

## SYNOPSIS

09/17/2020

# Review of “Case-control study of use of personal protective measures and risk for severe acute respiratory syndrome coronavirus 2 infection, Thailand”

**Article citation:** Doung-Ngern P, Suphanchaimat R, Panjangampatthana A, Janekrongtham C, Ruampoom D, Daochaeng N, et al. Case-control study of use of personal protective measures and risk for severe acute respiratory syndrome coronavirus 2 infection, Thailand. *Emerg Infect Dis.* 2020 Sep 14 [Epub ahead of print]. Available from: <https://doi.org/10.3201/eid2611.203003>

## One-minute summary

- This is a **retrospective case-control** study to evaluate the effectiveness of mask wearing, hand washing, social distancing and other personal protective measures in preventing Coronavirus Disease 2019 (COVID-19) infection in public venues in Thailand.
- **Personal protective measures found to be independently associated with a lower risk of COVID-19 infection** from contact with a person with COVID-19 are:
  - **Wearing masks all the time during contact, regardless of mask type** (adjusted odds ratio [aOR] = 0.23, 95% CI: 0.09–0.60; P = .006)
  - **Keeping a distance of 1 m or more** (aOR = 0.15, 95% CI: 0.04–0.63; P = .02)
  - **Washing hands often with soap and water or alcohol-based sanitizer** (aOR = 0.33, 95% CI: 0.13–0.87; P = .045)
  - Having close contact for less than 15 minutes (aOR = 0.24, 95% CI: 0.07–0.90; P = .09)
- **Persons who wore masks all the time were more likely** than those who did not wear a mask to:
  - **report duration of contact for under 15 minutes** (26% vs. 13%; P < .001)
  - **wash hands often** (79% vs. 26%; P < .001)
  - **keep social distance of at least 1 m** (25% vs. 18%; P = .03)
- **Secondary attack rates noted for different types of high-risk exposures** (n=890) were:
  - boxing stadiums: 86% (111/129)
  - nightclubs: 18.2% (34/187)
  - household: 16.5% (38/230)
  - workplace: 4.9% (10/205)
  - other places: 1.4% (2/139)
- The authors conclude that **no single protective measure was associated with complete protection from COVID-19**, and that **mask wearing, hand washing and social distancing can all increase protection against COVID-19 in public settings.**

## Additional information

- Contact data used in the study were based on contact investigations of three large COVID-19 clusters in nightclubs, boxing stadiums and a state enterprise office from March 1 to 31, 2020 in Thailand.
  - Contacts were defined by the Thailand Department of Disease Control as “persons who had activities with or were in the same location as a person with confirmed COVID-19”.
  - Cases were contacts of symptomatic COVID-19 patients who had no symptoms on the first day of contact and later tested positive for COVID-19 infection by RT-PCR by April 21, 2020.
  - Controls were contacts of symptomatic COVID-19 patients who had no symptoms on the first day of contact and never tested positive by RT-PCR by April 21, 2020.
- Data collection took place from April 30 to May 27, 2020 by telephone interview.
- 1,050/1,716 contacts were included in the study; 221 tested positive and were cases, while 839 never tested positive and were controls.
- Where a contact had been exposed to more than one symptomatic COVID-19 patient, the patient with the closest contact would be identified as the index patient.
- High-risk exposures for contacts were defined as:
  - household contacts of a COVID-19 patient
  - having had direct physical contact with a COVID-19 patient
  - being present at less than 1 m from a COVID-19 patient for over 15 minutes
  - being in the same closed environment (e.g., a room, nightclub, stadium, vehicle) at less than 1 m from a COVID-19 patient for over 15 minutes
- Exposures in health care settings were excluded.
- The authors estimated that the number of **COVID-19 cases might have been reduced by 84% if everyone wore a mask all the time; washed hands often; stayed at least 1 m apart; did not share a dish, cup or cigarette; and kept duration of contact to under 15 minutes.** However, the authors pointed out that caution should be exercised in interpreting such estimation due to the use of several assumptions.
- With a household secondary attack rate of 16.5%, the authors suggest that **all household members should wear masks, frequently wash their hands, and perform social distancing** to the extent possible. In addition, symptomatic person should immediately be separated into a specific room and use a separate bathroom where possible, and eating utensils should not be shared.
- The following **limitations** to the findings were noted by the authors:
  - Findings may not be generalizable to other settings as data were based on 3 major clusters of COVID-19 infections.
  - Risk of infection was based on self-identified index patients and exposure to unidentified infected persons could not be ruled out.
  - Cases might have been missed as only 89% of controls were tested for COVID-19.
  - Secondary attack rates might be under- or over-estimated as contact identification could be incomplete.
  - Biases could not be avoided given the retrospective nature of the study.

## PHO reviewer's comments

- Contacts investigated in this study had been in contact with symptomatic COVID-19 patients whose infectiousness was assumed but unknown. In addition, the extent of protection offered by mask wearing by the index patients as a source control measure was not explored, as 27% of data were missing values for mask use by the index patients. One should also note that self-reported hand washing and mask wearing may not reflect actual practice (frequency and correct method). Additional research would help inform the extent of protection offered by mask wearing in public settings.

## Citation

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