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A mixed method exploration of job morale of physicians working in public healthcare settings in Kazakhstan during the COVID-19 pandemic

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Abstract

Background Physicians faced increased workloads during the COVID-19 pandemic, which exposed them to considerable physical and psychological stress. Gaining insight into shapers of job morale of physicians can help healthcare administrators assess the effectiveness of current work conditions and support systems, enabling them to develop policies that improve work environments and prepare healthcare systems for future resurgences of COVID-19 and other future unknown challenges. Therefore, the present study aimed to improve the understanding of physicians' experiences of job morale in Kazakhstan during the COVID-19 pandemic.

Methods This was an explanatory sequential mixed method study that adopted an online structured questionnaire and semi-structured individual interviews as tools for data collection. The Warr-Cook-Wall scale, Maslach Burnout Inventory Human Services Survey for Medical Personnel, and Beck Depression Inventory were used to measure job morale indicators. The interview topic guide, in turn, covered two key areas: general views on physicians' job morale during the COVID-19 pandemic and specific experiences which worsened or improved job morale during the COVID-19 pandemic. Descriptive statistics and regression models were utilised to analyse the quantitative data, while thematic analysis was employed for the qualitative data.

Results A total of 2086 survey responses and 30 interviews were analysed. Although job motivation was moderate, physicians were rather satisfied with their jobs. The prevalence of burnout was 30.97%, and signs of severe depression symptoms were detected among 3.69% of participants. Four themes emerged from the thematic analysis: (1) fear of uncertainty; (2) media scrutiny; (3) resurgence in appreciation; and (4) heightened sense of duty.

Conclusions Despite the significant challenges posed by the COVID-19 pandemic, physicians in Kazakhstan's public healthcare sector maintained generally positive job morale. This was mainly due to their strong sense of calling and a renewed appreciation for their role. Future research should rigorously examine longitudinal changes in job morale and the relationship between physicians' job morale and patient experiences.

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Keywords Job morale, Job motivation, Job satisfaction, Burnout, Physicians, Kazakhstan, COVID-19 pandemic

Introduction

Job morale in health care research has been defined as an umbrella term encompassing a number of job-related concepts, such as job motivation, job satisfaction, burnout and job-related well-being [1]. Positive job morale typically indicates that employees are engaged, motivated and committed to their job, whereas negative job morale may be reflected in dissatisfaction, disengagement, burnout, depression and a lack of motivation [1]. The impact of the coronavirus pandemic (COVID-19) on the job morale of healthcare professionals has been significant and multifaceted. Firstly, healthcare professionals have faced unprecedented levels of stress due to the relentless demands of treating COVID-19 patients, often with limited resources and personal protective equipment. This prolonged stress impacted the psychological well-being of healthcare professionals and led to high levels of burnout [2–6]. Secondly, the fear of contracting and transmitting the virus is likely intensified in those witnessing the suffering and death of patients on a large scale. The emotional strain on top of physical exhaustion created, for many physicians, feelings of helplessness, moral distress, anxiety and depression [7–9]. Thirdly, imposed social distancing measures prevented healthcare professionals from receiving the usual support from family and friends, increasing feelings of isolation and detachment [10–12].

Kazakhstan, an upper-middle-income country [13] located in Central Asia, was also afflicted by the COVID-19 pandemic. The first cases of COVID-19 were detected in March 2020, and within a few months, the pandemic affected all regions [14]. Despite early containment efforts, the Kazakhstani healthcare system quickly became overwhelmed, with hospitals reaching capacity and facing shortages of beds, medical supplies, and personnel [14]. As COVID-19 cases in Kazakhstan began to decline in late 2021, the Omicron variant caused a sharp rise in infections, which peaked within two weeks and then steadily declined by February 2022 [14]. As of April 2022, 47.8% of the population had been fully vaccinated, bringing the country closer to the 60% herd immunity target [14]. However, vaccine hesitancy remained a substantial challenge, fuelled by concerns over the safety and efficacy of vaccines [14]. The COVID-19 pandemic has emphasised weaknesses in the healthcare system of Kazakhstan, including limited infrastructure of healthcare services, prevailing reliance on hospital care, centralised governance and insufficient staffing levels [14, 15]. A review conducted by the Organisation for Economic Co-operation and Development (OECD) in 2018 suggests that the job morale of healthcare professionals in Kazakhstan was low, yet no supporting data was provided [15]. Another study performed in 2019 reported opposite results, claiming that the job morale of physicians working in Kazakhstan is rather positive due to the strong sense of calling and high value-based motivation to help patients [16]. Healthcare professionals' morale and factors influencing it represent critical areas of research, as improving these aspects is essential for mitigating the distressing and potentially life-threatening consequences of burnout. Secondly, a country's functioning and health is heavily reliant on healthcare professionals being well and able to work well. However, limited data is available on how the COVID-19 pandemic affected job morale among healthcare professionals in Kazakhstan, which hinders the development of effective strategies for enhancing job morale and providing better support to physicians during crises.

Therefore, the present study aims to improve the understanding of physicians' experiences of job morale in Kazakhstan during the COVID-19 pandemic. To address this aim, the study had two objectives: [1] to assess the levels of four indicators of job morale (job motivation, job satisfaction, burnout and depression symptoms), and [2] to explore experiences underpinning positive and negative job morale among physicians working in public healthcare settings in Kazakhstan during the COVID-19 pandemic.

Methods

Study design

An explanatory sequential mixed method design was adopted in this study, where the quantitative data collection and analysis phase was followed by a qualitative phase. In this study design the qualitative phase is used to explain the initial quantitative results [17]. The quantitative strand of the study utilised an online structured cross-sectional questionnaire as a tool for data collection, whereas the qualitative strand adopted semi-structured individual interviews. Equal weight was given to the quantitative and qualitative strands of the study. Findings from the two phases were integrated at the interpretation phase.

Study setting and population

Six major cities of Kazakhstan were appointed as study sites. Astana, Almaty and Shymkent were chosen as cities of national significance, whereas Aktau, Taraz and Ust-Kamenogorsk were selected because they are /represent regional administrative centres. The former group of cities allocate all types of state healthcare settings. Primary healthcare is delivered through polyclinics, whereas secondary healthcare is administered by regional, city,

specialised and republican hospitals. The latter group of cities deploy polyclinics and regional, city and specialised hospitals. The inclusion of various types of healthcare settings was important as they vary in capacity, infrastructure, financing, and payment schemes [18], which may shape physicians' job morale. Furthermore, the geographical, socio-economic and cultural contexts of the cities differ depending on the administrative-territorial layer to which they belong, which might also influence job morale. Thus, physicians could take part in the study if they were currently employed in public healthcare settings in Astana, Almaty, Shymkent, Taraz, Aktau and Ust-Kamenogorsk. The exclusion criteria included other healthcare staff, medical students and residents, and physicians working in private healthcare settings.

Sampling

A convenience sampling approach was used in this study, where the selection is based on the availability of respondents within reach.

Quantitative strand

According to the latest statistical data, the overall number of physicians employed in public healthcare settings in Kazakhstan is 76,443 [19]. Using the sample size calculation formula (S1 Table) it was defined that a minimum population sample size of 383 physicians was required to guarantee statistical power of 95% with margin of error of 0.05.

Qualitative strand

In line with Braun and Clarke's [20] recommendation to administer six to ten interviews for studies aimed at implementing thematic analysis, five interviews per each study site was set as a target. It is important to note that transcription and familiarisation with data were done concurrently with the interviews, which allowed us to claim that theoretical saturation [21] was reached by conducting thirty interviews.

Recruitment

Within the period from March 1, 2022, to April 20, 2022, the authors organised staff meetings in two randomly selected by a computer hospitals in each of the six cities to invite physicians to participate in the study. The study representatives introduced the study purposes and circulated the survey link among the physicians who attended the meeting. Physicians were asked to share the link among colleagues in other healthcare organisations. Furthermore, participants were recruited using adverts disseminated via social networks, including Facebook, Instagram, and professional WhatsApp conferences. Recruitment for the qualitative phase was supplemented by a chain-referral technique, as participants were asked to voluntarily nominate eligible participants and share the study details. Nominated potential participants were sent e-mails inviting them to participate in an interview, which also included an information sheet where the study purposes and participation conditions were outlined. Follow-up calls were made to confirm their willingness to participate.

Procedure

Quantitative strand

An online survey was administered through Survey Monkey online software (https://www.surveymonkey.com) (S2 Table). Considering that personal and sensitive questions were asked, the survey was designed to be anonymous and confidential. The questionnaire was developed to exclude the possibility of having missing values and only one response from one email address was accepted.

At the beginning of the survey, participants were provided with an information sheet and an online written consent form, acquainting participants with study purposes and highlighting that the questionnaire is anonymous and all responses will be kept confidential.

The survey comprised four sections with a total of 68 questions, as specified below:

1. Social-demographic form (age, gender, marital status, place of residence, specialization and years of experience).
2. Job motivation and job satisfaction levels were assessed using the seven-point Likert Warr-Cook-Wall (WCW) scale [22]. NT translated the job satisfaction and job motivation questionnaire into Russian, and AK carried out the back translations, ensuring the consistency and validity of the translations. The level of agreement between NT and AK 85%, which was quantified by counting the number of items with differences in wording. Job motivation is measured by six items (e.g. "I take pride in doing my job to the best I can") and was rated on a seven-point Likert scale. The response options ranged from "strongly disagree" (score 1) to "strongly agree" (score 7), and resulted in total scores ranging from 6 to 42. Job satisfaction is assessed by ten items (e.g. "Freedom to choose your own method of working") and was rated on a seven-point Likert scale. The response options ranged from "extremely dissatisfied" (score 1) to "extremely satisfied" (score 7) and resulted in total scores ranging from 10 to 70. A higher overall mean score indicates higher job motivation and satisfaction.
3. The validated Russian translation of the Maslach Burnout Inventory Human Services Survey for Medical Personnel (MBI-HSS MP) was used for the survey [23, 24]. This seven-point Likert scale

contains 22 questions evaluating three burnout domains: emotional exhaustion (EE) (9 questions), depersonalisation (DP) (5 questions), and personal accomplishment (PA) (8 questions). Higher scores for emotional exhaustion and depersonalisation and lower scores for personal accomplishment indicated a higher level of burnout. Burnout scores ranged from 0 to 54 for EE, 0 to 30 for DP, and 0 to 48 for PA. EE was categorized as low (0–16 points), moderate (17–29 points), and high (30–54 points). DP scores were considered as low (0–5 points), moderate (6–11points), and high (12–30 points). PA was classified as low (0–33 points), moderate (34–39 points), and high (40–48 points).

4. The validated Russian translation of the Beck Depression Inventory (DBI) was used [25, 26]. This four-point Likert scale consists of 21 self-evaluative statements, the scoring of which ranges from 0 to 3. Higher scores indicated stronger depression symptoms. Depression symptoms were defined as severe (30–63 points), moderate (20–29 points), mild (16–19 points), minimal (10–15 points) and absent (0–9 points).

Qualitative strand

The authors (native speakers) performed each face-to-face interview in a private office at the participants' workplaces. Only interviewer and interviewee were present, and the duration of interviews ranged between 30 and 60 min. The interviews were conducted in Russian (n=20) and Kazakh (n=10). All interviews were audiotaped and reflective and reflexive field notes were taken, ensuring the accuracy of the collected data reducing any investigator bias. Participants received 15,000 KZT remuneration for their participation. At the start of each interview, the information sheet was thoroughly discussed, a short socio-demographic form detailing participants' specialities, ages, sex, and years of experience was filled out, and written informed consent was given by participants.

The interview topic guide was developed in Russian and Kazakh. The topic guide covered two key areas: (1) general views on physicians' job morale during the COVID-19 pandemic and (2) specific experiences which worsened or improved job morale during the COVID-19 pandemic.

Transcription and translation

The transparency and reliability of the study were enhanced by following the recommendations for cross-language qualitative research [27]. In order to ensure the consistency and validity of the translations, four randomly selected interviews were fully translated into English. The translations were carried out by the lead author and a translation agency in Astana. The level of agreement between the lead author and the translation agency was 65% quantified by counting the number of items with differences in wording. All disagreements were resolved by involving the research team. Further, only quotations adopted in the study were translated by the lead author and backtranslated by the translation agency in Astana.

Research governance and ethics

The study has been reviewed and approved by the ethics committee of First Multidisciplinary City Hospital of Astana, and was conducted conforming to the Declaration of Helsinki [28]. Written informed consent was obtained from all study participants.

Data analysis

Quantitative strand

Collected data was entered into a Microsoft Excel spreadsheet and underwent error-checking (e.g. values outside of the range). Afterwards the data was transferred to Stata 17 statistical software (Stata Corp, College Station, TX). Initial analyses included data cleaning and sample selection. The level of significance was set at 0.05 (two-sided) for 95% confidence interval. The levels of job motivation, job satisfaction, burnout and depression symptoms were classified as the outcome variables. Data analysis was performed following the stages below:

1. Cronbach's alpha was used to assess the reliability and internal consistency of the instruments. Cronbach's alpha scores above 0.70 were deemed as acceptable reliability [29].
2. The normality of data was examined using the kurtosis and skewness values. The distribution was found to be normal when the kurtosis and skewness values were between − 1 and + 1 [30].
3. Descriptive statistics, including frequency, percentage, mean and standard deviation (SD) were calculated for the socio-demographic characteristics (age, sex, ethnic group, marital status, number of children, and place of residence) and outcome variables (job motivation, job satisfaction, emotional exhaustion, depersonalisation, personal accomplishment, and depression scores) for the whole country and for six regions separately.
4. Bivariate analysis was carried out for data from Kazakhstan and each of the six cities using a t-test and analysis of variance (ANOVA). The t-test was used to determine if there was a significant difference between the means of the two categories. A t-test was utilised to compare outcome variables for the categories of age, sex, and years of experience. ANOVA was adopted to compare the outcome results for characteristics with three or more

categories, such as ethnic group, marital status, number of children, and place of residence. Effect sizes were calculated to complement p-values and provide additional insight into the magnitude of observed differences. For the t-test, Cohen's d was used to measure effect size, with values interpreted as small ($d = 0.2$), medium ($d = 0.5$), or large ($d = 0.8$). For ANOVA, partial Eta-squared (η^2) was calculated to determine the proportion of variance explained by group differences, with thresholds for small ($\eta^2 = 0.01$), medium ($\eta^2 = 0.06$), and large ($\eta^2 = 0.14$) effects. The results from the first stage were presented in a table format as mean ± SD of scores in each category with *p*-values, indicating the significance of the difference in scores between categories.

5. Statistically significant values from the bivariate analysis were used for multiple regression analyses aiming to examine how these variables explained the variance of the job motivation, job satisfaction, burnout and depression scores. To convey the results of multiple linear regressions interception points (β), 95% confidence intervals [95% CI], *p*-values were presented alongside Cohen's d, which approximated the effect size for the predictor.
6. Pearson correlations were used to find correlations between outcome variables. The correlation was strong when | r |>0.5, medium (moderate) when 0.3<| r |<0.5, and small when | r |<0.3 [31].

Qualitative strand

Thematic analysis by Braun and Clarke was used as the analytic strategy and implemented in six recursive phases: familiarisation with data, generating initial codes, searching for themes, reviewing themes, defining and naming themes and producing the report [32]. Firstly, AK and MT transcribed audio files and read and reread the transcripts to familiarise themselves with the data. Secondly, NVivo (Version 12) was utilised to generate initial codes using an open inductive coding approach for randomly selected transcripts. Authors adopted the inclusivity principle, aiming to define as many potential codes as possible [32]. Coded data was then merged and collated into sub-themes and themes. Authors challenged the coherence, distinctiveness, and internal and external homogeneity of developed themes. The final stage included the reporting of analysis findings presented in the section below.

A narrative contiguous approach was used to integrate the mixed-method findings [17]. Results of the quantitative strand will be followed by the results of the qualitative strand and presented in subsequent sections.

Results

Quantitative strand

Overall, 2086 physicians returned the questionnaires in full. The mean age of the participants was 40.68 (11.94). Based on the mean age, participants were categorised into two groups: 40 years old and yonger and over 40 years. The mean value of years of experience of the participants was 15.25 (11.76) years. According to this variable, participants were categorised into two groups: from one to 15 years of experience and 16 years and more of work experience as a physician. Approximately 72.91% of participants were female, 58.34% were 40 years old and younger, 60.50% had between one and 15 years of experience as a physician, 85.14% were Kazakh, and 70.47% were married. The socio-demographic characteristics of the study participants are reported in Table 1.

Job motivation findings

The mean total job motivation score among physicians working in Kazakhstan was 33.30 (5.23), indicating a moderate level of job motivation. Table 2 represents mean scores of job motivation domains (i.e., "I feel a sense of personal satisfaction when I do my job well") among physicians working in Kazakhstan during the COVID-19 pandemic.

The bivariate analysis results showed that the total job motivation score was significantly associated with age ($p=0.044$), but the small effect size (Cohen's $d=0.078$) suggests that the difference has little practical relevance (S3 Table). Based on a multivariate regression model, age did not remain a statistically significant predictor of job motivation among physicians and dentists working in Kazakhstan (S4 Table).

Job satisfaction findings

On a potential scale of 70, the mean total score of job satisfaction was 46.60 (10.01), indicating that participants were "slightly satisfied" with their jobs. Physicians were mostly satisfied with the opportunity to use their clinical skills, yet they were mostly dissatisfied with their income. Furthermore, participants had moderate intrinsic and extrinsic job satisfaction levels and were slightly satisfied with their working conditions and relations between employees (Table 3).

Bivariate analyses (S5 Table) revealed that age was significantly positively associated with intrinsic job satisfaction ($P=0.001$), extrinsic job satisfaction ($P=0.003$), working conditions satisfaction ($P<0.001$), employee relations satisfaction ($P=0.004$), and total job satisfaction ($P=0.0016$). The effect size for extrinsic job satisfaction ($d=2.96$) was strong, while other effect sizes were weak (d ranging from −0.16 to 0.14). Female participants were more likely to have lower intrinsic job satisfaction ($P=0.007$) and total job satisfaction ($P=0.047$) compared

Table 1 Socio-demographic characteristics of study participants

Variable	Results *n* (%)
Age	
Mean age ± SD	40.68 ± 11.94
≤ 40	1217 (58.34%)
40<	869 (41.66%)
Sex	
Male	565 (27.09%)
Female	1521 (72.91%)
Year of experience	
Mean years of experience ± SD	15.25 ± 11.76
1–15	1262 (60.50%)
16 and more	824 (39.50%)
Ethnic group	
Kazakh	1776 (85.14%)
Russian	111 (5.32%)
Uzbek	47 (2.25%)
Korean	31 (1.49%)
Others	121 (5.8%)
Marital status	
Single	257 (12.32%)
Engaged	20 (0.96%)
Have a partner	15 (0.72%)
Married	1470 (70.47%)
Divorced	224 (10.74%)
Widow/ widower	72 (3.45%)
Other	28 (1.34%)
Number of children	
None	350 (16.78%)
1	421 (20.18%)
2	566 (27.13%)
3	434 (20.81%)
4	219 (10.50%)
5 and more	96 (4.60%)
Place of residence	
Astana	375 (17.98%)
Almaty	391 (18.74%)
Shymkent	363 (17.40%)
Aktau	350 (16.78%)
Taraz	342 (16.40%)
Ust-Kamenogorsk	265 (12.70%)
Specialisation	
Family medicine	656 (31.45%)
Paediatrics	155 (7.43%)
Obstetrics and gynaecology	146 (7.00%)
General practice	136 (6.52%)
Surgery	141 (6.76%)
Neurology	64 (3.07%)
Anaesthesiology and resuscitation	63 (3.02%)
Dentistry	52 (2.49%)
Endocrinology	52 (2.49%)
Medical laboratory	49 (2.35%)
Psychiatry	48 (2.30%)
Cardiology	46 (2.21%)
Infectious diseases	38 (1.82%)
Oncology	38 (1.82%)
Physical medicine and rehabilitation	37 (1.77%)
Dermatology and venereology	36 (1.73%)
Phthisiology	36 (1.73%)
Ophthalmology	30 (1.44%)
Epidemiology	30 (1.44%)
Otorhinolaryngology	28 (1.34%)
Traumatology and orthopaedics	27 (1.29%)
Others	178 (8.53%)

*Continues data is presented as mean and SD, and categorical data as numbers and percentages

to males, yet the effect sizes were weak (Cohen's d = -0.012 for intrinsic job satisfaction and −0.022 for total job satisfaction). Although years of experience variable was significantly associated with all job satisfaction measures ($P<0.05$), the effect sizes were weak (d ranging from −0.16 to 0.09). Years of experience was significantly associated with intrinsic job satisfaction ($P<0.001$), extrinsic job satisfaction ($P=0.001$), working conditions satisfaction ($P<0.001$), employee relations satisfaction ($P=0.004$), and total job satisfaction ($P=0.027$). City of residence was strongly associated with extrinsic job satisfaction ($P=0.038$) and employee relations satisfaction ($P=0.004$), although the effect sizes were weak ($\eta^2 = 0.006$ and 0.008). Specialisation was significantly associated with intrinsic job satisfaction ($P=0.004$), extrinsic job satisfaction ($P<0.001$), working conditions satisfaction ($P<0.001$), and employee relations satisfaction ($P<0.001$) with small to medium effect sizes for extrinsic job satisfaction ($\eta^2=0.046$) and working conditions satisfaction ($\eta^2=0.050$), and small effect sizes for intrinsic job satisfaction ($\eta^2=0.020$) and employee relations satisfaction ($\eta^2=0.035$).

According to the multivariate regression model (S6 Table), female participants were more likely to have lower intrinsic job satisfaction ($P=0.009$) compared to the male study participants, with a strong effect size ($d=2.69$). Place of residence was found to be a statistically significant predictor of extrinsic job satisfaction ($P=0.002$) and employee relations satisfaction ($P=0.001$), with large effect sizes for both variables ($d=3.14$ and $d=3.43$, respectively).

Burnout findings

The mean scores for EE and DP were 25.34 (8.18) and 10.21 (5.32), respectively, indicating a moderate level of EE and DP among study participants. Regarding PA, the mean was 33.77 (7.11), which was close to the low level of PA. There were 50.62% of participants who reported a moderate level EE and 30.97% reported a high level of

Table 2 Mean scores of job motivation domains among physicians working in Kazakhstan during the COVID-19 pandemic

Job motivation scale	Mean (SD)
I feel a sense of personal satisfaction when I do my job well	5.85 (1.35)
I'm disappointed with myself if I do my job badly	5.02 (1.61)
I take pride in doing my job to the best I can	5.91 (1.22)
I feel unhappy when my work is not up to my usual standard	4.73 (1.65)
I want to feel satisfied when I look back at the work I did on that day	5.88 (1.18)
I try to think of ways of doing my job effectively	5.92 (1.09)
Total Job Motivation	**33.30 (5.23)**

Table 3 Mean scores of job satisfaction domains among participants

Job satisfaction scale	Mean (SD)
Freedom to choose your own method of working	4.88 (1.26)
Amount of variety in your work	4.67 (1.37)
Physical working conditions	4.39 (1.57)
Opportunities to use your clinical skills	5.11 (1.24)
Your colleagues and fellow workers	5.11 (1.24)
Recognition you get for good work	4.73 (1.50)
Your hours of work	4.66 (1.60)
Your remuneration	3.82 (1.81)
Amount of responsibility you are given	4.42 (1.57)
Taking everything into consideration, how do you feel about your work?	4.81 (1.27)
Total	**46.60 (10.01)**
Intrinsic job satisfaction	**23.81 (5.07)**
Extrinsic job satisfaction	**13.32 (3.57)**
Working conditions satisfaction	**14.16 (3.45)**
Employee relations satisfaction	**8.55 (2.84)**

EE. Overall, 38.69% of participants reported a moderate level of DP, whereas, 30.17% reported a high level of DP. As regards to PA, 50.34% of participants reported a high level of PA, and 28.38% reported a moderate level of PA. Table 4 shows the mean values and severity of different domains of burnout among study participants.

We performed a t-test and ANOVA to identify factors associated with EE, DP, and PA (S7 Table). Results suggest that participants' socio-demographic characteristics had influenced the severity of burnout domains. Younger age was significantly associated with higher EE and DP score ($P<0.001$ for both) and with lower PA score ($P=0.023$). The effect size for EE was small to moderate (d=0.415), and for DP and PA it was minimal ($d=0.206$ and $d=0.023$). Fewer years of experience was significantly associated with higher EE and DP scores ($P<0.001$ for both), and with lower PA scores ($P=0.004$). The effect size for EE and DP was small to moderate ($d=0.366$ and $d=0.364$), while for PA it was minimal (d=-0.129). Both higher EE and DP scores were strongly associated with female sex ($P<0.001$ and $P=0.008$, respectively). Divorced and single participants experienced significantly higher levels of EE ($P=0.001$) compared to those with partners although the effect size was weak ($\eta^2=0.011$). Higher EE scores were also significantly associated with number of children ($P=0.025$) and specialisation ($P<0.001$), with small effect sizes ($\eta^2=0.006$ and $\eta^2=0.024$, respectively). Higher DP scores were significantly associated with place of residence ($P=0.049$) and specialization ($P=0.007$), with small effect sizes ($\eta^2=0.005$ and $\eta^2=0.019$, respectively).

Multivariate regression analysis was used to identify predictors of burnout domains among the study group (S8 Table). Higher EE was associated with female sex and younger age ($P<0.001$ for both), with large effect sizes (d=-9.26 and d=-4.69, respectively). The aforementioned factors were also associated with higher level of DP ($P=0.001$ for both), with large effect sizes: d=-3.17 for age, and d=-3.36 for sex. No statistically significant predictors of PA were found.

Depression symptoms findings

In our study, the mean score for BDI was 9.52 (8.63), indicating that 59.25% of the respondents reported no symptoms of depression. Signs of severe depression symptoms were found in 3.69% of participants. The distribution of depression levels among physicians is shown in Table 5.

Bivariate analyses revealed several statistically significant associations between socio-demographic characteristics and depression symptoms (S9 Table). Younger age and fewer years of experience were significantly associated with higher levels of depression ($P<0.001$ and 0.005, respectively). Female physicians were found to develop depression more than male physicians ($P<0.001$). Furthermore, higher depression scores were observed among

Table 4 Mean scores for severity of burnout domains among study participants

Burnout domain	Mean (SD)	Degree					
		Low degree		Moderate degree		High degree	
		N	%	*N*	%	*N*	%
EE	25.34 (8.18)	384	18.41	1056	50.62	646	30.97
DP	10.21 (5.32)	441	21.14	807	38.69	838	30.17
PA	33.77 (7.11)	1050	50.34	592	28.38	444	21.28

*EE-emotional exhaustion, DP-depersonalisation, PA-personal accomplishment

Table 5 Depression levels among study participants

Depression level	*N* (%)
No depression symptoms	1236 (59.25%)
Minimal depression	436 (20.90%)
Mild depression	164 (7.86%)
Moderate depression	173 (8.29%)
Severe depression	77 (3.69%)
Mean (SD)	**9.52 (8.63)**

Koreans as an ethnic group ($P=0.025$) and engaged participants ($P<0.001$). However, all association had little effect size (d ranging from 0.005 to 0.299).

Multivariate regression analysis (S10 Table) revealed that female physicians were significantly more depressed ($P<0.001$) compared to male physicians. Also, physicians who are 40 years old and younger are more likely to experience depression symptoms ($P=0.026$) than those who are 41 years and older. The effect sizes for age (d=-0.229) and sex (d=-0.244) indicated a small-to-moderate negative effect.

Correlations between job motivation, job satisfaction, burnout and depression symptoms

We observed a strong positive correlation between EE and DP, where the coefficient of determination was 61.10% ($P<0.001$). There were medium positive correlations between EE and depression ($r=0.465$ and $P<0.001$) and DP and depression ($r=0.424$ and $P<0.001$). A small positive correlation was observed between job motivation and job satisfaction ($r=0.263$ and $P<0.001$). There were moderate negative correlations between DP and PA (r=-0.304 and $P<0.001$), and PA and depression symptoms (r=-0.312 and $P<0.001$). There were small negative correlations between job motivation and EE (r=-0.051, $P=0.019$), job motivation and DP (r=-0.045, $P=0.037$), job motivation and depression symptoms (r=-0.053, $P=0.015$), job satisfaction and EE (r=-0.057, $P=0.010$), job satisfaction and DP (r=-0.045, $P=0.039$), and EE and PA (r=-0.109, $P<0.001$). Table 6 represents the Pearson correlation between the following outcome variables: job motivation, job satisfaction, burnout domains and depression symptoms.

Table 7 Characteristics of the sample

Characteristics	Individual interviews ($n=30$)
Sex (*n*, %)	
Female	18 (60%)
Male	12 (40%)
Nationality (n, %)	
Kazakh	23 (76.7%)
Russian	5 (16.7%)
Ukrainian	1 (3.3%)
Uzbek	1 (3.3%)
Years of practice (n, %)	
0–9 years	11 (36.7%)
10 years and more	19 (63.3%)
Speciality (n, %)	
General Practitioners	8 (26.7%)
Infectious diseases	5 (16,65%)
Surgery	5 (16,65%)
Obstetrics and gynaecology	4 (13.3%)
Traumatology and orthopaedics	3 (10%)
Cardiology	2 (6.7%)
Otorhinolaryngology	2 (6.7%)
Endocrinology	1 (3.3%)

Qualitative strand

A total of 30 individual semi-structured interviews were conducted. Sample characteristics are summarised in Table 7.

Four themes were defined from the analysed data. The themes describe participants' experiences of what underpinned positive and negative job morale during the COVID-19 pandemic. These were (1) fear of uncertainty; (2) media: scrutiny and recognition; (3) resurgence in appreciation; (4) heightened sense of duty (Table 8).

Fear of uncertainty

Participants shared experiencing a profound fear of uncertainty during the COVID-19 pandemic, which influenced their job morale in a negative manner.

It has been emphasised that little was known about the novel coronavirus at the outset of the pandemic, creating anxiety and fear that humanity may not survive it.

> *"At the beginning of the pandemic, we knew nothing about this virus. It was very scary. You could feel the tension in the air. (…) Everything was so uncer-*

Table 6 Correlations between job motivation, job satisfaction, burnout domains and depression symptoms

	Job motivation	Job satisfaction	EE	DP	PA	Depression
Job motivation	1	-	-	-	-	-
Job satisfaction	**0.263** ($P<0.001$)	1	-	-	-	-
EE	**-0.051** ($P=0.019$)	**-0.057** ($P=0.010$)	1	-	-	-
DP	**-0.045** ($P=0.037$)	**-0.045** ($P=0.039$)	**0.6110** ($P<0.001$)	1	-	-
PA	0.024 ($P=0.263$)	0.015 ($P=0.505$)	**-0.109** ($P<0.001$)	**-0.304** ($P<0.001$)	1	-
Depression	**-0.053** ($P=0.015$)	-0.026 ($P=0.236$)	**0.465** ($P<0.001$)	**0.424** ($P<0.001$)	**-0.312** ($P<0.001$)	1

Table 8 Thematic framework underpinning positive and negative job morale during the COVID-19 pandemic

1.	Fear of uncertainty
1.1.	"Will we survive?"
1.2.	High risk of contagion and transmission
1.3.	Unprepared healthcare services
2.	**Media: scrutiny and recognition**
2.1.	"Under the public eye"
2.2.	Fuelling misinformation
2.3.	Heroism narratives
3.	**Resurgence in appreciation**
3.1.	Global recognition
3.2.	Financial benefits
3.3.	Tangible support
4.	**Heightened sense of duty**
4.1.	Fulfilment of purpose
4.2.	Responsibility to patients
4.3.	Calling to be a physician

tain. What are the symptoms, how to treat it or how deadly it is. I think everyone had one question in their minds: "Will we survive it or not?" (Interview 13, female).

Due to direct exposure to infected patients and contaminated materials, participants faced a high risk of contagion and transmission of COVID-19. Concerns about personal safety and the risk of transmitting the virus to loved ones contributed to heightened levels of occupational stress and burnout. Furthermore, participants admitted experiencing significant loss and grief caused by the deaths of colleagues and family members.

"I was in constant stress because I was scared that I may infect my family. I followed all the precautionary measures, but there was no guarantee." (Interview 3, male)

"We lost many good people in this battle. (…) My father died from COVID. I can't help but wonder whether I infected him or not. We will never know now. (…) Good colleagues of mine also died from COVID. Such a great loss." (Interview 5, female).

Participants also noted that healthcare services were largely unprepared for the challenges posed by the pandemic. There were shortages of critical supplies and difficulties in accommodating surges in demand for acute care. Physicians grappled with decisions related to recourse-allocation and faced the challenge of staying up-to-date with the ever-changing guidelines, while adapting their practices accordingly, leading to the feelings of uncertainty about the most effective treatment approaches.

"Speaking frankly, it was a huge mess. We did not have enough PPE [personal protective equipment], the testing system was not perfectly organised, patients were nervous because we could not admit everyone with symptoms. (…) The system was falling apart." (Interview 27, male).

"… treatment protocols changed every time new information emerged. We tried to follow every new finding. (…) Although we adopted all guidelines into the practice right away, we were unsure how effective it would be and what kind of consequences we might have." (Interview 23, female).

Media: scrutiny and recognition

A number of participants also reflected on the increased media attention, influencing job morale in both negative and positive ways.

Media coverage of the pandemic has been extensive, with physicians often at the forefront of news stories. Participants admitted that the constant spotlight added pressure as they felt the weight of public scrutiny.

"I felt like working under the public eye. (…) Expectations were high. Everyone was watching us and waiting for when we would be able to manage this crisis. Of course, it made our work harder, although we already worked at full capacity." (Interview 15, female).

Participants shared that the spread of misinformation and disinformation through various media channels added an additional layer of strain on healthcare professionals. They not only have to combat the virus but also combat false narratives and conspiracy theories, which can be exhausting and frustrating. Furthermore, conflicting messages about COVID-19 contributed to patients' aggressive behaviour and lack of compliance with public health and treatment measures.

"COVID-19 caused enormous hype in the press. Lots of reports were based on made-up facts, which caused us problems. We had to explain and justify almost every move. (…) Also, patients were not compliant, sceptical and sometimes aggressive because they believed in conspiracy theories and not evidence-based information spread in social media." (Interview 17, male).

It has also been noted that media sources frequently portrayed physicians as heroes, highlighting their bravery, dedication, and selflessness in the face of unprecedented challenges caused by the pandemic. Such heroism narratives served as a source of inspiration and motivation.

"There were many stories in the press of healthcare workers risking their own health and safety to care for patients. All of them were very inspirational and made me believe that together we can overcome this disease." (Interview 7, female).

Resurgence in appreciation

According to participants, there was a significant resurgence in appreciation for physicians during the COVID-19 pandemic, which positively impacted job morale.

Participants shared that the medical profession was somewhat neglected and the COVID-19 pandemic reinforced its importance and value to society. Healthcare professionals received recognition not only within their own communities but also on a global scale.

"You know, there is no evil without good. COVID times were awful, but only the worldwide pandemic reminded everyone how important healthcare workers are. It was nice and satisfying to get the recognition we deserve." (Interview 25, male).

Kazakhstani government issued additional payments for healthcare professionals working in high-risk environments during the COVID-19 pandemic. Participants admitted that these compensations served not only as incentives but as an acknowledgement of their extraordinary efforts and sacrifices. These payments improved participants' quality of life.

"We received additional compensation during the pandemic, and it was a life-changing amount compared to our normal meagre salary. I was able to pay off the loan and buy a new car. Can you imagine? (…) When you receive good money for your work, you feel valued and motivated." (Interview 19, male).

Additionally, some participants reflected on the tangible support from many individuals and organisations, such as providing meals, offering free services and other resources.

"Entrepreneurs and some organisations provided financial support to healthcare professionals during the pandemic. We have been offered free meals and provided with protective equipment. Many volunteers worked at testing sites. (…) I was happy to see such solidarity." (Interview 1, female).

Heightened sense of duty

Participants admitted experiencing a heightened sense of duty during the COVID-19 pandemic, shaping job morale positively.

While the pandemic brought about immense challenges for physicians, a number of participants found fulfilment of purpose in their work despite the adversity. Participants reflected on engaging in meaningful work that aligned with their values and contributed to the greater good.

"Although we are involved in patient care every day, the opportunity to make a difference during the pandemic felt different. I think it [pandemic] kind of reaffirmed that the main aim of our profession is helping people and seeing the positive impact we are making provided a deep sense of fulfilment." (Interview 24, female).

Participants also shared that physicians felt a strong sense of responsibility to care for others, especially during the crisis. Despite the risks and personal sacrifices involved, this sense played a pivotal role in guiding their actions and decisions.

"Of course, we were afraid and anxious during the pandemic because we were at the epicenter of the crisis. However, I never thought about leaving my profession in such difficult times. (…) I felt a personal responsibility to patients and tried to ensure that they received proper care. (…) Well-being and safety of patients is above everything else." (Interview 12, male).

Further, participants underlined that medicine is not just a job but a calling and a central aspect of their identity. The pandemic reinforced their vocation as physicians, reiterating their commitment to upholding the values and ethics of their profession even in the face of unprecedented difficulties.

"Being a physician for me is a calling. I cannot imagine working anywhere else. And I guess things such as professional ethics, principles and values, intensified during the pandemic. It definitely helped us survive these awful times." (Interview 9, male).

Discussion

Main findings

Overall, the current study shows that job morale among physicians working during the COVID-19 pandemic in Kazakhstan was impacted by the pandemic with interacting factors having different effects. A resurgence in appreciation and a heightened sense of duty led to positive job morale. Although job motivation level was moderate, physicians were rather satisfied with their jobs, with job satisfaction maintained by global recognition, financial benefits, a strong sense of calling and fulfilment

of purpose. This positive experience was directly connected to the worldwide pandemic, which by contrast let to a particularly stressful working environment, contributing to negative job morale. Participants experienced the fear of uncertainty, caused by their concerns for humanity, the high risk of contagion and the transmission of such to loved ones, and stress due to healthcare services being entirely unprepared for such. This could explain increased EE and DP levels among 30.97% and 30.17% of participants, respectively, and symptoms of severe depression among 3.69% of participants. Increased media scrutiny led to the feelings of working under a constant spotlight and the spread of misinformation, causing patients' aggressive behaviour. However, media reports highlighting physicians' heroism and courage in combating the pandemic have significantly contributed to the widespread appreciation of healthcare professionals and shaped their job morale positively. It is important to note that according to the quantitative results, younger female participants were more likely to have lower intrinsic job satisfaction, experience depression symptoms and show higher levels of EE and DP, whereas participants' accounts were broadly consistent irrespective of variations in sex, speciality, and years in practice in the qualitative part of the study.

Strengths and limitations

The current study has the following strengths. Firstly, to our knowledge, this is the first investigation of physicians' experiences of job morale in Kazakhstan during the COVID-19 pandemic. Second, the mixed methods approach adopted, ensuring the breadth and depth of the research process. In particular, the authors first conducted an online cross-sectional survey, enabling the collection of diverse opinions by involving a vast and geographically distinct pool of participants. Further, the individual semi-structured face-to-face interviews captured personal experiences, attitudes, and perceptions [33]. This design allowed for data triangulation [34], the study's third strength, whereby the quantitative data was enriched and clarified using qualitative accounts; it also enabled two interlinked yet distinct research objectives to be addressed. The findings can be used to shape interventions, training and hospital policies going forward.

The study also has several limitations. The first limitation is related to the convenience sampling strategy, which may have led to selection bias as no official mailing lists were used, and physicians were asked to nominate eligible participants. This may have influenced sample representativeness and subsequent generalisability. Secondly, incomplete surveys were not represented in the final sample, potentially impacting the study's representativeness. Nevertheless, this was regarded to be the only feasible approach considering the scope of the study. A third limitation is connected to the cross-sectional design, which leads to difficulties in assessing causal relationships and temporality of events. Fourthly, there was a higher proportion of females than males in the quantitative strand, which could have influenced our results since females have been considered as having an increased risk for negative psychological outcomes during the COVID-19 pandemic [35, 36]. However, females occupy the majority of healthcare positions in Kazakhstan, which means the high proportion of female participants in our study reflect the broader reality [19] and similar studies have shown analogous disproportion [37, 38]. Another limitation is the result of the translation bias inherent to cross-language qualitative research. Although a translation agency backtranslated to ensure the transparency and reliability of the translation process, it should be acknowledged that some information may have been lost or misinterpreted.

Comparison with the literature

The current study found a moderate level of job motivation from combining quantitative and qualitative approaches, with a feeling of a calling to the profession to be a key motivating factor among physicians. Notably, the serving nature of the medical profession, helping patients recover and being a physician being considered as a vocation were previously reported as important drivers of positive job morale by the systematic review and qualitative study on job morale of physicians in LMICs [39] and Kazakhstan [16], respectively, conducted prior to the COVID-19 pandemic. Such similarity may indicate that physicians' intrinsic motivations remained consistent despite the challenging circumstances. However, one should also acknowledge that the pandemic may have influenced the balance of intrinsic and extrinsic motivations for some physicians, potentially affecting overall job satisfaction and leading to burnout and depression. According to recent systematic reviews and meta-analyses, the pooled prevalence of burnout among physicians during the COVID-19 pandemic varied, at 32.9% [40], 41% [41] and 54.6% [42], which are all higher than the level of burnout found in the present study (30.97%). The systematic review and meta-analysis performed before the COVID-19 pandemic in LMICs, in turn, reported a pooled prevalence of burnout of 32% [43]. These informal comparisons may suggest that the level of burnout only increased slightly during the COVID-19 pandemic, which is rather unexpected given the significant pressures physicians faced during the pandemic.

The present study also found that approximately 40% of the participants displayed signs of depression, considerably higher than the reported pooled prevalence of such among healthcare staff, with differing estimates of 20.5% [44], 21.7% [45], 22,8% [46], and 37.6% [40]. However,

direct comparisons are difficult as systematic reviews and meta-analyses describe wide confidence intervals and significant heterogeneity. Furthermore, most reviews concentrated on the broader population of healthcare professionals, making drawing parallels challenging. To our knowledge, there has been only one systematic review on depression among qualified physicians before the COVID-19 pandemic [47]. The prevalence of depression found in the present study falls within the dimension reported in the indicated review, ranging from 14 to 60% [47]. Therefore, it might be suggested that, similar to burnout, there is no conclusive evidence of a significant increase in depression levels among physicians during the COVID-19 pandemic. This could possibly imply that although job demands reached a maximum, additional job recourses were available during the pandemic to counterbalance the heightened demands, which came with a heightened recognition of vitality to society, and physicians' views of their purpose and significance also shifted.

According to the scoping review [1] regarding job morale, the Job Demands-Resources (JD-R) Model [48] can be used to understand the underlying processes to this finding. The JD-R model's main hypothesis is that low demands combined with high job resources result in positive job morale, and vice versa [48]. Nevertheless, it has also been observed that job morale can be positive even when both job demands and job resources are high for specific reasons [48]. First, it was proposed that various job resources can mitigate job demands, acting as a buffer [48]. This assumption is consistent with the findings of the present study, indicating that a resurgence in appreciation for the medical profession buffered Kazakhstani physicians against the fear of uncertainty brought by the pandemic. Furthermore, increased recognition and support from the public, heroism narratives in the media and acknowledgement of their critical role endorsed resilience and motivation, helped physicians to cope with unprecedented job demands. Secondly, the JD-R model suggests that employees strive to maintain and protect the job resources they value, which become more important and provide motivation when job demands increase [48]. This assumption is also in line with our findings, as a heightened sense of duty and responsibility to patients inspired physicians in Kazakhstan to overcome the challenges of the pandemic. Moreover, the COVID-19 pandemic enabled physicians to fulfil their professional purpose and contribute to the greater good, because medicine was perceived to be a vocation and as a core part of their identities. This fits with the broader literature from the social identity approach to health, which indicates that making a social identity salient has positive impacts on motivation, and reduces burnout [49]; further, strengthening sense of social identification, for example the identity of being a physician, has positive impacts on quality of life and mental health [50].

Implications for research and practice

Future studies should evaluate longitudinal changes in job morale should using a set of standardised tools and methods, using random probability sampling, rather than convenience sampling. This would allow for producing more easily comparable, generalisable and practically applicable results. Secondly, more attention could be possibly given to the connection between physicians' job morale and patient experiences. Rigorous examinations involving both parties are crucial to understanding the difficulties of healthcare provision: in other settings there appears to be a negative relationship between patient-provider communication and physician burnout [51]. Finally, a thorough analysis of healthcare actions taken during the COVID-19 pandemic is required to create a healthcare delivery plan for emergency situations.

Kazakhstani workforce policies should possibly aim to balance job demands and job resources as the interplay between these factors determines job morale. While it seems straightforward, it could be challenging to achieve as it may require addressing complex issues in healthcare delivery in the context of constantly increasing demands and limited resources. Firstly, workforce policies may need to focus on fostering the formation and development of physicians' professional identity, as it was found to be a vital job resource that mitigates the impact of job demands [52]. As professional identity in these fields is generally developed through formal education and immersion in healthcare institutional cultures, it seems logical to incorporate hidden curricula aimed at constructing professional identity within both undergraduate and postgraduate medical education. Such curricula may involve classroom activities and guided reflection sessions involving medical students and residents in discussions about their professional identity and how it interplays with their personal identities, and interventions could be adapted from existing social identity informed interventions developed in organisational settings [53]. Secondly, it is crucial to address the physical, mental and emotional toll experienced by physicians after the COVID-19 pandemic. It seems reasonable to embed mental support programs for physicians within health services, offering evidence-based therapy and interventions aiming to reduce symptoms of burnout and depression. Building a strong support system for physicians is essential to be ready for future healthcare crises. Furthermore, there is a need to develop and provide resilience-building training, which may help physicians not only overcome symptoms of stress and anxiety but also raise awareness about burnout and means of preventing burnout. Systems to monitor physicians' job morale and

well-being should be established, with clear and discreet referral pathways available for individuals requiring individual psychological support. Finally, government and media may need to collaborate on developing recognition programs, public awareness campaigns and supportive policies, highlighting physicians' achievements in order to make them feel valued, recognised and appreciated.

Conclusions

The present study found that despite enormous challenges brought by the COVID-19 pandemic, the job morale of physicians working in public healthcare settings in Kazakhstan was generally positive due to the strong sense of calling and resurgence in appreciation of their role. Fostering the formation and development of physicians' professional identity and emphasising traditional perceptions of healthcare professionals' responsibilities could potentially enhance job morale throughout their careers. Future research should robustly examine longitudinal changes in job morale using standardised methods to ensure comparable results that can feed into practical changes to better support morale. Rigorous studies assessing physicians' job morale and patient experiences are also essential for understanding in the relationship between the two.

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s41043-024-00732-y.

Supplementary Material 1: S1 Table. Sample size calculation formula. S2 Table. Survey. S3 Table. Associations between job motivation and socio-demographic characteristics: results of bivariate analysis. S4 Table. Factors associated with job motivation: results of multivariate analysis. S5 Table. Association between socio-demographic characteristics and job satisfaction domains. S6 Table. Factors associated with job satisfactions domains: results from multivariate analysis. S7 Table. Associations between socio-demographic characteristics and burnout domains. S8 Table. Factors associated with burnout domains: results from multivariate analysis. S9 Table. Association between depression and socio-demographic characteristics. S10 Table. Factors associated with depression: results from multivariate analysis.

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Author contributions
Conceptualization AK and MT; Supervision: AK and MT; Data curation: MD, NT, TS, DS, RM, MS and AT; Quantitative data analysis, validation, and interpretation: MD, NT, TS, DS and RM; Qualitative data analysis and interpretation: AK, RM, MS, AT and MC; Original draft preparation: AK, MD, MT, NT and MC. All authors have agreed to the order of authorship. All authors have approved the submission of this version and are accountable for the content of this manuscript.

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Data availability
The datasets used and analysed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate
The study was conducted according to the guidelines of the Declaration of Helsiniki, and approved by the ethics committee of First Multidisciplinary City Hospital of Astana (N2 25.11.2021). Informed consent was obtained from all subjects involved in the study.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

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