



## THE INSTRUMENTS MEASURING NURSES' POSTTRAUMATIC GROWTH DURING THE COVID-19 PANDEMIC: A SCOPING REVIEW

Yudho Tri Handoko<sup>1</sup>, Nurfika Asmaningrum<sup>2\*</sup>, Anisah Ardiana<sup>3</sup>

<sup>1</sup>Clinical Nurses, Health Service of Bondowoso, Jl. Imam Bonjol No.13, Mandaluki, Kademangan, Bondowoso, Bondowoso, Jawa Timur 68217, Indonesia

<sup>2</sup>Research Group of ProNurses, Faculty of Nursing, Universitas Jember, Jl. Kalimantan Tegalboto No.37, Krajan Timur, Sumbersari, Sumbersari, Jember, Jawa Timur 68121, Indonesia

<sup>3</sup>Research Group of CFUNS, Faculty of Nursing, Universitas Jember, Jl. Kalimantan Tegalboto No.37, Krajan Timur, Sumbersari, Sumbersari, Jember, Jawa Timur 68121, Indonesia

<sup>1,2,3</sup>Master Study Program, Faculty of Nursing, Universitas Jember, Jl. Kalimantan Tegalboto No.37, Krajan Timur, Sumbersari, Sumbersari, Jember, Jawa Timur 68121, Indonesia

\*[nurfika\\_asmaningrum@unej.ac.id](mailto:nurfika_asmaningrum@unej.ac.id)

### ABSTRACT

Posttraumatic growth (PTG) refers to positive psychological changes that occur in individuals who have experienced traumatic events, such as nurses battling an underpressure situation during the COVID-19 pandemic. The attempts at measuring PTG are still limited due to the lack of instruments that suit natural variations caused by culture or language adaptation and sampling types. Although there are many studies regarding PTG, no comprehensive review has been found to identify the instrument measuring nurses' posttraumatic growth. Objective: The study aimed to identify research on instruments measuring nurses' PTG during the COVID-19 pandemic. Method: Five online databases (PubMed, Wiley Online Library, Proquest, Science Direct, and Google Scholar) were put under analysis to identify studies that report information on instruments measuring nurses' PTG. Only studies published between 2020-2024 were involved in the analysis. The selection process was done using Preferred Reporting Items for Systematic Reviews (PRISMA). Results: From the identification process, authors found 6,589 articles and after going through the screening and eligibility stages 24 studies were included in this review. Exploring PTG among nurses involves examining how they reflect upon and derive meaning from their experiences during challenging circumstances. Several instruments to measure PTG among nurses were identified, inter alia, Posttraumatic Growth Inventory (PTGI), Posttraumatic Growth Inventory Chinese versions (PTGI-C), Posttraumatic Growth Inventory-Expanded (PTGI-X), Posttraumatic Growth Inventory-Short Form (PTGI-SF), and Turkish, Polish, and Korean versions of PTGI. Conclusion: In general, the original version of PTGI has been adapted and translated into several languages to measure PTG among nurses during the COVID outbreak.

Keywords: covid-19; instruments; nurse; pandemic; posttraumatic growth; review

<b>First Received</b> 22 March 2024	<b>Revised</b> 28 April 2024	<b>Accepted</b> 30 April 2024
<b>Final Proof Received</b> 25 May 2024		<b>Published</b> 01 October 2024
<b>How to cite (in APA style)</b> Handoko, Y., Asmaningrum, N., & Ardiana, A. (2024). The Instruments Measuring Nurses' Posttraumatic Growth During the Covid-19 Pandemic: A Scoping Review. <i>Indonesian Journal of Global Health Research</i> , 6(5), 2747-2760. Retrieved from <a href="https://jurnal.globalhealthsciencegroup.com/index.php/IJGHR/article/view/3316">https://jurnal.globalhealthsciencegroup.com/index.php/IJGHR/article/view/3316</a> .		

### INTRODUCTION

On 30 January 2020, the World Health Organization (WHO) declared the COVID-19 outbreak a global health emergency (WHO, 2020). The epidemic officially became a pandemic on 11 March 2023 as the novel coronavirus spread around the world. Confirmed cases were increasing every day, causing heavy burdens on healthcare providers (Al Thobaity & Alshammari, 2020). The need for hospitals was consistently on the rise due to the high number of cases, especially patients in critical conditions. Meanwhile, the capacity and

healthcare personnel were limited. Since then, COVID-19 has spread around the world and caused global health problems including among healthcare workers.

Nurses play a critical role in the healthcare system during the COVID-19 pandemic (Buheji & Buhaid, 2020). As frontline caregivers, nurses frequently come into direct contact with infected patients, increasing their risk of contracting COVID-19 (Sugianto et al., 2021). In addition, nurses need to cope with high and unpredictable workloads that cause them to be psychologically overwhelmed (Gao et al., 2020). A recent study using systematic reviews reveals that nurses during the COVID-19 pandemic experience mental issues associated with anxiety (29.55%), depression (38.79%), posttraumatic stress disorder (29.8%), and insomnia (40.66%). Another study reported that nurses who provide hands-on care to infected patients were more likely to develop mental health disorders than other healthcare workers (Kang L et al., 2020). Furthermore, higher levels of depression, anxiety, and stress are evident among nurses with suboptimal personal protective equipment (Sampaio et al., 2020).

Another issue among nurses is that they experience “trauma” due to stressful conditions during COVID-19, posing detrimental psychological and physical impacts. The Diagnostic and Statistical Manual of Mental Disorders (DSM-5; American Psychiatric Association [APA]) defines traumatic experience as a traumatic event because of an injury, exposure to sexual abuse, a real death or the threat of death, or having a close encounter with death, witnessing such incidents, or learning that a close friend or relative has experienced such an event. A traumatic event, however, not only sparks negative effects such as posttraumatic stress disorder (PTSD) (Yim & Kim, 2022), but it also has a positive impact on individual psychological changes called posttraumatic growth (PTG) (Mo et al., 2022).

The attempts at measuring PTG are still limited due to the lack of instruments that suit natural variations caused by culture or language adaptation and sampling types. Although there is a study of posttraumatic growth and the analysis of influencing factors of PTG, no review has been found to analyze the instruments measuring nurses’ PTG. Such an inquiry lends credence to providing insights into the impact of traumatic events as part of an infectious disease and unpredictable disasters. Therefore, herein, this study aimed to identify any instrument that can be used to measure nurses’ PTG based on nurses’ experiences in different countries.

The term “posttraumatic growth” was first introduced by Tedeschi dan Calhoun which emerged from negative experiences or traumatic events that developed as a result of individual struggle with such tragedies. PTG refers to positive psychological changes that occur in individuals who have experienced traumatic events, such as nurses battling an underpressure situation during the COVID-19 pandemic (Cui et al., 2021). Positive changes occurring in individuals are characterized by a transformation in the individual’s self-quality or condition for the better before experiencing trauma. Individuals who experience PTG will develop self-improvement (Dell’osso et al., 2022). There are five major domains in PTG, amongst others, changes in self-preception, changes in interpersonal relationships, and a changed philosophy of life, leading to increased self-awareness and self-confidence and the discovery of new possibilities (Tedeschi & Calhoun, 1996). At least, one needs to address three of five domains to foster PTG.

Building on the aforementioned review, The study aimed to identify research on instruments measuring nurses’ PTG during the COVID-19 pandemic. This study also posits that nurses could potentially undergo positive transformations following traumatic events experienced

during the COVID-19 pandemic. The exploration of their posttraumatic growth (PTG) can shed lights on their reflective processes and sense-making strategies amidst challenging circumstances. The existing cholarships have recognized PTG as a globally applicable concept, yet variations across cultures may result in diverse interpretations of PTG. Simply put, different cultural contexts can yield distinct definitions of "trauma," influencing individual responses (Jozefiaková et al., 2022).

## **METHOD**

The study employed a scoping review approach that aimed to identify instruments measuring nurses' PTG. It amassed relevant literature from various sources or databases through several stages that included 1) identifying research questions, 2) identifying relevant studies, 3) study selection, 4) mapping data, and 5) compiling, summarizing, and reporting results (Arksey & O'Malley, 2005). Scoping reviews typically include a broader range of issues, allowing for the identification of numerous study designs (Peters et al., 2020). Five online databases (*PubMed, Wiley Online Library, Proquest, Science Direct, and Google Scholar*) were used in this study. The keywords ("instrument" OR "tool" OR "questionnaire" OR "scale") AND ("posttraumatic growth" OR "PTG") AND (nurse) AND ("pandemic" OR "COVID-19") were used for the search and studies published between January 2020 and January 2024.

The inclusion criteria for this review comprised both qualitative and quantitative study designs published in English between 2020 and 2024, focusing on nurses who provided care for COVID-19 patients in hospital settings. The search was specifically limited to studies exploring instruments for measuring nurses' posttraumatic growth (PTG). In contrast, the exclusion criteria encompassed non-full paper articles, duplicate articles, literature review articles, and articles retracted due to publication ethics. Details regarding the author's name, country of origin, aims, participants, study design, subscale, and type of instrument are all presented in the table.

## **RESULTS**

A total of 6,589 articles were initially identified from five online databases. These consisted of 20 articles from PubMed, 106 articles from Wiley, 542 articles from ProQuest, 356 articles from ScienceDirect, and 5,600 articles from Google Scholar. Following the first article selection and exclusion, 28 duplicate articles were removed. Then, the title and abstract of these articles were evaluated against the inclusion and exclusion criteria, and 39 articles were identified to fit the inclusion criteria. At the final stage, 24 articles were included in this scoping review (see Figure 1). The characteristics of the review results are shown in Table 1. The included articles were published between 2020 and February 2024. These studies were conducted in several countries such as China, Turkey, Korea, Poland, and the United States. The majority of the articles were cross-sectional studies and the remaining were large-scale research surveys and mixed-method studies. In general, the included studies used tools to measure positive outcomes for nurses experiencing trauma. Some of the articles dealt with developing novel instruments and some others delved into updated and/or revised instruments. In addition, other studies with large-scale surveys used short self-report questionnaires to measure PTG.

### **Post Traumatic Growth Inventory (PTGI)**

As shown in Table 1, there are several versions of PTGI, i.e., the Post Traumatic Growth Inventory (PTGI) developed by Tedeschi and Calhoun (1996), Post Traumatic Growth Inventory Short Form (PTGI-SF), Post Traumatic Growth Inventory - Expanded (PTGI), and Post Traumatic Growth Inventory (PTGI) in Chinese, Turkish, Korean and Polish version. In

general, the tools consisted of 5 major domains: relating to others, new possibilities, personal strength, spiritual change, and appreciation of life.

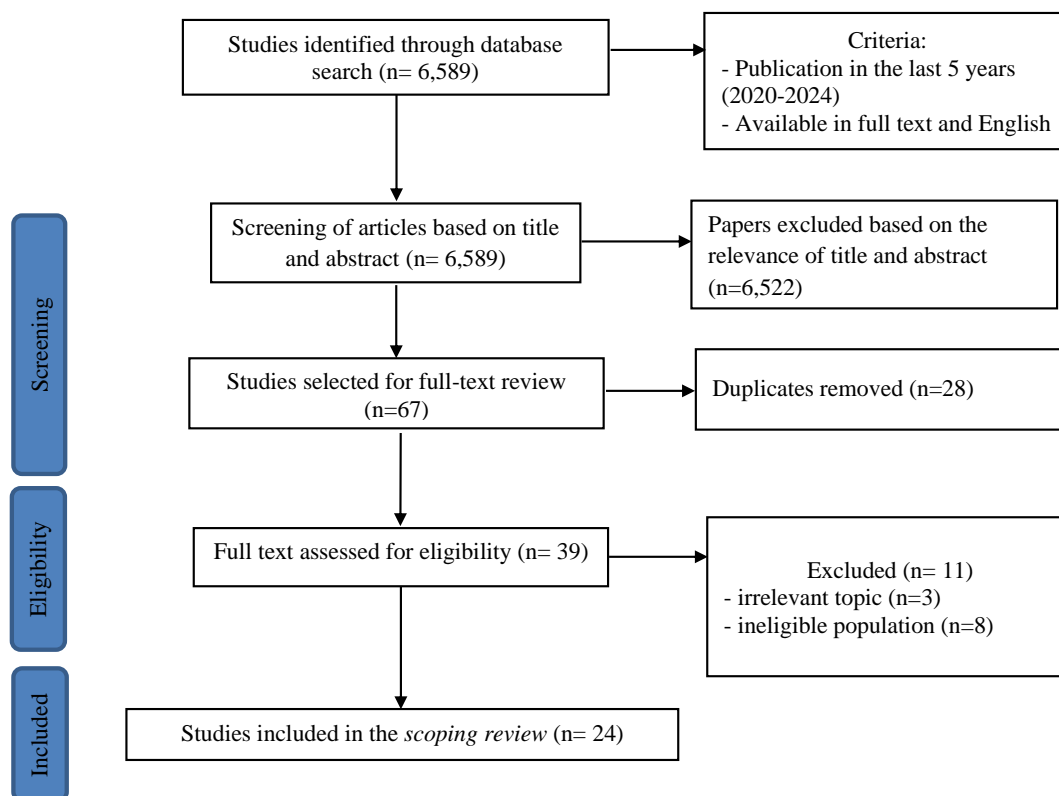


Figure 1. Preferred Reporting Items for Systematic Reviews and Meta-Analyses flow diagram (PRISMA, 2020)

**RESULT**

Table 1. Overview of Study Characteristics Included in the Review

Study	Study Design	Aims	Sub-scale	Count	Intended Participant	Type of Instrument
(Chen et al., 2021)	A cross-sectional large-scale survey	To assess posttraumatic growth factors for nurses in the COVID-19 pandemic	NR	China	12,596 nurses	Posttraumatic Growth Inventory - Short Form (PTGI-SF)
(Yao et al., 2023)	A cross-sectional study	To examine the nurses' posttraumatic growth during the COVID-19 pandemic	5 dimensions: appreciation of life, new possibilities, relating to others, personal strength, and self-transformation	China	1,512 nurses	Posttraumatic Growth Inventory Chinese Version (PTGI-C)
(Li et al., 2022)	A cross-sectional survey	To assess the posttraumatic Growth (PTG) of Chinese nurses during the COVID-19 pandemic	5 dimensions: personal strength, new possibilities, relating to others, spiritual change, and appreciation of life	China	455 nurses	Posttraumatic Growth Inventory (PTGI)

Study	Study Design	Aims	Sub-scale	Country	Intended Participant	Type of Instrument
(Mo et al., 2022)	A cross-sectional descriptive	To investigate the Posttraumatic Growth (PTG) of Chinese nurses who faced the coronavirus disease 2019 (COVID-19) pandemic	5 major domains: relating to others, new possibilities, personal strength, spiritual change, and appreciation of life	China	266 nurses	Posttraumatic Growth Inventory (PTGI)
(Prekazi et al., 2021)	Cross-sectional and correlational research	To elucidate Posttraumatic Growth (PTG) as the positive impact of coping during COVID-19 outbreak on mental health	The scale includes factors of New Possibilities, Relating to Others, Personal Strength, Spiritual Change, and Appreciation of Life	Kosovo	550 nurses	Posttraumatic Growth Inventory (PTGI)
(Nowicki et al., 2023)	A cross-sectional study	To assess post-traumatic growth (PTG) among nurses caring for COVID-19 patients in intensive care during the pandemic	4 factors include changes in self-perceptions, changes in relating to others, appreciation of life, and spiritual changes	Poland	120 nurses	Posttraumatic Growth Inventory (PTGI) Polish adaptation
(Yim & Kim, 2022)	A cross-sectional study	To establish a path model of posttraumatic growth (PTG) among nurses who provide care for COVID-19 patients	NR	Korea	229 nurses	Posttraumatic Growth Inventory (PTGI) Korean version
(X. Liu et al., 2021)	A cross-sectional survey	To measure posttraumatic growth among Chinese nurses to support Wuhan in managing COVID-19	5 dimensions: appreciation of life, new possibilities, relating to others, personal strength, and self-transformation	China	200 nurses	Posttraumatic Growth Inventory Chinese Version (PTGI-C)
(Kalaitzaki et al., 2024)	A cross-sectional survey	To measure contingent growth that occurred following the COVID-19 pandemic	5 domains: personal strength, relating to others, new possibilities, appreciation of life and spiritual change	Greece	429 nurses	Posttraumatic Growth Inventory (PTGI)
(Lyu et al., 2021)	Longitudinal study	To measure frontline healthcare workers' posttraumatic growth	NR	China	44 nurses 40 doctors 13 medical technicians 5 medical researchers 32 administrator	Posttraumatic Growth Inventory Chinese Version (PTGI-C)
(Han, Yeun, et al., 2023)	A cross-sectional descriptive	To measure posttraumatic growth among nurses during the	4 sub-factors: change in self-perception, increase in interpersonal	Korea	Nurses	Posttraumatic Growth Inventory (PTGI-X)

Study	Study Design	Aims	Sub-scale	Country	Intended Participant	Type of Instrument
	research	COVID-19 pandemic	depth, increase in spiritual and existential depth, and the discovery of new possibilities			
(Han, Chun, et al., 2023)	A descriptive study	To measure posttraumatic growth among nurses working at designated hospitals during the COVID-19 pandemic	4 domains: change in self-perception, increase in interpersonal depth, increase in spiritual and existential depth, and discovery of new possibilities	Korea	250 nurses	Posttraumatic Growth Inventory (PTGI-X)
(Zhang et al., 2021)	A descriptive study	To investigate the current status of PTG of clinical nurses	5 dimensions: relating to others, new possibilities, personal strength, spirituality, and appreciation of life	China	1790 nurses	Posttraumatic Growth Inventory (PTGI)
(Cui et al., 2021)	A cross-sectional survey	To assess the level of frontline nurses' posttraumatic growth (PTG) during the COVID-19 pandemic	5 factors: relating to others, new possibilities, appreciation of life, personal strength, and spiritual change.	China	167 nurses	Posttraumatic Growth Inventory Chinese Version (PTGI-C)
(Liu et al., 2023)	Random sampling method	To assess the positive changes following the traumatic events of nurses working in mobile cabins during the COVID-19 pandemic	5 dimensions involving life perception, personal strength, new possibilities, relationships with others, and self-transformation	China	449 nurses	Posttraumatic Growth Inventory Chinese Version (PTGI-C)
(Yi et al., 2024)	Random sampling method	To assess the level of posttraumatic growth among frontline healthcare workers working in mobile cabin hospitals during COVID-19 pandemic	5 dimensions of appreciation of life, personal strength, new possibilities, relating to others, and spiritual change	China	449 nurse 74 doctor 17 inspector	Posttraumatic Growth Inventory Chinese Version (PTGI-C)
(Yeung et al., 2022)	A cross-sectional survey	To measure the participants' positive changes since the COVID-19	NR	Hongkong	1510 nurses	Posttraumatic Growth Inventory-Short Form (PTGI-SF)
(Peng et al., 2021)	A cross-sectional study	To assess post-traumatic growth (PTG) levels among frontline nurses during the COVID-19 pandemic	5 dimension: Insights on life, personal strength, new possibilities, relationships with others, and self-transformation	China	116 nurses	Posttraumatic Growth Inventory Chinese version (PTGI-C)
(Nieman, 2022)	Mixed method studies	To identify post-traumatic growth (PTG) in a population of	5 factors: relating to others, new possibilities, and appreciation of life,	Spain	22 nurses	Posttraumatic Growth Inventory (PTGI)

Study	Study Design	Aims	Sub-scale	Country	Intended Participant	Type of Instrument
		nurses affected by the COVID-19 pandemic	personal strength, and spiritual change			
(Ata et al., 2023)	a cross-sectional and descriptive survey	To assess the posttraumatic growth status of nurses working in the COVID-19 pandemic	3 factors: Change in Self-Perception, Change in Philosophy of Life, and Change in Relationships with Others	Turki	192 nurses	Posttraumatic Growth Inventory (PTGI)
(İnce & Bekleviç, 2022)	A cross-sectional and descriptive survey	to examine the post-traumatic growth of infection control nurses during pandemic COVID-19	5 sub-dimensions: new possibilities, relating to others, personal strength, spiritual change, and appreciation of life	Turki	170 nurses	Posttraumatic Growth Inventory (PTGI) Turkish version
(Mazanec et al., 2023)	A cross-sectional and descriptive correlational	To assess stress-related growth among nurses during COVID-19 pandemic	5 subscales: relating to others, new possibilities, personal strength, spiritual and existential change, and appreciation of life	The United States	1.009 nurses	Posttraumatic Growth Inventory – Expanded (PTGI-X)
(Vitorino et al., 2023)	A large research survey	To assess positive psychological changes among Portuguese nurses during COVID-19 pandemic	NR	Portuguese	51 nurses 102 participants 51 significant others	Posttraumatic Growth Inventory Short Form (PTGI-SF)
(Akbari et al., 2023)	A cross-sectional study	To assess posttraumatic growth among nurses	5 domains of psychological growth, including relating to others, new possibilities, appreciation of life, personal power, and spiritual power	Iran	57 nurses 40 physicians 34 medical students	Posttraumatic Growth Inventory (PTGI)

Table 2.  
Properties of PTGI Instruments under Analysis

Tools	Item	Study	Validity and Reliability (Cronbach's Alpha $\alpha$ )	Factor Analysis	Interpretation
Posttraumatic Growth Inventory-original version (PTGI)	21 items	Yao et al. Li et al. Mo et al. Prekazi et al. Kalaitzaki et al. Zhang et al. Nieman Ata et al. Akbari et al.	0.874 0.92 0.972 0.92 0.95 0.90 NR 0.95 0.87	Five domains including (a) relating to others, (b) new possibilities, (c) appreciation of life, (d) personal power, (e) spiritual power	1. Interpretation uses a 6-point Likert scale, with 0 corresponding to no change and 5 indicating substantial degree of change. 2. Total scores $\geq 63$ indicate a sign of PTG.

Turkish version of PTGI	21 items	Ince et al.	0.94	Five dimensions including (a) new possibilities, (b) relating to others, (c) personal strength, (d) spiritual change, (e) appreciation of life	<ol style="list-style-type: none"> <li>The items are measured with a 6-point Likert scale ranging from 0 to 5.</li> <li>The score ranges from 0 to 105, with higher scores indicating greater growth.</li> </ol>
The Chinese version of PTGI	20 items	Liu et al. Cui et al. Liu et al. Peng et al. Lyu et al.	0.968 0.947 0.938 0.874 0.82, 0.92, 0.80 (3 times measurement)	Five dimensions including (a) relating to others, (b) new possibilities, (c) appreciation of life, (d) personal strength, and (e) spiritual change	<ol style="list-style-type: none"> <li>A 5-point Likert scale was used with a total score of 100 points.</li> <li>A total score &gt; 60 and an average item score &gt; 3 indicate moderate and higher levels of PTG, respectively. A higher score suggests a higher level of PTG.</li> </ol>
Posttraumatic Growth Inventory (PTGI) Polish adaptation	21 items	Nowicki et al.	0.92	Four factors including (a) changes in self-perceptions, (b) changes in relating to others, (c) appreciation of life, (d) spiritual changes	<ol style="list-style-type: none"> <li>Interpretation is based on a 6-level scale ranging from 0 to 5, with the former indicating no experience of change and 5 suggesting a significant change.</li> <li>The article does not describe the interpretation of measurement results.</li> </ol>
Posttraumatic Growth Inventory (PTGI) Korean version	16 items	Yim et al.	0.92	The article does not mention the dimensions of the subscale.	<ol style="list-style-type: none"> <li>The items are measured using a 6-point Likert scale, ranging from 0 to 5.</li> <li>The article does not describe the interpretation of measurement results.</li> </ol>
Posttraumatic Growth Inventory Expanded (PTGI-X)	25 items	Han et al. Han et al. Mazanec et al.	0.969 0.969 0.97	Four subscales involving (a) a change in self-perception, (b) an increase in interpersonal depth, (c) an increase in spiritual and existential	<ol style="list-style-type: none"> <li>Responses are rated on a 6-point Likert scale, ranging from 0 (not at all) to 5 (very much so).</li> <li>The total PTGI score ranges from 0 to 150, with higher</li> </ol>

				depth, (e) the discovery of new possibilities	scores indicating greater growth.
Posttraumatic Growth Inventory – Short Form (PTGI-SF)	10 items	Chen et al. Yeung et al. Vitorino et al.	NR 0.89 0.92	Five subscales: (1) relating to others, (2) new possibilities, (3) personal strength, (4) spiritual change, and (5) appreciation of life.	<ol style="list-style-type: none"> <li>1. Responses are rated on a 6-point Likert scale, ranging between 0 (I did not experience this change as a result of my crisis) and 5 (I experienced this change to a very great degree as a result of my crisis).</li> <li>2. The interpretation is based on the mean score of all items i.e., scores at 60<sup>th</sup> percentile or higher (<math>\geq 32</math>) indicating probable personal growth and a higher mean score indicating higher PTG.</li> </ol>

## DISCUSSION

In this paper, we reviewed the instruments measuring nurses’ PTG during the COVID-19 pandemic. The Post Traumatic Growth Inventory (PTGI) was first developed by Tedeschi and Calhoun (1996) for assessing positive outcomes or PTG reported by persons who have experienced traumatic events or stressful conditions. This original instrument of PTG measurement utilizes 21 items which encompass five domains: (1) relating to others, (2) new possibilities, (3) appreciation of life, (4) personal power, and (5) spiritual power. Eight of nine studies employed the original version of PTGI, which further acknowledges the reliability and validity of the instrument. The 21 items involving five domains are rated with a 6-point Likert scale (i.e., 0, 1, 2, 3, 4, 5). The original PTGI by Tedeschi and Calhoun (1996) suggests that total scores  $\geq 63$  signify a sign of PTG (Kalaitzaki et al., 2024). The level of PTG measured from the result scores  $\leq 45$  indicates none/low PTG whereas scores  $\geq 46$  indicate medium/high PTG (Akbari et al., 2023). The original PTGI is assumed to be easy to score and interpret.

The original version of The Post Traumatic Growth Inventory (PTGI) has been adapted and translated into several languages, such as Turkish, Polish, Chinese, and Korean versions. In the Turkish version, the use of the PTGI questionnaire has resulted in reliable and valid data. Similarly, the Polish version of PTGI has been found to demonstrate satisfactory reliability and validity. The 21 items with five dimensions are rated with a 6-point Likert scale (0, 1, 2, 3, 4, 5). Compared to the original PTGI, the Turkish and Polish versions have not described the interpretation of the PTG level. In contrast to previous translations, The Post Traumatic Growth Inventory (PTGI) developed by Tedeschi and Calhoun (1996) has been translated, revised, and updated for use in South Korea. The adapted version contains 16 items which are measured on a 6-point Likert scale ranging from 0 to 5. This instrument has been proven to be valid and reliable. However, this study does not explain the items and dimensions conducted

operative. Furthermore, the interpretations of the measurement results have not been fully delineated.

The Chinese version of the Post Traumatic Growth Inventory (PTGI-C) is designed to measure PTG among persons who experience traumatic events in China. The instrument has demonstrated a decent rate of reliability and validity (Wang et al). PTGI-C includes 20 items and five domains. The difference between PTGI-C and the previous original version is that an item was removed. Because of cultural adaptation, item 18 ('I have stronger religious faith') was removed. This instrument used a 6-point Likert scale (0, 1, 2, 3, 4, 5) in scoring the level of PTG. A total score > 60 and an average score > 3 indicate moderate and higher levels of PTG, respectively, (Yi et al., 2024). Comparatively, PTG levels are categorized as follows: a total score of 60 is considered low-level growth, a total score of 61–66 is classified as medium-level growth, and a total score greater than 66 indicates high-level growth (Peng et al., 2021). A higher score suggests a higher level of PTG. Similar to the original version, the Chinese version of PTGI-C is considered easy to administer, score, and interpret.

Posttraumatic Growth Inventory – Expanded (PTGI-X) consists of 25 items and four domains to assess positive psychological change in persons combating trauma. The reliability and validity of the PTGI-X have been proven satisfactory in the study. Compared to the original PTG, PTGI-X generally encompasses similar domains, but the latter includes a different number of items on each domain. This instrument adds questions related to existential and spiritual changes. In the PTGI, the spiritual change domain consists of two items, while the existential and spiritual change domain in the PTGI-X consists of 7 items. All items are assessed on a 6-point Likert scale, ranging from 0 (not at all) to 5 (very much so). The PTGI score ranges from 0 to 150, with higher scores indicating a greater level of PTG. Posttraumatic Growth Inventory – Short Form (PTGI-SF) is a simple and short questionnaire. PTGI-SF contains 10 items and five domains, assessed on a 6-point Likert scale ranging from 0 (not at all) to 5 (very much so). The interpretation of the instrument depends on the mean score of all items. A score at the 60th percentile or higher ( $\geq 32$ ) is considered to signify personal growth, with a higher mean score indicating a higher PTG level (Chen et al., 2021). All three studies that used this instrument employed a large-scale survey as the research design. According to the study, PTGI-SF is a self-reported questionnaire that is easy to administer for a large sample (Vitorino et al., 2023). However, one of the three studies involving this questionnaire provides no details regarding the validity and reliability of the data.

The discussion of review results points to the premise that using the right instruments that suit the research context can better assess the PTG of researchers, clinicians, and health professionals even in a large population with various unique cultural attributes. The measurement appears to be useful in assessing individuals facing and coping with traumatic events (Tedeschi & Calhoun, 1996). Based on the findings, the original PTGI by Tedeschi and Calhoun (1996) is the instrument most widely used to measure PTG among persons who have experienced traumatic events. The review results have demonstrated that the original instrument possesses a decent level of validity and reliability. Notwithstanding, some of the instruments have not delineated the evidence of validity and reliability. In addition, this study has identified common attributes or domains that are operative across different instruments. While differences are identified, these are only concerned with shortening subscales and adding new subscales based on item question adjustment. The difference between the instruments pointed to the adjustment of the items to comply with cultural factors when the instrument is translated, revised, and updated into another language. Furthermore, PTGI has

been updated, revised, and translated into several languages to suit unique contexts across countries during the pandemic of COVID-19 to measure PTG among healthcare workers, especially nurses.

## **CONCLUSION**

The studies measuring PTG in this literature review are developed out of one instrument, The Post Traumatic Growth Inventory (PTGI) by Tedeschi and Calhoun (1996). To cater to unique research contexts across countries, the original version of PTGI has been adapted and translated into several languages, i.e., Posttraumatic Growth Inventory Chinese versions (PTGI-C), Turkish, Polish, and Korean versions of PTGI. Additionally, various adaptations of the original PTGI have been made, including expanded and shortened versions, such as the Posttraumatic Growth Inventory-Short Form (PTGI-SF) and Posttraumatic Growth Inventory-Expanded (PTGI-X).

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