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# Confirmatory Factor Analysis of the Perceived Stress Scale among Physicians of Obstetrics and Gynaecology in Pakistan

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***Abstract*:** Valid psychological assessments of stress play a crucial role in measuring, managing, and preventing stress-related mental health conditions. However, there is lack of validation study on perceived stress scale (PSS-10) among physicians of Obstetrics and Gynaecology as well the relationship between physicians' stress levels and factors such as number of night calls per week, age, and hospital location remains unexplored in existing literature, highlighting a significant gap in research. Hence, the present study investigated the factor structure, role of demographics, and the reliability of the PSS-10 within a cohort of Obs and Gynae physicians ($N$ = 347). The three competing measurement models of the PSS-10 were scrutinized using Confirmatory factor analysis with one model labelled as unidimensional factor, second model with two correlated factors, and third bi-factorial model. The findings of the study revealed that the bifactor structure with an adequate model fit indices (Root Mean Square Error of Approximation = .05, Comparative Fit Index = .95, Tuker Lewis Index = .96, Goodness of Fit Index = .96) is a best fit model. Further, the scale is found to have commendable internal consistency reliability in the total PSS-10 scores as well as in its individual subscales. Convergent validity was found by correlating the scale with a team decision-making questionnaire that gauged aspects such as team support, learning, and quality services. This study lends strong support for PSS-10 as a reliable tool to enhance well-being and resilience in healthcare professionals.

**Keywords:** Physicians, Perceived Stress, Factorial structure, psychological assessment

## 1. Introduction

Within the demanding field of clinical medicine, the mental health of healthcare professionals is of utmost importance because it affects both their health and the standard of care they provide to patients (Søvold et al., 2021). Physicians of Obstetrics and Gynaecology (Obs and Gynae) frequently face cases of complex pregnancies and gynecological conditions involving diverse medical situations such as eclampsia, gestational diabetes, fetal distress, hysterectomy, etc. Handling sensitive issues such as infertility, difficult deliveries, eclampsia can take an emotional toll on physicians. Moreover, the demanding nature of the specialty often leads to challenges in maintaining a healthy work-life balance (Zajac et al., 2021). Additionally, Obstetricians and gynecologists frequently face ethical dilemmas, such as decision-making regarding high-risk pregnancies. Such scenarios create stress among physicians. Cohen et al. (1983) developed a self-report measure of stress with 14 items that has long been a mainstay in the literature on stress assessment. However, the usefulness of this scale warrants careful examination considering the context of the multifaceted and dynamic environment of clinical practice. In addition to critically evaluating the established PSS as a starting point for our investigation, this manuscript aims to emphasize the critical necessity of having a stress measure that has been rigorously validated and is tailored to the

unique experiences of physicians.

A commonly used instrument, the Perceived Stress Scale (PSS) measures the individual´s subjective perception of stress in diverse life conditions. This scale offers a comprehensive evaluation of stress and is not only for particular situations, instead it measures how individuals view their lives as being characterized by unpredictability, a lack of control, and excessive demands (Mondo et al., 2021). Five-point Likert scale is employed to articulate the thoughts and emotions related to life and events in the past month. The response options are "Never which indicates a zero score and Very Often" which indicates a score of four (Cohen et al., 1983, p. 387). The score on PSS encapsulates a person's general perception of stress. PSS-10 emerged from the elimination of items (item no: 13, 12, 5, and 4) having lowest factor loadings on the original scale. This ten-item measure was developed by Cohen and Williamson (Khalili et al., 2017). The PSS-10 has been endorsed for use in future studies by the scale's developers because it has psychometric properties that are comparable to those of the original 14-item version (Juarez-Garcia et al., 2023). Cohen and Williamson (1988) initially evaluated the PSS-10 in a sample of 2,387 American adults, noting a satisfactory internal consistency ($\alpha = 0.78$). They found a significant correlation between PSS-10 scores in a regular week ($r = 0.39$, $p = .001$) and encounters with stressful situations in the past year ($r = 0.32$, $p = .001$), suggesting moderate concurrent criterion validity. The PSS-10 demonstrated satisfactory convergent validity, correlating negatively with perception of a healthy life ($r = -.22$, $p = 0.001$) and positively with utilization of health services ($r = 0.22$, $p = 0.001$) and psychosomatic symptoms ($r = 0.28$, $p = 0.001$). Ongoing studies (Ahmed, 2023; Pasi et al., 2023; Soria- Reyes et al., 2023) consistently affirm strong internal consistency reliability for the PSS-10. These studies reveal associations between the scale and both physical and mental health measures, confirming its satisfactory convergent validity. Empirical research, notably by Di Trani et al. (2023) and Yokokura et al. (2017), has primarily centered on establishing the dimensionality of the PSS-10, addressing discussions about its structure.

Consistently, various studies reveal a two-factor structure in the PSS-10. The first factor includes positively phrased items (8, 7, 5, 4), while the second factor comprises negatively worded items (10, 9, 6, 3, 2, 1). This pattern, observed by multiple researchers (Baik et al., 2019; Kreutz et al., 2004; Ng, 2013; Reis et al., 2010; Schäfer et al., 2023), contrasts with the original research by Cohen and Williamson (1988), where the factors were not significantly different due to item directionality. Cohen and Williamson found that the ten-item scale measures stress perceptions as a unified construct, incorporating both negative and positive phrasing. According to Folkman's modified stress theory (Obbarius et al., 2021), the two factors in the PSS-10 represent adverse emotions linked to stress ("Stress") and favorable emotions countering stress ("Counter Stress"). The negatively worded items form the first factor, labeled as perceived helplessness and negative-stress. Conversely, the positively worded items constitute the second factor, called perceived self-efficacy and positive-stress (Roberti et al., 2006; Reis et al., 2010). Anwer et al. (2020) and Jovanović & Gavrilov-Jerković (2015) proposed an alternative bifactor model for the PSS-10 which includes a general factor representing perceived stress, and two additional factors consisting of negative (Factor-1) and positive (Factor-2) worded items. The primary goal is to gauge the fundamental concept of perceived stress using a general factor, with each item additionally contributing to a domain-specific factor. In the bifactor model of PSS-10 by Campo-Arias et al. (202) and Ruisoto et al. (2020), domain-specific factors elucidate unique variability in specific indicator subsets, extending beyond the influence of the general factor. The general factor captures the shared variability among all the observed indicators, which are the items within the PSS-10. The improved fit of the bifactor model was evident in clinical settings (psychiatric outpatients, $n = 157$) and non-clinical contexts, including adults and university students in Serbia ($n = 458$) (Jovanović & Gavrilov-Jerković, 2015). The model also showed a good fit among American patients with multiple sclerosis (n = 446).

Wu and Amtmann (2013) affirmed that PSS-10 is unidimensional, emphasizing that the overarching factor more effectively encompasses perceived stress than domain-specific factors, exhibiting a higher level of variance. This validates the PSS-10 total score as a reliable indicator of perceived stress. However, they did not assess or provide information on the percentage of variance contributed by the general factor or domain-specific factors. Jovanović & Gavrilov-Jerković (2015) proposed using both PSS-10 total score and individual subscale scores. Concerns arise from variations in PSS-10 scores among clinical physicians, highlighting the need for additional studies on stress scale validation, particularly in clinical settings.

### 1.2 Role of Stress in Cultural Context of Pakistan

The cultural context in Pakistan plays a significant role in shaping perceptions and responses to stress. Ensuring the reliability of stress measurement tools is crucial, particularly in the Pakistani context. Currently, there is a scarcity

of validated instruments specifically designed to assess stress among physicians in Pakistan. It facilitates a nuanced comprehension of how cultural factors might impact physicians' stress experiences, allowing for customized interventions and support systems. The aftermath of the COVID-19 pandemic has placed an unprecedented burden on healthcare professionals globally, including in Pakistan. Physicians have been at the forefront of combating the virus, facing increased workloads, resource shortages, and personal health risks (Martel, 2023). Validating perceived stress measures post-COVID-19 allows for a focused examination of the specific stressors arising from the pandemic's impact on healthcare delivery in Pakistan. Moreover, as Pakistan spends only 1% of its annual GDP on healthcare which leads to extreme challenges in the healthcare sector such as shortage of doctors, shortage of beds, emergency medicines, lack of medical testing labs, usage of non-sterilized instruments especially in Government hospitals put a great stress among physicians (Younas et al., 2023). Additionally, under such constraint situations, physicians are less paid. A news report stated that a patient dies because of the doctors strike over less salary. This stress has affected on the part of patients who suffer. Another report stated that staff and doctors initiated an indefinite strike in protest against a 2019 law regulating major public healthcare institutions. As a result, the outpatient departments (OPDs) of the facility in Islamabad remained closed for six hours (Saad, 2022). The increased workload, night calls, time pressured situation, social pressure, strict hospital rules, uncertainty of cases such as hysterectomy (Zavala et al., 2017) in Pakistan further underscore the importance of understanding and addressing physician stress. Under such situations, it is very essential to have a validated tool that can accurately measure Obs and Gynae physicians stress level so that precautionary measures could be taken to manage the stress. Furthermore, literature (Younas et al., 2023; Zhou & Zheng, 2022) documents that experienced physicians have less stress however young physicians are more stressed because of increased workload, night calls, less leisure time, increased time pressure, uncertainty, and organizational constraints (Zavala et al., 2017). However, lack of any finding exists on stress levels among physicians on the factors such as number of night calls per week and hospital sector (government and private). Hence, to fill these research gaps, the present study aimed to perform a psychometric assessment of the PSS-10 (Cohen & Williamson, 1988) in its English version. Urdu translation was not required as Pakistani physicians could easily speak, write, and understand English well.

### 1.3 Objectives of the Study

The study aimed to validate three models of the PSS-10. It used confirmatory factor analysis to establish construct validity for single-factor, bi-factor, and two-factor structures. The expectation was that a bi-factor model would best fit the data based on item wording. The study then assessed criterion-related validity by correlating PSS-10 with team support, learning, and service quality indicators. According to the transactional Model of Stress and Coping (Lazarus & Folkman) individuals who perceive stress based on their appraisal of a situation and the available resources to cope with stressful situation may be negatively related to indicators of support (e.g., team support). The availability of support (such as team support) may buffer the impact of stressors, leading to a negative correlation between perceived stress and team support. After determining the optimal factor structure, the study evaluated reliability and internal consistency using omega coefficient. Lastly, perceived stress was examined in relation to variables like night calls, age, and hospital location (government and private).

## 2. Methods

### 2.1 Participants

The research involved physicians practicing in Government and Private sector hospitals across the country with ages spanning from 24 to 60 years (M = 32.066; SD = 7.513). To be eligible for participation, individuals had to self-identify as practitioner of Obs and Gynae who had obtained an MBBS degree and were currently employed as trainee residents, registrars, or consultants in any hospital.

### 2.2 Measures

#### 2.2.1 Perceived Stress Scale (PSS-10)

Cohen and Williamson (1988) developed the PSS-10 which is a self-report questionnaire with ten items that measure a person's overall perception of stress. To calculate the total score, we first reverse-score the four items that are worded in a positive manner and then sum up all the items on the scale. High score indicates high level of perceived stress. Additionally, Factor 1, which pertains to "Negative" (hopelessness) aspects, is determined by summing the scores of six reverse score items (Items 10, 9, 6, 3, 2, 1) to calculate the subscale scores. Factor 2, representing "Positive" aspects (self-efficacy), is determined by adding the scores of the four items (8, 7, 5, and 4)

which indicate positive words. In this case, higher scores on first factor indicate more significant stress-related feelings or distress, while higher scores on second factor suggest stronger positive stress feelings and better-coping abilities.

### 2.2.2 Team Decision-Making Questionnaire

This questionnaire was developed by Batorowicz and Shepherd (2008) to measure teamwork as a support in decision-making process. The scale has three subscales, team support, team learning, and team providing quality services which are rated using a Likert scale that range from 1 (not at all) to 7 (to a great extent). The scale's and subscales internal consistency and reliability are reported to be strong as Cronbach's Alpha lies within 0.83 to 0.91.

### 2.3 Procedure

The present study is a cross-sectional survey that examined the validity and reliability of PSS in a population of healthcare physicians in clinical settings. Before participant enrollment, the materials and study protocols underwent a review and received permission from Ethical Review Board of the University (Ref. No. 0988/Ethic/01/S3H/070/DBS). Participants were approached at respective Government and private sector hospitals through convenient sample techniques. Permission to collect data was taken from the hospital authorities prior to data collection. Informed consent and other demographic-related information sheet was provided along with the set of questionnaires. Participants were given the assurance of complete confidentiality, and the significance of offering unbiased opinions was emphasized.

### 2.4 Data Analyses

Two software's, AMOS (Analysis of Moment Structures) and SPSS (Statistical Package for Social Sciences) was used to conduct the statistical analyses of the study. Descriptive statistics, such as means, percentages, frequencies, skewness, and kurtosis indices, were utilized to summarize demographic information and scale scores. SPSS software was used to assess the value of Cronbach's alpha which indicates the internal consistency of the scale. Omega coefficient was calculated through JASP (Jeffreys's Amazing Statistics Program) software. To evaluate convergent validity, the Pearson Product-Moment correlation was employed. executed Maximum Likelihood extraction method was used to execute the Confirmatory factor analysis (CFA). The study evaluated two latent factor structures that had been identified previously (Baik et al., 2019; Liu et al., 2020) (1) a single factor PSS model (unidimensional) with the ten items loading on a single factor, (2) a bi-factor model with one global factor and two latent factors, and (3) a two factor model where item loading takes place on two latent correlated factors: distress (comprising item no: 10, 9, 6, 3, 2, 1) and perceived self-efficacy (comprising item no : 8, 7, 5, 4). Various fit indices were considered for model fit. This includes the Comparative-Fit Index (CFI), the root mean square error of approximation (RMSEA), and SRMR (standardized root mean square residual), GFI (Goodness of fit), and AGFI (Adjusted Goodness of Fit) to evaluate the goodness of fit for these specific models. When $\chi^2$/df was less than 1.5, CFI, GFI, and AGFI values are greater than or equal to.95 (with adequacy starting from .92 to.94), and RMSEA and SRMR was less than .06, models were deemed to have a satisfactory fit to the data (Xia & Yang, 2019). Additionally, group differences across age, number of night calls per week, and hospital location were also investigated using Independent sample T-Test analysis through SPSS.

## 3. Results of the Study

### 3.1 Descriptive Statistics

The demographic details of the study's demographics of physicians are shown in Table 1. The mean of participants 'age was 31.184 and standard deviation came to be 6.704. Notably, the Perceived Stress Scale-10 (PSS-10) and team support scales had very little missing data, with no individual item exhibiting more than 2% of missing values. In order to compute means and standard deviations based on the data that were available for each variable and to calculate correlations between variables with non-missing data, we used pairwise deletion of missing data. The overall sample had the mean of 24.636 (*SD* = 5.208), and a range from 0 to 33. In addition, we found two factors in the PSS-10: the negative factor having a range between 0 to 24 and a mean score of (*M* = 14.626, *SD* = 4.325) whereas the positive factor has the range between 0 to 16 and a mean score (*M* = 9.948, *SD* = 2.438). The proper distribution of scores is illustrated through the skewness and kurtosis values. The values were in range of +1 to -1. However, according to Cain et al. (2017), there is supporting evidence that values falling within the -2 to +2 range are considered acceptable for establishing a normal univariate distribution.

**Table 1:** Descriptive statistics for PSS-10

| Scales | No of items | *M* | *SD* | Range | | | |
|---|---|---|---|---|---|---|---|
| | | | | Actual | Potential | Skewness | Kurtosis |
| PSS | 10 | 24.574 | 5.179 | 3-40 | 0-40 | -.095 | .697 |
| P_self efficacy | 4 | 9.948 | 2.4384 | 1-16 | 0-16 | -.094 | .571 |
| P_Learned helplessness | 6 | 14.626 | 4.3258 | 0-24 | 0-24 | -.369 | .017 |

Note. PSS = Perceived stress scale; P_self efficacy = Perceived self-efficacy; P_learned hopelessness = Perceived learned helplessness

### 3.2 Construct Validity of PSS-10

One factor, bi-factor, and two factor structures of PSS-10 were assessed using Confirmatory factor analysis. The findings showed (CFI = 0.722, RMSEA = 0.140, SRMR = 0.132) lack of statistically favorable fit for the one-factor model. Also the two factor model showed unsatisfactory indices (CFI = 0.822, RMSEA = 0.13, SRMR = 0.11). However, adequate fit statistics for the bi-factor model were achieved, which included "Negative" and "Positive" factors (CFI = 0.951, RMSEA = 0.052, SRMR = 0.063) with a general factor. As a result of the superior fit of the bi-factor solution, subsequent analyses focusing on demographic differences were exclusively conducted using this model.

In evaluating factor analysis models, it's common to consider different indices. Two frequently recommended methods are maximum likelihood for estimating the model and diagonally weighted least squares. These methods are often compared in terms of their fitness for confirmatory factor analysis (Table 2). Looking at Table 2, it's evident that the Bentler-Bonett non-normed fit index (NNFI), Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), and Root Mean Square Error of Approximation (RMSEA) values suggest that the fitness indices are more favorable for the second model when using DWLS techniques. Optimal NNFI, GFI and AGFI values fall between 0 and 1, with closer proximity to 1 indicating a better fit. Additionally, for RMSEA, values below .05 are considered ideal for a perfect fit (Baghdarnia et al., 2014).

**Table 2**: Indices of two factor Structure of PSS-10

| **Indices** | ***ML*** | ***DWLS*** |
|---|---|---|
| GFI | .92 | .96 |
| AGFI | .93 | .95 |
| RMSEA | .07 | .05 |
| NNFI | .92 | .95 |

Note. ML = Maximum Likelihood; DWLS =Diagonally Weighted Least Squares; RMSEA = Root Mean Square Error of Approximation; GFI = Goodness of Fit Index; AGFI = Adjusted Goodness of Fit Index; NNFI = Bentler-Bonett non-normed fit index

Furthermore, Table 3 provides a detailed breakdown of how much each question contributes to understanding or assessing a particular factor, including the factor loading represented by coefficients along the route between factors and measurement indices. The standardized coefficients range from .524 to .733, and all routes are statistically significant. Furthermore, an investigation into measurement invariance across early career physicians and experienced physicians was conducted to determine whether participants attributed the same meanings to scale items regardless of differences on experience level. The results indicate that PSS remains invariant across early career and expert physicians, supported by a chi-square value of 24.78 with a p-value of .132. These statistically insignificant findings affirm the assumption that both early career and expert physicians similarly interpret the items of the perceives stress scale.

**Table 3:** Standard error measurement values and Standardized coefficient values for items of the scale

| PSS-10 item | Route standardized coefficients | | Standard Error Measurement (SEM) | |
|---|---|---|---|---|
| | *ML* | *DWLS* | *ML* | *DWLS* |
| **P_learned helplessness items** | | | | |
| 1 | .702 | .712 | 2.784 | 2.44 |
| 2 | .695 | .524 | 3.184 | 2.47 |
| 3 | .706 | .721 | 2.832 | 2.64 |
| 6 | .727 | .733 | 3.073 | 2.34 |
| 9 | .531 | .551 | 3.579 | 2.47 |
| 10 | .621 | .620 | 3.617 | 2.28 |
| **P_self efficacy items** | | | | |
| 4 | .706 | .690 | 2.832 | 2.70 |
| 5 | .673 | .661 | 3.115 | 2.46 |
| 7 | .632 | .660 | 3.632 | 2.50 |
| 8 | .596 | .610 | 3.700 | 2.29 |

Note. P_self efficacy = Perceived self-efficacy; P_learned helplessness = perceived learned helplessness; ML = Maximum Likelihood; DWLS = Diagonally Weighted Least Squares,
*$p < .05$

### 3.4 Reliability and Internal Consistency

The Perceived Stress Scale-10 (PSS-10) revealed satisfactory reliability and internal consistency on the overall scale (α = .75). Cronbach's alpha coefficients for Factor 1, representing "Negative" (perceived helplessness) stress items (6 items), demonstrated adequate reliability coefficients equal to .83. Similarly, the assessment of Factor 2, representing "Positive" (perceived self-efficacy) stress items (4 items) revealed satisfactory reliability and internal consistency for the total study sample (α = .78). The values of omega coefficient for overall scale is .78; for negative stress items it is (Ω = .84) and for positive items, the value is (Ω = .75).

### 3.5 Convergent Validity

Pearson Product Moment Correlation was used to compute the correlation between PSS-10 scores and scores on measure of convergent validity. The correlation shows significant negative correlation with team support ($r$ = -.083*), team learning ($r$ = -.093*), and team providing quality services ($r$ = -.065*). Similarly, as anticipated, the negative factor has a significant negative correlation with team support ($r$ = -.030*), team learning ($r$ = -.035*), and quality services ($r$ = -.054*). However, the strength of the relationship is very small but still significant showing the evidence of convergent validity. If stress is increased, the team support will decrease showing an inverse relationship. On the other hand, the positive factor of perceived stress shows a positive relationship with team support ($r$ = .229**), team learning ($r$ = .258**), as well as with team providing quality services ($r$ = .233**). The effect size is small to medium but in the positive direction.

### 3.6 Findings Across Demographic Variables

The results of T-Test (Table 4) for number of calls in a week reveal significant differences across perceived stress and its domains. Professionals having three or more calls per week scored significantly higher than professionals who have 1 or 2 calls per week. Additionally, on the domain of perceived self-efficacy, non-significant differences are observed however, significant differences are observed on the domain of perceived helplessness. Those having three or more calls per week scored higher on helplessness as compared to those having one or two calls per week. Moderate effect sizes are observed as revealed through the values of Cohen's d in both cases showing enough effect

as being substantive or meaningful, but it's not so large that it could be categorized as a particularly strong or overwhelming effect. Furthermore, significant demographic differences are also revealed across age group (Table 4). Physicians having age bracket of 24 to 32 years scored significantly high on stress as compared to the older physicians. Also on the domain of perceived learned hopelessness, younger age group scored high as compared to the older age group. The values of Cohen's d reveal small effect size suggesting a small substantial difference between the two groups.

**Table 4**: T values, means and standard deviation for the demographics of age and number of calls per week

| Scales | Physicians having 3 or more night calls per week ($n$ = 167) | | Physicians having 1-2 night calls per week ($n$ = 180) | | | | 95% CI | | |
|---|---|---|---|---|---|---|---|---|---|
| | *M* | *SD* | *M* | *SD* | *t* | *p* | *LL* | *UL* | *Cohen´s d* |
| PSS | 25.864 | 4.897 | 23.857 | 4.828 | 2.703 | .00 | .5373 | 3.476 | 0.41 |
| P_Self efficacy | 10.234 | 2.568 | 9.741 | 2.435 | 2.423 | .19 | -.268 | 1.254 | 0.19 |
| P_helplessness | 15.630 | 4.091 | 14.116 | 4.127 | 2.415 | .01 | .277 | 2.751 | 0.36 |
| Scales | Age (24-32 years) ($n$ = 186) | | Age (33-60 years) ($n$ = 161) | | | | | | |
| | *M* | *SD* | *M* | *SD* | *t* | *p* | *LL* | *UL* | *Cohen´s d* |
| PSS | 24.77 | 4.628 | 23.33 | 5.021 | 2.33 | .02 | .226 | 2.654 | 0.298 |
| P_Self efficacy | 9.797 | 2.291 | 9.422 | 2.415 | 1.243 | .21 | -.219 | .968 | 0.159 |
| P_helplessness | 14.977 | 3.884 | 13.910 | 4.472 | 2.005 | .04 | .018 | 2.113 | 0.254 |

Note. PSS = Perceived stress scale; P_self efficacy = Perceived self-efficacy; P_learned helplessness = perceived learned helplessness

Furthermore, t-test was also performed across physicians of government and private sector hospitals. The results again reveled non-significant difference across two groups. This could be attributed to factors like comparable levels of dedication, shared medical knowledge, and similar expertise or training standards and leveling the playing field in terms of outcomes.

## 4. Discussion and Conclusion

The present study attempted to investigate the three models (bi-factors, two factor, and one factor) of PSS-10. This study's uniqueness is evident in its adaptation of the concept of stress to the cultural and professional circumstances of Pakistani Obs and Gynae professionals. This lays the groundwork for more successful interventions, advances international studies on physician well-being, and encourages a comprehensive approach to healthcare in Pakistan.

Confirmatory factor analysis was computed to assess construct validity. The unidimensional measure of perceived stress as proposed originally by Cohen and Williamson (1988) did not adequately fit to the data. The bi-factor model, on the other hand, showed adequate fit and factors related to directionality of items; first factor comprised reverse score items (negatively worded) while the second factor consisted of positive items (positively worded). As a result, the only structure that demonstrated an acceptable match was the two-factor model. The standardized coefficients ranged from .524 to .733, and all pathways were statistically significant. However, existing research emphasizes the absence of strict guidelines in factor analysis for determining the threshold of factor loadings. Some studies suggest that certain items, while theoretically distanced from a specific factor, may exhibit lower factor loadings. Despite this, they could still play a crucial role in contributing to the overall scale. Therefore, if items fall short of the expected level of factor loadings, researchers have the flexibility to include them based on their

theoretical significance or retain items with lower factor loadings (Bandalos & Finney, 2010).

Additionally, the statistically insignificant chi-square value of 24.78 ($p$ =.132) holds substantial implications. It supports the underlying assumption that physicians in their early career and those in their expert roles share a consistent interpretation of items in the perceived stress scale. This lack of significant variation underscores the scale's inherent robustness, which shows that it can retain measurement equivalency even when professional experience levels vary. This supports the broader assertion that the scale transcends potential biases associated with experience levels, adding a layer of confidence to its utility in gauging perceived stress irrespective of professional tenure.

A remarkable convergent validity was demonstrated by PSS-10 beyond establishing factorial validity by showing substantial correlations in anticipated directions with team support, team learning, and team providing quality services. A high score on perceived stress and negative stress experiences correlated with reduced reporting of team support, learning, and service quality. Conversely, a high score on positive stress subscale was correlated with increased reporting of team support, learning, and service quality. This aligns with convergent validity analyses from prior studies (e.g., Hebles et al., 2022; Sangal et al., 2020), reinforcing the presence of two distinct PSS-10 subscales with differential associations with clinical syndromes. Notably, "Negative" scores exhibited stronger negative associations with team support compared to "Positive" scores. The correlations between "Positive" scores and team support, learning, and quality services scores were significant and favorable, as expected, but the linkages only had weak to moderate strength. This suggests that team support was marginally correlated with coping strategies and positive stress (subscale of perceived self-efficacy). Many studies used the PSS-10 measure with a general factor (as a unidimensional construct), attributing the two factors to item format instead of theoretical differences (for instance, Denovan et al., 2019; Nielsen et al., 2016; Reis et al., 2010). Additionally, the aforementioned studies used the overall score of PSS-10 rather than scores on the individual subscales despite the mounting evidence for the existence of the two distinct factors. Further examination is required to investigate the construct validity of the PSS-10, encompassing both discriminant and convergent validity. This examination should also delve into its relationship with theoretically associated domains, such as perceived health status, depression, and anxiety. Additionally, there is still room for investigation into whether physician groups should use subscale scores, total scores, or a combination of both.

Results further revealed that professionals having three or more calls per week scored significantly higher than their counterparts with 1-2 calls per week. This suggests that there is a significant correlation between the number of calls and the observed outcomes. Higher perceived hopelessness scores among physicians having three or more calls per week point to a possible association between unfavorable psychological states and greater call frequency. Notably, non- significant differences were found on perceived self-efficacy between the two groups (see Table 4); nevertheless, there were substantial variations in perceived hopelessness, which provided insight into a particular psychological dimension that was impacted by the frequency of calls. This little distinction highlights how crucial it is to look at different psychological domains separately in order to have a whole picture of how professional communication affects wellbeing. These results warrant more investigation into the underlying mechanisms behind the observed variations in perceived helplessness. Possible factors may include the potential interference with work-life balance, the emotional toll of dealing with urgent matters, and disruptive nature of frequent calls on professionals' workflow. A detailed examination of these factors could enhance the interpretability of the results and contribute to the existing literature on occupational stress and psychological well-being. Moreover, significant differences are also observed across age group. Physicians of older age group scored low on stress and perceived hopelessness as compared to physicians of younger age group. This can be attributed to the challenges in early career phases, including heightened career pressure, personal training, and difficulty balancing professional and personal life. Research evidence also supports that older physicians may benefit from developed coping mechanisms and resilience gained through experience (Heath et al., 2020). Additionally, generational differences in coping strategies and increased mental health awareness among younger physicians could contribute to the observed pattern. Additionally, T-Test was also performed across hospital location where findings pose non-significant differences between two groups. This can be attributed to the dominance of the multifaceted nature of stress, the diversity of individual coping strategies, and common professional stressors within the medical profession. This underscores the importance of considering a holistic array of factors when exploring stress dynamics among healthcare professionals.

It is crucial to interpret the study results mindful of certain limitations. Firstly, the participants predominantly comprised Pakistani Obs and Gynae physicians. This limits the generalizability and confines the applicability of the

findings to different subgroups of Pakistani physicians. Therefore, to enhance the applicability of the results to the broader Pakistani physician community, it is imperative to further investigate the measurement invariance and the factorial validity of the PSS-10 among physicians of other departments such as surgery, medicine, pediatrics etc. Despite the acknowledged limitations of the study, the study affirms the reliability and validity of the PSS-10 and is deemed suitable for gauging perceptions of stress among physicians of Pakistan. Furthermore, it offers supplementary evidence in favor of the bifactor structure of PSS-10, endorsing the utilization of scores across subscales. The present study demonstrated substantial evidence of the PSS's validity and reliability among physicians, indicating that psychologists and practitioners can use this measure with confidence to identify and treat stress among their medical clients. Furthermore, clinical psychologists would benefit greatly from the PSS's validation among physicians since it will allow them to offer more specialized and successful interventions to treat stress-related problems in this particular population.

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