

## Supplemental Materials

### Positive Vaccine Beliefs Linked to Reduced Mental Stress in Healthcare Professionals During COVID-19: A Retrospective Study

Supplemental Figure 1. The burnout questionnaire for this study.

#### Personal Burnout Questions

1. How often do you feel tired?

(4) Always (3) Often (2) Sometimes (1) Seldom (0) Never/rarely.

2. How often are you physically exhausted?

(4) Always (3) Often (2) Sometimes (1) Seldom (0) Never/rarely.

3. How often are you emotionally exhausted?

(4) Always (3) Often (2) Sometimes (1) Seldom (0) Never/rarely.

4. How often do you think: "I can't take it anymore"?

(4) Always (3) Often (2) Sometimes (1) Seldom (0) Never/rarely.

5. How often do you feel worn out?

(4) Always (3) Often (2) Sometimes (1) Seldom (0) Never/rarely.

6. How often do you feel weak and susceptible to illness?

(4) Always (3) Often (2) Sometimes (1) Seldom (0) Never/rarely.

(4) Always: 100. (3) Often: 75. (2) Sometimes: 50. (1) Seldom: 25. (0) Never/rarely: 0.

The score of personal burnout is the average score of the above 6 questions (1-6).

#### Work-related Burnout Questions

7. Is your work emotionally exhausting?

(4) To a very high degree (3) To a high degree (2) Somewhat (1) To a low degree (0) To a very low degree.

8. Do you feel burnt out because of your work?

(4) To a very high degree (3) To a high degree (2) Somewhat (1) To a low degree (0) To a very low degree.

9. Does your work frustrate you?

(4) To a very high degree (3) To a high degree (2) Somewhat (1) To a low degree (0) To a very low degree.

10. Do you feel worn out at the end of the working day?

(4) Always (3) Often (2) Sometimes (1) Seldom (0) Never/rarely.

11. Are you exhausted in the morning at the thought of another day at work?

(4) Always (3) Often (2) Sometimes (1) Seldom (0) Never/rarely.

12. Do you feel that every working hour is tiring for you?

(4) Always (3) Often (2) Sometimes (1) Seldom (0) Never/rarely.

13#. Do you have enough energy for family and friends during your leisure time?

(4) Always (3) Often (2) Sometimes (1) Seldom (0) Never/rarely.

(4) Always: 100. (3) Often: 75. (2) Sometimes: 50. (1) Seldom: 25. (0) Never/rarely: 0.

The score of work-related burnout is the average score of the above 7 questions (7-13).

# Reversed score for the last question.

#### Reference:

1. Yeh W.Y., Cheng Y., Chen C.J., Hu P.Y., Kristensen T.S. Psychometric properties of the Chinese version of Copenhagen burnout inventory among employees in two companies in Taiwan. *Int. J. Behav. Med.* 2007;14:126-133.

Supplemental Table 1. Investigation of the factors related to moderate/severe mood disorder in 2021 (Detail).

Variables	Crude OR 95%CI	P-value	Adjusted OR 95%CI	P-value
<b>Gender</b>				
Male	1 (Ref.)			
Female	1.05 (0.66-1.68)	0.835		
<b>Age (years)</b>				
21-30	1 (Ref.)		1 (Ref.)	
31-40	1.07 (0.65 – 1.76)	0.784	1.18 (0.71 – 1.95)	0.530
41-50	1.06 (0.66 – 1.72)	0.805	1.13 (0.70 – 1.85)	0.613
> 50	0.60 (0.34 -1.07)	0.083	0.78 (0.43 – 1.39)	0.398
<b>Title</b>				
Physician	1 (Ref.)			
Nurse	0.84 (0.32 - 2.21)	0.720		
Medical staff	0.49 (0.17 – 1.46)	0.202		
Technician	0.48 (0.11 – 2.18)	0.342		
Administration	0.89 (0.32 – 2.44)	0.817		
<b>Patient contact</b>				
No	1 (Ref.)			
Yes	1.05 (0.72 -1.53)	0.805		
<b>Working area</b>				
ER	1 (Ref.)			
ICU/isolation wards	1.18 (0.59 – 2.34)	0.636		
General wards	0.75 (0.40 -1.41)	0.368		
OPD/exam rooms	0.71 (0.35 – 1.43)	0.336		
RnC/PS/P	1.05 (0.46 – 2.43)	0.906		
Administrative area	0.70 (0.34 – 1.46)	0.343		
Others	0.72 (0.38 – 1.45)	0.363		
<b>Vaccine belief</b>				
No	1 (Ref.)		1 (Ref.)	
Yes	0.36 (0.26 – 0.50)	< 0.001	0.38 (0.28 – 0.52)	< 0.001

The parameters with  $p < 0.1$  in univariate were included in the multivariate analysis. ER, emergency room; ICU, intensive care unit; OPD, outpatient department; RnC/PS/P, registration and cashier/patient service/pharmacy.

Supplemental Table 2. Investigation of the factors related to moderate/severe mood disorder in 2022 (Detail).

Variables	Crude OR 95%CI	<i>P</i> -value	Adjusted OR 95%CI	<i>P</i> -value
Gender				
Male	1 (Ref.)			
Female	0.95 (0.62-1.47)	0.826		
Age (years)				
21-30	1 (Ref.)		1 (Ref.)	
31-40	1.16 (0.68 – 1.98)	0.590	1.23 (0.75 – 2.23)	0.347
41-50	1.20 (0.72 – 2.02)	0.486	1.30 (0.77 – 2.20)	0.320
> 50	0.53 (0.29 -0.97)	0.040	0.68 (0.37 – 1.27)	0.224
Category Group				
Physician	1 (Ref.)			
Nurse	1.34 (0.60 - 2.98)	0.475		
Medical staff	0.81 (0.32 – 1.97)	0.639		
Technician	1.09 (0.30 – 3.99)	0.892		
Administration	1.14 (0.49 – 2.64)	0.753		
Patient contact				
No	1 (Ref.)			
Yes	1.12 (0.79 -1.60)	0.522		
Working area				
ER	1 (Ref.)			
ICU/isolation wards	1.46 (0.70 – 3.05)	0.310		
General wards	0.98 (0.49 -1.95)	0.958		
OPD/exam rooms	1.05 (0.52 – 2.16)	0.887		
RnC/PS/P	1.47 (0.62 – 3.53)	0.383		
Administrative area	0.93 (0.43 – 2.02)	0.851		
Others	1.16 (0.57 – 2.36)	0.683		
Vaccine belief				
No	1 (Ref.)		1 (Ref.)	
Yes	0.35 (0.26 – 0.48)	< 0.001	0.41 (0.30 – 0.52)	< 0.001

The parameters with  $p < 0.1$  in univariate were included in the multivariate analysis. ER, emergency room; ICU, intensive care unit; OPD, outpatient department; RnC/PS/P, registration and cashier/patient service/pharmacy.

Supplemental Table 3. Investigation of the factors related to positive vaccine belief in 2021 (Detail).

Variables	Crude OR 95%CI	P-value	Adjusted OR 95%CI	P-value
<b>Gender group</b>				
Male	1 (Ref.)		1 (Ref.)	
Female	0.64 (0.46 – 0.90)	0.010	0.74 (0.52 – 1.06)	0.100
<b>Age subgroup (years)</b>				
21-30	1 (Ref.)		1 (Ref.)	
31-40	1.45 (1.03 – 2.03)	0.031	1.38 (0.98 - 1.95)	0.062
41-50	1.30 (0.94 - 1.80)	0.111	1.23 (0.88 – 1.72)	0.219
> 50	3.08 (2.12 – 4.47)	<0.001	2.67 (1.81 – 3.93)	<0.001
<b>Category Group</b>				
Physician	1 (Ref.)			
Nurse	0.60 (0.28 – 1.24)	0.167		
Medical staff	1.26 (0.57 – 2.77)	0.566		
Technician	1.08 (0.40 – 2.93)	0.875		
Administration	1.07 (0.49 – 2.29)	0.870		
<b>Patient contact</b>				
No	1 (Ref.)		1 (Ref.)	
Yes	0.62 (0.48 – 0.80)	<0.001	1.06 (0.74 – 1.51)	0.751
<b>Working space/area</b>				
ER	1 (Ref.)			
ICU/isolation wards	0.73 (0.45 – 1.21)	0.224	0.80 (0.48 – 1.34)	0.400
General wards	0.98 (0.63 – 1.53)	0.980	1.05 (0.67 – 1.66)	0.822
OPD/exam rooms	1.48 (0.91 – 2.40)	0.113	1.43 (0.87 - 2.34)	0.156
RnC/PS/P	1.34 (0.73 – 2.47)	0.350	1.21 (0.65 – 2.25)	0.557
Administrative area	2.14 (1.27 – 3.59)	0.004	2.03 (1.12 – 3.71)	0.020
Others	1.62 (0.99 – 2.63)	0.054	1.06 (0.93 – 2.57)	0.092

The parameters with  $p < 0.1$  in univariate were included in the multivariate analysis. ER, emergency room; ICU, intensive care unit; OPD, outpatient department; RnC/PS/P, registration and cashier/patient service/pharmacy.

Supplemental Table 4. Investigation of the factors related to positive vaccine belief in 2022 (Detail).

Variables	Crude OR 95%CI	P-value	Adjusted OR 95%CI	P-value
<b>Gender group</b>				
Male	1 (Ref.)		1 (Ref.)	
Female	0.66 (0.49 – 0.88)	0.004	0.95 (0.67 – 1.36)	0.78
<b>Age subgroup (years)</b>				
21-30	1 (Ref.)		1 (Ref.)	
31-40	1.65 (1.17 – 2.22)	0.004	1.49 (1.05-2.13)	0.025
41-50	1.43 (1.03 – 1.99)	0.034	1.24 (0.88 – 1.75)	0.214
> 50	3.34 (2.38 – 4.95)	<0.001	2.77 (1.88 – 4.08)	<0.001
<b>Category Group</b>				
Physician	1 (Ref.)		1 (Ref.)	
Nurse	0.38 (0.23 – 0.66)	0.001	0.49 (0.27 – 0.90)	0.022
Medical staff	0.85 (0.47 – 1.53)	0.580	0.90 (0.47 – 1.71)	0.746
Technician	0.88 (0.37 – 2.10)	0.772	0.72 (0.29 – 1.78)	0.474
Administration	0.65 (0.37 – 1.14)	0.136	0.55 (0.29 – 1.04)	0.065
<b>Patient contact</b>				
No	1 (Ref.)		1 (Ref.)	
Yes	0.58 (0.46 – 0.74)	<0.001	0.85 (0.61 – 1.18)	0.331
<b>Working space/area</b>				
ER	1 (Ref.)		1 (Ref.)	
ICU/isolation wards	0.84 (0.52 – 1.33)	0.452	0.94 (0.58 – 1.53)	0.804
General wards	1.07 (0.70 – 1.62)	0.762	1.11 (0.72 – 1.72)	0.630
OPD/exam rooms	1.76 (1.13 – 2.75)	0.012	1.50 (0.94 – 2.39)	0.087
RnC/PS/P	1.47 (0.82 – 2.64)	0.196	0.97 (0.51 – 1.85)	0.928
Administrative area	2.02 (1.25 – 3.27)	0.004	1.52 (0.85 – 2.73)	0.160
Others	1.51 (0.97 – 2.35)	0.067	1.20 (0.75 – 1.93)	0.452

The parameters with  $p < 0.1$  in univariate were included in the multivariate analysis. ER, emergency room; ICU, intensive care unit; OPD, outpatient department; RnC/PS/P, registration and cashier/patient service/pharmacy.