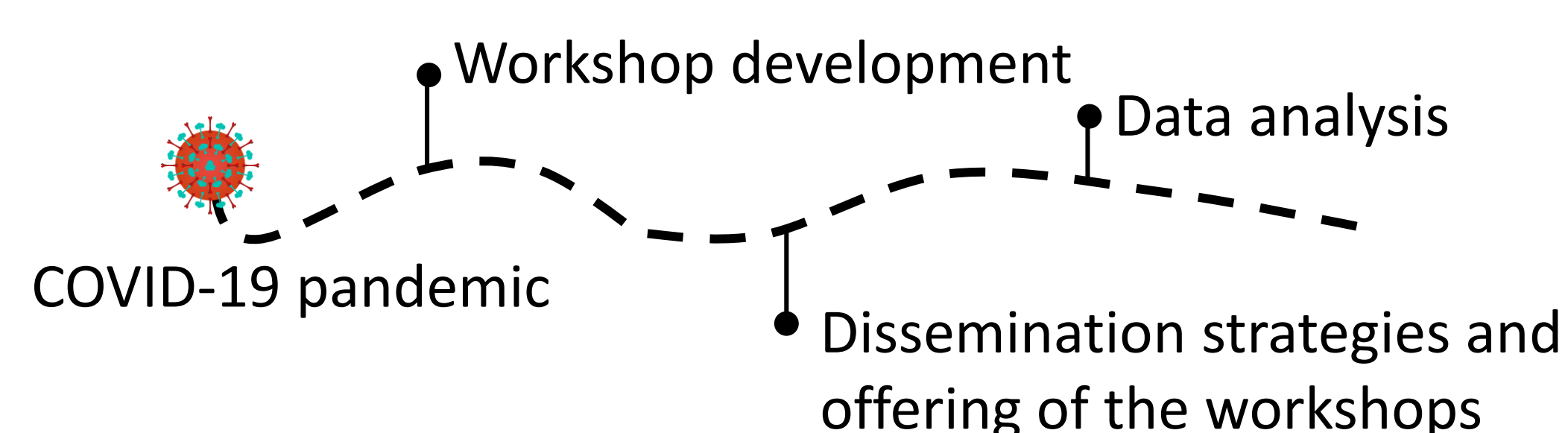
### OBJECTIVE

To describe the approach to developing and implementing a workshop on the proper use of N95 masks in a hospital and its impact on HCP knowledge.

## METHODS

**Design:** Quality improvement approach using a mixed-method, pre/post training design.

**Participants:** All HCP working in one hospital in a suburban region (Laval, Canada) were eligible between April 21 and May 1st, 2020.



### Workshop development:

- Content based on recommendations and procedures for the proper use of N95 masks in the context of the COVID-19 pandemic available at that time.
- Content validated by hospital microbiologists.
- Developed and offered to HCP within one month.

### Dissemination strategies:

- Invitations sent by the head nurses to HCP working on the care units dedicated to patients with COVID-19
- Publicity on the hospital intranet
- Word of mouth
- Private groups on social networks

**Procedures:** Completion of a short questionnaire pre- and post-workshop using the same questions. Participants were asked to check the correct answer(s) from multiple choices.

**Variables:** Participants' knowledge of when to wear a N95 mask, when to discard it and when it can be reused, before and after the workshop.

**Analyses:** Descriptive analyses comparing post-questionnaires responses to pre-questionnaires responses. "Correct answers" were defined as exclusively correct answers, "partially correct answers" as a mixture of correct and incorrect answers, and "incorrect answers" as exclusively incorrect answers.

## RESULTS

A total of 18 workshops were offered to 150 HCP. Of these, 69 (46%) completed pre- and post-questionnaires.

**Table 1. Sociodemographic characteristics of participants who completed the questionnaires.**

Characteristics	N (%)
<b>Sex</b>	
Women	61 (88)
Men	8 (12)
<b>Age (years old)</b>	
18-40	38 (55)
41-60	28 (41)
61 years and older	1 (1)
Missing data	2 (3)
<b>Profession</b>	
Doctors or medicine residents	12 (17)
Nurses	41 (60)
Others	15 (22)
Missing data	1 (1)

**Table 2. Improved knowledge on the proper use of N95 masks after the workshop.**



Assessed knowledge	Pre-workshop	Post-workshop	P value
<b>When to wear a N95 mask (n=59)</b>			
Correct answer	14	50	<0,001
Partially correct answer	11	3	0,011
Incorrect answer	34	6	<0,001
<b>When to discard a N95 mask (n=60)</b>			
Correct answer	0	8	0,005
Partially correct answer	12	24	0,023
Incorrect answer	48	28	<0,001
<b>When to reuse a N95 mask (sterilization) (n=55)</b>			
Correct answer	4	21	<0,001
Partially correct answer	30	23	0,144
Incorrect answer	21	11	0,025

The comments collected after the workshops showed a **subjective decrease in anxiety** and **improvement in the HCP's confidence in the knowledge acquired** during the training.



**Figure 1. Word cloud of appreciation of the workshop.**

## CONCLUSION

- Using a workshop on the latest recommendations about using N95 masks in the context of the COVID-19 pandemic has several advantages:
  - it can rapidly be developed and implemented,
  - limited resources are required,
  - there is a positive impact on HCPs' knowledge and anxiety.
- A workshop is another option to meet the information needs of HCPs in an urgent sanitary context.

## FACILITATING FACTORS

- Collaboration with various key actors in the field, such as the hospital microbiologists to validate the workshop's content and the head nurses of the care units to promote it, is essential to provide reliable and timely information to HCPs.
- The quality improvement approach allowed the flexibility and speed of action required in an urgent sanitary context.

## LIMITATING FACTORS

- Under-representation of health professionals other than nurses.
- The quality improvement approach used in the project limits its generalizability to other contexts.

## References

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