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# Health Professions Students' Mental Well-Being and Perceived Health - The Impact of Optimism, Resilience, Religiosity and Stress

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## Abstract

The study explored the impact of optimism, resilience and religiosity on the mental well-being and perceived health as well as their role in the perceived stress and mental well-being relation in health professions' students. The study was carried out online with a total of 123 students in medicine, nursing, assistant-pharmacists and social workers. Analyses suggest that optimism and resilience were associated with the stress appraisal as less intensive, less threatening and more controllable. Religiosity was not associated with perceived stress. The mental well-being was predicted positively by optimism, resilience and religiosity and negatively by stress, but perceived health – only by stress. Resilience enhanced mental well-being both directly and indirectly through the perceived stress (partial mediator). Optimism acted as a moderator of stress and mental well-being relationship. Optimism, resilience and religiosity contribute to high levels of students' positive functioning in the mental health domain, but not in physical health domain as far as the subjective general physical health is concerned. Positive impact of optimism and resilience on psychological functioning is related to their associations with favorable stress appraisals and the buffering effect of optimism on stress. The positive influence of subjective level of religiosity on mental well-being is unrelated to how stress is perceived. Stress management programs as well as appropriate interventions and educational approaches to enhance resilience could be offered to health professions' students.

*Keywords:* optimism; resilience; religiosity; mental well-being; health; stress.

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Studying health disciplines is stressful due to the heavy academic load. There has been a persistent data that health professions' students have had higher levels of perceived stress compared to the general population and other undergraduates (Hasson et al., 2021; Heinen et al., 2017). Perceived stress has been predominantly academic-related and remained moderately high during training (McKerrow et al., 2020), but have increased significantly prior to end of year examinations (Kulsoom & Afsar, 2015). The intensive stress has had a negative impact on students' physical and mental health (McKerrow et al., 2020). Deterioration in various aspects of health due to stress has led to deterioration in psychological and subjective well-being of students (He et al., 2018; Ribeiro et al., 2018; Shi et al., 2015; Zaheer & Khan, 2022), has impaired their perceived health (Teh et al., 2013) and health related quality of life (Ogunsanya et al., 2018). Given that these students are future healthcare professionals, it is of great importance that they maintain a high level of well-being during their studies, which in turn highlights the need to explore the factors that predict it and reduce the impact of stress on it.

Two approaches have emerged in the well-being research: hedonic and eudemonic. The hedonic approach has focused on the experience of positive affect and life satisfaction (subjective well-being) and the eudemonic - on the optimal functioning (psychological and social well-being) (Keyes et al., 2002). Overview of these two kinds of approaches to well-being has discussed their conceptual and empirical overlap, has highlighted their differences and complementarities, but has concluded by emphasizing their belonging to the same general concept of mental well-being (Huta, 2017). Mental well-being refers to subjective, psychological and social well-being taken together as a critically important part of mental health (Keyes, 2002).

In the scientific literature, optimism and resilience have been associated with positive mental health outcomes under stress and with some of the domains of well-being in university students. Optimism has reduced levels of perceived stress (Pathak & Lata, 2018) and has moderated its

relationship with health by reducing the risk of psychological symptoms of distress during the academic study and examinations (Hasson et al., 2021; Riolli et al., 2012). Optimism also significantly has predicted students' psychological well-being (Datu & Valdez, 2016; Selvaraj & Bhat, 2018) and has mediated the relationship of perceived stress with psychological well-being (Zaheer & Khan, 2022), has increased life satisfaction directly (Cabras & Mondo, 2018) as well as indirectly as a buffer to the negative effects of stress (Riolli et al., 2012).

Resilience refers to the adaptive coping capacity that maintains good psychological health in the face of uncertainty, trauma and adversity (Smith et al., 2008). In medical students, resilience has been associated with lower levels of distress under heavy workload in their study curriculum (Kiziela et al., 2019) and has reduced the effect of academic stress on the occurrence of burnout (Yu & Chae, 2020). The predictive role of resilience with psychological well-being in medical students has been highlighted by a systematic review and meta-analysis (Solis & Lotufo-Neto, 2019) and cross-sectional studies (Hasson et al., 2021; He et al., 2018; Smith & Yang, 2017; Tempski et al., 2015; Yu & Chae, 2020; Zaheer & Khan, 2022). Resilience has correlated positively with life satisfaction also (Mak et al., 2011). In addition to directly impact, resilience indirectly increases medical students' well-being as a mediator of the relationship between stress and life satisfaction (Shi et al., 2015) and academic burnout with psychological well-being (Yu & Chae, 2020).

In recent decades, cross-sectional and longitudinal studies have examined the relationship between religiosity as people's engagement with particular religious beliefs, principles and activities and their mental health. For example, meta-analyses have found a positive association of religiosity with well-being in adults (Garssen et al., 2020; Sholihin et al., 2021), although according to others the association is positive but weak (Joshanloo et al., 2021). Studies with undergraduates have shown that religiosity has predicted lower intensity of perceived stress (Aftab et al., 2018) and better subjective perception of general health (Alipoor et al., 2016). In contrast, other studies among students have found no such associations (Thao, 2020) or a positive impact of religiosity on mental health but negative on physical health (Kioulos et al., 2015). Similarly, studies of medical students have suggested positive associations between religiosity, life satisfaction and positive affect (Chesser et al., 2018; Machado et al., 2018), as well as psychological well-being (Abdel-Khalek & Tekke, 2019; Saleem & Saleem, 2017), but others have found these associations not to be significant (Dlugosz et al., 2022; Oteri, 2018).

In summary, some literature confirms the relationships of optimism and resilience, and inconsistently of religiosity with hedonic and eudemonic well-being under stress in health profession students. Insufficient research has examined the impact of these factors on well-being, considering both hedonic and eudemonic approaches, representing mental well-being. Given that latter concerns positive functioning predominantly in the mental health domain, studies that examine the impact of optimism, resilience and religiosity including on physical health would deepen understanding of their impact on the overall well-being. This would help to suggest appropriate interventions to improve the quality of life of students and, as a result, the quality of care provided to future patients.

**Aim and hypotheses of the study**

The first aim of the present study was to establish the relationship of optimism, resilience, religiosity and perceived stress with mental well-being and perceived health in health professions students. The second aim was to establish the role of optimism, resilience and religiousity in the relationship between perceived stress and students' mental well-being.

H 1: It was hypothesized that high resilience, optimism and religiosity would be associated with appraisals of less intense, higher controlled and lower threating stress.

H 2: Resilience, optimism and religiosity will positively predict mental well-being and perceived health both directly and indirectly through appraisals of stress.

H 3: High optimism, religiosity and resilience will weaken the relationship between stress and mental well-being.

# Method

The study took place at the end of the academic year, 2 weeks before the beginning of the exam session, in an online learning environment in pandemic settings. The study was conducted with 123 students distributed as follows: by gender: males, 21 (15%); females, 102 (85%); by residence: large city, 36 (29%); small city, 61 (50%); rural, 26 (21%); by ethnicity: (3%); and by age groups: 18-25 years - 69 (56%), 26-35 years - 15 (12%), over 35 years - 39 (32%); by specialty: medicine - 35 (28%), nursing - 53 (44%), assistant-pharmacist- 14 (11%), social work - 21 (17%); by activity: study - 61 (49%), study and work - 62 (51%). All procedures performed in the study were in accordance with the Declaration of Helsinki and its later

amendments. Participation in the study was voluntary and completely anonymous. All participants provided informed consent by clicking on the online questionnaire link.

**Measures**

*Brief Resilience Scale (BRS)* (Smith et al., 2008). The scale assesses the ability to recover from stressful and traumatic experiences. The scale has one-factor structure and consists of 6 items, which are assessed on a 5-point Likert type scale. A general score is formed, as a higher result means a higher degree of endurance and a better ability to recover from the difficulties experienced. High internal consistency of the scale in our study was found (Cronbach's α = .827).

*Life Orientation Test-Revised (LOT-R)* (Ganeva, 2018). The scale contains 10 items about which respondents state their consent on a 5-point Likert's scale from "1- I do not agree at all" to "5 - I completely agree". To calculate the overall score for Optimism, negatively formulated items 3, 7, 9 are reversed and then summed with the answers of items 1, 4, 10. In the present study the scale demonstrated satisfactory consistency (Cronbach's α =. 507), which allowed statistical analysis to be performed to test scientific hypotheses.

*Positive Mental Health Scale (PMHS)* (Lukat et al., 2016). The scale measures positive mental health as a single concept which includes life satisfaction, emotional and psychological well-being but not social well-being (Lukat et al., 2016). It contains 9 items, which are evaluated on a 4-point Likert scale, ranging from 1 - "I do not agree at all" to 4 -"I completely agree". A total score is calculated, with higher scores being an indicator of better well-being. In our study high internal consistency of the scale was found (Cronbach's α = .852).

*Perceived Stress Scale (PSS)* (Karayastoyanov & Hristova, 2000). The scale assesses the extent to which life situations are perceived as threatening, unpredictable, uncontrollable without specify the stressors. It contains 14 items (7 positively formulated to measure perceived control and 7 negatively formulated - about perceived threat). For each item, respondents evaluate the frequency of occurrence in the last month on a scale from 1 = "Never" to 5 = "Very often". To calculate the general score of perceived stress, the positively formulated items № 4, 5, 6, 7, 9, 10, 13 are reversed and summed with the negatively formulated items. In the study internal consistency of the scale was very high (Cronbach's α = .85).

Perceived health was measured by a single item self-rated health question: „In general, would you say your physical health is poor, fair, good, very good or excellent? The respondents rates their overall health using a 5-point scale (1 = excellent; 5 = poor).

Religiosity as a subjective perception of the overall level of religiosity was measured with the question ”How religious one consider yourself?” on an ordinal scale where 1= non-religious, 2 = slightly religious, 3 = moderately religious and 4= deeply religious.

# Results

The correlation analyses found that optimism and resilience correlated significantly positively with mental well-being and the degree of perceived control over stressors, as well as correlated inversely with the degree of perceived threat from stressors and the appraisal of stress levels. There were statistically significant positive correlation between resilience and perceived health, but non-significant correlation between optimism and perceived health. Religiosity correlated significantly positively with mental well-being and non-significantly with perceived health and perceived stress. Mental well-being and perceived health inversely correlated with the level of perceived stress and perceived threat, as well as positively with the level of perceived control (see Table 1). Thus, hypothesis 1 was supported for resilience and optimism, but not for religiosity.

Table1.
*Correlation Analyses of Relationships Between Optimism, Resilience, Perceived Stress, Religiosity, Mental Well-Being and Perceived Health ($r_s$ coefficients)*

| | PS | PC | PD | MWB | PH |
|---|---|---|---|---|---|
| Resilience | -.53*** | .36*** | - .57*** | .55*** | .21* |
| Optimism | -.55*** | .58*** | -.50*** | .55*** | .13 |
| Religiosity | -.11 | .10 | -.07 | .25*** | -.12 |
| PH | -.39*** | .41*** | -.33*** | .37*** | 1 |
| MWB | -.64*** | .61** | -.55** | 1 | .37*** |

*Note.* ***p* < .05. ****p* < .01. *****p* < .001. PS - Perceived stress, PD - Perceived danger, PC - Perceived control, MWB - Mental well-being, PH - Perceived health

There were not statistically significant differences in the perceived stress and mental well-being and perceived health by gender, age, ethnicity, residence, specialty and activity. Linear regression analyses found that perceived health was significantly predicted by perceived stress *(F* (2,121) = 22.298, *p* = .000, $R^2$ = .167). Perceived high levels of stress reduced self-rated health status (*β* = - .394, *p* < .001). Statistically significant differences in perceived health

according to levels of resilience ($t$ (52) = 2.199, $p$ = .032, 95% CI (-.85 - .04) and non-significant differences according to levels of optimism and religiosity were found by independent samples T-test. High resilient students rated their general health as better ($M$ = 4.2; $SD$ = .08) compared with low resilient students ($M$ = 3.4; $SD$ = .07).

The conducted multiple hierarchical regression analysis found that perceived stress, optimism, resilience and religiosity significantly predicted mental well-being ($F$ (4,119) = 34.258, $p$ < .001) with small effect size (part correlation range: .18 - .27) explaining 53.7 % of the variance of the dependent variable. (See Table 2).

Table 2.
*Multiple Regression Model for Predicting Mental Well-Being by Perceived Stress, Optimism, Resilience and Religiosity*

| DV | IV | *B* | St. Error B | *β* | *t* |
|---|---|---|---|---|---|
| Mental well-being | Constant | 20.159 | 3.687 | | 5.468*** |
| | Perceived stress | -.176 | .042 | -.36 | -4.24*** |
| | Optimism | .339 | .115 | .241 | 2.961*** |
| | Resilience | .222 | .071 | .235 | 3.113*** |
| | Religiosity | .833 | .071 | .162 | 2.491** |

*Note.* *$p$ < .05. **$p$ < .01. ***$p$ < .001. DV- Dependent variable, IV- Independent variable

To check for any multicollinearity still existing in the model, variance inflation factors (VIF) for each variable during analysis were calculated. The Durbin Watson value was close to 2, tolerance (range: .54 – .89) and VIF (range: 1.07–1.84) did not indicate a multicollinearity and autocorrelation problems in the regression model. Skewness and kurtosis values between +1.5 and –1.5 indicated that there is a normal distribution. Therefore, hypothesis 2 was supported for the direct impact on mental well-being, but not on perceived health.

Further, hierarchical multiple analyses established the meditational role of perceived stress in the relationship between resilience and psychological well-being, but not in the relationship between optimism and mental well-being. As shown in Table 3, in the first step of verification, resilience significantly predicted perceived stress ($\beta$ = -.54, $p$ < .001). In the second step of verification, resilience significantly predicted mental well-being ($\beta$ = .541, $p$ < .001, 95% bias – corrected bootstrap CI: 348-688) at an explanatory power of 29.3%. In the third step of verification, when resilience and perceived stress were simultaneously incorporated into the validation, the effect of resilience on mental well-being remained significant, although such influence decreased ($\beta$ =. 28, $p$ < .05, 95% bias –corrected bootstrap CI: 123-410). The results showed that perceived stress partially mediated the relationship between the resilience and the

mental well-being, and the mediating effect was statistically significant (Sobel test $Z = 3.58$, $p < .001$). Therefore, hypothesis 2 was supported for the indirect influence of resilience, but not for optimism and religiosity.

Table 3.
*Hierarchical Multiple Analysis of the Mediating Role of Perceived Stress Between Resilience and Mental Well-Being Relationship*

| DV | IV | *B* | St. Error B | *β* | *t* | $R^2$ (adj. $R^2$) | *F* |
|---|---|---|---|---|---|---|---|
| PS | Resilience | -1.046 | .148 | -.540 | -7.55** | 291 (.286) | 49.78*** |
| MWB | Resilience | .513 | .072 | .541 | 7.076** | 293 (.287) | 50.074*** |
| | Resilience | .265 | .076 | .280 | 3.506* | .459 (.450) | 50.815* |
| | PS | -.237 | .039 | -.484 | -6.063* | | |

*Note.* *$p < .05$. **$p < .01$. ***$p < .001$. DV- Dependent variable, IV- Independent variable, MWB - Mental well-being, PS- Perceived stress

To establish the moderator effect of optimism, resilience and religiosity in the relationship between perceived stress and mental well-being, three hierarchical regression analyses were conducted. In the first step the centered variable perceived stress (predictor) was introduced, followed by the centered values of potential moderator in the second step and the interaction variable in the third step. The significant effect of the interaction of optimism with the level of perceived stress on mental well-being ($\beta = .183$, $p < .01$) was found with small effect size (part correlation = .158). The model was significant ($F$ (2,121) = 30.410, $p < .001$, VIF = 1.329) and explains 58% of the variation of the dependent variable. Optimism acted as a moderator of the relationship between perceived stress and mental well-being, but resilience and religiosity did not moderate that relation, as significant differences in the regression model were found only by adding the variable of interaction of optimism with stress (sig. $F$ change = .011). Thus, hypothesis 3 was supported for optimism, but not for resilience and religiosity. The effects of stress on the mental well-being depending on the optimism level are presented in Table 4. At low levels of optimism, perceived stress had a statistically significant negative effect on the well-being with large effect size ($\beta = -.857$, $p = .000$), but at high optimism the impact of stress on the well-being had marginal p-value and the effect decreased ($\beta = -.351$, $p = .049$).

Table 4.
*Linear Regression Analysis of the Relationship Between Mental Well-Being and Perceived Stress in Groups with High and Low Optimism*

| Optimism level | | *B* | St. Error B | *β* | *t* | *p* |
|---|---|---|---|---|---|---|
| Low optimism | Constant | 46.507 | 3.322 | | 13.998 | .000 |
| | Perceived stress | -.495 | .067 | -.857 | -7.422 | .000 |
| High optimism | Constant | 34.562 | 2.955 | | 11.696 | .000 |
| | Perceived stress | -.168 | .082 | -.351 | - 2.052 | .049 |

Analyses found that there were significant differences in the mental well-being between optimism level groups at high perceived stress ($t$ (52) = 2.975, $p$ = .013), high perceived danger ($t$ (32) = 4.07, $p$ = .03) and low perceived control ($t$ (21) = 2.15, $p$ = .01). When stress was perceived as more intense, high threatening and less controllable, the mental well-being of low optimistic students was significantly lower than that of high optimistic students.

# Discussion

The present study found that the mental well-being and perceived health of health professions students depended on the level of perceived stress, and stress being perceived as high decreases well-being and health evaluation. This was consistent with findings of other authors regarding relationships between stress and well-being domains such as life satisfaction (Shi et al., 2015), emotional, social and psychological well-being (He et al., 2018; Ribeiro et al., 2018; Zaheer & Khan, 2022) and health (Teh et al., 2013).

Optimism and resilience were significantly associated with appraisals of stress as less intense, less threatening, and more controllable which is in line with other studies with medical students (Hassons et al., 2021; Heinen et al., 2017; Smith & Yang, 2017). The study found no association of religiosity with perceived stress which is consistent with previous findings (Thao, 2020) but does not support others (Aftab et al., 2018; Maltby & Day, 2003). However, the association of religiosity with stress perception in the cited studies has been referred to different facets of religiosity. For example, an internal orientation in which religion is deeply personal to the individual has been associated with appraisals of stress as low threat, whereas an external orientation that emphasizes participation in religious social activities has been associated with high loss and threat stress appraisals (Maltby & Day, 2003). This demonstrates the different ways in which subjective overall religiosity and religious orientation are associated with stress appraisals. Also, these results suggest that religiousness is not related to primary stress appraisal in students, but this relationship may differ when examining other facets of religiosity.

The conducted study showed that subjective level of religiosity positively predicted mental well-being, but this relationship was not mediated by perceived stress. Other research also found that perceptions of stress did not mediate the relationship between religious orientation and psychological well-being (Maltby & Day, 2003). A literature review has pointed out that much of the effect of religiosity on the well-being is mediated by other variables, such as meaning in life, coping, social support, and emotion regulation (Kim-Prieto & Miller, 2018). Also, all aspects of religiosity (such as religious beliefs, practices, and commitment) have been directly related to the choice of positive or negative religious coping, which in turn determines subsequent health outcomes and well-being during stress in medical students (Francis et al., 2019). A high level of religiosity has determined the disposition toward positive religious coping. In turn, this type of coping has been associated with appraisals of stress as a challenge that promotes personal development and growth, and through this appraisal of stress, religious coping has enhanced psychological well-being (Maltby, & Day, 2003). These results suggest that evaluation of stress in terms of primary appraisal is not the cognitive mechanism through which overall religiosity enhances students' psychological functioning, but it might be through other psychological processes such as the choice of religious coping, for example.

Furthermore, the study found that religiosity did not protect psychological well-being from the effects of stress. However, the moderating role of religiosity may depend on the type of stress. For example, other authors have found that religiosity acted as a moderator of the association of traumatic stress with students' mental health. Under conditions of traumatic stress, religiosity was associated with positive reappraisal of stress, better mental health and posttraumatic growth in university students (He et al., 2019). Under difficult life circumstances, religiosity has reduced the effects of stress and has led to higher subjective well-being, but under regular stress, religiosity did not have such a positive impact on the relationship between stress and life satisfaction (Kim-Prieto & Miller, 2018).

According to findings, religiosity was not significantly associated with subjective perception of physical health, which is not in line with another study among medical students (Alipoor et al., 2016). The differences in the results may be due to the relative homogeneity of our non-clinical sample in terms of health status. In addition, the self-rated health assessment likely resulted in limited variability in individual outcomes, which may have influenced the obtained associations of interest. Also, the sample of students in the study cited above were predominantly highly religious, which is also due to the characteristics of their culture as highly valuing religiosity. An

analytical review has stated that religiosity in the culture itself as the degree to which a culture values religious belief or provides supports for the practice of religion, have moderated religiosity and well-being relationship at an individual level (Kim-Prieto & Miller, 2018). For example, religious culture, compared to secular culture, has been shown to enhance the impact of religiosity on subjective well-being (Kim-Prieto & Miller, 2018) and has reduced the impact of negative emotional experiences under stress on life satisfaction (Joshanloo, 2019).This suggests that culture may moderate the relationships between religiosity and perceived health, and in cultures where religious beliefs are more salient and strong, individual religiosity may be more strongly related to positive self-assessment of health as well as reduce the effects of stress on perceived health and well-being. This assumption might be further explored.

In contrast to religiosity, optimism acted as a buffer to the negative impact of intense, poorly controllable and threatening stress on the mental well-being. Optimism predicted mental well-being relative to high life satisfaction, positive affect, self-acceptance, autonomy, self-efficacy, social belonging, and contribution to community, but not with the assessment of health. These results partially corroborated findings that optimism positively predicted the mental and physical well-being of students (Ramsay et al., 2013). The differences in the results may be due to the way of measurement (perceived general health single question versus assessment of more health dimensions) as well as to the specific characteristics of our study participants, specifically their professional competence. Self-perception of general health represents both subjective and objective aspects of health and is formed of respondent's information and knowledges, bodily sensations and subjective evaluative attitudes (Kaplan & Baron-Epel, 2003). Furthermore, general physical health can be viewed from the perspective of different assessment approaches: biomedical, emotional and functional. For example, patients have evaluated their health not as the presence of physical symptoms and dysfunctions, but as related to a general sense of psychological vitality. In contrast, specialists have used traditional medical concepts oriented towards disease (Kaplan & Baron-Epel, 2003). Moreover, one of the areas of competence of health professionals relates to the application of evidence-based health assessment. This implies that healthcare students apply a biomedical approach and have developed such a precise and professional approach to assessing health, including their own health. Perhaps the determinants of this cognitive process are their high health awareness, professional knowledge and attitudes rather than personal predispositions such as optimism.

According to the results, resilience was significantly associated with mental well-being and positively predicted it. Also, it was associated with better perceived health without directly predicting it. Other studies have also found that resilience predicted higher well-being in medical students (Aboalshamat et al., 2018; Hassons et al., 2021; Riolli et al., 2012; Shi et al., 2015; Smith & Yang, 2017) and positive perception of mental and physical health (Tempski et al., 2015). Resilience increased well-being both directly and through its association with more favorable stress appraisals. High resilience individuals' perception of stress as a challenge, rather than a threat or loss, has increased positive emotions in a stressful situation (Kaczmarek, 2009). Positive emotions reduce the effects of stress on mental and somatic health, and might explain the higher mental well-being and better perceived health in high resilient students. Furthermore, the association of resilience with a triad of positive beliefs about self, the future, and the stressful situation may be the cognitive mechanism that leads to positive perceptions of well-being (Mak et al., 2011). In addition to relationship with high overall well-being, resilience has been associated to learning and job satisfaction in medical professionals. Resilience was a strong predictor for medical-school related quality of life, perception of the educational environment, learning atmosphere, teachers and self-assessments for academic performance (Tempski et al., 2015), more positive perception of the learning climate and acted as a prtotective factor against burnout in medical students (Yu & Chae, 2020). According to that impact of resilience, resilience building interventions are necessary to be implemented in medical education. The development of resilience during training can be focused on three main areas, namely: personal resilient qualities and behaviours, educational programmes and transition (becoming a student and a part of medical team) (Walsh et al., 2020). There ara data that some intervention such as couching programs, workshops and daily practices have increased resilience of medical students and have help them maintain high mental and physical well-being (Gheihman et al., 2021). Resilient qualities might be supported by educational envinronment that is learner-centred and based on empowerment of students. Furthermore, an application of some teaching and learning approaches as peer activities, reflective learning; directed study, problem-based learning and experiential learning has promoted students resilience also (Walsh et al., 2020).

## Limitations of this study and recommendations for future directions

Several limitations of this study should be mentioned. First, only one cohort of medical students from one medical school was studied. In addition, students were in different courses of study and disproportionately distributed by gender, which do not allow to test the impact of gender and

stage of training on stress and well-being. Second, it was proposed that experienced stress is academic-related, but stress was measured as a general not to a specific type of stressor. However, sources of stress may vary and affect well-being and health differently. Third, the data relies on participants' self-perception and the study do not include objective measures of health. The subjective assessment approach may distort the data obtained so that they do not correspond to the objective states.

Given that the conducted study was cross-sectional, future studies could examine predictive models of overall well-being by types of stress, gender, and year of training over the long term during medical education. It would be appropriate to include spiritual well-being as a part of the overall well-being. More research is needed to explore the underlying mechanism that ensure positive impact of religiosity on mental well-being. It would be interesting to examine the influence of other dimensions of religiosity on mental well-being and health, the mediating role of religious coping and cognitive-emotional regulation in the religiosity and well-being relation , as well as the moderating role of stressor type and culture.

## Conclusions

It can be concluded that stress negatively affects health professions students' mental well-being and perception of general health. The study highlights that optimism, resilience and religiosity contribute to high levels of students' positive functioning primarily in the mental health domain, but not in the physical health domain as far as the subjective general physical health is concerned. The positive effect of optimism and resilience on psychological functioning is related to their associations with favorable stress appraisals and the buffering effect of optimism on stress. The positive impact of subjective level of religiosity on mental well-being is unrelated to how stress is perceived. Stress management programs, as well as appropriate interventions and educational approaches to enhance resilience could be offered to health professions students.

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# References

Abdel- Khalek, A.M., & Tekke, M. (2019). The association between religiosity, well-being, and mental health among college students from Malaysia. *Revista Mexicana de P*sicología, *36*(1), 5-16.

Aboalshamat, K. T., Alsiyud, A. O., Al-Sayed, R. A., Alreddadi, R. S., Faqiehi, S. S., & Almehmadi, S. A. (2018). The relationship between resilience, happiness, and life satisfaction in dental and medical students in Jeddah, Saudi Arabia. *Nigerian Journal of Clinical Practice, 21*, 1038-1043.

Aftab, M. T., Naqvi, A. A., Al-Karasneh, A. F., & Ghori, S. A. (2018). Impact of Religiosity on Subjective Life Satisfaction and Perceived Academic Stress in Undergraduate Pharmacy Students. *J Pharm Bioallied Sci, 10*(4):192-198. https://doi.org/ 10.4103/JPBS.JPBS_65_18

Alipoor, R., Naghdi, M., Hosseinpour, S., Soureshani, R. H., Rezaie, A., Moisavian, G., et al. (2016). Relationship between Religious Attitude and General Health of Medical Science Students in Different Regions in Iran. *Int J Med Invest. 5*(4):146:152. http://intjmi.com/article-1-256-fa.html

Cabras, C., & Mondo, M. (2018). Coping strategies, optimism, and life satisfaction among first-year university students in Italy: gender and age differences. *Higher Education, 75*, 643-654. https://doi.org/10.1007/s10734-017-0161-x

Chesser, S., Swanson, S., Garey, E. & Hood, R. W. (2018). Religious and non-religious predictors of life satisfaction in a sample of American college students. *Mental Health, Religion & Culture*, *21*(4), 418–428. https://doi.org/10.1080/13674676.2018.1504905

Datu, J. A. D., & Valdez, J. P. M. (2016). Psychological Capital Predicts Academic Engagement and Well-Being in Filipino High School Students. *The Asia – Pacific Education Researcher, 25,* 399-405. https://doi.org/10.1007/s40299-015-0254-1

Długosz, P., Liszka, D., Yuzva, L. (2022). The Link between Subjective Religiosity, Social Support, and Mental Health among Young Students in Eastern Europe during the COVID-19 Pandemic: A

Cross-Sectional Study of Poland and Ukraine. *Int. J. Environ. Res. Public Health*, *19*, 6446. https://doi.org/10.3390/ ijerph19116446

Francis, B., Gill, J. S., Yit Han, N., Petrus, C. F., Azhar, F. L., Ahmad Sabki, Z., et al. (2019). Religious Coping, Religiosity, Depression and Anxiety among Medical Students in a Multi-Religious Setting. *Int. J. Environ. Res. Public Health*, *16*, 259. https://doi.org/10.3390/ijerph16020259

Ganeva, Z. (2018). *Bulgarski versii na psihologicheski skali: validizaciq, prilozhenie, statisticheski analiz.* [Bulgarian Versions of Psychological Scales; Validation, Application, Statistical Analysis], Sofiya: Elestra.

Garseen, B., Visser, A., & Pool, G. (2020). Does spirituality or religion positively affect mental health? Meta-analyses of longitudinal studies. *The international Journal for the Psychology of Religion*, 1-17. https://doi.org/10.1080/10508619.2020.1729570

Gheihman, G., Cooper, C., & Simpkin A. (2019). Everyday resilience: practical tools to promote resilience among medical students. *J Gen Intern Med*. *34*(4), 498-501. https://doi.org/10.1007/s11606-018-4728-8

Hasson, F., Li, Z., Slater, P. & Guo, X. (2021). Resilience, Stress and Well-Being in Undergraduate Nursing Students in China and the UK. *International Journal of Research in Nursing, 12*(1), 11-20. https://doi.org/10.3844/ijrnsp.2021.11.20

Heinen, I., Bullinger, M., & Kocalevent, R. D. (2017). Perceived stress in first year medical students - associations with personal resources and emotional distress. *BMC Medical Education, 17*(1), 4. https://doi.org/10.1186/s12909-016-0841-8

He, Z., Wang, Z., Lew, B., Mansor, A., Jie, Z., Koenig, H., et al. (2019). Moderating Effects of Religiosity on the Relationship Between Trauma and Suicidal Behaviors Among College Students in Northwest China*. SAGE Open*, *9*(2), 215824401985908. http://dx.doi.org/10.1177/2158244019859087

He, F.X., Turnbull, B., Kirshbaum, M.N., Phillips, B., & Klainin-Yobas, P. (2018). Assessing stress, protective factors and psychological well-being among undergraduate nursing students. *Nurse EducToday*, *68*, 4-12. https://doi.org/10.1016/j.nedt.2018.05.013

Huta, V. (2017). An overview of hedonic and eudaimonic well-being concepts. In L. Reinecke & M. B. Oliver (Eds.), *The Routledge handbook of media use and well-being: International perspectives on theory and research on positive media effects* (pp. 14-33). Routledge/Taylor & Francis Group.

Joshanloo M. (2019). Cultural religiosity as the moderator of the relationship between affective experience and life satisfaction: A study in 147 countries. *Emotion (Washington, D.C.)*, *19*(4), 629–636. https://doi.org/10.1037/emo0000469

Joshanloo, M. (2021). 'Within-person relationship between religiosity and life satisfaction: A 20-year study', *Personality and Individual Differences,* 179), 110933. https://doi.org/10.1016/j.paid.2021.110933

Kaczmarek, Ł. (2009). Resiliency, stress appraisal, positive affect and cardiovascular activity. Polish Psychological Bulletin, 40(1), 46-53. https://doi.org/10.2478/s10059-009-0007-1

Kaplan, G., & Baron-Epel, O. (2003). What Lies Behind the Subjective Evaluation of Health Status? *Social science & medicine*, 56. 1669-76. https://doi.org/10.1016/S0277-9536(02)00179-X

Karayastoyanov, G., & Rusinova-Hristova, A. (2000). Balgarska adaptaciq na vaprosnika za vyzpriet stress (Bulgarian Adaptation of Perceived stress Scale) *Psihologichni izsledvaniya*, *1-2*, 67-77.

Keyes, C. L. M., Shmotkin, D., & Ryff, C. D. (2002). Optimizing well-being: The empirical encounter of two traditions. *Journal of Personality and Social Psychology, 82*(6), 1007-1022. https://doi.org/10.1037/0022-3514.82.6.1007

Kim-Prieto, C., & Miller, L. (2018). Intersection of religion and subjective well-being. In E. Diener, S. Oishi, & L. Tay (Eds.), Handbook of well-being. Salt Lake City, UT: DEF Publishers. DOI:nobascholar.com

Kioulos, K. T., Bergiannaki, J. D., Glaros, A., Vassiliadou, M., Alexandri, Z., & Papadimitriou, G. (2015). Religiosity dimensions and subjective health status in Greek students. *Psychiatrike = Psychiatriki*, *26*(1), 38–44.

Kulsoom, B., & Afsar, N. A. (2015). Stress, anxiety, and depression among medical students in a multiethnic setting. *Neuropsychiatric disease and treatment*, *11*, 1713-1722. https://doi.org/10.2147/NDT.S83577

Kiziela, A., Viliūnienė, R., Friborg, O., & Navickas, A. (2019). Distress and resilience associated with workload of medical students, *Journal of Mental Health, 28* (3), 319-323, https://doi.org/10.1080/09638237.2018.1521922

Lukat, J., Margraf, J., Lutz, R. et al. (2016). Psychometric properties of the Positive Mental Health Scale (PMH-scale). *BMC Psychology, 4,* 8. https://doi.org/10.1186/s40359-016-0111-x

Machado, L. et al. (2018). Subjective well-being, religiosity and anxiety: a cross-sectional study applied to a sample of Brazilian medical students. Trends in Psychiatry and Psychotherapy ,40(3),185-192. https://doi.org/10.1590/2237-6089-2017-0070

Mak, W. W. S., Ng, I. S. W., & Wong, C. C. Y. (2011). Resilience: Enhancing well-being through the positive cognitive triad. *Journal of Counseling Psychology, 58*(4), 610-617. https://doi.org/10.1037/a0025195

Maltby, J., & Day, L. (2003). Religious orientation, religious coping and appraisals of stress: Assessing primary appraisal factors in the relationship between religiosity and psychological well-being. *Personality and Individual Differences, 34*(7), 1209-1224. https://doi.org/10.1016/S0191-8869(02)00110-1

McKerrow, I., Carney, P.,Caretta-Weyer, H.,Furnari, M., & Juve, A. (2020). Trends in medical students' stress, physical, and emotional health throughout training. *Medical Education Online, 25*. https://doi.org/1709278. 10.1080/10872981.2019.1709278

Ogunsanya, M. E., Bamgbade, B. A., Thach, A. V., Sudhapalli, P,& Rascati, K.L. (2018). Determinants of health-related quality of life in international graduate students. *Curr Pharm Teach Learn*, *10*(4), 413-422. https://doi.org/ 10.1016/j.cptl.2017.12.005

Oteri, I.O. (2018). Effects of Religiosity on Psychological Well - Being of Students: A Case Study of Students of Delta State Polytechnic, Ozoro, Delta State. *International Journal of Innovative Social Sciences & Humanities Research*, *6*(2), 83-92.

Pathak, R., & Lata, S. (2018). Optimism in Relation to Resilience and Perceived Stress. Journal of Psychosocial Research, 13(2), 359-367. https://doi.org/10.32381/JPR.2018.13.02.10

Ramsay, J. E., Yang, F., Pang, J. S., Lai. C-M., Ho, R, C., & Mak, K-K. (2015). Divergent pathways to influence: Cognition and behavior differentially mediate the effects of optimism on physical and mental quality of life in Chinese university students. *Journal of Health Psychology*, *20*(7), 963-973. https://doi.org/10.1177%2F1359105313504441

Ribeiro, Í. J. S., Pereira, R., Freire, I. V., de Oliveira, B. G., Casotti, C. A., & Boery, E. N. (2018). Stress and quality of life among university students: A systematic literature review. *Health Professions Education, 4*(2), 70-77. https://doi.org/10.1016/j.hpe.2017.03.002

Riolli, L., Savicki, V.,& Richards, J. (2012). Psychological Capital as a Buffer to Student Stress. *Psychology, 3,* 1202-1207. https://doi.org/10.4236/psych.2012.312A178

Saleem, S., Saleem, T. (2017). Role of Religiosity in Psychological Well-Being Among Medical and Non-medical Students*. J Relig Health*, *56*, 1180-1190. https://doi.org/10.1007/s10943-016-0341-5

Selvaraj, P. R., & Bhat, C. S. (2018). Predicting the mental health of college students with psychologicalcapital. *Journal of Mental Health, 27*(3), 279-287. https://doi.org/10.1080/09638237.2018.1469738

Shi, M., Wang, X., Bian, Y., & Wang, L. (2015). The mediating role of resilience in the relationship between stress and life satisfaction among Chinese medical students: a cross-sectional study. *BMC Medical Education,* 15-16. https://doi.org/10.1186/s12909-015-0297-2

Sholihin, M., Hardivizon, H., Wanto, D. & Saputra, H. (2022). The effect of religiosity on life satisfaction: A meta-analysis', *HTS Teologiese Studies/Theological Studies, 78*(4), a7172. https://doi.org/10.4102/hts.v78i4.7172

Smith, B. W., Dalen, J., Wiggins, K. Tooley, E., Christopher, P. & Bernard, J. (2008). The brief resilience scale: Assessing the ability to bounce back. *International Journal of Behavioral Medicine, 15*, 194-200. https://doi.org/10.1080/10705500802222972

Smith, G. D., & Yang, F. (2017.) Stress, resilience and psychological well-being in Chinese undergraduate nursing students. *Nurse Eduation Today, 49,* 90-95. https://doi.org/10.1016/j.nedt.2016.10.004

Solis, A. C., & Lotufo-Neto, F. (2019). Predictors of quality of life in Brazilian medical students: a systematic review and meta-analysis. *Braz J Psychiaty, 41*(6), 556-567. https://doi.org/10.1590/1516-4446-2018-0116

Tempski, P., Santos, I.S., Mayer, F. B., Enns, S. C., Perotta, B., Paro, H. B. M. S, et al. (2015) Relationship among Medical Student Resilience, *Educational Environment and Quality of Life. PLoS ONE, 10*(6), e0131535. https://doi.org/10.1371/journal.pone.0131535

Thao, Jai. (2020). Relationships Between Religious Involvement, Stress, Depression, and Academic Performance of Graduate Students in Education. University of the Pacific, Dissertation. https://scholarlycommons.pacific.edu/uop_etds/3701

Teh, C. H., Archer, J. A., Chang, W., & Chen, S. A. (2013). Mental Well-Being Mediates the Relationships between Perceived Stress and Perceived Health. *Stress and Health*, *31*, 71-77. https://doi.org/10.1002/smi.2510

Walsh, P., Owen, P. A., Mustafa, N., & Beech, R. (2020). Learning and teaching approaches promoting resilience in student nurses: An integrated review of the literature. *Nurse Educ Pract*.,45:102748. https://doi.org/10.1016/j.nepr.2020.102748.

Yu, J., & Chae, S. (2020). The mediating effect of resilience on the relationship between the academic burnout and psychological well-being of medical students. *Korean journal of medical education*, 32(1), 13-21. https://doi.org/10.3946/kjme.2020.149

Zaheer, Z. & Khan, M. (2022). Perceived Stress, Resilience and Psychological Well-Being among University Students: The Role of Optimism as a Mediator. *Asian Social Studies and Applied Research*, 3(1), 55-67.

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