



## AI Powered Early Warning Systems for Healthcare Worker Burnout in New York City: Predictive Modeling of Absenteeism, Turnover, and Scheduling Burden

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### ABSTRACT--Background

New York City healthcare professionals are experiencing rising cases of burnout because of heavy workloads, shortages, irregular working schedules, and operational stress. These issues lead to absenteeism, turnover intention, and decreased workforce stability. Developments in artificial intelligence (AI)-based early warning systems have become new technologies that can anticipate burnout and enhance workforce management, with predictive analytics and real-time monitoring.

Objective-- The objective of the study was to measure the efficacy of AI-enabled early warning systems in forecasting the occurrence of burnout among healthcare workers by analyzing the scheduling load, burnout-related symptoms, absenteeism, turnover intention, perception of AI systems, and ethical issues in healthcare settings in New York City.

Methodology-- The study used a quantitative cross-sectional research design. The structured close-ended questionnaire based on a five-point Likert scale was used to collect data on 355 healthcare professionals (nurses, physicians, technicians, and administrative staff). Data gathered were entered in SPSS software and analyzed under descriptive statistics, such as frequencies, percentages, means, standard deviations, variance analysis and reliability test using Cronbach Alpha.

Results-- The findings revealed high levels of scheduling burden, burnout, absenteeism tendencies, and turnover intention among healthcare workers. Burnout Indicators recorded a high mean score ( $M = 4.01$ ), while AI System Perception achieved the highest mean value ( $M = 4.08$ ), indicating strong acceptance of AI-based predictive systems. Reliability analysis demonstrated excellent internal consistency across all constructs, with Cronbach's Alpha values ranging from 0.84 to 0.91. Respondents also expressed significant ethical concerns regarding privacy, fairness, and transparency in AI implementation.

Conclusion-- The paper concludes that AI-based early warning systems would be useful in mitigating the risk of burnout, enhancing workforce stability, and proactive management of healthcare workforce. Nonetheless, to implement it successfully, ethical leadership, transparency, data privacy, and human-centered AI practices are necessary to guarantee trust and responsible adoption in healthcare settings.

INDEX TERMS-- *Artificial Intelligence, Healthcare Worker Burnout, Predictive Analytics, Workforce Management, Absenteeism, Turnover Intention, Ethical AI, Scheduling Burden, Early Warning Systems, Healthcare Management*

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## INTRODUCTION

Healthcare systems in large metropolitan areas are increasingly under pressure due to the mounting demand among patients, staffing shortages, and ineffective operations. The workload of medical workers in such places as New York City is excessive because of the number of patients, the duration of work, and the irregular schedules [1]. These factors make occupational stress and burnout in healthcare professionals in the long term. Burnout is often referred to as a multidimensional concept, which is interrelated with the emotional exhaustion, depersonalization, and reduced personal accomplishment that may ultimately lead to compromising the staff well-being and the quality of patient care [2]. Over the past several years, healthcare organizations started to realize that the sustainability of the workforce is as vital as clinical outcomes, thus the interest in highly technical solutions that could be used to efficiently combat human resources issues proactively [3].

Artificial intelligence (AI) is a groundbreaking device of the healthcare system not only in its diagnostics and treatment planning, but in its operating work and optimization of its staffing [4]. There is also a future of AI-driven early warning systems that would help identify the trends of burnout before they lead to absenteeism, turnover or even worse clinical outcomes. The systems are based on predictive analytics and machine learning models and real-time workforce data to assess risk factors such as overload of shifts, shift-imbalance, fatigue patterns and attendance exceptions [5]. With the integration of various streams of data, AI systems can give actionable information to healthcare administrators, allowing early intervention strategies to enhance staff retention and organizational efficiency.

In the healthcare sector, urban areas, especially New York City, are especially prone to burnout due to structural and systemic factors. Risks of staffing shortages can lead to forced overtime, less rest between shifts, and workload imbalance. All these harbor negative effects on not only physical and mental health but also heighten the chances of healthcare professionals leaving their workplace through absenteeism and turnover intention [6]. Another problem aggravated by the high turnover rates is the issue of staffing; this creates the cycle such that this overworks the limited staff left behind [7]. In this case, traditional workforce management approaches are normally reactive rather than proactive where they react to problems once they have already impacted performance and service delivery.

AI-based predictive systems have been an evolution towards proactive workforce management in healthcare [8]. These systems are capable of detecting early warning signs of burnouts based on behavioral and operational cues such as scheduling load, occurrence of overtime and patterns of sick leaves. Moreover, AI can be used to aid in decision making, such as optimization of shifts and a fair distribution of workloads [9]. It does not only increase the effectiveness of operations but also leads to better satisfaction of employees and lower burnout rates [10]. However, with the potential benefits, serious concerns related to the use of AI in the field of workforce monitoring related to the confidentiality of information about employees, the ethical application of information, and the trust in the automated decision-making process also exist.



The paper is aimed at assessing the potential of AI-powered early warning systems to anticipate burnout among medical workers in New York City. It also takes into consideration such variables as the workload load of schedules, signs of burnout, absenteeism behavior and turnover intention and perception of the AI-based workforce monitoring systems. The research also examines the issues of ethics related to the implementation of AI in a healthcare setting. Through the dimensions, the research will help in advancing the knowledge on the integration of predictive technologies in the healthcare workforce management strategies.

Overall, the study falls at the intersection of healthcare management, artificial intelligence and organizational behavior. It makes us focus on the need to find new solutions that will allow healthcare professionals and retain the standards of patient care high. The findings are expected to be of immense value to the hospital administration, policymakers, and technological developers who might be interested in implementing intelligent systems that will guarantee workforce sustainability and eliminate burnouts.

## **PROBLEM STATEMENT**

Healthcare professionals in New York City are experiencing rising burnout rates due to overworking, irregular working hours, and shortage, leading to the rise in absenteeism and turnover. The existing workforce management systems are predominantly reactive and cannot identify the symptoms of burnout at an early stage. There are no predictive models that integrate data on scheduling, behavior predictors, and employee wellness measures. Although, the potential remedies to the problem of artificial intelligence exist in the shape of early warning systems, little empirical research has been conducted on the applicability of artificial intelligence in predicting burnout with regard to the stability of the workforce in healthcare settings. The present paper bridges this gap by examining AI-based predictive burnout prevention models.

## **LITERATURE REVIEW**

### ***A. HEALTHCARE WORKER BURNOUT AND ITS ORGANIZATIONAL IMPACT***

Burnout in healthcare is a worldwide problem, particularly in healthcare systems with high demand in urban areas [11]. It is commonly associated with emotional exhaustion, poor job satisfaction and reduced productivity. Burnout in a medical setting does not only affect personal well-being and health but the safety of patients, increases the rate of medical errors, and creates labor instability [12]. Some of the key factors include intense workload, long shifts and emotional demands of patient care [13]. Firms with endemic cases of burnout tend to have a poor efficiency and high operational costs due to high turnover and absenteeism.

### ***B. SCHEDULING BURDEN AND WORKFORCE STRAIN***

The complexity of scheduling contributes significantly to stress levels in healthcare workers. The unusual shifts, the necessity of working overtime and the lack of time between the duties contribute greatly to the physical and psychological pressure [14]. The shortage of staff also adds to workload imbalance, inducing employees to work under prolonged pressure. In the long run, this leads to chronic fatigue and lack of interest in work duties [15]. The workforce management research shows that ineffective scheduling systems are directly connected to high absenteeism rates and job loss in healthcare facilities.



### ***C. ABSENTEEISM AND TURNOVER INTENTIONS***

Stress and burnout in the workplace result in absenteeism as well as a symptom. Physical fatigue or mental stress is another factor that causes unforeseen leave to healthcare professionals [16]. In more critical instances, continued dissatisfaction results in turnover intention, where employees desire to leave their jobs, or move to other healthcare providers [17]. The high turnover rates cause instability in the staffing setups, pressure on the remaining staff and further burnout cycles [18]. An efficient workforce monitoring program is needed to identify the initial signs of behavioral indicators of absenteeism and turnover risk.

### ***D. ARTIFICIAL INTELLIGENCE IN HEALTHCARE WORKFORCE MANAGEMENT***

Artificial intelligence has become a topic of interest as an effective instrument in streamlining healthcare processes. Within the field of workforce management, AI is able to process big data to point out trends that relate to overall performance, attendance, and workload distribution of employees [19]. The predictive models can identify the risk of burnout using indicators such as overtime rates, density of shifts, and absentee tendencies. The AI-based systems can be used to optimize schedules, remove workload imbalance, and improve resource allocation efficiency as well [20]. These capabilities make AI a promising solution for addressing systemic workforce challenges.

### ***F. ETHICAL AND PRACTICAL CONSIDERATIONS OF AI ADOPTION***

The use of AI to monitor employees has an ethical issue, although it has benefits connected to it. The main focus of the discussion about the application of AI in healthcare settings are the privacy, data protection, and transparency concerns [21]. The workers may perceive AI surveillance systems as the performance surveillance systems [22]. Hence, to achieve successful implementation, it is imperative to have ethical guidelines and human oversight [23]. The effectiveness of AI-based systems depends on the acceptance and belief of the healthcare workers.

### **CONCEPTUAL RELEVANCE TO THE STUDY**

The Integration of AI-based early warning systems into the healthcare workforce management is a shift towards predictive and preventive approaches. These systems will detect a risk of burnout at an initial stage through the combination of operational data and behavioral indicators. This research is based on the fact that scheduling burden, burnout levels, absenteeism and turnover intention are interrelated variables, which can be effectively studied with predictive modeling methods. The implementation of AI systems can be used to increase employee stability and positively impact the outcomes of healthcare service delivery.

### **RESEARCH QUESTIONS**

- What is the level of scheduling burden experienced by healthcare workers in New York City?
- To what extent do healthcare workers experience burnout symptoms in their workplace?
- How prevalent are absenteeism behaviors among healthcare professionals?
- What is the level of turnover intention among healthcare workers?
- How do healthcare workers perceive the effectiveness of AI-powered early warning systems in reducing burnout?
- What ethical concerns do healthcare workers have regarding AI-based workforce monitoring systems?



- Is there a relationship between scheduling burden, burnout, absenteeism, and turnover intention?
- Can AI-based predictive systems effectively support early identification of burnout risks in healthcare environments?

## **METHODOLOGY**

### **A. RESEARCH DESIGN**

The research design adopted in this study was a quantitative design to examine the relationship of AI-powered early warning systems in predicting healthcare worker burnout in New York City. Quantitative approach was deemed suitable as it allowed systematizing the gathering of numerical data and statistical analysis of the data in terms of scheduling burden, indicators of burnout, absenteeism behavior, turnover intention, perception of AI systems, and ethical issues. The researchers have used cross-sectional survey design to investigate the perceptions and experiences of healthcare professionals at a single time.

### **B. RESEARCH POPULATION AND SAMPLE**

The target population was the healthcare practitioners in New York City hospitals and clinics and the healthcare institutions. The respondents included nurses, physicians, technicians, administrative staff and other healthcare professionals that are directly involved in patient care and workforce processes. The sample size of 355 respondents was determined based on the convenience sampling method since healthcare workers were readily available and accessible to the study area. The sample was sufficient with regards to sample coverage on different professional groups and experience in the healthcare industry.

### **C. DATA COLLECTION INSTRUMENT**

The data collection was conducted, with the help of structured, close-ended questionnaire, which was developed according to the study goals and literature on healthcare burnout and AI-based workforce management systems. The questionnaire was categorized into a number of sections, which included demographic, scheduling burden, burnout signs, absenteeism behavior, turnover intention, perception of AI system, and ethical issues. The use of a five-point Likert was adopted in which strongly disagree and strongly agree was used to gauge the responses. The instrument was designed in a manner that could be easily understood, pertinent, and consistent in measuring the variables of the study.

### **D. RELIABILITY AND VALIDITY**

Cronbach Alpha analysis was done to determine the reliability of the questionnaire. All constructs with Cronbach Alpha between 0.84 and 0.91 are good with Cronbach Alpha above the acceptable limit of 0.70. These results affirmed that the research tool was valid and could be used to analyze the data statistically. Content validity was upheld through ensuring that the questions in the questionnaire were highly linked to the study objectives, research questions as well as the literature.

### **E. DATA COLLECTION PROCEDURE**

Online and physical distribution of questionnaires to healthcare professionals in New York City was used as the data collection method. The participants were explained the purpose of the study, and they were asked to participate voluntarily. The research was carried out in a confidential and anonymous manner to promote ethical conduct and truthful reactions of the participants.



### G. DATA ANALYSIS TECHNIQUES

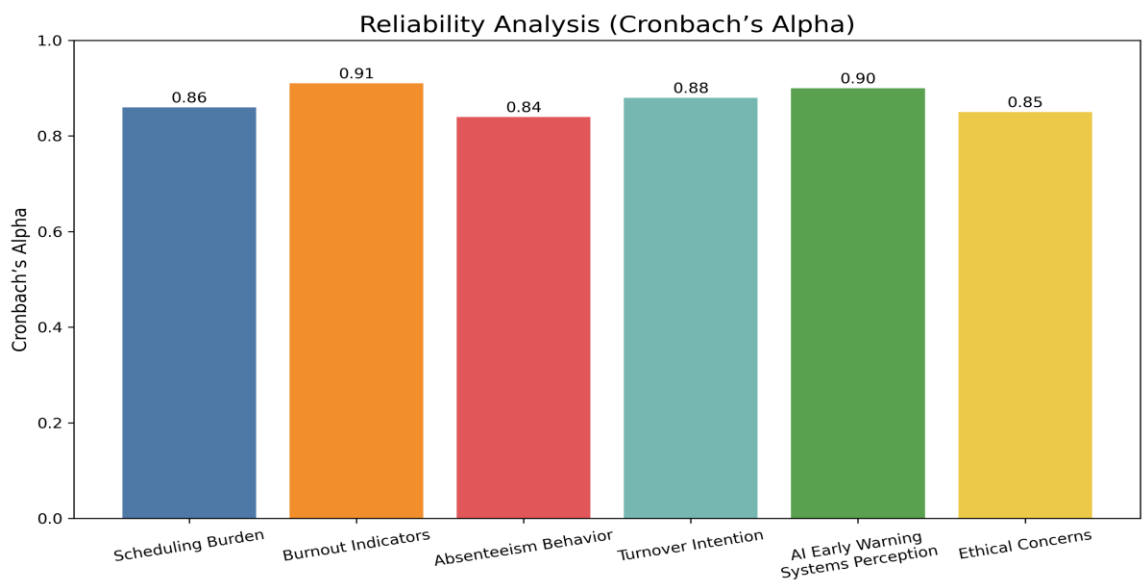
Statistical Package for the Social Sciences (SPSS) was used to analyze the collected data. Frequencies, percentages, mean, standard deviations and the analysis of variance were employed to provide a summary of respondent demographics and the variables being studied using descriptive statistical methods. Cronbach Alpha was also done to determine the consistency of the measurement scales. The data analyzed were shown in the form of tables, charts and graphs to improve the interpretation and comprehension of the results.

### H. ETHICAL CONSIDERATIONS

The research was carried out under the ethical principles. The participants were informed of the study objectives and the right to withdraw at any stage of the study without penalty. The personalities and organizational information of the respondents were confidential to maintain privacy of the respondents. Moreover, the paper identified ethical concerns of AI-based workforce surveillance systems particularly in the field of privacy, fairness, transparency, and responsible usage of employee data within a healthcare context.

## RESULTS

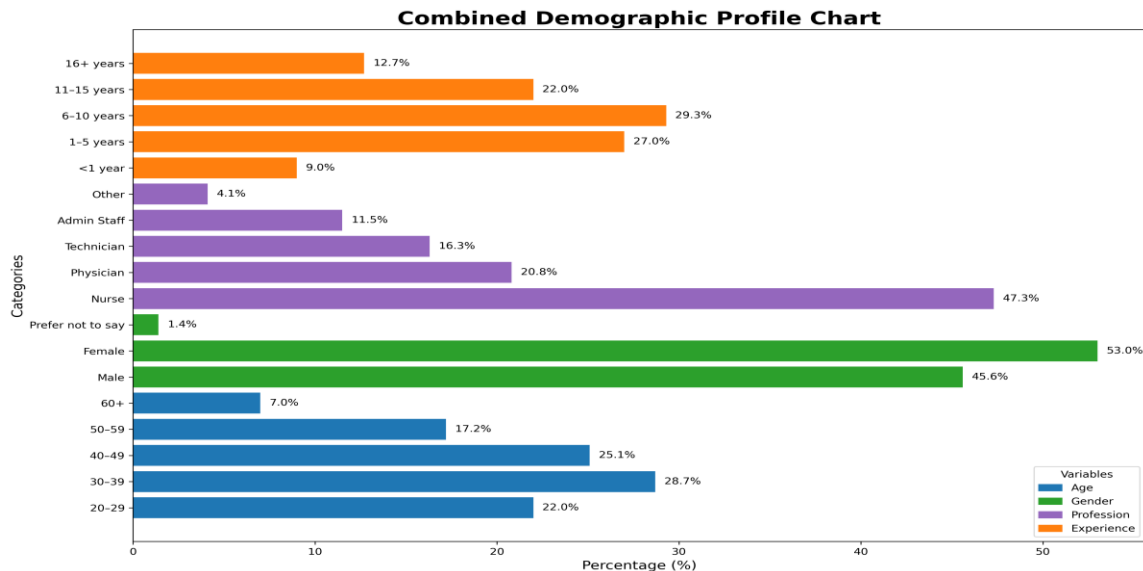
Results section is a significant part of a research study that includes the results of data analysis in a clear, objective and organized manner. It is a summary of the results of statistical tests, descriptive analyses, tables, charts and any other pertinent evidence that is not subject to personal interpretation and bias. The Results section is to provide factual information in response to research questions or objectives of the study. It assists the reader to comprehend the trends, correlation and key results based on the data obtained.



**Fig 1: Reliability Analysis**



The reliability analysis reveals that the internal consistency of all the study constructs is high since all the Cronbach Alpha values are greater than the acceptable threshold of 0.70. Burnout Indicators ( $\alpha = 0.91$ ) and AI Early Warning Systems Perception ( $\alpha = 0.90$ ) demonstrated high reliability meaning that the responses were very consistent across the participants. Very good levels of reliability were also reflected in Turnover Intention ( $\alpha = 0.88$ ), Scheduling Burden ( $\alpha = 0.86$ ) and Ethical Concerns ( $\alpha = 0.85$ ). Absenteeism Behavior ( $\alpha = 0.84$ ) also had a good reliability. In general, the results suggest that the measurement tool is sound, consistent, and can be used to conduct additional statistical analysis and interpretation.

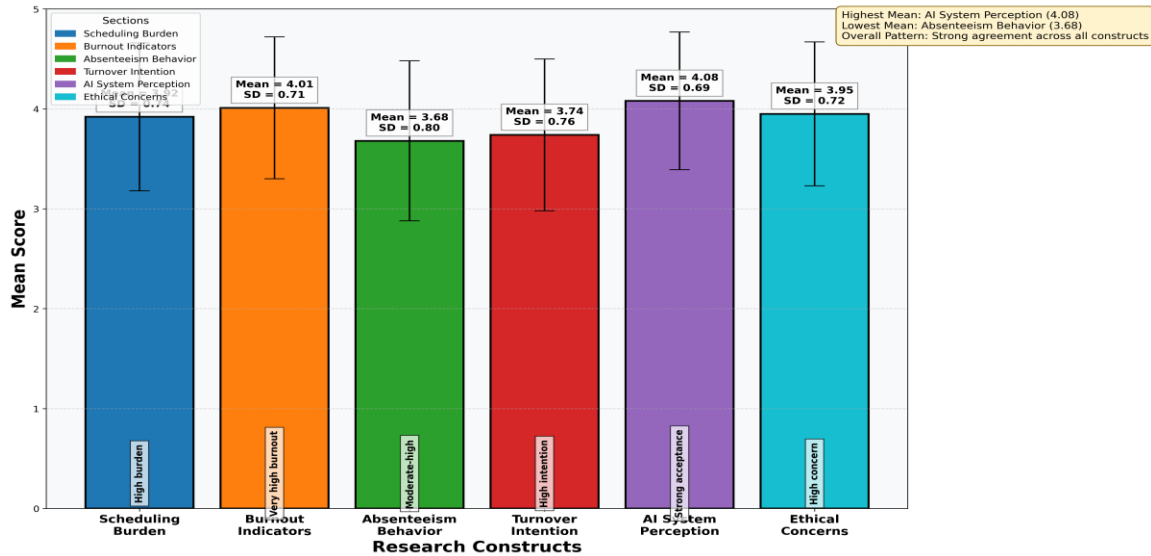


**Fig 2: Demographic Profile of the Respondents**

Demographic analysis shows that the highest percentage of the respondents was formed by the age group of 30-39 (28.7%), then 40-49 (25.1%), which suggests high attendance of the mid-career health workers. Most respondents were females (53.0%), whereas males were 45.6% of the sample. Regarding career, nurses constituted the most significant occupation (47.3%), then physicians (20.8%), and technicians (16.3%), which is a representation of the majority of frontline health workers in the study. In terms of professional experience, the majority of the respondents had 6-10 years of experience (29.3%), then 1-5 years (27%), which means that the sample sizes were mostly composed of experienced healthcare workers with extensive experience of working in the field and using AI-based monitoring systems.



## Descriptive Statistics



**Fig 3:** Descriptive Statistics

Descriptive statistics indicate that respondents were subjected to significant workplace and psychological issues related to scheduling and management of workforce. The mean score of Burnout Indicators was high ( $M = 4.01$ ,  $SD = 0.71$ ), which means that the levels of burnout among healthcare professionals are very high. The largest mean ( $M = 4.08$ ,  $SD = 0.69$ ) was recorded in AI System Perception, which allowed suggesting high rates of acceptance and positive attitudes to AI-based early warning systems. Burden ( $M = 3.92$ ,  $SD = 0.74$ ) and Ethical Concerns ( $M = 3.95$ ,  $SD = 0.72$ ) were also scored high, indicating that the participants were conscious of both operational pressures and ethical issues of AI integration. Turnover Intention had a rather high mean ( $M = 3.74$ ,  $SD = 0.76$ ), which means that there were strong intentions to view job departure, and Absenteeism Behavior ( $M = 3.68$ ,  $SD = 0.80$ ) indicated moderate-to-high levels of absenteeism. In general, the results indicate high workplace stress and a robust belief in AI-based monitoring and predictive management systems.

| Item                       | Mean | SD   | Variance |
|----------------------------|------|------|----------|
| Unpredictable Schedule     | 4.01 | 0.79 | 0.62     |
| Overtime work              | 4.12 | 0.74 | 0.55     |
| Shift Rotation Imbalance   | 3.88 | 0.81 | 0.66     |
| Staffing Shortage Workload | 3.95 | 0.76 | 0.58     |
| Recovery Difficulty        | 3.65 | 0.82 | 0.67     |

**Table 1:** Scheduling Burden

The results of Scheduling Burden show that there was a high rate of workload and stress associated with scheduling in healthcare professionals. The most significant burden among the respondents was reported to be the overtime work ( $M = 4.12$ ,  $SD = 0.74$ ) which implied that overtime work was the most significant burden. The workload on unpredictable schedules ( $M = 4.01$ ,  $SD = 0.79$ ) and staffing shortage ( $M = 3.95$ ,  $SD = 0.76$ ) were also high.



= 3.95, SD = 0.76) was also highly agreeable, indicating the instability of operations and workforce deficiency in healthcare facilities. The lack of satisfaction with the fairness and consistency of the schedules was also expressed in shift rotation imbalance ( $M = 3.88$ ,  $SD = 0.81$ ). The least amount of concern was shown by recovery difficulty ( $M = 3.65$ ,  $SD = 0.82$ ), but still proved to show moderate-to-high concern about lack of rest and recovery time. Overall, the low-to-moderate variance values suggest relatively consistent responses across participants.

| Burnout Dimension    | Mean | SD   | Variance |
|----------------------|------|------|----------|
| Emotional Exhaustion | 4.15 | 0.70 | 0.49     |
| Physical Drain       | 4.05 | 0.73 | 0.53     |
| Low Motivation       | 3.98 | 0.75 | 0.56     |
| Work Stress          | 4.20 | 0.68 | 0.46     |
| Job Detachment       | 3.68 | 0.80 | 0.64     |

**Table 2:** Burnout Indicators

Burnout Indicators indicate that there is a relatively large degree of psychological and physical burnout among healthcare workers. Stress at work registered the peak mean score ( $M = 4.20$ ,  $SD = 0.68$ ) meaning that work-related stress was the most notable factor that respondents experienced in burnout. The levels of emotional exhaustion ( $M = 4.15$ ,  $SD = 0.70$ ) and physical drain ( $M = 4.05$ ,  $SD = 0.73$ ) were also very high, indicating that there is a lot of mental and physical exhaustion among the workforce. The low level of motivation ( $M = 3.98$ ,  $SD = 0.75$ ) demonstrated that a significant number of participants had low levels of enthusiasm and engagement with their job duties. There was the lowest mean score of job detachment ( $M = 3.68$ ,  $SD = 0.80$ ), but the moderate-to-high tendency towards being emotionally detached at workplace still could be observed. On the whole, the variance values are relatively low, indicating that there are consistent perceptions of burnout among respondents.

| Absenteeism Indicator        | Mean | SD   | Variance |
|------------------------------|------|------|----------|
| Unplanned Leave              | 3.70 | 0.78 | 0.61     |
| Need for Time Off            | 3.85 | 0.74 | 0.55     |
| Fatigue Affecting Attendance | 3.92 | 0.71 | 0.50     |
| Sick Leave Due to Exhaustion | 3.55 | 0.83 | 0.69     |
| Colleague Absenteeism        | 3.70 | 0.77 | 0.59     |

**Table 3:** Absenteeism

The absenteeism analysis shows that the workload pressure and fatigue were important factors that affected the attendance behavior of healthcare professionals. The highest mean score was fatigue in terms of its effect on attendance ( $M = 3.92$ ,  $SD = 0.71$ ) implying that physical and mental fatigue significantly influenced the capacity of employees to attend school regularly. Time off ( $M = 3.85$ ,  $SD = 0.74$ ) also showed a high level of agreement, with more respondents showing more need to rest and rejuvenate. Colleague absenteeism ( $M = 3.70$ ,  $SD = 0.77$ ) and unplanned leave ( $M = 3.70$ ,  $SD = 0.78$ ) showed the moderate-to-high trends of absenteeism in the healthcare environment. Exhaustion-based sick leave



registered the least mean score ( $M = 3.55$ ,  $SD = 0.83$ ), but even there, it showed a significant impact of health issues caused by burnout on attendance. In general, the values of variance indicate that there were rather steady and consistent responses among the participants.

| Turnover Intention Indicator | Mean | SD   | Variance |
|------------------------------|------|------|----------|
| Thinking About Leaving       | 3.88 | 0.76 | 0.58     |
| Considering Job Change       | 3.80 | 0.79 | 0.62     |
| Better Opportunity Intention | 3.95 | 0.72 | 0.52     |
| Workplace Dissatisfaction    | 3.72 | 0.80 | 0.64     |
| Stay Intention (Reverse)     | 3.36 | 0.88 | 0.77     |

**Table 4:** Turnover Intention

The Turnover Intention findings indicate that there is a significant propensity among health care experts to think of quitting their jobs. Better opportunity intention had the largest mean score ( $M = 3.95$ ,  $SD = 0.72$ ) which showed that most of the respondents were motivated to pursue better career opportunities elsewhere. The high turnover related concerns were also reflected in thinking about leaving ( $M = 3.88$ ,  $SD = 0.76$ ) and in thinking about job change ( $M = 3.80$ ,  $SD = 0.79$ ) and indicated dissatisfaction with the working conditions. Employee dissatisfaction at the workplace ( $M = 3.72$ ,  $SD = 0.80$ ) also indicated organizational and environmental issues that affected employee retention. Stay intention (reversed coded) was the lowest in the mean score ( $M = 3.36$ ,  $SD = 0.88$ ), which means that the commitment to stay in the organization was relatively weak. In general, the results indicate that the risk of workforce turnover in the healthcare sector is high, and the answers of the participants are rather consistent.

| Indicator                    | Mean | SD   | Variance |
|------------------------------|------|------|----------|
| Burnout Detection Capability | 4.22 | 0.66 | 0.44     |
| Scheduling Improvement       | 4.10 | 0.70 | 0.49     |
| Workload Balancing           | 4.05 | 0.72 | 0.52     |
| Trust in AI                  | 3.90 | 0.78 | 0.61     |
| Reduction in Turnover        | 4.12 | 0.69 | 0.48     |
| Willingness to Use AI        | 4.20 | 0.65 | 0.42     |

**Table 5:** AI System Perception

The AI System Perception outcome shows that there is a very positive attitude towards the application of AI-based workforce management systems among healthcare workers. The capability of burnout detection registered the highest average score ( $M = 4.22$ ,  $SD = 0.66$ ) which means that they strongly believe that AI systems can detect employee burnout effectively. The intention to use AI ( $M = 4.20$ ,  $SD = 0.65$ ) and the reduction in turnover ( $M = 4.12$ ,  $SD = 0.69$ ) were also the factors that demonstrated a great acceptance of AI technologies to increase the workforce stability and retention. Scheduling improvement ( $M = 4.10$ ,  $SD = 0.70$ ) and workload balancing ( $M = 4.05$ ,  $SD = 0.72$ ) also presupposed the fact that respondents believed that AI could be used to enhance operational efficiency and fair distribution of responsibilities. The mean score was lowest in Trust ( $M = 3.90$ ,  $SD = 0.78$ ), but it still revealed the overall



positive level of trust towards AI applications. Overall, the low scores on variance mean that the participants share common perceptions regarding the effectiveness and usefulness of AI systems.

| Indicator                          | Mean | SD   | Variance |
|------------------------------------|------|------|----------|
| Privacy Concern                    | 4.05 | 0.71 | 0.50     |
| Fairness Concern                   | 3.88 | 0.79 | 0.62     |
| Need for Ethics Rules              | 4.25 | 0.64 | 0.41     |
| Acceptance with Privacy Protection | 4.10 | 0.70 | 0.49     |
| AI Should Support Humans           | 4.30 | 0.63 | 0.40     |

**Table 6:** Ethical Concerns

The findings of Ethical Concerns entail that the importance of ethical governance in the implementation of AI was highly underscored by healthcare professionals. The largest mean score was achieved by AI ( $M = 4.30$ ,  $SD = 0.63$ ) with a high degree of consensus that AI systems are anticipated to be very useful supports and not replacements of human decision-making. The ethics rules ( $M = 4.25$ ,  $SD = 0.64$ ), were also deemed as a point of concern incredibly, which means that the field of AI-based workforce management should have clear ethics rules and a regulatory framework. Privacy concern ( $M = 4.05$ ,  $SD = 0.71$ ) and acceptance with privacy ( $M = 4.10$ ,  $SD = 0.70$ ) were adopted to show that the participants are ready to use AI systems provided that the data privacy and confidentiality are ensured. Fairness concern had the lowest mean score ( $M = 3.88$ ,  $SD = 0.79$ ), however, it also displayed that individuals were extremely concerned with the fairness of AI-driven decisions and practices. Altogether, the low values of variance indicate that there are similar perceptions among the respondents on ethical considerations of AI technologies.

## DISCUSSION

The findings of the current study demonstrate that nurses in New York City experience a considerable portion of schedule burden, burnout, absenteeism, turnover intention, which supports the previous research that has defined healthcare settings as the highly stressful and operationally demanding workplaces [1], [13]. Overtime work, emotional exhaustion and work stress have a high mean score suggesting that excessive workload and irregular schedules continue to be significant factors leading to the exhaustion of employees and their psychological stress. These results are consistent with the work of Alotaibi et al. [14], who highlighted that long working hours and the lack of rest greatly influence the well-being of healthcare workers and organizational stability. On the same note, Sun et al. [15] found that professional dissatisfaction and lower workforce engagement in healthcare workers are highly correlated with fatigue and occupational stress.

The research also found that there were moderate-to-high absenteeism and turnover intention levels among respondents that further indicate that long-term burnout conditions adversely affect the retention of workforce. These findings are in line with those of Johnson et al. [16], which suggested that stress and exhaustion at the workplace are a direct cause of absenteeism and decreased employee commitment. The intention to search greater employment opportunities is also high and indicates issues raised by Yikilmaz et al. [17], who discovered that emotional exhaustion frequently makes employees think about quitting challenging organizational settings in healthcare.

One of the significant contributions of the research is the positive attitude to the use of AI-powered early warning systems. The respondents thought that AI technologies could be used successfully to identify



the risk of burnout, enhance scheduling habits, and decrease turnover. These results align with previous research highlighting the increased importance of predictive analytics and AI-based workforce optimization in healthcare management [2], [6]. The findings also support the claim of Wilton et al. [3] that AI-monitors are able to offer proactive solutions to preventing burnout and workforce sustainability.

In spite of such positive perceptions, ethical issues associated with the privacy, fairness and governance still were important. The respondents were categorical that AI systems would assist but not substitute the human decision making. This finding is in line with the earlier research that revealed the importance of ethical control, transparency and trust in AI application within healthcare organizations [21], [22]. In general, the research shows that AI-powered predictive systems can be useful to mitigate burnout and enhance the management of healthcare workforce when used in an ethical and responsible manner.

## CONCLUSION AND RECOMMENDATIONS

The research finds that healthcare professionals in New York City are experiencing high levels of schedules load, burnout, absenteeism, and turnover intentions, primarily caused by workloads, nursing shortage, irregular work schedules, and lack of rest. The findings show that the issues associated with burnout do not only affect the well-being of the workers, but also put the stability of the workforce and the quality of healthcare services at risk. Meanwhile, participants expressed a high level of acceptance towards AI-powered early warning systems, as they saw potential in enhancing the scheduling culture, identifying burnout risks, workload balancing, and decreasing turnover among employees. The results indicate that predictive AI technologies could be effective forms of proactive management of the workforce to identify warning signs in time before it turns into a major problem in an organization. However, other important ethical concerns regarding employee privacy, fairness, transparency, and responsible use of workforce information were also revealed through the research. Many of the participants emphasized that AI systems should be employed as the aiding tools that can facilitate a healthcare professional but not to replace the human judgment and decision-making process.

On the basis of these results, the study suggests that healthcare organizations should adopt AI-powered predictive systems to enhance workforce sustainability and employee well-being. The hospital leaders should incorporate intelligent scheduling and burnout monitoring software that can assist in monitoring the patterns of high risks associated with fatigue, absenteeism, and turnover intentions. To alleviate workplace stress, organizations should also establish policies that allow employees to work balanced and rest enough, and in favorable working conditions. In addition, they must have ethical governance mechanisms that will foster transparency, fairness, privacy of information, and sound utilization of AI in the healthcare setting. This will demand training programs to increase the level of knowledge and confidence that medical staff will have towards AI technologies to increase their willingness and cooperation. Research and technological development by healthcare leaders and policymakers should also be directed towards developing AI systems that are human-centered to enhance the effectiveness of operations and the dignity, autonomy, and psychological well-being of employees.

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