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**Name of Journal:** *World Journal of Methodology*

**Manuscript NO:** 99162

**Manuscript Type:** EDITORIAL

**Innovative Forecasting Models for Nurse Demand in Modern Healthcare Systems**

**Point by point response to the reviewer.**

Thank you for the reviewing our manuscript. Please see the below mentioned response of each comment.

The authors present several novel methodologies for predicting nursing demand. However, this paper is deficient in specificity. Therefore, it is imperative to provide more comprehensive elucidations.

1 Title: Is the most important and compelling information included in the title?

Response: Yes.

2 Authors: Are the first author(s) and the corresponding author(s) leaders or active in the field?

Response- Yes.

3 Institution: Is the corresponding author's institution an important or recognized research institution or laboratory in the field?

Response- Yes.

4 Abstract: Does the content highlight the importance of the manuscript's topic to the field, the purpose of the research, the uniqueness of the method, and the novelty, significance, and impact of the results?

Response- Yes.

5 Key Words: Do the keywords express the characteristic elements and fully reflect the central content of the manuscript?

Response- Yes.



6 Introduction: Does the Introduction describe the consensus and theory on the topic, explain any current unknown issues or questions about the topic, propose critical issues that need to be addressed, and state the purpose of the study?

Response-Yes.

7 Materials and Methods/Experimental Procedure: Is the novelty of the new method, new technique, or algorithm described in detail?

Response- The document does not describe the novelty of any new method, technique, or algorithm in detail. It primarily focuses on discussing existing forecasting models rather than introducing a new one.

8 Is each step of the experiment described in detail so that readers can repeat the experiment?

Response-Not applicable. We did not use any experiment in our paper.

Do the authors state that an ethics committee has approved the experiment?

Response- No

Is statistical probability analysis clearly stated?

Response- Not applicable

8 Results: Are the results presented new and understandable to readers?

Response- Yes

Can the results be reproduced and are they directly related to the methods described?

Response- Yes

Did the authors discover a new method that improves on an existing one?

Response- No

Are the pictures and illustrations in the manuscript sufficiently self-explanatory?

Response- Not applicable.



Does the manuscript display the data correctly?

Response-Yes

Is the manuscript easy to interpret and understand?

Response- Yes

Are the statistics and interpretation of the data appropriate and consistent throughout the manuscript?

Response- Yes

Are the figures and tables numbered in order of appearance in the manuscript?

Response-.Not Applicable

Are the tables three-line\* ones? \*Three-line tables include table numbers, table titles, table heads, table bodies, and table footnotes. Do pictures\* of the same theme use a single theme, and are the annotations for each picture stated separately? \*Pictures and line drawings generally consist of pictures/drawings, picture/drawing numbers, picture/drawing titles, and picture/drawing notes.

Response- Not applicable.

The literature review presents numerous models for forecasting nursing demand, but does not elaborate on the specific outcomes produced by these models. Please explain the particular advantages conferred on the healthcare system in previous studies, focusing on personnel and economic aspects. Could the authors provide particular instances of simulation-based strategies?

Response-No

9 Discussion: Does the Discussion adequately explain the results?

Response- Yes

Compared with other studies, what problems should have been solved in the study?



Response: Thank you for the comment. In this study we discussed the modern healthcare systems, inefficiency of traditional methods, adaptability to dynamic scenarios, impact of policy and technological changes, preparedness for emergencies and crises, regional and demographic variability, and integration of diverse data sources with other studies.

Are the results of the study compared with those of previous studies?

Response: Thank you for the comment. The results of the study are not explicitly compared with those of previous studies. While the study does reference prior research and methodologies—such as time-series analysis, machine learning models, simulation-based approaches, and agent-based modeling—it primarily highlights the advantages of using these advanced techniques over traditional methods. However, there is no direct comparison or detailed analysis of the study's findings against the results of previous studies. Instead, the focus is on presenting the potential of the proposed forecasting methodologies to address gaps and limitations in existing research.

Are discoveries, methods, and techniques as well as the implications of the findings discussed?

Response: Thank you for the comment. The study identifies the challenges of traditional nurse demand forecasting methods and highlights the potential of advanced techniques like machine learning, time-series analysis, and simulation-based models to address these challenges. The study elaborates on advanced forecasting techniques: Time-series analysis, Machine learning models for managing large datasets and uncovering hidden trends, Simulation-based models for scenario testing and proactive workforce adjustments. Additional methods, such as regression analysis and agent-based modeling, are also discussed to cater to specific workforce planning needs.

Are the limitations of the study acknowledged and discussed?



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Response: Thank you for the highlighted the point. The limitations of the study are not explicitly acknowledged or discussed in the provided document. While the study extensively discusses the advantages and potential of advanced forecasting methodologies like machine learning, time-series analysis, and simulation-based models, it does not directly address the constraints or challenges associated with above mentioned methods.

In the event of a significant surge in demand for nursing care during a pandemic like COVID-19, can this need be addressed only through the rearranging of nurses? Will it be essential to employ additional nurses?

Response: Thank you for the comment. Addressing a significant surge in demand for nursing care during a pandemic like COVID-19 cannot be achieved solely through the rearranging of nurses. The study emphasizes the importance of employing advanced forecasting models to anticipate staffing needs effectively, particularly during crises, such as pandemics or seasonal illness spikes.

Given the authors' unique example of COVID-19, the authors ought to clarify their approach as well. Is this paper's approach to improving the workforce possible, and why? Please provide a comprehensive explanation.

Response: Thank you for the comment. The paper's approach to improving the nursing workforce, particularly during a pandemic like COVID-19, is both feasible and effective based on the methodologies discussed. The study advocates for integrating advanced forecasting techniques, including time-series analysis, machine learning, and simulation-based models, to predict and proactively prepare for surges in nurse demand. These models allow healthcare administrators to analyze trends, anticipate staffing needs, and test various scenarios, providing dynamic adaptability to unexpected challenges. Simulation-based models, in particular, enable real-time adjustments by considering



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factors such as patient acuity, turnover rates, and unexpected demand surges. Machine learning further enhances precision by handling large and complex datasets, accounting for demographic changes, policy shifts, and seasonal illnesses. The approach is highly feasible as healthcare systems increasingly adopt digital tools and data-driven practices, ensuring scalability across regions. Additionally, it is cost-effective, reducing financial inefficiencies through optimized staffing. The methodologies, such as dynamic simulation and machine learning, have already demonstrated success in real-world applications, proving their practicality for healthcare workforce planning. However, potential challenges, including data quality, implementation costs, and resistance to adopting new technologies, must be addressed for full realization. Overall, the approach offers a robust framework for dynamic and adaptable workforce planning, enhancing preparedness and efficiency in managing surges like those experienced during COVID-19.

10 Conclusion: Is the comprehensive manuscript writing, from the Title to the Conclusion, logical and coherent?

Response- Yes.

Is the hypothesis of the study valid? Do the results of the study support the conclusion?

Response- Yes

Is the most significant finding of the study expressed clearly?

Response- Yes

Are the methods of the study adequately expressed so that they could be repeated?

Response- Yes

Are the implications of the study for the future expressed?

Response- Yes



11 Acknowledgments: Acknowledgments should be expressed to institutions or individuals who have contributed to, supported, or helped with the study. The name of any commercial company is not allowed to be present in this section. No specific comments.

Response- Yes.

12 References: Are the references of the manuscript consistent with the subject of the manuscript? Does the manuscript include references to important relevant articles published within the last 3-10 years?

Response- Yes

Are important references missing from the manuscript's reference list?

Response- No.

Do the authors cite their own published articles that are irrelevant to the subject of the manuscript? Are references sequentially cited in the text?

Response- No

Are references sequentially cited in the text?

Response- Yes

13 Abbreviations: Are abbreviations used correctly in the manuscript? Standard abbreviations should be defined in the Abstract, Core Tip, and main body of the manuscript upon first mention in the text. Certain commonly used abbreviations, such as DNA, RNA, HIV, LD50, PCR, HBV, ECG, WBC, RBC, CT, ESR, CSF, IgG, ELISA, PBS, ATP, EDTA, and mAb, do not need to be defined and can be used directly. No specific comments.

Response- Yes



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14 Language: Are there a large number of spelling errors, grammatical errors, tense errors, singular and plural errors, punctuation errors, or terminology errors in the manuscript?

Response- No.