PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	Investigation of the Relation Between Risk Assessment of Exposure and Nosocomial SARS-CoV-2 Transmission in Healthcare Workers: A Prospective Single-center Study
AUTHORS	Kaya Kalem, Ayse; Kayaaslan, Bircan; Eser, Fatma; Hasanoglu, İmran; Ayhan, Muge; Coskun, Belgin; Guner, Rahmet

VERSION 1 – REVIEW

REVIEWER	Wilber Sabiiti University of St Andrews, School of Medicine
REVIEW RETURNED	26-Sep-2021

GENERAL COMMENTS	The authors have presented an important piece of work on the risks of COVID-19 transmission among HCWs. Given the high need for data to understand COVID-19 transmission dynamics in the early days of the pandemic, it is quite unfortunate that the findings are being presented for publication more than a year after completion of the study. Nevertheless, some lessons can still be picked for COVID-19 infection prevention and control procedures going forward. Minor concern: Although the English of the manuscript is generally acceptable, there is need for authors to carefully go through the paper to improve grammar and fill in missing words. Major concern: The findings, 'when exposed HCWs with and without SARS-CoV-2 RT-PCR positivity were compared; age, gender, index case type, index case mask usage, HCW's PPE usage, and contact type were not found as independent risk factors for the development of PCR positivity. The only significant factor for the development of SARS-CoV-2 RT-PCR positivity was found to be direct involvement in patient care. Risk of developing COVID-19 was observed to be 5.65 times higher in those who were not directly involved in patient care (OR = 5.65, 95% CI = 2.437-13.11; p<0.001)" is quite contradictory. If direct involvement with patient care was the main risk of getting a COVID-19 PCR positive results, it would then be more plausible that risk of developing COVID-19 is directly associated with high involvement in patient care. Furthermore authors show that over 70% of index cases were fellow HCWs, implying that interacting with fellow workers was more likely to lead to contracting COVID-19 than being involved with patients. This further contradicts the observation that patient care involvement was more associated with COVID-19 PCR positive result. Thirdly, the high exposure group were also high comorbidity group, doesn't this undermine the level of exposure as a driver of COVID-19 transmission and likelihood of developing severe COVID-19 infection? Did the authors adjust for comorbidity in their statistical analysis? In the current status, the authors haven't used the

	discussion section to clearly explain the contradictory findings and their implications. They use the opportunity of the revision to explain the results in clear terms to remove any questions in the readers' minds.

REVIEWER	Bruce Gillis University of Illinois Medical Center at Chicago
REVIEW RETURNED	17-Oct-2021

GENERAL COMMENTS	The primary and in fact limiting factor relates to the implication that the statistical results are extremely accurate. They, in fact, are not so but only because for this study to have greater value, every HCW should have been screened for COVID at least weekly since some COVID positive patients may have not been fully symptomatic and therefore may have been missed.

VERSION 1 – AUTHOR RESPONSE

Reviewer: 1
Dr. Wilber Sabiiti, University of St Andrews
Comments to the Author:
The authors have presented an important piece of work on the risks of COVID-19 transmission among HCWs. Given the high need for data to understand COVID-19 transmission dynamics in the early days of the pandemic, it is quite unfortunate that the findings are being presented for publication more than a year after completion of the study. Nevertheless, some lessons can still be picked for COVID-19 infection prevention and control procedures going forward.

Minor concern: Although the English of the manuscript is generally acceptable, there is need for authors to carefully go through the paper to improve grammar and fill in missing words.
The article has been revised in terms of English language rules to improve grammar and fill in missing words.

Major concern: The findings, 'when exposed HCWs with and without SARS-CoV-2 RT-PCR positivity were compared; age, gender, index case type, index case mask usage, HCW's PPE usage, and contact type were not found as independent risk factors for the development of PCR positivity. The only significant factor for the development of SARS-CoV-2 RT-PCR positivity was found to be direct involvement in patient care. Risk of developing COVID-19 was observed to be 5.65 times higher in those who were not directly involved in patient care (OR = 5.65, 95% CI = 2.437-13.11; p<0.001)" is quite contradictory. If direct involvement with patient care was the main risk of getting a COVID-19 PCR positive results, it would then be more plausible that risk of developing COVID-19 is directly associated with high involvement in patient care. Furthermore authors show that over 70% of index cases were fellow HCWs, implying that interacting with fellow workers was more likely to lead to contracting COVID-19 than being involved with patients. This further contradicts the observation that patient care involvement was more associated with COVID-19 PCR positive result.
"The only significant factor for the development of SARS-CoV-2 RT-PCR positivity was found to be direct involvement in patient care" This phrase is written inadvertently and removed from the manuscript."
Thirdly, the high exposure group were also high comorbidity group, doesn't this undermine the level of exposure as a driver of COVID-19 transmission and likelihood of developing severe COVID-19 infection? Did the authors adjust for comorbidity in their statistical analysis? In the current status, the authors haven't used the discussion section to clearly explain the contradictory findings and their implications. They use the opportunity of the revision to explain the results in clear terms to remove any questions in the readers' minds.

Comorbidities were not included in the comparison. Because the presence of comorbidity was accepted as a risk factor for serious COVID-19 infection, not COVID-19 transmission. Also, there was no immunosuppressive disease among the participants.

Reviewer: 2
Dr. Bruce Gillis, University of Illinois Medical Center at Chicago
Comments to the Author:
The primary and in fact limiting factor relates to the implication that the statistical results are extremely accurate. They, in fact, are not so but only because for this study to have greater value, every HCW should have been screened for COVID at least weekly since some COVID positive patients may have not been fully symptomatic and therefore may have been missed.
It's clearly fact. It has been stated as a study limitation. But execution of such a programme is costly and requires a large laboratory capability, that is not available at every institution. When resources are available, to perform routine SARS-CoV-2 nasopharyngeal screening for all HCWs.

VERSION 2 – REVIEW

REVIEWER	Bruce Gillis University of Illinois Medical Center at Chicago
REVIEW RETURNED	28-Nov-2021

GENERAL COMMENTS	I continue to have difficulty understanding how you determined your statistical results. Please provide a more thorough explanation.

VERSION 2 – AUTHOR RESPONSE

Reviewer: 2
Dr. Bruce Gillis, University of Illinois Medical Center at Chicago
Comments to the Author:
I continue to have difficulty understanding how you determined your statistical results. Please provide a more thorough explanation.

In our National Follow-up Guideline for Health Personnel in Contact, it is recommended that all healthcare personnel, even asymptomatic, be screened with SARS-CoV-2 RT-PCR after medium and high-risk contacts. In the presence of symptoms after low-risk exposure, SARS-CoV-2 RT-PCR is recommended. As you stated, routine screening of all healthcare workers with SARS-CoV-2 RT-PCR would give us the most accurate results. However, both the cost and the laboratory capacity should be sufficient for this condition. Our hospital is a hospital where 15,000 health personnel work and carry the region's burden in the pandemic. Therefore, this will not be easy to accomplish. We followed up our health personnel according to the national guide. In addition, according to the study protocol, it was observed that some SARS-CoV-2 RT-PCR-recommended HCWs were not tested, while those that were not recommended had the test. We performed our analyses by including these patients' data in our study results. SARS-CoV-2 RT-PCR positivity rates and factors affecting SARS-CoV-2 RT-PCR positivity were studied on the tested personnel.

When I re-examined, I realized that I had incorrectly written the SARS-CoV-2 RT-PCR positivity rates in Table 6. I fixed this error. Thank you very much for your elaborateness review. In this case, there is 3.7% positivity in asymptomatic HCWs with low-risk contacts. If we had tested all of them, the rate would have been higher.

VERSION 3 – REVIEW

REVIEWER	Bruce Gillis University of Illinois Medical Center at Chicago
REVIEW RETURNED	30-Dec-2021

GENERAL COMMENTS	Your revisions were appropriate.