Insights into the Mediating Impact of Nurses In-Charge Unit Management Competencies on the Relationship between Organizational Factors and Citizenship Behaviour: A Bibliometric Analysis

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ABSTRACT

Background: Nursing services are an essential component that is not independent of the healthcare industry's shifting global needs. A Nurse Manager oversees one or more specific nursing services departments.

Aims: This desk research aims to (1) to conduct a bibliometric analysis to identify and visualize emerging themes through cluster analysis.

(2) to identify research gaps and opportunities for future empirical research based on the bibliometric findings.

Methods: The bibliometric analysis, which included 162 articles, was applied. VOSviewer 1.6.19 was used to identify missing research themes and areas of knowledge.

Results: Attention has been given to citizenship behaviours, burnout, competency, and nurse managers. Four emerging themes were identified: organizational factors, citizenship behaviours, management competence, and nurse managers. Further, there are fever studies on the relationship between interpersonal relationships and citizenship behaviours.

Conclusions: As per the above results, more studies are needed on management competency, organizational support, work experience, interpersonal relationships, and work environment and their relationships to the citizenship behaviours of nurses in-charge. Hence, these findings provide theoretical and future research implications.

Keywords: Bibliometric Analysis, Citizenship Behavior, Literature Review, Nurse Managers, Organizational Factors, Unit Management Competencies

INTRODUCTION

Healthcare is another sector undergoing significant changes, complexity, volatility, and upheaval. Nursing services are a crucial element that is not separate from these changing worldwide needs. The nursing discipline must, therefore, undergo change and innovation to remain competitive. A Nurse Manager (NM) is a registered nurse who oversees one or more specific nursing services departments (Chase, 2010; American Nurses Association, 2016) and in-charge of nursing staff hiring, mentorship, and performance. The staff nurses are subordinate to the nurse manager (Chase, 2010). Ward managers are the first-line nurse managers in hospitals and the immediate supervisors of nursing staff. Ward sisters, Assisting Nurse Managers, Grade I Nursing Officers (Sri Lanka Nursing Service Minute, 2013; Wiggins, 2018), first-line nurse managers (Gunawan et al., 2018), Nurse Unit Managers (Robinson et al., 2016), Deputy Nurse Managers, and Level 2 nurses (Townsend et al., 2012) are alternative names for the ward manager position.

In the unique context of Sri Lanka, the public sector is the primary provider of health services (Rajapaksa et al., 2021). Despite the long-standing presence of ward managers overseeing hospital wards or units, the

shortage of these crucial positions is a persistent issue. The training and appointment of ward managers alone are insufficient to fill all the open positions in government hospitals. As a result, the most senior nurses, referred to as 'Nurses In-charge', are often appointed to manage and supervise these units, bridging the gap in the workforce.

Nurses in-charge merely have work experience as nurses, but taking on the role of nurses in-charge is something they perform without any ward or unit management training. Further, their Citizenship Behaviour (CB) affects the successful management of the hospital units at the micro level. As per Organ (1983), CB is "an effort to demonstrate voluntary effort and extra-role behaviour beyond the standards and job descriptions set for the individual in the working environment." In the context of nursing, CB plays a crucial role in promoting a positive work environment, improving patient care, and enhancing overall organizational performance. Nurses who exhibit CB contribute to a more efficient and effective healthcare system.

Further, CB in nursing involves actively participating in team meetings and discussions, collaborating with colleagues to solve problems, supporting team members, and sharing knowledge and expertise. Additionally, nurses demonstrate innovation by suggesting new ideas, experimenting with new approaches, participating in quality improvement initiatives, and staying updated with the latest evidence-based practices. Furthermore, they prioritize patient care by going the extra mile to provide compassionate and personalized care. Therefore, nursing management positions are crucial for clients' and nurses' satisfaction. Satisfied nurses provide outstanding service by going beyond their job descriptions and increasing the productivity of the units (Taghinezhad et al., 2015; Mathumbu & Dodd, 2013).

Objectives

The main goal:

The main goal is to critically analyze the existing research to gain new insights into how organizational factors affected CB by mediating the impact of the nurses' in-charge unit management competencies.

Objectives

(1) to conduct a bibliometric analysis to identify and visualize emerging themes through cluster analysis.

(2) to identify research gaps and opportunities for future empirical research based on the bibliometric findings.

METHODS AND METHODOLOGY

Study Selection Process and Methods

Keyword Identification: First, a set of the most relevant keywords is taken from the most crucial academic literature, and search criteria were developed by including the terms "organizational factors, citizenship behaviour, unit management competencies, perceived job burnout, perceived work environment, perceived organizational support, perceived interpersonal relationships, nurse managers, nursing, and first-line nurse managers".

Database Analysis: Taylor & Francis, SAGE, PubMed, JSTOR, Emerald, Springer, Elsevier, Wiley Online Library, and Academia.edu were employed. The keywords were used to search the databases for relevant articles with a defined custom range for 2011–May 2022.

Research Refinement: The PRISMA approach employed the predetermined inclusion-exclusion criteria (Liberati et al., 2009). Articles published between 2011 and 2022 May in well-known databases, Academic journals, full articles of potentially valuable studies (Kitchenham, 2007), and Articles written in the English language were inclusion criteria, while any publication before the year 2011 and after 2022 May, non-academic databases, the abstracts and articles which are not full, and articles written in any other language except English were exclusion criteria. The authors conducted manual eligibility assessments. Setting a minimally acceptable threshold is necessary for evaluating methodological quality. Therefore, articles that

comply with the minimum acceptable standard are included, while those that do not comply are removed (Meline, 2006). Figure 1 presents the PRISMA flow diagram, which illustrates the systematic review process from initial literature identification to the final inclusion of studies in the analysis.

Bibliographic Analysis: Bibliometric analysis enables us to identify key research themes and trends by analyzing keywords, authors, and journals. It also helps uncover knowledge gaps by examining publication distribution, visualize the intellectual structure of the field through co-citation and co-word analysis, and identify influential researchers and institutions by analyzing citation patterns (van Eck & Waltman, 2014). Therefore, 162 articles were fed to the Zotero reference management system and prepared for bibliometric analysis by converting them to an Excel sheet, the basis for a quantitative bibliometric analysis that mapped the subject topic and identified several literary significations. The VOSviewer tool displays visualizations showing networks between researchers, organizations, years of publications, and countries. It can also be utilized to look into an increasing number of studies, keywords, research collaborations, and well-liked study themes. VOSviewer has been used to implement analytical units and documents (Chen et al., 2016; Senanayake et al., 2023).

Content Analysis: The researcher selected the following components for coding in this study: publication year, the publishers of the articles, the methodological approaches of the reviewed articles, the reviewed articles by continents with countries, the distribution of articles by location, the reviewed theories supported by scholars, and the participants of the reviewed articles. Content analysis has been done on each document in the VOSviewer-defined cluster to discover developing research fields, gaps, and issues for future directions. How these stages were carried out in this investigation is shown in Figure 1. Each task's articles that did not adhere to the conditions for inclusion were eliminated (Meline, 2006; Senanayake et al., 2023)

Article Risk of bias assessment

Assessment of the bias of the article due to the researcher's bias in article selection and analysis, reviews' quality degrades (Kitchenham & Charters, 2007; Paule-Vianez et al., 2020). The selection bias can be reduced by using a review protocol, methodical, objective articles (Priyashantha et al., 2022a; Priyashantha, 2022), and executing a parallel independent quality assessment of publications articles reviewed by two or more people (Brereton et al., 2007). Furthermore, a draft protocol design that establishes the analysis in advance techniques can be used to lessen analytical bias (Priyashantha et al., 2022b). Thus, those steps were taken to remove bias from article selection and analysis.
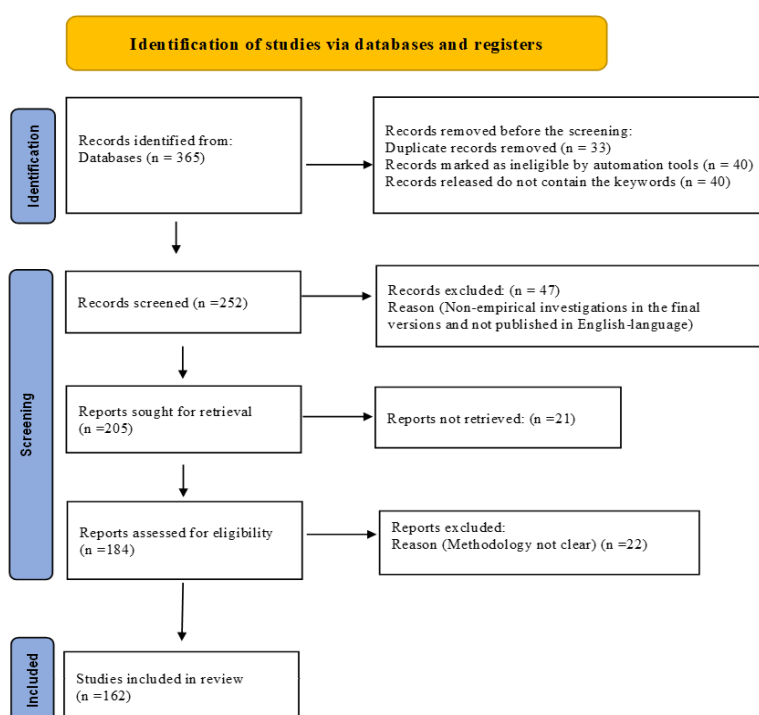

Figure 1. PRISMA Flow diagram

METHODS OF ANALYSIS

The analysis method was the bibliometric analysis (keyword co-occurrence) using Biblioshiny and VOSviewer. It is a mathematical technique to examine scientific activity in research (Paule-Vianez et al., 2020). The term co-occurrence analysis is one of the various bibliometric analyses crucial for determining the terms used in articles and abstracts and was used to construct the term co-occurrence network visualization. This approach divides the phrase into several clusters and identifies the themes that each cluster represents (Aparicio et al., 2019; Van Eck & Waltman, 2014; Senanayake et al., 2023). Further, the relationship between the keywords' co-occurrences can be used to construct different article links. The VOSviewer shows such connections in a map named "keyword co-occurrence network visualization" (Priyashantha, 2022).

As a result, by default, VOSviewer creates a network in a two-dimensional space and uses association strength normalization. In that network, nodes adjacent to one another reflect strongly linked concepts, whereas weakly related terms are represented by nodes near to one another, while nodes far away represent weakly connected keywords (Van Eck & Waltman, 2014; Priyashantha et al., 2022b). The nodes were then put into a network of clusters by the VOSviewer, with nodes with a high correlation being placed together (Chen et al., 2016). Further, VOSviewer uses colours to show the cluster assigned to a node. Hence, a cluster may represent a common theme. Thus, researchers utilized these emerging themes from the cluster analysis to achieve the second objective.

The density visualization of keyword co-occurrence, another important analysis derived from the keyword co-occurrence analysis, serves to identify areas where research lacks relevant concepts. This is denoted by a colour range from blue to green to red by default, as per the VOSviewer manual (Chen et al., 2016; Van Eck & Waltman, 2014).

According to the VOSviewer manual, keywords' density at each position in the item density visualization map is denoted by a default colour range from blue to green to red. The more objects are near a position, the redder and heavier they are. A node in the red backdrop denotes that there has been plenty of research to establish the concept. However, keyword nodes with a yellow background suggest that additional research on certain topics is required. Green indicates an average item for a point. Conversely, the nearer blue a point's colour is, the more signs that defective items are nearby and the lighter the weights (Chen et al., 2016; Priyashantha et al., 2022a; Senanayake et al., 2023). Therefore, keywords that fell into the blue or green area were searched to achieve the study's third objective.

Additionally, "the trend of article publications," "methodological approaches", "publishers of reviewed articles," "types of participants", "data analysis methods," and "continental and country-wise article publications" were generated by the software.

RESULTS AND FINDINGS

Study Selection

Figure 1 shows the article selection process and the reasons for excluding the articles. The PRISMA flow diagram indicates that researchers first identified 365 articles during the identification stage. The criteria for inclusion and exclusion were established, as shown in Table 1 (Kitchenham & Charters, 2007). Finally, 162 articles were retained for review and fed to the Zotero reference management system. Then, it was transferred to an MS Excel sheet and was modified to fit the analysis requirements to achieve the research objectives. Therefore, the article's title, abstract, keywords, authors' names and affiliations, the journal's name, the number of citations, and the year of publication were all extracted and added to an MS Excel sheet.

Study Characteristics

This research looked at 162 studies found in databases from 48 countries. Therefore, there is a significant trend in this area of study. The methodological approaches of the reviewed articles are depicted in Table 1. Among them, the majority (112) of quantitative studies are noteworthy, 19 articles are qualitative studies, and four

articles are mixed methodology.

Table 1. The methodological approaches of reviewed articles

Methodological Approaches	Number of Studies	Percentage
Quantitative studies	112	69.13%
Qualitative studies	19	11.73%
Mixed methodology	4	2.47%
Literature review	4	2.47%
Integrative review	2	1.23%
Critical review	2	1.23%
Concept analysis	1	0.62%

Further, researchers reviewed articles by continent and country, as shown in Figure 3. The 16 countries of the Asia continent have published 59 articles, which is the highest number and percentage (35.41%) among continents. In second place are 43 articles (26.54%) from 12 countries on the American continent. Although continents contributed substantially less to the field of research than Asian, European, and American countries, there is still plenty of room for more research.

Additionally, this analysis discovered various theories that academics employed to explain the frameworks. For example, organizational support theory (Battistelli et al., 2016; Kim et al., 2016), Hertzberg theory (Gunawan & Aungsuroch, 2017), Benner's theory of competence (Warshawsky & Cramer, 2019), social exchange theory (Chang, 2014; Parr et al., 2021; Rose, 2012), and theory of planned behaviour (Torlak et al., 2021) are a few of them. Despite these theories, it was challenging to discover studies that integrated two or three of these theories into a single model.

Clustering Analysis

VOSviewer version 1.6.18 was used to address the study's second objective. The minimum threshold term occurrence val0ue was set at five, and articles above the threshold were considered to create it. There were main keywords, and their interrelationships with other keywords are denoted in Figure 2. All terms that appeared five or more times in the abstracts and articles were considered to create the keyword co-occurrence network visualization shown in Figure 2.
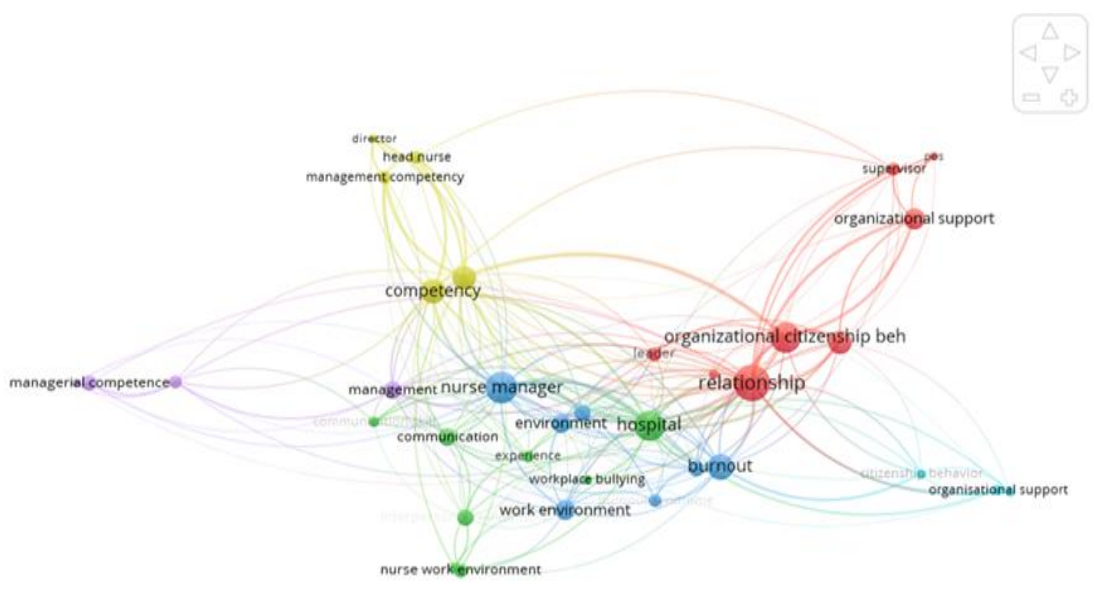

Figure 2 Temporal Co-World Map of the Literature

The VOSviewer automatically connected the most important terms with lines based on how frequently each term appeared in the articles. Also, they were separated into six clusters, each represented by a different type. These connections between phrases demonstrate how they are related, and colour-coded clusters highlight areas of interest. These common themes were found by evaluating the similarities between the findings of each article (Chen et al., 2016). Below, Figure 3 related concepts are described, along with each article's conclusions.

The round image's size illustrates the importance of the articles' keywords. The size of the round image makes the connection between them crystal clear. Some of the study's important terms are job burnout, organizational support, work environment, interpersonal relationships, citizenship behaviour, and management competencies of nurse managers and head nurses. These words have appeared repeatedly in the data throughout the research period. Accordingly, figures 2 and 3 show the relationships among keywords.

Figure 2 shows the connections between keywords in nodes. The larger the node, the higher the occurrence of that keyword. Also, based on the occurrence of keywords, it relates to the factor analysis. The connection represents the relationship between each keyword. Specifically, the strength of a relationship is characterized by the thickness of the line. Therefore, figure 2 shows that relationships, organizational citizenship behaviour, nurse manager, managerial competence, environment, and organizational support are linked by a thicker line, indicating high relationships among those keywords (Chen et al., 2016). In addition, it clearly shows six clusters with colours, and cluster analysis helps identify a few key themes of the study.

Cluster 1: Red: Five keywords fell into this cluster. Since they share common characteristics, it is essential to state the source journals and citation information for the cluster. Accordingly, 55 journals with articles containing these keywords were identified, with a citation count of 1835. The large nodes and dark lines indicated that most research has been conducted in these areas.

Cluster 2: Yellow: Three keywords fell into the yellow cluster. Competency shows poor relationships with nurse managers, managerial competence, and Organizational Citizenship Behaviour, meaning fewer or no studies have been found on these relationships.

Cluster 3: Blue: Nurse Manager, Burnout, Organizational Support, and Work Environment are the keywords that have interrelationships. Further, Burnout has been studied previously.

Cluster 4: Green: Four keywords were clustered into this cluster, but this does not indicate a strong relationship with CB.

Cluster 5: Purple: Though Managerial Competence and Management are keywords included in this cluster and have good research, they have a weak relationship with CB.

Further, the findings associated with each keyword are explained as follows:

Table 2 The identified clusters

Cluster	Keywords
Cluster 1: Red	Organizational Citizenship Behaviour, Relationship, Organizational Support, Supervisor
Cluster 2: Yellow	Competency, Management Competency, Head Nurse
Cluster 3: Blue	Nurse Manager, Burnout, Organizational Support, Work Environment
Cluster 4: Green	Nurse Work Environment, Hospital, Communication, Experience
Cluster 5: Purple	Managerial Competence, Management
Cluster 6: Light Blue	Organizational Support, Citizenship Behaviour

According to the above clusters, organizational citizenship behaviour is a prominent theme. Organizational support, work environment**,** nurse work environment, burnout, and relationships are related to organizational factors. Experience is a demographic factor. Communication is included in management competence. Thus, the immerged themes were organizational factors (organizational support, work environment, interpersonal relationships, and burnout), Organizational citizenship behaviour, nurse managers (head nurse/supervisor), and management competency. Hence, the second objective of the study was achieved.

Areas where empirical research is lacking

The density map is another analysis derived from the keyword co-occurrence analysis, which was used to discover the areas where empirical research is lacking. The nurse, relationships, and organizational citizenship behaviour are the most commonly used keywords in studies and have been extensively researched, as shown in Figure 3.

Thus, the researchers searched for keywords within the blue or green area. A few keywords are in the yellow background, indicating insufficient research. Though empirically tested, these keywords (burnout, relationship, organizational citizenship behaviour, nurse manager, and competency) can be considered insufficient for established knowledge. There are no red nodes, which indicates inadequate research for existing knowledge, but key terms in nearly blue areas say that no studies were found empirically.
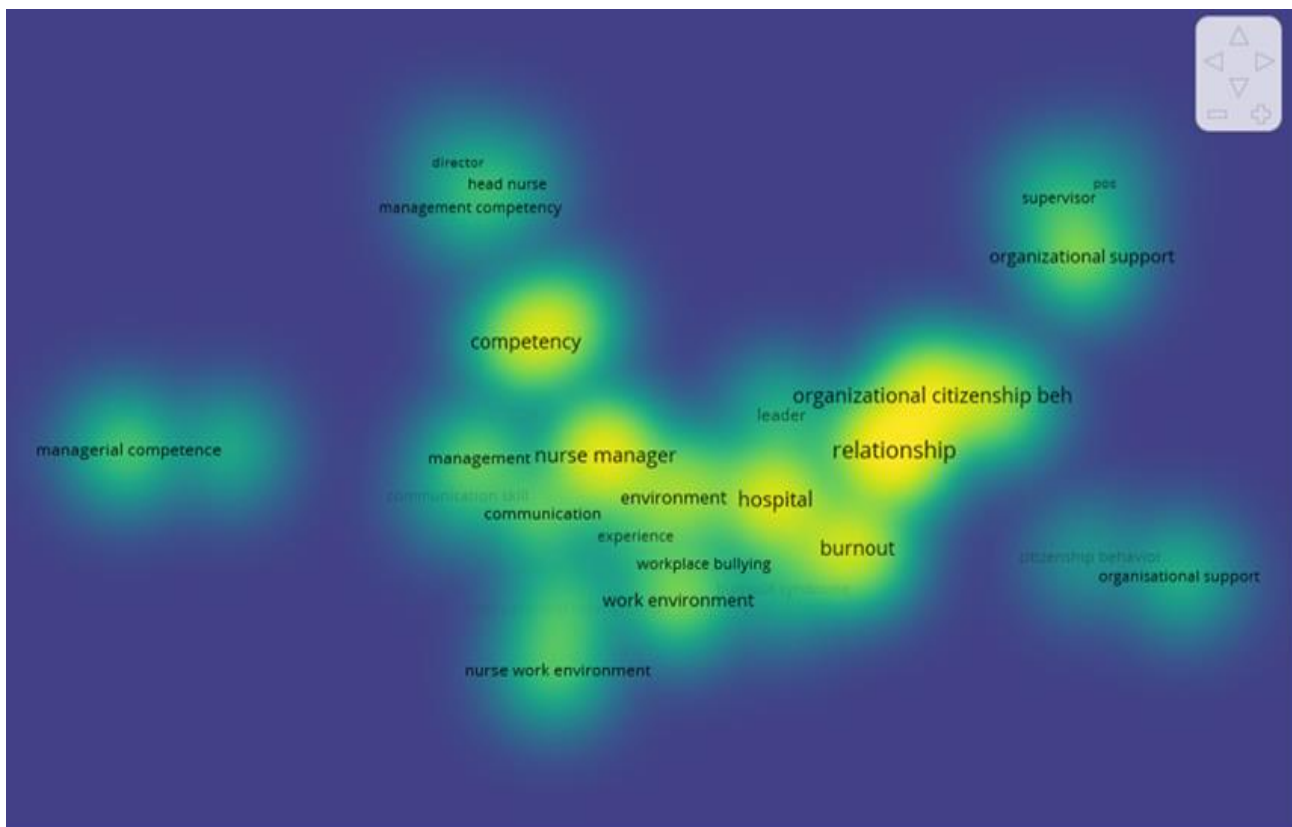

Figure 3 the density map of keywords of the literature review

DISCUSSION

Each article's results and synthesis were mainly reported. Under cluster analysis, the following themes were identified: organizational factors (organizational support, work environment, interpersonal relationships, burnout), citizenship behaviour, nurse manager/head nurse, and management competency.

Organizational Factors

Organizational factors significantly influence nurse manager/head nurse roles and behaviors. Studies have identified various factors, such as organizational support, work environment, workload, night shift work,

resource availability, education and training development, leadership, and environmental factors, as key determinants of effective nurse management (Gunawan et al., 2018, 2020). These factors can impact a manager's leadership style, decision-making abilities, and overall effectiveness.

Organizational Support: To succeed, organizational leaders must facilitate their novice's transition into new roles. Coaching new nurse managers to apply the knowledge acquired via didactic education to clinical practice experiences is part of a supportive transition period. NMs must conduct rigorous program evaluations considering sustainability and estimating the return on investment (Warshawsky et al., 2020). Organizational support theory plays a significant role in organizational support (Blau, 1964). Further, nurses' organizational support positively influences organizational citizenship behaviour (Chang, 2014).

Work Environment: An environment enabling nurses to function fully within their abilities to provide quality patient care is known as a "healthy work environment" (Aiken et al., 2018). "A supportive work environment will help employees in terms of improving the quality of completion of tasks so that it has an impact on work performance" (Gunawan et al., 2020). According to Lake et al. (2019), the nurse work environment merits consideration to advance patient and clinician wellness and healthcare quality and safety. However, a comprehensive overview of these studies still needs to be provided.

Many working factors, including social support, workload, and managerial assistance, are linked to a favourable perception of the work environment. Improving working conditions and providing opportunities for professional growth are essential to producing happier nurses willing to stay in their existing positions and deliver higher-quality care (Suliman & Aljezawi, 2018). Hospitals can sustain a competitive nursing workforce that supports high-quality care by creating a caring environment that values collaboration between healthcare professionals and nursing leadership (Ma et al., 2015). Workplace rudeness should be avoided for better outcomes in the ward, and it improves the CB of nurses, nurse managers, and other staff (Smith et al., 2018).

Interpersonal Relationship: Interpersonal relationships play a vital role in the effectiveness of nurse managers. Strong relationships with colleagues, supervisors, and subordinates can enhance job satisfaction, improve communication, and foster a positive work environment. Key interpersonal relationship domains include interviewing, counselling, rapport-building, and effective communication (Shen et al., 2014). Research has shown that positive relationships with nurse administrators and physicians are strong predictors of nurse managers' professional engagement and proactive job behaviour, respectively (Warshawsky et al., 2012). Encouraging open dialogue and fostering collaborative relationships can significantly improve team performance and patient care (Lee & Kim, 2020; Tran et al., 2018). In particular, effective interpersonal relationships are crucial in critical care settings, where complex and urgent patient conditions demand timely and accurate information exchange (Mahvar et al., 2020).

Burnout: Nurses' burnout, characterized by emotional exhaustion, depersonalization, and reduced personal accomplishment, is a significant issue in the nursing profession. High levels of burnout are linked to job dissatisfaction and increased turnover intentions (Lusiyana et al., 2021). Factors such as heavy workload, poor work-life balance, and inadequate organizational support can contribute to burnout. To mitigate the negative impacts of burnout, it is essential to create supportive work environments that promote empathy, compassion, and job satisfaction. In addition, Nurse managers (NMs) play a crucial role in fostering positive work environments. By demonstrating compassion and empathy, NMs can enhance the well-being of their staff. Additionally, organizational factors such as workload, control, community, value, reward, and fairness can influence burnout levels (Putra et al., 2021). Further, Demographic factors, including marital status, income, education, and years of experience, can also impact burnout. Higher-educated and more experienced nurses may experience lower levels of emotional exhaustion and depersonalization, but they may also feel less personal accomplishment (Zhang et al., 2020).

Citizenship Behavior

Citizenship behaviour involves discretionary behaviours that go beyond the basic job requirements (Organ, 1983). These behaviours, such as altruism, conscientiousness, courtesy, sportsmanship, and civic virtue, contribute to organizational effectiveness and job performance (Organ, 1988). In healthcare settings, nurses

who exhibit CB, by going above and beyond their regular duties, are crucial for successful organizations (Mahmoud & Ibrahim, 2016). A positive work environment and work-life balance significantly influence CB and positively impact job performance (Gunawan et al., 2022).

Nurse Manager/Head Nurse

The role of the nurse manager/head nurse is multifaceted. As first-line managers, they are responsible for operational, fiscal, and performance accountability (Warshawsky et al., 2012). They oversee patient care, team training, and adherence to standards (Locke et al., 2011). Understanding the complexities of this role is essential for developing effective leadership strategies and support systems for nurse managers.

Management Competency

Management competency is a crucial aspect of effective nurse leadership. Factors such as educational background, management experience, and leadership style can influence a manager's ability to lead and inspire their team. Further, nurse managers' competencies encompass a range of observable and unobservable attributes, including technical skills, leadership abilities, conceptual thinking, interpersonal skills, and financial management expertise (Chase, 1994; Gunawan & Aungsuroch, 2017). These competencies are essential for effective performance and can be influenced by factors such as performance appraisal, training attendance, career advancement, and organizational context (Gunawan et al., 2020b). First-line nurse managers must possess a diverse skill set, including self-development, planning, organizing, leading, ethical decision-making, and the delivery of quality healthcare.

CONCLUSION

This article presented the bibliometric analysis. Furthermore, cluster analysis showed the relationships among keywords by creating six clusters. In light of that, four themes developed: organizational factors, CB, management competence, and nurse manager/head nurse. However, there are insufficient empirical studies on CB, burnout, relationships, and nurse managers. In addition, there is a lack of knowledge of the head nurse (nurses in-charge, nursing directors, nurse work environment, organizational support, experience, communication, work environment, and managerial competence of nurse managers (Senanayake et al., 2023).

Research Limitations

Only 162 articles were reviewed, limited research in the area studied, researchers looked at only academic journals published from 2011 to 2022, and finally, only articles written in English were considered for this study.

Future Research Suggestions

Identifying a relationship between interpersonal relationships and CB was challenging. Even though job burnout and work environment have been studied for their association with CB, more research has yet to be found (Gunawan et al., 2020; Moloney et al., 2020; Sesen et al., 2011). Thus, future studies can focus on them. Moreover, the relationship between the unit management competencies of the nurses in-charge and CB needs to be further considered because there are fewer studies. There are some applications of nurses' CB, work environment, and interpersonal relationships, but more knowledge is needed. A vital implication is the many untapped areas of nurse managers' CB and unit management competencies in the research landscape.

Implications for nursing practice, health, and social care policy: The researchers can empirically test the relationships mentioned above between concepts in government hospitals. Middle and top-level nurse managers will better understand the nurses' in-charge overall UMCs and the level of CB, help identify and confirm the organizational factors that affect the CB of nurses in-charge. Further, nurse executives will also get benefits for decision-making, recruitment, and planning a new program to improve nurses' in-charge management competencies rather than giving a traditional position, building more effective policies or reviewing existing policies.

Ethical Approval

They are not applied.

Data Availability

The data set can be provided by inquiring about the corresponding author.

Declaration of Interest

No conflicts of interest are associated with this paper.

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