ABSTRACT

Objective Workplace engagement is associated with several significant positive organisational outcomes. The COVID-19 pandemic has emphasised the importance of workplace engagement, particularly for front-line healthcare workers. Drawing on the conservation of resources theory, this study examines the impact of personal and job resources in a workplace that help in resource conservation for work engagement. In view of the high burnout rates reported among health professionals during the COVID-19 pandemic, this study aims to investigate the impact of perceived organisational support (POS) on work engagement through the mediating effect of well-being and the moderating role of employees’ resilience.

Design Time-lagged, cross-sectional, split questionnaire-based survey study.

Setting Data were gathered from 88 hospitals in Pakistan, of which 45 were public and 23 were private hospitals.

Participants and analysis Simple random sampling techniques were used and data were collected from 345 healthcare professionals (ie, doctors, nurses and allied health professionals) using split questionnaires, in two waves with a 3-week interval, with a response rate of 80%. For analysis of data, the study used the PROCESS macro by Hayes.

Results Engagement at work was positively correlated with POS, well-being and resilience. POS significantly predicted work engagement through well-being ($\beta=0.06$, SE=0.02, 95% bias-corrected CI 0.021, 0.10). Further analysis of the strong effect of resilience on subjective well-being shows the significant value of the mediated moderation index ($\beta=0.06$, SE=0.02, 95% bias-corrected CI 0.03, 0.11).

Conclusion The findings suggest that well-being may be an important pathway through which healthcare workers’ POS may influence work engagement, particularly when their resilience capability is high. To maintain engagement at the workplace, hospital administrators should consider strengthening organisational and individual resources that build a supportive environment to meet the demands of challenging times.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ The study used Hayes’ PROCESS macro analytical strategy, which overcomes constraints in sample sizes by rebooting the analysis with larger sizes, hence bolstering confidence in inference based on sample size.

⇒ The study used a two-wave, time-lagged design to minimise common method biases.

⇒ The study’s cross-sectional design impedes the ability to infer causal relationships.

⇒ Data from only one country and context may constrain the generalisability of survey results to other settings.

INTRODUCTION

Healthcare workers are essential to providing stable and high-quality medical and health services, ensuring that systems run smoothly and that people’s health and safety are protected. Long working hours, rigorous workload and strict management standards have long been issues among healthcare workers.¹ The COVID-19 epidemic has increased the dangers of infection among medical professionals, impacting the quality and effectiveness of care they provide, leading to exhaustion and eventually reducing work engagement.

The COVID-19 pandemic has predominantly changed the entire world scenario, leaving enduring effects on individuals and world economies.²³ Initial studies have shown that employees’ productivity has incurred a drastic reduction of 35%.⁴ The pandemic poses a crucial time for the workforce due to its high psychological and physical energy demands; particularly, it can severely impact healthcare professionals and their
The COR theory gives further weight to the idea of work engagement. The theory asserts that individuals are motivated to protect their existing resources and to acquire new ones. They try to avoid situations that may cause loss of resources. Hobfoll\textsuperscript{13} classifies these resources into four categories: object resources, conditions, personal characteristics and energies. Later, Hobfoll\textsuperscript{17} also credited social support as a valuable resource that helps achieve other resources. POS is an important resource that invigorates instrumental, social and emotional backing,\textsuperscript{18,19} reducing stress and burnout.\textsuperscript{20} The absence of such support causes anxiety, sickness, depression and exhaustion, a few of the facets of poor mental health and general well-being of individuals.\textsuperscript{19} The perception of organisational support is weighed as the organisation’s facilitation for positive reciprocity\textsuperscript{21} that enables healthcare workers to perform well to repay positive influences. The work environment manifests the collective effects of various environmental settings on different aspects of well-being. Hence, the study’s first hypothesis proposes that POS is positively associated with the subjective well-being of healthcare workers.

Subjective well-being is a positive psychological state of mind that implies an individual’s assessment of his/her personal life.\textsuperscript{22} It is an individual’s subjective appraisal of the general experience of his/her life in a way that unveils higher perceived life satisfaction with higher well-being.\textsuperscript{23} The multidimensional concept of well-being entails three aspects: an individual’s emotional response, domain satisfaction and global assessment of life satisfaction.\textsuperscript{24,25} Following the description of personal resources provided by Hobfoll,\textsuperscript{17} individuals’ subjective well-being flourishes in their personal growth and development. Furthermore, well-being lessens anxiety, stress, worry and tediousness, while manifesting positivity at the workplace, steering towards positive outcomes. According to Diener,\textsuperscript{22} with high levels of well-being, individuals experience a spirit of pride for the progressive pursuit of their goals. Hence, it provides a rationale to contend that subjective well-being is a vital personal resource that limits the adverse influences of work, thus invigorating a high level of work engagement.\textsuperscript{26} Based on existing research,\textsuperscript{20,27} the second

![Figure 1](https://example.com/figure1.png)

**Figure 1** Research model. The process and the buffering condition for the relationship between perceived organisational support and work engagement.
hypothesis of this study proposes a positive relationship between subjective well-being and work engagement.

Furthermore, Hobfoll introduced the notion of resource caravan passageways, which focus on creating ecologies that develop engagement and resilience at the workplace. Such ecologies facilitate resource pool management by increasing competitive resources and preserving limited resources. Effective organisations provide a ‘members marketplace’ of mutual resources, impart these resources to the departments, sections and managers, and assist the organisation in achieving its goal while facilitating the internal transaction of resources. Perception of organisational support and the feeling of stability and safety are both facets of creating a resource caravan and sustainability of organisational ecologies. If organisations do not provide such resource passageways, employees become less productive, and to some extent counterproductive. Hobfoll stipulated that the enrichment of organisational resource ecologies occurs from sturdy employee–leader relationships and outspreads to stronger employee–colleague and employee–customer relationships. When an organisation deals with its employees with empathy, forethought and consideration, employees perceive that their organisation values them, enhancing their well-being perception. According to the organisational support theory, POS is somehow valued by employees because it fulfils their desires for approval, admiration and affiliation. Moreover, it provides comfort in times of distress. Hence, organisational support develops a feeling of connection with the organisation, improving employees’ well-being and compelling them to consider organisational goals as their own, making them more engaged and loyal to their work.

Further, well-being is often used as an indicator of resilience. Resilience, a personal resource, helps employees get acclimatised to adverse situations. According to psychology, it is the ability to recover after being exposed to unpleasant, stressful situations and negative emotions. Resilience is seen in the positive psychology literature as a strong quality of individuals and organisations to cope with exceptional circumstances. Previous studies have established that resilience alleviates the influences created by stressful situations at the workplace, fostering employee engagement in their work. Further, employees who possess a high level of resilience tend to buffer the presumed positive association between well-being and work engagement. The COR theory asserts that individuals strive for maintenance, protection and accumulation of valued resources. Stress increases when individuals comprehend an imbalance in resource gain or presume a loss of resources in an unrectractive environment. To prevent resource loss, employment of resources takes place by individuals, either from personal resources or from the environment. This implies that resources provide protection from loss of resources and help establish positive work-related behaviours. The sturdier the employees’ resilience, the greater the ability they possess to recover from a bad experience, enabling them to be more adaptable continuously to changing situations. Given this discussion, we postulate in our fourth hypothesis that resilience capabilities buffer the relationship between well-being and work engagement because positive reframing enables healthcare workers to downregulate negative states of emotion, which broadens their capacity to look for ways to get engaged in their work and perform better.

Overall, these explanations of the mediation and moderation effects propose a mediated moderation effect. Mainly, POS is positively and indirectly linked to work engagement through subjective well-being. The indirect relationship is dependent on healthcare workers’ capacity for resilience. For instance, their resilience conditionally impacts the indirect effect of POS on work engagement via well-being perception. As anticipated, there is a strong (weak) association between POS and workplace engagement when healthcare workers’ resilience capability is high (low). Hence, based on prior research and the theoretical underpinnings of the COR theory, the fifth hypothesis considers resilience as moderating the indirect effect of POS on work engagement via employees’ well-being perception, such that the indirect effect will be stronger (weaker) at higher (lower) levels of employee resilience.

The five study hypotheses are outlined in table 1.

The present study, therefore, is designed to investigate the impact of personal and job resources in a workplace that help in resource conservation for work engagement. In view of the high burnout rates reported among health professionals during COVID-19, the study aims to investigate the impact of POS on work engagement through the mediating effect of well-being and the moderating role of employees’ resilience. Considering the importance of an engaged workforce during times of pandemic such as COVID-19, the findings of the current study will motivate healthcare administrators to invest in support strategies, such as ensuring a safe working environment, providing manageable workload and establishing flexible schedules. If healthcare employees are left on their own to deal with pandemic-related difficulties, this disengagement will lead to increased absenteeism and decreased productivity, which would have an adverse impact on healthcare work settings.

METHODS
Data collection
Data were collected from 345 healthcare professionals working in public and private sector hospitals in Pakistan. Guadagnoli and Velicer suggested that a sample
of 300–400 provides an excellent match to the population. Data were gathered from 68 hospitals, of which 45 were public and 23 were private hospitals. Simple random sampling techniques were used to choose 238 healthcare professionals from public sector hospitals (69%) and 107 from private sector hospitals (31%). The following were established for study participation: entry requirements include holding a practitioner qualification certificate, working as an official hospital staff member and voluntarily participating in the survey. Postgraduate students, refresher physicians, people with inability to comprehend the study’s goal and people who do not want to engage in research were all excluded. Data were gathered between 24 July 2020 and 19 January 2021. Our research team chose to conduct a questionnaire survey both online and offline due to COVID-19, in accordance with hospitals’ epidemic prevention and control policies. Google Forms were used to carry out the online survey. Our study team provided healthcare professionals with a link to an online survey via WhatsApp after obtaining consent from the head doctors. The online questionnaire had the necessary fields and logical checks to ensure it was completed correctly. For the offline survey, paper questionnaires were used. Head doctors informed the department’s staff in advance of the purpose and content of the survey, and consent was obtained before administering the offline questionnaire survey. The research team then handed out paper surveys in person to professionals who expressed interest in taking part in the study. The research team performed initial verification once the respondents had completed the questionnaires. After gathering the completed paper questionnaires, a second review was conducted to weed out invalid surveys. Information regarding the study and participants’ informed consent were provided on the first page of both the paper and online questionnaires. The respondents chose whether to engage freely in this study in light of their own conditions.

To ease the burden on front-line health workers during the pandemic, we selected the split questionnaire technique for data gathering. First, respondents were informed that the survey was for an academic study. Second, assurance was given regarding the anonymity of the questionnaire. Third, it was communicated that responses would be examined as a whole, not individually. Finally, the completed questionnaires were collected in person to minimise exposure of the responses. Further, the study selected a two-wave, time-lagged design to reduce common method biases. An interval of 3 weeks was maintained between time 1 (T1) and time 2 (T2) responses. Coding of both sets of questionnaires for T1 and T2 was done to accurately match the responses received from healthcare workers at two different time periods. Respondents’ demographic information, such as age, education, gender, marital status and hospital type, as well as questions related to POS and well-being perceptions were asked at T1. Out of 510 health workers approached, 432 responded to the survey questions at T1. Three weeks later, at T2, the same 432 respondents provided responses on resilience and work engagement. Matching of the two sets of data was later performed, completing our sample of 345 health workers, with a response rate of 80%. Time-based division, according to Podsakoff et al., reduces respondents’ inclination to answer subsequent questions in line with the preceding questions, minimising method bias.

The results of the demographic analysis are displayed in table 2.

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothesis 1</td>
<td>Perceived organisational support has a positive relationship with well-being.</td>
</tr>
<tr>
<td>Hypothesis 2</td>
<td>Well-being has a positive relationship with work engagement.</td>
</tr>
<tr>
<td>Hypothesis 3</td>
<td>Subjective well-being mediates the relationship between perceived organisational support and work engagement.</td>
</tr>
<tr>
<td>Hypothesis 4</td>
<td>Resilience moderates the relationship between well-being and work engagement by enhancing the impact of well-being on work engagement.</td>
</tr>
<tr>
<td>Hypothesis 5</td>
<td>Resilience moderates the indirect effect of perceived organisational support on work engagement via the employee’s well-being perception, such that the indirect effect will be stronger (weaker) at higher (lower) levels of employee resilience.</td>
</tr>
</tbody>
</table>

Measurements and scales
To measure the variables of the current study, we used well-established and widely accepted scales (online supplemental appendix A). Precise details of the scales used in this research are summarised in the following sections.

Perceived organisational support
Participants rated their POS at T1 using Coyle-Shapiro and Conway’s seven-item measure. One of the items in the measure is ‘My hospital cares about my well-being’ (1=’strongly disagree’, 5=’strongly agree’).

Subjective well-being
Subjective well-being was assessed at T1 by the measure adopted by Han et al. using a five-item scale. One of the items is ‘I feel healthy and happy in this job’ (1=’strongly disagree’, 5=’strongly agree’). Han et al. adopted this scale from Diener,28 the most widely used scale for subjective well-being. We have chosen the scale adopted by Han et al.
al43 (for hotel employees) considering its relevance to our study, as we intend to measure the subjective well-being of employees associated with the service industry. The literature44 45 has revealed similarities between the hotel and hospital industries. With varying levels of responsibility, both employ a large workforce hierarchy. Further, by creating an experience, both hotels and hospitals also generate an experience with associated emotions. Visitors assess their perceived experience and develop their future intentions, deciding whether or not to continue or recommend the service to others depending on their experience of the service.45 In light of the aforementioned similarities in the hotel and healthcare context, the current study opted for Han et al’s43 scale for subjective well-being.

Resilience
Employee resilience was assessed at T2 by the measure developed by Smith et al46 using a six-item scale. A sample item is ‘I tend to bounce back quickly after hard times’ (1=‘strongly disagree’, 5=‘strongly agree’).

Work engagement
Health workers provided responses about their level of work engagement at T2 using a three-item measure developed by Schaufeli et al.47 A sample item is ‘At my work, I feel bursting with energy’ (1=‘almost never’, 5=‘very often’).

Control variables
Taking into account prior research, a few of the demographic variables, such as age, gender, marital status and type of hospital, were controlled. Earlier research has shown an association between age, gender, job association with public or private sector hospitals, POS, well-being and work engagement.48–51

Patient and public involvement
There was no patient and public involvement.

RESULTS
Analytical procedures
Confirmatory factor analysis (CFA) was performed to examine the convergent and discriminant validity between variables. Models 4 and 14 of the PROCESS macro by Hayes were then run to analyse the mediation and the mediated moderation paths.

Confirmatory factor analysis
A measurement model was tested by employing CFA and using AMOS V.24 to confirm goodness of fit before testing the hypotheses. To assess the fit indices for CFA, this study used \( \chi^2 \) test statistics, comparative fit index (CFI), goodness of fit (GFI), Tucker-Lewis index (TLI) and root mean square error of approximation (RMSEA). Usually, an \( \chi^2 \) value less than 3, an RMSEA below 0.08, and TLI and CFI scores greater than 0.90 indicate an acceptable fit. Our measurement model of four factors—POS, subjective well-being, resilience and work engagement—adequately fit the data (\( \chi^2/df=1.552\), RMSEA=0.040, GFI=0.963, CFI=0.981) (table 3). The comparison of fit of the four-factor model indicates a considerably good fit compared with alternate models with three factors, two factors and one factor, indicating sufficient discriminant validity.

Finally, for reliability and convergent validity of the measurement scale, we computed the average variance extracted (AVE) and the composite reliability (CR) (table 4). The AVE should be above 0.50 for all study variables to ascertain convergent validity. To establish the CR, a threshold of 0.60 was acceptable. As shown in table 4,
the CR and AVE were within the recommended range. The discriminant validity was also computed to examine overlap of unrelated constructs. The results were acceptable, as the MSV for all constructs was less than the AVE.

### Descriptive statistics

Table 5 provides the mean, SD, reliability estimates (Cronbach’s alpha) and correlations among the study variables. The significant correlations in the expected direction provided initial support for the hypothesised relationships.

### Hypothesis testing

In hypothesis 1, we propose that there is a positive correlation between POS and the subjective well-being of employees. As model 1 in table 6 shows, POS positively predicted the subjective well-being of employees ($\beta=0.48$, $SE=0.083$, $p<0.001$). Hence, hypothesis 1 is supported.

In hypothesis 2, we postulated that well-being positively correlates with work engagement. The findings in table 6 support hypothesis 2, revealing that employees’ subjective well-being leads to work engagement ($\beta=0.39$, $SE=0.13$, $p<0.001$).

In hypothesis 3, we anticipated an indirect association between POS and work engagement through employees’ subjective well-being. As depicted in table 7, the regression results with bootstrapping of 5000 resample for the indirect effects of POS on work engagement through employees’ subject well-being did not include 0 ($\beta=0.06$, $SE=0.02$, 95% bias-corrected CI 0.021, 0.107), establishing support for hypothesis 3.

In hypothesis 4, we proposed that the subjective well-being of employees and their capability for resilience interactively predicted workplace engagement. We noted a significant interaction between employees’ subjective well-being and their resilience in predicting work engagement ($\beta=0.11$, $SE=0.03$, 95% bias-corrected CI 0.061, 0.18). Hence, hypothesis 4 is validated. In further analysing the strong effect of resilience on subjective well-being and work engagement, the interaction was plotted at ±1 SD of resilience (figure 2). The figure reveals that the effect of subjective well-being on work engagement is stronger under high resilience (+1 SD) and weaker under low resilience (−1 SD).

Finally, in hypothesis 5, we predicted that employees’ resilience moderates the indirect effect of POS on work engagement through subjective well-being. We used model 14 of the PROCESS macro by Hayes to test this hypothesis. The results shown in table 7 validate this hypothesis by showing the significant value of the mediated moderation index engagement ($\beta=0.063$, $SE=0.022$, 95% bias-corrected CI 0.026, 0.114).

Although the direct effect of POS on work engagement has not been established, the indirect effect remains significant. Hence, we found that subjective well-being fully mediated POS and employee work engagement.

### Discussion

Despite an increase in research on work engagement over the past two to three decades, there have been few studies...
that contribute to workplace engagement addressing its underlying mechanisms. Moreover, majority of the studies on work engagement of medical professionals have been conducted on nurses, while work engagement among doctors has received less attention. The present study addresses this gap. The current study’s core objective was to analyse how POS might intensify health workers’ propensities in ways that would explain their engagement with work during a pandemic. This study mainly looked at the impact of POS on work engagement of healthcare workers through mediation of subjective well-being and moderation of resilience.

The COR theory has been employed to explain the POS–workplace engagement relationship. The COR theory asserts that individuals strive to maintain, protect and accumulate their valued resources. Stress increases when individuals comprehend an imbalance in gain of resources and investment or when they presume a loss of resources in an unreceptive environment. For the prevention of resource loss or imbalances, employment of resources, personal or from the environment, takes place by individuals. This implies that resources provide protection from loss of resources and help establish positive behaviours related to work. Using Hayes’ PROCESS macro, this study ascertained that work engagement is not a direct consequence of POS. Instead, it is caused by the mediation of subjective well-being, which is a direct outcome of POS. The current study offers a credible contribution to the theory by introducing subjective well-being as an important descendant of POS. Moreover, these findings have potentially far-reaching implications. If POS influences subjective well-being, other work-related attitudes and behaviours linked to it may also be affected. For instance, subjective well-being is an emotional response, i.e., it is an assessment of an individual’s life satisfaction. In the literature, subjective well-being refers to happiness or otherwise. Hence, the findings of this research underscore that POS may directly influence numerous attitudes and behaviours of employees beyond work engagement.

Additionally, the study explores the role of individual traits in the indirect link between POS and work engagement. It is crucial to understand that not every subordinate in a workplace experiences work engagement. Both situational conditions and individual characteristics determine the degree to which subordinates are

<table>
<thead>
<tr>
<th>Table 5</th>
<th>Means, SDs and correlations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variables</td>
<td>Mean</td>
</tr>
<tr>
<td>1 POS</td>
<td>3.40</td>
</tr>
<tr>
<td>2 Subjective well-being</td>
<td>5.04</td>
</tr>
<tr>
<td>3 Resilience</td>
<td>3.49</td>
</tr>
<tr>
<td>4 Work engagement</td>
<td>3.47</td>
</tr>
<tr>
<td>5 Age</td>
<td>1.62</td>
</tr>
<tr>
<td>6 Gender</td>
<td>2.48</td>
</tr>
<tr>
<td>7 Marital status</td>
<td>1.68</td>
</tr>
<tr>
<td>8 Hospital type (public/private)</td>
<td>1.31</td>
</tr>
</tbody>
</table>


*P<0.05 (two-tailed), **P<0.01 (two-tailed).

Table 6  Regression results for subjective well-being and work engagement

<table>
<thead>
<tr>
<th>Variables</th>
<th>Subjective well-being</th>
<th>Work engagement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model 1</td>
<td>Model 2</td>
</tr>
<tr>
<td>Control</td>
<td>β</td>
<td>SE</td>
</tr>
<tr>
<td>POS</td>
<td>0.489**</td>
<td>0.083</td>
</tr>
<tr>
<td>Subjective well-being</td>
<td>0.33**</td>
<td>0.13</td>
</tr>
<tr>
<td>Resilience</td>
<td>−0.67**</td>
<td>0.17</td>
</tr>
<tr>
<td>Subjective well-being×resilience</td>
<td>0.13**</td>
<td>0.03</td>
</tr>
<tr>
<td>R²</td>
<td>0.09</td>
<td>F=34.67, p&lt;0.001</td>
</tr>
</tbody>
</table>

N=345. Bootstrap sample size=5000.

*P<0.05, **P<0.01.

POS, perceived organisational support.
impacted by POS. This study examined the moderating role of resilience in the association between subjective well-being and health workers’ tendency to engage in the workplace. The findings validate that the positive relationship between subjective well-being and work engagement was moderated by resilience, as subjective well-being with weak resilience was more likely to lead to less workplace engagement.

The current study examined the impact of POS on health workers’ engagement through the mediation of subjective well-being. The results revealed that subjective well-being (β=0.06, SE=0.02, 95% bias-corrected CI 0.021, 0.10) explains the link between POS and work engagement. Further analysis of the strong effect of resilience on subjective well-being showed the significant value of the mediated moderation index (β=0.06, SE=0.02, 95% bias-corrected CI 0.03, 0.11).

Prior research authenticates the findings of this study. Literature has found that POS starts a social exchange process where employees feel obligated to help the organisation achieve its goals and objectives in the hope that their increased efforts will be rewarded. Social exchange theorists contend that resources received from others have greater value when given voluntarily rather than as a result of extenuating circumstances. This kind of voluntary assistance is appreciated as a sign that the provider sincerely cares about and values the recipients. The three major categories of perceived favourable treatment from the organisation that boost POS are justice, support from the supervisor, and rewards and employment conditions. Feeling appreciated and cared for results in positive emotions with lesser health issues. A healthier workforce is more productive and capable of greater focus and better mood, with minimised illness and absenteeism. Individuals who feel valued and respected by the fellows of their group show reduced levels of anxiety and mental distress and greater mental well-being. This formation enhances their resilience, social integration and health. Also, individuals possessing emotional positivity are not stagnant. Instead, they strive towards optimal functioning. According to Fredrickson and Joiner, for the sustainable and continuous growth, positive emotions will serve as fuel, crafting a self-sustaining system. Hence, the work environment manifests the collective effect of various environmental settings on numerous aspects of health workers’ well-being and engagement.

**Theoretical and practical implications**

By demonstrating empirical evidence of how POS leads to employee engagement via the mediating role of subjective well-being and the moderating role of resilience, we analyzed the relationship between personal and organizational effectiveness of resources. This study also contributes to identifying emerging prerequisites that influence engagement at work, particularly in the South Asian context.

This research will have practical implications for hospital management in bringing work engagement among healthcare workers by fostering a supportive environment.

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### Table 7  Results for the conditional indirect effects

<table>
<thead>
<tr>
<th>Relationship</th>
<th>Effect</th>
<th>SE</th>
<th>95% LLCI</th>
<th>95% ULCI</th>
</tr>
</thead>
<tbody>
<tr>
<td>An indirect effect of POS on WE</td>
<td>0.06</td>
<td>0.02</td>
<td>0.021</td>
<td>0.107</td>
</tr>
<tr>
<td>An indirect effect of POS on WE through resilience</td>
<td>0.001</td>
<td>0.028</td>
<td>−0.058</td>
<td>0.053</td>
</tr>
<tr>
<td></td>
<td>0.058</td>
<td>0.022</td>
<td>0.018</td>
<td>0.103</td>
</tr>
<tr>
<td></td>
<td>0.115</td>
<td>0.030</td>
<td>0.061</td>
<td>0.181</td>
</tr>
<tr>
<td>Index of moderated mediation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resilience</td>
<td>0.063</td>
<td>0.022</td>
<td>0.026</td>
<td>0.114</td>
</tr>
</tbody>
</table>

N=345. Bootstrap sample size=5000. LLCI, Lower limit confidence interval; POS, perceived organisational support; ULCI, Upper limit confidence interval; WE, work engagement.

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### Figure 2  The moderating effect of resilience. The strength of the effect of resilience on subjective well-being and work engagement

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culture that is perceived as supportive by the healthcare staff. Considering the importance of an engaged workforce during times of pandemic such as COVID-19, the findings of the current study will motivate healthcare administrators to invest in support strategies, such as ensuring a safe working environment, providing manageable workload and establishing flexible schedules. Moreover, subjective well-being is enhanced by reducing the negative impact of overwork and stress faced by frontline personnel during a pandemic, as experienced during the challenging time of COVID-19. If healthcare employees are left on their own to deal with pandemic-related difficulties, this disengagement may lead to increased absenteeism and decreased productivity,\(^{37}\) which would have an adverse impact on healthcare work settings.

Limitations and future research
Certain limitations exist in the study which must be considered when interpreting the results. Because we used self-reported questionnaires for all indicators, the study is subject to common method variance and mono-method bias.\(^ {41}\) To minimise common method variance, we chose a two-wave, time-lagged research design with a 3-week delay between the predictor and criterion variables.\(^ {41}\) The second constraint is that we cannot infer causal relationships between the study variables because our research is correlational. To address this shortcoming, future research may employ longitudinal and experimental methods to investigate the cause and effect connection between the study variables. The third limitation concerns the research’s generalisability. Since this study was conducted in a South Asian environment, findings may differ from those obtained in a Western setting, as South Asia has distinctive contextual and cultural characteristics.\(^ {58}\) Future research may focus on positive psychology, which has been shown to improve employees’ mental health, functioning and engagement. Such a long-term study should delve into the mental health experiences of individuals, which would be fruitful in establishing appropriate policies and interventions for long-term action in response to personal and community mental health needs both during and after the pandemic.\(^ {59}\)

CONCLUSION
This research adds to the domains of organisational behaviour by presenting a mediated moderation framework that investigates the relationship between POS and work engagement via the mediation effect of subjective well-being and the moderating effect of resilience. Drawing on Hobfoll’s\(^ {17}\) COR theory, the study establishes that POS works as a driver of work engagement, where the subjective well-being of employees functions as an underlying mechanism and the individual’s resilience as a moderator that influence the relationship between subjective well-being and work engagement. Our study adds to the literature on work engagement by examining the combination of different organisational and personal aspects, as engagement varies according to the resources people perceive and possess. We envisage that future studies in this domain will enable healthcare administrators to better understand how personal resources, like hope and employees’ mental health, may increase work engagement capacity.

Contributors FA act as guarantor. contributed to conceptualisation. GA contributed to data curation. FA and SI contributed to formal analysis. GA and FA contributed to the methodology. GA contributed to supervision. FA contributed to writing—original draft. KMB contributed to the implications of the study. FA and KMB contributed to review and editing.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication Not required.

Ethics approval This study involves human participants and was approved by the Research Ethics Committee of Lahore College for Women University (vide diary no: ORIC/LCWW/22/15, dated 18 January 2022). Participants gave informed consent to participate in the study before taking part.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement Data are available upon reasonable request.

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APPENDIX-A

SURVEY QUESTIONNAIRE (T1)

Thank you for taking the time to participate in this important research project. Your response is highly valued and will remain completely confidential and anonymous. There are no right or wrong answers. Please answer each question as honestly as you can.

BACKGROUND INFORMATION

A. Gender:  □ Male  □ Female

B. Marital Status:
  □ Single  □ Married  □ Divorced  □ Widow

C. Age (yrs): ___________________________

D. Education (yrs): _____________________

E. Email: _____________________________

F. Profession
  □ Physician  □ Surgeon  □ Nurse  □ Other _________

G. Designation: _______________________

H. Hospital Name: ------------------------

I. Hospital Type:
  □ Private  □ Public

J. Tenure in this Hospital :---------------

CODE GENERATION

Following information is needed for only coding purpose to match the responses of respondents at two different time intervals.

Last two alphabets of your name ______________

Last two digits of your date of birth ______________

Last two alphabets of your mother name ______________

PERCEIVED ORGANIZATIONAL SUPPORT: Perceived organizational support is the degree to which employees believe that their organization values their contributions and cares about their well-being and fulfills socio-emotional needs.

Please indicate the extent of agreement with each of the following statements.

(Please tick only one number)

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. My hospital cares about my well-being.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. My hospital values my contributions to its well-being.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
SUBJECTIVE WELL-BEING: Subjective Well-being refers to contentment, satisfaction, or happiness derived from optimal functioning.

<table>
<thead>
<tr>
<th>Statement</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. My hospital cares about my opinions.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. My hospital considers my goals and value.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. My hospital cares about my general satisfaction at work.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. My hospital is willing to help me when I need a special favor.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. My hospital shows very little concern for me.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Please indicate the extent of agreement with each of the following statements.

(Please **tick only one** number)

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Slightly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Slightly Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I feel healthy and happy in this job.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>2. I feel emotional well-being while staying at this job.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>3. My job plays an important role in making me feel relaxed.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>4. Thanking about this hospital makes me feel calm and peaceful.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>5. This hospital plays an important role in making me feel refreshed.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

THANKS FOR YOUR VALUABLE TIME
SURVEY QUESTIONNAIRE (T2)

Thank you for taking the time to participate in this important research project. Your response is highly valued and will remain completely confidential and anonymous. There are no right or wrong answers. Please answer each question as honestly as you can.

CODE GENERATION

Following information is needed for only coding purpose to match the responses of respondents at two different time intervals.

<table>
<thead>
<tr>
<th>Information</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last two alphabets of your name</td>
<td></td>
</tr>
<tr>
<td>Last two digits of your date of birth</td>
<td></td>
</tr>
<tr>
<td>Last two alphabets of your mother name</td>
<td></td>
</tr>
</tbody>
</table>

REsilience: Resilience is the ability to bounce back or recover from stress, to adapt to stressful circumstances, and to function above the norm in spite of stress.

Please indicate the extent of agreement with each of the following statements.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I tend to bounce back quickly after hard time.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. I don’t have hard time making it through stressful events.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. It does not take me long to recover from a stressful event</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. It is easy for me to snap back when something bad happens.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. I usually come through difficult times with little trouble</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6. I tend to take a little time to get over set-backs in my life</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
**WORK ENGAGEMENT:** Work engagement refers to a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption.

Please indicate the extent of agreement with each of the following statements.

(Place **tick only one** number)

<table>
<thead>
<tr>
<th>Statement</th>
<th>Almost Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Very Often</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. At my work, I feel bursting with energy.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. I am enthusiastic about my job.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. I am immersed in my work.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

**THANK YOU FOR YOUR VALUABLE TIME**