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# Journal of Public Health Research - Manuscript ID PHJ-22-0123.R2
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Wed, Nov 9, 2022 at 4:44
PM

09-Nov-2022

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Your manuscript ID is PHJ-22-0123.R2.

You have listed the following individuals as authors of this manuscript:
Paskarini, Indriati; Dwiyanti, Endang; Syaiful, Dayinta ; Roshida, Devy

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Journal of Public Health Research

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**Fig 1. Model of The Relationship (Outer Model) between Variables with Indicators That has Been Valid.png**
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**Table 2. Mean, minimum, and maximum score from each dimension.docx**
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# Burnout among nurses: Examining psychosocial work environment causes

**Indriati Paskarini**[ID]**, Endang Dwiyanti, Dayinta Annisa Syaiful and
Devy Syanindita**[GQ: 1]

## Abstract

**Background:** Medical personnel, and especially staff working in hospitals such as doctors and nurses are exposed to a number of important psychosocial risk factors as a consequence of the type of work. The consequence can be the occurrence of job burnout among nurses. the researchers wanted to analyze work psychosocial support in an effort to control burnout in health workers at Semen Gresik Hospital.

**Design and methods:** This research is an analytical observational quantitative research. The research was conducted by interviewing respondents regarding the independent variables and the dependent variable without giving any treatment. This research is included in the analytical research design with the aim of analyzing the relationship between variables This research is analyzed using Semi Equation Model (SEM) by calculating outer model, inner model, and the goodness of fit of the model.

**Results:** The results of testing the first hypothesis give the result that there is a significant positive effect of *Psychosocial Work Environment* on *Burnout* with a *T*-Statistic value (59,577) >1.96 and *p*-value (0.000) <0.05 so it can be stated that there is a significant positive influence of *Psychosocial Work Environment* on *Burnout*. This means that hypothesis 1 can be supported. **[AQ: 2]**

**Conclusions:** The most influenced factor from psychosocial work environment are job demand as well as conflict and offensive behavior. Because nurses have several workload especially during the pandemic, they have the obligation to do administrative, preventive, and curative action in the meantime.

## Keywords
Psychosocial work environment, burnout, nurses
**[AQ: 3]**

Date received: 19 July 2022; accepted: 5 December 2022

## Introduction

Medical personnel, and especially staff working in hospitals such as doctors and nurses are exposed to a number of important psychosocial risk factors as a consequence of the type of work including high-intensity workloads, self-employment, lack of social support, lack of free time, unfriendly shifts, violent patients, rude or demanding, terminally ill patients. These risk factors can change their physical health, and most importantly, their mental health. The negative consequences of exposure to these psychosocial risk factors outline serious problems not only for the physical and psychological well-being of doctors and nurses, but also for the quality of care provided to their patients.[1]

Identification of psychosocial risk factors in the work environment to which doctors and nurses may be exposed, will allow to direct preventive actions that can be useful for improving the health and quality of life of professional groups.[2]

Department of Occupational Health and Safety, Faculty of Public Health, Airlangga University, Surabaya, Indonesia

**Corresponding author:**
Indriati Paskarini, Department of Occupational Health and Safety, Faculty of Public Health, Airlangga University, Jl. Dr. Ir. H. Soekarno, Mulyorejo, Kec. Mulyorejo, Kota SBY, Jawa Timur 60115, Surabaya, East Java 60115, Indonesia.**[AQ: 1]**
Email: Indriati.paskarini@fkm.unair.ac.id

Burnout in the life of health workers is a term used to describe a psychological state, which arises after long exposure to psychosocial risk factors. It has been described as a syndrome that arises as a consequence of working in contact with afflicted people. It is characterized by emotional exhaustion (EE, excessive emotional feelings with work), depersonalization (DP, callousness and interpersonal responsiveness to people) and decreased personal achievement (PA, decreased feelings of competence and achievement at work).[3]

The causes of burnout are more related to the psychosocial work environment (excessive workload, lack of job control, low job social support, lack of autonomy, time pressure, lots of direct contact with patients, etc.), than to personal factors.[4] Based on the description of the background, this study aims to analyze the influence of individual characteristics and of psychosocial work environment on burnout among nurses working at Semen Gresik Hospital (Indonesia).

## Method

### Study design

This study is using an analytical, observational, and quantitative research. Data were collected via questionnaire in January–March 2021.

### Setting

This study was conducted in general hospital, Semen Gresik, Gresik, Indonesia. There was 70% bed occupancy rate because of COVID-19 in 2021 at Semen Gresik Hospital.

### Participants

The population consists 162 nurses. Using the Slovin Formula with confidence level of 95%, we randomly sampled 115 nurses with this following calculation:

$$n = \frac{N}{1 + Ne^2}$$

$$n = \frac{162}{1 + 162(0.05)^2}$$

$$n = 115 \text{ nurses}$$

After the selection. We also used two inclusion criteria, such as: nurses are able to communicate in Bahasa Indonesia and they are willing to involve in this stud. Finally, the response rate during conducting this study was 100% with 115 out of 115 nurses filled the questionnaires. If sampled nurses did not meet the inclusion criteria, we resampled until the required sample size was reached. After the data collection, another six nurses who met inclusion criteria asked to participate in the study.

### Outcome

The nurses' burnout represented by emotional fatigue (coded as B1), depersonalization (coded as B2), and impairment of achievement (coded as B3).

### Independent variables

Nurses' individual characteristics, such as age (coded as IC1), gender (coded as IC2), marital status (coded as IC3), education level (coded as IC4), working period (coded as IC5), and working unit (coded as IC6). Moreover, psychosocial work environment represented by job demands (coded as PWE1), interpersonal relations and leadership (coded as PWE2), organization and job content (coded as PWE3), individual and work interaction (coded as PWE4), social capital (coded as PWE5), health and well-being (coded as PWE6), personality (coded as PWE7), conflict and offensive behavior (coded as PWE8).

Data measurement. Psychosocial work environment is assessed by Copenhagen Psychosocial Questionnaire III (COPSO III) short version with 43 items scoring with 5-point Likert scale and Burnout is assessed using Maslach Burnout Inventory (MBI) with 22 items scoring with 5-points Likert scale. Primary data collection in this study was carried out through filling out a questionnaire containing a draft statement made by the respondent in accordance with the conditions that the respondent felt. Before filling out the questionnaire, the researcher first explained the explanation before the study and then it was approved by the respondent which was stated by signing or Informed Consent approval. Filling out the questionnaire was done independently by the respondent. Questionnaires distributed to respondents were used to obtain data on the dependent and independent variables in this study. This research has received an ethics certificate with the number 13/EA/KEPK/2021 from The Health Research Ethics Committee, Faculty of Public Health, Airlangga University.

### Statistical method

This research is analyzed using Semi Equation Model (SEM) by calculating several aspects, which were performed using SmartPLS 3.0, such as:

1. Outer model
   Evaluation of the measurement model aims to see the relationship of each indicator with its latent variable or referred to as the outer model. In the outer model, several stages of analysis will be carried out, namely convergent validity test, discriminant validity test and reliability test. The purpose of the validity test is to evaluate whether a research variable can be declared valid or not. The purpose of the reliability test is to evaluate a value in the

data whether it has reliable results or not. The following are the types of testing and the value requirements that need to be met so that the results of this study can be declared valid and reliable.

2. Inner model
   This will be using path diagram, which make it easier for researchers to see the causality relationship to be tested. As for compiling a flow chart, it is illustrated by the relationship between constructs through arrows. Straight arrows represent a direct causal relationship between one construct and another.[5] Exogenous constructs, also known as source variables or independent variables, are not predicted by other variables in the model. An exogenous construct is a construct addressed by a line with one arrowhead.

3. The Goodness of Fit
   The suitability of the model is evaluated through a study of various goodness-of-fit criteria. The first action is to evaluate whether the data used can meet the SEM assumptions, namely sample size, normality and linearity, outliers, multicollinearity and singularity. After that, the researchers conducted a suitability test and statistical test. Several suitability indices and their cut-off values are used to test whether a model is accepted or rejected.

4. Interpretation
   After the model has been estimated, the residual must be small or close to zero and the frequency distribution of the residual covariance must be symmetrical. A good model has a small Standardized Residual Variance. The number 2.58 is the limit of the allowable Standardized Residual value, which is interpreted as statistically significant at the 5% level and indicates a substantial prediction error for a pair of indicators.

Finally, this analysis is aim to test the hypothesis such as:

H1: Individual characteristics influence burnout among nurses
H2: Psychosocial work environment influence burnout among nurses

## Result

### Individual characteristics

Around 121 nurses were included in our study (response rate = 106.14%). The predominant characteristics were the following: early adult (*n* = 36; 29.8%), female (*n* = 84; 69.4%), married (*n* = 116; 95.9%), graduated from Diploma III (*n* = 101; 83.5%) with >10 years of experience in this field (*n* = 88; 72.7%), and involve in in-patient care-pavilion (*n* = 21; 17.4%) (Table 1).

**Table 1.** Characteristic of nurses working at the Semen Gresik Hospital, Gresik Indonesia, 2021.

| Variables | Frequency (*n*) | Percentage (%) |
|---|---|---|
| **Age** | | |
| Late teenagers (17–25 years old) | 10 | 8.3 |
| Early adult (26–35 years old) | 36 | 29.8 |
| Late adult (36–45 years old) | 52 | 43 |
| Early elderly (46–55 years old) | 23 | 19 |
| Total | 121 | 100 |
| **Gender** | | |
| Male | 37 | 30.6 |
| Female | 84 | 69.4 |
| Total | 121 | 100 |
| **Marital status** | | |
| Single | 4 | 3.3 |
| Married | 116 | 95.9 |
| Divorce | 1 | 0.8 |
| Total | 121 | 100 |
| **Education** | | |
| Diploma III | 101 | 83.5 |
| Bachelor | 18 | 14.9 |
| Diploma IV | 2 | 1.7 |
| Total | 121 | 100 |
| **Working period** | | |
| <5 years | 21 | 17.4 |
| 5–10 years | 12 | 9.9 |
| >10 years | 88 | 72.7 |
| Total | 121 | 100 |
| **Working unit** | | |
| Hemodialysis | 11 | 9.1 |
| Central surgery | 14 | 11.6 |
| Intensive care unit | 9 | 7.4 |
| Emergency care | 14 | 11.6 |
| Out-patient care | 12 | 9.9 |
| In-patient care—pavilion | 21 | 17.4 |
| In-patient care—regular | 16 | 13.2 |
| Chemotherapy | 6 | 5 |
| Medical check-up unit | 4 | 3.3 |
| Maternal care | 14 | 11.6 |
| Total | 121 | 100 |

### Descriptive analysis

In this study, descriptive analysis and hypothesis testing will be carried out using the *Structural Equation Modeling* (SEM) method. This study will use the SmartPLS 3.0 software to determine the relationship between the influence of *Individual Characteristics* and *Psychosocial Work Environment* on *Burnout*. The data used as many as 121 respondents obtained through a *survey*.

The following is a description of the results of the answers that come from respondents to each variable indicator. The descriptive statistics that will be used are the *mean* for each dimension and indicator. The following is

**Table 2.** Mean, minimum, and maximum score from each dimension.

| Variable | Indicator | Description. | Mean | Min | Max |
|---|---|---|---|---|---|
| Psychosocial work environment | PWE1 | Job demands | 3.752 | 1.000 | 4.000 |
| | PWE2 | Interpersonal relations and leadership | 3.298 | 1.000 | 2.000 |
| | PWE3 | Organization and job content | 3.380 | 1.000 | 3.000 |
| | PWE4 | Individual and work interaction | 3.215 | 1.000 | 2.000 |
| | PWE5 | Social capital | 3.496 | 1.000 | 3.000 |
| | PWE6 | Health and well-being | 3.413 | 1.000 | 10.000 |
| | PWE7 | Personality | 3.653 | 1.000 | 5.000 |
| | PWE8 | Conflict and offensive behavior | 3.810 | 1.000 | 5.000 |
| Burnout | B1 | Emotional fatigue | 3.504 | 1.000 | 5.000 |
| | B2 | Depersonalization | 3.364 | 1.000 | 5.000 |
| | B3 | Impairment of achievement | 3.587 | 1.000 | 5.000 |

the average result of the answers of 121 respondents in this study in Table 2.

## Outer model evaluation

Evaluation of the measurement model aims to see the relationship of each indicator with its latent variable or referred to as the outer model. In the outer model, several stages of analysis will be carried out, namely convergent validity test, discriminant validity test and reliability test. The purpose of the validity test is to evaluate whether a research variable can be declared valid or not. The purpose of the reliability test is to evaluate a value in the data whether it has reliable results or not. The following are the types of testing and the value requirements that need to be met so that the results of this study can be declared valid and reliable.

The first result of the convergent validity test where several indicators are found that have an outer loading <0.5, using Fornell and Lacker Criterion,[6] which amounts to four invalid indicators originating from the Individual Characteristics. So it needs to be removed from this study and test the validity of the second time with indicators that have been valid.

Table 3 is the result of a convergent validity test after deducting four invalid indicators, where all variables have an outer loading >0.50 so that all indicators are valid and can be used in further analysis. The next step is to see the value of AVE, composite reliability and Cronbach Alpha on each variable in Table 4 with the following results:

## Discriminant validity test

The discriminant validity test can be analyzed using the cross loading which aims to see the level of correlation between indicators in the same construct. A good model is a model with a *cross loading* with the variable itself being greater than the other variables. The results of the discriminant validity test at the initial stage can be seen in Table 5 follows:

**Table 3.** Convergenity and reliability test between individual characteristics, psychosocial work environment, and burnout.

| | B_ | IC | PWE_ |
|---|---|---|---|
| B1 | 0.64791667 | | |
| B2 | 0.65763889 | | |
| B3 | 0.61111111 | | |
| IC2 | | 0.50625 | |
| IC6 | | 0.62847222 | |
| PWE1 | | | 0.55138889 |
| PWE2 | | | 0.50208333 |
| PWE3 | | | 0.52222222 |
| PWE4 | | | 0.61805556 |
| PWE5 | | | 0.64375 |
| PWE6 | | | 0.60902778 |
| PWE7 | | | 0.6 |
| PWE8 | | | 0.65555556 |

**Table 4.** Result of convergent validity after deducting four invalid indicators.

| | Cronbach's alpha | rho_A | Composite reliability | Average variance extracted (AVE) |
|---|---|---|---|---|
| B | 0.63194444 | 0.63541667 | 0.65486111 | 0.58819444 |
| IC_ | 0.37430556 | 0.42986111 | 0.55902778 | 0.46944444 |
| PWE_ | 0.65555556 | 0.65833333 | 0.6625 | 0.50138889 |

The following is a model of the relationship (*outer model*) between variables with indicators that has been valid. See Figure 1 for Model of The Relationship (Outer Model) between Variables with Indicators That has Been Valid.

## R-*square coefficient*

One of the evaluations of this structural model is by using the *R*-square value or the coefficient of determination. The coefficient of determination will describe a

further relationship between the independent variable and the dependent variable. The value of *R* Square is in the range between 0 and 1. If the value of R Square is getting closer to the value of 1 (one), the relationship between variables will be better. The following is the value of $R^2$ for each of the dependent variables of this study, see Table 6.

**Table 5.** Discriminant validity test.

|      | B_     | IC     | PWE_       |
|------|--------|--------|------------|
| B1   | I      | −0.250 | I          |
| B2   | I      | −0.171 | 0.59097222 |
| B3   | I      | −0.081 | 0.55277778 |
| IC2  | −0.113 | I      | −0.179     |
| IC6  | −0.182 | I      | −0.249     |
| PWE1 | I      | −0.142 | I          |
| PWE2 | 0      | −0.216 | I          |
| PWE3 | I      | −0.232 | I          |
| PWE4 | I      | −0.238 | I          |
| PWE5 | I      | −0.282 | I          |
| PWE6 | I      | −0.215 | I          |
| PWE7 | I      | −0.174 | I          |
| PWE8 | I      | −0.294 | I          |

## The relationship between individual characteristics and psychosocial work environment with burnout

The research hypothesis test will use the *T*-Statistic value. At a significant level of 5%, a variable can be said to have a significant effect on other latent variables if the *T*-Statistic value > 1.96 or *p*-Value < 0.05. If the *T*-Statistic value is < 1.96 or *p*-Value > 0.05, the research variable has no significant effect on other latent variables.[7] *Path coefficient* aims to measure the extent of the relationship between latent variables. If the coefficient value is close to +1, then the relationship between variables is positive or the value is stronger in predicting the dependent variable, see Table 7.

1. Hypothesis testing 1 (There is a significant influence of Psychosocial Work Environment on Burnout)

    The results of testing the first hypothesis give the result that there is a significant positive effect of Psychosocial Work Environment on Burnout with a *T*-Statistic value (59,577) > 1.96 and *p*-value (0.000) < 0.05 so it can be stated that there is a significant positive influence of Psychosocial Work Environment on Burnout. This means that hypothesis 1 can be supported.
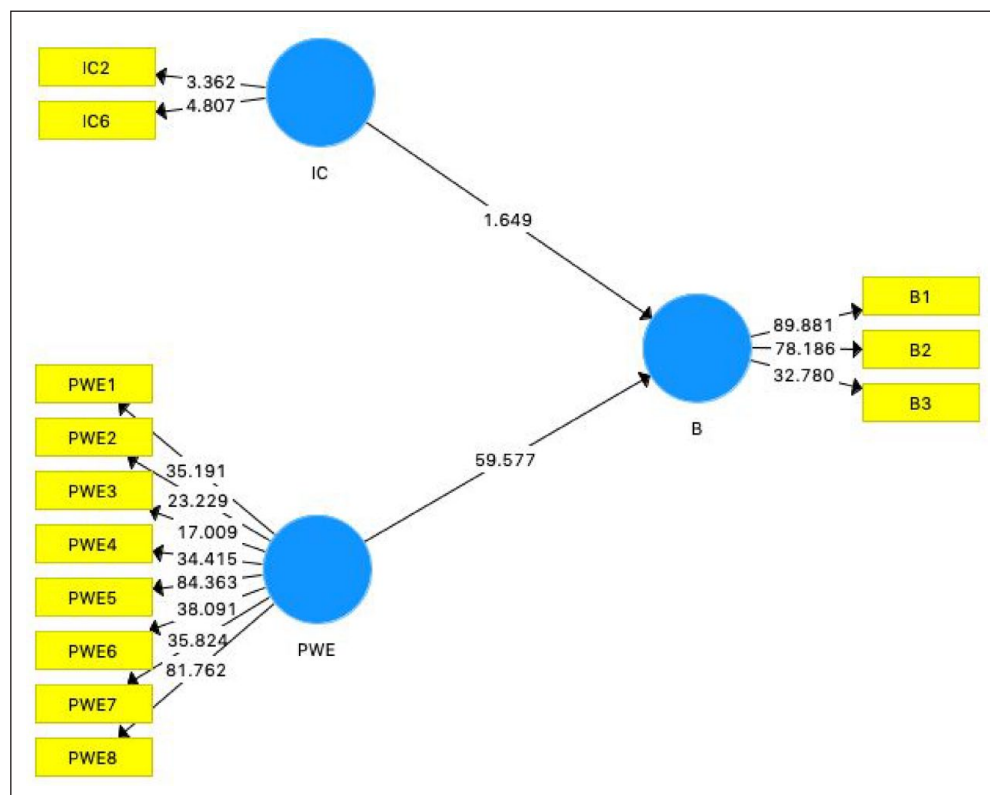


**Figure 1.** Model of the relationship (outer model) between variables with indicators that has been valid.

2. Testing hypothesis 2 (There is no significant effect of Individual Characteristics on Burnout)
3. The test results of the second hypothesis give the result that there is no significant effect of Individual Characteristics on Burnout with a coefficient value of $-0.037$ (Negative), $T$-Statistic value (1.649) $<1.96$ and $p$-value (0.138) $>0.05$ so it can be stated that there is no significant effect of Individual Characteristics on Burnout. This means that hypothesis 2 cannot be supported.

## Discussions

### Influence of psychosocial work environment and burnout

The results of the SEM test show that the $t$-count of individual characteristics is at 59.577. This indicates that there is an influence of the psychosocial work environment on burnout in nurses. Psychosocial work environment is psychosocial as an approach used to understand the factors that shape or influence the behavior and ways of thinking of individuals in certain social situations. In line with that, the term psychosocial also describes an individual's complex social relationships and the factors that influence the individual's mental condition.[8]

The psychosocial aspect of the work environment affects burnout in nurses, this is due to the high work demands of nurses, especially during a pandemic, causing nurses to have to work and be more responsible in their work. Prieto et al.[9] investigated the relationship of job demands and burnout in 274 teachers (57% females) drawn from secondary schools in Spain. Initial response and loss to follow-up were acceptable. The period between the two surveys was only 8 months. Exposure was operationalized by job demands (i.e. quantitative overload, mental demands, emotional demands, role ambiguity, and role conflicts). The work demands of nurses during the

pandemic in the form of nurses are faced with many tasks that are not the duties of a nurse, making the workload heavier. Nurses have to deal with and deal with too many patients during the pandemic, followed by the number of COVID-19 patients that always increases from time to time. According to Hakman[10] nurses who experienced heavy burnout with a heavy workload during the emergence of COVID-19 were due to nurses using PPE according to their working hours, at that time they did not touch food or drinks before the completion of the set working hours. and very limited rest time. Salcha and Juliani[11] added that nurses who handled COVID-19 patients were isolated for 14 days, causing nurses to be prevented from carrying out their social activities which caused them to isolate themselves from family, friends and neighbors. Because, many people think that nurses who handle COVID-19 patients will also be indicated.

The demands of a nurse's job can be circumvented by distributing tasks to nurses fairly and providing deadlines, especially in looser administrative areas. Thus, nurses do not feel that their work is piling up and they have to do many things related to their work.

In addition to high job demands, it turns out that the conflict and offensive behavior aspect of nurses is one of the most influential psychosocial work environment indicators in the incidence of burnout. Nurses stated that they often get unpleasant behavior from co-workers, bosses, and patients. The nurse stated that some felt that there was slander from their co-workers, causing their superiors to have a wrong perception of the nurse. What has been described so far evidences that health care professionals are highly exposed to violence in the workplace. This exposure may have a negative impact on their health, job satisfaction or emotional exhaustion and stress at work. Recently, it has been observed that at least 5 out of 10 professionals show a high degree of emotional exhaustion, 6 out of 10 show a high degree of depersonalization and 6 out of 10 show a low degree of self-fulfillment. Other studies found that 26.7% of participants had high emotional exhaustion, 38.1% had high cynicism and 35.6% had low self-fulfillment. Specifically, in Spain, where the present study was carried out, 23% emotional exhaustion, 11.4% cynicism, and 12.8% reduced self-fulfillment were observed in health professionals.

**Table 6.** *R* square coefficient.

|   | *R* square | *R* square adjusted |
|---|---|---|
| B | 0.876 | 0.873 |

**Table 7.** The relationship between individual characteristics and psychosocial work environment with burnout.

| Hypothesis | Original samples | *T* statistics | *p*-Values | Hypothesis Analysis |
|---|---|---|---|---|
| H₁: There is a significant positive effect of Psychosocial Work Environment on Burnout | 0.067 | 1.649 | 0.06944444 | Supported |
| H₂: There is a significant positive effect of Individual Characteristics on Burnout | 0.66041667 | 59,577 | 0.000 | Not supported |

Then, the condition of the dual role that nurses have is the most supportive psychosocial work environment indicator. Nurses have a role to handle patients in the curative field, but must also be responsible for the implementation of the COVID-19 vaccination, along with daily reports, and other administrative activities. Thus, nurses find it difficult to divide their time in completing their tasks. Paden and Buchler[12] in Jimad, define dual role conflict as a role conflict that arises between the expectations of two different roles that a person has. At work, a professional woman is expected to be aggressive, competitive, and able to carry out her commitments to work. At home, women are often expected to take care of their children, love and care for their husbands. Netemeyer[13] in Hennessy, defines dual role conflict as conflict that arises due to work-related responsibilities interfering with demands, time and tension in the family.

## Conclusion

1. There is a psychosocial work environment influence on burnout with *t* count 59.577
2. Burnout can be caused significantly by work demands, non-physical offensive behavior, and dual role conflicts experienced by nurses.
3. Nurses forced to have additional workload during the pandemic, including doing administrative, preventive, and curative action in the meantime.
4. Health and safety program, such as counseling, mental health training, and mindfulness event should be conducted for both nurses' mental and social health. Moreover, spreading the tasks not only to nurses but also to the other health practitioners especially in preventive and administrative aspects will be useful to reduce nurses' job demand which will affect burnout.

### Declaration of conflicting interests [GQ: 2]

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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### Supplemental material

Supplemental material for this article is available online.

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