

Subjective well-being among medical staff: capturing mental health outcomes using the Warwick-Edinburgh Mental Well-Being Scale

Jianing Zhu

Wenzhou Medical University

Aishu Dong (✉ dotjiff858268@163.com)

the Second Affiliated Hospital of Wenzhou Medical University

Jing Huang

Wenzhou Medical University

Wenjian Guo

the Second Affiliated Hospital of Wenzhou Medical University

Research Article

Keywords: Warwick-Edinburgh Mental Well-being Scale, Well-being, Medical Staff, Influencing Factors

Posted Date: March 8th, 2022

DOI: <https://doi.org/10.21203/rs.3.rs-1416140/v1>

License:  This work is licensed under a Creative Commons Attribution 4.0 International License.

[Read Full License](#)

Abstract

Background: There is growing awareness of the importance of subjective well-being (SWB) in the general population and specific groups. The mental health of medical staff influences the quality of their treatment. We performed this study to explore the SWB of medical staff using the Warwick-Edinburgh Mental Well-Being Scale (WEMWBS).

Methods: In this cross-sectional study, we surveyed medical staff at several hospitals in China. We recorded demographics and the WEMWBS from a cross-sectional online multicenter survey from May 15 to July 15, 2020. Univariate analysis and structural equation modeling were used to identify factors correlated with the SWB among medical staff.

Results: A total of 572 respondents completed the questionnaires. The mean age was 34.18 ± 6.36 years (21 to 55 years). The mean WEMWBS was 38.47 ± 13.23 (standard deviation = 13.23; 95% confidence interval 37.45 to 39.61). The factors influencing SWB were age, marital status, religious status, job type, daily working hours, number of night shifts per week, daily fruit and vegetable consumption, weekly exercise duration, self-reported personality type, general health status, and health status compared with one year before ($P \leq 0.05$).

Conclusions: The medical staff's SWB level was lower than occupational groups. These data provide a baseline for future research in this area, especially for promoting SWB. More attention should be paid to improving SWB among medical staff.

Introduction

Subjective well-being (SWB) is an essential aspect of overall health, especially mental health. SWB is defined as a sense of satisfaction with life, meaning self-perception of physical and mental health, interpersonal relationships, security, spirituality, living standards, and life achievement (1). Several studies focused on SWB in the general population and specific groups [1–7]. The focus of SWB on the positive elements of mental health and functioning superseded a previous emphasis on deficits, problems, and symptoms. As the most populous country globally, China is becoming an aging society, and the proportion of medical resources per capita is low. The medical load is heavy, and medical staff are overloaded, affecting their physical and mental health [8].

In the context of the rising workload, medical staff with higher SWB can better improve patient quality of life. Several medical staff mental health surveys highlight critical causes of work stress [9, 10]. The work environment has changed dramatically, including elevated work pressure, heavy workload, frequent interpersonal contact, and irregular work hours, affecting mental health. There are high average rates of work-related stress, depression, and anxiety among medical workers [11]; there are high rates of anxiety and depression, including self-doubt and increased suicide rates [12–15]. These outcomes influence the quality of their care, patient security, and the quality of the medical institutions [16, 17].

To identify targeted strategies to improve the efficient operation of healthcare systems, it is critical to identify potentially modifiable factors that stimulate work engagement. Previous studies found that interpersonal relationships, workload, and burnout can affect SWB [18]. Nevertheless, different cultures, environments, and faiths may lead to varying understandings of well-being. Adopting targeted interventions requires the identification of factors that influence SWB. Studies suggested that developing meaningful interventions requires further exploration of factors that affect SWB among medical staff [19]. We designed this study to identify these critical factors and improve medical staff's well-being.

Currently, the SWB is defined by self-assessment. Several studies explored SWB among health professionals using measures of psychological distress and conceptually elaborate and specific tools such as the 20-item PANAS scale, the 5-item Satisfaction with Life Scale, and the five-item World Health Organization (WHO) Happiness Index (WHO-5) [20–24]. We used the Warwick-Edinburgh Mental Well-Being Scale (WEMWBS), focusing on positive aspects of mental health to identify SWB and identify influencing factors. The WEMWBS is brief and avoids ceiling effects in a population sample [25]. This study may help organizations retain the best employees and maintain the health and well-being of medical staff.

We present the following article in accordance with the TREND reporting checklist

Methods

Study design

We conducted the cross-sectional survey online from May 15 to July 15, 2020. The survey period coincided with the highest point of the COVID-19 epidemic in China. In this study, 572 medical staff came from different hospitals. We used convenience sampling to select Zhejiang, Hunan, Beijing, Anhui, and Liaoning. Before the survey, all participants were informed that the survey was voluntary. All medical staff were informed of the purpose and significance of the study. The questionnaire was completed using anonymous online questionnaire software, and all data were anonymized. The ethics committees of the second affiliated hospital, Wenzhou Medical University, approved the study.

Research tools

A self-designed test questionnaire was constructed with three parts. The first part obtains socio-demographic information (age, marital status, gender, bodyweight [kilograms], height [meters], professional status, and education level). The second part covers lifestyle habits (working hours, night shift times per week, smoking history, drinking history, eating vegetables and fruits, physical exercises, and self-reported personality). The third part deals with mental well-being using WEMWBS and self-perceived quality of life.

WEMWBS consists of a 14-item sequential scale to measure the three aspects of positive psychological function, emotion, and interpersonal relationship satisfaction, which reflect mental well-being. It is

consistent with the basic concept of SWB proposed by Keyes[26]. A 5-point Likert scale scored all items (1 = Never, 2 = Occasionally, 3 = Yes, 4 = Often, 5 = always). The total score ranges from 14 to 70, and higher scores mean greater SWB.

Statistical analysis

We employed double parallel data entry using EpiData (version 3.1, Lauritsen JM & Bruus M, Odense, Denmark) and consistency testing using the Statistical Package for the Social Sciences software (version 18.0, SPSS, Inc, Chicago, IL, USA) to conduct a descriptive analysis. We used Analysis of Moment Structure 17.0 to construct structural equation modeling and factors influencing medical staff SWB. Demographic characteristics were expressed as frequency. A structural equation model was used to analyze the SWB of medical staff. The maximum likelihood estimation method was used to estimate the model's parameters. All tests were two-sided, and the test level $\alpha = 0.05$. $P < 0.05$ was considered statistically significant.

Results

General information of medical staff

A total of 572 medical staff completed the questionnaire (Table 1). The Chinese version of WEMWBS ranged from 14 to 70, with a mean of 38.47 (standard deviation [SD] = 13.227, 95% confidence interval [CI] 37.45 to 39.61).

Univariate analyses

Age, marital status, faith status, job type, working hours per day, night shift per week, daily consumption of fruits and vegetables, exercise time per week, self-reported personality type, body mass index (BMI), general health, and health status were significantly different from one year before the survey ($P < 0.05$). Medical staff who felt the most extraordinary general health had the highest SWB scores, while those who felt worse than a year before had the lowest. There were no significant differences in gender, education, job title, institutional setting, monthly income, smoking history, or alcohol consumption ($p > 0.05$) (Table 1).

(See Table 1)

Construction of structural equation modeling

Personal characteristics, living habits, personality characteristics, and health status were taken as exogenous latent variables, and SWB was taken as endogenous. The fitted values of each fitting index of the model were all within the recommended range. The factor loadings for items 1–14 were 0.74, 0.80, 0.81, 0.87, 0.84, 0.86, 0.87, 0.90, 0.83, 0.87, 0.80, 0.79, 0.75, and 0.87 respectively. Factor loadings of all items in this study were > 0.6 . As can be seen from the *Figure 1*, the goodness of fit of the structure is statistically significant.

($\chi^2 = 3.683$, less than the critical value 5.0, RMSEA = 0.069, less than the critical value 0.08, GFI = 0.907, N = 572), with a good fitting degree, $\chi^2/v = 3.683$, less than the critical value 5.0. CFI=0.907, greater than the critical value of 0.9, RMSEA = 0.069, less than the critical value 0.08, indicating that the model can be fitted. The standardized coefficients of confirmatory factor analysis are shown in Fig 1.

☒see Fig 1 ☒

(See Table 2)

Table 2 displays the results of the path analysis among the influencing factors, in which the variables that have effects on SWB include personal characteristics, lifestyle habits, and health status, in which health status has a positive effect on SWB, path coefficient of $\beta = 0.570$ ($t = 0.188$, $p < 0.001$), while personal characteristics and lifestyle habits harm SWB with path coefficients of $\beta = -0.105$ ($t = 0.267$, $p = 0.040$) and $\beta = -0.211$ ($t = 0.365$, $p = 0.010$), respectively.

The SWB index of the medical staff of this group was lower than that of other countries [4, 27-30]. This finding may be related to the current multi-hospital operation mode of the hospital. Changes in the working environment also changed the staff's mental health. Especially in the current context, with medical staff battling on the front lines of the pandemic, there are high levels of work-related and psychological pressure. These pressures impair positive emotions and emotional stability and directly affect SWB.

Discussion

With the change of time, the medical staff no longer simply pursues the income but also pays more attention to their SWB. In this cross-sectional study, we measured the SWB of medical staff using the WEMWBS scale and explored the factors that influence medical staff SWB. We found that the SWB scores were low, which lower than previously reported [4, 27-30]. As far as we know, only a few studies used WEMWBS to measure the SWB of medical staff in mainland China. WEMWBS results can be used to measure mental health. In addition, our study can lead medical staff to adopt interventions to improve the SWB.

Comparison with other studies

We found that the SWB score of medical staff aged 20–29 was the highest, and those aged 40 and above had the lowest scores. This finding is different from that presented in a previous study that found that young age correlated with low SWB [31]. The reason for the discrepancy may be differences in providing for the aged views, in China, people are responsible for their parents, and adults over 40 years old need to pay more attention to their children, who are passing through a critical time in their lives.

Government support policies [32] for the elderly abroad are excellent, and the development of nursing homes has improved, as a result, children are under less pressure to support their parents. In addition to these family factors, clinical pressure increases workload, including promotion-related stress and the

conflict between clinical and academic requirements. All these factors can create challenges for medical staff. Younger medical staff are beginning their careers with less family and work pressure. These facts might explain why we found that SWB of medical staff over 40 years old was the lowest.

Marital status is another critical factor. Our study aligned with previous studies finding that marital status influences mental health. Unmarried medical staff scored slightly higher than married staff in our study. Interestingly, when we reviewed other studies, we found that married people had higher levels of SWB than those who were unmarried, divorced, or separated [33]. This may be due to the more complex family structure and interpersonal relationships after marriage. Such individuals need to deal with relationships and financial issues from several families.

The divorce rate has increased recently [34]. This fact indirectly suggests that married medical staff may be more vulnerable to the impact of marriage. Meanwhile, the age at marriage has become generally older. Furthermore, the minimum requirement for entering the medical industry is undergraduate education, and medical work typically begins at 23 years of age. Such individuals tend to have parents with relatively good physical status, therefore, these physicians might not need to care for their parents, resulting in less stress. Because of changes in fertility attitudes, most young medical staff are only children and prefer to be alone. They do not need the company of another person, therefore, unmarried people have a higher SWB than married medical staff[35].

BMI also affects the mental health of medical staff. Our study supports previous work demonstrating that low BMI correlates with high SWB [36]. This finding might be related to the mainstream aesthetic ideal of thinness as beauty in China. With changes in health concepts, people are eating healthier, and their BMIs are more often in the normal range. Furthermore, the living standards of Chinese people have improved substantially in recent decades. Increasing numbers of Chinese people are willing to spend more time paying attention to nutrition-related knowledge and engage in more moderate food intake. Medical staff have more nutrition knowledge than the general population. Therefore, their BMIs are at healthier levels. Their physical health state can represent a healthier mental state.

While some situations lead to short-term fluctuations (and in some cases, long-term changes in well-being), substantial research has supported a dispositional perspective of well-being [37]. Extroverts had the highest correlation with positive affect [38]. They are more eager to socialize and show more significant affinity to others. By contrast, in the present study, medical staff who reported an introverted personality were happier [39]. This finding may have resulted from the fact that extroverts could not go out and travel during the epidemic. Furthermore, extroverts could not spend time with friends as usual after work. Nevertheless, extroverts change more than introverts to adapt to this situation. Extroverts have more difficulty than introverts with adjusting to these changes.

There was an unexplained phenomenon in our study. Participants reported that medical staff who consume fruits and vegetables less than once per day had the highest SWB. This differs from Saverio's findings, which suggested that fruit and vegetable intake may play a potential role as a driver of physical and mental well-being in the general population [36]. Medical staff consuming more fruits and vegetables

have a healthier mental state. Further research is needed to explore the reasons for this discrepancy, nevertheless, the discrepancy might be related to the setting of this questionnaire. First, this questionnaire was translated directly from the English version. Due to the difference in eating habits at home and abroad, the number of vegetables and fruits in the questionnaire was somewhat unclear. Because of the epidemic, we conducted an online questionnaire, and we could not interpret questions face-to-face. Thus, the results of this paper differ from other studies. This topic needs further investigation and discussion.

Those who never engage in physical activity per week had the highest SWB score. We analyzed the possible reasons for the differences in results from other studies [40, 41] and speculated that this finding might be related to the nature of their work. The medical staff felt exhaustion when they exercised after work. The workload meets the guidelines for 30 to 90 minutes per day and 150 to 300 minutes per week of moderate physical fitness activity. Most medical staff will not use their spare time to engage in extra physical exercise.

Job type could also influence medical staff SWB. We found that physicians have the highest SWB, followed by nurses, others had lower scores, inconsistent with previous findings [28]. This discrepancy might be related to the fact that patients trust physicians more than other positions. Their sense of accomplishment is relatively high, therefore, they have the highest sense of SWB. Doctors and nurses have more opportunities to contact patients. They provide more help to patients than others in the hospital. Doctors and nurses can better experience the joy of giving from it. Higher senses of accomplishment correlate with higher SWB. Nevertheless, it is worth discussing the results of this study, which had a higher percentage of nurses. The conclusion needs a more appropriate ratio among medical staff.

In other studies, the workload was related to decreased SWB [42, 43], consistent with our present findings. In the present study, medical staff who work 8–12 hours appeared to feel happier. Those who work 12–14 hours per day or 3-night shifts per week had the lowest mental health. This finding might be due to the shortage of medical staff, especially nurses. In China, the nurse-bed ratio is less than 0.4:1, and the daily workload is heavier [44]. It is challenging for medical staff to obtain happiness in such conditions because of the imposed mental stress due to the demand for knowledge, heavy work tasks, and the tension between physicians and patients. They do not have too much time to pay attention to their health, which will affect their physical health for a long time and lead to lower SWB. Our findings suggest that reducing workload plays a significant role in improving the SWB of medical staff. Hospital managers should adjust work arrangements, and they should pay close attention to the mental state of doctors and nurses. In this manner, leaders could understand the medical staff's basic situation and take adequate measures to reduce medical staff burdens and improve SWB.

We found that medical staff who reported better general health than one year earlier had higher SWB scores. General health is a subjective judgment made by individuals according to their health status, reflecting their psychological and physical status to a certain extent. Due to the unique nature of their profession, medical workers encounter dramatic changes in disease. As a result, they are more sensitive

to health than other groups, especially new physicians and nurses. Medical staff who believe their health status is better than in the past pay more attention to themselves and are more enthusiastic about life. Studies have shown that medical staff are affected by life and death situations [45]. Anxiety, depression, and other disorders are common, and negative emotions affect individual SWB. It has been shown that self-rated general health affects individual SWB indirectly by influencing mental health [46], poor general health correlates with poor mental health status. When medical staff feel uncomfortable, they are more likely to generate worse outcomes because of their expertise. They particularly worry about their physical health, which can lead to depression and even anxiety, and they relieve these feelings in many ways to improve their SWB [47, 48].

Limitations

Our research is preliminary, therefore, some limitations warrant discussion. First, the sample size was small, and most of the participants were recruited from Zhejiang province, which may not be generalizable to other populations. Further investigation with larger samples of medical staff from other areas is necessary. Second, there were 521 women, accounting for 91.1% of the total. The ratio of men and women was not coordinated, and most were nurses, while doctors and other medical staff accounted for a small proportion. Finally, we used an online questionnaire due to the epidemic, and researchers could not supervise or explain the questions. Completion and recovery rates could not be guaranteed. Finally, respondents could only provide give answers based on established questions. They could gain a deeper understanding of their views.

Conclusion

SWB in medical staff is complex and includes many aspects. SWB is a positive feeling related to mental health. Low mental health affects physical and mental health and even be adverse to patients [18]. Improving the SWB of medical staff has positive effects on patients, hospitals, and themselves. Therefore, it is critical to determine which factors influence SWB so that health service managers can minimize these factors and improve well-being. Through a better understanding of these factors, more preventive measures are needed. Our study and other studies should generate organizational, healthcare, and occupational changes. Meaningful and targeted interventions for further study can be developed and investigated. The medical staff should improve their work enthusiasm and be kind to their patients. Finally, medical staff should reasonably arrange work and leisure time to maximize happiness.

Abbreviations

WEMWBS

Warwick-Edinburgh Mental Well-Being Scale

SWB

Subjective Well-Being

Declarations

Acknowledgements

The authors wish to thank all medical staff.

Authors' contributions

JZ wrote the article. WG completed the data analysis. All authors read and approved the final manuscript.

Funding

This work was supported by the Program of Wenzhou Science and Technology Bureau (Grant Number Y2019038)

Availability of data and materials

Data shall only be shared with researchers upon reasonably request, at the discretion of the principal investigator.

Code availability

Not applicable.

Ethics approval and Consent to participate

The study was approved by the Ethics Committee of the Second Affiliated Hospital of Wenzhou Medical University (Wenzhou, China) Consent for publication

Consent for publication

Not applicable.

Competing interests

The authors have no conflicts of interest to declare that are relevant to the content of this article.

Author details

¹School of Nursing, Wenzhou Medical University, College West Road 109,0577 Wenzhou, Zhejiang, People's Republic of China. ²Cardiac Department, the Second Affiliated Hospital of Wenzhou Medical University, College West Road 109,0577 Wenzhou, Zhejiang, People's Republic of China. ³Hematology Department, the Second Affiliated Hospital of Wenzhou Medical University, College West Road 109,0577 Wenzhou, Zhejiang, People's Republic of China.

References

1. Stochl J, Sonesson E, Wagner AP, Khandaker GM, Goodyer I, Jones PB: Identifying key targets for interventions to improve psychological wellbeing: replicable results from four UK cohorts. *Psychol Med* 2019, 49(14):2389-2396.
2. Smith AP: Female urinary incontinence and wellbeing: results from a multi-national survey. *BMC Urol* 2016, 16(1):22.
3. Ng SSW, Leung TKS, Ng PPK, Ng RKH, Wong ATY: Activity Participation and Perceived Health Status in Patients with Severe Mental Illness: a Prospective Study. *East Asian Arch Psychiatry* 2020, 30(4):95-100.
4. Simpson K, Ashworth M, Roberts-Lewis S, Ayis S: Evaluation of NHS Practitioner Health: capturing mental health outcomes using five instruments. *BJPsych Open* 2021, 7(4):e106.
5. Newbold A, Warren FC, Taylor RS, Hulme C, Burnett S, Aas B, Botella C, Burkhardt F, Ehring T, Fontaine JRJ et al: Promotion of mental health in young adults via mobile phone app: study protocol of the ECoWeB (emotional competence for well-being in Young adults) cohort multiple randomised trials. *BMC Psychiatry* 2020, 20(1):458.
6. Karpavičiūtė S, Macijauskien J: The Impact of Arts Activity on Nursing Staff Well-Being: An Intervention in the Workplace. *Int J Environ Res Public Health* 2016, 13(4):435.
7. Harding S, Morris R, Gunnell D, Ford T, Hollingworth W, Tilling K, Evans R, Bell S, Grey J, Brockman R et al: Is teachers' mental health and wellbeing associated with students' mental health and wellbeing? *J Affect Disord* 2019, 242:180-187.
8. Aiken LH, Sloane DM, Bruyneel L, Van den Heede K, Griffiths P, Busse R, Diomidous M, Kinnunen J, Kózka M, Lesaffre E et al: Nurse staffing and education and hospital mortality in nine European countries: a retrospective observational study. *Lancet* 2014, 383(9931):1824-1830.
9. Jorm AF, Ryan SM: Cross-national and historical differences in subjective well-being. *Int J Epidemiol* 2014, 43(2):330-340.
10. Toh WX, Yang H, Hartanto A: Executive Function and Subjective Well-being in Middle and Late Adulthood. *J Gerontol B Psychol Sci Soc Sci* 2020, 75(6):e69-e77.
11. Ameli R, Sinaii N, West CP, Luna MJ, Panahi S, Zoosman M, Rusch HL, Berger A: Effect of a Brief Mindfulness-Based Program on Stress in Health Care Professionals at a US Biomedical Research Hospital: A Randomized Clinical Trial. *JAMA Netw Open* 2020, 3(8):e2013424.
12. West CP, Tan AD, Shanafelt TD: Association of resident fatigue and distress with occupational blood and body fluid exposures and motor vehicle incidents. *Mayo Clin Proc* 2012, 87(12):1138-1144.
13. Balch CM, Oreskovich MR, Dyrbye LN, Colaiano JM, Satele DV, Sloan JA, Shanafelt TD: Personal consequences of malpractice lawsuits on American surgeons. *J Am Coll Surg* 2011, 213(5):657-667.
14. Oreskovich MR, Shanafelt T, Dyrbye LN, Tan L, Sotile W, Satele D, West CP, Sloan J, Boone S: The prevalence of substance use disorders in American physicians. *Am J Addict* 2015, 24(1):30-38.

15. Shanafelt TD, Balch CM, Dyrbye L, Bechamps G, Russell T, Satele D, Rummans T, Swartz K, Novotny PJ, Sloan J et al: Special report: suicidal ideation among American surgeons. *Arch Surg* 2011, 146(1):54-62.
16. Goodman DC, Fisher ES: Physician workforce crisis? Wrong diagnosis, wrong prescription. *N Engl J Med* 2008, 358(16):1658-1661.
17. Zgliczyńska M, Zgliczyński S, Ciebiera M, Kosińska-Kaczyńska K: Occupational Burnout Syndrome in Polish Physicians: A Systematic Review. *Int J Environ Res Public Health* 2019, 16(24).
18. Hall LH, Johnson J, Watt I, Tsipa A, O'Connor DB: Healthcare Staff Wellbeing, Burnout, and Patient Safety: A Systematic Review. *PLoS One* 2016, 11(7):e0159015.
19. Brand SL, Thompson Coon J, Fleming LE, Carroll L, Bethel A, Wyatt K: Whole-system approaches to improving the health and wellbeing of healthcare workers: A systematic review. *PLoS One* 2017, 12(12):e0188418.
20. Watson D, Clark LA, Tellegen A: Development and validation of brief measures of positive and negative affect: the PANAS scales. *J Pers Soc Psychol* 1988, 54(6):1063-1070.
21. Diener E, Emmons RA, Larsen RJ, Griffin S: The Satisfaction With Life Scale. *J Pers Assess* 1985, 49(1):71-75.
22. Ryff CD, Keyes CL: The structure of psychological well-being revisited. *J Pers Soc Psychol* 1995, 69(4):719-727.
23. Joseph S, Linley PA, Harwood J, Lewis CA, McCollam P: Rapid assessment of well-being: The Short Depression-Happiness Scale (SDHS). *Psychol Psychother* 2004, 77(Pt 4):463-478.
24. Kusier AO, Folker AP: The Well-Being Index WHO-5: hedonistic foundation and practical limitations. *Med Humanit* 2020, 46(3):333-339.
25. Tennant R, Hiller L, Fishwick R, Platt S, Joseph S, Weich S, Parkinson J, Secker J, Stewart-Brown S: The Warwick-Edinburgh Mental Well-being Scale (WEMWBS): development and UK validation. *Health Qual Life Outcomes* 2007, 5:63.
26. Keyes CL: The mental health continuum: from languishing to flourishing in life. *J Health Soc Behav* 2002, 43(2):207-222.
27. Brown M, Hooper N, James P, Scott D, Bodger O, John A: A Web-Delivered Acceptance and Commitment Therapy Intervention With Email Reminders to Enhance Subjective Well-Being and Encourage Engagement With Lifestyle Behavior Change in Health Care Staff: Randomized Cluster Feasibility Stud. 2020, 4(8):e18586.
28. Waqas A, Ahmad W, Haddad M, Taggart FM, Muhammad Z, Bukhari MH, Sami SA, Batool SM, Najeeb F, Hanif A et al: Measuring the well-being of health care professionals in the Punjab: a psychometric evaluation of the Warwick-Edinburgh Mental Well-being Scale in a Pakistani population. *PeerJ* 2015, 3:e1264.
29. Summers EMA, Morris RC, Bhutani GE, Rao AS, Clarke JC: A survey of psychological practitioner workplace well-being. *Clin Psychol Psychother* 2021, 28(2):438-451.

30. Bass M, Dawkin M, Muncer S, Vigurs S, Bostock J: Validation of Warwick-Edinburgh Mental Well-being Scale (WEMWBS) in a population of people using Secondary Care Mental Health Services. *J Ment Health* 2016, 25(4):323-329.
31. Murray MA, Cardwell C, Donnelly M: GPs' mental wellbeing and psychological resources: a cross-sectional survey. *Br J Gen Pract* 2017, 67(661):e547-e554.
32. Fox S, Kenny L, Day MR, O'Connell C, Finnerty J, Timmons S: Exploring the Housing Needs of Older People in Standard and Sheltered Social Housing. *Gerontol Geriatr Med* 2017, 3:2333721417702349.
33. Kiekkas P, Spyrtos F, Lampa E, Aretha D, Sakellaropoulos GC: Level and correlates of burnout among orthopaedic nurses in Greece. *Orthop Nurs* 2010, 29(3):203-209.
34. Zil EAA, Awana MT, Aadil M: Relationship Issues and High Divorce Rate among Surgeons. *J Coll Physicians Surg Pak* 2017, 27(11):739-740.
35. Meng R, Luo Y, Liu B, Hu Y, Yu C: The Nurses' Well-Being Index and Factors Influencing This Index among Nurses in Central China: A Cross-Sectional Study. *PLoS One* 2015, 10(12):e0144414.
36. Stranges S, Samaraweera PC, Taggart F, Kandala NB, Stewart-Brown S: Major health-related behaviours and mental well-being in the general population: the Health Survey for England. *BMJ Open* 2014, 4(9):e005878.
37. Anglim J, Horwood S, Smillie LD, Marrero RJ, Wood JK: Predicting psychological and subjective well-being from personality: A meta-analysis. *Psychol Bull* 2020, 146(4):279-323.
38. Steel P, Schmidt J, Shultz J: Refining the relationship between personality and subjective well-being. *Psychol Bull* 2008, 134(1):138-161.
39. Spittlehouse JK, Vierck E, Pearson JF, Joyce PR: Temperament and character as determinants of well-being. *Compr Psychiatry* 2014, 55(7):1679-1687.
40. Harvey C, Ratcliffe P, Gulliford MC: Well-being, physical activity and long-term conditions: cross-sectional analysis of Health Survey for England 2016. *Public Health* 2020, 185:368-374.
41. Piercy KL, Troiano RP, Ballard RM, Carlson SA, Fulton JE, Galuska DA, George SM, Olson RD: The Physical Activity Guidelines for Americans. *Jama* 2018, 320(19):2020-2028.
42. Diehl E, Rieger S, Letzel S, Schablon A, Nienhaus A, Escobar Pinzon LC, Dietz P: Health and intention to leave the profession of nursing - which individual, social and organisational resources buffer the impact of quantitative demands? A cross-sectional study. *BMC Palliat Care* 2020, 19(1):83.
43. Chien WT, Yick SY: An Investigation of Nurses' Job Satisfaction in a Private Hospital and Its Correlates. *Open Nurs J* 2016, 10:99-112.
44. Rizo-Baeza M, Mendiola-Infante SV, Sepehri A, Palazón-Bru A, Gil-Guillén VF, Cortés-Castell E: Burnout syndrome in nurses working in palliative care units: An analysis of associated factors. *J Nurs Manag* 2018, 26(1):19-25.
45. Deng L, Xang S, t., Shen Y, Zhang L, Chen Z, h.: Study on mental health status of young medical staff in a first-class grade-three general hospital. *China Journal of Modern Medicine* 2016, 26(19):128-131.

46. National Academies of Sciences E, Medicine, National Academy of M, Committee on Systems Approaches to Improve Patient Care by Supporting Clinician W-B. In: Taking Action Against Clinician Burnout: A Systems Approach to Professional Well-Being. edn. Washington (DC): National Academies Press (US) Copyright 2019 by the National Academy of Sciences. All rights reserved., 2019.
47. Czeglédi E, Tandari-Kovács M: [Characteristics and prevention of burnout syndrome among nurses]. Orv Hetil 2019, 160(1):12-19.
48. Suleiman-Martos N, Gomez-Urquiza JL, Aguayo-Estremera R, Cañadas-De La Fuente GA, De La Fuente-Solana EI, Albendín-García L: The effect of mindfulness training on burnout syndrome in nursing: A systematic review and meta-analysis. J Adv Nurs 2020, 76(5):1124-1140.

Tables

Table 1 General information of 572 medical staff (N=572)

Variable	Number (n)	WEMWBS score	<i>P</i>
Gender			0.241
Male	51	34.00(28.00,44.00)	
Female	521	37.00(28.00,48.00)	
Age (years)			0.039*
20-29	142	39.00(31.00,50.00)	
30-39	324	36.00(28.00,47.00)	
>40	106	33.00(28.00,45.00)	
Marital Status			0.005*
Unmarried and others	108	41.00(31.50,50.00)	
Married	464	35.00(28.00,46.00)	
Faith Status			0.022*
With Faith	138	33.00(28.00,43.00)	
Without faith	434	38.00(28.00,48.00)	
Education			0.754
junior college graduate	86	37.00(28.00,48.00)	
College graduate	422	37.00(28.00,47.00)	
postgraduates	64	37.00(28.00,45.00)	
Professional title			0.162
Junior	253	39.00(28.00,50.00)	
Intermediate	263	35.00(28.00,46.00)	
Deputy high	56	33.50(28.00,44.50)	
Job Type			0.007*
Doctor	59	41.00(29.00,51.00)	
Nurse	474	37.00(28.00,47.00)	
Medical Technology	39	28.00(26.00,42.00)	
Employment status			0.291
Official	390	38.00(28.00,47.00)	
Contract or temporary	182	36.00(28.00,47.00)	

Working hours per day			0.029*
<8	199	34.00(28.00,46.00)	
8-12	359	38.00(28.00,48.00)	
12-16	14	29.50(25.00,45.00)	
night shift per week			0.040*
0	147	33.00(28.00,43.00)	
1	286	39.00(28.00,48.00)	
2	103	38.00(28.00,49.00)	
3	36	32.50(28.00,44.00)	
monthly income			0.339
<4000	55	39.00(29.00,51.00)	
4000-6000	182	37.00(28.00,45.00)	
6000-8000	143	37.00(28.00,49.00)	
>8000	192	35.00(28.00,45.00)	
Smoking			0.375
No	548	37.00(28.00,47.00)	
Yes	24	29.00(28.00,48.00)	
Drinking			0.962
No	351	38.00(28.00,47.00)	
Yes	221	37.00(28.00,46.00)	
Daily consumption of fruits and vegetables			0.002*
<1	135	41.00(29.00,52.00)	
1-3	383	36.00(28.00,45.00)	
3-5	54	29.50(26.00,43.00)	
Exercise time per week			<0.001*
Never	247	39.00(29.00,52.00)	
1-2hour	239	36.00(28.00,45.00)	
3-4hour	86	29.00(27.00,42.00)	
Self-reported personality type			<0.001*

Extroverted	138	29.50(27.00,42.00)	
Intermediate	303	37.00(28.00,46.00)	
Introverted	131	42.00(29.00,53.00)	
BMI			0.039*
Low BMI	80	41.50(29.50,49.00)	
Normal BMI	397	37.00(28.00,46.00)	
High BMI	95	34.00(28.00,47.00)	
General health			<0.001*
1	21	28.00(20.00,32.00)	
2	54	28.00(26.00,38.00)	
3	232	33.50(28.00,42.00)	
4	221	41.00(30.00,51.00)	
5	44	48.50(38.00,62.00)	
Healthy status than one year ago			<0.001*
1	17		
2	79	33.50(28.00,42.00)	
3	146	33.00(28.00,42.00)	
4	288	41.00(29.00,51.00)	
5	42	46.50(32.50,62.50)	

*: $P < 0.05$

Table 2 Model path coefficient: path relationship analysis of factors influencing SWB of medical personnel(N=572)

path	Estimate	SE.	CR.	P
Job factor→WEMWBS	0.064	0.140	1.080	0.280
Personal factor→WEMWBS	-0.105	0.267	-2.058	0.040
Lifestyle habit factor→WEMWBS	-0.211	0.365	-2.576	0.010
Personality trait factor→WEMWBS	0.691	13.264	0.330	0.741
Health status factor→WEMWBS	0.570	0.188	6.038	***

Figures

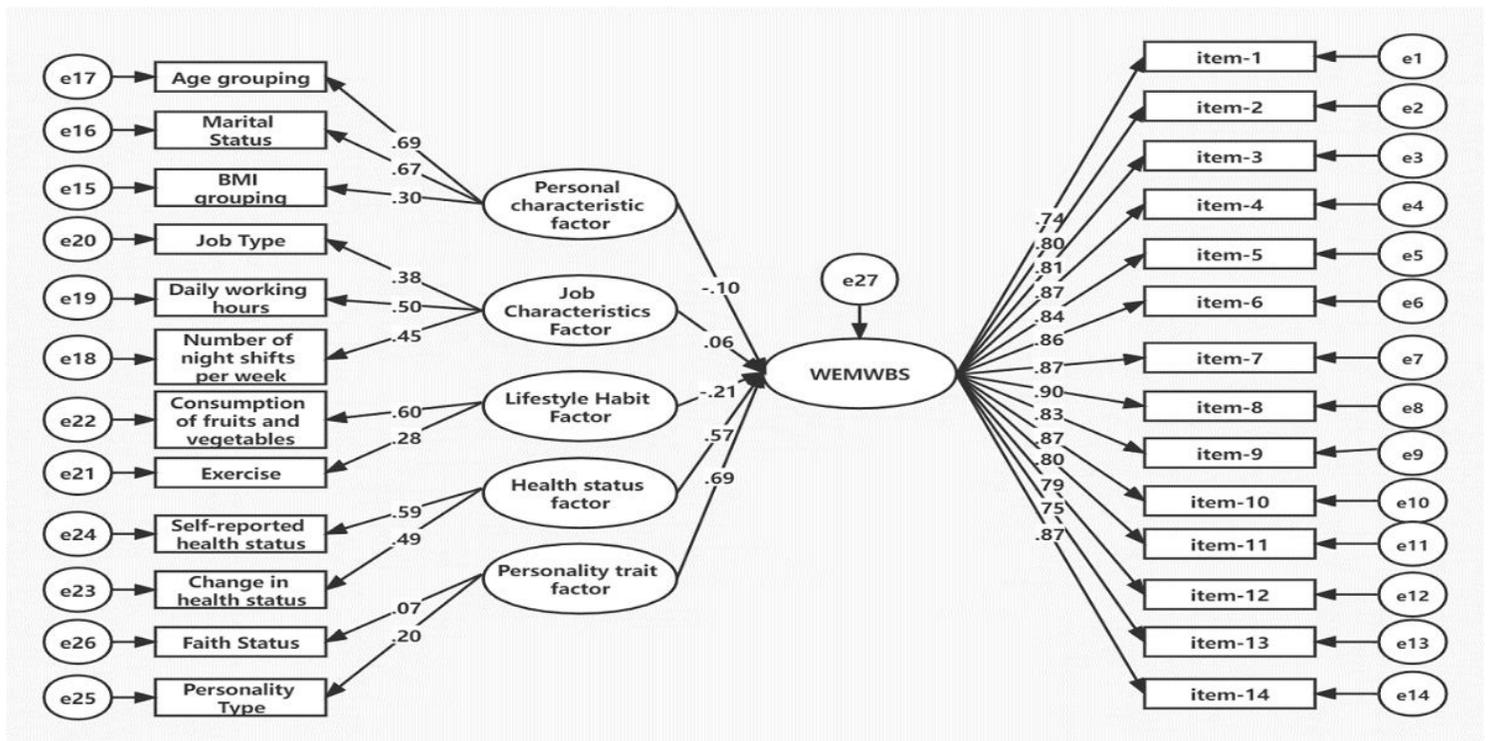


Figure 1

The standardized coefficients of confirmatory factor analysis