



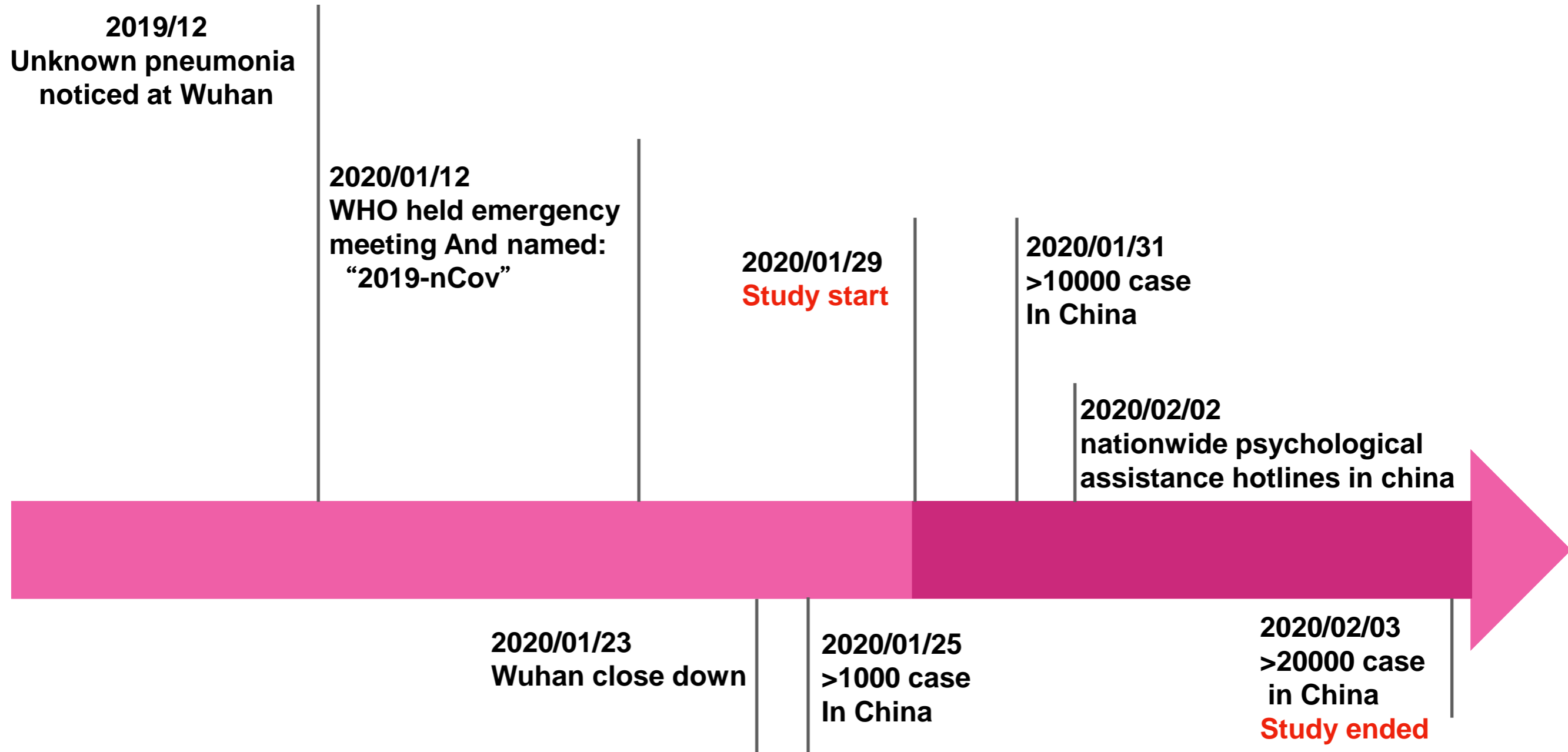
Original Investigation | Psychiatry

Factors Associated With Mental Health Outcomes Among Health Care Workers Exposed to Coronavirus Disease 2019

Jianbo Lai, MSc; Simeng Ma, MSc; Ying Wang, MSc; Zhongxiang Cai, MD; Jianbo Hu, MSc; Ning Wei, MD; Jiang Wu, MD; Hui Du, MD; Tingting Chen, MD; Ruiting Li, MD; Huawei Tan, MD; Lijun Kang, MSc; Lihua Yao, MD; Manli Huang, MD; Huafen Wang, MD; Gaohua Wang, MD; Zhongchun Liu, MD; Shaohua Hu, MD

Presenter : R1 田羽彤
Supervisor: VS 李昱
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Introduction

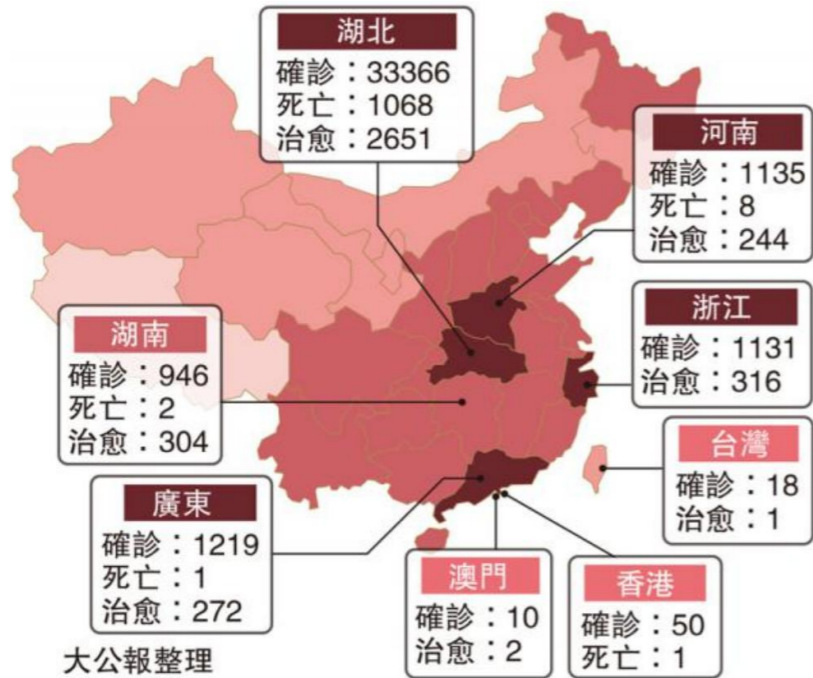


Mental health intervention Targeting **front line**

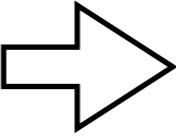
Find potential **risk factor**

Compare **different area**

Method



1257 participator
34 hospital



Hospital from
Wuhan: 20
Wubei other:7
Other:7



2020/01/29 - 2020/02/03
Cross-sectional

Front line:
diagnosing, treating,
give nursing care to people confirm
COVID-19 or elevated BT

Method



Depression: 9 item patient health questionnaire (PHQ-9)

Severe:>10



Anxiety: the 7 item generalized anxiety disorder (GAD-7)

Severe:>7



Insomnia: insomnia severity index(ISI)

Severe:>15



Distress: 22 item impact of event scale revised(IES-R)

Severe:>26

Statistic

- 1. Significant level: $\alpha=0.05$, 2-tailed**
- 2. The original score of four measurement tool are not normal distribute, so present as medians with interquartile range(IQRs)**
- 3. Severity: Mann-Whitney U test/ Kruskal- Walis test**
Compare symptoms between two or more group
- 4. Risk factor: multivariable logistic regression analysis**
Showed with odds ratio with 95%CIs after adjusting background confounder

Result

Demography

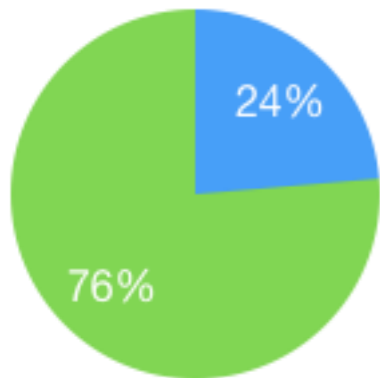
● male ● female

● 18-25 ● 26-30 ● 31-40
● >40

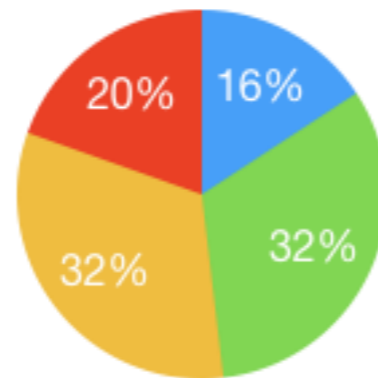
● junior ● intermediate
● senior

● physician ● nurse

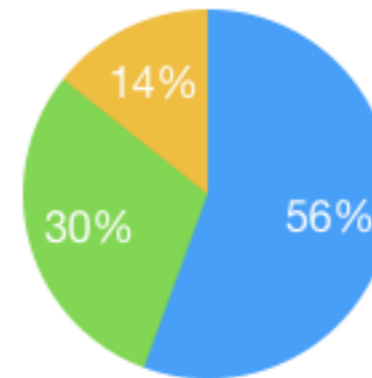
Gender



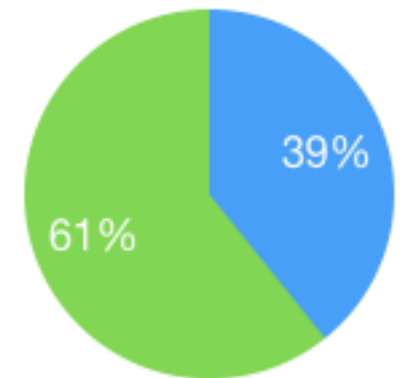
age



Technic title



Occupation

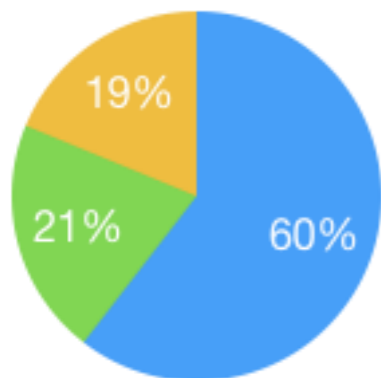


● Wuhan ● Hubei
● Other

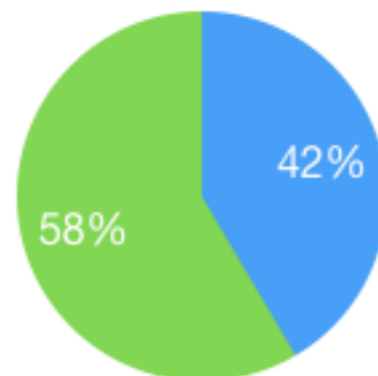
● frontline ● seceondline

● tertiary ● secondary

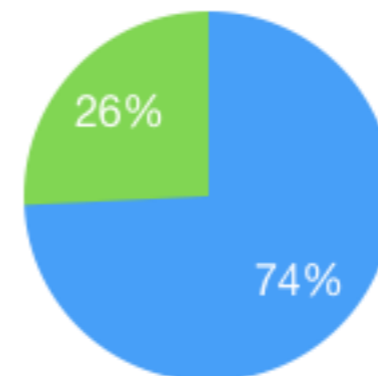
Area



Working position



Type of hospital



Result (Severity)

Severity category	Total, No. (%)
PHQ-9, depression symptoms	
Normal	623 (49.6)
Mild	448 (35.6)
Moderate	108 (8.6)
Severe	78 (6.2)
GAD-7, anxiety	
Normal	697 (55.4)
Mild	406 (32.3)
Moderate	88 (7.0)
Severe	66 (5.3)
ISI, insomnia symptoms	
Absence	830 (66.0)
Subthreshold	330 (26.2)
Moderate	85 (6.8)
Severe	12 (1.0)
IES-R, distress symptoms	
Normal	358 (28.5)
Mild	459 (36.5)
Moderate	308 (24.5)
Severe	132 (10.5)

Considerable health care worker had symptoms of depression, anxiety, insomnia and distress

Depression (50.4%)

Insomnia (34%)

Anxiety (44.6%)

Distress (71%)

Abbreviations: GAD-7, 7-item G

Table 2. Severity Categories of Depression, Anxiety, Insomnia, :

Severity category	Total, No. (%)	Occupation		P value
		Physician	Nurse	
PHQ-9, depression symptoms				
Normal	623 (49.6)	268 (54.4)	355 (46.5)	<u>.01</u>
Mild	448 (35.6)	157 (31.8)	291 (38.1)	
Moderate	108 (8.6)	44 (8.9)	64 (8.4)	
Severe	78 (6.2)	24 (4.9)	54 (7.1)	
GAD-7, anxiety				
Normal	697 (55.4)	293 (59.4)	404 (52.9)	<u>.03</u>
Mild	406 (32.3)	143 (29.0)	263 (34.4)	
Moderate	88 (7.0)	34 (6.9)	54 (7.1)	
Severe	66 (5.3)	23 (4.7)	43 (5.6)	
ISI, insomnia symptoms				
Absence	830 (66.0)	358 (72.6)	472 (61.8)	<u><.001</u>
Subthreshold	330 (26.2)	107 (21.7)	223 (29.2)	
Moderate	85 (6.8)	24 (4.9)	61 (8.0)	
Severe	12 (1.0)	4 (0.8)	8 (1.0)	
IES-R, distress symptoms				
Normal	358 (28.5)	163 (33.1)	195 (25.5)	<u>.01</u>
Mild	459 (36.5)	167 (33.9)	292 (38.2)	
Moderate	308 (24.5)	120 (24.3)	188 (24.6)	
Severe	132 (10.5)	43 (8.7)	89 (11.6)	

Compare: occupation, sex, working position, type of hospital, location

Nurse ,Woman, Frontline worker, work in Wuhan

More severe symptoms

Abbreviations: GAD-7, 7-item Generalized Anxiety Disorder; IES-R, 22

Result (Severity)

		Type of hospital		
		No. (%)		
		Tertiary	Secondary	P value
IES- R, distress symptoms				
Normal	358 (28.5)	259 (27.7)	99 (30.5)	
Mild	459 (36.5)	349 (37.4)	110 (33.9)	0.81
Moderate	308 (24.5)	231 (24.7)	77 (23.7)	
Severe	132 (10.5)	94 (10.0)	38 (11.7)	

Abbreviations: GAD-7, 7-item GIPHQ-9, 9-item Patient Health Question

Work in **secondary hospital** had more symptoms in depression, anxiety, insomnia
But no distress

Result(Score)

Table 3. Scores of Depression, Anxiety, Insomnia, and Distress Measurements in Total Cohort and Subgroups

Scale	Total score, median (IQR)	Occupation			Sex			Working position			Type of hospital			Geographic location			
		Physician	Nurse	P value	Men	Women	P value	Frontline	Second-line	P value	Tertiary	Secondary	P value	Wuhan	Hubei province outside of Wuhan	Outside Hubei province	P value
PHQ-9, depression symptoms	5.0 (2.0-8.0)	4.0 (1.0-7.0)	5.0 (2.0-8.0)	.007	3.0 (0-7.0)	5.0 (2.0-8.0)	<.001	6.0 (2.0-9.0)	4.0 (1.0-7.0)	<.001	4.0 (1.0-7.0)	5.0 (2.0-9.0)	<.001	5.0 (2.0-8.0)	4.0 (1.0-7.0)	3.0 (0-7.0)	<.001
GAD-7, anxiety symptoms	4.0 (1.0-7.0)	3.0 (0-7.0)	4.0 (1.0-7.0)	.008	2.0 (0-6.0)	4.0 (1.0-7.0)	<.001	5.0 (1.0-7.0)	3.0 (0.0-6.5)	<.001	3.0 (0-7.0)	4.0 (1.0-7.0)	.005	4.0 (1.0-7.0)	3.0 (0-6.0)	2.0 (0-6.0)	<.001
ISI, insomnia symptoms	5.0 (2.0-9.0)	4.0 (1.0-8.0)	5.0 (2.0-10.0)	<.001	3.0 (1.0-8.0)	5.0 (2.0-9.0)	<.001	6.0 (2.0-11.0)	4.0 (1.0-8.0)	<.001	4.0 (2.0-9.0)	6.0 (2.0-10.0)	.008	5.0 (2.0-10.0)	4.0 (1.0-8.0)	3.0 (1.0-8.0)	<.001
IES-R, distress symptoms	20.0 (7.0-31.0)	18.0 (5.0-30.0)	20.5 (8.0-32.0)	.009	14.0 (3.0-28.0)	21.0 (9.0-32.0)	<.001	22.5 (9.0-35.0)	17.0 (5.5-28.5)	<.001	19.0 (7.0-32.0)	20.0 (6.0-31.0)	.46	21.0 (8.5-34.5)	18.0 (6.0-28.0)	15.0 (4.0-26.0)	<.001

Abbreviations: GAD-7, 7-item Generalized Anxiety Disorder; IES-R, 22-item Impact of Event Scale-Revised; IQR, interquartile range; ISI, 7-item Insomnia Severity Index; PHQ-9, 9-item Patient Health Questionnaire.

Similar result as severity:
**Nurse ,Woman, Frontline worker,
 work in Wuhan**

More severe symptoms

**Work in secondary hospital had
 more symptoms in
 depression, anxiety, insomnia
 But no distress**

Result

Table 3. Scores of Depression, An

Scale	Total score, median (IQR)	Geographic location			P value
		Median (IQR)			
		Wuhan	Hubei province outside of Wuhan	Outside Hubei province	
PHQ-9, depression symptoms	5.0 (2.0-8.0)	5.0 (2.0-8.0)	4.0 (1.0-7.0)	3.0 (0-7.0)	<.001
GAD-7, anxiety symptoms	4.0 (1.0-7.0)	4.0 (1.0-7.0)	3.0 (0-6.0)	2.0 (0-6.0)	<.001
ISI, insomnia symptoms	5.0 (2.0-9.0)	5.0 (2.0-10.0)	4.0 (1.0-8.0)	3.0 (1.0-8.0)	<.001
IES-R, distress symptoms	20.0 (7.0-31.0)	21.0 (8.5-34.5)	18.0 (6.0-28.0)	15.0 (4.0-26.0)	<.001

Abbreviations: GAD-7, 7-item General Patient Health Questionnaire.

Similar result as severity:

**Nurse ,Woman, Frontline worker,
work in Wuhan**

More severe symptoms

Result (score)

Table 4. Association of Hospital Type With Scores of Mental Health Outcomes Among Frontline Workers

Scale	Score, median (IQR)		<i>P</i> value
	Tertiary hospital	Secondary hospital	
PHQ-9, depression symptoms	5.0 (2.0-8.0)	6.0 (3.0-9.0)	.08
GAD-7, anxiety symptoms	5.0 (1.0-7.0)	5.0 (2.0-8.0)	.23
ISI, insomnia symptoms	6.0 (2.0-11.0)	6.0 (2.0-11.0)	.26
IES-R, distress symptoms	23.0 (9.0-37.0)	21.0 (7.5-31.5)	.11

Frontline worker showed high score either in Tertiary or secondary hospital

Result (risk factor of mental health)

Table 5. Risk Factors for Mental Health Outcomes Identified by Multivariable Logistic Regression Analysis

Variable	No. of severe cases/ No. of total cases (%)	Adjusted OR (95%CI) ^a	P value ^b	
			Category	Overall
PHQ-9, depression symptoms				
Sex				
Men	30/293 (10.2)	1 [Reference]	NA	
Women	156/964 (16.2)	1.94 (1.26-2.98)	.003	.003
Type of hospital				
Tertiary hospital	124/933 (13.3)	1 [Reference]	NA	
Secondary hospital	62/324 (19.1)	1.65 (1.17-2.34)	.004	.004
Technical title				
Junior	91/699 (13.0)	1 [Reference]	NA	
Intermediate	73/378 (19.3)	1.77 (1.25-2.49)	.001	.005
Senior	22/180 (12.2)	1.21 (0.72-2.03)	.47	
Working position				
Second-line	92/735 (12.9)	1 [Reference]	NA	
Frontline	94/522 (18.0)	1.52 (1.11-2.09)	.01	.01
GAD-7, anxiety symptoms				
Sex				
Men	66/293 (22.5)	1 [Reference]	NA	
Women	299/964 (31.0)	1.69 (1.23-2.33)	.001	.001
Type of hospital				
Tertiary hospital	255/933 (27.3)	1 [Reference]	NA	
Secondary hospital	110/324 (34.0)	1.43 (1.08-1.90)	.01	.01
Technical title				
Junior	184/699 (26.3)	1 [Reference]	NA	
Intermediate	141/378 (37.3)	1.82 (1.38-2.39)	<.001	<.001
Senior	40/180 (22.2)	1.01 (0.67-1.51)	.97	
Working position				
Second-line	184/735 (25.0)	1 [Reference]	NA	
Frontline	181/522 (34.7)	1.57 (1.22-2.02)	<.001	<.001

Result (risk factor of mental health)

ISI, insomnia symptoms				
Working position				
Second-line	33/735 (4.5)	1 [Reference]	NA	<.001
Frontline	64/522 (12.3)	2.97 (1.92-4.60)	<.001	
IES-R, distress symptoms				
Sex				
Men	83/293 (28.3)	1 [Reference]	NA	.01
Women	357/964 (37.0)	1.45 (1.08-1.96)	.01	
Technical title				
Junior	225/699 (32.2)	1 [Reference]	NA	<.001
Intermediate	169/378 (44.7)	1.94 (1.48-2.55)	<.001	
Senior	46/180 (25.6)	1.03 (0.69-1.55)	.87	
Working position				
Second-line	220/735 (29.9)	1 [Reference]	NA	<.001
Frontline	220/522 (42.1)	1.60 (1.25-2.04)	<.001	
Location				
Wuhan	298/760 (39.2)	1 [Reference]	NA	.02
Hubei province outside Wuhan	79/261 (30.2)	0.77 (0.57-1.06)	.10	
Outside Hubei province	63/236 (26.7)	0.62 (0.43-0.88)	.008	

Result (risk factor of mental health)

Being a **woman**, having **intermediate technic title**, work in **frontline** had more symptoms in **depression, anxiety, and distress**

Work in **secondary hospital** had more symptoms of **depression and anxiety**

Work in **Hubei** had higher risk of **feeling distress**

Work in **frontline** is an **independent risk factor** of all four symptoms

Discussion

In this study, more than **70%** reported psychological distress

When **SARS 89%** health worker had psychological symptoms

The pressure are from :

1. feeling vulnerable, loss of control
2. concern about health of self and family
3. Change in work and being isolated
4. Shortage of supplies
5. Increase influx of patients

76% of participants are **woman** and **60%** are **nurse**

More than **70%** of these nurse had **junior title** with means less experience

And they are less likely to be warned about exposure and inadequate protection

Limitation

- 1. Limited scope**
- 2. Lack long term follow up**
- 3. Cannot compare to other people live in Wuhan**
- 4. Cannot distinguish preexisting symptoms and new symptoms**
- 5. Response rate 68% , the condition of non responder ?**

Conclusion

Special intervention to promote mental well being health care workers expose to COVID-19 need to be immediately implemented with **woman, nurse and frontline worker requiring particular attention**

Thanks for your listening !