October 18th, 2021

Dear Editor-in-Chief
International Journal of Public Health Science (IJPHS)

We would like to appreciate the time and effort that the reviewers dedicated to providing feedback on our manuscript and are grateful for the insightful comments on and valuable improvements to our paper. We have attached a revised manuscript of **"COVID-19 Risk Perceptions Among Healthcare Workers During Early "New Behavior Norms" Phase" with Reference ID Number: 21252.**

No conflict of interest exits in the submission of this manuscript, and manuscript is approved by all authors for publication. We would like to declare on behalf of my co-authors that the work described was original research which has not been published previously, and not under considerations for publication elsewhere, in whole or in part. All the authors listed have approved the manuscript that is enclosed.

In this work, we have revised our final manuscript according to the reviewer's suggestions. The change is highlighted in green color within the manuscript. We hope this revision is suitable for "International Journal of Public Health Science".

We deeply appreciate your consideration of our manuscript. If you have any queries, please don't hesitate to contact us at the address below.

Yours Sincerely,
Corresponding author:
apt. Lolita, M.Sc.,
Assistant Professor, Department of Clinical Pharmacy,
Ahmad Dahlan University
Prof Dr Soepomo Warungboto Umbulharjo, Yogyakarta, Indonesia
Email: lolita_ur@yahoo.com , lolita@pharm.uad.ac.id
Telp: +62 89506685859

This is a timely and vital research however, please address the following concerns

- The abstract states that analyses were done using SPSS version 21 while the methodology says that version 22 was used. Please correct.
- There are a few sentences with grammatical errors. For example
  - **'In addition, dishonesty patients in providing healthcare professionals could be mentioned as a great challenge in dealing with the pandemic [9]**' can be reworded to 'In addition, dishonest patients in providing information to healthcare professionals could be deemed as a great challenge in dealing with the pandemic [9]'
  - **Meanwhile, the spearman correlation test was carried out to identify the association of sociodemographic factors towards risk perception of COVID-19.** Can be reworded to **'**The spearman correlation test was carried out to identify the association of sociodemographic factors with risk perception of COVID-19'.

- While the 'use' of PPE is personal and can be classified as a sociodemographic variable 'availability' of PPE is not the same.
- **'The sample was drawn using the non- probability sampling method with the convenience sampling technique.'** This is unclear if a sample was drawn it means you had a sampling frame. Please provide details on how the healthcare professionals were identified and reached.
- How did you assess validity and what results did you obtain when you assessed for validity?
- How many questions were used in the generation of the 'perceived severity' and 'perceived vulnerability' scores?
- It is not clear how 'perceived threat' was derived. What is the basis of this formula? Is it a well established formula in the literature?
- In table 1 the percentages for smoking history exceeds 100%. Seems it should be 6.9% for yes rather than 69%.
- It would have been clearer if results section was separated from the discussion section.
- The Mann-Whitney U/Kruskal-Wallis H should be reported along with the mean ranks for the different groups.
- Spearman correlation is valid for variables that are at least ordinal. Table 3 presents several nominal variables for example 'marital status'. This makes it difficult to understand the interpretation you presented in your discussion.
- **'In line with a previous study stated that older adults were associated with a lower risk for contracting COVID-19 and less experiencing negative emotions, including anxiety and depression [22]–[24]'.** This sentence needs to be reconstructed as well as you have stated **'In line with a previous study'** but cited three studies**.**
- What are the limitations of the study?
- Are there any new questions or hypotheses arising from your research?

Editor/Author Correspondence

Author
2021-08-20
04:33
AM

DELETE

Subject: COVID-19 Risk Perceptions Among Healthcare Workers During Early "New Behavior Norms" Phase

The following message is being delivered on behalf of International Journal of Public Health Science (IJPHS).

_____

Lolita

_____

International Journal of Public Health Science (IJPHS)
http://ijphs.iaescore.com

Author
2021-08-20
04:34
AM

DELETE

Subject: COVID-19 Risk Perceptions Among Healthcare Workers During Early "New Behavior Norms" Phase

The following message is being delivered on behalf of International Journal of Public Health Science (IJPHS).

_____

August 20, 2021

Dear Editor-in-Chief
International Journal of Public Health Science [IJPHS]

We wish to submit an original research article entitled: COVID-19 Risk Perceptions Among Healthcare Workers During Early "New Behavior Norms" Phase for consideration by International Journal of Public Health Science [IJPHS]. Hereby we confirm that this manuscript has not been submitted for publication nor has it been published in whole or in part elsewhere. The author has read, approved the manuscript, and made significant contributions to the study. The author has no conflicts of interest to declare regarding this study.

To the best of our knowledge, this is the first study on the investigation of risk perception and its associated factor among Indonesian healthcare workers during the early phase of new normal-era. Healthcare workers are at disproportionate risk of contracting COVID-19. Evaluating the risk perception and its associated factors is vital in identifying healthcare workers' protective action in handling the pandemic. Several factors are significant correlated with the COVID-19 risk perception. Therefore, we believe that our results are of substantial interest to the current issue of COVID-19. Thank you for your attention and we are looking forward to furthering information from you.

Sincerely,

Lolita Lolita, MSc
Assistant Professor, Department of Clinical Pharmacy
Ahmad Dahlan University
Prof Dr Soepomo Warungboto Umbulharjo, Yogyakarta, Indonesia

Email: lolita_ur@yahoo.com
lolita@pharm.uad.ac.id

International Journal of Public Health Science (IJPHS)
http://ijphs.iaescore.com

Ed DELETE
ito Subject: [IJPHS] Editor Decision
r   The following message is being delivered on behalf of International Journal of Public
202 Health Science (IJPHS).
1-
10-
07   Dear Prof/Dr/Mr/Mrs: Mrs Lolita Lolita,
03:
51   We have reached a decision regarding your submission entitled "COVID-19 Risk
AM   Perceptions Among Healthcare Workers During Early "New Behavior Norms" Phase" to
     International Journal of Public Health Science (IJPHS), a peer-reviewed and an OPEN
     ACCESS journal that makes significant contributions to major areas of public health
     science.

     Our decision is revisions required
     The goal of your revised paper is to describe novel technical results.
     A high quality paper MUST has:
     (1) a clear statement of the problem the paper is addressing --> explain in "Introduction"
     section
     (2) the proposed solution(s)/method(s)/approach(es)/framework(s)/ ....
     (3) results achieved. It describes clearly what has been done before on the problem, and
     what is new.

     In preparing your revised paper, you should pay attention to:
     1. Please ensure that: all references have been cited in your text; Each citation should be
     written in the order of appearance in the text; The references must be presented in
     numbering and CITATION ORDER is SEQUENTIAL [1], [2], [3], [4], ...
     Please download & study our published papers for your references:
     - http://ijphs.iaescore.com
     - http://ijere.iaescore.com
     - http://journal.uad.ac.id/index.php/edulearn
     - http://iaescore.com/journals (other journals)
     (Please use "Search" menu under "JOURNAL CONTENT" menu in right side of the site)

     2 An Introduction should contain the following three (3) parts:
     - Background: Authors have to make clear what the context is. Ideally, authors should give
     an idea of the state-of-the art of the field the report is about.
     - The Problem: If there was no problem, there would be no reason for writing a manuscript,
     and definitely no reason for reading it. So, please tell readers why they should proceed
     reading. Experience shows that for this part a few lines are often sufficient.
     - The Proposed Solution: Now and only now! - authors may outline the contribution of the
     manuscript. Here authors have to make sure readers point out what are the novel aspects of

authors work. Authors should place the paper in proper context by citing relevant papers. At least, 5 references (recently journal articles) are used in this section.

3. Results and discussion section: The presentation of results should be simple and straightforward in style. This section report the most important findings, including results of statistical analyses as appropriate. You should present the comparison between performance of your approach and other researches. Results given in figures should not be repeated in tables. It is very important to prove that your manuscript has a significant value and not trivial.

Please submit your revised paper within 6 weeks.

I look forward for hearing from you

Thank you

Best Regards,
Dr. Lina Handayani
Universitas Ahmad Dahlan
ijphs@iaescore.com

Update your metadata in our online system when you submit your revised paper through our online system, included:
- Authors name are presented without salutation
- Authors Name are presented Title Case (ex: Michael Lankan, and NOT written--> michael lankan or MICHAEL LANKAN). Add all authors of your paper as per your revised paper
- Title of revised paper (ex: Application of space vector .... , NOT --> APPLICATION OF SPACE VECTOR ....)
- Your abstract

Reviewer E:
This is a timely and vital research however, please address the following concerns

• The abstract states that analyses were done using SPSS version 21 while the methodology says that version 22 was used. Please correct.
• There are a few sentences with grammatical errors. For example
o 'In addition, dishonesty patients in providing healthcare professionals could be mentioned as a great challenge in dealing with the pandemic [9]' can be reworded to 'In addition, dishonest patients in providing information to healthcare professionals could be deemed as a great challenge in dealing with the pandemic [9]'
o Meanwhile, the spearman correlation test was carried out to identify the association of sociodemographic factors towards risk perception of COVID-19. Can be reworded to 'The spearman correlation test was carried out to identify the association of sociodemographic factors with risk perception of COVID-19'.

• While the 'use' of PPE is personal and can be classified as a sociodemographic variable 'availability' of PPE is not the same.
• 'The sample was drawn using the non- probability sampling method with the convenience sampling technique.' This is unclear if a sample was drawn it means you had a sampling frame. Please provide details on how the healthcare professionals were identified and reached.
• How did you assess validity and what results did you obtain when you assessed for validity?
• How many questions were used in the generation of the 'perceived severity' and 'perceived vulnerability' scores?
• It is not clear how 'perceived threat' was derived. What is the basis of this formula? Is it a well established formula in the literature?
• In table 1 the percentages for smoking history exceeds 100%. Seems it should be 6.9% for yes rather than 69%.
• It would have been clearer if results section was separated from the discussion section.
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• 'In line with a previous study stated that older adults were associated with a lower risk for contracting COVID-19 and less experiencing negative emotions, including anxiety and depression [22]–[24]'. This sentence needs to be reconstructed as well as you have stated 'In line with a previous study' but cited three studies.
• What are the limitations of the study?
• Are there any new questions or hypotheses arising from your research?

_____

International Journal of Public Health Science (IJPHS)
http://ijphs.iaescore.com

Ed DELETE
ito Subject: [IJPHS] Editor Decision
r   The following message is being delivered on behalf of International Journal of Public
202 Health Science (IJPHS).
1-
10- _____
31
     Dear Prof/Dr/Mr/Mrs: Mrs Lolita Lolita,
11:
11   It is my great pleasure to inform you that your paper entitled "COVID-19 Risk Perceptions
AM   Among Healthcare Workers During Early "New Behavior Norms" Phase" is ACCEPTED
     and will be published on the International Journal of Public Health Science (IJPHS). This
     journal is accredited SINTA 1 by Ministry of Research and Technology/National Research
     and Innovation Agency, Republic of Indonesia (RISTEK-BRIN) and has ACCEPTED for
     inclusion (indexing) in Scopus
     (https://suggestor.step.scopus.com/progressTracker/?trackingID=D331D503BA1584BF)
     since 2020 issues
     (https://www.scopus.com/results/results.uri?src=s&st1=&st2=&sot=b&sdt=b&origin=searc
     hbasic&rr=&sl=57&s=SRCTITLE%20(International%20Journal%20of%20Public%20Heal

th%20Science). Congratulations!

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You should submit your camera-ready paper along with your payment receipt and similarity report (that less than 25%) within 6 weeks.

I look forward to hearing from you.

Thank you

Best Regards,
Dr. Lina Handayani

Please ensure that all references have been cited in your text. Each citation should be written in the order of appearance in the text in square brackets. For example, the first citation [1], the second citation [2], and the third and fourth citations [3,4]. When citing multiple sources at once, the preferred method is to list each number separately, in its own brackets, using a comma or dash between numbers, as such: [1], [3], [5] or [4-8]. It is not necessary to mention an author's name, pages used, or date of publication in the in-text citation. Instead, refer to the source with a number in a square bracket, e.g. [9], that will then correspond to the full citation in your reference list. Examples of in-text citations:
This theory was first put forward in 1970 [9]."
Bloom [10] has argued that...
Several recent studies [7], [9], [11-15] have suggested that....
...end of the line for my research [16].......

In order to cover part of the publication cost, each accepted paper is charged: USD 215 (~IDR 3000K). This charge is for the first 8 pages, and if any published manuscript over 8 pages will incur extra charges USD 50 (~IDR 700K) per page

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- All correspondence should be addressed to the emails (support by phone is not provided).
_____
International Journal of Public Health Science (IJPHS)
http://ijphs.iaescore.com

Response Letter to Reviewer and Editor

Dear reviewer and editor,

Thank you so much for reviewing our manuscript and raising many valuable comments towards our paper. We have made some corrections and promoted our manuscript according to these comments, which are shown as follows:

Comment from reviewer :

1. The abstract states that analyses were done using SPSS version 21 while the methodology says that version 22 was used. Please correct.

   Author's reply:
   Thank you for your detailed correction. The data analysis of our study was conducted using software programs of SPSS version 22. We have corrected the SPSS version which written in the abstract by :
   "The data were analyzed through the Spearman correlation method using SPSS version 22.0"

2. There are a few sentences with grammatical errors. For example
   a. **'In addition, dishonesty patients in providing healthcare professionals could be mentioned as a great challenge in dealing with the pandemic [9]**' can be reworded to 'In addition, dishonest patients in providing information to healthcare professionals could be deemed as a great challenge in dealing with the pandemic [9]'
   b. **Meanwhile, the spearman correlation test was carried out to identify the association of sociodemographic factors towards risk perception of COVID-19.** Can be reworded to **'**The spearman correlation test was carried out to identify the association of sociodemographic factors with risk perception of COVID-19'.

   Author's reply:
   We have improved according to the suggestions of reviewers

   The revision statement is:
   a. In addition, dishonest patients in providing information to healthcare professionals could be deemed as a great challenge in dealing with the pandemic [9]'
   b. The spearman correlation test was carried out to identify the association of sociodemographic factors with risk perception of COVID-19'.

3. While the 'use' of PPE is personal and can be classified as a sociodemographic variable 'availability' of PPE is not the same.
Author's reply:
Thank you for your kind suggestion. We decided not classified the "availability of personal protective equipment" as sociodemographic variable. We have removed it for the Table 1. The "availability of PPE" and their consistent use by healthcare staff is a crucial factor in combating COVID-19 disease. Therefore, we reported those important data as written explanation in the discussion section.

The revision statement is:
Our findings also highlighted the consistent availability of PPE and its supply for healthcare workers. According to our study, more than half of the participants (66.1%) stated that PPE availability was at an adequate stock level. Optimization of the PPE supply chain is crucial in enabling safe and effective infection prevention of COVID-19 disease.

4. **'The sample was drawn using the non- probability sampling method with the convenience sampling technique.'** This is unclear if a sample was drawn it means you had a sampling frame. Please provide details on how the healthcare professionals were identified and reached.

Author's reply
Thank you for pointing this out. To the best of our knowledge, non-probability sampling does not require a complete sampling frame. According to our study, the sample was selected based on non-random criteria (non probability sampling), thus a sampling frame doesn't required. We have revised the sentences to make it clear.

The revision statement is:
The sampling technique was used with non-probability sampling technique namely convenience sampling. According to our study, the respondents were identified and chosen from the population based on the relative ease of access to the researchers.

5. How did you assess validity and what results did you obtain when you assessed for validity?

Author's reply
Thank you for pointing this out. We have added some statement according to the validity assessment.

The revision statement is:
The content validity test of the questionnaire was performed using Pearson Product Moment Correlation method with SPSS version 22. According to the validity test, each item of questionnaire was valid with the p-value < 0.001.

6. How many questions were used in the generation of the 'perceived severity' and 'perceived vulnerability' scores?

The revision statement is:

Each item questionnaire for perceived severity and perceived vulnerability consisted of one question. The perceived severity assessed the severity of COVID-19 using a 10-point Likert scale, from 1 (not severe) to 10 (very severe). Meanwhile, the perceived vulnerability assessed the likelihood of acquiring this disease using a 5-point Likert scale, from 1 (very unlikely) to 5 (very likely).

7. It is not clear how 'perceived threat' was derived. What is the basis of this formula? Is it a well established formula in the literature?

Author's reply

Thank you for pointing this out. The basis formula for perceived threat was derived based on previous literature. According to the literature stated that "In line with the Protection Motivation Theory, one measure was defined as "perceived threat"; it was constructed by multiplication of the measures of perceived severity (scale 1–10) and vulnerability (in case of an outbreak in the country from a new virus; scale 1–5). To make the scores comparable, the severity score was first divided by two. To normalize the skewed distribution of the new variable, a square root transformation was performed that resulted in a measure of perceived threat on a scale from 1 (low) to 5 (high)".

Therefore, perceived threat is the square root of the multiplication of perceived severity/2 and perceived vulnerability (de Zwart, O., Veldhuijzen, I.K., Elam, G. et al. Perceived Threat, Risk Perception, and Efficacy Beliefs Related to SARS and Other (Emerging) Infectious Diseases: Results of an International Survey. Int.J. Behav. Med. 16, 30–40 (2009). https://doi.org/10.1007/s12529-008-9008-2_)

8. In table 1 the percentages for smoking history exceeds 100%. Seems it should be 6.9% for yes rather than 69%.
Author's reply:
We have improved it according to the suggestions of reviewers

Table I. Demographic characteristic of healthcare workers

Variables	n	%
Sex		
Male	60	24.2
Female	188	75.8
Age		
Adolescent	46	18.5
Adult	180	72.6
Elderly	22	8.9
Education		
Middle Education	8	3.2

Higher Education		240	96.8
Marital Status			
Married		173	69.8
Single		68	27.4
Widow/ Widower		7	2.8
Health Status			
Healthy		208	83.9
Do not know		18	7.3
Doubtful		7	2.8
Probable		2	0.8
Suspect		10	4.0
It has been declared cured of COVID-19		3	1.2
Quarantine Conditions			
Full time activities at home		21	8.5
Still leaving the house 2-3x a week is not for work		10	4.0
Work outside the home every day		145	58.5
Work outside the home 2-3x a week		56	22.6
Others		16	6.5
History of Chronic Illness			
Yes		15	6
No		233	94
Smoking History			
Yes		17	6.9
No		231	93.1
Supplements use			
Yes		204	82.3
No		44	17.7
Personal Protective Equipment (PPE) use			
Yes		143	57.7
Sometimes		74	29.8
Rarely		18	7.3
Never		12	4.8

9. It would have been clearer if results section was separated from the discussion section.

Author's reply:
Thank you for the good suggestion.
Our written manuscript were followed according to IJPHS author guidelines. Based on those guidelines, author are suggested to present their articles in the sections structure: Introduction - Research Method - Results and Discussion – Conclusion. Therefore, we combine results and discussion into one section.

10. The Mann-Whitney U/Kruskal-Wallis H should be reported along with the mean ranks for the different groups.

Author's reply:

Thank you for your detailed suggestion. We truly appreciated and accepted the reviewer comments. We have revised it based on reviewer suggestion. The Mann Whitney U/Kruskal-Wallis H has been reported along with the Mean Ranks for different groups The detailed revision could be seen in Table 2 below

Table 2. Healthcare workers perceived risk towards COVID-19

No	Independent Variables	Dependent Variables									
		Perceived Vulnerability		Perceived Severity		Perceived Threat		Response efficacy		Self-efficacy	
		Mean Rank	P	Mean Rank	P	Mean Rank	P	Mean Rank	P	Mean Rank	P
1	*Sex*										
	Male	127.03	0.745	100.53	**0.001***	112.13	0.123	121.43	0.690	117.48	0.348
	Female	123.69		132.15		128.45		125.48		126.74	
2	*Age*										
	Adolescent	145.59		123.49		141.58		111.25		111.82	
	Adult	120,91	**0.056**	126.68	0.493	123.27	0.063	128.14	0.323	128.71	0.260
	Elderly	109.77		108.82		98.86		122.43		116.61	
3	*Education*										
	Middle Education	131.38	0.775	106.56	0.440	104.69	0.425	117.25	0.760	120.56	0.865
	Higher Education	124.27		125.10		125.16		124.74		124.63	
4	*Marital Status*										
	Married	117.18	**0.027***	123.77	0.955	118.36	0.066	130.17	**0.034***	123.43	0.503
	Single	139.08		126.57		135.76		107.15		129.71	
	Widow/ Widower	163.79		122.57		166.71		152.86		100.43	
6	*Health Status*										
	Healthy	115.55		124.86		118.19		127.47		130.20	
	Do not know	161.19		114.78		146.83		92.78		92.06	
	Doubtful	183.79		139.43		169.93		117.21		88.93	
	Probable	135.75	**0.000***	186.00	0.627	171.25	0.052	137.75	0.46	109.50	0.077
	Suspect	176.30		123.65		166.15		127.75		104.85	
	It has been declared cured of COVID-19	206.50		85.17		152.33		106.50		82.67	
7	*Quarantine conditions*										
	Full time activities at home	92.36		112.93		95.07		141.76		138.55	
	Leaving the house 2-3x per week not for work	99.00		72.65		84.75		133.25		70.95	
	Work outside every day	125.78	0.085	128.04	**0.016***	129.43	0.098	122.65	0.786	125.85	0.078
	Work outside 2-3x per week	131.41		137.33		130.72		121.42		121.04	
	Others	146.88		95.09		121.47		123.94		139.41	
8	*History of Chronic Illness*										
	Yes	151.07	0.125	140.50	0.339	153.20	0.108	124.03	0.978	94.53	0.072
	No	122.79		123.47		122.65		124.53		126.43	
9	*Smoking History*										
	Yes	142.15	0.276	104.97	0.212	129.62	0.756	114.06	0.514	104.03	0.189
	No	123.20		125.94		124.12		125.27		126.01	
10	*Supplement Use*										
	Yes	127.61	0.128	125.45	0.628	127.24	0.194	123.35	0.569	124.02	0.806
	No	110.10		120.08		111.82		129.82		126.74	
11	*Personal Protective Equipment (PPE) use*										
	Yes	121.37		122.02		121.30		125.82		127.46	
	Sometimes	127.20	0.918	129.36	0.641	129.10	0.865	129.54	**0.023***	121.96	**0.017***
	Rarely	129.19		130.00		128.36		125.89		141.94	
	Never	127.79		105.46		118.17		65.33		68.46	

11. Spearman correlation is valid for variables that are at least ordinal. Table 3 presents several nominal variables for example 'marital status'. This makes it difficult to understand the interpretation you presented in your discussion.
Author's reply:

Thank you for your detailed suggestion. We truly appreciated and accepted the reviewer comments. We have removed several variables with nominal scale such as : gender, marital status, history of chronic illness, smoking history and the use of supplement, from the Spearman correlation analysis.
Furthermore, we conducted the statistical analysis with a valid data.

The revision was reported in Table 3 below

Table 3. Factor correlation analysis of healthcare risk perception towards COVID-19

Independent Variables	Risk perception	
	Coefficient correlation	*P-value*
Age	-0.152	**0.017***
Education	-0.034	0.592
Health Status	0.205	**0.001***
Quarantine Conditions	0.104	0.102
The use of PPE	-0.037	0.559

Spearman correlation analysis indicated a significant negative correlation between age and risk perception (r=-0.152, p-value=0.017). Besides, a significant positive correlation between health status and risk perception (r=0.205, p-value=0.001).

12. **'In line with a previous study stated that older adults were associated with a lower risk for contracting COVID-19 and less experiencing negative emotions, including anxiety and depression [22]–[24]'.** This sentence needs to be reconstructed as well as you have stated **'In line with a previous study'** but cited three studies.

Author's reply:
Thank you for your detailed suggestion. We accepted the reviewer comment and reconstructed the statement
The revision statement is:
In line with several studies stated that older adults were associated with a lower risk for contracting COVID-19 and less experiencing negative emotions, including anxiety and depression [22]–[24]

13. What are the limitations of the study?
Author's reply:
Thank you for the good suggestion. We accepted this reviewer's comment. We would like to add the limitation in this study into these statements below:

This study has several limitations, including the sample that was taken is less representative of the Indonesian healthcare workers population. It is more likely that better results will be obtained from a larger sample size. Moreover, the cross-sectional study methodology could only illustrate relationships between patterns and social-demographic factors; no causal relationship exists. A further cohort-based study design should be proposed to measure changes in COVID-19 risk perception across time. Therefore, this study should be considered a preliminary study as such, and the findings can be used to help improve risk communication and epidemic control education in the future pandemic.

14. Are there any new questions or hypotheses arising from your research?
    Author's reply:
    Thank you for pointing this out. According to this study findings, we have established appropriate new hypotheses for future research.

    The revision statement is:
    Despite these limitations, our present findings might expected on enhancing risk perception and promoting preventive actions, as well as initiating online sessions, in order to assist healthcare professionals comprehend existing standards and protect themselves from COVID-19 infection. Targeted risk communication with relevant channels should be considered for these frontline groups in order to improve their risk awareness and safety actions.

❒   101

COVID-19 Risk Perceptions Among Healthcare Workers During Early "New Behavior Norms" Phase

Lolita Lolita, Azis Ikhsanudin
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Article Info	ABSTRACT
	The COVID-19 pandemic poses a serious health threat among Indonesian healthcare workers. As front-line workers, they were facing higher risk due to the prolonged exposure of SARS-CoV-2. This study aims to explore various factors affecting perceived risk among healthcare professionals. A cross-sectional study was conducted among health practitioners who met the inclusion criteria of being over the age of 17 years and resided in Indonesia. This study was conducted during the early "new normal behavior" period from April to July 2020. The sampling technique was convenience sampling which involved collecting data through the online questionnaire. The data were analyzed through the Spearman correlation method using SPSS version 22.0. A total of 248 respondents were included in the final analysis. Overall, age (p=0.017) and health status (p=0.001) significantly affected the COVID-19 risk perception among healthcare workers. Therefore, comprehensive COVID-19 risk communication should be established to optimize health behavior and crisis control management among healthcare workers.

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1. INTRODUCTION

The novel coronavirus of SARS-CoV-2 causing coronavirus diseases 2019 (COVID-19) has been established as a global health crisis that affected 216 countries of the globe. This virus has rapidly spread to almost all nations, including Indonesia [1]. Indonesia first announced the COVID-19 infection in early March 2020. Within one month, the number of infected people had surpassed nearly 3.000, with an 8% of case fatality rate. Based on data compiled by Indonesian Health Authorities, there are more than 3.5 million confirmed cases of COVID-19 in the 34 provinces. The significant jump in the number of confirmed COVID-19 positive cases has been followed by a substantial death rate risk [2]. Considering to minimize the socioeconomic and psychological impact of the COVID-19 crisis, the Indonesian government announced a new normal transition by adjusting health lifestyle behavior. The concept of new normal conditions provides high public awareness to implement the health protocols when carrying out their normal activities [3].

Many healthcare professionals are at the forefront of an ongoing struggle against the pandemic. They face enormous challenges in providing emergency health care services under extreme pressure [4]. Therefore, they have become at a much greater risk of COVID-19 exposure and might be exposed to significant worsening mental health [5]. A previous study found that depression among health workers was relatively high [6]. Similarly, a study of healthcare workers in Portugal also noted that almost 50% of them are highly vulnerable

to getting COVID-19 infection [7]. Most of them expressed fear of contracting COVID-19 while working in health services.

As of June 2020, Amnesty International's analysis has reported that as many as 878 cases of Indonesian health workers have contracted the COVID-19, and 89 of them are known to have died, including 60 doctors, 23 nurses, and 6 dentists [8]. The lack of supply of personal protective equipment (PPE) and inadequate basic training regarding infection control are taking healthcare personnel at greater risk of acquiring the COVID-19 [6]. In addition, dishonest patients in providing healthcare professionals information could be deemed a great challenge in dealing with the pandemic [9]. According to reported cases, many Indonesian health workers were exposed to COVID-19 after treating patients who did not provide trustworthy information about their illnesses [10].

Risk perception is a major driving factor to elicit individual health behavior in response to the pandemic. Notably, the effectiveness of COVID-19 response strategies will depend upon personal behavior and adherence to COVID-19 preventive measures [11]. Inadequate related knowledge and risk perception among healthcare workers could increase the infection rates caused by delayed therapeutic management of COVID-19 [12]. Understanding the critical factors that influence healthcare workers' risk perception is vital for helping navigate their response in the face of a pandemic [13]. To the best of our knowledge, this is the first study investigating risk perception and its associated factor among Indonesian healthcare workers during the early phase of the new normal-era. Therefore, understanding their COVID-19 risk perception might provide valuable insights to develop more effective risk communications strategies in pandemic prevention and control.

2. RESEARCH METHOD

2.1 Study Design and Data Collection

This study has been approved by the Research Ethics Committee of Aisyiyah University (reference number: 1305/KEP-UNISA/IV/2020). All participants have been informed about the study purpose and the confidential data detailed on the first page of the online survey. The study was proceeded after obtaining the informed consent and agreement from each participant. A cross-sectional analysis study was designed to examine the risk perception of COVID-19 and its associated factor among Indonesian healthcare professionals. We conducted an online survey questionnaire shared through the social media platforms during the early phase of "new behavior norms" implementation from April to July 2020. The sampling technique was used with non-probability sampling technique, namely convenience sampling. The respondents were identified and chosen from the population based on the relative ease of access to the researchers. The eligibility criteria included healthcare professionals over the age of 17 years and residing in Indonesia. We excluded the participants who did not fill the whole questionnaire and foreign healthcare workers living in Indonesia.

2.2 Research Instrument

The data collection was carried out by distributing the questionnaire via Google Forms. The particular questionnaire comprised three parts, namely socio-demographic, risk perception, and efficacy belief. The risk perception questionnaire was developed according to our previous study [14][15]. Before distributing the questionnaire, validity and reliability tests were conducted on 30 anonymous respondents. The content validity test of the questionnaire was performed using the Pearson Product Moment Correlation method with SPSS version 22. According to the validity test, each item of the questionnaire was valid with a p-value < 0.001. The questionnaire reliability for perceived risk and efficacy belief was 0.806 and 0.734 (Cronbach's alpha). Respondents were asked to answer questionnaires regarding perceived risk dimensions, including perceived severity, vulnerability, followed by two dimensions of efficacy belief, namely response-efficacy and self-efficacy.

Each item questionnaire for perceived severity and perceived vulnerability consisted of one question. We used a 10-point Likert scale to assess the perceived severity of COVID-19, ranging from 1 (not serious) to 10 (very serious). A higher score indicates greater perceived severity of COVID-19. Meanwhile, the perceived vulnerability related to COVID-19 was measured using a five-point Likert scale, ranging from 1 (very unlikely) to 5 (very likely). A higher score indicated a greater exposure of COVID-19 among healthcare workers. The perceived threat was used as the overall measurement of risk perception, calculated using the square root of the multiplication of perceived severity divided by two and perceived vulnerability. The result was a perceived threat using a five-point Likert scale ranging from 1 (low) to 5 (high). The response-efficacy was assessed by asking how confident the participants think the people around them can take practical actions to prevent contracting COVID-19 using a 4-point Likert scale from 1 (not at all) to 4 (very much). Furthermore, self-efficacy was assessed by asking how confident they think they can prevent contracting the disease. The answer options used a 4-point Likert scale, from 1 (not confident) to 4 (very confident) [14][15].

2.3 Data Analysis

All statistical software packages were conducted using SPSS version 22.0 for data entry and analysis (IBM Corp., Armonk, NY, USA). Descriptive analysis was carried out to describe the sociodemographic characteristics as independent variables such as sex, age, educational level, marital status, health status, quarantine condition, chronic illness history, smoking history, supplement use, and availability of personal protective equipment (PPE) during the pandemic. In comparison, the dependent variable was risk perception of COVID-19 in three categories: perceived severity, perceived vulnerability, and perceived threat. The data was tested using the Kolmogorov-Smirnov to examine the normal distribution between variables. The Kruskal-Wallis/Mann Whitney U bivariate analysis was performed to determine the relationship between sociodemographic characteristics towards risk perception dimensions and efficacy beliefs. The Spearman correlation test was carried out to identify the association of sociodemographic factors with risk perception of COVID-19. A significance level of 5% was considered statistically significant.

3. RESULTS AND DISCUSSIONS

In total, 251 participants have completed filling and submitting the questionnaire. Furthermore, data were checked to ensure that the whole respondents met the inclusion and exclusion criteria. Three data were excluded because the respondents did not fill the whole questionnaire. A total of 248 participants were input into the database and used for data analysis.

Demographic

Table 1 describes that majority of respondents were female (75.8%), adult (72.6%), and had a higher education (96.8%). Most of the participants in this study were health workers who had a healthy condition (83.9%), consumed supplements routinely (82.3%), and still worked in health services every day (58.5%).

Table I. Demographic characteristic of healthcare workers

Variables	n	%
Sex		
Male	60	24.2
Female	188	75.8
Age		
Adolescent	46	18.5
Adult	180	72.6
Elderly	22	8.9
Education		
Middle Education	8	3.2
Higher Education	240	96.8
Marital Status		
Married	173	69.8
Single	68	27.4
Widow/ Widower	7	2.8
Health Status		
Healthy	208	83.9
Do not know	18	7.3
Doubtful	7	2.8
Probable	2	0.8
Suspect	10	4.0
It has been declared cured of COVID-19	3	1.2
Quarantine Conditions		
Full time activities at home	21	8.5
Still leaving the house 2-3x a week is not for work	10	4.0
Work outside the home every day	145	58.5
Work outside the home 2-3x a week	56	22.6
Others	16	6.5
History of Chronic Illness		
Yes	15	6
No	233	94
Smoking History		
Yes	17	6.9
No	231	93.1

Supplements use		
Yes	204	82.3
No	44	17.7
Personal Protective Equipment (PPE) use		
Yes	143	57.7
Sometimes	74	29.8
Rarely	18	7.3
Never	12	4.8

Healthcare Professional's Risk Perception

Table 2 reveals the sociodemographic differences towards perceived risk and efficacy belief. Our study found that several sociodemographics have significant differences with risk perception and efficacy belief, including gender, age, marital status, health status, quarantine condition, and use of PPE.

Regarding the sex group, this variable was significantly different from the perceived severity domain (p=0.001). The average value of perceived severity among women healthcare workers was significantly higher than that of men. This finding indicated that women were aware of the COVID-19 severity while working as health care providers during the pandemic. They also believed that COVID-19 might pose a risk of contracting the more severe disease. A study conducted by Sriharan et al. found that women healthcare workers frequently experienced emotional and mental health problems, contributing to their fear of contracting COVID-19 [16]. In addition, psychosocial and behavioral factors also played a role in gender differences in the perceived pandemic severity. According to another study, men were more likely to underestimate the severity of the potential virus that could harm them [17]. Meanwhile, women reported avoiding large public gatherings or closed physical contact with other people [18].

Our study also found a significant difference in perceived vulnerability (p=0.027) and response efficacy (p=0.034) according to marital status. Widow or widower health workers perceived themselves as more vulnerable to COVID-19 compared to married or single workers. This result indicated that widow or widower health workers believe their chances of contracting COVID-19 are incredibly high, leading them to take preventive measurements. A previous study also concluded that a high level of perceived vulnerability among health care workers was triggered by workload factors and a lack of social support from closest friends or family[16].

These findings also revealed that health status had a significant difference with perceived vulnerability. Healthcare workers who perceived themselves as in good health during the COVID-19 pandemic had a lower perceived vulnerability than other groups. According to existing data, individuals with pre-existing medical conditions are more susceptible to death [19], [20].

The existence of a quarantine policy might affect health workers' perceptions during the COVID-19 pandemic. In this study, there was a significant difference between quarantine conditions and perceived severity (p=0.016). The perceived severity of COVID-19 was lower among healthcare workers who left the house 2-3 times per week for non-work reasons, implying that they did not consider COVID-19 as a severe disease. During the COVID-19 pandemic, quarantine had a substantial impact on stress levels, especially for healthcare personnel. Those who continue to work during quarantine are seen as more vulnerable than those who do not [21].

There were significant differences in PPE use towards response-efficacy (p=0.023) and self-efficacy (p=0.017). The self-efficacy and response efficacy of health workers who did not wear PPE were lower than others, suggesting that they might not be able to face the threat of COVID-19 and not take COVID-19 precautions. A study supported these findings, which reported that adequate information about the use of PPE influences the risk perception towards infection. As frontline healthcare workers fighting this pandemic, they should know how to use PPE to prevent SAR-CoV-2 exposure properly [22]. Our findings also highlighted the consistent availability of PPE and its supply for healthcare workers. According to our study, more than half of the participants (66.1%) stated that PPE availability was at an adequate stock level. Optimization of the PPE supply chain is crucial in enabling safe and effective infection prevention of COVID-19 disease.

Table 2. Healthcare workers perceived risk towards COVID-19

No	Independent Variables	Dependent Variables									
		Perceived Vulnerability		Perceived Severity		Perceived Threat		Response efficacy		Self-efficacy	
		Mean Rank	P	Mean Rank	P	Mean Rank	P	Mean Rank	P	Mean Rank	P
1	*Sex*										
	Male	127.03	0.745	100.53	**0.001***	112.13	0.123	121.43	0.690	117.48	0.348
	Female	123.69		132.15		128.45		125.48		126.74	
2	*Age*										
	Adolescent	145.59		123.49		141.58		111.25		111.82	
	Adult	120,91	0.056	126.68	0.493	123.27	0.063	128.14	0.323	128.71	0.260
	Elderly	109.77		108.82		98.86		122.43		116.61	
3	*Education*										
	Middle Education	131.38	0.775	106.56	0.440	104.69	0.425	117.25	0.760	120.56	0.865
	Higher Education	124.27		125.10		125.16		124.74		124.63	
4	*Marital Status*										
	Married	117.18	**0.027***	123.77	0.955	118.36	0.066	130.17	**0.034***	123.43	0.503
	Single	139.08		126.57		135.76		107.15		129.71	
	Widow/ Widower	163.79		122.57		166.71		152.86		100.43	
6	*Health Status*										
	Healthy	115.55		124.86		118.19		127.47		130.20	
	Do not know	161.19		114.78		146.83		92.78		92.06	
	Doubtful	183.79		139.43		169.93		117.21		88.93	
	Probable	135.75	**0.000***	186.00	0.627	171.25	0.052	137.75	0.46	109.50	0.077
	Suspect	176.30		123.65		166.15		127.75		104.85	
	It has been declared cured of COVID-19	206.50		85.17		152.33		106.50		82.67	
7	*Quarantine conditions*										
	Full time activities at home	92.36		112.93		95.07		141.76		138.55	
	Leaving the house 2-3x per week not for work	99.00		72.65		84.75		133.25		70.95	
	Work outside every day	125.78	0.085	128.04	**0.016***	129.43	0.098	122.65	0.786	125.85	0.078
	Work outside 2-3x per week	131.41		137.33		130.72		121.42		121.04	
	Others	146.88		95.09		121.47		123.94		139.41	
8	*History of Chronic Illness*										
	Yes	151.07	0.125	140.50	0.339	153.20	0.108	124.03	0.978	94.53	0.072
	No	122.79		123.47		122.65		124.53		126.43	
9	*Smoking History*										
	Yes	142.15	0.276	104.97	0.212	129.62	0.756	114.06	0.514	104.03	0.189
	No	123.20		125.94		124.12		125.27		126.01	
10	*Supplement Use*										
	Yes	127.61	0.128	125.45	0.628	127.24	0.194	123.35	0.569	124.02	0.806
	No	110.10		120.08		111.82		129.82		126.74	
11	*Personal Protective Equipment (PPE) use*										
	Yes	121.37		122.02		121.30		125.82		127.46	
	Sometimes	127.20	0.918	129.36	0.641	129.10	0.865	129.54	**0.023***	121.96	**0.017***
	Rarely	129.19		130.00		128.36		125.89		141.94	
	Never	127.79		105.46		118.17		65.33		68.46	

Individuals' perceived risks constitute a significant component in health behavior and risk communication, reflecting the individuals' judgment about their potential harm such as injury, illness, and death. Risk perception may be related to several factors of individual sociodemographic. According to Table 3, it could be seen that age (p-value=0.017), marital status (p-value=0.031), and health status (p-value=0.001) have a significant correlation towards healthcare workers' risk perception.

Table 3. Factor correlation analysis of healthcare risk perception towards COVID-19

Independent Variables	Risk perception	
	Coefficient correlation	P-value
Age	-0.152	0.017*
Education	-0.034	0.592
Health Status	0.205	0.001*
Quarantine Conditions	0.104	0.102
The use of PPE	-0.037	0.559

Spearman correlation analysis indicated a significant negative correlation between age and risk perception (r=-0.152, p-value=0.017). It implies that the higher of healthcare worker's age, the lower their COVID-19 risk perception. The present findings suggested that elderly healthcare workers are less perceived regarding the COVID-19 fatality risk. In line with several studies stated that older adults were associated with a lower risk for contracting COVID-19 and less experiencing negative emotions, including anxiety and depression [23]–[25]. Older people are more resilient with minor complaints in daily life in order to avoid becoming stressed. Although the elderly reported fewer potentially stressful events, they described them as less unpleasant [26]. Another study concluded that younger age has a greater COVID-19 threat concerns while older adults had better emotional well-being and were less reactive to stressors in the early weeks of the pandemic [27]. Despite the COVID-19 epidemic, older adults might have managed their emotions by focusing on positive activities and interactions to reduce their stress [28].

According to this research, a significant positive relationship has been reported between risk perception and health status. These findings demonstrated that healthcare workers perceived as at high risk of contracting COVID-19 would take proactive preventive measures to avoid infection. As previously reported, the higher risk perception among healthcare workers contributes to them adhering to health protocols and engaging in the preventive health behaviors related to COVID-19[11].

Risk perception has long been recognized as a critical concept in encouraging healthy behaviors. Managing public health risks during the COVID-19 pandemic depended on the public's ability to assess their potential risks [29]. COVID-19 pandemic awareness was processed according to each individual's risk perception [30]. Therefore, it is important to understand the impact of numerous factors on COVID-19 risk perception. A high level of risk perception among healthcare workers will increase their awareness in implementing protective behaviors to contribute significantly to COVID-19 prevention and control [31].

This study has several limitations, including the sample being less representative of the Indonesian healthcare workers population. It is more likely that better results will be obtained from a larger sample size. Moreover, the cross-sectional study methodology could only illustrate relationships between patterns and social-demographic factors; no causal relationship exists. A further cohort-based study design should be proposed to measure changes in COVID-19 risk perception across time. Therefore, this study should be considered a preliminary study as such, and the findings can be used to help improve risk communication and epidemic control education in the future pandemic.

Despite these limitations, our present findings might be expected to enhance risk perception, promote preventive actions, and initiate online sessions to assist healthcare professionals in comprehending existing standards and protecting themselves from COVID-19 infection. Targeted risk communication with relevant channels should be considered for these frontline groups to improve their risk awareness and safety actions.

4. CONCLUSION

Healthcare workers are at disproportionate risk of contracting COVID-19. Evaluating the risk perception and its associated factors is vital in identifying healthcare workers' protective action in handling the pandemic. This study identified healthcare workers with a high level of COVID-19 risk perception during the early phase of new normal behavior. Age and health status are significantly correlated with the COVID-19 risk perception. Therefore, comprehensive risk communication, professional training, and great support should be implemented to strengthen the pandemic management strategies in the healthcare workforce setting.

CONFLICT OF INTEREST:

The author declares no conflict of interest.

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COVID-19 Risk Perceptions Among Healthcare Workers During Early "New Behavior Norms" Phase

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Article Info	ABSTRACT
	The COVID-19 pandemic poses a serious health threat among Indonesian healthcare workers. As front-line workers, they were facing higher risk due to the prolonged exposure of SARS-CoV-2. This study aims to explore various factors affecting perceived risk among healthcare professionals. A cross-sectional study was conducted among health practitioners who met the inclusion criteria of being over the age of 17 years and resided in Indonesia. This study was conducted at the early period of "new normal behavior' from April to July 2020. The sampling technique was convenience sampling which involved collecting data through the online questionnaire. The data were analyzed through the Spearman correlation method using SPSS version 22.0. A total of 248 respondents were included in the final analysis. Overall, age (p=0.017), and health status (p=0.001) were found to have a significant effect on the COVID-19 risk perception among healthcare workers. Therefore, comprehensive COVID-19 risk communication should be established in order to optimize health behavior and crisis control management among healthcare workers.

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3. INTRODUCTION

The novel coronavirus of SARS-CoV-2 causing coronavirus diseases 2019 (COVID-19) has been established as a global health crisis that affected 216 countries of the globe. This virus has rapidly spread to almost all nations, including Indonesia [1]. Indonesia first announced the COVID-19 infection in early March 2020. Within one month, the number of infected people had surpassed nearly 3.000, with an 8% of case fatality rate. Based on data compiled by Indonesian Health Authorities, there are more than 3.5 million confirmed cases of COVID-19 in the 34 provinces. The significant jump in the number of confirmed COVID-19 positive cases has been followed by a substantial risk of death rate [2]. Considering to minimize the socioeconomic and psychological impact of the COVID-19 crisis, the Indonesian government announced a new normal transition by adjusting health lifestyle behavior. The concept of new normal conditions provides high public awareness to implement the health protocols when carrying out their normal activities [3].

Many healthcare professionals are at the forefront of an ongoing struggle against the pandemic. They face enormous challenges in providing emergency health care services under extreme pressure [4]. Therefore, they have become at a much greater risk of COVID-19 exposure and might be exposed to significant worsening mental health [5]. A previous study has found that the prevalence of depression among health workers was

relatively high [6]. Similarly, a study of healthcare workers in Portugal also noted that almost 50% of them are highly vulnerable to getting COVID-19 infection [7]. Most of them expressed fear of contracting COVID-19 while working in health services.

As of June 2020, Amnesty International's analysis has reported that as many as 878 cases of Indonesian health workers have contracted the COVID-19, and 89 of them are known to have died, including 60 doctors, 23 nurses, and 6 dentists [8]. The lack of supply of personal protective equipment (PPE) and inadequate basic training regarding infection control are taking healthcare personnel at greater risk of acquiring the COVID-19 [6]. In addition, dishonest patients in providing information to healthcare professionals could be deemed as a great challenge in dealing with the pandemic [9]. According to reported cases, many Indonesian health workers were exposed to COVID-19 after treating patients who do not provide trustworthy information about their illnesses [10].

Risk perception is a major driving factor to elicit individual health behavior in response to the pandemic. Notably, the effectiveness of COVID-19 response strategies will depend upon personal behavior and adherence to COVID-19 preventive measures [11]. Inadequate related knowledge and risk perception among healthcare workers could increase the infection rates caused by delayed therapeutic management of COVID-19 [12]. Understanding the key factor influence healthcare worker's risk perception is important for helping navigate their response in the face of a pandemic [13]. To the best of our knowledge, this is the first study on the investigation of risk perception and its associated factor among Indonesian healthcare workers during the early phase of new normal-era. Therefore, understanding their COVID-19 risk perception might provide valuable insights to develop more effective risk communications strategies in pandemic prevention and control.

4.   RESEARCH METHOD
2.1 Study Design and Data Collection

This study has been approved by the Research Ethics Committee of Aisyiyah University (reference number: 1305/KEP-UNISA/IV/2020). All participants have been informed about the study purpose and the confidential data detailed on the first page of the online survey. The study was proceeded after obtaining the informed consent and agreement from each participant. A cross-sectional analysis study was designed to examine the risk perception of COVID-19 and its associated factor among Indonesian healthcare professionals. We conducted an online survey questionnaire shared through the social media platforms during the early phase of "new behavior norms" implementation from April to July 2020. The sampling technique was used with non-probability sampling technique, namely convenience sampling. According to our study, the respondents were identified and chosen from the population based on the relative ease of access to the researchers. The eligibility criteria included healthcare professionals over the age of 17 years and residing in Indonesia. We excluded the participants who did not fill the whole questionnaire and foreign healthcare workers living in Indonesia.

2.2 Research Instrument

The data collection was carried out by distributing the questionnaire via Google Forms. The particular questionnaire comprised three parts, namely socio-demographic, risk perception, and efficacy belief. The risk perception questionnaire was developed according to our previous study [14]. Before distributing the questionnaire, validity and reliability tests were conducted on 30 anonymous respondents. The content validity test of the questionnaire was performed using the Pearson Product Moment Correlation method with SPSS version 22. According to the validity test, each item of the questionnaire was valid with p-value < 0.001. The questionnaire reliability for perceived risk and efficacy belief was 0.806 and 0.734 (Cronbach's alpha). Respondents were asked to answer questionnaires regarding perceived risk dimensions, including perceived severity, vulnerability, followed by two dimensions of efficacy belief, namely response-efficacy and self-efficacy.

Each item questionnaire for perceived severity and perceived vulnerability consisted of one question. We used a 10-point Likert scale to assess the perceived severity of COVID-19, ranging from 1 (not serious) to 10 (very serious). A higher score indicates greater perceived severity of COVID-19. Meanwhile, the perceived vulnerability related to COVID-19 was measured using a five-point Likert scale, ranging from 1 (very unlikely) to 5 (very likely). A higher score indicated a greater exposure of COVID-19 among healthcare workers. The perceived threat was used as the overall measurement of risk perception, calculated using the square root of the multiplication of perceived severity divided by two and perceived vulnerability. The result was a perceived threat using a five-point Likert scale ranging from 1 (low) to 5 (high). The response-efficacy was assessed by asking how confident the participants think the people around them can take practical actions to prevent contracting COVID-19 using a 4-point Likert scale from 1 (not at all) to 4 (very much). Furthermore, self-efficacy was assessed by asking how confident they think they can prevent contracting the disease. The answer options used a 4-point Likert scale, from 1 (not confident) to 4 (very confident).

2.3 Data Analysis

All statistical software packages were conducted using SPSS version 22.0 for data entry and analysis (IBM Corp., Armonk, NY, USA). Descriptive analysis was carried out to describe the sociodemographic characteristics as independent variables such as sex, age, educational level, marital status, health status, quarantine condition, chronic illness history, smoking history, supplement use, and availability of personal protective equipment (PPE) during the pandemic. In comparison, the dependent variable was risk perception of COVID-19 in three categories: perceived severity, perceived vulnerability, and perceived threat. The data was tested using the Kolmogorov-Smirnov to examine the normal distribution between variables. The Kruskal-Wallis/Mann Whitney U bivariate analysis was performed to determine the relationship between sociodemographic characteristics towards risk perception dimensions and efficacy beliefs. The Spearman correlation test was carried out to identify the association of sociodemographic factors with risk perception of COVID-19. A significance level of 5% was considered statistically significant.

3. RESULTS AND DISCUSSIONS

In total, 251 participants have completed filling and submit the questionnaire. Furthermore, data were checked to ensure that the whole respondents met the inclusion and exclusion criteria. Three data were excluded because the respondents do not fill the whole questionnaire. A total of 248 participants were input into the database and used for data analysis.

Demographic

Table 1 describes that majority of respondents were female (75.8%), adult (72.6%), and had a higher education (96.8%). Most of the participants in this study were health workers who had a healthy condition (83.9%), consumed supplements routinely (82.3%), and still worked in health services every day (58.5%).

Table I. Demographic characteristic of healthcare workers

Variables	n	%
Sex		
Male	60	24.2
Female	188	75.8
Age		
Adolescent	46	18.5
Adult	180	72.6
Elderly	22	8.9
Education		
Middle Education	8	3.2
Higher Education	240	96.8
Marital Status		
Married	173	69.8
Single	68	27.4
Widow/ Widower	7	2.8
Health Status		
Healthy	208	83.9
Do not know	18	7.3
Doubtful	7	2.8
Probable	2	0.8
Suspect	10	4.0
It has been declared cured of COVID-19	3	1.2
Quarantine Conditions		
Full time activities at home	21	8.5
Still leaving the house 2-3x a week is not for work	10	4.0
Work outside the home every day	145	58.5
Work outside the home 2-3x a week	56	22.6
Others	16	6.5
History of Chronic Illness		
Yes	15	6
No	233	94
Smoking History		
Yes	17	6.9

No	231	93.1
Supplements use		
Yes	204	82.3
No	44	17.7
Personal Protective Equipment (PPE) use		
Yes	143	57.7
Sometimes	74	29.8
Rarely	18	7.3
Never	12	4.8

Healthcare Professional's Risk Perception

Table 2 reveals the sociodemographic differences towards perceived risk and efficacy belief. Our study found several sociodemographics have significant differences with risk perception and efficacy belief, including gender, age, marital status, health status, quarantine condition, and use of PPE.

Regarding the sex group, this variable was significantly different from the perceived severity domain (p=0.001). The average value of perceived severity among women healthcare workers was significantly higher than that of men. This finding indicated that women are aware of the COVID-19 severity while working as health care providers during the pandemic. They also believed that COVID-19 might pose a risk of contracting more severe disease. A study conducted by Sriharan et al. found that women healthcare workers frequently experienced emotional and mental health problems, contributing to their fear of contracting COVID-19 [15]. In addition, psychosocial and behavioral factors also played a role in gender differences in the perceived pandemic severity. According to another study, men were more likely to underestimate the severity of the potential virus that could harm them [16]. Meanwhile, women reported avoiding large public gatherings or closed physical contact with other people [17].

Our study also found a significant difference in perceived vulnerability (p=0.027) and response efficacy (p=0.034) according to marital status. Widow or widower health workers perceived themselves as more vulnerable to COVID-19 compared to married or single workers. This result indicated that widow or widower health workers believe their chances of contracting COVID-19 are incredibly high, leading them to take preventive measurements. A previous study also concluded that a high level of perceived vulnerability among health care workers was triggered by workload factors and a lack of social support from closest friends or family[15].

These findings also revealed that health status had a significant difference with perceived vulnerability (p=0.000). Healthcare workers who perceive themselves to be in good health during the COVID-19 pandemic had a lower perceived vulnerability than other groups. According to existing data, individuals with pre-existing medical conditions are more susceptible to death [18], [19].

The existence of a quarantine policy might affect health workers' perceptions during the COVID-19 pandemic. In this study, there was a significant difference between quarantine conditions and perceived severity (p=0.016). The perceived severity of COVID-19 was lower among healthcare workers who left the house 2-3 times per week for non-work reasons, implying that they did not consider COVID-19 as a severe disease. During the COVID-19 pandemic, quarantine had a substantial impact on stress levels, especially for healthcare personnel. Those who continue to work during quarantine are seen as more vulnerable than those who do not [20].

There were significant differences in PPE use towards response-efficacy (p=0.023) and self-efficacy (p=0.017). The self-efficacy and response efficacy of health workers who did not wear PPE were lower than others, suggesting that they might not be able to face the threat of COVID-19 and not take COVID-19 precautions. A study supported these findings, which reported that adequate information about the use of PPE influences the risk perception towards infection. As frontline healthcare workers fighting this pandemic, they should know how to use PPE to prevent SAR-CoV-2 exposure properly [21]. Our findings also highlighted the consistent availability of PPE and its supply for healthcare workers. According to our study, more than half of the participants (66.1%) stated that PPE availability was at an adequate stock level. Optimization of the PPE supply chain is crucial in enabling safe and effective infection prevention of COVID-19 disease.

Table 2. Healthcare workers perceived risk towards COVID-19

No	Independent Variables	Dependent Variables									
		Perceived Vulnerability		Perceived Severity		Perceived Threat		Response efficacy		Self-efficacy	
		Mean Rank	P	Mean Rank	P	Mean Rank	P	Mean Rank	P	Mean Rank	P
1	*Sex*										
	Male	127.03	0.745	100.53	**0.001***	112.13	0.123	121.43	0.690	117.48	0.348
	Female	123.69		132.15		128.45		125.48		126.74	
2	*Age*										
	Adolescent	145.59		123.49		141.58		111.25		111.82	
	Adult	120,91	0.056	126.68	0.493	123.27	0.063	128.14	0.323	128.71	0.260
	Elderly	109.77		108.82		98.86		122.43		116.61	
3	*Education*										
	Middle Education	131.38	0.775	106.56	0.440	104.69	0.425	117.25	0.760	120.56	0.865
	Higher Education	124.27		125.10		125.16		124.74		124.63	
4	*Marital Status*										
	Married	117.18	**0.027***	123.77	0.955	118.36	0.066	130.17	**0.034***	123.43	0.503
	Single	139.08		126.57		135.76		107.15		129.71	
	Widow/ Widower	163.79		122.57		166.71		152.86		100.43	
6	*Health Status*										
	Healthy	115.55		124.86		118.19		127.47		130.20	
	Do not know	161.19		114.78		146.83		92.78		92.06	
	Doubtful	183.79		139.43		169.93		117.21		88.93	
	Probable	135.75	**0.000***	186.00	0.627	171.25	0.052	137.75	0.46	109.50	0.077
	Suspect	176.30		123.65		166.15		127.75		104.85	
	It has been declared cured of COVID-19	206.50		85.17		152.33		106.50		82.67	
7	*Quarantine conditions*										
	Full time activities at home	92.36		112.93		95.07		141.76		138.55	
	Leaving the house 2-3x per week not for work	99.00		72.65		84.75		133.25		70.95	
	Work outside every day	125.78	0.085	128.04	**0.016***	129.43	0.098	122.65	0.786	125.85	0.078
	Work outside 2-3x per week	131.41		137.33		130.72		121.42		121.04	
	Others	146.88		95.09		121.47		123.94		139.41	
8	*History of Chronic Illness*										
	Yes	151.07	0.125	140.50	0.339	153.20	0.108	124.03	0.978	94.53	0.072
	No	122.79		123.47		122.65		124.53		126.43	
9	*Smoking History*										
	Yes	142.15	0.276	104.97	0.212	129.62	0.756	114.06	0.514	104.03	0.189
	No	123.20		125.94		124.12		125.27		126.01	
10	*Supplement Use*										
	Yes	127.61	0.128	125.45	0.628	127.24	0.194	123.35	0.569	124.02	0.806
	No	110.10		120.08		111.82		129.82		126.74	
11	*Personal Protective Equipment (PPE) use*										
	Yes	121.37		122.02		121.30		125.82		127.46	
	Sometimes	127.20	0.918	129.36	0.641	129.10	0.865	129.54	**0.023***	121.96	**0.017***
	Rarely	129.19		130.00		128.36		125.89		141.94	
	Never	127.79		105.46		118.17		65.33		68.46	

Individuals' perceived risks constitute a significant component in health behavior and risk communication, reflecting the individuals' judgment about their potential harm such as injury, illness, and death. Risk perception may be related to several factors of individual sociodemographic. According to Table 3, it could be seen that age (p-value=0.017), marital status (p-value=0.031), and health status (p-value=0.001) have a significant correlation towards healthcare worker's risk perception.

Table 3. Factor correlation analysis of healthcare risk perception towards COVID-19

Independent Variables	Risk perception	
	Coefficient correlation	*P-value*
Age	-0.152	**0.017***
Education	-0.034	0.592
Health Status	0.205	**0.001***
Quarantine Conditions	0.104	0.102
The use of PPE	-0.037	0.559

Spearman correlation analysis indicated a significant negative correlation between age and risk perception (r=-0.152, p-value=0.017). It implies that the higher of healthcare worker's age, the lower their COVID-19 risk perception. The present findings suggested that elderly healthcare workers are less perceived regarding the COVID-19 fatality risk. In line with several studies stated that older adults were associated with a lower risk for contracting COVID-19 and less experiencing negative emotions, including anxiety and depression [22]–[24]. Older people are more resilient with minor complaints in daily life in order to avoid becoming stressed. Although the elderly reported fewer potentially stressful events, they described them as less unpleasant [25]. Another study concluded that younger age has a greater COVID-19 threat concerns while older adults had better emotional well-being and were less reactive to stressors in the early weeks of the pandemic [26]. Despite the COVID-19 epidemic, older adults might have managed their emotions by focusing on the positive activities and interactions in order to reduce their stress [27].

According to this research, a significant positive relationship has been reported between risk perception and health status. These findings demonstrated that healthcare workers perceived as at high risk of contracting COVID-19 would take proactive preventive measures to avoid infection. As previously reported, the higher risk perception among healthcare workers contributes to them adhering to health protocols and engaging in the preventive health behaviors related to COVID-19[11].

Risk perception has long been recognized as a critical concept in encouraging healthy behaviors. Managing public health risks during the COVID-19 pandemic depended on the public's ability to assess their potential risks [28]. COVID-19 pandemic awareness was processed according to each individual's risk perception [29]. Therefore, it is important to understand the impact of numerous factors on COVID-19 risk perception. A high level of risk perception among healthcare workers will increase their awareness in implementing protective behaviors in order to contribute significantly in COVID-19 prevention and controlling[30].

This study has several limitations, including the sample that was taken is less representative of the Indonesian healthcare workers population. It is more likely that better results will be obtained from a larger sample size. Moreoever, the cross-sectional study methodology could only illustrate relationships between patterns and social-demographic factors; no causal relationship exists. A further cohort-based study design should be proposed to measure changes in COVID-19 risk perception across time. Therefore, this study should be considered a preliminary study as such, and the findings can be used to help improve risk communication and epidemic control education in the future pandemic.

Despite these limitations, our present findings might be expected to enhance risk perception, promote preventive actions, and initiate online sessions to assist healthcare professionals in comprehending existing standards and protecting themselves from COVID-19 infection. Targeted risk communication with relevant channels should be considered for these frontline groups to improve their risk awareness and safety actions.

4. CONCLUSION

Healthcare workers are at disproportionate risk of contracting COVID-19. Evaluating the risk perception and its associated factors is vital in identifying healthcare workers' protective action in handling the pandemic. This study identified healthcare workers with a high level of COVID-19 risk perception during the early phase of new normal behavior. Age, and health status are significant correlated with the COVID-19 risk perception. Therefore, comprehensive risk communication, professional training, and great support should be implemented to strengthen the pandemic management strategies in the healthcare workforce setting.

CONFLICT OF INTEREST:
The author declares no conflict of interest.

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COVID-19 Risk Perceptions Among Healthcare Workers During Early "New Behavior Norms" Phase

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Article Info	ABSTRACT
	The COVID-19 pandemic poses a serious health threat among Indonesian healthcare workers. As front-line workers, they were facing higher risk due to the prolonged exposure of SARS-CoV-2. This study aims to explore various factors affecting perceived risk among healthcare professionals. A cross-sectional study was conducted among health practitioners who met the inclusion criteria of being over the age of 17 years and resided in Indonesia. This study was conducted at the early period of "new normal behavior' from April to July 2020. The sampling technique was convenience sampling which involved collecting data through the online questionnaire. The data were analyzed through the Spearman correlation method using SPSS version 21.0. A total of 248 respondents were included in the final analysis. Overall, age (p=0.017), marital status (p=0.031), and health status (p=0.001) were found to have a significant effect on the COVID-19 risk perception among healthcare workers. Therefore, comprehensive COVID-19 risk communication should be established in order to optimize health behavior and crisis control management among healthcare workers.

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5. INTRODUCTION

The novel coronavirus of SARS-CoV-2 causing coronavirus diseases 2019 (COVID-19) has been established as a global health crisis that affected 216 countries of the globe. This virus has rapidly spread to almost all nations, including Indonesia [1]. Indonesia first announced the COVID-19 infection in early March 2020. Within one month, the number of infected people had surpassed nearly 3.000, with an 8% of case fatality rate. Based on data compiled by Indonesian Health Authorities, there are more than 3.5 million confirmed cases of COVID-19 in the 34 provinces. The significant jump in the number of confirmed COVID-19 positive cases has been followed by a substantial risk of death rate [2]. Considering to minimize the socioeconomic and psychological impact of the COVID-19 crisis, the Indonesian government announced a new normal transition by adjusting health lifestyle behavior. The concept of new normal conditions provides high public awareness to implement the health protocols when carrying out their normal activities [3].

Many healthcare professionals are at the forefront of an ongoing struggle against the pandemic. They face enormous challenges in providing emergency health care services under extreme pressure [4]. Therefore, they have become at a much greater risk of COVID-19 exposure and might be exposed to significant worsening mental health [5]. A previous study has found that the prevalence of depression among health workers was

relatively high [6]. Similarly, a study of healthcare workers in Portugal also noted that almost 50% of them are highly vulnerable to getting COVID-19 infection [7]. Most of them expressed fear of contracting COVID-19 while working in health services.

As of June 2020, Amnesty International's analysis has reported that as many as 878 cases of Indonesian health workers have contracted the COVID-19, and 89 of them are known to have died, including 60 doctors, 23 nurses, and 6 dentists [8]. The lack of supply of personal protective equipment (PPE) and inadequate basic training regarding infection control are taking healthcare personnel at greater risk of acquiring the COVID-19 [6]. In addition, dishonesty patients in providing healthcare professionals could be mentioned as a great challenge in dealing with the pandemic [9]. According to reported cases, many Indonesian health workers were exposed to COVID-19 after treating patients who do not provide trustworthy information about their illnesses [10].

Risk perception is a major driving factor to elicit individual health behavior in response to the pandemic. Notably, the effectiveness of COVID-19 response strategies will depend upon personal behavior and adherence to COVID-19 preventive measures [11]. Inadequate related knowledge and risk perception among healthcare workers could increase the infection rates caused by delayed therapeutic management of COVID-19 [12]. Understanding the key factor influence healthcare worker's risk perception is important for helping navigate their response in the face of a pandemic [13]. To the best of our knowledge, this is the first study on the investigation of risk perception and its associated factor among Indonesian healthcare workers during the early phase of new normal-era. Therefore, understanding their COVID-19 risk perception might provide valuable insights to develop more effective risk communications strategies in pandemic prevention and control.

6. RESEARCH METHOD
2.1 Study Design and Data Collection
This study has been approved by the Research Ethics Committee of Aisyiyah University (reference number: 1305/KEP-UNISA/IV/2020). All participants have been informed about the study purpose and the confidential data detailed on the first page of the online survey. The study was proceeded after obtaining the informed consent and agreement from each participant. A cross-sectional analysis study was designed to examine the risk perception of COVID-19 and its associated factor among Indonesian healthcare professionals. We conducted an online survey questionnaire shared through the social media platforms during the early phase of "new behavior norms" implementation from April to July 2020. The sample was drawn using the non-probability sampling method with the convenience sampling technique. The eligibility criteria included healthcare professionals over the age of 17 years, and residing in Indonesia. We excluded the participants who did not fill the whole questionnaire, and foreign healthcare workers living in Indonesia.

2.2 Research Instrument
The data collection was carried out by distributing the questionnaire via Google Forms. The particular questionnaire comprised three parts, namely socio-demographic, risk perception, and efficacy belief. The risk perception questionnaire was developed according to our previous study [14]. Before distributing the questionnaire, validity and reliability tests were conducted on 30 anonymous respondents. The questionnaire reliability for perceived risk and efficacy belief was 0.806 and 0.734 (Cronbach's alpha). Respondents were asked to answer questionnaires regarding perceived risk dimensions, including perceived severity, vulnerability, and threat, followed by two dimensions of efficacy belief, namely response-efficacy and self-efficacy.

We used a 10-point Likert scale to assess the perceived severity of COVID-19, ranging from 1 (not serious) to 10 (very serious). A higher score indicates greater perceived severity of COVID-19. Meanwhile, the perceived vulnerability related to COVID-19 was measured using a five-point Likert scale, ranging from 1 (very unlikely) to 5 (very likely). A higher score indicated a greater exposure of COVID-19 among healthcare workers. The perceived threat was used as the overall measurement of risk perception, calculated using the square root of the multiplication of perceived severity divided by two and perceived vulnerability. The result was a perceived threat using a five-point Likert scale ranging from 1 (low) to 5 (high). The response-efficacy was assessed by asking how confident the participants think the people around them can take practical actions to prevent contracting COVID-19 using a 4-point Likert scale from 1 (not at all) to 4 (very much). Furthermore, self-efficacy was assessed by asking how confident they think they can prevent contracting the disease. The answer options used a 4-point Likert scale, from 1 (not confident) to 4 (very confident).

2.3 Data Analysis
All statistical software packages were conducted using SPSS version 22.0 for data entry and analysis (IBM Corp., Armonk, NY, USA). Descriptive analysis was carried out to describe the sociodemographic characteristics as independent variables such as sex, age, educational level, marital status, health status,

quarantine condition, chronic illness history, smoking history, supplement use, and availability of personal protective equipment (PPE) during the pandemic. In comparison, the dependent variable was risk perception of COVID-19 in three categories: perceived severity, perceived vulnerability, and perceived threat. The data was tested using the Kolmogorov-Smirnov to examine the normal distribution between variables. The Kruskal-Wallis/Mann Whitney U bivariate analysis was performed to determine the relationship between sociodemographic characteristics towards risk perception dimensions and efficacy beliefs. Meanwhile, the spearman correlation test was carried out to identify the association of sociodemographic factors towards risk perception of COVID-19. A significance level of 5% was considered statistically significant.

3. RESULTS AND DISCUSSIONS

In total, 251 participants have completed filling and submit the questionnaire. Furthermore, data were checked to ensure that the whole respondents met the inclusion and exclusion criteria. Three data were excluded because the respondents do not fill the whole questionnaire. A total of 248 participants were input into the database and used for data analysis.

Demographic

Table 1 describes that majority of respondents were female (75.8%), adult (72.6%), and had a higher education (96.8%). Most of the participants in this study were health workers who had a healthy condition (83.9%), consumed supplements routinely (82.3%), and still worked in health services (58.5%).

Table I. Demographic characteristic of healthcare workers

Variables	n	%
Sex		
Male	60	24.2
Female	188	75.8
Age		
Adolescent	46	18.5
Adult	180	72.6
Elderly	22	8.9
Education		
Middle Education	8	3.2
Higher Education	240	96.8
Marital Status		
Married	173	69.8
Single	68	27.4
Widow/ Widower	7	2.8
Health Status		
Healthy	208	83.9
Do not know	18	7.3
Doubtful	7	2.8
Probable	2	0.8
Suspect	10	4.0
It has been declared cured of COVID-19	3	1.2
Quarantine Conditions		
Full time activities at home	21	8.5
Still leaving the house 2-3x a week is not for work	10	4.0
Work outside the home every day	145	58.5
Work outside the home 2-3x a week	56	22.6
Others	16	6.5
History of Chronic Illness		
Yes	15	6
No	233	94
Smoking History		
Yes	17	69
No	231	93.1
Supplements use		
Yes	204	82.3
No	44	17.7
Availability of PPE and Health Facilities		

Yes	76	30.6
No	18	7.3
Enough	88	35.5
Less	65	26.2
Personal Protective Equipment (PPE) use		
Yes	143	57.7
Sometimes	74	29.8
Rarely	18	7.3
Never	12	4.8

Healthcare Professional's Risk Perception

Table 2 reveals the sociodemographic differences towards perceived risk and efficacy belief. Our study found several sociodemographics have significant differences with risk perception and efficacy belief, including gender, age, marital status, health status, quarantine condition, and use of PPE.

Regarding the sex group, this variable was significantly different from the perceived severity domain (p=0.001). The average value of perceived severity among women healthcare workers was significantly higher than that of men. This finding indicated that women are aware of the COVID-19 severity while working as health care providers during the pandemic. They also believed that COVID-19 might pose a risk of contracting more severe disease. A study conducted by Sriharan et al. found that women healthcare workers frequently experienced emotional and mental health problems, contributing to their fear of contracting COVID-19 [15]. In addition, psychosocial and behavioral factors also played a role in gender differences in the perceived pandemic severity. According to another study, men were more likely to underestimate the severity of the potential virus that could harm them [16]. Meanwhile, women reported avoiding large public gatherings or closed physical contact with other people [17].

The age group should also be considered in assessing risk perception. This study found that age was significantly different from the perceived vulnerability domain (p=0.037). This finding also reported that the perceived vulnerability of elderly healthcare workers was lower than that of adult and adolescent health workers, implying that the elderly believed less likely to contract COVID-19 on the work. Indeed, not all individuals have the risk of dying from being infected with COVID-19. Based on COVID-19 case data, older people are at greater risk of death if infected [18]. However, older persons do not make many attempts to avoid COVID-19. Similarly, Niepel et al. found that older people estimated their likelihood of death from COVID-19 infection to be about 1 in 10000 or lower, thereby significantly underestimating their probability of death [19].

Our study also found a significant difference in perceived vulnerability (p=0.027) and response efficacy (p=0.034) according to marital status. Widow or widower health workers perceived themselves as more vulnerable to COVID-19 compared to married or single workers. This result indicated that widow or widower health workers believe their chances of contracting COVID-19 are incredibly high, leading them to take preventive measurements. A previous study also concluded that a high level of perceived vulnerability among health care workers was triggered by workload factors and a lack of social support from closest friends or family[15].

These findings also revealed that health status had a significant difference with perceived vulnerability (p=0.000). Healthcare workers who perceive themselves to be in good health during the COVID-19 pandemic had a lower perceived vulnerability than other groups. According to existing data, individuals with pre-existing medical conditions are more susceptible to death [18].

The existence of a quarantine policy might affect health workers' perceptions during the COVID-19 pandemic. In this study, there was a significant difference between quarantine conditions and perceived severity (p=0.016). The perceived severity of COVID-19 was lower among healthcare workers who left the house 2-3 times per week for non-work reasons, implying that they did not consider COVID-19 as a severe disease. During the COVID-19 pandemic, quarantine had a substantial impact on stress levels, especially for healthcare personnel. Those who continue to work during quarantine are seen as more vulnerable than those who do not [20].

There were significant differences in PPE use towards response-efficacy (p=0.023) and self-efficacy (p=0.017). The self-efficacy and response efficacy of health workers who did not wear PPE were lower than others, suggesting that they might not be able to face the threat of COVID-19 and not take COVID-19 precautions. A study supported these findings, which reported that adequate information about the use of PPE influences the risk perception towards infection. As frontline healthcare workers fighting this pandemic, they should know how to use PPE to prevent SAR-CoV-2 exposure properly [21].

Table 2. Healthcare workers perceived risk towards COVID-19

No	Independent Variables	Dependent Variables									
		Perceived Vulnerability		Perceived Severity		Perceived Threat		Response efficacy		Self-efficacy	
		x̄ ± SD	P	x̄ ± SD	P	x̄ ± SD	P	x̄ ± SD	P	x̄ ± SD	P
1	*Sex*										
	Male	3.42±0.92	0.745	7.50±2.62	**0.001***	3.49±0.89	0.123	3.03±1.04	0.690	4.02±0.79	0.348
	Female	3.36±1.13		8.65±2.01		3.72±0.88		3.09±1.07		4.13±0.77	
2	*Age*										
	Adolescent	3.70±0.98	**0.037***	8.43±1.94	0.612	3.89±0.82	0.364	2.87±0.80	0.101	3.98±0.71	0.203
	Adult	3.31±1.09		8.46±2.18		3.65±0.87		3.13±1.13		4.14±0.79	
	Elderly	3.18±1.18		7.55±1.95		3.34±1.08		3.00±0.97		400±0.81	
3	*Education*										
	Middle Education	3.50±1.06	0.203	7.38±2.92	0.658	3.46±0.83	0.412	3.00±1.41	0.785	4.00±0.92	0.581
	Higher Education	3.37±1.09		8.40±2.19		3.67±0.89		3.08±1.05		4.10±0.77	
4	*Marital Status*										
	Married	3.25±1.09	**0.027***	8.34±2.27	0.955	3.59±0.89	0.066	3.16±1.08	**0.034***	4.08±0.81	0.503
	Single	3.60±1.01		8.34±2.27		3.59±0.89		2.81±0.95		4.18±0.71	
	Widow/ Widower	4.00±1.15		8.34±2.27		3.59±0.89		3.57±1.27		3.86±0.69	
6	*Health Status*										
	Healthy	3.23±1.07	**0.000***	8.39±2.23	0.627	3.59±0.88	0.052	3.12±1.05	0.46	4.16±0.78	0.077
	Do not know	3.94±0.87		8.17±2.06		3.97±0.78		2.56±0.92		3.72±0.75	
	Doubtful	4.29±0.75		8.29±3.14		4.16±1.20		2.86±1.46		3.71±0.75	
	Probable	3.50±0.70		10.0±0.00		4.17±0.42		3.50±2.12		4.00±0.00	
	Suspect	4.20±0.91		8.50±1.84		4.18±0.71		3.10±0.87		3.90±0.73	
	It has been declared cured of COVID-19	4.67±0.57		7.00±2.64		3.96±0.47		3.00±1.73		3.67±0.57	
7	*Quarantine conditions*										
	Full time activities at home	2.86±1.15	0.085	8.00±2.60	**0.016***	3.24±0.87	0.098	3.33±1.15	0.786	4.24±0.83	0.078
	Leaving the house 2-3x per week not for work	3.00±0.94		7.20±1.68		3.22±0.60		3.20±1.03		3.50±0.70	
	Work outside every day	3.38±1.04		8.54±2.07		3.73±0.85		3.05±1.05		4.12±0.76	
	Work outside 2-3x per week	3.50±1.14		8.59±2.27		3.78±0.93		3.00±1.00		4.05±0.79	
	Others							3.13±1.31		4.25±0.77	
8	*History of Chronic Illness*										
	Yes	3.80±1.01	0.125	8.80±1.93	0.339	4.03±0.82	0.108	3.00±0.92	0.978	3.80±0.56	0.072
	No	3.34±1.08		8.34±2.24		3.64±0.88		3.08±1.07		4.12±0.79	
9	*Smoking History*										
	Yes	3.65±0.99	0.276	8.06±1.81	0.212	3.77±0.71	0.756	2.94±0.96	0.514	3.88±0.78	0.189
	No	3.35±1.09		8.39±2.25		3.66±0.90		3.08±1.07		4.12±0.78	
10	*Supplement Use*										
	Yes	3.42±1.01	0.128	8.44±2.13	0.628	3.70±0.87	0.194	3.06±1.05	0.569	4.09±0.79	0.806
	No	3.16±0.98		8.07±2.60		3.48±0.93		3.14±1.13		4.14±0.70	
11	*Availability of PPE and Health Facilities*										
	Yes	3.18±1.08	0.187	8.37±2.15	0.624	3.54±0.77	0.380	3.22±0.98	0.376	4.21±0.61	0.611
	No	3.78±1.11		8.39±2.11		3.91±0.90		2.89±1.49		3.94±1.11	
	Enough	3.44±0.99		8.10±2.55		3.66±0.97		3.01±1.04		4.09±0.78	
	Less	3.40±1.18		8.71±1.82		3.76±0.88		3.00±1.03		4.02±0.83	
12	*Personal Protective Equipment (PPE) use*										
	Yes	3.33±0.99	0.918	8.30±2.29	0.641	3.63±0.84	0.865	3.08±1.01	**0.023***	4.15±0.68	**0.017***
	Sometimes	3.43±1.25		8.54±2.10		3.73±0.97		3.16±1.07		4.05±0.85	
	Rarely	3.50±1.20		8.50±2.30		3.76±0.95		3.11±1.32		4.28±0.95	
	Never	3.42±0.90		7.83±2.25		3.59±0.77		2.17±0.71		3.42±0.79	

Individuals' perceived risks constitute a significant component in health behavior and risk communication, reflecting the individuals' judgment about their potential harm such as injury, illness, and death. Risk perception may be related to several factors of individual sociodemographic. According to Table 3, it could be seen that age (p-value=0.017), marital status (p-value=0.031), and health status (p-value=0.001) have a significant correlation towards healthcare worker's risk perception.

Table 3. Factor correlation analysis of healthcare risk perception towards COVID-19

Independent Variables	Risk perception	
	Coefficient correlation	P-value
Gender	0.098	0.123
Age	-0.152	**0.017***
Education	-0.034	0.592
Marital Status	-0.137	**0.031***
Health Status	0.205	**0.001***
Quarantine Conditions	0.104	0.102
History of Chronic Illness	0.102	0.108
Smoking History	0.019	0.760
Supplement use	0.083	0.194
The availability of PPE	-0.106	0.096
The use of PPE	-0.037	0.559

Spearman correlation analysis indicated a significant negative correlation between age and risk perception (r=-0.152, p-value=0.017). It implies that the higher of healthcare worker's age, the lower of their COVID-19 risk perception. The present findings suggested that elderly healthcare workers are less perceived regarding the COVID-19 fatality risk. In line with a previous study stated that older adults were associated with a lower risk for contracting COVID-19 and less experiencing negative emotions, including anxiety and depression [22]–[24]. Older people are more resilient with minor complaints in daily life in order to avoid becoming stressed. Although the elderly reported fewer potentially stressful events, they described them as less unpleasant [25]. Another study concluded that younger age has a greater COVID-19 threat concerns while older adults had better emotional well-being and were less reactive to stressors in the early weeks of the pandemic [26]. Despite the COVID-19 epidemic, older adults might have managed their emotions by focusing on the positive activities and interactions in order to reduce their stress [27].

Our study also found that there was a significant negative correlation between risk perception and marital status. In comparison to single, those who are in a married relationship have a higher risk perception. Married individuals are not only concerned about their risk of contracting COVID-19, but also how to protect their families or children from COVID-19. Previous research also indicated that a higher level of COVID-19 perceived risk among health workers was associated to the number of family dependents such as children and the elderly [28].

According to this research, a significant positive relationship has been reported between risk perception and health status. These findings demonstrated that healthcare workers perceived as at high risk of contracting COVID-19 would take proactive preventive measures to avoid infection. As previously reported, the higher risk perception among healthcare workers contributes to them adhering to health protocols and engaging in the preventive health behaviors related to COVID-19[11].

Risk perception has long been recognized as a critical concept in encouraging healthy behaviors. Managing public health risks during the COVID-19 pandemic depended on the public's ability to assess their potential risks[29]. COVID-19 pandemic awareness was processed according to each individual's risk perception [30]. Therefore, it is important to understand the impact of numerous factors on COVID-19 risk perception. A high level of risk perception among healthcare workers will increase their awareness in implementing protective behaviors in order to contribute significantly in COVID-19 prevention and controlling[31].

4. CONCLUSION

Healthcare workers are at disproportionate risk of contracting COVID-19. Evaluating the risk perception and its associated factors is vital in identifying healthcare workers' protective action in handling the pandemic. This study identified healthcare workers with a high level of COVID-19 risk perception during the early phase of new normal behavior. Age, marital status, and health status are significant correlated with the COVID-19 risk perception. Therefore, comprehensive risk communication, professional training, and great support should be implemented to strengthen the pandemic management strategies in the healthcare workforce setting.

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