SYSTEMATIC / NARRATIVE REVIEW ARTICLE

# Job satisfaction among public health and primary care physicians: A systematic review

**Siti Najiha Md Asari, MPH, Ghaneshinee Sathiyaseelan, MPH, Faiz Daud, DrBA, Nazarudin Safian, PhD, Azmawati Mohammed Nawi, PhD**

Department of Public Health Medicine, Faculty of Medicine, Universiti Kebangsaan Malaysia, Jalan Yaacob Latif, Bandar Tun Razak, 56000 Cheras, Wilayah Persekutuan Kuala Lumpur, Malaysia

**ABSTRACT**

**Introduction: Job satisfaction among physicians involved in public health services including public health physicians and primary care physicians is critical for their performance, motivation, and retention. These professionals address systemic health challenges and ensure effective health promotion at the population level. Despite their significance, they face challenges such as high workloads, administrative burdens, and insufficient resources, adversely affecting their satisfaction. This systematic review aims to examine the levels and determinants of job satisfaction among physicians engaged in public health roles.**

**Materials and Methods: This review followed PRISMA guidelines and was registered in PROSPERO (CRD42024613843). Articles were retrieved from PubMed, Scopus, and Web of Science databases. Fourteen eligible studies were selected based on strict criteria. Data synthesis employed an emerging clusters approach to identify factors influencing job satisfaction, categorised into four themes: job characteristics and role clarity, organisational support and leadership, work environment and culture, and rewards and career development.**

**Results: Data from 7313 physicians highlighted high workloads (60%) and administrative burdens (53%) as key sources of dissatisfaction. Approximately 44.7% reported high satisfaction, driven by autonomy in decision-making, supportive environments, doctor-patient relationships, and work-life balance. In contrast, 32% experienced moderate satisfaction, linked to manageable administrative tasks and fair remuneration. However, 20% reported low satisfaction, primarily due to excessive workloads, poor leadership support, financial insecurity, and limited career progression opportunities.**

**Conclusion: Job satisfaction among physicians in public health roles is moderate through a combination of high and low satisfaction factors. These professionals face demanding environments requiring them to balance administrative responsibilities, staff issues, community satisfaction, and resource allocations. Enhancing job satisfaction is essential for improving workforce morale and achieving effective public health outcomes. Implementing targeted interventions to address these challenges can foster long-term workforce stability and organisational success.**

**KEYWORDS:**
*Job satisfaction, public health physicians, primary care doctors, general practitioners, work environment, organisational leadership, career development*

## INTRODUCTION

The concept of job satisfaction has been defined in various ways since the early 20th century. Hoppock[1] described job satisfaction that it combines several factors such as physiological, psychological, and environmental situations. There were many different perspectives on job satisfaction.[2] Job satisfaction is a pivotal element influencing professionals' performance, motivation, and retention across various sectors, particularly in healthcare.

Physician dissatisfaction remains a significant concern that warrants attention. When physicians are dissatisfied with their practice conditions, they have two options.[3] Through Hirschman's classic formulation, physicians may either exit (abandon their current job or the profession) or voice their concerns by complaining individually or organising collectively.[4] Therefore, it would trigger some embarrassment in medical circles.[5]

Among all the physicians, physicians in public health play a crucial role in safeguarding the populations by addressing systemic health issues, managing disease prevention programs, and responding to emergencies.[6] Their work is inherently challenging, requiring medical expertise and skills in leadership, policy-making, and community engagement.[7] Given the complexity and responsibility of their roles, understanding their job satisfaction is essential to ensuring sustained excellence in public health services.

Job satisfaction among physicians in public health service is caused by many factors, including workplace environment, opportunities for professional growth, financial compensation, and the availability of resources to perform their duties effectively.[8] Equally important are intrinsic motivators, such as a sense of purpose and the impact of their work on improving community health. However, these professionals often face challenges like bureaucratic hurdles, high workload demands, and limited autonomy, which can hinder their satisfaction and lead to burnout or attrition where, to some extent, they have been diagnosed with mental disorders in Brazil.[9]

*This article was accepted: 15 July 2025*
*Corresponding Author: Faiz Daud*
*Email: faizdaud@hctm.ukm.edu.my*

Therefore, exploring the levels and determinants of job satisfaction in this workforce is crucial for their well-being and the broader healthcare system. When physicians are satisfied, they stay committed to their jobs and contribute to developing innovative and effective health interventions. On the other hand, dissatisfaction may lead to increased employee turnover, diminished productivity, and a potential compromise in public health outcomes.

Hence, this systematic review aims to examine the levels and determinants of job satisfaction among physicians engaged in public health services, including public health physicians, family medicine specialists, and general practitioners with postgraduate qualifications. This review synthesises evidence from multiple settings to identify key influencing factors and inform future strategies to improve workforce satisfaction and retention in public health.

For this review, the term "public health physicians" refers to all physicians who deliver population-level health services. This includes formally recognised public health specialists, as well as general practitioners and primary care doctors with relevant postgraduate training, who are actively involved in health promotion, disease prevention, and community-based care. In Malaysia, such roles are typically held by Family Medicine Specialists (FMS) or public health specialists working at the district (PKD) and state (JKN) levels. This broader functional definition was adopted to reflect the global diversity in job titles, qualifications, and roles associated with public health service delivery. In many high-income countries, general practitioners (GPs) are integrated within public health systems and undertake responsibilities similar to Family Medicine Specialists (FMS) or public-sector Medical Officers (MOs) in Malaysia. These roles typically include population-based functions such as disease prevention, screening, and health promotion. In contrast, GPs in Malaysia's private sector primarily focus on individual clinical care.

## MATERIALS AND METHODS

The study adhered to the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) framework, ensuring transparency and reproducibility.[10] The protocol for this review was registered in PROSPERO (Registration No: CRD42024613843) to maintain methodological rigour.

### Research Question Formulation

The PEO (population, exposure, outcome) concepts were the foundation for developing the review question. Aetiology and risk factor reviews benefit from applying the PEO concepts.[11] The PEO concept characterises the population as physicians working in public healthcare services worldwide, including general practitioners as they were specialised in some countries. Exposure is the factor affecting job satisfaction, and the outcome was levels of job satisfaction measured using quantitative, qualitative scales or mixed method approaches. Hence, the main research question was, what are the levels and determinants of job satisfaction among physicians working in public health and primary care settings?

### Data Source and Search Strategy

As for data sources, the systematic review utilised a comprehensive search across multiple electronic databases to ensure the inclusion of diverse and relevant studies. The following databases used were PubMed Scopus, and Web of Science since they were highly recognised and widely used in universities. The search terms were developed strategically and cross-checked by the two authors. The search strategy was built around three key phrases: job satisfaction rate, factors influencing the rate, and public health physicians. The keywords used to search for related articles are provided in Table I. The search terms included a combination of keywords and Medical Subject Headings (MeSH) terms tailored to capture the core components of the research question. Boolean operators (AND, OR) were used to refine the search. The date for the search was on Nov 1 2024, with no language restriction.

### Inclusion and Exclusion Criteria

The inclusion criteria for this systematic review were defined to ensure the selection of studies relevant to the research question. Studies were included if they (1) focused on public health physicians as the primary population, (2) examined factors influencing job satisfaction, such as workload, leadership, work environment, remuneration, or career development, and (3) employed quantitative, qualitative, or mixed-methods designs. The inclusion criteria for this systematic review did not impose restrictions on the publication date, allowing for the inclusion of studies published across various periods to ensure a comprehensive understanding of the topic. Exclusion criteria were applied to filter out studies that were: (1) focused on healthcare professionals other than public health physicians, (2) meta-analysis, descriptive reports, commentaries, or reviews without original data, (3) lacking clear outcomes related to job satisfaction, and (4) not accessible in full text. These criteria ensured that the review remained focused, rigorous, and relevant to the target population while minimising bias.

### Study Selection

The study selection process was conducted in multiple stages to ensure a systematic and unbiased approach. All search results from the identified databases were initially imported into reference management software, where duplicates were removed. After eliminating duplicates, each reviewer rescreened the remaining papers. Two rounds of screening were conducted on articles before they were included in the review. In phase one, the authors will pre-screen study titles and abstracts against the eligibility criteria. In phase two, two authors will independently retrieve the full texts of studies identified as potentially relevant during the first screening and screen them again against the eligibility criteria. The third and fourth reviewers will discuss and, if necessary, resolve any uncertainties regarding study eligibility. The PRISMA-based flow diagram below in Figure 1 will illustrate the transparency of the study selection process at the different stages, including the excluded studies.

In phase one, 41 articles were removed due to the wrong population, unrelated articles, and systematic review. In phase two, eight (8) articles were removed due to the inability to extract the public health physician component from the

other healthcare workers. At the final stage, only 14 articles were selected after removing duplicate articles, primary screening, and secondary screening. All the selected articles were confirmed against the inclusion and exclusion criteria; some studies that required further reading were read more than once to ensure their suitability before inclusion. No additional clarification was required from the original study authors, as all necessary data were available within published manuscripts.

**Data Extraction and Data Synthesis**

Two authors extracted key information from all included studies and organised the relevant data into a data extraction form. The most significant results were selected and compiled into study characteristics shown in Table II. To ensure accuracy and completeness, another author cross-checked all data extractions. As a result, the data was extracted twice to minimise the risk of omitting any vital information.

The form requested information about the following: (1) Author; (2) Country; (3) Job Title; (4) Objective; (5) Participant; (6) Design; (7) Questionnaire; (8) Job Satisfaction Rate and (8) Themes or factors as shown in Table II. A narrative synthesis was carried out because of the study's variability.

**Quality Assessment Tool**

Using the Mixed Methods Appraisal Tool (MMAT), the authors evaluated the quality of each of the 14 studies.[12] This tool can assess the methodology quality of five different types of studies: mixed methods studies, quantitative randomised controlled trials, quantitative non-randomised studies, quantitative descriptive studies, and qualitative studies. Since this study has quantitative and qualitative studies, MMAT is the best tool for assessing this type of research.

The appraisal process began with two screening questions, followed by five criteria applied to each category to assess the study's quality. The MMAT evaluated various aspects, including the appropriateness of the study aim and design, participant recruitment, methodology adequacy, data collection, presentation of findings, data analysis, and the authors' discussions and conclusions. Each criterion carried equal weight; the final score was the sum of the five individual items.13 The MMAT results were reported using a rating system: 5***** (100% of quality criteria met), 4**** (80% met), 3*** (60% met), 2** (40% met), and 1* (20% met). To interpret the risk of bias, MMAT scores were mapped to risk categories: studies rated 5***** or 4**** were classified as having a low risk of bias, while those rated 3*** were considered moderate risk, and studies scoring 2** or below were considered high risk of bias. The quality assessment was conducted independently by two reviewers for each included article. No discrepancies were found between the reviewers regarding the quality assessment of the included studies.

**Handling of Non-English Articles**

Four non-English articles which were written in Spanish, Norwegian, and German were included in this review.[14–17] The full texts were translated into English using an AI-based language model (ChatGPT-4), a large language model developed by OpenAI. While expert linguistic validation was not performed due to resource limitations, the translated texts were reviewed carefully by the research team to ensure interpretive accuracy and contextual relevance. The use of ChatGPT for language translation in academic reviews has gained traction in recent literature. For example, Brewster et al.[18] demonstrated its utility in translating medical education material across multiple languages including Spanish and Norwegian, with satisfactory accuracy when cross-checked by bilingual reviewers. Similarly, the preprint by Jiao et al.[19] supports ChatGPT's capability to preserve core meaning in non-English texts during translation tasks in research settings. These precedents support the use of AI-assisted translation as a pragmatic approach in systematic reviews when professional translation services are unavailable.

**Data Analysis**

This review employed the emerging clusters approach to synthesise data from the included studies. The analysis was conducted in two stages: first, identifying all factors influencing job satisfaction among Public Health Physicians, and second, organising these factors into clusters under relevant themes. Given the study's objective of identifying job satisfaction determinants, the cluster mapping approach was deemed appropriate. The results were presented narratively and supplemented with tables highlighting the identified themes and clusters. The process involved iterative reading and interpretation of findings from eligible studies to ensure accuracy and consistency in factor categorisation.

Through this approach, the findings were structured into four primary themes: Job Characteristics and Role Clarity, Organisational Support, Work Environment and Culture, and Rewards and Career Development, with associated sub-domains for each theme, representing specific factors identified in the studies. Due to substantial heterogeneity in study designs, populations, measurement tools, and outcome reporting, a formal meta-analysis was not feasible. The use of varied instruments such as different job satisfaction scales alongside context-specific factors and inconsistent reporting of quantitative metrics across studies would have led to statistically non-meaningful results. Instead, a descriptive synthesis was adopted to retain the depth and contextual relevance of the findings, allowing for a more comprehensive understanding of job satisfaction patterns. For quantitative articles, trends in frequency, percentages, and reported satisfaction levels were summarised narratively. Additionally, the risk-of-bias ratings based on the MMAT were incorporated into Table II to reflect the quality and strength of the evidence.

## RESULTS

Seventy-seven studies were found during the early search of the included databases. After removing duplicate articles and the primary and secondary screening process, 14 papers were considered for inclusion in this study (Figure 1). Nearly 80% of qualifying papers were guaranteed high quality, and all the articles were evaluated using the MMAT. No article was removed because none of the documents had a high-risk bias.

**Table I: Search Strategy and Boolean Strings Used in Major Databases**

| Database | Search String |
|---|---|
| Scopus (Advanced Search), PubMed, WoS (Advanced Search) | (("Job Satisfaction" [MeSH] OR "career contentment" OR "occupational gratification" OR "employment happiness" OR "work fulfilment" OR "job enjoyment" OR "job happiness" OR "professional well-being" OR "vocational satisfaction" OR "workplace morale" OR "happiness at work" OR "job quality" OR "workforce inspiration"))<br><br>AND<br><br>(("Public Health" [MeSH] AND ("Physicians" [MeSH] OR "Doctors" [MeSH])) OR "public health physician" OR "public health doctor" OR "public health specialist" OR "Occupational doctor" OR "Occupational specialist" OR "general practitioner")<br><br>AND<br><br>(("Factors" [MeSH] OR "cause" OR "element" OR "circumstance" OR "component" OR "influence" OR "rate")) |

**Characteristics of included studies**

The characteristics of the 14 studies included in this systematic review are presented in Table II. These characteristics include the year of publication, country of research, study design, job title, participant characteristics, questionnaire used in the study, and job satisfaction level. There is a wide choice of articles available from 1988 to 2024, as there is no restriction on the year of publication. Hence, the year of publication may be categorised into before the 20th century and after the 20th century. Only one article was published before the 20th century, [20] while the rest (92.8%) were published after the 20th century.[14–17,21–29] Out of 14 included studies, three were conducted in England and Germany (21.4%), and Denmark contributed two articles (14.2%). Most of these studies originate from high-income countries, as classified by Gross National Income (GNI)[30], except for one study from a lower-middle-income country which is Pakistan (7.1%).[8]

Next, only three articles use qualitative research methods (21.4%), while the rest are quantitative study designs, with the cross-sectional method being the most commonly used (81.8%). As per the participants, a total of 7313 public health physicians have been sampled in this review, with the majority job title of participants being General Practitioners with postgraduate qualifications (71.4%), while the rest have specific job titles as Public Health Residents or Family and Community Physicians.[15]

Only 11 articles have used questionnaires to measure job satisfaction among public health physicians, with seven articles using a similar questionnaire, the Warr-Cook-Wall Job Satisfaction Scale (WCW-JSS) (63.6%,) as shown in Table IV. The rest utilised different questionnaires, such as the Minnesota Satisfaction Questionnaire from a study by Kumar et al.[8], the Hospital Consultants' Job Stress & Satisfaction Questionnaire by Peter et al.[24], and a self-developed questionnaire from an exploratory qualitative study.[26] Only one study has measured depressive symptoms as an outcome of job satisfaction with Patient Health Questionnaire-9 (PHQ-9).[29] Only 10 articles documented satisfaction rates or scores among public health physicians, of which five articles documented satisfaction scores and three studies on satisfaction rates. The remaining two articles indirectly record statements on job satisfaction. Most studies documented moderate satisfaction (60%), followed by a low satisfaction level (30%), and only one study demonstrated a high satisfaction level.[25]

**Quality Appraisal**

According to the MMAT evaluation criteria, most studies score 5*****/100% and were therefore classified as having a low risk of bias. Three studies scored 3***/60% and were categorised as moderate risk of bias.[17,23,24] Nevertheless, all 14 articles met the quality appraisal and were included in this study, as shown in Table III.

This systematic review identified multiple factors influencing job satisfaction among healthcare professionals, categorised into four key domains, which were:

**Job characteristics and role clarity**

High satisfaction was strongly associated with autonomy, flexibility, and leadership roles. Autonomy in decision-making significantly enhanced satisfaction, scoring 5.11 out of 7 in findings.[20] Similarly, autonomy and role clarity contributed to 44.7% of participants' high satisfaction.[17,25] Flexibility was another factor; physicians with flexible work arrangements were more satisfied with their roles.[26] Leadership roles were also valued, with involvement in leadership enhancing satisfaction for many respondents.[16]

Moderate satisfaction arose from manageable administrative responsibilities. While administrative tasks were persistent, they were not overwhelming. Additionally, 56.6% of respondents experienced moderate satisfaction in managing these roles alongside clinical workloads.[22]

Low satisfaction was linked to excessive workloads, unclear roles, overwhelming administrative burdens, and time pressure. Unclear roles were typical, leading to stress and dissatisfaction.[23,24,27] High workloads were a high concern, identified as a primary source of dissatisfaction.[17,29] For example, 70% of public health professionals cited workload as their primary stressor.[8] Overwhelming administrative burdens were other key dissatisfiers, and one study led to scoring 2.8 out of 7.[17,28] Time pressure was also notable, with excessive time demands negatively affecting satisfaction.[8]

**Table II: Result of data extraction from the included studies (n=14 articles)**

| No | Author/ Year | Country | Job title | Objective | Participant | Design | Questionnaire | Job satisfaction levels | Themes/ Factors | Risk of Bias (MMAT Score) |
|---|---|---|---|---|---|---|---|---|---|---|
| I. | Cedrone et al.[29] | Italy | Public Health Residents | To assess depression among Public Health Residents in Italy | N: 379 residents<br><br>Mean age: 30 years | Quantitative study<br><br>Cross-sectional | Patient Health Questionnaire-9 (PHQ-9) | Resident with depressive symptoms associated with poor job satisfaction (AOR=0.456, 95% CI=0.283–0.734).<br><br>61% experienced depressive symptoms; 26% had clinically relevant symptoms negatively impacting job satisfaction. | **Job Characteristics and Role Clarity**<br>**Low**<br>• High workload<br>• Unclear role expectation<br><br>**Work environment and culture**<br>**Low**<br>• Emotional exhaustion<br>• Depressive symptoms | Low |
| II. | Götz et al.[14]* | Germany | GP | To analyse job satisfaction among GPs and its influencing factors. | N: 523 GPs<br><br>Age: N/A | Quantitative Study<br><br>Cross-sectional study | Warr-Cook-Wall (WCW) Scale<br>7 scale Likert | Mean: 5.58.<br>• Highest: Colleagues and staff (6.00);<br>• Lowest:<br>- Income (4.33),<br>- Work hours (4.49).<br>- psychological workload | **Work environment and culture**<br>**High**<br>**Supportive colleagues and staff**<br>**Rewards and Career Development**<br>**Low**<br>• The mismatch between effort and rewards.<br>• Low pay<br>• Limited career growth | Low |
| III. | Hall et al.[28] | England | Primary care physicians | To investigate strategies for enhancing GP well-being and mitigating burnout based on GPs' perspectives on workplace factors influencing their well-being and burnout levels. | N: 25 practicing GPs<br><br>Age: The mean age of the sample is 42.15 years | Qualitative Study<br><br>Focus group discussion | N/A | N/A | **Job Characteristics and Role Clarity**<br>**Low**<br>• High workload<br>• Time pressure<br>• Administrative work<br><br>**Organisational Support and Leadership**<br>**Low**<br>• Lack of team support/ cohesion<br>• poor communication<br><br>**Work Environment and Culture**<br>**High patient complaint**<br>Negative portrayal of GP | Low |

**Table II: Result of data extraction from the included studies (n=14 articles)**

| No | Author/ Year | Country | Job title | Objective | Participant | Design | Questionnaire | Job satisfaction levels | Themes/ Factors | Risk of Bias (MMAT Score) |
|---|---|---|---|---|---|---|---|---|---|---|
| IV. | Huby et al.[27] | Scotland | GPs | To examine experiences of well-being and workplace distress, identify their perceptions of the causes and potential solutions, and outline implications for enhancing morale in general practice. | N: 63 GPs<br><br>Age: N/A | Qualitative Study<br><br>In-depth interview and Focus group discussion | N/A | N/A | **Job Characteristics and Role Clarity**<br>**Low**<br>• Undefined responsibilities within partnerships<br>• No task delegation<br>• There is no role clarity.<br>• High Workload | Low |
| V. | Le Floch et al.[26] | France | GP | Identify which of these 31 factors are crucial and applicable for shaping future policies to enhance the attractiveness, recruitment, and retention of family medicine professionals in France. | N: 29 respondents among family medicine specialists (GP)<br><br>Age: N/A | Quantitative study<br><br>Delphi Consensus and Nominal Group Technique | 31 job satisfaction factors questionnaire | N/A | **Job Characteristics and Role Clarity.**<br>**High**<br>• Flexibility<br>• Autonomy in work<br>• Independent decision-making<br><br>**Work environment and culture**<br>**High**<br>• Patient-centred<br>• Work-life balance<br>• Good communication with the hospital<br><br>**Rewards and Career Development**<br>**High**<br>• Career development opportunities and diversity (78%) | Low |

**Table II: Result of data extraction from the included studies (n=14 articles)**

| No | Author/ Year | Country | Job title | Objective | Participant | Design | Questionnaire | Job satisfaction levels | Themes/ Factors | Risk of Bias (MMAT Score) |
|---|---|---|---|---|---|---|---|---|---|---|
| VI. | Makin et al.[20] | England | GP | To determine aspects of the job GPs report as causing stress and job satisfaction | N: 101<br>GP<br><br>Age: 25-64 | Quantitative study<br><br>Cross-sectional | Job satisfaction questionnaire<br><br>-seven-point Likert-type scale. | Mean (SD) =5.11 (0.98)<br><br>Overall job satisfaction was somewhat above the scale's mid-point, between moderately and very satisfied. | **Job characteristics and role clarity**<br>**High**<br>• Flexibility<br>• Autonomy<br><br>**Low**<br>• Administrative workload<br><br>**Work Environment and Culture**<br>**Low**<br>• High emotional involvement<br>• Unpredictable interruptions<br>• Long hours of work<br><br>**Rewards and Career Development**<br>**Low**<br>• Low pay<br>• Lack recognition | Low |
| VII. | Nørøxe et al.[25] | Denmark | GP | To investigate changes in mental well-being and job satisfaction among Danish GPs and examine potential associations with age, gender, and practice organisation | N: 1697<br>GP<br><br>Age: no mean age<br><45: 501<br>46-59: 771<br>>60: 425 | Quantitative study<br><br>Cross-sectional | 1) WCW-JSS- 7-point scale<br>2) Maslach Burnout Inventory (MBI)<br>3) WHO-5 | **Low job satisfaction: 22.1% of participants** (score ≤3 on a 7-point scale).<br><br>**Moderate job** satisfaction: 33.2% (scores 4–5).<br><br>**High job satisfaction:** 44.7% (score ≥6). | **Organisational Support and Leadership**<br>**Low**<br>• Poor leadership<br><br>**Work Environment and Culture**<br>**Low**<br>• High stress<br>• No Work life balance<br><br>**High**<br>• Autonomy | Low |
| VIII. | Iglesias et al.[15]* | Spain | Family and Community Physicians | To explore factors influencing young family physicians' decisions to leave Family and Community Medicine practice and provide recommendations | N=13 young family physicians<br><br>Age=N/A | Qualitative study | N/A | There is no rate, but qualitative findings indicate low satisfaction | **Work Environment and Culture**<br>**Low**<br>• No work-life balance<br>• COVID-19 exacerbated the work culture<br><br>**Rewards and Career Development**<br>• Lack of recognition<br>• Job insecurity | Low |

**Table II: Result of data extraction from the included studies (n=14 articles)**

| No | Author/ Year | Country | Job title | Objective | Participant | Design | Questionnaire | Job satisfaction levels | Themes/ Factors | Risk of Bias (MMAT Score) |
|---|---|---|---|---|---|---|---|---|---|---|
| IX. | Peter et al.[24] | Germany | GPs providing Palliative Care (PC) | To assess the impact of palliative care qualifications on the job stress factors experienced by GPs in palliative care settings | N=445 GPs<br><br>Age: mean age 53.6 years | Quantitative Study<br><br>Cross-sectional survey | Hospital Consultant Job Stress & Satisfaction Questionnaire (HCJSSQ) | N/A | **Job Characteristics and Role Clarity**<br>**Low**<br>• High levels of responsibility<br>• Unclear job description<br><br>**Organisational Support and Leadership**<br>**Low**<br>• Bureaucratic burdens<br>• Lack of adequate support<br><br>**Work Environment and Culture**<br>**Low**<br>• No work-life balance<br>• Emotional with physical distress from patient care.<br><br>**Rewards and Career Development**<br>**Low**<br>• Financial remuneration uncertainty<br>• Lack of career progression opportunities. | Moderate |
| X. | Sibbald et al.[22] | England | GPs | To evaluate GP intentions to leave direct patient care, analyse changes between 1998 and 2001, and examine factors associated with this decision, with a particular focus on job satisfaction | N=1,949 GPs (790 in 1998, 1,159 in 2001)<br><br>Age: Mean age:43.75 years in 1998, 44.35 years in 2001 | Quantitative Study<br><br>Cross-sectional survey | Job Satisfaction Scale<br><br>A standardised instrument with a 7-point scale for job satisfaction (higher scores indicate greater satisfaction) | Mean job satisfaction scores:<br>• 1998: 4.64 (out of 7)<br>• 2001: 3.96 (declined significantly) | **Job Characteristics and Role Clarity**<br>**Low**<br>• Administrative workload<br>• Unclear job descriptions.<br>• High workload<br><br>**Organisational Support and Leadership**<br>• Bureaucratic burdens<br><br>**Work Environment and Culture**<br>**Low**<br>• Long working hours | Moderate |
| XI. | Vedsted et al.[22] | Denmark | GP | To examine the relationship between practising as a GP in a walk-in open-access setting and the incidence of burnout among a sample of Danish GPs. | N=376<br><br>Age= mean age 51.8 (SD=6.7) | Quantitative study<br><br>Cross-sectional | -Maslach Burnout Inventory Human Services Survey (MBI-HSS)<br><br>-Job Satisfaction Scale by Warr, Cook, and Wall 7-point scale | 20.5% reported high satisfaction (score ≥6/7), while the rest reported moderate or low satisfaction | **Job Characteristics and Role Clarity**<br>**Low**<br>**High workload**<br>**Work Environment and Culture**<br>**Low**<br>• Long working hours | Low |

**Table II: Result of data extraction from the included studies (n=14 articles)**

| No | Author/ Year | Country | Job title | Objective | Participant | Design | Questionnaire | Job satisfaction levels | Themes/ Factors | Risk of Bias (MMAT Score) |
|---|---|---|---|---|---|---|---|---|---|---|
| XII. | Kumar et al.[8] | Pakistan | Public health professionals with postgraduate qualifications | To assess the level of job satisfaction and identify the factors influencing it among public health professionals in the public sector. | 73<br><br>Age= NA | Quantitative study<br><br>Cross-sectional | Minnesota Satisfaction Questionnaire | The overall satisfaction rate was reported at 41%, with 45% somewhat satisfied and 14% highly dissatisfied | **Job Characteristics and Role Clarity**<br>**Low**<br>• Irrelevant tasks<br>• lack of autonomy<br>• Unclear job and role<br>• Time pressure<br><br>**Organisational Support and Leadership**<br>**Low**<br>• Poor supervision<br>• Insufficient professional support<br>• Lack of cooperation within organisations<br><br>**Work Environment and Culture**<br>**Low**<br>• Low support<br>• Lack of resources in the public sector<br><br>**Rewards and Career Development**<br>**Low**<br>• Low salaries<br>• Lack of training opportunities,<br>• Inadequate career progression pathways<br>• No recognition | Low |
| XIII. | Nylenna & Aasland[16] * | Norway | GPs | To assess job satisfaction among Norwegian physicians and identify differences by speciality, work type, and demographics | n: 1,072 Norwegian physicians<br><br>Age: N/A | Quantitative study<br><br>Cross-sectional | Job Satisfaction Scale | Mean: 5.3 (on a 7-point scale). Private practitioners: 5.8; Hospital specialists: 5.1; Community medicine: 5.6. | **Job Characteristics and Role Clarity**<br>**High**<br>• Leadership role<br>• Autonomy<br>**Low**<br>High workload<br><br>**Work Environment and Culture**<br>**Low**<br>Long working hours | Low |
| XIV. | Löffler et al.[17] * | Germany | GPs | To examine the job satisfaction of GPs, identify the factors influencing it, and compare satisfaction levels over time | n: 568 GP<br><br>Age: N/A | Quantitative study<br><br>Cross-sectional | Job Satisfaction Scale | Mean: 4.1. High: Doctor-patient relationship (4.6): 48%. Low: Administrative tasks (2.8). : 20% | **Job Characteristics and Role Clarity**<br>**High**<br>• Autonomy<br>• Task Variety<br>**Low**<br>• Administrative burdens<br>• Workloads<br>• Time pressure<br><br>**Work Environment and Culture**<br>**High**<br>• Continuity of patient relationship<br>• Trust for patient care<br><br>**Rewards and Career Development**<br>**Low**<br>• Income stability in the rural area | Moderate |

* Original article available in other language than English, where ChatGPT was used for the translation process N/A: not available, GP: General Practitioners

**Table III: MMAT (Quality Appraisal)**

| | Author and Year | SQ | | 1. Qualitative study | | | | | 2. Quantitative study: Randomized Controlled Trials | | | | | 3. Quantitative Non-Randomised | | | | | 4. Quantitative Descriptive Only | | | | | 5. Mixed Methods study | | | | | Bias |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | S1 | S2 | 1.1 | 1.2 | 1.3 | 1.4 | 1.5 | 2.1 | 2.2 | 2.3 | 2.4 | 2.5 | 3.1 | 3.2 | 3.3 | 3.4 | 3.5 | 4.1 | 4.2 | 4.3 | 4.4 | 4.5 | 5.1 | 5.2 | 5.3 | 5.4 | 5.5 | |
| I. | Cedrone et al.[29] | ✔ | ✔ | - | - | - | - | - | - | - | - | - | - | ✔ | ✔ | ✔ | ✔ | ✔ | - | - | - | - | - | - | - | - | - | - | Low |
| II. | Götz et al.[14] | ✔ | ✔ | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ✔ | ✔ | ✔ | ✔ | ✔ | - | - | - | - | - | Low |
| III. | Hall et al.[28] | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | Low |
| IV. | Huby et al.[27] | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | Low |
| V. | Le Floch et al.[26] | ✔ | ✔ | - | - | - | - | - | - | - | - | - | - | ✔ | ✔ | ✔ | ✔ | ✔ | - | - | - | - | - | - | - | - | - | - | Low |
| VI. | Makin et al.[20] | ✔ | ✔ | - | - | - | - | - | - | - | - | - | - | ✔ | ✔ | ✔ | ✔ | ✔ | - | - | - | - | - | - | - | - | - | - | Low |
| VII. | Nørøxe et al.25 | ✔ | ✔ | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ✔ | ✔ | ✔ | ✔ | ✔ | - | - | - | - | - | Low |
| VIII. | Iglesias et al.15 | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | Low |
| IX. | Peter et al.24 | ✔ | ✔ | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ✔ | ✕ | ✔ | ✕ | ✔ | - | - | - | - | - | Moderate |
| X. | Sibbald et al.[23] | ✔ | ✔ | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ✔ | ✕ | ✔ | ✕ | ✔ | - | - | - | - | - | Moderate |
| XI. | Vedsted et al.[22] | ✔ | ✔ | - | - | - | - | - | - | - | - | - | - | ✔ | ✔ | ✔ | ✔ | ✔ | - | - | - | - | - | - | - | - | - | - | Low |
| | Author and Year | SQ | | 1. Qualitative study | | | | | 2. Quantitative study: Randomized Controlled Trials | | | | | 3. Quantitative Non-Randomised | | | | | 4. Quantitative Descriptive Only | | | | | 5. Mixed Methods study | | | | | Bias |
| | | S1 | S2 | 1.1 | 1.2 | 1.3 | 1.4 | 1.5 | 2.1 | 2.2 | 2.3 | 2.4 | 2.5 | 3.1 | 3.2 | 3.3 | 3.4 | 3.5 | 4.1 | 4.2 | 4.3 | 4.4 | 4.5 | 5.1 | 5.2 | 5.3 | 5.4 | 5.5 | |
| XII. | Ramesh Kumar et al.[21] | ✔ | ✔ | - | - | - | - | - | - | - | - | - | - | ✔ | ✔ | ✔ | ✔ | ✔ | - | - | - | - | - | - | - | - | - | - | Low |
| XIII. | Nylenna & Aasland[16] | ✔ | ✔ | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ✔ | ✔ | ✔ | ✔ | ✔ | - | - | - | - | - | Low |
| XIV. | Löffler et al.[17] | ✔ | ✔ | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ✔ | X | ✔ | ✔ | ✔ | - | - | - | - | - | Moderate |

**Table IV: Job satisfaction level**

| Author (Year) | Questionnaire | Job satisfaction rate or score | Level |
|---|---|---|---|
| Cedrone et al.[29] | Patient Health Questionnaire-9 (PHQ-9) + | 61% of residents experiencing clinically significant depressive symptoms reported lower job satisfaction levels | Low |
| Götz et al.[14] | Warr-Cook-Wall (WCW) Scale* | Mean= 5.58 | Moderate |
| Hall et al.[28] | -# | - | - |
| Huby et al.[27] | -# | - | - |
| Le Floch et al.[26] | -# | - | - |
| Makin et al.[20] | Job satisfaction scale* | Mean =5.11 | Moderate |
| Nørøxe et al.[25] | Warr-Cook-Wall Job Satisfaction Scale (WCW-JSS) * | 44.7% highly,33.2% moderately and 22.1% low satisfaction | High |
| Iglesias et al.[15] | - + | There is no rate, but qualitative findings indicate low satisfaction | Low |
| Peter et al.[24] | -# | - | - |
| Sibbald et al.[23] | Job Satisfaction Scale * | Mean =3.96 | Low |
| Vedsted et al.[22] | Job Satisfaction Scale by Warr, Cook, and Wall* | 20.5% highly, 56.6% moderately, and 22.9% low satisfaction | Moderate |
| Ramesh Kumar et al.[21] | Minnesota Satisfaction Questionnaire | 41% highly, 45% moderately, and 14% low satisfaction | Moderate |
| Nylenna & Aasland et al.[16] | Job Satisfaction Scale * | Mean= 5.3 | Moderate |
| Löffler et al.[17] | Job Satisfaction Scale * | Mean= 4.1 | Moderate |

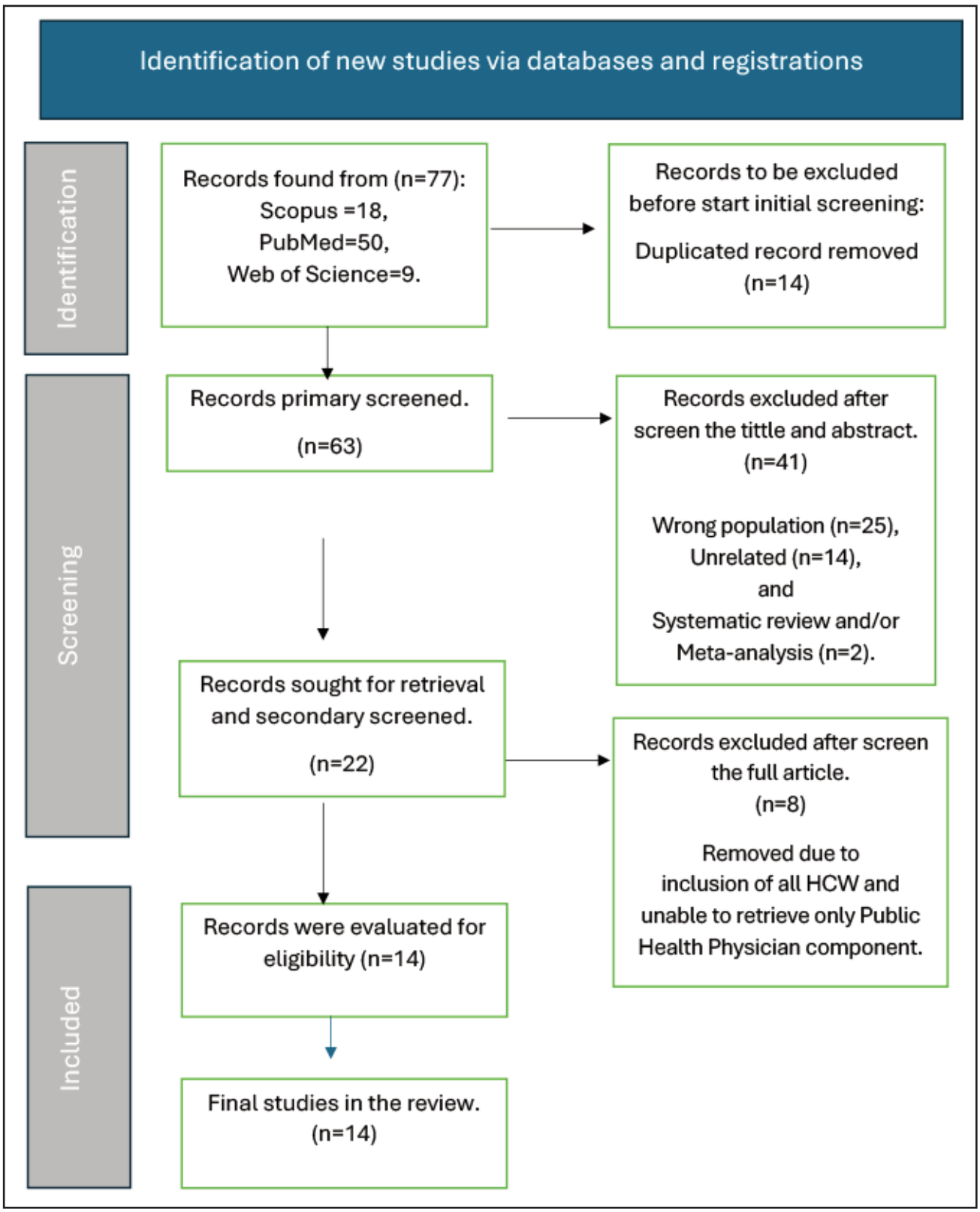


**Fig. 1:** PRISMA 2020 flow diagram for this study

**Work Environment and Culture**

High work environment and culture satisfaction were strongly linked to positive doctor-patient relationships, manageable work-life balance, and supportive workplace culture. Positive doctor-patient interactions were highly valued, contributing significantly to job satisfaction. For example, physicians reported high levels of fulfilment when engaging with patients meaningfully, with a rate of 4.6 from 7.[17] A manageable work-life balance was another key factor, with 78% of professionals noting that flexible schedules allowed them to maintain personal and professional responsibilities.[26] Supportive workplace culture also played a role, with professionals working in environments encouraging collaboration and inclusivity reporting higher satisfaction levels.[14,26]

Moderate satisfaction arose from environments with good team dynamics but high patient demands. While teamwork and cooperation among colleagues were seen as positive aspects, the heavy workload caused by high patient volumes occasionally dampened satisfaction. The interplay of these factors led to a moderate level of job satisfaction.[28]

Low satisfaction was linked to emotionally draining environments, high patient expectations, poor work-life balance, long working hours, and frequent interruptions. Emotionally taxing environments were a significant concern, as reported in several studies, where up to 61% of professionals cited burnout due to the intensity of their work.[20,24,29] High patient expectations added to this burden, particularly in demanding settings.[28] Poor work-life balance was another major issue, with dissatisfaction stemming from an inability to separate personal and professional responsibilities, leading to a job satisfaction rate of less than 3 out of 7.[15,25] Long working hours were a consistent source of frustration, with professionals frequently citing this as a primary driver of low satisfaction.[16,20,22,23] Interruptions during work also contributed to dissatisfaction, often disrupting clinical workflows and adding stress.[20]

**Rewards and Career Development**

Fair payment and opportunities for career advancements were key drivers of high satisfaction among healthcare professionals. In Le Floch et al.[26], 78% of professionals who perceived their salaries as fair and reflective of their responsibilities reported significantly higher satisfaction. Moderate satisfaction was observed among professionals who found their salaries adequate but not entirely competitive.[8,17]

Poor salaries, limited training opportunities, job insecurity, restricted career growth, and lack of recognition primarily drove low satisfaction. Poor salaries were a recurring issue across studies, with respondents citing dissatisfaction when wages did not match their responsibilities.[17,20,21] Limited access to training programs hindered professional development, as noted in 14% of professionals.[8] Job insecurity further exacerbated dissatisfaction, with Peter et al.[24] and Iglesias et al.[15] highlighting stress and uncertainty among professionals about long-term career prospects. Additionally, limited opportunities for career growth were a consistent theme.[8,14,24] Finally, lack of recognition for achievements significantly affected the morale of up to 62% of respondents, as observed in several studies.[8,14,15,20]

**Organisational Support and Leadership**

High satisfaction was linked to supportive leadership and cohesive team dynamics. According to Hall et al.[28], 70% of participants who experienced regular mentorship programs and team check-ins reported high satisfaction, as these practices significantly reduced burnout and improved morale.

Moderate satisfaction was associated with inconsistent leadership support and limited communication from management. Sibbald et al.[23] reported that 40% of respondents experienced moderate satisfaction, as some leadership involvement was present but lacked consistency. While guidance and mentorship were available sporadically, their absence in critical areas prevented higher satisfaction.

Inadequate leadership support, conflicting demands, and poor organisational governance predominantly drove low satisfaction. In Peter et al.[24], 64.25% of participants with low satisfaction reported stress from unclear priorities and insufficient leadership intervention. Additionally, rural physicians were disproportionately affected, with 53% identifying the lack of leadership support as a key dissatisfier contributing to their low job satisfaction.[24]

Overall, the results indicate that while some public health physicians experience satisfaction due to positive work environments and professional autonomy, many continue to face significant challenges, particularly in unclear roles, workload management, and career advancement opportunities.

## DISCUSSION

Interest in job satisfaction grew significantly, driven by critical societal shifts, the economy, and organisations. The growth of industrialisation and the shift towards a knowledge-driven economy highlighted how crucial it is to prioritise employee well-being for boosting productivity and achieving success within organisations. Research in psychology began examining workplace behaviour, drawing on theories such as Maslow's hierarchy of needs and Herzberg's two-factor theory, which highlight the role of intrinsic and extrinsic motivators in job satisfaction.[31] Moreover, globalisation and technological progress have heightened competition, leading companies to focus on employee engagement and retention as vital resources.[32]

There has been a greater focus on studying job satisfaction in high-income countries, influenced by various factors. These nations often possess greater resources to dedicate to academic and organisational research, allowing for a more thorough understanding of workplace dynamics.[32] Moreover, wealthier countries enjoy greater economic stability, enabling businesses to move beyond survival and enhance employee engagement and performance. Additionally, having well-developed education systems and a strong corporate sector leads to a significant need for research that guides human resource practices, employee policies, and strategies for organisational growth, highlighting job satisfaction as an important area of focus.[33]

Importantly, the role of general practitioners (GPs) in these countries often differs from that in Malaysia. In countries such as the UK and Denmark, GPs are integrated into public health systems and perform population-level functions akin to Malaysia's Family Medicine Specialists (FMS) and public health specialists. In contrast, GPs in Malaysia's private sector primarily provide individual clinical care. This distinction is essential when comparing international findings on job satisfaction, as the expectations and responsibilities of GPs vary across healthcare systems. Contextualising these differences is crucial for accurate interpretation of the results.

Quantitative study designs are commonly utilised in job satisfaction research because they offer measurable, generalisable, and statistically reliable insight.[34] These designs help researchers gather extensive data from various groups of people, making it possible to spot patterns, trends, and connections between factors like salary, work environment, leadership style, and employee satisfaction.[35] The WCW-JSS is a popular tool for assessing job satisfaction, created to reflect employee's diverse feelings about their work.[36] Created by Peter Warr, John Cook, and Toby Wall, this scale evaluates satisfaction through various lenses, encompassing intrinsic elements like personal achievement and growth and extrinsic factors such as salary, work environment, and job stability.[37] The WCW-JSS usually employs a Likert scale format, allowing respondents to express their satisfaction with different aspects of their job. It helps create a well-rounded understanding of their workplace experience.

Job satisfaction among public health physicians is often moderate due to combining the four thematic areas of job characteristics and role clarity, organisational support and leadership, work environment and culture, and rewards and career development. Job characteristics and role clarity were identified as key factors influencing moderate job satisfaction among public health physicians, with high workloads, unclear roles, and administrative tasks consistently emerging as significant challenges. Streamlining administrative tasks and clearly defining roles are critical for alleviating stress and improving efficiency. For instance, Gustavsson et al.38 showed that reducing non-clinical duties improved satisfaction by fostering meaningful professional engagement. Integrating strategies to balance workload distribution and clarify job expectations can address a primary source of dissatisfaction across healthcare systems.[38]

The second factor is the work environment and culture in which work-life balance and inclusivity are critical to reducing stress and fostering job satisfaction. As Iglesias et al.[15] emphasised, resilient workplace environments can mitigate the impact of external stressors, including pandemic disruptions. Next, promoting an inclusive and supportive culture is essential for addressing these systemic challenges. Third, fair financial incentives and professional growth opportunities are crucial for retention and job satisfaction. Floch et al.[26] highlighted that 78% of healthcare professionals viewed fair remuneration as essential for job satisfaction, a finding consistent with this review. Career autonomy remains a key motivator, reinforcing the need for development pathways tailored to individual goals.16 Addressing financial inequities and establishing structured growth opportunities can improve workforce stability.[26]

Finally strong leadership and robust support systems were important in shaping morale and reducing burnout.[39,40] Findings align with Liu et al.[41], who demonstrated that integrated care models, supported by effective leadership, enhanced job satisfaction despite workload challenges. Strengthening leadership through targeted training and fostering collegial support can enhance organisational resilience, particularly during the pandemic.[15] Leadership alignment with organisational goals contributed to a sense of fulfilment and professional satisfaction among this high-satisfaction group.[28]

**Implication and Future Directions**

Most public health physicians exhibit modest satisfaction in their work, which may result in elevated turnover rates and reduced productivity, potentially leading to a decline in public health outcomes. Hence, healthcare organisations must prioritise administrative reforms, leadership development, and inclusive workplace policies to enhance job satisfaction. Addressing financial and professional inequities is crucial for retention.

Future research should investigate the long-term effects of these interventions and specifically examine underrepresented subgroups within the public health workforce such as subspecialty public health professionals like epidemiologists, and those working in rural or resource-constrained settings. These groups often face distinct challenges, including limited autonomy, unclear career progression, and mental health stressors, which are underexplored in current literature.

Among the included studies, Cedrone et al.[29] and Kumar et al.[8] specifically examined early-career public health residents and non-clinical public health professionals, respectively. Although no subgroup analysis was conducted, these studies highlighted unique satisfaction challenges such as limited autonomy, unclear career progression, and mental health stressors, suggesting the need for future research focusing on specific workforce subgroups.

This systematic review has notable strengths that enhance its credibility and relevance. First, the comprehensive search strategy included diverse studies across various healthcare settings, providing a broad understanding of job satisfaction determinants. The thematic analysis facilitated a detailed and nuanced synthesis of findings, capturing commonalities and unique insights. Additionally, the review spans pre-pandemic and pandemic contexts, offering valuable perspectives on how external crises influence job satisfaction.

However, several limitations are present. The dependence on cross-sectional studies limits the ability to link causal relationships between factors and job satisfaction. Furthermore, heterogeneity in sample sizes, study designs, and methodologies among included studies limits the generalizability of the findings. This review did not incorporate a meta-analysis due to the heterogeneity in study

designs, measurement tools, and outcome reporting, which restricted the feasibility of statistical aggregation. Finally, the absence of longitudinal data restricts insights into the long-term effects of interventions and job satisfaction trends over time. Despite these limitations, the consistency of themes across diverse studies strengthens the validity of the conclusions. These findings establish a strong foundation for future research to investigate targeted interventions and assess their long-term impact on improving job satisfaction among healthcare professionals.

## CONCLUSION

Job satisfaction among public health physicians is moderate, influenced by a combination of high and low satisfaction factors. These professionals face demanding environments requiring them to balance administrative responsibilities, staff issues, community satisfaction, and resource allocations. Enhancing job satisfaction is essential for improving workforce morale and achieving effective public health outcomes. Implementing targeted interventions to address these challenges can foster long-term workforce stability and organisational success.

## CONFLICT OF INTEREST

The authors confirm that they have no conflict of interest to declare.

## ACKNOWLEDGEMENTS

We like to thank the Department of Public Health Medicine, Faculty of Medicine, The National University of Malaysia and Ministry of Higher Education Malaysia for supporting this research.

## FUNDING

This research received funding via FRGS/1/1/2024/SS02/UKM/02/1.

## REFERENCES

1. Hoppock R. Job satisfaction. New York: John Wiley & Sons; 1935.
2. Aziri B. Job satisfaction: a literature review. Manag Res Pract 2011; 3(4): 77-86.
3. Daud F, Abd Ghani NF, Abu Zahid SN. Job satisfaction among specialist in Ministry of Health Malaysia and its associated factors. Malays J Public Health Med 2022; 22(3): 1-8.
4. Ayres CE. Albert O. Hirschman. Exit, voice, and loyalty: responses to decline in firms, organizations, and states. Ann Am Acad Pol Soc Sci 1971; 393(1): 170-1.
5. Kravitz RL. Physician job satisfaction as a public health issue. Isr J Health Policy Res 2012; 1(1): 5.
6. Elster AB. Physician roles in medicine-public health collaboration: future directions of the American Medical Association. Am J Prev Med 2002; 22(3): 211-3.
7. Hancock T. Why public health is the most challenging speciality of all. CMAJ 2017; 189(41): E1301.
8. Kumar R, Shaikh BT, Hafeez R, Hafeez A. Job satisfaction among public health professionals working in the public sector: a cross-sectional study from Pakistan. Hum Resour Health 2013; 11: 2.
9. Ribeiro RB, de Araújo TM, AAA. Factors associated with job satisfaction among public-sector physicians in Belo Horizonte, Brazil. Int J Health Serv 2014; 44(4): 787-804.
10. Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. Syst Rev 2021; 10(1): 89.
11. Munn Z, Stern C, Aromataris E, Lockwood C, Jordan Z. What kind of systematic review should I conduct? A proposed typology and guidance for systematic reviewers in the medical and health sciences. BMC Med Res Methodol 2018; 18(1): 5.
12. Hong Q, Fàbregues S, Bartlett G, Boardman F, Cargo M, Dagenais P, et al. The Mixed Methods Appraisal Tool (MMAT) version 2018 for information professionals and researchers. Educ Inf 2018; 34: 1–7.
13. Adamovich T, Murdoch S, Giovino L, Kulkarni S, Luchak M, et al. Barriers and facilitators to physical activity participation for child, adolescent, and young adult cancer survivors: a systematic review. J Cancer Surviv 2024; 18(2): 245-62.
14. Brewster R, Gonzalez P, Khazanchi R, et al. Performance of ChatGPT and Google Translate for pediatric discharge instruction translation. Pediatrics. 2024; 154
15. Jiao W, Wang W, Huang J, Wang X, Shi S, Tu Z. Is ChatGPT a good translator? A preliminary study. arXiv preprint arXiv:2302.12345. 2023
16. Makin PJ, Rout U, Cooper CL. Job satisfaction and occupational stress among general practitioners--a pilot study. J R Coll Gen Pract 1988; 38(312): 303–6.
17. Löffler C, Höck J, Hornung A, Kundt G, Drewelow E, Völker S, et al. What makes happy doctors? Job satisfaction of general practitioners in Mecklenburg-Western Pomerania - a representative cross-sectional study. Gesundheitswesen 2014; 77(12): 927-31.
18. Nylenna M, Aasland O. Jobbtilfredshet blant norske leger. Tidsskr Nor Legeforen 2010; 130(10): 1028-31.
19. Kumar R, Ahmed J, Shaikh BT, Hafeez R, Hafeez A. Job satisfaction among public health professionals working in the public sector: a cross-sectional study from Pakistan. Hum Resour Health 2013; 11(1): 2.
20. Vedsted P, Sokolowski I, Olesen F. Open access to general practice was associated with burnout among general practitioners. Int J Family Med 2013; 2013: 383602.
21. Sibbald B. The national survey of job satisfaction and retirement intentions among general practitioners in England. BMJ 2003; 326(7379): 22.
22. Peter S, Volkert AM, Radbruch L, Rolke R, Voltz R, Pfaff H, et al. Influence of palliative care qualifications on the job stress factors of general practitioners in palliative care: a survey study. Int J Environ Res Public Health 2022; 19(21): 14541.
23. Pereira Iglesias A, Cruz Piqueras M, Minué Alonso S. [Factors influencing the abandonment of family and community medicine practice in young family physicians: a qualitative study]. Rev Esp Salud Publica 2024; 98.
24. Nørøxe KB, Pedersen AF, Bro F, Vedsted P. Mental well-being and job satisfaction among general practitioners: a nationwide cross-sectional survey in Denmark. BMC Fam Pract 2018; 19(1): 130.
25. Götz K, Broge B, Willms S, Joos S, Szecsenyi J. Die arbeitszufriedenheit von allgemeinmedizinern. Med Klin 2010; 105(11): 767-71.
26. Le Floch B, Bastiaens H, Le Reste JY, Nabbe P, Le Floch P, Cam M, et al. Job satisfaction criteria to improve general practitioner recruitment: a Delphi consensus. Fam Pract 2024; 41(4): 554-63.
27. Huby G. Morale among general practitioners: a qualitative study exploring relations between partnership arrangements, personal style, and workload. BMJ 2002; 325(7356): 140.
28. Hall LH, Johnson J, Heyhoe J, Watt I, Anderson K, O'Connor DB. Strategies to improve general practitioner well-being: findings from a focus group study. Fam Pract 2018; 35(4): 511-6.
29. Cedrone F, Berselli N, Stacchini L, De Nicolò V, Caminiti M, Ancona A, et al. Depressive symptoms of public health medical residents during the COVID-19 pandemic: a nationwide survey. Int J Environ Res Public Health 2023; 20(9): 5620.

30. World Bank. World Bank country and lending groups. 2022 [cited 2024]. Available from: https://datahelpdesk.worldbank.org/knowledgebase/articles/906519.
31. Ihensekhien O. Abraham Maslow's hierarchy of needs and Frederick Herzberg's two-factor motivation theories: implications for organisational performance. Rom Econ J 2023; 26: 32-49.
32. Mazlan M. Challenges of talent retention: a review of literature. J Bus Manag Rev 2023; 4: 78-91.
33. Davidescu AA, Apostu SA, Paul A, Casuneanu I. Work flexibility, job satisfaction, and performance among Romanian employees—implications for sustainable human resource management. Sustainability 2020; 12(15): 6086.
34. Lim WM. What is quantitative research? An overview and guidelines. Australas Mark J 2024.
35. Munther M, Tahani R, Bsharat T, Dweikat K. Quantitative research methods: maximising benefits, addressing limitations, and advancing methodological frontiers. 2024; II: 11-4.
36. Heritage B, Roberts L. Confirmatory factor analysis of Warr, Cook and Wall's (1979) job satisfaction scale. Aust Psychol 2015; 50: 122-9.
37. El Mouaddib H, Mansouri A, Adarmouch L, Amine M. Job satisfaction of primary healthcare professionals (public sector): a cross-sectional study in Morocco. Heliyon 2023; 9(9): e20357.
38. Gustavsson K, van Diepen C, Fors A, Axelsson M, Bertilsson M, Hensing G. Professionals' job satisfaction experiences when providing person-centred care: a systematic review of qualitative studies. BMJ Open 2023; 13(6): e071178.
39. Mohd Fauzi MF, Johani FH, Ong AL, Rani N, Daud F. Relationship between leadership style with organizational commitment and intention to stay: Assessment via Sobel Analysis. Akademika 2019; 89(3): 45-55.
40. Ahmad N, Syed Nor SF, Daud F. Understanding myths in pregnancy and childbirth and the potential adverse consequences: a systematic review. Malays J Med Sci 2019; 26(4): 17-27.
41. Liu-M, Wang J, Lou J, et al. Impact of integrated care on job satisfaction. Hum Resour Health 2023; 21(1): 86