Jurnal Pendidikan Administrasi Perkantoran (JPAP)
Journal homepage: https://journal.unesa.ac.id/index.php/jpap

Jurnal Pendidikan Administrasi Perkantoran (JPAP)
Volume 12, Nomor 3, 2024
E-ISSN: 23389621

APPLICATION OF THE WORKLOAD INDICATORS OF STAFFING NEED METHOD IN ACHIEVING HOSPITAL SERVICE QUALITY IN DEVELOPING COUNTRIES: SYSTEMATIC LITERATURE REVIEW

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ARTICLE INFO

Keywords:
WISN, health workforce, hospital service quality

Article History:
Received 10 November 2024
Accepted 22 December, 2024
Available online 05 January, 2025

https://doi.org.10.26740/jpap.v12n3.p391-405

ABSTRACT

Phenomenon/Issue: This research is not only related to WISN to measure the level of workload but how the results of this WISN methodology can be used as an evaluation of the achievement of hospital service quality, especially in this study are hospitals in developing countries.
Purpose: This study aims to find out how the application of the WISN method in developing country hospitals in achieving hospital service quality.
Novelty: This research only focuses on the results of existing research in developing countries so it cannot be generalized.
Research Methods: This study uses the SLR method to collect articles related to the implementation of WISN in developing countries published between 2019 and 2024.
Results: The application of the WISN method in hospitals in developing countries is very effective in determining the shortage of labor that results in an increased workload, so that performance is not optimal. Management is needed that can organize or allocate labor according to workload analysis. In addition, to optimize the workforce, it is necessary to carry out training to improve the competence of the workforce, because the quality of the workforce affects the achievement of the quality of hospital services.
Research Contributions: With this study, it can be used by hospitals as a consideration in evaluating their health workforce in terms of number and competence.

INTRODUCTION

The WISN (*Workload Indicators of Staffing Need Method*) method can be used in strategic employment planning, one of which is in the health service sector. WISN serves as a tool for policymakers for health services, including prioritizing recruitment, optimizing the utilization of existing workforce, reallocating personnel according to current workloads, and establishing normative guidelines that are useful to improve the quality of services provided (Stankovic & Santric Milicevic, 2022). This method has the usefulness of considering the actual workload of personnel, thereby facilitating the optimal allocation of resources aimed at improving the quality of health service delivery. The application of health workforce planning using the WISN approach allows organizations to assess the number of health workers needed based on their workload by applying specific time standards for various activities.

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E-ISSN: 23389621

Through workload demand analysis, the WISN method assists management in health services in determining staffing needs, thereby ensuring the availability of the appropriate number of skilled professionals at the required time and location (Sasyari, Falah, & Nurlina, 2022). By using this method in allocating labor in the health service sector, it can improve health service achievement and optimize human resource management in a decentralized health service system (Kunjumen, Okech, Diallo, et al., 2022). Using the WISN methodology, the critical role of management in planning and organizing to efficiently achieve organizational goals becomes clear (Mohamed & Al-Lawati, 2022). The achievement of organizational goals shows that an organization can achieve good quality.

In this study, we will discuss the quality of services in hospitals. Achieving quality service quality in hospitals is essential to increase patient satisfaction and loyalty. Some of the strategies to achieve the quality of hospital services are to create a positive work climate, a well-managed workload of the health workforce, and monitoring the service quality process to improve the performance of customer-facing employees who collectively improve the quality of health services and patient satisfaction (Ahmed, Abd Manaf, & Islam, 2017; Hastuti & Aini, 2024). It can be concluded that the performance of the health workforce is an important thing to pay attention to or study in order to maintain and improve the quality of health services. If the performance of the health workforce is good, it will ensure the quality of health services to patients. Although in achieving the quality of hospital services, there are various challenges, which must involve understanding patient needs, compliance with national standards, and the use of effective data analysis. Various studies highlight the importance of integrating patient feedback, following quality indicators, and leveraging data to improve service delivery. This study focuses on all these indicators, namely quality achievement by utilizing the results of work allocation calculations using the WSN method.

In this study, we review and analyze various recent studies on the topic of the use of WISN, especially related to improving the quality of services in hospitals. This research is expected to help especially researchers in the field of health or others and the community to know the overview of research in the field of health worker planning using WISN. With the data analysis technique *of the Sytematic Literarure Review* (SLR) in this study, it will also limit the application of WISN in developing countries. The implementation of WISN in developing countries was chosen because there is still a shortage of health workers, there are issues related to "importing" health workers and preferring to work in developed countries, as revealed by Oikelome, Broward, & Hongwu (2022) that health workers from developing countries who immigrate to developed countries are one of them because of the desire to work in a better health care sector. In addition, in developing countries, graduates of the health workforce where the unemployment rate is still high due to limited resources and guidance, so they lack skills and motivation (Butt et al., 2024).

From the above background, this study aims to determine the implementation of WISN for health workers in hospitals in developing countries and the challenges faced related to work needs in the health service sector. Furthermore, the WISN method is used to achieve service quality in hospitals and the benefits of using the WISN method in allocating labor based on workload. The results of this study are expected to be used for further research studies in the use of the WISN method for health workers, especially its application in developing countries whose goal is to be able to improve the quality of hospital services.

LITERATURE REVIEW

Workload Indicators of Staffing Need Method (WISN)

Based on WHO (2023) The *Workload Indicators of Staffing Need Method* (WISN) is a human resource management tool used to determine how many health workers of a certain type are needed to overcome the workload of a particular health facility, and assess the workload pressure of health workers in the facility. The characteristics of the WISN method are that it is easy to operate, uses data that has been collected and available, is easy to use and can be applied to the field of staffing at all levels of health services, is technically acceptable to health care managers, can be understood by medical and non-medical management, and is realistic in providing practical targets for budgeting and resource allocation. The WISN can help estimate staffing requirements for the healthcare services provided by a team. The WISN can also identify the services that are intended to be provided by a person in another job, e.g. the WISN can help in estimating staff needs for different categories in a particular health service

(e.g. HIV-related services) provided by a team. Identifying shared tasks and acuity levels in the WISN analysis will optimize efforts to improve staff and can measure opportunities for staff to share, in order to improve resource allocation.

Steps to implement WISN:

1. Determine priority health workers and types of health facilities
2. Estimate available work time
3. Define workload components
4. Define activity standards
5. Assign standard workloads
6. Calculating other supporting factors
7. Determine staff needs based on WISN
8. Analyze and interpret WISN results

Achievement of Hospital Service Quality

Achieving hospital service quality is a strategy and framework that aims to improve health services. The integration of the principles of quality management, patient feedback, and systematic evaluation plays a crucial role in achieving high standards of care. The main quality achievement is patient-centered, that is, patients can easily get health services at the hospital. In addition, the hospital needs to have a good quality management system by improving a sustainable work system. The orientation towards improving patient services and good quality management also needs to be balanced with the opinions of other stakeholders, such as the Government and health-related agencies. This opinion is then used as a policy consideration that will be used in a hospital to improve the quality of services and responsibilities as public servants.

METHOD

This study uses the *Systematic Literature Review* (SLR) method which is a structured approach to review existing literature to answer specific research questions. SLR is a form of research that deals with existing publications and follows a systematic methodology for synthesizing data that has already been published (Kraus, Breier, & Dasí-Rodríguez, 2020). The SLR process includes defining the research question, conducting a systematic search, applying inclusion/exclusion criteria, data extraction, data analysis and interpretation (Lame, 2019). This process involves a comprehensive search, selection, and analysis of relevant studies, following established guidelines such as PRISMA (*Preferred Reporting Items for Systematic Review and Meta-Analysis*). The steps include "identification", "screening" and "included". Next is risk assessment related to article bias and conducting data analysis with analysis methods assisted by *data processing* software.

RESULTS AND DISCUSSIONS

Result

PRISMA Guidelines

1. Identification

The identification stage includes the determination of search terms, search criteria, databases and data extraction methods. In this study, *Mendeley* software is used in processing or selecting results from the first library source. Search for articles or journals with *Emerald Insight* (https://emeraldinsight.com/) library sources;*Science Direct* (https://www.sciencedirect.com/); *ProQuest* (https://search.proquest.com/); *Sage journals* (https://journals.sagepub.com/); *Taylor & Francis* (https://tandonline.com/); DOAJ (https://doaj.org/); *Cambridge journals* (https://www.cambridge.org/); Spinger (https://link.springer.com/); *Wiley online library* (https://onlinelibrary.wiley.com/); *Pubmed* (https://pubmed.ncbi.nlm.nih.gov/); *Oxford academic* (https://academic.oup.com/). The eleven contributors are combined with the reason to know the trend and all kinds of articles are accepted to know the development of the WISN method in developing countries. The keywords included in each journal are WISN AND "*workload analysis*" AND "*staffing need*" AND "*service efficiency*".

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2. Filtering

In this step, screening, retrieval, and assessment of the feasibility of each article are carried out. Articles that do not comply will be eliminated while articles that are suitable will be analyzed according to Table 1.

Table 1. Article Screening Criteria

Inclusion Criteria	Research results in the field of health or management relevant to the allocation of labor / WISN Research results in the field of health or management that are relevant to the achievement of service quality Location of article research in developing countries Year of publication of articles/journals in 2019 - 2024
Exclusion Criteria	Conceptual articles or reviews/reviews

These criteria are selected according to the topic of discussion, namely regarding WISN and the achievement of service quality in an organization, especially in this study in hospitals. The next criterion is that the research location in the developing country is the latest in this article, and the last one is the last 5 years of publication, because it can be said that it uses an *article that is up to date*. Article editing is assisted by Covidence software (www.covidence.org), which is *software* to manage and simplify systematic reviews.

1. Included

After the article screening is carried out, the next step is to conduct a feasibility assessment manually. This assessment entails a methodological quality assessment by establishing a minimum acceptable level (Priyashantha, De Alwis, & Welmilla, 2024). Articles that meet the inclusion criteria may be accepted, while articles that do not meet the inclusion or exemption criteria are excluded. The results of data processing were from 138 articles that contained research keywords, only 31 were in accordance with the inclusion criteria. In the first screening, as many as 43 articles were duplicated, so that the final result of the processed articles was 95 articles. There are 19 article titles that are not included in the SLR research topic. The second screening of 45 articles was not included, the results did not explain the quality achievement, the research location was not in a hospital and not a hospital in a developing country. The following is the process *of reviewing* and submitting articles according to the topic of discussion (Figure 1):

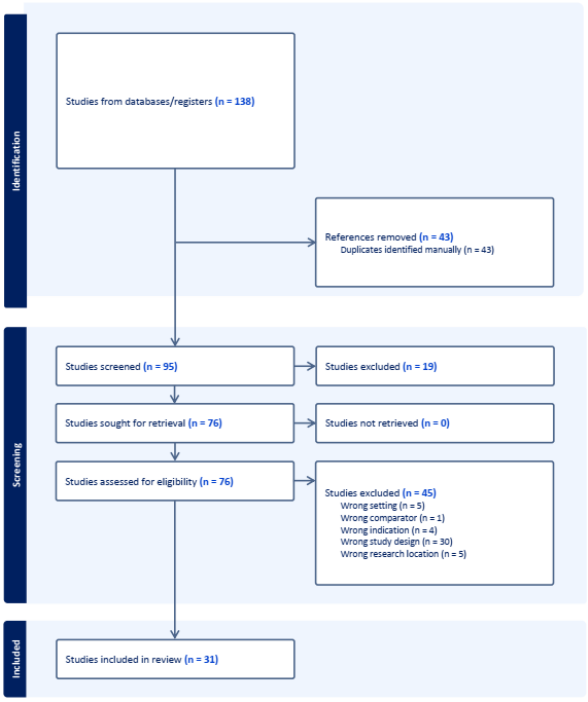

Figure 1. PRISMA article filtering (*Covidence* output)

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Article Bias Risk Assessment

Selection bias can be avoided by following review protocols, systematic and objective article selection procedures, and conducting independent and parallel assessment of article quality by two or more researchers (Priyashantha, Dahanayake, & Maduwanthi, 2023). In this SLR article to assess the bias of the article assisted by *Covidence* software. This process is carried out when extracting the selected articles in accordance with the criteria and topics of the research. Assessed on the *Quality Assessment feature*. This feature assesses the methods used (suitability and detail), completeness of data results (reductions and exclusions are included in the report), and whether there are other interventions that affect the report. *Quality Assessment* is rated high, medium, and low. Thirty-one (31) articles that were filtered after being manually identified had a high *Quality Assessment* according to Table 1.

Table 1. Quality Assessment of the journals included in the SLR

Journal	Journal Rankings (SJR)	Sum
Disaster Medicine and Public Health Preparedness	Q2	1
BMC Health Services Research	Q1	1
BMC pregnancy and childbirth	Q1	1
Educational Journal of History and Humanities	-	1
Global Public Health	Q1	1
Health Care Management Science	Q1	1
Health Services Insights	Q1	1
Healthcare	-	2
Human Resources for Health	Q1	10
International Emergency Nursing	Q1	1
International Journal of Environmental Research and Public Health	Q2	2
International Journal of Healthcare Management	Q2	1
IOP Conference Series: Materials Science and Engineering	-	1
Journal of family medicine and primary care	-	1
Journal of Health Management	Q2	1
Journal of Health Organization and Management	Q2	1
Leadership in Health Services	Q3	1
Nursing Open	Q1	1
The Bottom Line	-	1
PLoS ONE	Q1	1
Total		**31**

The following are the details of the journals included in this SLR:

Table 2. Filtered article details

No.	Heading	Research objectives	Results	Research location
1	A Delphi consensus study to determine the workload components and activity standards of dietitians in South Africa central and tertiary public hospitals (Naicker, Naidoo, Muchiri, & Legodi, 2024)	Determine the workload component for dietitians in South Africa and set activity standards for dietitians in public hospitals.	The standard workload component may improve dietitian job descriptions and the findings of this study may guide future staffing assessments for dietitians.	Afrika Selatan
2	A strategic action plan to enhance the accessibility of healthcare in rural areas of Zimbabwe (Mangundu, Roets, & Janse van Rensburg, 2023)	Identify strategies to improve healthcare accessibility in rural Zimbabwe, develop an action plan strategies for improving health care, and investigating challenges and opportunities in health care accessibility.	Accessibility challenges include long travel distances to healthcare facilities. The lack of transportation exacerbates the problem of healthcare accessibility. Active stakeholder participation is essential in developing an action plan. Financial resources are needed	Zimbabwe

			for medicines, medicine, and infrastructure.	
3	Adopting workload-based staffing norms at public sector health facilities in Bangladesh: evidence from two districts (Nuruzzaman et al., 2022)	Assess existing staffing norms in health facilities, adopt better staffing norms for efficient utilization of the workforce, and to encourage a review of staffing policies.	High workload pressure exists in public sector health facilities. Seven out of 20 staff categories face a very high workload. Staffing norms do not meet the actual requirements of health facilities. Staff reallocation can address workload imbalances. A long-term revision of personnel norms is needed.	Bangladesh
4	An assessment of existing surge capacity of tertiary healthcare system of Khyber Pakhtunkhwa Province of Pakistan using workload indicators for staffing need method (Haroon & Thaver, 2022)	Evaluate the current staffing situation in tertiary care hospitals and to analyze workload indicators for staffing needs	Shortage of nursing staff is the main reason for the low capacity surge.	Pakistan
5	An Overview of Human Resource (HR) Needs Based on WISN Theory at The Central Sterile Supply Department (CSSD) of PKU Muhammadiyah Gamping Hospital (Muzayyanah, Hidayat, Muzayyanah, & Hidayat, 2024)	Evaluate the needs of human resources in CSSD using the WSN method. And measure the energy required versus available for workload handling.	There is a shortage of sterilization personnel in CSSD, so there is a delay in sterilization that can interfere with health services. Additional personnel will improve the quality and efficiency of the service.	Indonesia
6	Applying the workload indicators of staffing needs method in nursing health workforce planning: evidences from four hospitals in Vietnam (Nguyen, Phung, & Bui, 2022)	Implement the WISN for nursing workforce planning to analyze nurse workload and calculate staffing needs and provide evidence for policymakers on personnel norms.	The WISN tool effectively contributes to the workforce planning process. The results of this study encourage the use of WISN tools in other health facilities.	Vietnam
7	Assessing the impact of COVID-19 management on the workload of human resources working in India National Tuberculosis Elimination Program (Mergenthaler et al., 2024)	To assess staff needs for TB and COVID-19 requirements.	COVID-19 has significantly increased the workload of TB program staff. The average time spent on COVID-19 tasks is 4 hours each day. The WISN analysis shows staff shortages in TB control cadres.	India
8	Assessment of Staffing Needs for Frontline Health Workers in Selected	Assess the current workload in maternal and child health services using the WSIS methodology, in addition to	The shortage of health workers is in Ivory Coast and Niger. Burkina Faso has adequate health services or	Afrika Sub-Sahara

	Maternal and Child Health Services in 3 Countries of Sub-Saharan West Africa: Cote dIvoire, Burkina Faso, and Niger (Kpebo et al., 2022)	evaluating the distribution of health workers across different facilities and identifying geographical differences in health care staff.	overstaffed. Rural areas are more understaffed than urban areas. Regular WISN studies are necessary for better staff distribution.	
9	Assessment of staffing needs for registered nurses and licensed practical nurses at primary care units in Brazil using Workload Indicators of Staffing Need (WISN) method (Bonfim, Mafra, Palacio, & Rewa, 2022)	Assess staffing needs for registered nurses in PHC services	Staffing needs assessments reveal a consistent professional deficit at PCUs. Workload pressure impacts access and continuity of care at PHC.	Brazil
10	Challenges of midwifery staff at Tehran hospitals: A qualitative study from the midwifery managers perspective (Mahsa, Shahla, Mosadeghrad, Elham, & Mirmolaei, 2023)	Investigating the challenges faced by midwifery staff working in hospitals from the perspective of midwifery managers	Midwifery staff face significant training challenges in hospitals. Recruitment, development, and maintenance are the main challenge themes. Inequality of payments is a reported challenge. The professional line between midwife and obstetrician is blurred.	Iran
11	Determining staffing standards for primary care services using workload indicators of staffing needs in the Philippines (Ma et al., 2022)	Determine staffing standards for primary care services and analyze workforce pressures in different types of health facilities to optimize the health workers available in the Philippine Health System.	Some facilities are facing staff shortages and high workload pressures. Healthcare workers spend significant time on support activities. Healthcare facilities do not offer standard service packages.	Filipina
12	Enhancing Nursing Excellence: Exploring the Relationship between Nurse Deployment and Performance (Ariga, Aurelia, Ampun, Hutabarat, & Panjaitan, 2024)	Explore nurse placement and performance relationships, identify factors that affect nurse performance, and recommend optimal placement models for healthcare institutions.	There is a significant relationship between qualifications, experience, and performance. The work environment and team dynamics correlate with the performance of nurses. Policies or regulations show a low correlation with nurse performance. Effective placement improves the quality of care and patient safety.	Indonesia
13	Estimating staffing requirements using workload indicators of staffing need at Braun District Hospital in Morobe Province, Papua New Guinea (Dimiri et al., 2022)	Assess human resources for health requirements at the level of care.	Staff shortages exist among clinical and non-clinical staff. The results are mixed from the number of personnel and shortages in all cadres. Public health workers are multitasking due to staffing shortages.	Papua Nugini
14	Estimating the number of required nurses in different	Assess the labor stock in hospitals and evaluate	All hospitals are facing a shortage of nursing staff. Public teaching hospitals have	Pakistan

	types of hospitals: An application of the workload indicators of staffing needs (WISNS) method (Najafpour, Nasiri, Nozarian, Keliddar, & Shayanfard, 2023)	workload activities and standards.	the highest shortcomings. Specialty hospitals exhibit high workload pressure. Private hospitals have the lowest shortage of care. Nurses work overtime to make up for the shortage.	
15	Factors influencing turn over intention among health care employees during the COVID-19 pandemic in the private hospitals of Bahrain (Alawi, P. Sankar, Ali Akbar, & Natarajan, 2023)	To identify the relationship between polychronicity and turnover intention and explore the impact of occupational autonomy on turnover intention.	The perceived workload significantly affects the intention to change. High work demands increase turnover intentions.	Bahrain
16	Health service activity standards and standard workloads for primary healthcare in Ghana: A cross-sectional survey of health professionals (Asamani, Christmals, & Reitsma, 2021)	Estimate service standards for healthcare professionals, determine standard workloads across types of healthcare facilities, and explore the relationship between service standards and equipment availability.	Significant differences in activities between health centers and hospitals were identified. Increased workload reduces the time spent on patient care.	Ghana
17	Human Resources for Health in India: Strategic Options for Transforming Health Systems Towards Improving Health Service Delivery and Public Health (Zodpey, Negandhi, & Tiwari, 2021)	Reassess national policy levers for HRH management and develop a roadmap for health delivery priorities.	Halve the distribution gap between urban-rural health workers. Evaluate HRH support through the National Health Mission. In prioritizing the provision of health services, a list of names of health professionals is needed.	India
18	Implementation of the Workload Indicators of Staffing Need (WISN) Method in Determining Staff Requirements in Public Health Laboratories in Serbia (Tripković et al., 2022)	Identify the need for health workers in public health laboratories. Assess labor stock and workload activity. Evaluate activity standards and workload pressures.	Moderate to high workload pressures are observed among laboratory workers. Workload stress can be reduced with additional activity automation. Staffing policies should take into account workload and activity standards.	Serbia
19	Is the Workload Indicators of Staffing Needs (WISN) method rigorous enough to tell us how many nurses we need in a general hospital? (Niaraees Zavare, Akbari, Zahmatkesh, Alizadeh Bazgir, & Shaarbafchizadeh, 2023)	Determine the needs of nursing staff at Isfahan hospital, assess the gap between theoretical and actual staffing data, and consider other factors in Nursing care decision-making.	The WISN method shows a surplus of nursing staff. No work stress was reported on nurses. However, this WISN Method fails to take into account the complexity of the task. Low bed occupancy raises concerns about overstaffing.	Iran

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20	Lessons Learnt during the Implementation of WISN for Comprehensive Primary Health Care in India, South Africa and Peru (Mabunda et al., 2021)	Illustrates lessons learned from the implementation of WISN in India and South Africa and presents new health workforce planning methods developed by Peru	The implementation of WISN faces challenges in India and South Africa. Peru developed a contextual specific health workforce planning tool.	India Afrika Selatan Peru
21	Multi-country case studies on planning RMNCH services using WISN methodology: Bangladesh, Ghana, Kenya, Sultanate of Oman and Papua New Guinea (Kunjumen, Okech, Deki, et al., 2022)	To review workforce planning on RMNCH services in five countries and explore workload components and activity standards for health services.	Evidence-based workforce planning is essential for RMNCH services. The country shows variability in workload components and activity standards. Activity standards cannot be universally applied in different countries.	Bangladesh Ghana Kenya Oman Papua Nugini
22	Transformational leadership practices of nurse managers: the effects on the organizational commitment and job satisfaction of staff nurses (Uslu Sahan & Terzioglu, 2022)	Assessing the impact of transformational leadership on job satisfaction	Transformational Leadership improves the quality of nursing practice and patient care. There is a positive correlation between TL practices and job satisfaction.	Turki
23	Nurse-to-patient ratio and nurse staffing norms for hospitals in India: A critical analysis of national benchmarks (Sharma & Rani, 2020)	To conduct workload analysis related to accurate estimation of nurse-to-patient ratios.	Workload analysis is essential for accurate estimation of nurse-patient ratios.	India
24	Staffing the unit with nurses: the role of nurse managers (Ansah Ofei, Paarima, Barnes, & Kwashie, 2021)	Exploring nurse manager staffing practices at the unit level and to identify factors influencing staff schedules for effective care.	Inadequate staffing has an impact on patient safety and quality of care. Nurses expressed frustration over insufficient staff.	Ghana
25	Technical efficiency and its influencing factors in Malaysian hospital pharmacy services (Hamzah et al., 2019)	Measure the technical efficiency of hospital pharmacy services in Malaysia and investigate the factors that affect the level of efficiency in hospital pharmacies.	The findings inform policymakers to improve pharmaceutical services.	Malaysia
26	The cost of health workforce gaps and inequitable distribution in the Ghana Health Service: an analysis towards evidence-based health workforce planning and management	Measure the distribution of the health workforce, estimate the cost implications of the staffing gap, and shape health workforce policy and management strategies.	Ghana needs 105,440 health workers to meet staffing requirements. The current staffing cost is GHC1,424,331,400, indicating a deficit of 57%. The health workforce gap has an impact on health outcomes and service delivery.	Ghana

	(Asamani, Ismaila, et al., 2021)			
27	The influence of quality and respectful care on the uptake of skilled birth attendance in Tanzania (Hulsbergen & van der Kwaak, 2020)	Exploring quality care and kindness/respect in maternal health care. Offer recommendations to improve skilled birth attendance rates and evaluate health workers' personal attitudes towards care with kindness/respect.	Disrespectful care is linked to healthcare provider attitudes and lack of resources.	Tanzania
28	The Road to Developing Standard Time for Efficient Nursing Care: A Time and Motion Analysis (Al-Moteri et al., 2023)	Calculate standard time for nursing activity categories, determine adjustment times during nursing work, and identify factors that improve nursing care efficiency	Inefficiencies in nursing work are highlighted for improvement. Recommendations include using health information technology systems.	Saudi Arabia
29	Workload Analysis and Improvement of the Nurses Duty in the Hospital (Soewardi & Kusuma, 2019)	Analyze the mental workload of nurses and develop recommendations to reduce mental workload.	The highest workload indicators are effort, mental demands, and physical demands. Nurses experience excessive mental workload with a score of 62.46. Job redesign, technical controls, and work shift systems are required.	Indonesia
30	Workload assessment of medical doctors at primary health care centers in the Duhok governorate (Al-Dabbagh, Sulaiman, & Abdulkarim, 2022)	Estimate the number of doctors needed for primary health care centers and assess the workload of doctors at the Duhok governor's health center.	Shortages of doctors are identified in primary health care centers. The distribution of personnel is unfair throughout health centers.	Irak
31	Workload Indicators of Staffing Need as a tool to determine nurse staffing for a high volume academic Emergency Department: An observational study (Wundavalli, Kumar, & Dutta, 2019)	Determine nursing staff requirements for high-volume EDs and suggest steps for optimal scheduling of nursing staff.	The WISN tool effectively measures nursing workload and staffing needs. Staffing requirements may require periodic revision due to increased patient volume	India

Based on the results of the analysis using *Covidence* software , it is known that there are thirty-one (31) articles included. Then when the distribution was carried out based on the year of publication of the article, it was known that in 2022 there were a lot of articles related to the use of WISN for health workers which were associated with the achievement of hospital service quality (11 articles). This can be seen in Table 3 with the following details:

Table 3. Spread of Included Articles by Year

Year of Article	Sum
2019	3
2020	2
2021	5
2022	11
2023	6
2024	4
Total	**31**

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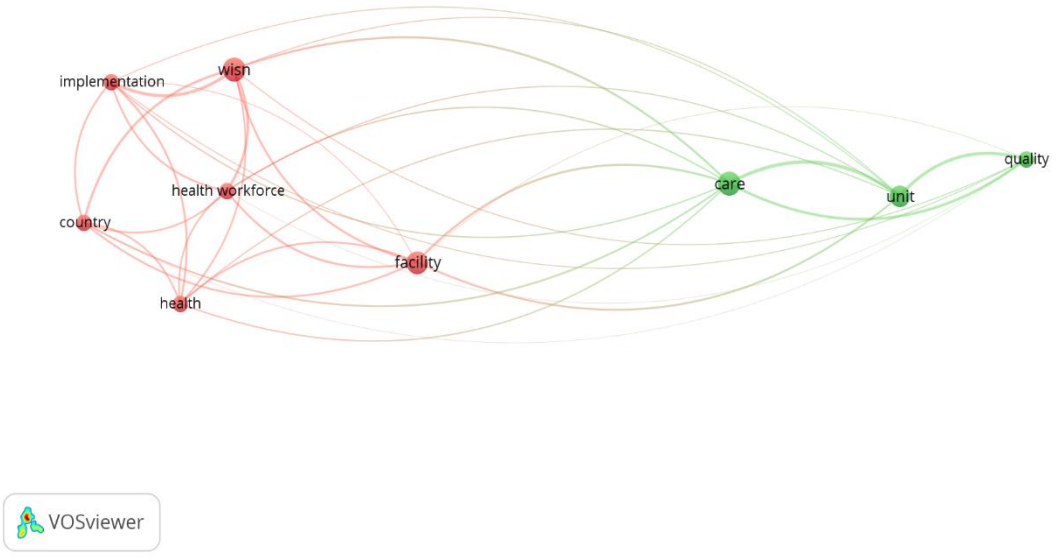
Based on the location of the research related to the 31 articles included, it is known that all countries are included in developing countries consisting of Bangladesh, Brazil, Ghana, India, Indonesia, Iraq, Kenya, Malaysia, Oman, Pakistan, Papua New Guinea, Philippines, Saudi Arabia, Serbia, South Africa, Sub-Saharan West Africa, Tanzania, Vietnam, and Zimbabwe.

Analysis methods

As in the research by Priyashantha, Dahanayake, & Maduwanthi (2023) and Priyashantha et al. (2024) the analysis method used in this study is bibliometric analysis. VOSviewer is used to obtain the results of the analysis. Bibliometric analysis is a scientific technique to examine scientific activities in a research. The two types of analysis include (1) scientific evaluation, performance, and productivity analysis, and (2) scientific maps. The map, which is commonly called a bibliometric network, is built on different information from an article. There are three *VOSviewer* outputs, namely Network Visualization, Overlay Visualization, *and* Density Visualization. The output of VOSviewer that will be used in this study is the *output of Network Visualization* (Figure 2). The output results show quite good results, characterized by not many *clusters* appearing so that it can be said that the discussion is not too broad. From the image, it can be seen that the WISN is related to each *output* that appears on the VOSviewer. WISN is closely related to its implementation in handling allocations and workloads, health *workforce*, facilities, health and also the implementation of WISN in a country. WISN is also related to care, service units, and quality, but it can be seen from the *VOSviewer* output graph that these three factors are not closely linked. From the graph, it can also be seen that the quality of service is closely tied to services and service units, followed by facilities, health workers, and the state. The results of this bibilometric analysis can also be seen that research on WISN in developing countries still discusses its implementation in dealing with allocations and workloads, health workers, facilities, health and also the implementation of WISN in a country. As for the relationship with services, service units, and service quality can be explored again because in the figure there are three factors that are not close to other factors, which means that they have not been studied too much in developing countries.



Picture 2. *Output Network Visualization* VOSviewer

Discussion

Implementation of WISN in Developing Countries

The implementation of the Staffing Needs Workload Indicator (WISN) in developing countries has been met with various challenges and results. A common challenge felt by developing countries related to the results of the WISN method is the lack of manpower. In the country of Iran which is included in the developing countries, based on the research of Najafpour, Nasiri, Nozarian, Keliddar, & Shayanfard (2023) General Hospitals have the highest rate of nursing shortages. No Hospital has enough nursing staff for the current workload (Haroon & Thaver, 2022). With the application of WISN known in the

E-ISSN: 23389621

research of Soewardi & Kusuma (2019), nurses experienced excessive mental workload with a score of 62.46 out of 100. A plan is needed as suggested by the research by Al-Dabbagh, Sulaiman, & Abdulkarim (2022), namely a restructuring plan for the supply of health workers is urgently needed. In addition, based on research by Nuruzzaman et al. (2022) conducted in Bangladesh, it is stated that a review of national personnel norms is very important to reduce the shortage of health workers, because based on research by Sharma & Rani, (2020) conducted in India with a culture almost the same as Bangladesh, it is stated that one norm alone cannot estimate nursing needs fairly.

In addition to the lack of health workers, the implementation of WISN helps to know that in developing countries there is still a lack of skills in health services and there is still substantial inequality in the number of health professionals that must be eliminated (Zodpey et al., 2021). One of the proofs is in a study by Hulsbergen & van der Kwaak (2020) that a lack of resources reduces the quality and accessibility of maternal care. Based on research by Asamani, Christmals, & Reitsma (2021) information systems and human resource management need to be developed for monitoring. In line with the study, based on research by Zodpey, Negandhi, & Tiwari (2021) greater training of health professionals is needed. Quality nursing education is essential for competent nurses (Namaganda, Whitright, & Maniple, 2022).

WISN Method for Hospital Quality Achievement

From the results of SLR, it can be seen that WISN is a method for allocating a service. By implementing WISN, health workers can be clearly allocated according to the workload. The placement of staff in accordance with the workload will improve services so that the work results of the health workforce will be more optimal. It can be concluded that the WISN method can effectively help human resource management in hospitals in placing and allocating the workload of each employee properly. This is reinforced by research (Ariga et al., 2024) and (Ansah Ofei, Paarima, Barnes, & Kwashie, 2021) that nurse placement significantly affects clinical performance and quality of care, because with proper placement it increases job satisfaction and nursing performance, so effective nurse placement increases confidence and skills. This will have a significant impact on the results of services to patients, because of the competence of qualified nurses. However, it needs to be emphasized that the work environment also has a positive effect on supporting better nurse performance results.

In existing studies, it can be known that for the achievement of hospital service quality, the influencing factor is the placement of health workers while the ability and knowledge of health workers can be carried out in follow-up or periodically as long as the determination of the workload and the number of workers is adjusted to the actual situation. The hope is that the quality of hospital services will not only be achieved, but continue to improve. Cooperation with external parties is also needed to regulate the workload of health workers, this is stated by Mabunda et al. (2021) in their research that the Government must be able to and maintain their health workers effectively. Dialogue between the Hospital and interested parties is also very necessary in achieving the quality of Hospital services. Based on research by Mangundu, Roets, & Janse van Rensburg (2023) all stakeholders actively participate in the planning process, in addition to infrastructure assessments are very important to implement action plans. No less important are financial resources in relation to the provision of health services. Human resource management is also crucial for healthcare accessibility, as retaining skilled healthcare workers improves access to healthcare services.

CONCLUSION

WISN as a method of allocating labor burden is actually very effective in finding out how the workforce feels burdened or needs additional labor for its division. In developing countries themselves, in achieving the quality of hospital services, it is known that the main factor is the shortage of labor. This can lead to a decrease in the quality of health services. So, the application of the WISN method in hospitals in developing countries is very efficient. From the WISN method, it is also known that the job placement of health workers is the main factor in achieving the quality of health services. The results of this SLR can be used as a reference for further research, especially research on the allocation of health workers and improving the quality of health workers which have an impact on the achievement of hospital service quality in developing countries. Further research can explore how to improve the quality of health workers, because in the results of research with the use of WISN it is known that a competent workforce is needed in relation to the achievement of hospital service quality. Further

research can also explore the use of the WISN method in developed countries as a comparison of the topic discussed in this article.

ACKNOWLEDGMENTS

The author would like to thank God Almighty for His blessing in completing this research. Thank you also to for the guidance and valuable input during the research process, as well as to for providing the necessary facilities. Gratitude is also addressed to family and friends who always support and motivate. Hopefully this research will be useful for the development of science and the improvement of the quality of hospital services in developing countries.

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